

		ОВ <b>2243</b>							
Pipi	ng C	Class	s:	0	1C	A15	<b>601</b>		
						Rev.			
Sh.	1	of	4	Α	0	1	2	3	

Design code : ASME B 31.3 2016 Base Material : LOW TEMP. CARBON STEEL Nom. Rating : CL150 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing : RF Valve Trim : 12 - SS316/HF

Corrosion Allow. : 1.5 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 210 °C

Service: CF - Dry (Cold) Flare PR - Propane Refrigerant

Pipe Thickness

NPS Thk.mm 1/2 3/4 3.73 3.91 1 1 1/2 2 3 4.55 5.08 5.54 5.49 10 9.27 36 12.7 9.53 STD 14.27 14.27 14.27 8.18 9.53 9.53 9.53 9.53 9.53 9.53 9.53 9.53 9.53 12.7 12.7 XS XS XS 56 60 64 15.88 15.88 17.48 SCH. XS XS STD STD

Nipple Thickness

 
 NPS
 1/2
 3/4
 1
 1 1/2
 2

 Thk.mm
 4.78
 5.56
 6.35
 7.14
 8.74

 SCH.
 160
 160
 160
 160
 160
 NPS

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 19.65 19.65 17.93 15.86 13.79 11.72 9.65 8.62 ASME B16.5/ASME B16.47 112 · 56 Temp. °C -28.9 37.78 93.33 148.9 204.4 260 315.6 343.3 Material Group 1.1 NPS Press. bar 14

60 64 Temp. °C 180

00	04 10111					
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE				,		
	1/2	24	PIPE	вw		ASTM A333 GR.6 - SMLS
	26	64		BW		ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)
FLAN		0.	, <u>-</u>	J.,		, i.e. i.i. i.i. i.i. i.i. i.i. i.i. i.i
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A350 LF2 - CL.1
	2	24		BW	CL150 RF	ASTM A350 LF2 - CL.1
	26	60		BW		ASTM A350 LF2 - CL.1
	64	64		BW	CL150 RF	ASTM A350 LF2 - CL.1
3	1/2	1 1/2		SW	CL300 RF	ASTM A350 LF2 - CL.1
3	2	24		BW	CL300 RF	ASTM A350 LF2 - CL.1
3	26	60		BW	CL300 RF	ASTM A350 LF2 - CL.1
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW		ASTM A350 LF2 - CL.1
5	2	24		BW	CL600 RF	ASTM A350 LF2 - CL.1
	1/2	24	BLIND FLANGE - ASME-B16.5			ASTM A350 LF2 - CL.1
	26	60	BLIND FLANGE - ASME-B16.47 series.A		CL150 RF	ASTM A350 LF2 - CL.1
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A350 LF2 - CL.1
3	26	60	BLIND FLANGE - ASME-B16.47 series.A		CL300 RF	ASTM A350 LF2 - CL.1
3	2	2		SW	CL300 RF	ASTM A350 LF2 - CL.1
14	2	2		THDF	CL150 RF	ASTM A350 LF2 - CL.1
	TACLE		THIDD INED. I EARIGE - ACINIC-D10.3	11101	OL 100 Ttl	AOTH AOOU EL 2 - OE. I
00	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	16	20	BLIND & SPACER - ASME-B16.48			ASTM A516 GR.70 + S5 (-46°C)
	24	24	BLIND & SPACER - ASME-B16.48			ASTM A516 GR.70 + S5 (-46°C)
	48	48	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>			ASTM AS16 GR.70 + S5 (-46°C)
	54	56	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>			ASTM AS16 GR.70 + 35 (-46 °C) ASTM A516 GR.70 + S5 (-46 °C)
	60	60	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM AS16 GR.70 + S5 (-46°C)
2	1/2	14	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM AS16 GR.70 + S5 (-46°C)
3	1/2	12	SPECTACLE BLIND - ASME-B16.48			ASTM AST6 GR.70 + S5 (-46 C) ASTM A516 GR.70 + S5 (-46 C)
23	3	3	BLIND & SPACER - ASME-B16.48			ASTM AS16 GR.70 + 35 (-46 C) ASTM A516 GR.70 + S5 (-46°C)
FITTI		3	BEIND & SPACEN - ASINE-B10.40		CL300 KI	ASTM ASTO GR.70 + 35 (-40 C)
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A350 LF2 - CL.1
3	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A350 LF2 - CL.1
"	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1
	2	24		BW	0000	ASTM A420 WPL6 - SMLS
	26	48		BW		ASTM A420 WPL6W - WLDD
	52	64		BW		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1
	2	24		BW	5000	ASTM A330 E1 2 - CE.1
	26	48		BW		ASTM A420 WPL6W - WLDD
	52	64		BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1
	2	48		BW	3000	ASTM A330 LF2 - GL.1 ASTM A420 WPL6 - SMLS
	52	64		BW		
	1/2	1 1/2		SW\THDF	3000	ASTM A350 LES CL 1
	1/2	1 1/2		SW\THDF	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2		THDM	3000	ASTM A350 LF2 - CL.1
	1/2	2		THDM		ASTM A330 CF 2 - CL.1
		2		THDM\PE		ASTM A333 GR.6 - SMLS
	1/2		NIPPLE - THDD/PE - ASME-B36.10			ASTM A333 GR.6 - SMLS
	3/4	2		PE\THDM PE		ASTM A420 WPL6 - SMLS
	3/4	2			2000	ASTM A350 LEG - SMLS
	1/2	1 1/2		SW	3000	ASTM A350 LF2 - CL.1
	2	24		BW		ASTM A420 WPL6 - SMLS
	28	48		BW		ASTM A420 WPL6W - WLDD
$\Box$	52	64	TEE - TB RAC 5061	BW		ASTM A420 WPL6W - WLDD



		ов <b>2243</b>							
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pt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
ITTI	NGS					
	2	8	WELDOLET - MSS-SP97	BW		ASTM A350 LF2 - CL.1
	2	2	LATROLET - BW END - MSS-SP97	BW	3000	ASTM A350 LF2 - CL.1
	3	8	SPECIAL LATROLET - <mfr std=""></mfr>	BW		ASTM A350 LF2 - CL.1
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	LATROLET - SW END - MSS-SP97	SW\BW	3000	ASTM A350 LF2 - CL.1
ASK	ETS					
	26	60	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	64	64	FLAT GASKET - GROOVED - <mfr std=""> GA-E-060013</mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
OLT	S					
	1/2	2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

	1/2	£ 1/£	51.50E1+2 NOT	5 - ANSI 11100 - 1 B BUL 3300			ASTM A193 B7 + ASTM A194 GR.2H (HULDIP 193)
VALV							
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60100	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A350 LF2 - CL.1 Trim :316 / HF
1	2	24	GA-E-60101	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A352 LCC Trim: 316 / HF
1	26	36	GA-E-67006	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A352 LCC Trim: 316 / HF
2	26	48	GA-E-60501	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - API609	FLGD	CL150 RF	Body: ASTM A352 LCC Trim: Metal seat - 316 - LT C.S. disc
4	1/2	1 1/2	GA-E-60200	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A350 LF2 - CL.1 Trim: 316 / HF
4	2	12	GA-E-60201	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A352 LCC Trim: 316 / HF
6	1/2	1 1/2	GA-E-60300	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A350 LF2 - CL.1 Trim: 316 / HF
6	2	10	GA-E-60301	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A352 LCC Trim: 316 / HF
6	12	24	GA-E-60302	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A352 LCC Trim: 316 / HF
7	6	6	GA-E-60401	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
7	8	24	GA-E-60402	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC Trim: Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60400	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A350 LF2 - CL.1 Trim : Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-60767	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60173	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A350 LF2 - CL.1 Trim :316 / HF
13	2	2	GA-E-60104	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
14	1/2	1 1/2	GA-E-60174	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	sw	CL800	Body: ASTM A350 LF2 - CL.1 Trim: 316 / HF
14	2	24	GA-E-60175	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A352 LCC Trim :316 / HF
19	1/2	1 1/2	GA-E-60176	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A350 LF2 - CL.1 Trim :316 / HF
69	36	36	GA-E-67500	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : 316 / HF
80	1/2	1 1/2	GA-E-60479	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL150 RF	Body: ASTM A350 LF2 - CL.1 Trim : Soft seat-316 trim - RPTFE seats
80	6	24	GA-E-67153	Ball-Stem Extension-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
82	6	24	GA-E-60775	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60496	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	PE/THD	CL800	Body: ASTM A350 LF2 - CL.1 Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-60147	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	sw	CL800	Body: ASTM A350 LF2 - CL.1 Trim :316 / HF
101	2	24	GA-E-60589	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : 316 / HF
101	26	36	GA-E-60575	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : 316 / HF
103	2	2	GA-E-60592	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : 316 / HF
103	3	3	GA-E-60592	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : 316 / HF
105	2	2	GA-E-60598	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A352 LCC Trim : 316 / HF
113	1/2	1 1/2	GA-E-67345	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
130	1/2	1 1/2	GA-E-67074	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
140	3	4	GA-E-67353	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : 316 / HF
141	4	4	GA-E-67354		FLGD	CL150 RF	Body: ASTM A352 LCC Trim : 316 / HF
143	2	24	GA-E-60574	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : 316 / HF
				_ L	-		<u> </u>



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/ALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
201	26	48	GA-E-60526	Butterfly-Stem Extension-Flanged-Triple Off Set- Int.seat-Fire safe - API609	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Metal seat - 316 - LT C.S. disc
401	2	12	GA-E-60279	Globe-Stem Extension-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : 316 / HF
701	4	6	GA-E-67160	Ball-Stem Extension-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
701	8	24	GA-E-60778	Ball-Stem Extension-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
801	1/2	1 1/2	GA-E-67124	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL150 RF	Body: ASTM A350 LF2 - CL.1 Trim : Soft seat-316 trim - RPTFE seats
801	3	3	GA-E-67263	Ball-Stem Extension-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
801	6	24	GA-E-60777	Ball-Stem Extension-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
824	8	8	GA-E-67600	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
840	6	6	GA-E-67602	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
841	6	10	GA-E-67601	Ball-Stem Extension-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
902	26	48	GA-E-69001	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - API609	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Metal seat - 316 - LT C.S. disc
902	50	60	GA-E-69043	Special Butterfly-Flanged-Triple Off Set-Int.seat- Fire safe - <mfr std=""></mfr>	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Metal seat - 316 - LT C.S. disc
902	62	64	GA-E-69002	Special Butterfly-Flanged-Triple Off Set-Int.seat- Fire safe - <mfr std=""></mfr>	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Metal seat - 316 - LT C.S. disc
907	2	6	GA-E-69000	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
907	12	12	GA-E-69095	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - RPTFE seats
936	6	6	GA-E-69097	Ball-Stem Extension-Split body-Red.B-	FLGD	CL300 RF	Body: ASTM A352 LCC
	10			Trunnion ball - API6D			Trim : Soft seat-316 trim - RPTFE seats
976	12	12	GA-E-69096	Ball-Stem Extension-Split body-Red.B- Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC
ļ			1	Truminon ball - APIOD		1	Trim : Soft seat-316 trim - RPTFE seats

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
4	36	36	GA-E-60600	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL150 RF	Body : ASTM A420 WPL6W - WLDD
							Screen: 316 - CLOTH - MESH 3
5	36	36	GA-E-60651	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL150 RF	Body : ASTM A420 WPL6W - WLDD
							Screen: 316 - CLOTH - MESH 3
10	42	48	GA-E-60626	Angle T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL150 RF	Body : ASTM A420 WPL6W - WLDD
							Screen: 316 - CLOTH - MESH 3
12	42	48	GA-E-60650	Angle T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL150 RF	Body : ASTM A420 WPL6W - WLDD
							Screen: 316 - CLOTH - MESH 3

**BRANCH TABLES** 



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8		S	S	S	W	W	w	÷	т																							
10		š	Š	Š	W	W	W	w	Ť	Т																						
12	2 S	S	S	S	W	W	W	W	W	Т	Τ																					
14		S	S	S	W	W	W	W	W	Р	Т	Т																				
16		S	S	S	W	W	W	W	W	Р	P	Ţ	T	_																		
18		S	S S	S	W	W	VV VV	VV VV	W	P P	P	P	I	T T	т																	
22		S	S	S	W	W	W	W	W	P	P	P	P	P	÷	т																
24		s	S	Š	W	W	W	W	W	P	Р	P	Р	P	Ť	Ť	Т															
28	3 S	S	S	S	W	W	W	W	W	Р	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т	Т														
30	) S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	T	T	T	_												
36		S	S	S	W	W	W	W	W	Р	Р	Р	Р	Р	Р	Р	Р	Р	T	T	_											
38	S S	S	S S	S	W	W	VV VV	VV VV	W	P	P	P	Р	P	Р	P	P	P	Р	T	T	т										
42	2 S	S	S	S	W	W	W	W	W	P	P	P	P	P	P	P	P	P	P	P	P	+	т									
48	3 S	S	Š	Š	W	W	W	W	W	P	P	P	P	P	P	P	P	P	P	P	P	P	Ť	Т								
52	2 S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	T1	T1	T1	T1	T1	T1	T1	T1	T1							
54	4 S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	T1	T1	T1	T1	T1	T1	T1	T1	T1						
56	5 S	S	S	S	W	W	W	W	W	P	Р	Р	Р	Р	Р	Р	Р	T1 P	T1	<b>T</b> 4												
60	) S 4 S	S S	S	S	W	W	VV VV/	VV VV	VV \//	P	P	P	Р	P	P	P	P	P	P	ΙΊ	T1	T1 T1	T1									
	Size 1/2			1 1/2	• • •	3	4	6	8	10	12	14	16	18	20	22	24	28	30	36	38	40	42	48	52	54	56	60				
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A	TEE - S	W EN	IDS -	ASM	E-B1	6.11																										٦
Р	PIPE TO						ING F	PAD-	rs-co	OR-E	NG-F	IPMT	-012	-E																		7
S	SOCKO																															1
Т	TEE - A																															_
T1	TEE - T																															
W	WELDO	LET .	- MSS	S-SP9	7																											_
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														4	5 deg	rees															
RunSize															_																
2	L	L	L	L	PP																										
3	L	L	L	L	LB	PP																									
4	L	L	L	L	LB	LS	PP																								
6	L	L	L	L	LB	LS	LS	PP																							
8	L	L	L	L	LB	LS	LS	LS	PP																						
10	L	L	L	L	LB	LS	LS	LS	LS	PP																					
12	L	L	L	L	LB	LS	LS	LS	LS	PP	PP																				
14	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP																			
16	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP																		
18	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP																	
20	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP																
22	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP															
24	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP														
28	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP													
30	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP												
36	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP											
38	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP										
40	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP									
42	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP								
48	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP							
52	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP						
54	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP					
56	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP				
60	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP			
64	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP		
BranchSize	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	22	24	28	30	36	38	40	42	48	52	54	56	60	64		
	Legenda  L LATROLET - SW END - MSS-SP97																														
				ND - N																											
LS SPE	CIAL	LATR	OLE	T - <n< td=""><td>IFR S</td><td>Std&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></n<>	IFR S	Std>																									
PP PIPE	TOI	PIPE \	NITH	l FUL	LEN	CIRC	LEME	NT S	SLEE\	/E:TS	-COF	R-ENG	3-PIP	MT-0	12-E																

## GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	C	1C	<b>A1</b> S	60	
						Rev.		
Sh.	1	of	4	Α	0	1		

Base Material: LOW TEMP. CARBON STEELDesign code: ASME B 31.3 2016Nom. Rating: CL150PWHT: AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 12 - SS316/HF

Corrosion Allow.: 1.5 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 230 °C

Service: [AIV] CF - Dry (Cold) Flare PR - Propane Refrigerant

Pipe Thickness

NPS Thk.mm 1 1 1/2 4.55 5.08 1/2 3/4 3.73 3.91 10 9.27 9.53 STD 9.53 **9.53** STD **STD** 9.53 STD 9.53 14.27 14.27 8.18 9.53 9.53 9.53 9.53 9.53 12.7 9.53 12.7 12.7 XS 54 XS 56 XS 60 XS 64 SCH. XS STD STD

14.27 | 15.88 | 15.88 | 17.48

Nipple Thickness

 NPS
 1/2
 3/4
 1
 1 1/2
 2

 Thk.mm
 4.78
 5.56
 6.35
 7.14
 8.74

 SCH.
 160
 160
 160
 160
 160

PRESSURE - TEMPERATURE Ratings

 NPS
 Press. bar
 19.65
 19.65
 17.93
 15.86
 13.79
 11.72
 9.65
 8.62
 ASME B16.5/ASME B16.47

 1/2 · 56
 Temp. °C
 -28.9
 37.78
 93.33
 148.9
 204.4
 260
 315.6
 343.3
 Material Group 1.1

 NPS
 Press. bar
 14

60 · 64 Temp. °C 180

		ize	Item Description	Ends	Rating/Facing	Material
pt.	from	to				
PE			1		1	
	1/2	24	PIPE	BW		ASTM A333 GR.6 - SMLS
	26	64	PIPE	BW		ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)
.AN	GES				_	
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A350 LF2 - CL.1
	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A350 LF2 - CL.1
	26	60	WN FLANGE - ASME-B16.47 series.A	BW	CL150 RF	ASTM A350 LF2 - CL.1
	64	64	SPECIAL WN FLANGE - <mfr std=""> GA-E-060013</mfr>	BW	CL150 RF	ASTM A350 LF2 - CL.1
3	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A350 LF2 - CL.1
3	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A350 LF2 - CL.1
3	26	60	WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A350 LF2 - CL.1
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A350 LF2 - CL.1
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A350 LF2 - CL.1
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A350 LF2 - CL.1
	26	60	BLIND FLANGE - ASME-B16.47 series.A		CL150 RF	ASTM A350 LF2 - CL.1
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A350 LF2 - CL.1
3	26	60	BLIND FLANGE - ASME-B16.47 series.A		CL300 RF	ASTM A350 LF2 - CL.1
3	2	2	SW REDUCING FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A350 LF2 - CL.1
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A350 LF2 - CL.1
PEC	TACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	16	20	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	24	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	54	60	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
2	1/2	14	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
23	3	3	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
ITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A350 LF2 - CL.1
3	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A350 LF2 - CL.1
İ	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	6000	ASTM A350 LF2 - CL.1
İ	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
İ	26	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
İ	52	64	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A420 WPL6W - WLDD
İ	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	6000	ASTM A350 LF2 - CL.1
İ	2	24	REDUCER - ASME-B16.9	вw		ASTM A420 WPL6 - SMLS
İ	26	48	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	52	64	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A350 LF2 - CL.1
i	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	6000	ASTM A350 LF2 - CL.1
	2	48	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	52	64	CAP - TB RAC 5064	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	6000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM	5000	ASTM A350 LF2 - CL.1
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95 SWAGE NIPPLE - PE/PE - MSS-SP95	PE(THDM		ASTM A420 WPL6 - SMLS
	3/4 1/2			SW	6000	ASTM A420 WPL6 - SMLS
		1 1/2 24	TEE - SW ENDS - ASME-B16.11		0000	ASTM A350 LF2 - CL.1
	2		TEE - ASME-B16.9	BW BW		ASTM A420 WPL6 - SMLS
	26	48	TEE - ASME-B16.9			ASTM A420 WPL6W - WLDD
	52	64	TEE - TB RAC 5061	BW		ASTM A420 WPL6W - WLDD
ACL	2 (ETS	36	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	6000	ASTM A350 LF2 - CL.1
AOI	-	60	ELAT CARKET ODOOVED ASER OUT			AIOLOGOL ODADIUTE
	26	60	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	62	64	FLAT GASKET - GROOVED - <mfr std=""> GA-E-060013</mfr>			AISI 316L+GRAPHITE



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opt.	from	Size	to	Item Description	Ends	Rating/Facing	Material
GASK	ETS						
	1/2			SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
<b>BOL1</b>	S						
	1/2		2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	-						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60100	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A350 LF2 - CL.1
1	2	24	GA-E-60101	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A352 LCC
1	26	36	GA-E-67006	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A352 LCC
2	26	48	GA-E-60501	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A352 LCC
4	1/2	1 1/2	GA-E-60200	- API609 Globe-BB-Red BThdd seat - API602	sw	CL800	Trim : Metal seat - 316 - LT C.S. disc Body: ASTM A350 LF2 - CL.1
4	2	12	GA-E-60201	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A352 LCC
6	1/2	1 1/2	GA-E-60300	Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
6	2	10	GA-E-60301	Check-BB- FB- Swing - API594		CL150 RF	Trim : 316 / HF
				, and the second	FLGD		Body: ASTM A352 LCC Trim : 316 / HF
6	12	24	GA-E-60302	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : 316 / HF
7	6	6	GA-E-60401	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
7	8	24	GA-E-60402	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60400	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A350 LF2 - CL.1 Trim : Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-60767	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60173	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
13	2	2	GA-E-60104	Gate-BB-FB-Flex wdg-Thdd seat - API600	DF FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A352 LCC
14	1/2	1 1/2	GA-E-60174	Gate-Stem Extension-BB-Red.B-Solid wdg-	sw	CL800	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
14	2	24	GA-E-60175	Exp.seat - API602 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A352 LCC
19	1/2	1 1/2	GA-E-60176	- API600 Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
80	1/2	1 1/2	GA-E-60479	Exp.seat - API602 Ball-Stem Extension-End entry -FB-Float.ball -	DF FLGD	CL150 RF	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
80	6	24	GA-E-67153	Frgd body - API608 Ball-Stem Extension-Split body-FB-Trunnion ball -		CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A352 LCC
82	6	24	GA-E-60775	API6D  Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A352 LCC
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60496	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	F		Body: ASTM A350 LF2 - CL.1 Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-60147	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
101	2	24	GA-E-60589	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : 316 / HF
101	26	36	GA-E-60575	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : 316 / HF
103	2	2	GA-E-60592	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: :316 / HF
103	3	3	GA-E-60592	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
140	6	6	GA-E-67353	Gate-BB-FB-Flex wdg-Thdd seat - API600 -	FLGD	CL150 RF	Body: ASTM A352 LCC
143	2	24	GA-E-60574	Interlock System Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Trim : 316 / HF Body: ASTM A352 LCC
201	26	48	GA-E-60526	- API600 Butterfly-Stem Extension-Flanged-Triple Off Set-	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A352 LCC
401	2	12	GA-E-60279	Int.seat-Fire safe - API609 Globe-Stem Extension-BB-Disk-Thdd seat - API	FLGD	CL150 RF	Trim : Metal seat - 316 - LT C.S. disc Body: ASTM A352 LCC
701	6	6	GA-E-67160	623 Ball-Stem Extension-Split body-Red.B-Floating	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A352 LCC
701	8	24	GA-E-60778	ball - API6D Ball-Stem Extension-Split body-Red.B-Trunnion	FLGD	CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A352 LCC
801	1/2	1 1/2	GA-E-67124	ball - API6D  Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A350 LF2 - CL.1
	6		GA-E-60777	Frgd body - API608  Ball-Stem Extension-Split body-FB-Trunnion ball -			Trim : Soft seat-316 trim - RPTFE seats
801		24		API6D		CL150 RF	Body: ASTM A352 LCC Trim : Soft seat: 316 frim - RPTFE seats
824	8	18	GA-E-67600	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL150 RF	Body: ASTM A352 LCC Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.



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STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	3	3	GA-E-60630	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3
1	42	42	GA-E-60600	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A420 WPL6W - WLDD Screen: 316 - CLOTH - MESH 3
2	36	48	GA-E-60626	Angle T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	1	Body :ASTM A420 WPL6W - WLDD Screen: 316 - CLOTH - MESH 3

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54					SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1					
56																		T1		T1	T1	T1	T1	T1	T1	T1	T1	T1				
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64						SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	T1	T1	T1	T1	T1	T1	T1	T1	T1		
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38						PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP											
40						PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP										
42						PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP									
48						PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP								
52						PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP							
54						PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP						
56						PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP					
60						PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP				
64						PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP			
BranchSize	2	3	4	6	8	10	12	14	16	18	20	22	24	28	30	36	38	40	42	48	52	54	56	60	64			
Legenda																												
PP PIPE	TOI	PIPE	WITH	l FUL	L EN	CIRC	LEME	ENT S	SLEE\	/E:TS	-COF	R-EN	3-PIP	MT-0	12-E													



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	1C	A15	60	
						Rev.		
Sh.	4	of	4	Α	0	1		

## GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are not permitted.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.
  6) This piping class is created for lines subjected to Acoustic Induced Vibration.



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	1C	A2S	<b>601</b>	
						Rev.		
Sh.	1	of	3	Α	0	1	2	3

 Base Material
 : LOW TEMP. CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL150
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 12 - SS316/HF

Corrosion Allow.: 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 230 °C

Service: CF - Dry (Cold) Flare WEG - Water/Ethylene Glycol WF - Wet (Warm) Flare

Pipe Thickness

 
 NPS
 1/2
 3/4
 1
 11/2
 2
 3
 4

 Thk.mm
 4.78
 3.91
 4.55
 5.08
 5.54
 5.49
 6.02

 SCH.
 160
 XS
 XS
 XS
 XS
 STD
 STD
 6 7.11 18 9.53 14 10 9.53 9.53 STD STD 8.18 9.27 9.53 9.53 9.53 9.53 12.7 12.7 12.7 12.7 STD STD STD STD STD STD

Nipple Thickness

 NPS
 1/2
 3/4
 1
 11/2
 2

 Thk.mm
 4.78
 5.56
 6.35
 7.14
 8.74

 SCH.
 160
 160
 160
 160
 160

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 19.65 19.65 17.93 15.86 13.79 11.72 9.65 8.62 ASME B16.5/ASME B16.47 1/2 · 52 Temp. °C -28.9 37.78 93.33 148.9 204.4 260 315.6 343.3 Material Group 1.1

1/2 ·	52 Temp	). °C -:	28.9 37.78 93.33 148.9 204.4 260 315.6 343.3 Material Group 1.	1		
	Si	ze	Item Description	Ends	Rating/Facing	Material
opt.	from	to				
PIPE						
	1/2	24	PIPE	BW		ASTM A333 GR.6 - SMLS
	26	52	PIPE	BW		ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)
FLAN	IGES					
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A350 LF2 - CL.1
	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A350 LF2 - CL.1
	26	52	WN FLANGE - ASME-B16.47 series.A	BW	CL150 RF	ASTM A350 LF2 - CL.1
3	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A350 LF2 - CL.1
3	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A350 LF2 - CL.1
5	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A350 LF2 - CL.1
63	4	4	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A350 LF2 - CL.1
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A350 LF2 - CL.1
	26	52	BLIND FLANGE - ASME-B16.47 series.A		CL150 RF	ASTM A350 LF2 - CL.1
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A350 LF2 - CL.1
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A350 LF2 - CL.1
SPEC	TACLE				le	1
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
CITTI	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI			DDID DING. TO DDI 5044	1	01.450.05	
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A350 LF2 - CL.1
3	1/2	3	DRIP-RING - TB DRI 5011	0)4/	CL300 RF	ASTM A350 LF2 - CL.1
	1/2	1 1/2 24	ELBOW - SW ENDS - ASME-B16.11	SW BW	6000	ASTM A350 LF2 - CL.1
	2	24 48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26 52	48 52	LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	6000	ASTM A420 WPL6W - WLDD ASTM A350 LF2 - CL.1
	2	24	REDUCER - ASME-B16.9	BW	0000	ASTM A420 WPL6 - SMLS
	26	48	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6V - WLDD
	52	52	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	6000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A350 LF2 - CL.1
	2	48	CAP - ASME-B16.9	BW	0000	ASTM A420 WPL6 - SMLS
	52	52	CAP - TB RAC 5064	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	6000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A420 WPL6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	6000	ASTM A350 LF2 - CL.1
	2	24	TEE - ASME-B16.9	вW		ASTM A420 WPL6 - SMLS
	26	48	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	52	52	TEE - TB RAC 5061	BW		ASTM A420 WPL6W - WLDD
	2	8	WELDOLET - MSS-SP97	BW		ASTM A350 LF2 - CL.1
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	6000	ASTM A350 LF2 - CL.1
GASI	KETS				_	
	26	52	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
5	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	4	4	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOL.			1			
	1/2	2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

V	ALVES														
	Size Data Sheet Item Description Ends Rating/Facing Material														
∥ p	os.	from	to				J J								
	1	1/2	1 1/2	GA-E-60100	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1							
								Trim: 316 / HF							
	1	2	24	GA-E-60101	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A352 LCC							
								Trim : 316 / HF							



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	1C	A2S	<b>601</b>	
						Rev.		
Sh.	2	of	3	Α	0	1	2	3

VALV	ES						
	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to		<u> </u>			
4	1/2	1 1/2	GA-E-60200	Globe-BB-Red BThdd seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1
4	2	12	GA-E-60201	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A352 LCC
	_	12	OA-L-00201	Globe-bb-blak-frida adat - Al 1 023	LOD	OL130 KI	Trim: 316 / HF
6	1/2	1 1/2	GA-E-60300	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A350 LF2 - CL.1
							Trim : 316 / HF
6	2	10	GA-E-60301	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A352 LCC
6	10	24	CA F 60202	Charle Flanged Dual plate Wildeland ADIFO4	FLOD	CL450 DE	Trim: 316 / HF
°	12	24	GA-E-60302	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A352 LCC Trim: 316 / HF
7	6	6	GA-E-60401	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC
	_						Trim : Soft seat-316 trim - RPTFE seats
7	8	24	GA-E-60402	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC
_							Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60400	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A350 LF2 - CL.1 Trim : Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-60767	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC
	0		O/ L 00/0/	Ball Opin Body 1 B Traillion Ball 71 10B	LOD	OL130 KI	Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60173	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
					DF		Trim : 316 / HF
13	2	2	GA-E-60104	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A352 LCC
14	2	24	GA-E-60175	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLOD	CL150 RF	Trim: 316 / HF Body: ASTM A352 LCC
14		24	GA-E-60175	- API600	FLGD	CL150 KF	Trim: 316 / HF
19	1/2	1 1/2	GA-E-60176	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602	DF		Trim: 316 / HF
80	1/2	1 1/2	GA-E-60479	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL150 RF	Body: ASTM A350 LF2 - CL.1
	4.0		0.4 5 00775	Frgd body - API608	E1 0B	01.450.05	Trim : Soft seat-316 trim - RPTFE seats
82	16	24	GA-E-60775	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC
89	1/2	1 1/2	GA-E-60496	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PF/THP	CI 800	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A350 LF2 - CL.1
"	1/2	1 1/2	S. L 00400	API608	F	22000	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-60147	Gate-Stem Extension-BB-Red.B-Solid wdg-	sw	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602			Trim : 316 / HF
101	2	2	GA-E-60589	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A352 LCC
103	2	2	GA-E-60592	- API600 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	ELGD	CL300 RF	Trim: 316 / HF Body: ASTM A352 LCC
103			GA-E-00392	- API600	LGD	CL300 KF	Trim: 316 / HF
130	1/2	1 1/2	GA-E-67074	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602	DF		Trim: 316 / HF
140	8	8	GA-E-67353	Gate-BB-FB-Flex wdg-Thdd seat - API600 -	FLGD	CL150 RF	Body: ASTM A352 LCC
, , ,			0.4 5 0057	Interlock System			Trim: 316 / HF
143	3	3	GA-E-60574	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A352 LCC
			1	- AF1000	1	1	Trim : 316 / HF

BRANCH TABLES



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	1C	A2S	<b>601</b>	
						Rev.		
Sh.	3	of	3	Α	0	1	2	3

RunSize  1/2		_			5																								
1/2	D	!															9	0 De	gree	s									
3/4																													
1																													
1 1/2					۸																								
2						Δ																							
3					Ŷ	Ť	т																						
4 S S S S W T T T 6 S S S S W T T T 8 S S S S W W T T T 8 S S S S W W W T T T 10 S S S S S W W W T T T 110 S S S S S W W W W T T 1 112 S S S S S S W W W W W T T T 114 S S S S S S W W W W W P T T 1 16 S S S S S W W W W W P P T T 1 16 S S S S S W W W W W P P P T T 1 18 S S S S S W W W W W P P P P T T 1 18 S S S S S W W W W W P P P P P T T 1 10 S S S S S S S S S S S S S S S S S					Ś	Ś	w	т																					
6 S S S S W W W T T 8 S S S S W W W T T 10 S S S S W W W W T T 112 S S S S W W W W W T T 114 S S S S W W W W W P T T 116 S S S S W W W W W P P T T 116 S S S S W W W W W P P T T 118 S S S S W W W W W P P P T T 120 S S S S W W W W W P P P T T 130 S S S S S W W W W W P P P P P P T T 130 S S S S W W W W W P P P P P P P P T T 130 S S S S S W W W W W P P P P P P P P P T T 142 S S S S W W W W W P P P P P P P P P T T 152 S S S S W W W W W P P P P P P P P P P T T 154 S S S S S W W W W W P P P P P P P P P P	2	1						Ť	Т																				
10	6	3				S	W	W	Т	Т																			
14			S			S	W	W	W	Т	Т																		
14	10	)						• •	W	W	Т	Т																	
16	12	2						• •	W	W	W	Ţ	T	_															
18						-	• • •	• • •	W	W	W	Р	ı	<u> </u>	_														
20 S S S S W W W W W P P P P P T T 24 S S S S W W W W W P P P P P P T T 30 S S S S W W W W W P P P P P P P T T 36 S S S S W W W W W P P P P P P P T T 42 S S S S W W W W W P P P P P P P P T T 43 S S S S W W W W W P P P P P P P P P T T 44 S S S S S W W W W W P P P P P P P P P P								• • •	VV VA/	VV	VV VA/			I	<u> </u>	_													
24								• • •	W	W					P	Ť	т												
30 S S S S W W W W W P P P P P P P P P T T 36 S S S S W W W W W P P P P P P P P P T T 42 S S S S W W W W W P P P P P P P P P T T 48 S S S S W W W W W P P P P P P P P P T T 52 S S S S W W W W W P P P P P P P P P P T T 52 S S S S W W W W W P P P P P P P P P T T T 64 BranchSize 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 30 36 42 48 52   Legenda  A TEE-SW ENDS-ASME-B16.11  P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET-SW END - MSS-SP97 T TEE-ASME-B16.9  T1 TEE-TB RAC 5061	24	4						• • •	w	w	• • •				P	P	Ė	Т											
36 S S S S W W W W W P P P P P P P P P P T T T 42 S S S S W W W W W P P P P P P P P P P T T T 48 S S S S W W W W W P P P P P P P P P P T T T 52 S S S S W W W W W P P P P P P P P P P P							W	W	W	W	W	P	P	P	P	P	P	Ť	Т										
48 S S S S W W W W W P P P P P P P P P P T T T 52 S S S S W W W W W P P P P P P P P P T T T T T T	36	3	S	S	S		W	W	W	W	W	Ρ	Ρ	Ρ				Ρ	Т	Т									
52 S S S W W W W P P P P P P P T1 T1 T1 T1 T1 T1 T1 T1 T1  BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12 14 16 18 20 24 30 36 42 48 52  Legenda  A TEE - SW ENDS - ASME-B16.11  P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E  S SOCKOLET - SW END - MSS-SP97  T TEE - ASME-B16.9  T1 TEE - TB RAC 5061	42	2							• • •											Т	Т								
BranchSize     1/2     3/4     1     1/2     2     3     4     6     8     10     12     14     16     18     20     24     30     36     42     48     52             Legenda           A         TEE - SW ENDS - ASME-B16.11           P         PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E           S         SOCKOLET - SW END - MSS-SP97           T         TEE - ASME-B16.9           T1         TEE - TB RAC 5061								• • •	v v	• • •					•			-			T	Т							
Legenda           A         TEE - SW ENDS - ASME-B16.11           P         PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E           S         SOCKOLET - SW END - MSS-SP97           T         TEE - ASME-B16.9           T1         TEE - TB RAC 5061							• •	• • •	v v	• •	* *		•	•	•	•	•				T1	T1							
A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9 T1 TEE - TB RAC 5061	Branch	ıSize	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	52						
A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9 T1 TEE - TB RAC 5061																													
P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9 T1 TEE - TB RAC 5061	Legend	la																											
S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9 T1 TEE - TB RAC 5061	Α	TEE	- SW	ENE	os -	ASM	IE-B1	6.11																			 	 	
T TEE - ASME-B16.9 T1 TEE - TB RAC 5061	Р	PIPE	TOI	PIPE	WIT	HR	EINF	ORC	ING	PAD-	TS-C	OR-E	NG-	PIPM.	T-012	2-E													
T1 TEE - TB RAC 5061	S	SOC	KOL	ET - :	sw	END	- MS	SS-S	P97																				
	Т	TEE	- ASI	ME-E	316.9	)																							
W WELDOLET - MSS-SP97	T1_	TEE	- TB	RAC	506	1																							
	W	WEL	DOL	ET -	MSS	S-SP9	97																						

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



	-	ОВ <b>2243</b>						
Pipii	ng C	Class	s:	0	1C	A2S	60	
						Rev.		
Sh.	1	of	3	Α	0			

Design code : ASME B 31.3 2016 Base Material : LOW TEMP. CARBON STEEL Nom. Rating : CL150 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 12 - SS316/HF

Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 230 °C

Service: [AIV] CF - Dry (Cold) Flare WF - Wet (Warm) Flare

Pipe Thickness

10 9.27 48 12.7 9.53 STD 8.18 9.53 9.53 9.53 9.53 9.53 9.53 12.7 12.7 12.7 STD STD STD STD STD STD

Nipple Thickness

 
 NPS
 1/2
 3/4
 1
 1 1/2

 Thk.mm
 4.78
 5.56
 6.35
 7.14

 SCH.
 160
 160
 160
 160
 8.74 160

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 19.65 17.93 15.86 13.79 11.72 9.65 8.62 ASME B16.5/ASME B16.47 1/2 · 52 Temp. °C -28.9 37.78 93.33 148.9 204.4 260 315.6 343.3 Material Group 1.1

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE					·	
	1/2	24	PIPE	вw	T	ASTM A333 GR.6 - SMLS
	26	52	PIPE	BW		ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)
FLAN		02	<u>, </u>	, J		
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A350 LF2 - CL.1
	2	24	WN FLANGE - ASME-B16.5	вW	CL150 RF	ASTM A350 LF2 - CL.1
	26	52	WN FLANGE - ASME-B16.47 series.A	вW	CL150 RF	ASTM A350 LF2 - CL.1
3	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A350 LF2 - CL.1
3	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A350 LF2 - CL.1
5	1/2	24	WN FLANGE - ASME-B16.5	вW	CL600 RF	ASTM A350 LF2 - CL.1
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A350 LF2 - CL.1
	26	52	BLIND FLANGE - ASME-B16.47 series.A		CL150 RF	ASTM A350 LF2 - CL.1
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A350 LF2 - CL.1
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A350 LF2 - CL.1
SPEC	TACLE	BLIND			_	
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
İ	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTII	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A350 LF2 - CL.1
3	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A350 LF2 - CL.1
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	6000	ASTM A350 LF2 - CL.1
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	52	52	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	6000	ASTM A350 LF2 - CL.1
	2	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	52	52	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	6000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A350 LF2 - CL.1
	2	48	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	52	52	CAP - TB RAC 5064	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	6000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A420 WPL6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	6000	ASTM A350 LF2 - CL.1
	2	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	30	48	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	52	52	TEE - TB RAC 5061	BW		ASTM A420 WPL6W - WLDD
	2	20	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	6000	ASTM A350 LF2 - CL.1
GASK	KETS				_	
	26	52	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
BOLT						
	1/2	2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

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	pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
	1	1/2	1 1/2	GA-E-60100	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
	1	2	24	GA-E-60101	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD		Body: ASTM A352 LCC Trim :316 / HF
	4	1/2	1 1/2	GA-E-60200	Globe-BB-Red BThdd seat - API602	SW		Body: ASTM A350 LF2 - CL.1 Trim :316 / HF
	4	2	12	GA-E-60201	Globe-BB-Disk-Thdd seat - API 623	FLGD		Body: ASTM A352 LCC Trim: 316 / HF
	6	1/2	1 1/2	GA-E-60300	Check-BB-Red.B-Piston-Thdd seat - API602	sw	1	Body: ASTM A350 LF2 - CL.1 Trim :316 / HF



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ALV	-						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
6	2	10	GA-E-60301	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A352 LCC
							Trim: 316 / HF
6	12	24	GA-E-60302	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL150 RF	Body: ASTM A352 LCC
							Trim: 316 / HF
7	6	6	GA-E-60401	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - RPTFE seats
7	8	24	GA-E-60402	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60400	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A350 LF2 - CL.1
							Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60173	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
					DF		Trim : 316 / HF
13	2	2	GA-E-60104	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A352 LCC
							Trim : 316 / HF
14	2	24	GA-E-60175	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL150 RF	Body: ASTM A352 LCC
				- API600			Trim : 316 / HF
19	1/2	1 1/2	GA-E-60176	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602	DF		Trim : 316 / HF
80	1/2	1 1/2	GA-E-60479	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL150 RF	Body: ASTM A350 LF2 - CL.1
				Frgd body - API608			Trim : Soft seat-316 trim - RPTFE seats
82	6	24	GA-E-60775	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A352 LCC
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60496	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A350 LF2 - CL.1
				API608	F		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-60147	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602			Trim : 316 / HF
101	2	2	GA-E-60589	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL150 RF	Body: ASTM A352 LCC
				- API600			Trim : 316 / HF
103	2	2	GA-E-60592	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A352 LCC
				- API600			Trim : 316 / HF
130	1/2	1 1/2	GA-E-67074	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602	DF		Trim : 316 / HF
143	3	3	GA-E-60574		FLGD	CL300 RF	Body: ASTM A352 LCC
				- API600			Trim : 316 / HF
824	18	20	GA-E-67600	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL150 RF	Body: ASTM A352 LCC
				Interlock System	1		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

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						Rev.		
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- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.

  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).

  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.

  5) This piping class is created for lines subjected to Acoustic Induced Vibration.



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Pipi	ng (	Class	s:	0	1Cl	B1S	01		
						Rev.			
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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL150 : AS PER CODE (NOTE 1) **PWHT** 

Facing/Finishing : RF Valve Trim :8 - 13Cr/ HF

Corrosion Allow. : 1.5 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 250 °C

Service: A - Air BWF - Liquid Blowdown Warm Flare CF - Dry (Cold) Flare CH - Chemical (Vent line from chemical injection unit to safe location) DP - Drain - Process DR - Potentially Contaminated Open Drain FO - Fuel Oil HL - Hydrocarbon Liquid HO - Hot Oil HOD - Hot Oil Drain HV - Hydrocarbon Vapour ME - Methanol MEG - Monoethylene Glycol N - Nitrogen NG - Natural Gas O - Oil PC - Process Condensate PG - Process Gas / Purge Gas V - Vent WF - Wet (Warm) Flare

Pipe ir	ncknes	55																				
NPS	1/2	3/4	1	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	52
Thk.mm	3.73	3.91	4.55	5.08	5.54	5.16	5.49	6.02	7.11	8.18	9.27	9.53	9.53	9.53	9.53	9.53	9.53	9.53	9.53	12.7	12.7	12.7
Isch.	XS	xs	XS	XS	XS	STD	STD	STD	STD	STD	STD	STD	STD	STD	STD	STD	STD	STD	STD	XS	XS	

Nipple Thickness

NPS Press. bar 19.65 17.93 15.86 13.79 11.72 9.65 8.62 7.58 6.55 ASME B16.5/ASME B16.47 1/2 · 52 Temp. °C 37.78 93.33 148.9 204.4 260 315.6 343.3 371.1 398.9 Material Group 1.1

1/2	32 . 0	o. o o.	7.76 93.33 146.9 204.4 200 313.0 343.3 371.1 396.9 Material Groc			
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	24	PIPE	BW	I	ASTM A106 GR.B - SMLS
	26	52	PIPE	BW		ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)
FLAN	IGES	32	1	DVV		A31W A071 GIV.CC03 CE.12 - E1 W + 32 (-40 C)
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A105 Normalized
	30	52	WN FLANGE - ASME-B16.47 series.A	BW	CL150 RF	ASTM A105 Normalized
3	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
3	2	24	WN FLANGE - ASME-B16.5	вW	CL300 RF	ASTM A105 Normalized
3	30	52	WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A105 Normalized
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
7	2	24	WN FLANGE - ASME-B16.5	BW	CL1500 RF	ASTM A105 Normalized
12	2	24	WN FLANGE - ASME-B16.5	BW	CL150 FF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A105 Normalized
73	2	24	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A105 Normalized
83	2	12	WN FLANGE - ASME-B16.5	BW	CL2500 RJ (F)	ASTM A105 Normalized
993	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
995	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Normalized
	30	52	BLIND FLANGE - ASME-B16.47 series.A		CL150 RF	ASTM A105 Normalized
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
5	2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A105 Normalized
3	2	2	SW REDUCING FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Normalized
SPEC	CTACLE	BLIND		_		
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	42	42	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
3	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI				1	ı	
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	30	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	50	52	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	30	48	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	50	52	REDUCER, LARGE BORE - TB RAC 5062	BW	2000	ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	30	48	CAP - ASME-B16.9	BW BW		ASTM A420 WPL6 - SMLS
	50	52	CAP - TB RAC 5064	BW	2000	ASTM A420 WPL6W - WLDD
	1/2	1 1/2	COUPLING - SWITHING FAME ASME BAS 44	SW\THDF	3000 3000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	THDM	5000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM\PE		ASTM A106 CR R SMI S
	1/2	2 2	NIPPLE - THDD/PE - ASME-B36.10	PE PE		ASTM A106 GR.B - SMLS
	1/2		NIPPLE - PE/PE - ASME-B36.10			ASTM A224 WPB SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM THDM		ASTM A234 WPB - SMLS
	3/4	2 2	SWAGE NIPPLE - THDD/THDD - MSS-SP95 SWAGE NIPPLE - PE/PE - MSS-SP95	PE PE		ASTM A234 WPB - SMLS
	3/4			SW	3000	ASTM A234 WPB - SMLS ASTM A105 Normalized
	1/2 2	1 1/2 24	TEE - SW ENDS - ASME-B16.11	BW	5000	
	30	48	TEE - ASME-B16.9 TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS ASTM A420 WPL6W - WLDD
	30	40		איש		AOTIVI A420 WELDV - WEDV



## PIPING MATERIAL **SPECIFICATION**

		DB 2 <b>243</b>							
Pipi	ng C	Class	s:	0	1Cl	B15	<b>601</b>		
						Rev.			
Sh.	2	of	4	Α	0	1	2	3	

opt.	Siz from	e to	Item Description		Ends	<b>3</b>	Rating/F	Facing	Material
								uog	material
	ice.								
	1GS 52	52	TEE - TR DAC FOR	1	вw				ASTM A420 WPL6W - WLDD
	2		TEE - TB RAC 506° WELDOLET - MSS		BW				ASTM A420 WPL6W - WLDD ASTM A105 Normalized
	1/2		SOCKOLET - SW E		SW\B	w	3000		ASTM A105 Normalized
MISCE	ELLANE								
	1/2		KIT FOR INSULATI	NG FLANGE - ASME-B16.5			CL150 R		GRE LAMINATED + TFE (MAX T 180 C)
CVEK	14	14	SPECIAL TEMPOR	ARY STRAINER - <mfr -="" metallic="" std=""></mfr>			CL150 R	F	ASTM A516 GR.70 + S5 (-46°C)
GASK	26	52	ELAT GASKET - GI	ROOVED - <mfr std=""></mfr>					AISI 316L+GRAPHITE
	1/2	24		-with OUT.& INN.RINGS - ASME-B16.20					304 SS+GRAPH 98% - C.S. OUT.RING
63	3		OCTAGONAL RJ G	ASKET - ASME-B16.20					SOFT IRON
73	1/2			ASKET - ASME-B16.20					SOFT IRON
83	2	12	OCTAGONAL RJ G	ASKET - ASME-B16.20					SOFT IRON
BOLT	1/2	4	ST.BOLT+2 NUTS	- ANSI Thdd - TB BUL 5368					ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
993	1/2			- ANSI Thdd - TB BUL 5368					ASTM A453 GR. 660 - PTFE COATED
995	1/2	1 7/8	ST.BOLT+2 NUTS	- ANSI Thdd - TB BUL 5368					ASTM A453 GR. 660 - PTFE COATED
VALVE	ES								
nes		ze to	Data Sheet	Item Description	Ends	Rating	Facing	Mat	erial
pos.	from 1/2	1 1/2	GA-E-60112	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800		Body: 4	ASTM A105 Normalized
		. 1/2	32 00112				-	Trim : 1	3CR / HF
1	2	24	GA-E-60113	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150			ASTM A216 WCB
2	26	48	GA-E-60503	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe	FLGD	CL150			3CR / HF STM A216 WCB
				- API609			-	Trim : N	Metal seat - 13CR - C.S. disc
4	1/2	1 1/2	GA-E-60209	Globe-BB-Red BThdd seat - API602	SW	CL800			NSTM A105 Normalized 3CR / HF
4	2	12	GA-E-60210	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150			STM A216 WCB
	4/-		0.4 5 07		0.47		-	Trim : 1	3CR / HF
5	1/2	1 1/2	GA-E-67200	Globe-BB-Red.B-Needle-Thdd seat - ASME- B16.34	SW	CL800			ASTM A105 Normalized 3CR / HF
6	1/2	1 1/2	GA-E-60312		SW	CL800			ASTM A105 Normalized
		40	04 5 00040	Oharda DD, ED, Ouders ADISO4	EL OD	01.450			3CR / HF
6	2	10	GA-E-60313	Check-BB- FB- Swing - API594	FLGD	CL150			\STM A216 WCB 3CR / HF
6	12	24	GA-E-60314	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL150	RF E	Body: A	ASTM A216 WCB
7	2	6	GA-E-60411	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150			3CR / HF NSTM A216 WCB
'	2	o	GA-L-00411	Bail-Split body-Ned.B-1 loating bail - AF 10D	FLGD	CLISO			Soft seat-316 trim - RPTFE seats
7	8	24	GA-E-60412	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150			ASTM A216 WCB
8	1/2	1 1/2	GA-E-60410	  Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150			Soft seat-CS ENP 76,2µm trim-RPTFE seats ASTM A105 Normalized
							-	Trim : S	Soft seat-316 trim - RPTFE seats
8	2	2	GA-E-60779	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150			ASTM A216 WCB Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-60780	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150			ASTM A216 WCB
	4/0		04 5 00477	0 + 20 0 10 0 10 1 5 1 4 2000					Soft seat-CS ENP 76,2µm trim-RPTFE seats
10	1/2	1 1/2	GA-E-60177	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800			ASTM A105 Normalized 3CR / HF
11	1/2	1 1/2	GA-E-60585	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL150	RF E	Body: A	ASTM A105 Normalized
,,	2	2	CA E 60103	Coto BR ER Floy wdg Thdd goot ADI600	D/W	CI 150			3CR / HF
11	2	2	GA-E-60102	Gate-BB-FB-Flex wdg-Thdd seat - API600	BW	CL150			NSTM A216 WCB 3CR / HF
13	2	2	GA-E-60117	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300	RF E	Body: A	ASTM A216 WCB
14	1/2	1 1/2	GA-E-60148	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800			3CR / HF NSTM A105 Normalized
				Exp.seat - API602			-	Trim : 1	3CR / HF
14	2	24	GA-E-67000	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150			NSTM A216 WCB 3CR / HF
15	2	2	GA-E-60126		FLGD	CL600			STM A216 WCB
				· ·			-	Trim : 1	3CR / HF
19	1/2	1 1/2	GA-E-67001		SW/TH DF	CL800			ASTM A105 Normalized 3CR / HF
62	2	10	GA-E-60305		FLGD	CL150	RF E	Body: A	ASTM A216 WCB
62	10	40	CA-E-60747	Chock BR- ER- Swing ADIE04	ELCC	CI 450			3CR / HF
62	12	12	GA-E-60747	Check-BB- FB- Swing - API594	FLGD	CL150			NSTM A216 WCB 3CR / HF
63	2	2	GA-E-60322	Check-BB- FB- Swing - API594	FLGD	CL300	RF E	Body: A	ASTM A216 WCB
80	1/2	1 1/2	GA-E-60794	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL150			3CR / HF NSTM A105 Normalized
30	1/2	1 1/2	JA-L-007 94	Frgd body - API608	LGD	02130			Soft seat-316 trim - RPTFE seats
82	6	24	GA-E-60782	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150	RF E	Body: A	ASTM A216 WCB
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THC	CI 800			Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
				API608	F		-	Trim : N	Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67011		SW	CL800			ASTM A105 Normalized
101	2	2	GA-E-67035	Exp.seat - API602 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL150			3CR / HF NSTM A216 WCB
				- API600			-	Trim : 1	3CR / HF
103	2	2	GA-E-60591	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300			NSTM A216 WCB 3CR / HF
				_ AI 1000				<u> </u>	JOIX / TII



Data Sheet

Item Description

VALVES

## PIPING MATERIAL **SPECIFICATION**

Ends Rating/Facing Material

		ОВ <b>2243</b>						
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110	2	2	GA-E-67343	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A216 WCB
'''	-		GA-L-07343	Cate-DB-1 B-1 lex wag-11ldu seat - Al 1000	LOD	OL130 IXI	Trim: 13CR / HF
113	1/2	1 1/2	GA-E-60583	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL300 RF	Body: ASTM A105 Normalized
							Trim: 13CR / HF
130	1/2	1 1/2	GA-E-67075	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A105 Normalized
				Exp.seat - API602	DF	02000	Trim: 13CR / HF
140	2	8	GA-E-67355	Gate-BB-FB-Flex wdg-Thdd seat - API600 -	FLGD	CL150 RF	Body: ASTM A216 WCB
				Interlock System			Trim: 13CR / HF
143	2	2	GA-E-67061	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A216 WCB
				- API600			Trim: 13CR / HF
150	14	16	GA-E-67304	Gate-Ext. Stem (2000mm)-BB-FB-Flex wdg-Thdd	FLGD	CL150 RF	Body: ASTM A216 WCB
				seat - API600			Trim: 13CR / HF
161	6	6	GA-E-67305	Gate-Ext. Stem (1600mm)-BB-FB-Flex wdg-Thdd	FLGD	CL150 RF	Body: ASTM A216 WCB
				seat - API600			Trim: 13CR / HF
801	1/2	1 1/2	GA-E-67125	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL150 RF	Body: ASTM A105 Normalized
				Frgd body - API608			Trim : Soft seat-316 trim - RPTFE seats
824	3	3	GA-E-67696	Ball-Split body-FB-Floating ball - API6D -	FLGD	CL150 RF	Body: ASTM A216 WCB
				Interlock System			Trim : Soft seat-316 trim - RPTFE seats
824	6	24	GA-E-67293	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL150 RF	Body: ASTM A216 WCB
				Interlock System			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
840	6	10	GA-E-67603	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL150 RF	Body: ASTM A216 WCB
				Interlock System			Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
890	1/2	1 1/2	GA-E-67653	Ball-Stem Extension-End entry -FB-Float.ball -	PE/THD	CL800	Body: ASTM A105 Normalized
				Frgd body+ Nipple - API608	F		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
907	2	6	GA-E-69003	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats
907	12	12	GA-E-69075	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
908	2	6	GA-E-69004	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats
908	10	10	GA-E-69076	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
972	8	24	GA-E-69046	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Metal seat-316+CR CARB.trim-(XM19 stem)-GRAPH
973	2	6	GA-E-69045	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
				·			, ,
STRA	INERS						
Ī		izo	Data Sheet	Item Description	I	- · · ·	
pos.	from	ize to	Data Sneet	item bescription	Ends	Rating/Facing	Material
1	2	2	GA-E-60631	Y Strainer-Bolted cover - ASME-B16.34	BW	CL150 RF	Body : ASTM A216 WCB
'	-		C/ (-E-00051	Totalio bolled cover - Advic-b10.34	200	OL 130 KI	Screen: 316 - PERF.PLATE - 18 Holes/Cm2
1	3	14	GA-E-60601	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL150 RF	Body : ASTM A234 WPB - SMLS
'	٦	14	OA3E-00001	1 Strainer-DW - SWI IX Stu - Wetaines	500	CLISU KF	Screen: 316 - CLOTH - MESH 3
9	2	14	GA-E-60637	Special Strainer, Basket Type-Bolted Cover -	FLGD	CL150 RF	i I
9	۷	14	GA-E-00031	<pre><mfr std=""></mfr></pre>	FLGD	CL150 KF	Body : ASTM A216 WCB
	l		1	SWI IX Stu 2	1	I	Screen: 316 - PERF.PLATE - 18 Holes/Cm2

**BRANCH TABLES** 



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RunSi	ze															٠	0 20;	9.000	•										
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3/4		Α	Α																										
1		Α	Α	Α																									
1 1/2		Α	Α	Α	Α																								
2		S	S	Т	Т	Т																							
2 1/2		_	_	_	_			_																					
3		S S	S S	S	S	W		T T	_																				
6		S	S	S	S	W		w	÷	_																			
8		S	S	S	S	W		W	w	÷	т																		
10		S	S	s	s	W		w	W	w	Ť	Т																	
12		Š	Š	Š	Š	W		W	W	W	W	Ť	Т																
14		S	S	S	S	W		W	W	W	W	Р	Т	Т															
16		S	S	S	S	W		W	W	W	W	Ρ	Ρ	Т	Т														
18		S	S	S	S	W		W	W	W	W	Р	Р	Р	Т	Т													
20		S	S	S	S	W		W	W	W	W	Р	Р	Ρ	Р	Т	T	_											
24		S	S	S	S	W		W	W	W	W	P	P	P P	Р	P	T	T	_										
30 36		S	S S	S S	S	W		W	W	W	W	P	P	P	P P	P	Р	I P	I T	_									
42		S S	S	S	S S	W		W	W	W	W	P	P	P	P	P	P	P	I D	+	т								
48		S	S	S	S	W		W	W	W	W	P	P	P	P	P	P	P	P	P	Ť	т							
52		S	S	s	s	W		w	w	w	w	P	P	P	P	P	P	Ť1	Ť1	Τ1	T1	T1	T1						
Branch			3/4				2 1/2	2 3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	52						
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Legend																													
A	TEE	- SW	/ ENI	os -	ASM	E-B1	6.11																						
Р	PIPE	TO	PIPE	WIT	HR	EINF	ORCI	ING F	PAD																				
S	SOC					- MS	SS-SF	P97																					
Т	TEE	- AS	ME-E	316.9																									
T1	TEE	- TB	RAC	506	1																								
W	WEL	DOL	ET -	MSS	-SP9	7																							

## GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



		ОВ <b>2243</b>						
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Base Material: CARBON STEELDesign code: ASME B 31.3 2016Nom. Rating: CL150PWHT: AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 12 - SS316/HF

Corrosion Allow.: 1.5 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 180 °C

Service: DR - Potentially Contaminated Open Drain MEG - Monoethylene Glycol

Pipe Thickness

NPS Thk.mm 1/2 3/4 3.73 3.91 1 1 1/2 4.55 5.08 10 9.27 18 9.53 6 7.11 5.49 6.02 8.18 9.53 9.53 9.53 12.7 SCH. XS XS XS XS XS STD STD STD STD STD STD STD

Nipple Thickness

 NPS
 1/2
 3/4
 1
 1 1/2
 2

 Thk.mm
 4.78
 5.56
 6.35
 7.14
 8.74

 SCH.
 160
 160
 160
 160
 160

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 19.65 19.65 17.93 15.86 ASME B16.5 1/2 · 24 Temp. °C -28.9 37.78 93.33 148.9 Material Group 1.1

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						<u> </u>
	1/2	24	PIPE	BW	T	ASTM A106 GR.B - SMLS
FLAN			- · · <del>-</del>			1
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A105 Normalized
l i	2	24	WN FLANGE - ASME-B16.5	вw	CL150 RF	ASTM A105 Normalized
3	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
3	2	i	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
7	2	24	WN FLANGE - ASME-B16.5	BW	CL1500 RF	ASTM A105 Normalized
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A105 Normalized
73	2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A105 Normalized
995	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Normalized
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
3	2	2	SW REDUCING FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
3	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTII	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
	2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	1/2		NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2		TEE - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
	2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
	1/2		SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A105 Normalized
MISC	ELLANE					
	1/2		KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
0.10	3	4	SPECIAL TEMPORARY STRAINER - <mfr -="" metallic="" std=""></mfr>		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
GASK					1	
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20		1	SOFT IRON
BOLT			OT DOLT AND TO ANOTHER TO DO			140714 4400 PT
005	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
995	1/2	1 7/8	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660 - PTFE COATED
VALV	/ES					

Size Data Sheet Item Description Ends Rating/Facing Material from pos to Body: ASTM A105 Normalized Trim: 316 / HF Gate-BB-Red.B-Solid wdg-Exp.seat - API602 1/2 1 1/2 GA-E-60167 sw CL800 GA-E-60116 Gate-BB-FB-Flex wdg-Thdd seat - API600 FLGD CL150 RF Body: ASTM A216 WCB Trim: 316 / HF Body: ASTM A105 Normalized 4 1/2 1 1/2 GA-E-60259 Globe-BB-Red B.-Thdd seat - API602 sw CL800 Trim: 316 / HF



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	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
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4	2	12	GA-E-60212	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim: 316 / HF
5	1/2	1 1/2	GA-E-67205	Globe-BB-Red.B-Needle-Thdd seat - ASME-	SW	CL800	Body: ASTM A105 Normalized
				B16.34			Trim: 316 / HF
6	1/2	1 1/2	GA-E-60375	Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Body: ASTM A105 Normalized
							Trim: 316 / HF
6	2	10	GA-E-60316	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim: 316 / HF
6	12	24	GA-E-60317	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim: 316 / HF
7	2	6	GA-E-60411	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats
7	8	24	GA-E-60471	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60410	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A105 Normalized
							Trim : Soft seat-316 trim - RPTFE seats
8	2	3	GA-E-60779	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60197	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A105 Normalized
					DF		Trim: 316 / HF
89	1/2	1 1/2	GA-E-60474		PE/THD	CL800	Body: ASTM A105 Normalized
				API608	F		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67012	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A105 Normalized
				Exp.seat - API602			Trim: 316 / HF
110	1/2	1 1/2	GA-E-67324	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800	Body: ASTM A105 Normalized
							Trim: 316 / HF
140	4	4	GA-E-67356		FLGD	CL150 RF	Body: ASTM A216 WCB
				Interlock System			Trim: 316 / HF
610	2	2	GA-E-60742	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim: 316 / HF
710	2	2	GA-E-67266	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats
801	1/2	1 1/2	GA-E-67125		FLGD	CL150 RF	Body: ASTM A105 Normalized
				Frgd body - API608			Trim : Soft seat-316 trim - RPTFE seats
310	2	4	GA-E-67267	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats

STRA	INERS					
pos.	from Size to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	4 6	GA-E-60601	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A234 WPB - SMLS Screen: 316 - CLOTH - MESH 3

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#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).



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A) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
 Specified Thickness are suitable to withstand Full Vacuum condition.



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	1Cl	B1S	60	
						Rev.		
Sh.	1	of	3	Α	0	1		

Base Material :ASME B 31.3 2016 : CARBON STEEL Design code Nom. Rating : CL150 : AS PER CODE (NOTE 1) **PWHT** 

Facing/Finishing: RF Valve Trim :8 - 13Cr/ HF

Corrosion Allow. : 1.5 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 250 °C

Service: [AIV] A - Air BWF - Liquid Blowdown Warm Flare CF - Dry (Cold) Flare CH - Chemical DP - Drain - Process FG - Fuel Gas FO - Fuel Oil HL - Hydrocarbon Liquid HO - Hot Oil HOD - Hot Oil Drain HV - Hydrocarbon Vapour ME - Methanol MEG - Monoethylene Glycol N - Nitrogen NG - Natural Gas O - Oil PC - Process Condensate PG - Process

Gas / Purge Gas V - Vent WF - Wet (Warm) Flare Pipe Thickness

NPS 1/2 3/4 1 1 1/2 Thk.mm 3.73 3.91 4.55 5.08 SCH. XS XS XS XS 
 2
 3
 4
 6
 8
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 14
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 5.54
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 42 12.7 12.7 12.7 Nipple Thickness

NPS 1/2 3/4 1 1 1/2 2
Thk.mm 4.78 5.56 6.35 7.14 8.74
SCH. 160 160 160 160 160
PRESSURE - TEMPERATURE Ratings

NPS Press. ber 19.65 17.93 15.86 13.79 11.72 9.65 8.62 7.58 6.55 ASME B16.5/ASME B16.47 1/2 · 52 Temp. °C 37.78 93.33 148.9 204.4 260 315.6 343.3 371.1 398.9 Material Group 1.1

1/2 ·	52 rem	p. °C 3	7.78   93.33   148.9   204.4   260   315.6   343.3   371.1   398.9   Material	-								
	s	ize	Item Description	m Description Ends Rating/Facing Material								
opt.	from	to										
PIPE				, i	_							
	1/2	24	PIPE	BW		ASTM A106 GR.B - SMLS						
	26	52	PIPE	BW		ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)						
FLAN	IGES											
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A105 Normalized						
	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A105 Normalized						
	30	52	WN FLANGE - ASME-B16.47 series.A	BW	CL150 RF	ASTM A105 Normalized						
3	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A105 Normalized						
3	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized						
3	30	52	WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A105 Normalized						
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A105 Normalized						
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized						
5	30	30	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A105 Normalized						
7	2	24	WN FLANGE - ASME-B16.5	BW	CL1500 RF	ASTM A105 Normalized						
12	2	24	WN FLANGE - ASME-B16.5	BW	CL150 FF	ASTM A105 Normalized						
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized						
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A105 Normalized						
73	2	24	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A105 Normalized						
993	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized						
995	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized						
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Normalized						
	30	52	BLIND FLANGE - ASME-B16.47 series.A		CL150 RF	ASTM A105 Normalized						
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized						
3	2	2	SW REDUCING FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized						
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Normalized						
SPEC	TACLE	BLIND										
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)						
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)						
3	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)						
FITTI	NGS											
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A105 Normalized						
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized						
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS						
	30	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD						
	50	52	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A420 WPL6W - WLDD						
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	6000	ASTM A105 Normalized						
	2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS						
	30	48	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD						
	50	52	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A420 WPL6W - WLDD						
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	6000	ASTM A105 Normalized						
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized						
	2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS						
	30	48	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS						
	50	52	CAP - TB RAC 5064	BW		ASTM A420 WPL6W - WLDD						
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized						
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	6000	ASTM A105 Normalized						
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized						
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS						
	1/2	2	NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A106 GR.B - SMLS						
	3/4	2	SWAGE NIPPLE - THDD/THDD - MSS-SP95	THDM		ASTM A234 WPB - SMLS						
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS						
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS						
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	6000	ASTM A105 Normalized						
	2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS						
i l	30	48	TEE - ASME-B16.9	вW		ASTM A420 WPL6W - WLDD						
	52	52	TEE - TB RAC 5061	вW		ASTM A420 WPL6W - WLDD						
	2	20	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	6000	ASTM A105 Normalized						
MISC	ELLANE	EOUS										



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	1Cl	B15	60	
						Rev.		
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		Size	Item Description	Ends	Rating/Facing	Material					
opt.	from	to									
MISC	ELLAN	IEOUS									
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)					
GASK	ETS										
12   2   FLAT NON MET. GASKET - ASME-B16.21   ARAMIDIC FIBER (13%)											
	26	52	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE					
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING					
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON					
73	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON					
<b>BOL1</b>	S										
	1/2 4 ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368 ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)										
993	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660 - PTFE COATED					
995	1/2	1 7/8	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660 - PTFE COATED					

VALVE	=6						NOTHING ON: GOO THE COMES						
VALVE	<b>:5</b> Si:	70	Data Sheet	Item Description	Ends	Rating/Facing	Material						
pos.	from	to	Data Sneet	item Description			Material						
1	1/2	1 1/2	GA-E-60112	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800	Body: ASTM A105 Normalized						
1	2	24	GA-E-60113	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Trim : 13CR / HF Body: ASTM A216 WCB						
							Trim: 13CR / HF						
2	26	48	GA-E-60503	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - API609	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Metal seat - 13CR - C.S. disc						
4	1/2	1 1/2	GA-E-60209	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A105 Normalized						
	_						Trim: 13CR / HF						
4	2	12	GA-E-60210	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 13CR / HF						
5	1/2	1 1/2	GA-E-67200	Globe-BB-Red.B-Needle-Thdd seat - ASME-	SW	CL800	Body: ASTM A105 Normalized						
6	1/2	1 1/2	GA-E-60312	B16.34 Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Trim : 13CR / HF Body: ASTM A105 Normalized						
		,_		ONOUN DE NOUIE NICHT MAG COM THE NOUIE	0	02000	Trim : 13CR / HF						
6	2	10	GA-E-60313	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 13CR / HF						
6	12	24	GA-E-60314	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL150 RF	Body: ASTM A216 WCB						
_		0	0.4 5 00444	Dell Cally hada Dad D Flooding hall ADIOD	FLOD	01.450 DE	Trim: 13CR / HF						
7	6	6	GA-E-60411	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats						
7	8	24	GA-E-60412	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB						
8	1/2	1 1/2	GA-E-60410	Ball-End entry -FB-Float.ball -Frgd body - API608	FI GD	CL150 RF	Trim: Soft seat-CS ENP 76,2µm trim-RPTFE seats Body: ASTM A105 Normalized						
							Trim : Soft seat-316 trim - RPTFE seats						
8	6	24	GA-E-60780	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB						
10	1/2	1 1/2	GA-E-60177	Gate-BB-Red.B-Solid wdg-Exp.seat - API602									
44	1/2	1.1/2	CA E COEDE	Coto DD Dad D Calid unda Fun aget ADICOS	DF Trim:13CR / HF								
11	1/2	1 1/2	GA-E-60585	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL150 RF	Body: ASTM A105 Normalized Trim : 13CR / HF						
11	2	2	GA-E-60102	Gate-BB-FB-Flex wdg-Thdd seat - API600	BW	CL150	Body: ASTM A216 WCB						
13	2	2	GA-E-60117	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Trim : 13CR / HF Body: ASTM A216 WCB						
							Trim: 13CR / HF						
14	1/2	1 1/2	GA-E-60148	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF						
14	2	24	GA-E-67000	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL150 RF	Body: ASTM A216 WCB						
19	1/2	1 1/2	GA-E-67001	- API600 Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Trim : 13CR / HF Body: ASTM A105 Normalized						
'		1 1/2	GA-E-07001	Exp.seat - API602	DF		Trim: 13CR / HF						
62	2	10	GA-E-60305	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 13CR / HF						
80	1/2	1 1/2	GA-E-60794	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL150 RF	Body: ASTM A105 Normalized						
82	6	24	GA E 60792	Frgd body - API608	ELCD	CL 150 DE	Trim : Soft seat-316 trim - RPTFE seats						
62	О	24	GA-E-60782	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.						
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A105 Normalized						
101	1/2	1 1/2	GA-E-67011	API608 Gate-Stem Extension-BB-Red.B-Solid wdg-	F SW	CL800	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A105 Normalized						
				Exp.seat - API602			Trim: 13CR / HF						
101	2	2	GA-E-67035	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 13CR / HF						
103	2	2	GA-E-60591	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A216 WCB						
140	3	3	GA-E-67355	- API600 Gate-BB-FB-Flex wdg-Thdd seat - API600 -	FLGD	CL150 RF	Trim: 13CR / HF Body: ASTM A216 WCB						
1-10	5	3		Interlock System	י בפט	OLIJU KF	Trim: 13CR / HF						
801	1/2	1 1/2	GA-E-67125	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL150 RF	Body: ASTM A105 Normalized						
824	8	20	GA-E-67293	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A216 WCB						
				Interlock System			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.						

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	2	2	GA-E-60631	Y Strainer-Bolted cover - ASME-B16.34	BW		Body :ASTM A216 WCB Screen: 316 - PERF.PLATE - 18 Holes/Cm2



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Pipi	ng C	Class	s:	0	1Cl	B1S	60	
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STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	3	12	GA-E-60601	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A234 WPB - SMLS Screen:316 - CLOTH - MESH 3

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RunSize																				_										
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1		A A		Α																										
1 1/2	-	A A		Α	Α																									
2						T	_																							
3						T	T		_																					
4						OV4	<u> </u>		I T	_																				
6						SW		., .	  -	I	_																			
8						SW SW			I T	1	<u> </u>	-																		
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18						SW				sw	÷	÷			Г	÷	т													
20						SW					Ė	Ť	i		Г	Ť	Ť	Т												
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30						SW							1		Γ	Т	Т	Ť	Ť	Т										
36						SW							V S	N S	W	Т	Т	Т	Т	Т	Т									
42						SW	SV	۷S	W	SW	SW	/ SI	V S	N S	W	Т	Т	Т	Т	Т	Т	Т								
48						SW												SW	Т	Т	Т	Т	1	Τ						
52						SW	SV	V S	W	SW	SW	/ SI	V S	N S	W :	SW	SW	SW	T1	T1	T1	T1	Т	1	T1					
3ranchSiz	ze 1	/2 3	4	1	1 1/2	2 2	3	3	4	6	8	1	0 1	2	14	16	18	20	24	30	36	3 42	2 4	48	52					
egenda																														
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#### GENERAL NOTES

- PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
   Threaded joints are not permitted.
   The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
   NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
   Specified Thickness are suitable to withstand Full Vacuum condition.
   This piping class is created for lines subjected to Acoustic Induced Vibration.



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	1CI	B2E	303	
						Rev.		
Sh.	1	of	2	Α	0	1	2	3

 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL150
 PWHT
 : YES (NOTE 1)

 Facing/Finishing : RF
 Valve Trim
 : 12 - SS316/HF

Corrosion Allow.: 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 180 °C

Service: [Amine Service] AD - Amine Drain (AG) AL - Amine Lean (AG) DMW - Demineralized Water (AG) PRW - Process Water SV - Solvent (AG)

Pipe Thickness

6.02 6 7.11 14 16 9.53 9.53 STD STD NPS 1/2 3/4 Thk.mm 3.73 3.91 1 1 1/2 2 3 4.55 5.08 5.54 5.49 8 8.18 10 9.27 18 9.53 9.53 SCH. XS XS XS XS XS STD STD STD STD STD STD STD

Nipple Thickness

 NPS
 1/2
 3/4
 1
 11/2
 2

 Thk.mm
 4.78
 5.56
 6.35
 7.14
 8.74

 SCH.
 160
 160
 160
 160
 160

PRESSURE - TEMPERATURE Ratings

| NPS | Press. bar | 19.65 | 17.93 | 15.86 | ASME B16.5 | 1/2 · 24 | Temp. °C | 37.78 | 93.33 | 148.9 | Material Group 1.1

1/2 ·	24 Tem	p. C 3	7.78 93.33 148.9 Material Group 1.1			
opt.	S from	ize to	Item Description	Ends	Rating/Facing	Material
PIPE		•		·	·	
	1/2	24	PIPE	BW		ASTM A106 GR.B - SMLS
FLAN	IGES					
	1/2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A105 Normalized
3	1/2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
73	1/2	24	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Normalized
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
5	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A105 Normalized
3	2	2	WN REDUCING FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Normalized
SPEC	CTACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
3	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A105 Normalized
	1/2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
MISC	ELLANI	1				
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
GAS	_				1	
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20	<u> </u>		SOFT IRON
BOL <sup>1</sup>	1					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	FS						
VALV		ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to	Data Sileet	item Description	Enas	Rating/Facing	Waterial
1	1/2	1 1/2	GA-E-60124	Gate-BB-Red.B-Solid wdg-Exp.seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim :316 / HF
1	2	24	GA-E-60116	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 316 / HF
4	1/2	1 1/2	GA-E-60211	Globe-BB-Red BThdd seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim :316 / HF
4	2	12	GA-E-60212	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 316 / HF
5	1/2	1 1/2	GA-E-67203	Globe-BB-Red.B-Needle-Thdd seat + Nipples - ASME-B16.34	BW	CL800	Body: ASTM A105 Normalized Trim: 316 / HF
6	1/2	1 1/2	GA-E-60315	Check-BB-Red.B-Piston-Thdd seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim :316 / HF
6	2	10	GA-E-60316	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A216 WCB
6	12	24	GA-E-60317	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim: 316 / HF
7	6	6	GA-E-60414	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
7	8	24	GA-E-60415	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB  Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60413	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	1C	B2E	303	
						Rev.		
Sh.	2	of	2	Α	0	1	2	3

6 1/2	24	Data Sheet GA-E-60795	Item Description	Ends	Rating/Facing	Material
1	24	CA E 0070E			raamig, asing	
1/2		GA-E-60/95	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
1/2						Trim : Soft seat-316 trim - RPTFE seats
	1 1/2	GA-E-67023	Gate-BB-Red.B-Solid wdg-Exp.seat + Nipples -	BW/TH	CL800	Body: ASTM A105 Normalized
			API602	DF		Trim : 316 / HF
1/2	1 1/2	GA-E-67046	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL150 RF	Body: ASTM A105 Normalized
						Trim: 316 / HF
2	2	GA-E-60119	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB
						Trim: 316 / HF
2	2	GA-E-60128	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A216 WCB
						Trim: 316 / HF
1/2	1 1/2	GA-E-67126	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A105 Normalized
						Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
6	24	GA-E-60782	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
						Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
1/2	1 1/2	GA-E-60796			CL800	Body: ASTM A105 Normalized
						Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
2	2	GA-E-67036		FLGD	CL150 RF	Body: ASTM A216 WCB
			1			Trim : 316 / HF
2	2	GA-E-67027		FLGD	CL300 RF	Body: ASTM A216 WCB
			1			Trim: 316 / HF
3/4	3/4	GA-E-67386	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL300 RF	Body: ASTM A105 Normalized
_		a. =				Trim:316 / HF
3	4	GA-E-67306		FLGD	CL150 RF	Body: ASTM A216 WCB Trim: 316 / HF
	2 2 1/2 6	2 2 2 1/2 1 1/2 6 24 1/2 1 1/2 2 2 2 2 3/4 3/4	2 2 GA-E-60119 2 2 GA-E-60128 11/2 1 1/2 GA-E-67126 6 24 GA-E-60782 11/2 1 1/2 GA-E-60796 2 2 GA-E-67036 2 2 GA-E-67027 3/4 GA-E-67386	2	2         2         GA-E-60119         Gate-BB-FB-Flex wdg-Thdd seat - API600         FLGD           2         2         GA-E-60128         Gate-BB-FB-Flex wdg-Thdd seat - API600         FLGD           1/2         1 1/2         GA-E-60126         Ball-End entry -FB-Float.ball -Frgd body - API608         FLGD           6         24         GA-E-60782         Ball-Split body-FB-Trunnion ball - API6D         FLGD           1/2         1 1/2         GA-E-60796         Ball-End entry -FB-Float.ball -Frgd body+ Nipple - BW/TH API608         BW/TH API608           2         2         GA-E-67036         Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat -API600         FLGD           2         2         GA-E-67027         Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat -API600         FLGD           3/4         3/4         GA-E-67386         Gate-BB-Red.B-Solid wdg-Exp.seat - API602         FLGD           3         4         GA-E-67306         Gate-Ext. Stem (1400mm)-BB-FB-Flex wdg-Thdd         FLGD	2 2 GA-E-60119 Gate-BB-FB-Flex wdg-Thdd seat - API600 FLGD CL300 RF 2 2 GA-E-60128 Gate-BB-FB-Flex wdg-Thdd seat - API600 FLGD CL600 RF 1/2 11/2 GA-E-67126 Ball-End entry -FB-Float.ball -Frgd body - API608 FLGD CL150 RF 6 24 GA-E-60782 Ball-Split body-FB-Trunnion ball - API6D FLGD CL150 RF 1/2 11/2 GA-E-60796 Ball-End entry -FB-Float.ball -Frgd body+ Nipple - API608 2 2 GA-E-67036 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600 Gate-BB-Red.B-Solid wdg-Exp.seat - API602 FLGD CL300 RF 3 4 GA-E-67306 Gate-Ext. Stem (1400mm)-BB-FB-Flex wdg-Thdd FLGD CL150 RF

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	3	3	GA-E-60601	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A234 WPB - SMLS Screen: 316 - CLOTH - MESH 3

BRANCH	TAB	LES	•															
RunSi	i70															90	) Deg	grees
		_																
1/2		Ţ	_															
3/4	ŀ	<u> </u>	1	т														
1		<u> </u>	<u> </u>	<u> </u>	_													
1 1/2			1	<u> </u>	<u> </u>	_												
2		W	W	W	W/	. I	_											
3		W	• •	• • •	• •	VV	<u> </u>	_										
4		W	W	W	W	W	1	- I	_									
6			W		W	W	W/	1	<u> </u>	_								
8		W	W	W	W	VV	W	VV	W	 	_							
10 12		W	W	W	W	VV	VV	VV	W	1	<u> </u>	_						
14		W	W	W	W	W	W	W	W	W	P	<u>+</u>	_					
16		W	W	W	W	W	W	۷۷		W	P	ı D	<u> </u>	_				
18		W	W	W	W	W	W	W	W	W	P	P	P	+	_			
20		W	W	W	W	W	W	W	W	W	P	Р	P	P	+	т		
24		W	W	W	W	W	٧٧	۷۷	W	W	Р	Р	P	P	P	÷	т	
			* *	•••	* *	* *	٧٧	۷V	• •	• •	•	40		•	•	1	0.4	
Branch	iSize	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	
Legenda	a																	
Р	PIPE	ТО	PIPE	WIT	TH RE	INFO	ORC	ING F	PAD-1	rs-co	DR-EI	NG-F	IPMT	-012	-E			
Т	TEE	- AS	ME-E	316.9	)													
W	WEL					7												

## GENERAL NOTES

- 1) PWHT is mandatory for all tihickness.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



		ОВ <b>2243</b>							
Pipi	ng C	Class	s:	0	1CI	B2E	309		
						Rev.			
Sh.	1	of	2	Α	0	1	2	3	

 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL150
 PWHT
 : YES (NOTE 1)

 Facing/Finishing
 : RF
 Valve Trim
 : 12 - SS316/HF

 Corrosion Allow. : 3 mm
 Welding Spec
 MZ-000-CCX-MC-SPC-00009/00013

Corrosion Allow. : 3 mm
Temp. Limit : -29 °C to 130 °C

Service: [Amine Service] AD - Amine Drain (UG) AL - Amine Lean (UG) SV - Solvent (UG)

Pipe Thickness

Nipple Thickness

NPS 1/2 3/4 1 1 1 1/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160

PRESSURE - TEMPERATURE Ratings

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
IPE						
	1/2	24	PIPE	BW	1	ASTM A106 GR.B - SMLS
LAN	IGES		, <del>, , , _</del>			,
	1/2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A105 Normalized
3	1/2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	1/2	24	WN FLANGE - ASME-B16.5	вW	CL600 RF	ASTM A105 Normalized
6	3	24	WN FLANGE - ASME-B16.5	вW	CL900 RF	ASTM A105 Normalized
İ	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Normalized
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
PEC	TACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
ITTII	NGS					
	1/2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
	1/2	2	LATROLET - BW END - MSS-SP97	BW		ASTM A105 Normalized
	3	8	SPECIAL LATROLET - <mfr std=""></mfr>	BW		ASTM A105 Normalized
IISC	ELLANE	OUS				
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
ASK	KETS					
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
OLT	rs ,					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	3/4	3/4	GA-E-60124	Gate-BB-Red.B-Solid wdg-Exp.seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim :316 / HF
1	2	8	GA-E-60116	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A216 WCB Trim :316 / HF
7	2	4	GA-E-60414	Ball-Split body-Red.B-Floating ball - API6D	FLGD		Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
8	3/4	1 1/2	GA-E-60413	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats

**BRANCH TABLES** 



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	1CI	B2E	309	
						Rev.		
Sh.	2	of	2	Α	0	1	2	3

DC																9	) Degi	rees
RunS																		
1/2		Ţ	_															
3/4	1	1	I	_														
4.4/6		<u> </u>	<u> </u>	<u> </u>	_													
1 1/2		1	W	ļ	<u> </u>	_												
3		W	W	W	W	W	_											
2		W	W	W	W	W	÷	т										
6		W	W	W	W	W	w	÷	т									
8		W	W	W	W	W	w	w	÷	т								
10		W	w	w	W	w	w	W	w	Ť	Т							
12		W	W	W	W	W	W	W	W	w	Ť	Т						
14		W	W	W	W	W	W	W	W	W	P	Ť	Т					
16	6	W	W	W	W	W	W	W	W	W	Ρ	Р	Т	Т				
18	3	W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Т	Т			
20		W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Т	Т		
24		W	W	W	W	W	W	W	W	W	Ρ	Р	Р	Р	Р	Т	Т	
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	
Legend	la																	
Р	PIPE	ТО	PIPE	WIT	HRE	INFO	ORC	ING F	PAD-	TS-C	OR-EI	NG-F	PIPM	Γ-012	-E			
T	TEE	- AS	ME-E	316.9	)													
W	WEL	DOL	ET -	MSS	-SP9	7												

															4	5 deg	rees						
Runs	Size																						
2	2	LB	LB	LB	LB	PP																	
3	3	LB	LB	LB	LB	LB	PP																
	4	LB	LB	LB	LB	LB	LS	PP															
6	6	LB	LB	LB	LB	LB	LS	LS	PP														
8	В	LB	LB	LB	LB	LB	LS	LS	LS	PP													
10		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP												
12		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP											
14		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP										
16		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP									
18		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP								
20		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP							
24	4	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP						
Branch9	Size	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24						
Legenda	a																						
LB	LATR	OLE	T - B\	N EN	1D - N	ISS-S	SP97																
LS	SPEC	IAL	LATR	OLE.	T - <n< td=""><td>/IFR S</td><td>Std&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td></n<>	/IFR S	Std>											-					
PP	PIPE	TO F	PIPE \	NITH	l FUL	L EN	CIRC	LEME	NT S	SLEE\	/E:TS	G-COF	R-EN	3-PIP	MT-0	12-E							

## GENERAL NOTES

- 1) PWHT is mandatory for all tihickness.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  4) Buried Carbon Steel piping shall be FBE external coated in accordance with Specification MZ-000-CCX-MC-SPC-00004 External Coating for Buried Pipeline and Piping Components-FBE and FJC .
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



	-	ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	1CI	B2E	310	
						Rev.		
Sh.	1	of	2	Α	0	1		

Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL150 **PWHT** :YES (NOTE 1) Facing/Finishing: RF Valve Trim : 9 - Monel

Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 70 °C

Service: [Caustic Service] CI - Chemical Injection CH - Chemical NA - Caustic

Pipe Thickness

| NPS | 1/2 | 3/4 | 1 | 11/2 | 2 | 3 | 4 | 6 | 8 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 14 16 9.53 9.53 STD STD 10 9.27 18 9.53 9.53 STD STD STD STD

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160

1/2 ·	24 Temp	7. °C  -2	28.9 37.78 Material Group 1.1			
opt.	Siz from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	24	PIPE	BW		ASTM A106 GR.B - SMLS
FLAN	GES					
	1/2	24	WN FLANGE - ASME-B16.5	вw	CL150 RF	ASTM A105 Normalized
3	1/2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
73	1/2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Normalized
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
3	2	2	WN REDUCING FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
14	3/4		THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS					
	1/2		DRIP-RING - TB DRI 5011		CL150 RF	ASTM A105 Normalized
	1/2		LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4		REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4		SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	1/2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
GASE	(ETS					
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3		OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20	<u> </u>	<u> </u>	SOFT IRON
BOL <sub>1</sub>						
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ES						
pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60169	Gate-BB-Red.B-Solid wdg-Integral seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim : Monel
1	2	24	GA-E-60170	Gate-BB-FB-Flex wdg-Wldd seat - API600	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Monel
4	1/2	1 1/2	GA-E-60261	Globe-BB-Red BIntegral seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim : Monel
4	2	12	GA-E-60262	Globe-BB-Disk-Wldd seat - API 623	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Monel
6	1/2	1 1/2	GA-E-60377	Check-BB-Red.B-Piston-Integral seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim : Monel
6	2	10	GA-E-60378	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Monel
6	12	24	GA-E-60379	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Monel
7	2	6	GA-E-60491	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB  Trim: Soft seat-MONEL trim - RPTFE seats
7	8	24	GA-E-60492	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB  Trim : Soft seat-MONEL trim - RPTFE seats
8	1/2	1 1/2	GA-E-60490	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A105 Normalized Trim : Soft seat-MONEL trim - RPTFE seats
8	6	24	GA-E-67251	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB  Trim : Soft seat-MONEL trim - RPTFE seats
10	1/2	1 1/2	GA-E-67395	Gate-BB-Red.B-Solid wdg-Integral seat + Nipples	BW/TH DM	CL800	Body: ASTM A105 Normalized Trim: Monel
13	2	2	GA-E-60191	1	FLGD	CL300 RF	Body: ASTM A216 WCB
120	1/2	1 1/2	GA-E-67076	Gate-BB-Red.B-Solid wdg-Integral seat + Nipples - API602	THDM	CL800	Trim : Monel



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5	TRA	INERS						
	oos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
	1	3	3	GA-E-60601	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A234 WPB - SMLS Screen:316 - CLOTH - MESH 3

ANCH TAI	BLES	3																				
RunSize															90	) Degre	es					
1/2	Т																					
3/4	Т	Т																				
1	Т	Т	Т																			
1 1/2	Т	Т	Т	Т																		
2	W	W	Т	Т	Т																	
3	W	W	W	W	W	Т																
4	W	W	W	W	W	Т	Т															
6	W	W	W	W	W	W	Т	Т														
8	W	W	W	W	W	W	W	Т	Т													
10	W	W	W	W	W	W	W	W	Т	Т												
12	W	W	W	W	W	W	W	W	W	Т	Т											
14	W	W	W	W	W	W	W	W	W	Ρ	Т	Т										
16	W	W	W	W	W	W	W	W	W	Ρ	Ρ	Т	Т									
18	W	W	W	W	W	W	W	W	W	Р	Ρ	Ρ	Т	Т								
20	W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Т	Т							
24	W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Т	T						
BranchSize	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24						

#### Legenda

3	<del></del>
Р	PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E
Т	TEE - ASME-B16.9
W	WELDOLET - MSS-SP97

## GENERAL NOTES

- 1) PWHT is mandatory for all tihickness.
  2) This piping Class is for CAUSTIC SERVICE
  3) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



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						Rev.		
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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL150 : AS PER CODE (NOTE 1) **PWHT** 

Facing/Finishing : RF Valve Trim :8 - 13Cr/ HF

Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 230 °C

Service: AG - Acid Gas (AG) BWF - Liquid Blowdown Warm Flare CD - Closed Drain CWR - Cooung Water Return CWS - Cooling Water Supply DR - Potentially Contaminated Open Drain FG - Fuel Gas HL - Hydrocarbon Liquid HO - Hot Oil HV - Hydrocarbon Vapour IA - Instrument Air N - Nitrogen O - Oil OW - Oily Water (AG) OWS - Oily Water Sewer PRW - Process Water SS - Sanitary Sewer (AG) STS - Storm Sewer (AG) V - Vent WEG - Water/Ethylene Glycol WF - Wet (Warm) Flare WW - Waste Water

Pipe Thickness

NPS	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	52
Thk.mm	3.73	3.91	4.55	5.08	5.54	5.49	6.02	7.11	8.18	9.27	9.53	9.53	9.53	9.53	9.53	12.7	9.53	12.7	12.7	12.7	12.7
SCH.	xs	XS	XS	XS	XS	STD	STD	STD	STD	STD	STD	STD	STD	STD	STD	XS	STD	XS	XS	XS	

Nipple Thickness

NPS Press. bar 19.65 17.93 15.86 13.79 11.72 9.65 8.62 7.58 6.55 ASME B16.5/ASME B16.47 1/2 · 52 Temp. °C 37.78 93.33 148.9 204.4 260 315.6 343.3 371.1 398.9 Material Group 1.1

pt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
IPE						
	1/2	24	PIPE	BW		ASTM A106 GR.B - SMLS
	26	52	PIPE	BW		ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)
LAN	IGES	32	II	DVV		A31W A071 GIV.CC03 CL.12 - L1 W + 32 (-40 C)
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A105 Normalized
	30	52	WN FLANGE - ASME-B16.47 series.A	BW	CL150 RF	ASTM A105 Normalized
3	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A105 Normalized
3	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
3	30	52	WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A105 Normalized
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized ASTM A105 Normalized
5	30	30		BW		
i	i		WN FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A105 Normalized
6	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RF	ASTM A105 Normalized
12	2	24	WN FLANGE - ASME-B16.5	BW	CL150 FF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
73	2	2	WN FLANGE - ASME-B16.5	BW		ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Normalized
_	30	52	BLIND FLANGE - ASME-B16.47 series.A		CL150 RF	ASTM A105 Normalized
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
3	2	2	SW REDUCING FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Normalized
PEC	TACLE	BLIND			1	
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
ļ	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
2	1/2	14	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
3	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
ITTI	NGS				1	
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	30	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	52	52	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	30	48	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	52	52	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A105 Normalized
İ	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
İ	2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	30	48	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	52	52	CAP - TB RAC 5064	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - THDD/THDD - MSS-SP95	THDM		ASTM A234 WPB - SMLS
	3/4	3	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	30	24 48		BW		ASTM A420 WPL6W - WLDD
	i		TEE - ASME-B16.9	BW		
	52 2	52	TEE - TB RAC 5061	BW		ASTM A420 WPL6W - WLDD ASTM A105 Normalized
		8	WELDOLET - MSS-SP97	SW\BW	3000	ASTM A105 Normalized ASTM A105 Normalized
ISC	1/2   ELLANE	1 1/2	SOCKOLET - SW END - MSS-SP97	SAN IDAA	ρυυυ	INO I NO I NO I NO I NO I NO I NO I NO
36	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)



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	Si	ize	Item Description	Ends	Rating/Facing	Material
opt.	from	to	·			
GASI	KETS					
12	1/2	24	FLAT NON MET. GASKET - ASME-B16.21			ARAMIDIC FIBER (13%)
	30	52	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	2	2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOL'	TS					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2		GA-E-60112	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized
1	2	24	GA-E-60113	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Trim :13CR / HF Body: ASTM A216 WCB
4	1/2	1 1/2	GA-E-60209	Globe-BB-Red BThdd seat - API602	sw	CL800	Trim:13CR/HF Body:ASTM A105 Normalized
4	2	12	GA-E-60210	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Trim:13CR/HF Body: ASTM A216 WCB
5	1/2	1 1/2	GA-E-67200	Globe-BB-Red.B-Needle-Thdd seat - ASME- B16.34	sw	CL800	Trim :13CR / HF Body: ASTM A105 Normalized Trim :13CR / HF
6	1/2	1 1/2	GA-E-60312	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
6	2	10	GA-E-60313	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim::13CR/HF
6	12	24	GA-E-60314	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 13CR / HF
7	2	6	GA-E-60411	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
7	8	24	GA-E-60412	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
8	1/2	1 1/2	GA-E-60410	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats
8	2	4	GA-E-60779	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-60780	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
10	1/2	1 1/2	GA-E-60177	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
11	1/2		GA-E-60585	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL150 RF	Body: ASTM A105 Normalized Trim: 13CR / HF
13	2	24	GA-E-60117	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim: 13CR / HF
14	3	3	GA-E-67000	- API600	FLGD	CL150 RF	Body: ASTM A216 WCB Trim: 13CR / HFF
41 62	1/2	1 1/2 10	GA-E-60297 GA-E-60305	Globe-BB-Red BThdd seat - API602 Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF CL150 RF	Body: ASTM A105 Normalized Trim: 13CR / HF Body: ASTM A216 WCB
82	2	3	GA-E-60781	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 13CR / HF Body: ASTM A216 WCB
82	6	24	GA-E-60782	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A216 WCB
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples -			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A105 Normalized
				API608	F		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2		GA-E-67011	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
101	2	4	GA-E-67035	- API600		CL150 RF	Body: ASTM A216 WCB Trim : 13CR / HF
103	2	2	GA-E-60591	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600		CL300 RF	Body: ASTM A216 WCB Trim: 13CR / HFF
113	3/4	3/4	GA-E-60583	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim: 13CR / HF
130	1/2	1 1/2	GA-E-67355	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL 150 BE	Body: ASTM A105 Normalized Trim: 13CR / HF
140	2	8	GA-E-67357	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 13CR / HF Body: ASTM A216 WCB
159	3	3 4	GA-E-67357 GA-E-67307	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System Gate-Ext. Stem (1200mm)-BB-FB-Flex wdg-Thdd	FLGD	CL150 RF CL150 RF	Body: ASTM A216 WCB Trim : 13CR / HF Body: ASTM A216 WCB
161	3	3	GA-E-67307 GA-E-67305	seat - API600	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 13CR / HF Body: ASTM A216 WCB
740	12	12	GA-E-67305 GA-E-67604	seat - API600  Ball-Split body-Red.B-Trunnion ball - API6D -	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 13CR / HF Body: ASTM A216 WCB
801	1/2		GA-E-67125	Interlock System  Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL150 RF	Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats Body: ASTM A105 Normalized
824	3	3	GA-E-67696	Frgd body - API608  Ball-Split body-FB-Floating ball - API6D -	FLGD	CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A216 WCB
				Interlock System			Trim : Soft seat-316 trim - RPTFE seats
824	6	16	GA-E-67293	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
840	3	3	GA-E-67607	Ball-Split body-FB-Floating ball - API6D - Interlock System	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.



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VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
840	6	12	GA-E-67603	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL150 RF	Body: ASTM A216 WCB
				Interlock System			Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
937	2	6	GA-E-69010	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats
938	2	2	GA-E-69077	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	2	2	GA-E-60631	Y Strainer-Bolted cover - ASME-B16.34	BW		Body : ASTM A216 WCB Screen: 316 - PERF.PLATE - 18 Holes/Cm2
1	4	8	GA-E-60601	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A234 WPB - SMLS Screen: 316 - CLOTH - MESH 3
9	8	8	GA-E-60637	Special Strainer, Basket Type-Bolted Cover - <mfr std=""></mfr>	FLGD		Body: ASTM A216 WCB Screen: 316 - PERF.PLATE - 18 Holes/Cm2

		ES																				
RunSize																9	0 De	grees	5			
1/2 3/4 1 11/2 2 3 4 6 8 8 10 12 14 16 18 20 24 30 36 42 24 48 52 Branch Siz	A A A A A A A A S S S S S S S S S S S S	A A A A A A A A A A A A A A A A A A A	A A T S S S S S S S S S S S S S S S S S	ATSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS	T W W W W W W W W W W W W W W W W W W W	,	T T W W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	TT TT PP PP PP PP PP PP PP PP PP PP PP P	F F F F F F F F	T T P P P P P P P P P P P 14	T T P P P P P P P P P 16	T T P P P P P P 18	T T P P P P P 20	T T P P T1 24	T T P P T1 30	T T P T1 36	T T T1 42	T T1 48	T1 3 52
egenda																						
	EE - S							10.1	240													
	IPE T								AD													
	EE - A					-	<u> </u>	<u>.                                    </u>														
		TB RA																				

## GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



		ОВ <b>2243</b>							
Pipi	ng (	Class	s:	0	1C	B2S	<b>602</b>		
						Rev.			
Sh.	1	of	3	Α	0	1	2	3	

Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL150 : AS PER CODE (NOTE 1) **PWHT** 

Facing/Finishing: RF Valve Trim :12 - SS316/HF

Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 230 °C

Service: CD - Closed Drain DR - Potentially Contaminated Open Drain GD - Glycol Drain HL - Hydrocarbon Liquid HV - Hydrocarbon Vapour MEG - Monoethylene Glycol PRW - Process Water WEG - Water / Ethylene Glycol WF - Wet (Warm) Flare

Pipe Thickness

1 11/2 2 3 4 4.55 5.08 5.54 5.49 6.02 XS XS XS STD STD NPS 1/2 3/4 Thk.mm 3.73 3.91 SCH. XS XS 14 9.53 16 9.53 STD 18 9.53 12 9.53 20 9.53 24 12.7 52 12.7 6 8 7.11 8.18 10 9.27 STD STD STD STD

Nipple Thickness NPS

 NPS
 1/2
 3/4
 1
 1 1/2
 2

 Thk.mm
 4.78
 5.56
 6.35
 7.14
 8.74

 SCH.
 160
 160
 160
 160
 160

PRESSURE - TEMPERATURE Ratings

 NPS
 Press. bar | 19.65 | 17.93 | 15.86 | ASME B16.5/ASME B16.47

 1/2 ⋅ 52
 Temp. °C | 37.78 | 93.33 | 148.9 | Material Group 1.1

	1/2	32 1 6111	J. U 31	7.78   93.33   148.9   Material Group 1.1			
Part		Si	ze	Item Description	Ends	Rating/Facing	Material
1/2   24   PIPE   BW	opt.	from					
28	PIPE						
12		1/2	24	PIPE	BW		ASTM A106 GR.B - SMLS
1/2		26	52	PIPE	BW		ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)
2   2   24	FLAN	GES					
1		1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A105 Normalized
3		2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A105 Normalized
3		52	52	WN FLANGE - ASME-B16.47 series.A	BW	CL150 RF	ASTM A105 Normalized
3	3	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
5	3	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
13   3   24   WN FLANCE - ASME-B16.5   BW	5	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
63   3   24    WN FLANGE - ASME-B16.5   BW	6	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RF	ASTM A105 Normalized
1/2	63	3	24		BW	CL900 RJ (F)	
S2	73	1/2			BW	CL1500 RJ (F)	
S2							
3			52				
3	3						
14					sw		
2							
SPECTACLE BLIND					l .		
1/2				THE RES. PERIOE NOME BIO.		02000111	NOTHI / 100 NOTHAILECT
16	-			SPECTACLE BLIND - ASME-B16 48	1	CL 150 RE	ASTM A516 GR 70 + S5 (-//6°C)
1/2							` '
FITTINGS	3						` '
1/2   3   DRIP-RING - TB DRI 5011   ELBOW - SW ENDS - ASME-B16.11   SW   3000   ASTM A105 Normalized   ASTM A105 Normalized   ASTM A105 Normalized   ASTM A105 Normalized   ASTM A105 Normalized   ASTM A105 Normalized   ASTM A105 Normalized   ASTM A205 WPIS - SMLS   ASTM A205 WPIS - SMLS   ASTM A220 WPIS - SMLS   AST			12	OF ECTACLE BLIND - ASMIC-BTO.40		CL300 KI	ASTM ASTO GR.70 + 35 (-40 C)
1/2			2	DDID-DING - TR DDI 5011	1	CI 150 PE	ASTM A105 Normalized
2					SW		
52   52   LONG RADIUS ELBOW - TB RAC 5060   BW   ASTM A420 WPL6W - WLDD						3000	
3/4					1		
2					1	2000	
52   52   REDUCER, LARGE BORE - TB RAC 5062   BW   ASTM A420 WPL6W - WLDD					1	3000	
1/2							
1/2				*	1	0000	
2					1		
52					1	3000	
1/2					1		
1/2					1		
1/2					1		
1/2   2					1	3000	
3/4   2   SWAGE NIPPLE - PE/THDD - MSS-SP95   PE\   ASTM A234 WPB - SMLS     3/4   2   SWAGE NIPPLE - PE/PE - MSS-SP95   PE   ASTM A234 WPB - SMLS     1/2					1		
3/4   2   SWAGE NIPPLE - PE/PE - MSS-SP95   PE   ASTM A234 WPB - SMLS     1/2					1		
1/2							
2					1		
52   52   TEE - TB RAC 5061   BW   ASTM A420 WPL6W - WLDD					1	3000	
2   8   WELDOLET - MSS-SP97   BW   ASTM A105 Normalized     1/2   1 1/2   SOCKOLET - SW END - MSS-SP97   SW/BW   3000   ASTM A105 Normalized     MISCELLANEOUS   1/2   24   KIT FOR INSULATING FLANGE - ASME-B16.5   CL150 RF   GRE LAMINATED + TFE (MAX T 180 C)   GASKETS     AISI 316L+GRAPHITE     1/2   24   SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20   304 SS+GRAPH 98% - C.S. OUT.RING     63   3   24   OCTAGONAL RJ GASKET - ASME-B16.20   SOFT IRON     73   1/2   2   OCTAGONAL RJ GASKET - ASME-B16.20   SOFT IRON     BOLTS   SW/BW   3000   ASTM A105 Normalized     ASTM A105 Normalized   ASTM A105 Normalized     ASTM A105 Normalized   ASTM A105 Normalized     ASTM A105 Normalized   ASTM A105 Normalized     ASTM A105 Normalized   ASTM A105 Normalized     ASTM A					1		
1/2   1 1/2   SOCKOLET - SW END - MSS-SP97   SW\BW   3000   ASTM A105 Normalized     MISCELLANEOUS   1/2   24   KIT FOR INSULATING FLANGE - ASME-B16.5   CL150 RF   GRE LAMINATED + TFE (MAX T 180 C)     GASKETS   52   FLAT GASKET - GROOVED - <mfr std="">   AISI 316L+GRAPHITE   304 SS+GRAPH 98% - C.S. OUT.RING     1/2   24   SP.WOUND GSKT-with OUT.&amp; INN.RINGS - ASME-B16.20   SOFT IRON     63   3   24   OCTAGONAL RJ GASKET - ASME-B16.20   SOFT IRON     73   1/2   2   OCTAGONAL RJ GASKET - ASME-B16.20   SOFT IRON     BOLTS   SW\BW   3000   ASTM A105 Normalized     ASTM A105 Normalized   ASTM A105 Normalized     ASTM A105 Normalized   ASTM A105 Normalized     ASTM A105 Normalized   ASTM A105 Normalized     ASTM A105 Normalized   ASTM A105 Normalized     ASTM A105 Nor</mfr>					1		
MISCELLANEOUS           1/2         24         KIT FOR INSULATING FLANGE - ASME-B16.5         CL150 RF         GRE LAMINATED + TFE (MAX T 180 C)           GASKETS           52         52         FLAT GASKET - GROOVED - <mfr std="">         AISI 316L+GRAPHITE           1/2         24         SP.WOUND GSKT-with OUT.8 INN.RINGS - ASME-B16.20         304 SS+GRAPH 98% - C.S. OUT.RING           63         3         24         OCTAGONAL RJ GASKET - ASME-B16.20         SOFT IRON           BOLTS</mfr>					1		
1/2   24   KIT FOR INSULATING FLANGE - ASME-B16.5   CL150 RF   GRE LAMINATED + TFE (MAX T 180 C)   GASKETS		-		SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A105 Normalized
52   52   FLAT GASKET - GROOVED - <mfr std=""></mfr>	MISC						
52			24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
1/2     24     SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20     304 SS+GRAPH 98% - C.S. OUT.RING       63     3     24     OCTAGONAL RJ GASKET - ASME-B16.20     SOFT IRON       73     1/2     2     OCTAGONAL RJ GASKET - ASME-B16.20     SOFT IRON       BOLTS	GASK	KETS					
63 3 24 OCTAGONAL RJ GASKET - ASME-B16.20 SOFT IRON 73 1/2 2 OCTAGONAL RJ GASKET - ASME-B16.20 SOFT IRON  BOLTS		52	52	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
73 1/2 2 OCTAGONAL RJ GASKET - ASME-B16.20 SOFT IRON BOLTS		1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
BOLTS		3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
	73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
1/2   4   ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368   ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)	BOLT						
		1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)



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Pipi	ng C	Class	s:	0	1Cl	B2S	<b>602</b>	
						Rev.		
Sh.	2	of	3	Α	0	1	2	3

VALV							
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60167	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim : 316 / HF
1	2	24	GA-E-60116	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A216 WCB Trim: 316 / HF
2	52	52	GA-E-60530	Special Butterfly-Flanged-Triple Off Set-Int.seat- Fire safe - <mfr std=""></mfr>	FLGD	CL150 RF	Body: ASTM A216 WCB  Trim : Metal seat - 13CR - C.S. disc
4	1/2	1 1/2	GA-E-60259	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A105 Normalized
4	2	12	GA-E-60212	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A216 WCB Trim: 316 / HF
5	1/2	1 1/2	GA-E-67205	Globe-BB-Red.B-Needle-Thdd seat - ASME-B16.34	sw	CL800	Body: ASTM A105 Normalized Trim :316 / HF
6	1/2	1 1/2	GA-E-60375	Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Body: ASTM A105 Normalized Trim :316 / HF
6	2	10	GA-E-60316	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim :316 / HF
6	12	24	GA-E-60317	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim :316 / HF
7	2	6	GA-E-60411	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
7	8	24	GA-E-60471	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60410	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats
8	2	3	GA-E-60779	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-67161	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60197	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF		Body: ASTM A105 Normalized Trim : 316 / HF
11	1/2	1 1/2	GA-E-67046	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL150 RF	Body: ASTM A105 Normalized Trim : 316 / HF
13	2	24	GA-E-60119	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 316 / HF
82	6	24	GA-E-60782	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB   Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	F		Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67012	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW	CL800	Body: ASTM A105 Normalized Trim : 316 / HF
101	2	2	GA-E-67036	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 316 / HF
103	2	2	GA-E-67027	- API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 316 / HF
110	1/2	1 1/2	GA-E-67324	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800	Body: ASTM A105 Normalized Trim : 316 / HF
110	2	2	GA-E-67346	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 316 / HF
130	1/2	1 1/2	GA-E-67077	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A105 Normalized Trim : 316 / HF
140	2	10	GA-E-67356	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 316 / HF
410	2	2	GA-E-60299	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 316 / HF
710	2	3	GA-E-67266	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
801	1/2	1 1/2	GA-E-67125	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL150 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats
810	6	6	GA-E-67268	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
814	6	6	GA-E-67605	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
824	8	8	GA-E-67293	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
840	8	8	GA-E-67606	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
937	6	6	GA-E-69010	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	6	6	GA-E-60601	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A234 WPB - SMLS Screen:316 - CLOTH - MESH 3



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Pipi	ng C	Class	s:	0	1Cl	B2S	<b>602</b>	
						Rev.		
Sh.	3	of	3	Α	0	1	2	3

RunSi	ze															9	n De	grees	
1/2		Α																	
3/4		Α	Α																
		A	Α	Α															
1 1/2		A	A	A	A	_													
2		S	S S	S	S	W	_												
3		S	S	S	S	W	+	т											
6		S	S	s	S	W	w	÷	т										
8		S	S	s	Š	W	W	w	Ť	Т									
10 12		S	S	S	S	W	W	W	W	Т	Т								
12		S	S	S	S	W	W	W	W	W	Т	Т							
14		S	S	S	S	W	W	W	W	W	Р	Т	Т						
16 18 20		S	S	S	S	W	W	W	W	W	Р	Р	T	T	_				
18		S	S	S	S	W	W	W	W	W	P	P	P P	I P	<u> </u>	_			
24		S	S S	S S	S S	W	W	W	VV	VV	Р	Р	P	P	I P	<u>+</u>	_		
52		S	S	S	S	W	W	٧٧	۷۷/	۷۷	P	P	Р	Р	P	P	P	T1	
Branch			-	-		• • •	3	4	6	8	10	12	14	16	18	20	24	52	
Dianon	0126	1/2	3/4	1	1 1/2	2 2	3	4	O	0	10	12	14	10	10	20	24	52	
	_																		
Legend				_															
Α	TEE -																		
Р	PIPE								<sup>2</sup> AD										
S	SOC					- MS	S-SF	97											
T	TEE -																		
T1	TEE -																		
W	WEL	DOL	<u> ET - N</u>	<b>MSS</b>	-SP9	7													

## GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



		ОВ <b>2243</b>						
Piping Class:		s:	0	1Cl	B2S	<b>305</b>		
						Rev.		
Sh.	1	of	3	Α	0	1		

Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL150 PWHT : AS PER CODE (NOTE 1)

Facing/Finishing : RF Valve Trim : 12 - SS316/HF

Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 90 °C

Service: CD - Closed Drain (UG) GD - Glycol Drain (UG)

Pipe Thickness

| Pipe Thickness | NPS | 1/2 | 3/4 | 1 | 11/2 | 2 | 3 | 4 | 1 | 11/2 | 2 | 3 | 4 | 1 | 11/2 | 2 | 3 | 4 | 1 | 11/2 | 2 | 3 | 4 | 1 | 11/2 | 2 | 3 | 4 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 | 11/2 | 1 16 9.53 STD 8 8.18 10 9.27 18 9.53 9.53 9.53 12.7 STD STD STD STD

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	24	PIPE	BW		ASTM A106 GR.B - SMLS
FLAN	IGES					
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A105 Normalized
li	2	24	WN FLANGE - ASME-B16.5	вW	CL150 RF	ASTM A105 Normalized
3	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
3	2	24	WN FLANGE - ASME-B16.5	вW	CL300 RF	ASTM A105 Normalized
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized
5	2	24	WN FLANGE - ASME-B16.5	вW	CL600 RF	ASTM A105 Normalized
6	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RF	ASTM A105 Normalized
12	2	24	WN FLANGE - ASME-B16.5	вW	CL150 FF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
73	2	2	WN FLANGE - ASME-B16.5	вW	CL1500 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Normalized
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
3	2	2	SW REDUCING FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
3	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
	2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
	2	2	LATROLET - BW END - MSS-SP97	BW	3000	ASTM A105 Normalized
	3	8	SPECIAL LATROLET - <mfr std=""></mfr>	BW		ASTM A105 Normalized
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A105 Normalized
	1/2	1 1/2	LATROLET - SW END - MSS-SP97	SW\BW	3000	ASTM A105 Normalized
MISC	ELLANE		L		1	
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
3	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL300 RF	GRE LAMINATED + TFE (MAX T 180 C)
	KETS		L		1	1.2
12	1/2	24	FLAT NON MET. GASKET - ASME-B16.21		1	ARAMIDIC FIBER (13%)
_	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	2	2	OCTAGONAL RJ GASKET - ASME-B16.20	1	1	SOFT IRON
BOLT			OT DOLT AND TO AND THE TO DO			AOTH ALCO DE AOTH ALCO OD OU DEED OO TE
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60167	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw		Body: ASTM A105 Normalized Trim : 316 / HF
1	2	24 GA-E-60116		Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD		Body: ASTM A216 WCB <u>Trim :</u> 316 / HF



		ов <b>2243</b>						
Pipi	ng C	Class	s:	0	1C	B2S	<b>305</b>	
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/ALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
4	1/2	1 1/2	GA-E-60259	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim :316 / HF
4	2	12	GA-E-60212	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A216 WCB Trim: 316 / HF
6	1/2	1 1/2	GA-E-60375	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim : 316 / HF
6	2	10	GA-E-60316	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim :316 / HF
6	12	24	GA-E-60317	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim :316 / HF
7	6	6	GA-E-60411	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
7	8	24	GA-E-60471	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60410	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats

## BRANCH TABLES

																90	) Deg	rees
RunS	ize																	
1/2		Α																
3/4	4	Α	Α															
· ·		Α	Α	Α														
1 1/2		Α	Α	Α	Α													
2		S	S	Т	Т	Т												
:		S	S	S	S	W	Т											
4		S	S	S	S	W	Т	Т										
6	3	S	S	S	S	W	W	Т	Т									
10	3	S	S	S	S	W	W	W	Т	Т								
10	)	S	S	S	S	W	W	W	W	Т	T	_						
12	2	S	S	S	S	W	W	W	W	W	Ţ	T	_					
14		S	S	S	S	W	W	W	W	VV	Р	- 1	1	_				
16	j	S	S	S	S	W	W	W	W	W	Р	Ь		<u> </u>	_			
18	3	S S	S	S	S	W	W	W	W	W	P	P	P	Ī	1	_		
18 20 24	)	S	S S	S	S S	W	W	W	W	W	P	P	P	P	I	<u> </u>	_	
				S	-	W	• • •	• • •	• • •		г		-	г	г	1	1	
Branch	ıSize	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	
Legend	egenda																	
Α	TEE - SW ENDS - ASME-B16.11																	
Р	PIPE	TO F	PIPE '	WIT	HRE	EINF	ORC	ING F	PAD									
S	SOC	(OLE	T - S	W E	ND	- MS	SS-SI	97										
Т	TEE -	ASN	ΛΕ-Β΄	16.9														
W	WEL	OOLE	ET - N	/ISS	-SP9	97												

															4	RunSize 45 degree													
Run	Size																												
2	2	L	L	L	L	PP																							
3	3	L	L	L	L	LB	PP																						
4	4	L	L	L	L	LB	LS	PP																					
	6	L	L	L	L	LB	LS	LS	PP																				
	В	L	L	L	L	LB	LS	LS	LS	PP																			
10		L	L	L	L	LB	LS	LS	LS	LS	PP																		
12		L	L	L	L	LB	LS	LS	LS	LS	PP	PP																	
14		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP																
16		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP															
18		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP														
20		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP													
24	4	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP												
Branch9	Size	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24												
Legenda																													
L	LATE	ROLE	T - S'	W E	1D - N	ASS-S	SP97																						
LB	LATE	ROLE	T - B'	W E	1D - N	ASS-S	SP97																						
LS	SPE	CIAL	LATR	OLE	T - <n< td=""><td>ΛFR S</td><td>Std&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></n<>	ΛFR S	Std>																						
PP	PIPE	TO F	PIPE '	WITH	1 FUL	L EN	CIRC	LEME	NT S	SLEE\	/E:TS	G-COF	R-EN	G-PIP	MT-0	12-E													

## GENERAL NOTES

1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	1Cl	B2S	<b>305</b>	
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<sup>2)</sup> Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).

4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.

5) Specified Thickness are suitable to withstand Full Vacuum condition.



		ОВ <b>2243</b>						
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						Rev.		
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: CARBON STEEL Design code : ASME B 31.3 2016 Base Material Nom. Rating : CL150 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing : RF Valve Trim : 12 - SS316/HF

Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 70 °C

Service: [Possible presence of sands and small stones] STS - Storm Sewer

Pipe Thickness

10 9.27 9.53 9.53 STD STD 8.18 9.53 9.53 STD STD STD STD

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160

t.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
Έ						
	1/2	24	PIPE	вw	T	ASTM A106 GR.B - SMLS
AN	IGES		,		_	
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A105 Normalized
i	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A105 Normalized
İ	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
İ	2	24	WN FLANGE - ASME-B16.5	вw	CL300 RF	ASTM A105 Normalized
İ	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized
İ	2	24	WN FLANGE - ASME-B16.5	вw	CL600 RF	ASTM A105 Normalized
İ	3	24	WN FLANGE - ASME-B16.5	вw	CL900 RF	ASTM A105 Normalized
İ	2	24	WN FLANGE - ASME-B16.5	вW	CL150 FF	ASTM A105 Normalized
İ	3	24	WN FLANGE - ASME-B16.5	вw	CL900 RJ (F)	ASTM A105 Normalized
İ	2	2	WN FLANGE - ASME-B16.5	вw	. ,	ASTM A105 Normalized
İ	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Normalized
İ	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
	2	2	SW REDUCING FLANGE - ASME-B16.5	sw		ASTM A105 Normalized
Ì	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Normalized
C	TACLE		THE REST ENTE NOME BIGG	,		, to the managed
Ī	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
П	NGS		or connect being manual prome		02000111	7.67 M 7.67 6 G14.76 7 66 ( 46 6)
Ī	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A105 Normalized
l	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
ı	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW	0000	ASTM A234 WPB - SMLS
ı	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
l	2	24	REDUCER - ASME-B16.9	BW	0000	ASTM A234 WPB - SMLS
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A105 Normalized
ı	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	2	24	CAP - ASME-B16.9	BW	5000	ASTM A234 WPB - SMLS
ı	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM	3000	ASTM A105 Normalized
l	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
1	3/4	2	SWAGE NIPPLE - PE/FINDD - MSS-SP95	PE		ASTM A234 WPB - SMLS
l	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	3000	
	2	24	TEE - ASME-B16.9	BW	5000	ASTM A105 Normalized ASTM A234 WPB - SMLS
	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
ł	1/2	0 1 1/2	SOCKOLET - WSS-SP97	SW\BW	3000	
_	ELLANE		SOCKOLET - SW END - MSS-SF97	DAN/PAA	βυσο	ASTM A105 Normalized
٠	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
ş.	KETS	24	PATT OK INSOLATING I LANGL - MOINE-D10.3		DL 130 KF	ONE EMMINATED THE (WAY 1 100 C)
-6	1/2	24	FLAT NON MET. GASKET - ASME-B16.21		T	ARAMIDIC FIBER (13%)
	1/2	24 24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
	3	24 24				304
	2	24	OCTAGONAL RJ GASKET - ASME-B16.20 OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
7			OCTAGONAL KU GASKET - ASME-B10.20		1	SUFT INUIN
	Γ <b>S</b> 1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
_	1/2	4	OT.BOLT#2 NOTO - ANOT HIRE - TD DUL 3300			TOTINI A 133 DT T AO TNI A 134 OK.2FI (FIOLDIP 133)
٧	/ES					
		ize	Data Sheet Item Description	Ends Ratin	g/Facing Mat	erial



		ОВ <b>2243</b>						
Pipir	ng C	Class	s:	0	1Cl	B2S	606	
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BRANCH	TAB	LES																									
																9	0 Degre	ees									_
RunSi																											
1/2		Α																									
3/4			Α																								
1		Α	Α	Α																							
1 1/2		A	Α	A	A	_																					
2			S	T	ı	I VA/	_																				
3			S	S	S	W	<u> </u>	_																			
4 S S S S W T T 6 S S S S W W T T 7																											
8			S	S	S	W	W	w	+	т																	
10		S	S	S	s	W	W	W	w	÷	т																
12		s	s	s	s	w	w	w	w	w	Ť	Т															
14		S	S	Š	Š	W	W	W	W	W	P	Ť	Т														
16			Š	Š	Š	W	W	W	W	W	P	P	Ť	Т													
18	;	S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Т	Т												
20		S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Т	Т											
24		S	S	S	S	W	W	W	W	W	Ρ	Р	Ρ	Ρ	Ρ	Т	Т										
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24										
Legenda	а																										
Α	TEE -	SW	END	)S - 2	ASM	IE-B1	6.11																				
Р	PIPE	TO F	PIPE	WIT	H RI	EINF	ORC	ING	PAD										-	-		-					
S	SOCI	KOLE	T - 8	SW E	END	- MS	SS-S	P97													,						
	TEE -																										
	WEL					97																					

## GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



	-	ов <b>2243</b>							
Pipii	ng C	Class	s:	0	1Cl	B2S	808		
						Rev.			
Sh.	1	of	2	Α	0	1	2	3	

Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL150 PWHT :AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim :8 - 13Cr/ HF

Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 130 °C

Service: DR - Potentially Contaminated Open Drain V - Vent

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 Thk.mm 3.73 3.91 4.55 5.08 5.54 5.49 6.02 SCH. XS XS XS XS XS STD STD 6 8 7.11 8.18 STD STD 16 9.53 STD 10 9.27 14 9.53 18 9.53 9.53 9.53 STD STD STD STD STD

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160

ont	Si from	ze to	Item Description	Ends	Rating/Facing	Material
opt.	IIOIII	10				
IPE			I	L	1	I
	1/2	24	PIPE	BW		ASTM A106 GR.B - SMLS
LAN	IGES		1	l	I	I
	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL150 RF	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A105 Normalized
3	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A105 Normalized
3	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A105 Normalized
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Normalized
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
PEC	TACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
ITTI	NGS					
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
İ	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
İ	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
İ	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
İ	2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
İ	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A105 Normalized
ASK	KETS		1	J=	1	
Ī	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20		1	304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
3OL1	- 1		TO THE STORY OF THE STORY	ı	1	
JEI	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED
	/ES					

VAL	ES						
		ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to					
1	1/2	1 1/2	GA-E-60112	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw		Body: ASTM A105 Normalized Trim : 13CR / HF

**BRANCH TABLES** 



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	1C	B2S	808	
						Rev.		
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6		S S	S S	S	W	W	Т	Т																	
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12		S S		S	W	W	W	W	W	Т	Т														
14		S S	s s	S	W		W	W	W	Р	Т	Т													
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16 18 20 24			S	S	W		W	W	W	Р	P	Р	Р	Ī	Ţ	-									
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Branch	Size	1/2 3	/4 1	1 1/	/2 2	3	4	6	8	10	12	14	16	18	20	24									
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	PIPE							PAD																	
S	SOCK	(OLE	- SW	END	- M	SS-S	P97																		
Т	TEE -	ASM	E-B16	.9																					
W	WELD	OOLE.	r - MS	S-SP	97																				

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  4) Buried Carbon Steel piping shall be FBE external coated in accordance with Specification MZ-000-CCX-MC-SPC-00004 External Coating for Buried Pipeline and Piping Components-FBE and FJC



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						Rev.		
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Base Material : CARBON STEEL Design code : ASME B 31.3 2016 Nom. Rating : CL150 : AS PER CODE (NOTE 1) **PWHT** 

Facing/Finishing: RF Valve Trim :8 - 13Cr/ HF

Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 250 °C

Service: [AIV] AG - Acid Gas (AG) BWF - Liquid Blowdown Warm Flare CD - Closed Drain DR - Potentially Contaminated Open Drain FG - Fuel Gas HL - Hydrocarbon Liquid HV - Hydrocarbon Vapour IA - Instrument Air N - Nitrogen O - Oil OW - Oily Water (AG) OWS - Oily Water Sewer PRW - Process Water SS - Sanitary Sewer (AG) STS - Storm Sewer (AG) V - Vent WF - Wet (Warm) Flare WW - Waste Water

Pipe Thickness

INPS	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	52	60
Thk.mm	3.73	3.91	4.55	5.08	5.54	5.49	6.02	7.11	8.18	9.27	9.53	9.53	9.53	9.53	9.53	9.53	9.53	12.7	12.7	12.7	12.7	14.27
SCH.	XS	XS	XS	XS	XS	STD	STD	STD	STD	STD	STD	STD	STD	STD	STD	STD	STD	XS	XS	XS		

Nipple Thickness

| NPS | 1/2 | 3/4 | 1 | 1 1/2 | 2 | Thk.mm | 4.78 | 5.56 | 6.35 | 7.14 | 8.74 | SCH. | 160 | 160 | 160 | 160 | 160 | PRESSURE - TEMPERATURE Ratings

NPS Press. bar 19.65 17.93 15.86 13.79 11.72 9.65 8.62 7.58 6.55 ASME B16.5/ASME B16.47 1/2 · 60 Temp. °C 37.78 93.33 148.9 204.4 260 315.6 343.3 371.1 398.9 Material Group 1.1

ont	Si from	ze to	Item Description	Ends	Rating/Facing	Material
opt.	HOIII	10				
PIPE	4.0	0.1	DIDE	lovar	I	10TH 4400 OD D 10H O
	1/2		PIPE	BW		ASTM A106 GR.B - SMLS
	26		PIPE	BW		ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)
FLAN	54 IGES	60	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
FLAN	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ACTM A405 Normalized
	2		WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A105 Normalized ASTM A105 Normalized
	30		WN FLANGE - ASME-B16.3 WN FLANGE - ASME-B16.47 series.A	BW	CL150 RF	ASTM A105 Normalized
3	1/2		SW FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A105 Normalized
3	2		WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
3	30		WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A105 Normalized
5	1/2		SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A105 Normalized
5	2		WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
7	2		WN FLANGE - ASME-B16.5	BW	CL1500 RF	ASTM A105 Normalized
12	2		WN FLANGE - ASME-B16.5	BW	CL150 FF	ASTM A105 Normalized
63	3		WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
73	1/2		SW FLANGE - ASME-B16.5	SW	1 ' '	ASTM A105 Normalized
73	2		WN FLANGE - ASME-B16.5	BW	1 ' '	ASTM A105 Normalized
993	2		WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
995	1/2		WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
	1/2		BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Normalized
	30		BLIND FLANGE - ASME-B16.47 series.A		CL150 RF	ASTM A105 Normalized
3	1/2		BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
3	2		SW REDUCING FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Normalized
SPEC	TACLE	BLIND			_	
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
3	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS				1	
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	30		LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	50	52	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A420 WPL6W - WLDD
	60		LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized
	2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	30		REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	50		REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A420 WPL6W - WLDD
	60		REDUCER, LARGE BORE - TB RAC 5062	BW	0000	ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	6000	ASTM A004 MRB. CAN C
	2		CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	30		CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	50		CAP - TB RAC 5064	BW SW\THDF	3000	ASTM A420 WPL6W - WLDD
	1/2		COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000 6000	ASTM A105 Normalized
	1/2		COUPLING - SW ENDS - ASME-B16.11	THDM	0000	ASTM A105 Normalized
	1/2 1/2		THD MALE PLUG - RND HEAD - ASME-B16.11	THDM\PE		ASTM A105 Normalized
			NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A106 GR.B - SMLS
	1/2		NIPPLE - THDD/THDD - ASME-B36.10 SWAGE NIPPLE - THDD/THDD - MSS-SP95	THDM		ASTM A106 GR.B - SMLS
	3/4		SWAGE NIPPLE - THDD/THDD - MSS-SP95 SWAGE NIPPLE - PE/PE - MSS-SP95	PE PE		ASTM A234 WPB - SMLS ASTM A234 WPB - SMLS
	3/4			PE\THDM		
	3/4		SWAGE NIPPLE - PE/THDD - MSS-SP95		6000	ASTM A234 WPB - SMLS  ASTM A105 Normalized
	1/2 2		TEE - SW ENDS - ASME-B16.11 TEE - ASME-B16.9	BW	6000	ASTM A234 WPB - SMLS
	30		TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	52		TEE - TB RAC 5061	BW		ASTM A420 WPL6W - WLDD
$\Box$	JZ	JZ	I E - I B NAC 300	D11		MOTHER WATER AND AND AND AND AND AND AND AND AND AND



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pt.	S from	ize to	Item Description	Ends	Rating/Facing	Material
ITTI	NGS					
	60	60	TEE - TB RAC 5061	BW		ASTM A420 WPL6W - WLDD
	2	24	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	6000	ASTM A105 Normalized
	30	30	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW		ASTM A350 LF2 - CL.1
ISC	ELLANE	EOUS				
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
ASŁ	KETS					
12	1/2	24	FLAT NON MET. GASKET - ASME-B16.21			ARAMIDIC FIBER (13%)
	26	60	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
3	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
OL]	ΓS					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
993	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660 - PTFE COATED
995	1/2	1 7/8	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660 - PTFE COATED

VALV	ES						
VALV	ES Si	70	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to	Data Sileet	item bescription		"	
1	1/2	1 1/2	GA-E-60112	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized
1	2	24	GA-E-60113	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Trim : 13CR / HF Body: ASTM A216 WCB
							Trim: 13CR / HF
2	26	48	GA-E-60503	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - API609	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Metal seat - 13CR - C.S. disc
4	1/2	1 1/2	GA-E-60209	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A105 Normalized
							Trim: 13CR / HF
4	2	12	GA-E-60210	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A216 WCB Trim: 13CR / HF
5	1/2	1 1/2	GA-E-67200	Globe-BB-Red.B-Needle-Thdd seat - ASME-	sw	CL800	Body: ASTM A105 Normalized
	4/0	4.4/0	04 5 00040	B16.34	0147	01.000	Trim: 13CR / HF
6	1/2	1 1/2	GA-E-60312	Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
6	2	10	GA-E-60313	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A216 WCB
6	12	24	CA E 60314	Check Flanged Dual plate Wilde aget ADIFO4	FLGD	CL150 RF	Trim : 13CR / HF Body: ASTM A216 WCB
6	12	24	GA-E-60314	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Trim: 13CR / HF
7	6	6	GA-E-60411	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
7	8	24	GA-E-60412	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A216 WCB
'		24	OA-E-00412	Bail-Ophi body-red.B-Traillilon bail - Al 10B	LOD	OL130 Ki	Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
8	1/2	1 1/2	GA-E-60410	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A105 Normalized
8	6	24	GA-E-60780	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A216 WCB
				San opin soay i s i i aminor san i i i os			Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
10	1/2	1 1/2	GA-E-60177	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
11	1/2	1 1/2	GA-E-60585	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL150 RF	Body: ASTM A105 Normalized
					L		Trim: 13CR / HF
11	2	2	GA-E-60102	Gate-BB-FB-Flex wdg-Thdd seat - API600	BW	CL150	Body: ASTM A216 WCB Trim : 13CR / HF
13	2	2	GA-E-60117	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB
14	1/2	1 1/2	CA F C0448	Cata Ctam Extension DD Dad D Calid and	0144	01.000	Trim: 13CR / HF
14	1/2	1 1/2	GA-E-60148	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
14	2	24	GA-E-67000	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL150 RF	Body: ASTM A216 WCB
19	1/2	1 1/2	GA-E-67001	- API600 Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Trim : 13CR / HF Body: ASTM A105 Normalized
.		,_	0.12 0.001	Exp.seat - API602	DF		Trim: 13CR / HF
62	2	10	GA-E-60305	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 13CR / HF
80	1/2	1 1/2	GA-E-60794	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL150 RF	Body: ASTM A105 Normalized
	_			Frgd body - API608	L		Trim : Soft seat-316 trim - RPTFE seats
82	6	24	GA-E-60782	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A105 Normalized
404	4/0	4.4/0	0.4 5 07044	API608	F	01.000	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67011	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
101	2	2	GA-E-67035	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL150 RF	Body: ASTM A216 WCB
103	2	2	GA-E-60591	- API600 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	EL GD	CL300 RF	Trim : 13CR / HF Body: ASTM A216 WCB
103	-	_	C/ ( L-00331	- API600	. 200	OLOGO IXI	Trim: 13CR / HF
140	4	4	GA-E-67355	Gate-BB-FB-Flex wdg-Thdd seat - API600 -	FLGD	CL150 RF	Body: ASTM A216 WCB
801	1/2	1 1/2	GA-E-67125	Interlock System Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL150 RF	Trim : 13CR / HF Body: ASTM A105 Normalized
				Frgd body - API608			Trim : Soft seat-316 trim - RPTFE seats
824	10	20	GA-E-67293	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL150 RF	Body: ASTM A216 WCB
	ļ		1	Interiory System	1	I	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.



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STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	2	2	GA-E-60631	Y Strainer-Bolted cover - ASME-B16.34	BW		Body : ASTM A216 WCB Screen: 316 - PERF.PLATE - 18 Holes/Cm2
1	3	12	GA-E-60601	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A234 WPB - SMLS Screen:316 - CLOTH - MESH 3

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1/2	Α																											
3/4	Α	Α																										
1	A	Α	Α	Α																								
1 1/2	Α	Α	Α	Α																								
2					Т																							
3					Т	Т																						
4					Т	Т	Т																					
6					SW	Т	T	T	_																			
8					SW		T	T	T	_																		
10					SW			T	Ţ	Ţ	_																	
12							SW		<u> </u>	<u> </u>	<u> </u>	_																
14 16							SW		_ I	<u> </u>	_ I	<u> </u>	_															
18							SW		<u> </u>	÷	+	÷	+	т														
20							SW		. <u>'</u>	÷	,	÷	+	÷	т													
24							SW		SW	, †	÷	÷	÷	÷	÷	т												
30							SW			, ÷	÷	÷	÷	÷	÷	÷	т											
36										SW	sw	SW	Ť	Ť	Ť	Ť	Ť	Т										
42											SW	SW	Ť	Ť	Ť	Ť	Ť	Ť	Т									
48												SW	SW	SW	SW	Ť	Ť	Ť	Ť	Т								
52												SW		SW	SW	T1	T1	T1	T1	T1	T1							
60					SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	T1	T1	T1	T1	T1						
BranchSize	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	52	60						
egenda																												
	- 61	V ENI	ns -	ASM	F_R1	6 11																						
				OLET			Std>																_			_		
		ME-E			~10																		 				 	
		RAC																					 				 	

#### GENERAL NOTES

- PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
   Threaded joints are not permitted.
   The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
   NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
   Specified Thickness are suitable to withstand Full Vacuum condition.
   This piping class is created for lines subjected to Acoustic Induced Vibration.



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Pipi	ng C	Class	s:	0	1CI	B2S	70		_
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Sh.	1	of	2	Α	0	1	2	3	

 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL150
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: FF Valve Trim: Bronze

 Corrosion Allow. : 3 mm
 Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

 Temp. Limit : -29 °C to 70 °C

Service: FW - Fire Water (AG)

Pipe Thickness

Nipple Thickness

#### PRESSURE - TEMPERATURE Ratings

NPS Press. bar 19.65 ASME B16.5 1/2 · 24 Temp. °C 37.78 Material Group 1.1

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	24	PIPE	BW	1	ASTM A106 GR.B - SMLS
FLAN			, <del>-</del>			, to this time of the owner
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 FF	ASTM A105 Normalized
	2		WN FLANGE - ASME-B16.5	BW	CL150 FF	ASTM A105 Normalized
3	1/2		SW FLANGE - ASME-B16.5	sw	CL300 FF	ASTM A105 Normalized
3	2		WN FLANGE - ASME-B16.5	BW	CL300 FF	ASTM A105 Normalized
5	1/2		SW FLANGE - ASME-B16.5	sw	CL600 FF	ASTM A105 Normalized
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 FF	ASTM A105 Normalized
6	3		WN FLANGE - ASME-B16.5	BW	CL900 FF	ASTM A105 Normalized
12	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A105 Normalized
12	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A105 Normalized
52	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized
52	2		WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
63	3		WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
	1/2		BLIND FLANGE - ASME-B16.5		CL150 FF	ASTM A105 Normalized
3	1/2		BLIND FLANGE - ASME-B16.5		CL300 FF	ASTM A105 Normalized
3	2	2	SW REDUCING FLANGE - ASME-B16.5	sw	CL300 FF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 FF	ASTM A105 Normalized
34	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 FF	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 FF	ASTM A516 GR.70 + S5 (-46°C)
	16	24	BLIND & SPACER - ASME-B16.48		CL150 FF	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL150 FF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	COUPLING - THD ENDS - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - THDD/THDD - MSS-SP95	THDM		ASTM A234 WPB - SMLS
	3/4		SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	1/2		TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
	1/2		SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A105 Normalized
MISC	ELLANE				1	
GASH	1/2 (ETS	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 FF	GRE LAMINATED + TFE (MAX T 180 C)
3,131	1/2	24	FLAT NON MET. GASKET - ASME-B16.21		1	ARAMIDIC FIBER (13%)
12	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
52	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3		OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOL1		47	JOSEPH CONTROL NOME DIO.20	1	1	1 33
DOL	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

pos.	Siz from	ze to	Data Sheet Item Description		Ends	Rating/Facing	Material
1	1/2	2		Bronze Gate-UB-Red.B-Solid wdg- Rising stem- Int.seat - MSS-SP80	THDF		Body: ASTM B61 UNS C92200 Trim : Bronze
1	3 24 GA-E-67050		GA-E-67050	Gate-BB-FB-Solid wdg-Integral seat - MSS SP 128 - UL/FM Certified		1	Body: ASTM A395 Trim : Bronze - Rubber coated



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os.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
6	3	16	GA-E-60707	Check-Wafer-Dual plate-Wldd seat - API594 -	WAFER	CL150 FF	Body: ASTM A395
				BUNA-N Lined - UL/FM Certified			Trim : Bronze
8	1/2	1 1/2	GA-E-67197	Bronze Ball-End entry-FB-Floating ball - <mfr< td=""><td>THDF</td><td>PN25</td><td>Body: ASTM B61 UNS C92200</td></mfr<>	THDF	PN25	Body: ASTM B61 UNS C92200
	"   "			Std - Metallic>			Trim : Soft seat-BRONZE trim - PTFE seats
12	3	24	GA-E-67051	Gate-BB-FB-Solid wdg-Integral seat - MSS SP	FLGD	CL150 RF	Body: ASTM A395
				128 - UL/FM Certified			Trim : Bronze - Rubber coated
13	3 2 2 GA-E-673			Bronze Gate-UB-Red.B-Solid wdg- Rising stem-		CL300	Body: ASTM B61 UNS C92200
				Int.seat - MSS-SP80			Trim : Bronze

#### BRANCH TABLES

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1/2	Duncia																9	0 De	grees	S
3/4																				
1 A A A A 11/2 A A A A A 11/2 A A A A A 11/2 A S S S T T T T 21/2 S S S S T T T 3 S S S S W T T T 4 S S S S S W W T T 6 S S S S W W W T T 10 S S S S S W W W T T 110 S S S S S W W W W T T 110 S S S S S W W W W T T 112 S S S S S W W W W W W T T 114 S S S S S W W W W W W P P T T 116 S S S S S W W W W W W P P T T 118 S S S S S W W W W W W P P P T T 118 S S S S S W W W W W W P P P T T 120 S S S S S W W W W W W P P P T T 131 S S S S S W W W W W W P P P T T 14 S S S S S W W W W W P P P P T T 15 S S S S S S S S S S S S S S S S S S S	1/2																			
1 1/2	3/4																			
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6 S S S S W W W T T T 8 S S S S W W W W T T T 10 S S S S W W W W W T T 11 12 S S S S W W W W W T T 12 S S S S W W W W W T T 14 S S S S S W W W W W W P T 16 S S S S W W W W W W P T T 16 S S S S W W W W W W P P T T 17 S S S S S W W W W W W P P P T T 18 S S S S W W W W W W P P P P T T 20 S S S S W W W W W W P P P P T T 20 S S S S W W W W W W P P P P T T 24 S S S S W W W W W W P P P P P T T 24 S S S S W W W W W W P P P P P T T 25 BranchSize 1/2 3/4 1 11/2 2 21/2 3 4 6 8 10 12 14 16 18 20 24    Legenda								١٨/	÷	т										
8 S S S S W W W W T T T 10 S S S S W W W W W T T 112 S S S S W W W W W T T 114 S S S S W W W W W W P T T 116 S S S S W W W W W W P P T T 118 S S S S W W W W W W P P T T 118 S S S S W W W W W W P P P T T 120 S S S S W W W W W W P P P T T 121 S S S S W W W W W W P P P T T 122 S S S S W W W W W W P P P P T T 124 S S S S W W W W W P P P P P T T 125 S S S S W W W W W W P P P P P T T 126 S S S S W W W W W W P P P P P T T 127 S S S S S W W W W W W W P P P P P T T 128 S S S S S W W W W W W W P P P P P T T 129 S S S S S W W W W W W W P P P P P T T 140 S S S S S S W W W W W W W P P P P P T T 150 S S S S S W W W W W W W P P P P P T T 160 S S S S S S S S S S S S S S S S S S S								w	w	÷	т									
10 S S S S W W W W W T T T 12 S S S S W W W W W T T 14 S S S S S W W W W W T T 16 S S S S W W W W W P P T T 18 S S S S W W W W W P P P T T 20 S S S S W W W W W P P P P T T 24 S S S S W W W W W P P P P T T 24 S S S S W W W W W P P P P T T 25 S S S S W W W W W P P P P T T 26 S S S S W W W W W P P P P P T T 27 S S S S W W W W W P P P P P T T 28 S S S S W W W W W W P P P P P T T 29 S S S S W W W W W W P P P P P T T 20 S S S S W W W W W W P P P P P T T 20 S S S S W W W W W W P P P P P T T 21 S S S S S W W W W W W W P P P P P P T T 22 S S S S S W W W W W W W P P P P P P T T 24 S S S S S W W W W W W W P P P P P P T T 25 S S S S S W W W W W W W P P P P P P T T 26 S S S S S W W W W W W W P P P P P T T 27 S S S S S S S S S S S S S S S S S S S	8								W	w	Ť	Т								
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16 S S S S W W W W W P P T T T 18 S S S S W W W W W P P P T T 20 S S S S W W W W W P P P T T 24 S S S S W W W W W P P P P T T 25 S S S S W W W W W P P P P T T 26 S S S S W W W W W P P P P P T T 27 S S S S S W W W W W P P P P P T T 28 S S S S W W W W W P P P P P T T 29 S S S S W W W W W P P P P P T T 20 S S S S W W W W W P P P P P T T 20 S S S S S W W W W W W P P P P P T T 21 S S S S S W W W W W W P P P P P T T 22 S S S S S W W W W W W P P P P T T 24 S S S S S W W W W W W P P P P T T 25 S S S S S W W W W W W P P P P T T 26 S S S S S W W W W W W P P P P T T 27 S S S S S S S S S S S S S S S S S S S			S	S	S	S	W	W	W	W	W	W	Т	Т						
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A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9	BranchS	Size	1/2	3/4	1	1 1/2	2 2	2 1/	2 3	4	6	8	10	12	14	16	18	20	24	
A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9																				
P PIPE TO PIPE WITH REINFORCING PAD S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9	Legenda	ı																		
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T TEE - ASME-B16.9	S S	SOCK	(OLE	ET - \$	SW E	END	- MS	SS-SF	97											
W   WELDOLET - MSS-SP97							97													

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  4) This Piping Class is also used for Underground Fire Water Riser



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XS

12.7 12.7 12.7

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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL150 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing : RF Valve Trim : 8 - 13Cr/ HF

XS

Corrosion Allow. : 6 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 70 °C Service: WW - Waste Water

Pipe Thickness NPS 1/2 3/4 1 11/2 2 3 4 6 8 Thk.mm 7.47 7.82 9.09 10.15 8.74 11.13 8.56 10.97 12.7 10 12.7 SCH. XXS XXS XXS XXS 160 160 XS

Nipple Thickness 

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 19.65 | 17.93 | 15.86 | 13.79 | 11.72 | 9.65 | 8.62 | 7.58 | 6.55 | ASME B16.5 | 1/2 · 24 | Temp. °C | 37.78 | 93.33 | 148.9 | 204.4 | 260 | 315.6 | 343.3 | 371.1 | 398.9 | Material Group 1.1

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE					•	
	1/2	24	PIPE	BW		ASTM A106 GR.B - SMLS
FLAN						
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A105 Normalized
İ	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A105 Normalized
3	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
3	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
12	2	10	WN FLANGE - ASME-B16.5	BW	CL150 FF	ASTM A105 Normalized
63	4	4	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Normalized
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
	16	24	BLIND & SPACER - ASME-B16.48 GA-E-060011		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
	2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	6000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	9000	ASTM A105 Normalized
	2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
	2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
	1/2	1 1/2	SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A105 Normalized
MISCI	ELLANE	OUS				
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
	3	3	SPECIAL TEMPORARY STRAINER - <mfr -="" metallic="" std=""></mfr>		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
GASK	_					
12	2	10	FLAT NON MET. GASKET - ASME-B16.21			ARAMIDIC FIBER (13%)
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	4	4	OCTAGONAL RJ GASKET - ASME-B16.20	<u> </u>	<u> </u>	SOFT IRON
BOLT						
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
VALV	'FS					

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60164	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW	CL1500	Body: ASTM A105 Normalized Trim : 13CR stellited
1	2 24 GA-E-60121		GA-E-60121	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 13CR / HF
4	1/2	1 1/2	GA-E-60220	Globe-WB-Red.B-Thdd seat - API602	SW	CL1500	Body: ASTM A105 Normalized Trim : 13CR stellited
4	2	12	GA-E-60214	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 13CR / HF
5	1/2	1 1/2	GA-E-67201	Globe-BB-Red.B-Needle-Thdd seat - ASME- B16.34	SW	CL1500	Body: ASTM A105 Normalized Trim : 13CR stellited
6	1/2	1 1/2	GA-E-60348	Check-WB-Red.B-Piston-Int seat - API602	sw	CL1500	Body: ASTM A105 Normalized Trim : 13CR stellited



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/ALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
6	2	24	GA-E-60319	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim: 13CR / HF
7	6	6	GA-E-60417	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB  Trim: Soft seat-316 trim - RPTFE seats
7	8	24	GA-E-60418	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB  Trim : Soft seat-CS ENP 76.2µm trim-RPTFE seats
8	1/2	1 1/2	GA-E-60416	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A105 Normalized  Trim: Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60182	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL1500	Body: ASTM A105 Normalized  Trim: 13CR stellited
11	1/2	1 1/2	GA-E-67021	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL150 RF	Body: ASTM A105 Normalized Trim:13CR / HF
13	2	24	GA-E-60125	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim: 13CR / HF
89	1/2	1 1/2	GA-E-67120	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE/THD	CL1500	Body: ASTM A105 Normalized  Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67013	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	SW	CL1500	Body: ASTM A105 Normalized Trim: 13CR stellited
101	2	2	GA-E-67039	1 ·	FLGD	CL150 RF	Body: ASTM A216 WCB Trim: 13CR / HF
103	2	2	GA-E-67028	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim: 13CR / HF
130	1/2	1 1/2	GA-E-67079	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL1500	Body: ASTM A105 Normalized Trim: 13CR stellited
140	2	8	GA-E-67355	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	1	CL150 RF	Body: ASTM A216 WCB Trim: 13CR / HF
801	1/2	1 1/2	GA-E-67127		FLGD	CL150 RF	Body: ASTM A105 Normalized  Trim : Soft seat-316 trim - RPTFE seats
824	2	6	GA-E-67607	0 /	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

pos.	from S			Item Description		Rating/Facing	Material
1	3 4 GA-E-606		GA-E-60601	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A234 WPB - SMLS Screen: 316 - CLOTH - MESH 3

SKANCH	וחחו	LLU															
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4		S	S	S	S	W	Т	Т									
6		S	S	S	S	W	W	Т	Т								
8		S	S	S	S	W	W	W	T	T	_						
10		S	S	S	S	W	W	W	W	I	<u> </u>	_					
12 14		S S	S S	S S	S	VV V/	W	W	W	W	P	+	т				
16		s	S	S	s	W	w	W	W	W	P	P	Ť	Т			
		S	Š	Š	S	W	W	W	W	W	P	P	P	T	Т		
18 20	1	S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Т	Т	
24		S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Р	Ρ	Т	Т
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	0 24
Legenda	а																
Α	TEE -	- SW	ENE	)S - 2	ASM	E-B1	6.11										
Р	PIPE	TOI	PIPE	WIT	HRE	EINF	ORC	ING F	PAD-	rs-co	DR-E	NG-F	PIPM	Γ-012	-E		
S	SOC	KOLE	ET - 3	SW E	END	- TB	RAC	5380	)								
Т	TEE -	ASI	ИЕ-В	16.9													
W	WEL	DOL	ET -	MSS	-SP9	7											

## GENERAL NOTES

STRAINERS

Data Sheet

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



		ОВ <b>2243</b>						
Pipir	ng C	Class	s:	0	1CI	B4S	02	
						Rev.		
Sh.	1	of	3	Α	0	1	2	3

 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL150
 PWHT
 : AS PER CODE (NOTE 1)

 Facing/Finishing : RF
 Valve Trim
 : UNS S31803 (duplex)

Corrosion Allow.: 6 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 180 °C

Service: BR - Brine CH - Chemical DR - Potentially Contaminated Open Drain GD - Glycol Drain MEG - Monoethylene Glycol V - Vent WEG - Water/Ethylene Glycol

Pipe Thickness

NPS 1/2 3/4 1 1 11/2 2 3 4 6 8 Thk.mm 7.47 7.82 9.09 10.15 8.74 11.13 8.56 10.97 12.7 10 12.7 14 12.7 20 24 12.7 14.27 12.7 12.7 12.7 SCH. XXS XXS XXS XXS 160 160 XS XS XS XS XS 30

Nipple Thickness

PRESSURE - TEMPERATURE Ratings

 NPS
 Press. bar
 19.65
 17.93
 15.86
 13.79
 ASME B16.5

 1/2 · 24
 Temp. °C
 37.78
 93.33
 148.9
 204.4
 Material Group 1.1

1/2	2 24 19009 - 100000 100000 100000 100000 10000 100000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 1												
opt.	Si: from	ze to	Item Description	Ends	Rating/Facing	Material							
PIPE													
	1/2	24	PIPE	BW	1	ASTM A106 GR.B - SMLS							
FLAN		24	FIFE	שטן		ASTINIATION GIVES - SINIES							
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A105 Normalized							
i	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A105 Normalized							
3	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized							
3	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized							
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A105 Normalized							
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized							
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Normalized							
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized							
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Normalized							
SPEC	TACLE	BLIND		_									
	1/2	14	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)							
	16	24	BLIND & SPACER - ASME-B16.48 GA-E-060011		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)							
3	1/2	12	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)							
FITTI	NGS												
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A105 Normalized							
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized							
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS							
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized							
	2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS							
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	9000	ASTM A105 Normalized							
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	6000	ASTM A105 Normalized							
	2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS							
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized							
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized							
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized							
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS							
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS							
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS							
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized							
	2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS							
	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized							
	1/2	1 1/2	SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A105 Normalized							
MISC	ELLANE		ha====e.u =====		la								
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)							
CACI	2	3	SPECIAL TEMPORARY STRAINER - <mfr -="" metallic="" std=""></mfr>		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)							
GAS			OR WOUND COUT IN OUT A NIN DIVIDE AGAINST THE		1	DOLLOS OF A PILLOS OF A PILLOS OF THE PILLOS							
D 01 -	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20	1	1	S31803+GRAPH 98%-S31803 OUT.RING							
BOLT	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)							
$\vdash$	1/2	4	OT. BOLITZ INOTO - MINOT THUU - TO BUL 3300			NOTINI A 193 BT + NOTINI A 194 GR. 20 (100 DIP 193)							

VALV	/ALVES													
pos.	Si from	ze to	Data Sheet	Item Description		Rating/Facing	Material							
1	1/2	1 1/2	GA-E-60122	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	sw	CL1500	Body: ASTM A105 Normalized Trim : Duplex S.31803							
1	2	24	GA-E-60123	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Duplex S.31803							
4	1/2	1 1/2	GA-E-60215	Globe-WB-Red.B-Thdd seat - API602	sw	CL1500	Body: ASTM A105 Normalized Trim : Duplex S.31803							
4	2	12	GA-E-60216	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Duplex S.31803							
5	1/2	1 1/2	GA-E-67210	Globe-BB-Red.B-Needle-Thdd seat - ASME-B16.34	sw	CL1500	Body: ASTM A105 Normalized Trim : Duplex S.31803							
6	1/2	1 1/2	GA-E-60320	Check-WB-Red.B-Piston-Int seat - API602	sw	CL1500	Body: ASTM A105 Normalized Trim : Duplex S.31803							
6	2	24	GA-E-60321	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Duplex S.31803							
7	2	6	GA-E-67163	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Soft seat-S.31803 trim - RPTFE seats							



		ов 2 <b>243</b>						
Pipi	ng C	Class	s:	0	1Cl	B4S	<b>602</b>	
						Rev.		
Sh.	2	of	3	Α	0	1	2	3

ALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
7	8	24	GA-E-67164	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-S.31803 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60499	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A105 Normalized
							Trim : Soft seat-S.31803 trim - RPTFE seats
8	2	4	GA-E-67162	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-S.31803 trim - RPTFE seats
8	6	24	GA-E-67156	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-S.31803 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60199	Gate-WB-Red.B-Solid wdg-Exp.seat - API602		CL1500	Body: ASTM A105 Normalized
	_				DF		Trim : Duplex S.31803
13	2	24	GA-E-60168	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB
	_	_					Trim : Duplex S.31803
62	2	2	GA-E-60303	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A216 WCB
			0.4 5 07050	D # 0 # 1 D # D # D # 1 # 4 D # 0			Trim: Duplex S.31803
72	2	2	GA-E-67252	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
	4 (0	4.4/0	04 5 07005	D # 5 1 4 50 51 41 # 5 11 1 AB1000			Trim : Metal seat-S.31803 trim-GRAPH.
82	1/2	1 1/2	GA-E-67265	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A105 Normalized
	•		0.4 5 07050	D # 0 154 1 ED EL 15 1 # 4 BIOD	E1 0 D	01.450.05	Trim : Metal seat-S.31803 trim-GRAPH.
82	2	4	GA-E-67253	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
00	•	0.4	OA F 07400	Dell Cells had ED Terreion hall ADIOD	FLOD	OL 450 DE	Trim : Metal seat-S.31803 trim-GRAPH.
82	6	24	GA-E-67189	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
89	1/2	1 1/2	GA-E-60498	Dall Ford antity FD Floot hall Freed hady unimples	DE ÆUD	CI 1500	Trim : Metal seat-S.31803 trim-GRAPH.
89	1/2	1 1/2	GA-E-00498	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE/THU	CL1500	Body: ASTM A105 Normalized Trim : Metal seat-S.31803 trim-GRAPH.
101	1/2	1 1/2	GA-E-67014	Gate-Stem Extension-WB-Red.B-Solid wdg-	SW	CL1500	Body: ASTM A105 Normalized
101	1/2	1 1/2	GA-L-07014	Exp.seat - API602	SVV	CL1500	Trim : Duplex S.31803
101	2	2	GA-E-67040	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	ELGD	CL150 RF	Body: ASTM A216 WCB
101	2		GA-L-07040	- API600	LGD	CL130 KI	Trim : Duplex S.31803
103	2	2	GA-E-67029	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A216 WCB
100	-	_	O/ ( L 0/ 020	- API600	. 202	02000111	Trim : Duplex S.31803
130	1/2	1 1/2	GA-E-67080	Gate-Stem Extension-WB-Red.B-Solid wdg-	SW/TH	CL1500	Body: ASTM A105 Normalized
				Exp.seat - API602	DF	-	Trim : Duplex S.31803
140	2	8	GA-E-67366	Gate-BB-FB-Flex wdg-Thdd seat - API600 -	FLGD	CL150 RF	Body: ASTM A216 WCB
-				Interlock System		-	Trim : Duplex S.31803
801	1/2	1 1/2	GA-E-67128	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL150 RF	Body: ASTM A105 Normalized
				Frgd body - API608			Trim : Soft seat-S.31803 trim - RPTFE seats
810	12	12	GA-E-67269	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-S.31803 trim - RPTFE seats
820	12	12	GA-E-67286	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Metal seat-S.31803 trim-GRAPH.
824	2	3	GA-E-67620	Ball-Split body-FB-Floating ball - API6D - Interlock	FLGD	CL150 RF	Body: ASTM A216 WCB
				System			Trim : Metal seat-S.31803 trim-GRAPH.
824	6	6	GA-E-67697	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL150 RF	Body: ASTM A216 WCB
				Interlock System			Trim : Soft seat-S.31803 trim - RPTFE seats
907	8	12	GA-E-69075	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats

## **BRANCH TABLES**



90 Degrees

		DB 2 <b>243</b>						
Pipi	ng C	Class	s:	0	1Cl	B4S	<b>602</b>	
						Rev.		
Sh.	3	of	3	Α	0	1	2	3

Runs	126																	
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6		S	S	S	9	۱۸/	١٨/	÷	т									
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14	ļ	S	S	S	S	W	W	W	W	W	Ρ	Т	Т					
16	3	S	S	S	S	W	W	W	W	W	Ρ	Ρ	Т	Т				
18 20	3	S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Т	Т			
20	)	S	S	S	S	W	W	W	W	W	Р	Р	Р	Р	Т	Т		
24		S	S	S	S	W	W	W	W	W	Р	Р	Р	Р	Р	Т	Т	
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	
Legend	а																	
Α	TEE	- SW	ENE	S	ASM	E-B1	6.11											
Р	PIPE	то	PIPE	WIT	H RE	EINFO	ORC	ING F	AD-1	S-CC	R-EI	NG-F	IPMI	-012	-E			
S	SOC																	
Т	TEE	- AS	ME-B	16.9	)													
W	WEL					97												

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  4) Specified Thickness are suitable to withstand Full Vacuum condition.
  5) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).



		ОВ <b>2243</b>						
Pipii	ng C	Class	s:	0	1CI	B4S	<b>305</b>	
						Rev.		
Sh.	1	of	2	Α	0	1		

 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL150
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 12 - SS316/HF

Corrosion Allow.: 6 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 150 °C

Service: CD - Closed Drain HL - Hydrocarbon Liquid WEG - Water / Ethylene Glycol

Pipe Thickness

Nipple Thickness

NPS 1/2 3/4 1 1 1 1/2 2 Thk.mm 7.47 7.82 9.09 10.15 8.74 SCH. XXS XXS XXS XXS 160

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 19.65 19.65 17.93 15.86 ASME B16.5 1/2 · 24 Temp. °C -28.9 37.78 93.33 148.9 Material Group 1.1

opt.	Si: from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE					_	
	1/2	24	PIPE	BW	1	ASTM A106 GR.B - SMLS
FLAN			, <u>-</u>	BW	_	PROTINITION OF CHIEF
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A105 Normalized
li	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A105 Normalized
3	1/2		SW FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A105 Normalized
3	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A105 Normalized
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
63	3	12	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
73	1/2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Normalized
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Normalized
	TACLE			11.12.	02.001	TO THE PROPERTY OF THE PROPERT
	1/2	14	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
l i	16	24	BLIND & SPACER - ASME-B16.48 GA-E-060011		CL150 RF	ASTM A516 GR.70 + S5 (-46°C)
3	1/2	12	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS		,			, , , , , , , , , , , , , , , , , , , ,
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
	2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	9000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	6000	ASTM A105 Normalized
l i	2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
l i	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
l i	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
l i	2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
	1/2	1 1/2	SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A105 Normalized
MISCI	ELLANÉ	OUS			-	
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
GASK					<u>'</u>	·
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			316 SS+GRAPH 98% - C.S. OUT.RING
63	3	12	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 316
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 316
BOLT	s					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
VALV	·					

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60186	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	sw	CL1500	Body: ASTM A105 Normalized Trim : 316 / HF
1	2	24	GA-E-60187	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 316 / HF
4	1/2	1 1/2	GA-E-60267	Globe-WB-Red.B-Thdd seat - API602	SW	CL1500	Body: ASTM A105 Normalized Trim : 316 / HF
4	2	12	GA-E-60268	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A216 WCB Trim :316 / HF
6	1/2	1 1/2	GA-E-60390	Check-WB-Red.B-Piston-Int seat - API602	SW	CL1500	Body: ASTM A105 Normalized Trim :316 / HF
6	2	24	GA-E-60391	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : 316 / HF



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	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
oos.	from	to	Data Officer	nem Besonption	Liido	rtuting/r uomig	material
7	6	6	GA-E-60417	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats
7	8	24	GA-E-67116	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60416	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A105 Normalized
							Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-67059	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL1500	Body: ASTM A105 Normalized
					DF		Trim: 316 / HF
13	2	2	GA-E-60192	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim: 316 / HF
62	4	4	GA-E-60740	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim: 316 / HF
89	1/2	1 1/2	GA-E-67120	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL1500	Body: ASTM A105 Normalized
				ASME-B16.34	F		Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67082	Gate-Stem Extension-WB-Red.B-Solid wdg-	SW	CL1500	Body: ASTM A105 Normalized
				Exp.seat - API602			Trim: 316 / HF
907	2	6	GA-E-69005	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	6	6	GA-E-60632	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A234 WPB - SMLS Screen:316 - CLOTH - MESH 3

NCH	TAB	LES	•																							
																90	) Degre	ees								
RunSiz																										
1/2		Α																								
3/4		Α	Α																							
1		A	A	A																						
1 1/2		A	A	A	A	_																				
2		S S	S S	S	S	W	т																			
4		S	S	S	S	W	÷	т																		
6		S	S	S	S	W	w	÷	т																	
8		S	S	S	S	W	w	w	÷	т																
10		S	š	Š	Š	W	W	W	w	Ť	Т															
12		S	S	S	S	W	W	W	W	W	Т	Т														
14		S	S	S	S	W	W	W	W	W	Ρ	Т	Т													
16		S	S	S	S	W	W	W	W	W	Ρ	Ρ	Т	Т												
18		S	S	S	S	W	W	W	W	W	Р	Р	Р	Т	Т											
20 24		S	S	S	S	W	W	W	W	W	Р	Р	Р	Р	Т	Т										
		S	S	S	S	W	W	W	W	W	Р	Р	Р	Р	Ρ	Т	Т									
3ranch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24									
egenda	a																									
Α	TEE -	- SW	/ END	S	ASM	E-B1	6.11																			
	PIPE								PAD-	rs-co	DR-EI	NG-F	PIPM	T-012	-E											
	SOCI																									
	TEE -																									
_	WEL					7																				

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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									_

 Base Material
 : GALVANIZED CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL150
 PWHT
 : AS PER CODE (NOTE 1)

 Facing/Finishing : RF
 Valve Trim
 : 8 - 13Cr/ HF

 Corrosion Allow. : 1.5 mm
 Welding Spec
 : (1/2->2) --

Temp. Limit : 0 °C to 70 °C (2 1/2->24) MZ-000-CCX-MC-SPC-00009/00013

Service:

PA - Plant Air RV - Relief Vent

Pipe Th	icknes	ss														
NPS	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24
Thk.mm	3.73	3.91	4.55	5.08	5.54	5.49	6.02	7.11	8.18	9.27	9.53	9.53	9.53	9.53	9.53	9.53
Isch.	XS	XS	XS	XS	XS	STD	STD	STD	STD	STD	STD	STD	STD	STD	STD	STD

| Nipple Thickness | NPS | 1/2 | 3/4 | 1 | 1 1/2 | 2 | 17hk.mm | 4.78 | 5.56 | 6.35 | 7.14 | 8.74 | SCH. | 160 | 160 | 160 | 160 | 160 | PRESSURE - TEMPERATURE Ratings

NPS Press. bar 19.65 19.65 17.93 15.86 ASME B

NPS	Press.	bar	19.65	19.65	17.93	15.86	ASME B16.5
1/2 - 24	Temp.	°C	-28.9	37.78	93.33	148.9	Material Group 1.1

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	2	PIPE - NPT ENDS	тном		ASTM A53 GR.B Hot Dip GALV SMLS
	2 1/2	24	PIPE	вW		ASTM A106 GR.B - SMLS
FLAN	IGES			,	·	
	1/2	2	THD FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Hot Dip GALVANIZED
	3	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A105 Normalized
3	1/2	2	THD FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Hot Dip GALVANIZED
3	3	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	1/2	2	THD FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A105 Hot Dip GALVANIZED
5	3	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
12	2	2	THD FLANGE - ASME-B16.5	THDF	CL150 FF	ASTM A105 Hot Dip GALVANIZED
14	3/4	4	THD FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Hot Dip GALVANIZED
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Hot Dip GALVANIZED
	2	3	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Hot Dip GALVANIZED
3	2	3	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Hot Dip GALVANIZED
SPEC	TACLE			1		
	1/2	14	SPECTACLE BLIND - ASME-B16.48		1	ASTM A516 GR.70+S5 Hot Dip GALV.
CITTI	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70+S5 Hot Dip GALV.
FITTI			L	L	l	 
	1/2	2	ELBOW - THD ENDS - ASME-B16.11	THDF	3000	ASTM A105 Hot Dip GALVANIZED
	3	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	2	RED. COUPLING - THD ENDS - ASME-B16.11	THDF	3000	ASTM A105 Hot Dip GALVANIZED
	3	24	REDUCER - ASME-B16.9	BW	0000	ASTM A234 WPB - SMLS
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF BW	3000	ASTM A105 Hot Dip GALVANIZED
	3	24 2	CAP - ASME-B16.9	THDF	3000	ASTM A234 WPB - SMLS
	1/2		COUPLING - THD ENDS - ASME-B16.11	THDM	3000	ASTM A105 Hot Dip GALVANIZED
	1/2 1/2	1 1/2 2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM\PE		ASTM A105 Hot Dip GALVANIZED
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10 NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A53 GR.B Hot Dip GALV SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A53 GR.B Hot Dip GALV SMLS ASTM A234 WPB HotDipGalv. A123 - SMLS
	3/4	2	SWAGE NIPPLE - THOD/THOD - MSS-SP95	THDM		ASTM A234 WPB HotDipGalv. A123 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB HotDipGalv. A123 - SMLS
	1/2	2	TEE - THD ENDS - ASME-B16.11	THDF	3000	ASTM A105 Hot Dip GALVANIZED
	3	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
	1/2	2	THREDOLET - THD END - MSS-SP97	THDF\BW	3000	ASTM A105 Normalized
MISC	ELLANE		THE END MICE OF OT		12200	, to the trouble of
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
GASE				1	1	
12	2	3	FLAT NON MET. GASKET - ASME-B16.21			ARAMIDIC FIBER (13%)
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
BOL1				·	·	,
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED
			,			

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	2	GA-E-60165	Bronze Gate-UB-Red.B-Solid wdg- Rising stem- Int.seat - MSS-SP80	THDF	CL200	Body: ASTM B61 UNS C92200 Trim :Bronze
1	3	4	GA-E-60113	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A216 WCB Trim :13CR / HF
4	1/2	2	GA-E-60257	Bronze Globe-UB-Red.B -Int.seat - MSS-SP80	THDF	CL200	Body: ASTM B61 UNS C92200 Trim : Bronze
6	2	2	GA-E-60372	Bronze Check-UB-Red.B-Swing-Int.seat - MSS-SP80	THDF	CL200	Body: ASTM B61 UNS C92200 Trim : Bronze
8	1/2	1 1/2	GA-E-60750	Bronze Ball-End entry-FB-Floating ball - <mfr -="" metallic="" std=""></mfr>	THDF	PN25	Body: ASTM B61 UNS C92200 Trim : Soft seat-BRONZE trim - PTFE seats
160	4	4	GA-E-67308	Gate-Ext. Stem (1400mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A216 WCB Trim :13CR / HF



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BRANCH	TAB	LES	;																								
RunSi																9	0 Degre	es									
1/2		Α																									
3/4	ŀ	A	A																								
1 4 4 70		A	A	Α																							
1 1/2 2		A	A	A	A A	۸																					
3		A B	A B	A B	В	A B	т																				
4		В	В	В	В	В	÷	Т																			
6		В	В	В	В	В	w	Ť	Т																		
8		В	В	В	В	В	W	W	Ť	Т																	
10	)	В	В	В	В	В	W	W	W	Т	Т																
12	2	В	В	В	В	В	W	W	W	W	Т	Т															
14		В	В	В	В	В	W	W	W	W	Р	Т	Т														
16		В	В	В	В	В	W	W	W	W	Ρ	Ρ	T	T	_												
18		В	В	В	В	В	W	W	W	W	Р	Р	Р	T	T	_											
20		В	В	В	В	В	W	W	W	W	P P	P	P P	Р	I P	<u> </u>	-										
24		В	В	В	В	В	W	• • •	W	W	•		•	Р	•	I	1										
Branch	Size	1/2	3/4	1	1 1/:	2 2	3	4	6	8	10	12	14	16	18	20	24										
Legend	а																										
Α	TEE	- THI	DEN	DS -	ASN	ΛΕ-Β΄	16.11																				
В	THRI	EDO	LET	- THI	D EN	ID - N	1SS-5	SP97									·			 	 		 	 			
Р	PIPE	то	PIPE	WIT	H RI	EINF	ORC	NG F	AD-	rs-c	OR-E	NG-F	PIPM	Γ-012	-E												
Т	TEE	- ASI	ME-E	16.9	)																						
	WEL					97																					

#### GENERAL NOTES

1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
2) Pipes NPS 3" and above shall be Hot Dip Galvanized at site after spool fabrication in accordance with Specification MZ-000-CCX-MC-SPC-00017
3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



14 16 9.53 9.53 STD STD

18 20 9.53 9.53 STD STD

9.53 STD

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Design code : ASME B 31.3 2016 Base Material : GALVANIZED CARBON STEEL Nom. Rating : CL150 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : Bronze Corrosion Allow. : 1.5 mm Welding Spec : (1/2->2) ---

(2 1/2->24) MZ-000-CCX-MC-SPC-00009/00013 Temp. Limit : 0 °C to 70 °C

Service:

DR - Potentially Contaminated Open Drain SW - Service Water (AG)

| Pipe Thickness | NPS | 1/2 | 3/4 | 1 | 11/2 | 2 | 3 | 4 | 6 | 8 | 10 | 12 |
| Thk.mm | 3.73 | 3.91 | 4.55 | 5.08 | 5.54 | 5.49 | 6.02 | 7.11 | 8.18 | 9.27 | 9.53 |
| SCH. | XS | XS | XS | XS | XS | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD | STD

Nipple Thickness NPS 1/2 3/4 1 1 1/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160 PRESSURE - TEMPERATURE Ratings

| NPS | Press. bar | 19.65 | 19.65 | 17.93 | 15.86 | ASME B16.5 | 1/2 · 24 | Temp. °C | -28.9 | 37.78 | 93.33 | 148.9 | Material Group 1.1

	Si	ze	Item Description	Ends	Rating/Facing	Material
opt.	from	to	item bescription	Liius	realing/r acing	material
IPE					_	
	1/2	2	PIPE - NPT ENDS	тном	T	ASTM A53 GR.B Hot Dip GALV SMLS
	2 1/2	24	PIPE	BW		ASTM A106 GR.B - SMLS
LAN			, ·· -		_	, to this time of the office
	1/2	2	THD FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Hot Dip GALVANIZED
İ	3	24	WN FLANGE - ASME-B16.5	вW	CL150 RF	ASTM A105 Normalized
3	1/2	2	THD FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Hot Dip GALVANIZED
3	3	24	WN FLANGE - ASME-B16.5	вW	CL300 RF	ASTM A105 Normalized
5	1/2	2	THD FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A105 Hot Dip GALVANIZED
5	3	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
12	1/2	2	THD FLANGE - ASME-B16.5	THDF	CL150 FF	ASTM A105 Hot Dip GALVANIZED
12	3	6	WN FLANGE - ASME-B16.5	BW	CL150 FF	ASTM A105 Normalized
15	1/2	2	WN FLANGE - ASME-B16.5	BW	CL150 FF	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A105 Hot Dip GALVANIZED
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Hot Dip GALVANIZED
	2	3	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A105 Hot Dip GALVANIZED
3	2	3	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Hot Dip GALVANIZED
PEC	TACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A516 GR.70+S5 Hot Dip GALV.
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A516 GR.70+S5 Hot Dip GALV.
ITTII	NGS					
	1/2	2	ELBOW - THD ENDS - ASME-B16.11	THDF	3000	ASTM A105 Hot Dip GALVANIZED
	3	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	2	RED. COUPLING - THD ENDS - ASME-B16.11	THDF	3000	ASTM A105 Hot Dip GALVANIZED
	3	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Hot Dip GALVANIZED
	3	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	2	COUPLING - THD ENDS - ASME-B16.11	THDF	3000	ASTM A105 Hot Dip GALVANIZED
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Hot Dip GALVANIZED
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A53 GR.B Hot Dip GALV SMLS
	1/2	2	NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A53 GR.B Hot Dip GALV SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB HotDipGalv. A123 - SMLS
	3/4	2	SWAGE NIPPLE - THDD/THDD - MSS-SP95	THDM		ASTM A234 WPB HotDipGalv. A123 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB HotDipGalv. A123 - SMLS
	1/2	2	TEE - THD ENDS - ASME-B16.11	THDF	3000	ASTM A105 Hot Dip GALVANIZED
	3	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
41001	1/2	2	THREDOLET - THD END - MSS-SP97	THDF\BW	3000	ASTM A105 Normalized
IIISCI	ELLANE				la	
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
	ETS		ELAT NOVINET GARGET ARMEDIA		1	
12	1/2	6	FLAT NON MET. GASKET - ASME-B16.21			ARAMIDIC FIBER (13%)
15	1/2	2	FLAT NON MET. GASKET - ASME-B16.21			ARAMIDIC FIBER (13%)
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20		I	304 SS+GRAPH 98% - C.S. OUT.RING
BOLT			CT DOLT O MUITO ANICITADA TO DUE 5000			AOTAL ALOO DZ . AOTAL ALOL OD CIL. DTEE COATES
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	2	GA-E-60165	Bronze Gate-UB-Red.B-Solid wdg- Rising stem- Int.seat - MSS-SP80	THDF	CL200	Body: ASTM B61 UNS C92200 Trim :Bronze
1	3	10	GA-E-67053	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Duplex S.31803
5	1/2	1/2	GA-E-67206	Globe-UB-Red.B-Needle-Int seat - <mfr -="" metallic="" std=""></mfr>	THDF	PN25	Body: ASTM B61 UNS C92200 Trim : Bronze
6	1/2	2	GA-E-60372	Bronze Check-UB-Red.B-Swing-Int.seat - MSS-SP80	THDF	CL200	Body: ASTM B61 UNS C92200 Trim :Bronze
6	3	6	GA-E-60713	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A216 WCB Trim : Inconel 625



	JC <b>032</b>	DB <b>243</b>						
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VALV	ES						
pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
8	1/2	1 1/2	GA-E-60750	Bronze Ball-End entry-FB-Floating ball - <mfr -="" metallic="" std=""></mfr>	THDF		Body: ASTM B61 UNS C92200 Trim : Soft seat-BRONZE trim - PTFE seats
160	4	4	GA-E-67309	Gate-Ext. Stem (1400mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD		Body: ASTM A216 WCB Trim : Inconel 625

STR	AINERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	6	6	GA-E-60601	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A234 WPB - SMLS Screen:316 - CLOTH - MESH 3

## **BRANCH TABLES**

RunS	izo															9(	) Deg	rees
1/2		A																
3/4		A	A															
4.4%		A	A	A														
1 1/2		A	A	A	A													
2		Α	A	Α	Α	Α	_											
	3	В	В	В	В	В	<u> </u>	_										
4		B B	В	В	В	В	W	_ I	_									
8		В	B B	B B	B B	B B	W	W	- I	_								
10		В	В	В	В	В	W	W	١ ١٨/	<u> </u>	_							
12		В	В	В	В	В	W	W	W	W	+	_						
14		В	В	В	В	В	W	W	W	W	P	+	т					
16		В	В	В	В	В	W	W	W	W	Р	P	+	т				
18		В	В	В	В	В	W	W	W	W	P	P	P	÷	т			
20	,	В	В	В	В	В	W	W	W	W	P	P	P	P	÷	т		
20	1	В	В	В	B	В	W	W	W	W	Р	Р	P	P	Þ	÷	т	
Branch			_	_	1 1/2	_	3	4	6	8	10	12	14	16	18	20	24	
Dianci	ISIZE	1/2	3/4	- 1	1 1/2	2 2	3	4	О	0	10	12	14	10	10	20	24	
Legend	la																	
Α	TEE	- THI	) EN	DS -	ASN	ΛΕ-Β	16.11											
В	THRI	EDO	LET -	- THI	D EN	D - N	ISS-S	SP97										
Р	PIPE	ТО	PIPE	WIT	H RE	EINF	ORC	ING F	AD-	rs-co	DR-E	NG-F	PIPM	T-012	-E			
Т	TEE	- ASI	иЕ-В	16.9	)													
W	WEL	DOL	ET -	MSS	S-SP9	97												

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Pipes NPS 3" and above shall be Hot Dip Galvanized at site after spool fabrication in accordance with Specification MZ-000-CCX-MC-SPC-00017
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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Base Material :ASME B 31.3 2016 : GALVANIZED CARBON STEEL Design code Nom. Rating : CL150 : AS PER CODE (NOTE 1) **PWHT** 

Facing/Finishing: FF Valve Trim : Bronze Corrosion Allow. : 1.5 mm Welding Spec : (1/2->2) --

(2 1/2->24) MZ-000-CCX-MC-SPC-00009/00013 Temp. Limit : 0 °C to 70 °C

Service:

FW - Fire Water (AG)

Pipe Th	nicknes	ss															
NPS	1/2	3/4	1	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24
Thk.mm	3.73	3.91	4.55	5.08	5.54	5.16	5.49	6.02	7.11	8.18	9.27	9.53	9.53	9.53	9.53	9.53	9.53
SCH.	XS	XS	XS	XS	XS	STD	STD	STD	STD	STD	STD	STD	STD	STD	STD	STD	STD

Nipple Thickness NPS 1/2 3/4 1 1 1/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160 PRESSURE - TEMPERATURE Ratings

| NPS | Press. | bar | 19.65 | 19.65 | 17.93 | 15.86 | ASME B16.5 | 1/2 · 24 | Temp. °C | -28.9 | 37.78 | 93.33 | 148.9 | Material Group 1.1

			1	_		
opt.	from S	ize   to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	2	PIPE - NPT ENDS	тном	T	ASTM A53 GR.B Hot Dip GALV SMLS
	2 1/2	24	PIPE	BW		ASTM A106 GR.B - SMLS
FLAN			, ·· -		_	provinition of the office
	1/2	2	THD FLANGE - ASME-B16.5	THDF	CL150 FF	ASTM A105 Hot Dip GALVANIZED
	2 1/2	24	WN FLANGE - ASME-B16.5	вw	CL150 FF	ASTM A105 Normalized
3	1/2	2	THD FLANGE - ASME-B16.5	THDF	CL300 FF	ASTM A105 Hot Dip GALVANIZED
3	3	24	WN FLANGE - ASME-B16.5	вw	CL300 FF	ASTM A105 Normalized
5	1/2	2	THD FLANGE - ASME-B16.5	THDF	CL600 FF	ASTM A105 Hot Dip GALVANIZED
5	2 1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 FF	ASTM A105 Normalized
12	3	8	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A105 Normalized
14	2	2	WN FLANGE - ASME-B16.5	BW	CL150 FF	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 FF	ASTM A105 Hot Dip GALVANIZED
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 FF	ASTM A105 Hot Dip GALVANIZED
	2	4	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 FF	ASTM A105 Hot Dip GALVANIZED
3	2	4	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 FF	ASTM A105 Hot Dip GALVANIZED
SPEC	TACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 FF	ASTM A516 GR.70+S5 Hot Dip GALV.
	16	24	BLIND & SPACER - ASME-B16.48		CL150 FF	ASTM A516 GR.70+S5 Hot Dip GALV.
FITTI	NGS					
	1/2	2	ELBOW - THD ENDS - ASME-B16.11	THDF	3000	ASTM A105 Hot Dip GALVANIZED
	3	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	2	RED. COUPLING - THD ENDS - ASME-B16.11	THDF	3000	ASTM A105 Hot Dip GALVANIZED
	2 1/2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Hot Dip GALVANIZED
	3	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	2	COUPLING - THD ENDS - ASME-B16.11	THDF	3000	ASTM A105 Hot Dip GALVANIZED
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Hot Dip GALVANIZED
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A53 GR.B Hot Dip GALV SMLS
	1/2	2	NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A53 GR.B Hot Dip GALV SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB HotDipGalv. A123 - SMLS
	3/4	2	SWAGE NIPPLE - THDD/THDD - MSS-SP95	THDM		ASTM A234 WPB HotDipGalv. A123 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB HotDipGalv. A123 - SMLS
	1/2	2	TEE - THD ENDS - ASME-B16.11	THDF	3000	ASTM A105 Hot Dip GALVANIZED
	2 1/2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	2 1/2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
0 4 6	1/2	2	THREDOLET - THD END - MSS-SP97	THDF\BW	3000	ASTM A105 Normalized
GASI	_		L		1	1
	1/2	24	FLAT NON MET. GASKET - ASME-B16.21			ARAMIDIC FIBER (13%)
12	3	4	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20	1	1	304 SS+GRAPH 98% - C.S. OUT.RING
BOL.			CT DOLT : 2 MILTO ANGLED AT TO DUE 5269			AOTAL ALOS DZ AOTAL ALOL OD OU. DTEE OOATES
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALVES Size Data Sheet Item Description Ends Rating/Facing Material from pos Bronze Gate-UB-Red.B-Solid wdg- Rising stem-Body: ASTM B61 UNS C92200 GA-E-67062 THDF 1/2 CL200 2 Int.seat - MSS-SP80
Gate-BB-FB-Solid wdg-Integral seat - MSS SP Trim : Bronze Body: ASTM A395 Trim : Bronze - Rubber coated 3 10 GA-E-67050 FLGD CL150 FF 128 - UL/FM Certified 3 GA-E-60707 Check-Wafer-Dual plate-Wldd seat - API594 -WAFER CL150 FF Body: ASTM A395 BUNA-N Lined - UL/FM Certified Trim : Bronze Body: ASTM B61 UNS C92200 Bronze Ball-End entry-FB-Floating ball - <MFR THDF 8 1/2 1 1/2 GA-E-67197 PN25 Std - Metallic> Trim: Soft seat-BRONZE trim - PTFE seats Gate-BB-FB-Solid wdg-Integral seat - MSS SP 128 - UL/FM Certified 12 3 6 GA-E-67051 FLGD CL150 RF Body: ASTM A395 Trim : Bronze - Rubber coated



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BRANCH	TAB	LES																	
RunSi	ze															90	Deg	grees	IS
1/2	,	Α																	
3/4		A	Α																
3/4	•	A	A	۸															
1 1/0				A	^														
1 1/2		A	A	A	A	٨													
2 2 1/2		A	A	A	A B	A B	т												
2 1/2		B B	B B	B B	В	В	- I	_											
3	•	_					1	<u> </u>	_										
4		B B	B B	B B	B B	B B	W	1	<u> </u>	_									
8		_	В	В	В	В	W	W	W/	<u> </u>	_								
10		B B	В	В	В	В	W	W	W	1 1/1	+	_							
12					В	D	VV VA/	W	W/	۷۷	1 1 1 1	<u> </u>	_						
14		B B	B B	B B	В	В	W	W	W	۷۷	W	I P	+	_					
16		В	В	В	В	В	W	W	W	W	W	Р	I D	+	т				
18	,	В	В	В	В	В	W	W	٧٧	۷۷	W	P	P	P	÷	т			
20	,	В	В	В	В	В	W	W	W	۱۸/	W	P	P	P	P	÷	т		
20 24	,	В	В	В	В	B	۷۷	W	W	۷۷	W	P	P	P	P	P	÷	т	
Branch						_	0.4/6	• • •	• • •	۷۷		•	•	•		•	1	0.4	
branch	JJIZE	1/2	3/4	1	1 1/2	2 2	2 1/2	2 3	4	6	8	10	12	14	16	18	20	24	•
Legend	а																		
Α	TEE -	- THE	) EN	DS -	ASM	IE-B	16.11												
В	THRE	EDOL	ET -	THI	D ENI	D - N	ISS-S	SP97											
Р	PIPE									TS-C	OR-E	NG-F	PIPMI	T-012	-E				
Т	TEE -																		

## GENERAL NOTES

WELDOLET - MSS-SP97

1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
2) Pipes NPS 2+1/2" and above shall be Hot Dip Galvanized at site after spool fabrication in accordance with Specification MZ-000-CCX-MC-SPC-00017
3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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Base Material : RTR-EPOXY Design code : ASME B 31.3 2016

Nom. Rating : CL150 PWHT : NC

Facing/Finishing: FF Valve Trim: Aluminum Bronze

Corrosion Allow. : 0 mm Welding Spec : ---

Temp. Limit : 0 °C to 70 °C

Service: BR - Brine (UG) DR - Potentially Contaminated Open Drain (UG) IA - Instrument Air (UG) PA - Plant Air (UG) OW - Oily Water (UG) OWS - Oily Water Sewer (UG) STS - Storm Sewer SW - Service Water SWS - Sea Water Supply (UG) WW - Waste Water

24 28

40

Sewer SW - Service Water SWS - Sea Water Supply (UG) WW - Waste Water Pipe Thickness

SCH.
Nipple Thickness

1

NPS Thk.mm SCH.

NPS Thk.mn

PRESSURE - TEMPERATURE Ratings

NPS	Press. bar	16
1 · 24	Temp. °C	70
NPS	Press. bar	3.5
28 · 60	Temp. °C	65

	Siz	76	Item Description	Ends	Rating/Facing	Material
opt.	from	to	Item peacripholi	Liius	ivaning/i acing	Material
PIPE						
	1	36	PIPE - BELL & SPIGOT ENDS - <mfr -="" plastic="" std=""></mfr>	BELL\SPIGO	PN16	RTR-EPOXY
					PN6	
	38	60	PIPE - PE ENDS - <mfr -="" plastic="" std=""></mfr>	PE	PN6	RTR-EPOXY
FLAN	IGES					
	1		BELL FLANGE - <mfr -="" plastic="" std=""> RTR-PN16</mfr>	1	CL150 FF	RTR-EPOXY
	26		BELL FLANGE - <mfr -="" plastic="" std=""> RTR-PN6</mfr>		CL150 FF	RTR-EPOXY
	40	60	WN FLANGE - <mfr -="" plastic="" std=""> RTR-PN6</mfr>	BW	CL150 FF	RTR-EPOXY
3	2	2	BELL FLANGE - <mfr -="" plastic="" std=""> RTR-PN16</mfr>	BELL	CL300 FF	RTR-EPOXY
	1	24	BLIND FLANGE - <mfr -="" plastic="" std=""> RTR-PN16</mfr>		CL150 FF	RTR-EPOXY
	26		BLIND FLANGE - <mfr -="" plastic="" std=""> RTR-PN6</mfr>		CL150 FF	RTR-EPOXY
SPEC	CTACLE	BLIND				
	1	14	SPECTACLE BLIND - ASME-B16.48		CL150 FF	ASTM B171 UNS C70600 (Ann.)
FITTI	NGS					
	1	32	ELBOW - BELL ENDS - <mfr -="" plastic="" std=""></mfr>		PN16 PN6	RTR-EPOXY
	40	60	ELBOW - PE ENDS - <mfr -="" plastic="" std=""></mfr>	PE	PN6	RTR-EPOXY
	1	32	REDUCER - BELL ENDS - <mfr -="" plastic="" std=""></mfr>		PN16 PN6	RTR-EPOXY
	40	60	REDUCER - PE ENDS - <mfr -="" plastic="" std=""></mfr>	PE	PN6	RTR-EPOXY
	1	60	CAP - PE END - <mfr -="" plastic="" std=""></mfr>		PN16 PN6	RTR-EPOXY
	1	24	COUPLING - BELL ENDS - <mfr -="" plastic="" std=""></mfr>	BELL	PN16	RTR-EPOXY
	1	32	Y.TEE - BELL ENDS - <mfr -="" plastic="" std=""></mfr>		PN16 PN6	RTR-EPOXY
	1	32	TEE - BELL ENDS - <mfr -="" plastic="" std=""></mfr>		PN16 PN6	RTR-EPOXY
	40	60	Y.TEE - PE ENDS - <mfr -="" plastic="" std=""></mfr>	PE	PN6	RTR-EPOXY
	40	60	TEE - PE ENDS - <mfr -="" plastic="" std=""></mfr>	PE	PN6	RTR-EPOXY
MISC	ELLANE	ous				
	1	2	SADDLE WITH NIPPLE PE - <mfr -="" plastic="" std=""></mfr>	PE\BW		RTR-EPOXY
GAS	KETS					
	1	60	FLAT NON MET. GASKET - ASME-B16.21			ARAMIDIC FIBER (13%)
BOL <sup>1</sup>	TS					
	1/4	4	ST.BOLT+2 NUTS+2 WASH ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

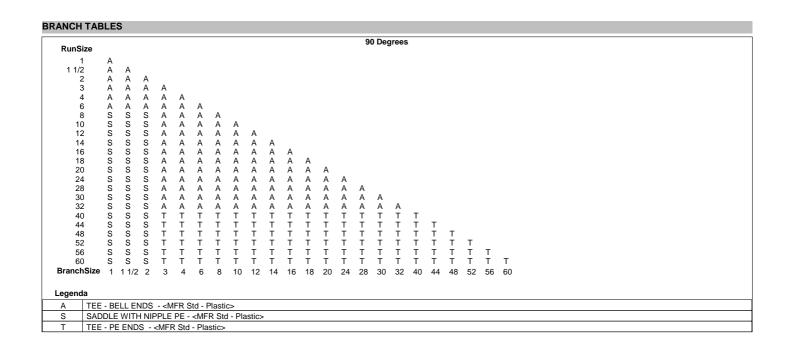
VALVES											
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material				
1	1	2	GA-E-67058	Bronze Gate-BB-Solid wdg-Thdd seat - MSS- SP80	FLGD	CL150 FF	Body: ASTM B148 UNS C95800 Trim : Ni-Aluminum Bronze - PTFE				
1	3	16	GA-E-67055	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 FF	Body: ASTM A216 WCB Trim : Inconel 625				
5	1	1	GA-E-67208	Globe-BB-Red.B-Needle-Thdd seat - ASME- B16.34	FLGD	CL150 FF	Body: ASTM B148 UNS C95800 Trim : Ni-Aluminum Bronze - PTFE				
6	2	2	GA-E-60719	Bronze Check-BB-FB-Swing-Integral seat - BS5154	FLGD	CL150 FF	Body: ASTM B148 UNS C95800 Trim : NI-Aluminum Bronze				
6	3	10	GA-E-60714	Check-BB- FB- Swing - API594	FLGD	CL150 FF	Body: ASTM A216 WCB Trim : Inconel 625				
8	1	2	GA-E-67192	Bronze Ball-End entry-FB-Floating ball - <mfr -="" metallic="" std=""></mfr>	FLGD	CL150 FF	Body: ASTM B148 UNS C95800 Trim : Soft seat-NI-AL.BRONZE trim - PTFE seats				
112	8	10	GA-E-67054	Gate-BB-FB-Solid wdg-Integral seat - MSS-SP-	FLGD	CL150 FF	Body: ASTM A395 - FBE Lined Trim : Ni-Aluminum Bronze				
150	4	4	GA-E-67094	Gate-Ext. Stem (2000mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 FF	Body: ASTM A216 WCB Trim : Inconel 625				
150	10	10	GA-E-67094	Gate-Ext. Stem (2000mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 FF	Body: ASTM A216 WCB Trim : Inconel 625				
151	4	4	GA-E-67095	Gate-Ext. Stem (2400mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 FF	Body: ASTM A216 WCB Trim : Inconel 625				
151	6	10	GA-E-67095	Gate-Ext. Stem (2400mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 FF	Body: ASTM A216 WCB Trim : Inconel 625				



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ALV	ES						
oos.	Siz from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
153	8	10	GA-E-67097	Gate-Ext. Stem (3000mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 FF	Body: ASTM A216 WCB Trim : Inconel 625
154	6 6 GA-E-67098 Gate-Ext. Stem (3200mm		Gate-Ext. Stem (3200mm)-BB-FB-Flex wdg-Thdd	FLGD	CL150 FF	Body: ASTM A216 WCB Trim : Inconel 625	
54	4 10 10 GA-E-67098		GA-E-67098	Gate-Ext. Stem (3200mm)-BB-FB-Flex wdg-Thdd seat - API600		CL150 FF	Body: ASTM A216 WCB  Trim : Inconel 625
154	12	12	GA-E-67098	Gate-Ext. Stem (3200mm)-BB-FB-Flex wdg-	FLGD	CL150 FF	Body: ASTM A216 WCB
				Thdd seat - API600			Trim : Inconel 625
155	10	10	GA-E-67099	Gate-Ext. Stem (4100mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 FF	Body: ASTM A216 WCB Trim : Inconel 625
156	10	12	GA-E-67300	Gate-Ext. Stem (4500mm)-BB-FB-Flex wdg-	FLGD	CL150 FF	Body: ASTM A216 WCB
				Thdd seat - API600			Trim : Inconel 625
158	10	10	GA-E-60584	Gate-Ext. Stem (3600mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 FF	Body: ASTM A216 WCB Trim : Inconel 625
162	4	10	GA-E-67390	Gate-Ext. Stem (1800mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 FF	Body: ASTM A216 WCB Trim : Inconel 625
164	12	12	GA-E-67700	Gate-Ext. Stem (3200mm)-BB-FB-Flex wdg-	FLGD	CL150 FF	Body: ASTM A216 WCB
				Thdd seat - API600			Trim : Inconel 625
690	8	10	GA-E-60708	Check-Flanged -Dual plate-Wldd seat - API594 - Buna-N lined	FLGD	CL150 FF	Body: ASTM A395 Trim : Ni-Al- Bronze - BUNA-N Lined
362	10	10	GA-E-67679	Ball- 3way -Split body -FB-Floating ball - ASME- B16.34	FLGD	CL150 FF	Body: ASTM A216 WCB Trim : Soft seat-AL.BRONZE trim - PTFE seats
902	2	8	GA-E-69073	Butterfly-Flanged-Double Off Set-Plastic seat - API609	FLGD	CL150 FF	Body: ASTM A216 WCB Trim : Sleeve/lined BUNA-N - PN 16 - C.S. disc
907	6	6	GA-E-69093	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 FF	Body: ASTM B148 UNS C95800
							Trim : Soft seat-NI-AL.BRONZE trim - PTFE seats
908	2	6	GA-E-69006	Bronze Ball-End entry-FB-Floating ball - <mfr -="" metallic="" std=""></mfr>	FLGD		Body: ASTM B148 UNS C95800 Trim: Soft seat-NI-AL BRONZE trim - PTFE seats

STRA	STRAINERS												
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material						
9	10	10	GA-E-60647	Special Strainer, Basket Type-Bolted Cover - <mfr std=""></mfr>	FLGD		Body :ASTM A395 - FBE Lined Screen: 316 - PERF.PLATE - 18 Holes/Cm2						





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	45 degrees																									
RunSize																										
1	Υ																									
1 1/2	Υ	Υ																								
2	Υ	Υ	Υ																							
2	Υ	Υ	Υ	Υ																						
4	Υ	Υ	Υ	Υ	Υ																					
6 8	Υ	Υ	Υ	Υ	Υ	Υ																				
8	Υ	Υ	Υ	Υ	Υ	Υ	Υ																			
10	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ																		
12	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ																	
14	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ																
16	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ															
18	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ														
20	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ													
24	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ												
28	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ											
30 32	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ										
32	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ									
40	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р								
44	Р	Р	Р	Р	Р	Р	Р	Ρ	Р	Р	Р	Р	Ρ	Р	Ρ	Р	Р	Р	Р							
48	Ρ	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р						
52	Ρ	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р					
56	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р				
60	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р			
BranchSize	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	28	30	32	40	44	48	52	56	60			
Legenda																										
P Y.TE	E - F	E ENI	os -	<mff< td=""><td>R Std</td><td>- Pla</td><td>stic&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></mff<>	R Std	- Pla	stic>																			
	Y Y.TEE - BELL ENDS - <mfr -="" plastic="" std=""></mfr>																									

## GENERAL NOTES

-GRP piping is designe din accordance with ISO 14692
-Wall thicknesses shall be calculated by the SUPPLIER, based on the design pressure, and ensuring that the wall thickness shall withstand the installation at completely buried condition. The burial depth will be provided by Purchaser. Be based on withstanding simultaneous hydraulic and external loads as well as a full vacuum. Purchaser responsible for stress calcs.



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Pipi	ng (	Class	s:	C	01FE0A03							
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 Base Material
 : RTR-EPOXY
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL150
 PWHT
 : NO

Facing/Finishing: FF Valve Trim: Aluminum Bronze

Corrosion Allow. : 0 mm Welding Spec : ---

Temp. Limit : 0 °C to 70 °C

Service: BR - Brine (AG) DR - Potentially Contaminated Open Drain (AG) OW - Oily Water (AG) OWS - Oily Water Sewer (AG) SWS - Sea Water Supply (AG) WW - Waste Water (AG)

Pipe Thickness

NPS 1 1 11/2 2 3 4 6 8 10 12 14
Thk.mm
SCH.

Nipple Thickness

NPS Thk.mm SCH.

PRESSURE - TEMPERATURE Ratings

NP5	Press. par	16
1 · 4	Temp. °C	70
NPS	Press. bar	3.5
14 · 14	Temp. °C	65

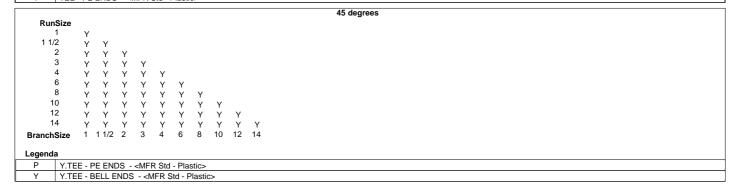
opt.	Siz	ze to	Item Description	Ends	Rating/Facing	Material							
	110111												
PIPE													
	1	14	PIPE - BELL & SPIGOT ENDS - <mfr -="" plastic="" std=""></mfr>	BELL\SPIGO		RTR-EPOXY							
				Т	PN20 PN16								
FLAN	IGES				FINIO								
LA	1	4	BELL FLANGE - <mfr -="" plastic="" std=""> RTR-PN16</mfr>	BELL	CL150 FF	RTR-EPOXY							
	6	12	BELL FLANGE - <mfr -="" plastic="" std=""> RTR-PN20</mfr>	BELL	CL150 FF	RTR-EPOXY							
	14	14	BELL FLANGE - <mfr -="" plastic="" std=""> RTR-PN16</mfr>	BELL	CL150 FF	RTR-EPOXY							
3	3	3	BELL FLANGE - <mfr -="" plastic="" std=""> RTR-PN16</mfr>		CL300 FF	RTR-EPOXY							
3	1	4	BLIND FLANGE - <mfr -="" plastic="" std=""> RTR-PN16  BLIND FLANGE - <mfr -="" plastic="" std=""> RTR-PN16</mfr></mfr>	DELL	CL300 FF	RTR-EPOXY							
	6		BLIND FLANGE - <mfr -="" plastic="" std=""> RTR-PN20</mfr>										
	14	14	BLIND FLANGE - <mfr -="" plastic="" std=""> RTR-PN16</mfr>			RTR-EPOXY							
SDEC	TACLE		BLIND FLANGE - < WIFR Std - Plastic> RTR-PNT6		CL 150 FF	RTR-EPOXY							
3F EC	1	14	SPECTACLE BLIND - ASME-B16.48	1	CL150 FF	A OTTAL DATA LINIO OZOGOO (A)							
FITTI		14	SPECTACLE BLIND - ASME-B10.48		CLISUFF	ASTM B171 UNS C70600 (Ann.)							
	1	14	ELBOW - BELL ENDS - <mfr -="" plastic="" std=""></mfr>	BELL	PN16	RTR-EPOXY							
	'	14	ELBOW - BELL ENDS - < WIFK Stu - Flastics	DELL	PN20	KTR-EPOXT							
					PN16								
	1	14	REDUCER - BELL ENDS - <mfr -="" plastic="" std=""></mfr>	BELL	PN16	RTR-EPOXY							
					PN20								
					PN16								
	1	14	CAP - PE END - <mfr -="" plastic="" std=""></mfr>	PE	PN16	RTR-EPOXY							
					PN20 PN16								
	1	14	COUPLING - BELL ENDS - <mfr -="" plastic="" std=""></mfr>	BELL	PN16	RTR-EPOXY							
	'	14	COOPEING - BELL ENDS - CIVIL IX SIG - Flastics	BLLL	PN20	KIR-EFOXI							
					PN16								
	1	14	TEE - BELL ENDS - <mfr -="" plastic="" std=""></mfr>	BELL	PN16	RTR-EPOXY							
					PN20								
					PN16								
	1	14	Y.TEE - BELL ENDS - <mfr -="" plastic="" std=""></mfr>	BELL	PN16 PN20	RTR-EPOXY							
					PN16								
MISC	ELLANE	ous			1110								
	1	2	SADDLE WITH NIPPLE PE - <mfr -="" plastic="" std=""></mfr>	PE\BW		RTR-EPOXY							
GAS			1-		·	j =. =							
	1	14	FLAT NON MET. GASKET - ASME-B16.21			ARAMIDIC FIBER (13%)							
BOL	rs '		,	1	<u> </u>								
	1/4	4	ST.BOLT+2 NUTS+2 WASH ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED							

VALV	FS						
pos.	-	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1	2	GA-E-67058	Bronze Gate-BB-Solid wdg-Thdd seat - MSS- SP80	FLGD	CL150 FF	Body: ASTM B148 UNS C95800 Trim : Ni-Aluminum Bronze - PTFE
1	3	14	GA-E-67055	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 FF	Body: ASTM A216 WCB
							Trim : Inconel 625
2	8	8	GA-E-60543	Butterfly-Flanged-Double Off Set-Plastic seat - API609	FLGD	CL150 FF	Body: ASTM A216 WCB Trim : Sleeve/lined BUNA-N - PN 16 - C.S. disc
5	1	1	GA-E-67208	Globe-BB-Red.B-Needle-Thdd seat - ASME- B16.34	FLGD	CL150 FF	Body: ASTM B148 UNS C95800 Trim : Ni-Aluminum Bronze - PTFE
6	2	2	GA-E-60719	Bronze Check-BB-FB-Swing-Integral seat - BS5154	FLGD	CL150 FF	Body: ASTM B148 UNS C95800 Trim : NI-Aluminum Bronze
6	3	10	GA-E-60714	Check-BB- FB- Swing - API594	FLGD	CL150 FF	Body: ASTM A216 WCB Trim : Inconel 625
8	2	2	GA-E-67192	Bronze Ball-End entry-FB-Floating ball - <mfr -="" metallic="" std=""></mfr>	FLGD	CL150 FF	Body: ASTM B148 UNS C95800 Trim : Soft seat-NI-AL.BRONZE trim - PTFE seats
112	8	10	GA-E-67054	Gate-BB-FB-Solid wdg-Integral seat - MSS-SP- 128	FLGD	CL150 FF	Body: ASTM A395 - FBE Lined Trim : Ni-Aluminum Bronze
690	8	10	GA-E-60708	Check-Flanged -Dual plate-Wldd seat - API594 - Buna-N lined	FLGD	CL150 FF	Body: ASTM A395 Trim : Ni-Al- Bronze - BUNA-N Lined



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BRANCH T	ABI	_ES	;									
RunSize	,											90 Degrees
1		Α										
1 1/2		Α	Α									
2		Α	Α	Α								
3		Α	Α	Α	Α							
4		Α	Α	Α	Α	Α						
6		Α	Α	Α	Α	Α	Α					
8		S	S	S	Α	Α	Α	Α				
10		S	S	S	Α	Α	Α	Α	Α			
12		S	S	S	Α	Α	Α	Α	Α	Α		
14		S	S	S	Α	Α	Α	Α	Α	Α	Α	
BranchSi	ze	1	1 1/2	2	3	4	6	8	10	12	14	
Legenda												
A T	EE -	BEI	LL EN	NDS	- <n< td=""><td>1FR S</td><td>Std -</td><td>Plasti</td><td>C&gt;</td><td></td><td></td><td></td></n<>	1FR S	Std -	Plasti	C>			
s s	ADD	LE '	WITH	l NIF	PPLE	PE -	<mf< td=""><td>R St</td><td>d - Pla</td><td>astic&gt;</td><td></td><td></td></mf<>	R St	d - Pla	astic>		
								astic>				



## GENERAL NOTES

-GRP piping is designe din accordance with ISO 14692
-Wall thicknesses shall be calculated by the SUPPLIER, based on the design pressure. Be based on withstanding simultaneous hydraulic and external loads as well as a full vacuum. Purchaser responsible for stress calcs.



		ОВ <b>2243</b>						
Pipi	ng (	Class	s:	(	1F	VOA	01	
						Rev.		
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Base Material : RTR-VINYLESTER Design code : ASME B 31.3 2016

Nom. Rating : CL150 PWHT : NO

Facing/Finishing: FF Valve Trim: Soft seat-NI-AL.BRONZE trim - PTFE seats

Corrosion Allow.: 0 mm Welding Spec:--Temp. Limit: 0 °C to 70 °C

Service: CH - Chemical

Pipe Thickness

NPS 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 Thk.mm SCH.

Nipple Thickness

NPS Thk.mm SCH.

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 16

1 ·	24 Temp	. °C	70			
opt.	Siz from	e to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1	24	PIPE - BELL & SPIGOT ENDS - <mfr -="" plastic="" std=""></mfr>	BELL\SPIGO T	PN16	RTR-VINYLESTER
FLAN	IGES					
1	1	24	BELL FLANGE - <mfr -="" plastic="" std=""> RTR-PN16</mfr>	BELL	CL150 FF	RTR-VINYLESTER
	1		BLIND FLANGE - <mfr -="" plastic="" std=""> RTR-PN16</mfr>		CL150 FF	RTR-VINYLESTER
SPEC	TACLE	BLIND				
	1	14	SPECTACLE BLIND - ASME-B16.48		CL150 FF	ASTM B171 UNS C70600 (Ann.)
FITTI	NGS					
	1	24	ELBOW - BELL ENDS - <mfr -="" plastic="" std=""></mfr>	BELL	PN16	RTR-VINYLESTER
	1	24	REDUCER - BELL ENDS - <mfr -="" plastic="" std=""></mfr>	BELL	PN16	RTR-VINYLESTER
	1	24	CAP - PE END - <mfr -="" plastic="" std=""></mfr>	PE	PN16	RTR-VINYLESTER
	1	24	COUPLING - BELL ENDS - <mfr -="" plastic="" std=""></mfr>	BELL	PN16	RTR-VINYLESTER
	1	24	Y.TEE - BELL ENDS - <mfr -="" plastic="" std=""></mfr>	BELL	PN16	RTR-VINYLESTER
	1	24	TEE - BELL ENDS - <mfr -="" plastic="" std=""></mfr>	BELL	PN16	RTR-VINYLESTER
MISC	ELLANE	ous				
	1	2	SADDLE WITH NIPPLE PE - <mfr -="" plastic="" std=""></mfr>	PE\BW		RTR-VINYLESTER
GASK	KETS					
	1	24	FLAT NON MET. GASKET - ASME-B16.21			ARAMIDIC FIBER (13%)
<b>BOL</b> <sub>1</sub>	ΓS					
	1/4	4	ST.BOLT+2 NUTS+2 WASH ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED
VALV	/ES					

	pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
	8	2	2		Bronze Ball-End entry-FB-Floating ball - <mfr -="" metallic="" std=""></mfr>	FLGD		Body: ASTM B148 UNS C95800 Trim : Soft seat-NI-AL.BRONZE trim - PTFE seats
ľ								

#### **BRANCH TABLES** 90 Degrees RunSize A A A A A A S S S S S S S S S S 1 1 1/2 2 3 4 6 8 10 12 14 16 18 20 AAAAASSSSSSS A A A A S S S S S S S S S S S A A A A A A A A A 3 A A A A A A A A A 4 A A A A A A A A 6 A A A A A A A A A A A A 10 A A A A A BranchSize 1 1/2 8 Legenda TEE - BELL ENDS - <MFR Std - Plastic> SADDLE WITH NIPPLE PE - <MFR Std - Plastic> TEE - PE ENDS - <MFR Std - Plastic>



		DB 2 <b>243</b>						
Pipi	ng C	Class	s:	C	1F	VOA	01	
						Rev.		
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															4	15 degrees			
Runs	Size															-			
1		Υ																	
1 1/2	2	Υ	Υ																
2		Υ	Υ	Υ															
3	3	Υ	Υ	Υ	Υ														
4		Υ	Υ	Υ	Υ	Υ													
6		Υ	Υ	Υ	Υ	Υ	Υ												
8		Υ	Υ	Υ	Υ	Υ	Υ	Υ											
10		Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ										
12		Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ									
14		Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ								
16		Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ							
18		Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ						
20		Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ					
24	ļ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ				
Branch5	Size	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24				
Legenda	ı																		
Р	Y.TEE	- P	E END	os -	<mff< td=""><td>R Std</td><td>- Plas</td><td>stic&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></mff<>	R Std	- Plas	stic>											
Υ	Y.TEE	- B	ELL E	NDS	- <n< td=""><td>IFR S</td><td>td - F</td><td>Plastic</td><td>&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></n<>	IFR S	td - F	Plastic	>										

## GENERAL NOTES

-GRP piping is designe din accordance with ISO 14692
-Wall thicknesses shall be calculated by the SUPPLIER, based on the design pressure. Be based on withstanding simultaneous hydraulic and external loads as well as a full vacuum. Purchaser responsible for stress calcs.



		ов <b>2243</b>						
Pipi	ng (	Class	s:	(	)1L	T0F	50	_
						Rev.		
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Base Material : CARBON STEEL PTFE LINED :ASME B 31.3 2016 Design code

Nom. Rating : CL150 **PWHT** 

Facing/Finishing : FF Valve Trim : Hastelloy C / HF; Sleeve PTFE - PTFE lined disc; Body Lined PTFE-PTFE Welding Spec : shutter; Body lined PTFE - PTFE trim; Body lined PTFE - PTFE trim; Body lined PTFE - PTFE Corrosion Allow. : 0 mm

Temp. Limit : 0 °C to 90 °C Service:

CH - Chemical (Hydrocloric acid 30%wt) CL - Sodium Hypochlorite V - Vent

Pipe Thickness

NPS	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12
Thk.mm	2.77	2.87	3.38	3.68	3.91	5.49	6.02	7.11	7.04	7.8	6.35
SCH.	STD	STD	STD	STD	STD	STD	STD	STD	30	30	20

#### Nipple Thickness

NPS Thk.mm SCH.

\/AL\/E0

#### PRESSURE - TEMPERATURE Ratings

1/2	12 . 0p.					
opt.	Siz from	e to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	12	PIPE CL150-FF	BW		ASTM A106 GR.B - SMLS - PTFE Lined
FLAN	IGES					
	1/2	12	LJ FLANGE - ASME-B16.5			ASTM A105 Normalized
3	1/2	12	LJ FLANGE - ASME-B16.5			ASTM A105 Normalized
	1/2	12	BLIND FLANGE - ASME-B16.5		CL150 FF	ASTM A105 Normalized - PTFE LINED
SPE	CTACLE E	BLIND				
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL150 FF	ASTM A516 GR.70 + S5 (-46°C) - PTFE LINED
FITTI	NGS					
	1/2	12	LJ STUB.END-BW END - SHORT TP - ASME-B16.9	BW\FLGD	CL150 FF	ASTM A234 WPB - SMLS - PTFE Lined
3	1/2	12	LJ STUB.END-BW END - SHORT TP - ASME-B16.9	BW\FLGD	CL300 FF	ASTM A234 WPB - SMLS - PTFE Lined
	1/2	12	FLANGED ELBOW - LINED - <mfr -="" metallic="" std=""> CL150-FF</mfr>	FLGD	CL150 FF	ASTM A234 WPB - SMLS - PTFE Lined
	3/4	12	FLANGED REDUCER - LINED - <mfr -="" metallic="" std=""> CL150-FF</mfr>	FLGD	CL150 FF	ASTM A234 WPB - SMLS - PTFE Lined
	1	12	FLANGED TEE - LINED - <mfr -="" metallic="" std=""> CL150-FF</mfr>	FLGD	CL150 FF	ASTM A234 WPB - SMLS - PTFE Lined
	2	12	INSTRUMENT TEE - LINED - <mfr -="" metallic="" std=""></mfr>	FLGD	CL150 FF	ASTM A105 Normalized - PTFE LINED
MISC	ELLANE	OUS				
	1/2	12	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 FF	GRE LAMINATED + TFE (MAX T 180 C)
BOL'	TS					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

pos.	Siz from	e to	Data Sheet	Item Description	Ends	Rating/Facing	Material
2	3	10	GA-E-60539	Butterfly-Lug wafer-Sleeve type-Centered disk - PTFE Lined	WAFER LUG	CL150 FF	Body: ASTM A216 WCB Trim : Sleeve PTFE - PTFE lined disc
4	2	2	GA-E-67408	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 FF	Body: ASTM A494 CW-12MW (HAST.C276)
							Trim : Hastelloy C / HF
6	2	8	GA-E-67501	Check-Fully Lined-Axial ball type - PTFE Lined - <mfr -="" metallic="" std=""></mfr>	FLGD	CL150 FF	Body: ASTM A216 WCB Trim :Body Lined PTFE-PTFE shutter
7	10	10	GA-E-67297	Ball-Split body-Red.B-Floating ball - PTFE Lined - API6D	FLGD	CL150 FF	Body: ASTM A216 WCB Trim :Body lined PTFE - PTFE trim
8	1	8	GA-E-67296	Ball-Split body-FB-Floating ball - PTFE Lined	FLGD	CL150 FF	Body: ASTM A216 WCB
							Trim : Body lined PTFE - PTFE trim
92	2	10	GA-E-60550	Diaphragm-BB-Straight Through - MSS-SP88	FLGD	CL150 FF	Body: ASTM A216 WCB
							Trim : Body lined PTFE - PTFE
240	3	3	GA-E-60541		WAFER	CL150 FF	Body: ASTM A216 WCB
				PTFE Lined - Interlock System	LUG		Trim : Sleeve PTFE - PTFE lined disc

**BRANCH TABLES** 



		ов 2 <b>243</b>												
Pipi	ng C	Class	s:	(	01LT0F50									
						Rev.								
Sh.	2	of	2	Α	0	1								

			1																	
RunSize												90 De	egrees							
1/2																				
3/4																				
1	Т	Т																		
1 1/2	Т	Т	Т																	
2	IT	Т	Т	Т																
3		Т	Т	Т	Т															
4		Т	Т	Т	Т	Т														
6		IT	ΙT	IT	Т	Т	Т													
8		IT	ΙT	IT		Т	Т	Т												
10		IT	ΙT	IT		Т	Т	Т	Т											
12		IT	IT	IT			Т	Т	Т	Т										
BranchSize	1/2 3/4	1 1	1 1/2	2 2	3	4	6	8	10	12										
Legenda																				
IT INS	TRUMEN	IT TE	E - LII	NED.	- <m< td=""><td>FR St</td><td>id - M</td><td>letalli</td><td>C&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></m<>	FR St	id - M	letalli	C>											
T FLA	NGED T	FF - I	INFD	M	IFR S	1 - hts	Metal	lic> +	CL	150-FF										

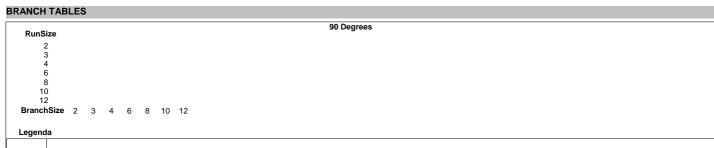
#### GENERAL NOTES

- 1) Plastic lining in pipe shall be in accordance with ASTM F1545 standard specification for PTFE plastic-lined ferrous metal pipe, fittings, and flanges. Pipe shall have Class 150 flanged ends.
  2) Welding or heating of metal surfaces of plastic-lined pipe shall not be permitted.
  3) Specified Thickness are suitable to withstand Full Vacuum condition.
  4) Piping layout configuration shall ensure lining integrity



		ОВ <b>2243</b>											
Pipi	ng C	Class	s:	01PD0H01									
						Rev.							
Sh.	1	of	2	Α	0	1	2	3					

Base Material :ASME B 31.3 2016 : HDPE Design code Nom. Rating : CL150 :NO **PWHT** Facing/Finishing : FF Valve Trim : Bronze Welding Spec : ---Corrosion Allow. : 0 mm Temp. Limit : 0 °C to 60 °C Service: STS - Storm Sewer (OLD Storm Water) (UG) OW - Oily Water WW - Waste Water (UG) Pipe Thickness NPS Thk.mn 2 3 6 8 10 12 SCH. Nipple Thickness NPS Thk.mm SCH. PRESSURE - TEMPERATURE Ratings NPS Press, bar 2 · 12 Temp. °C Size Ends Rating/Facing Material Item Description from to opt. PIPE PIPE - PE ENDS - <MFR Std - Plastic> HDPE-PN10 2 PN10 ASTM D3350 PE 3608 **FLANGES** ASTM A536 GR.65-45-12 L.I.FLANGE - ASME-B16.5 HDPF-PN10 12 2 BLIND FLANGE - ASME-B16.5 HDPE-PN10 ASTM A536 GR.65-45-12 12 **CL150 FF FITTINGS** ASTM D3350 PE 3608 2 12 FLANGE ADAPTER - PE END - ASTM F2880 PE\FLGD CL150 FF 2 12 ELBOW - PE ENDS - <MFR Std - Plastic> PE PN10 ASTM D3350 PE 3608 PE 2 12 REDUCER - PE ENDS - <MFR Std - Plastic> PN10 **ASTM D3350 PE 3608** 2 12 CAP - PE END - <MFR Std - Plastic> PΕ PN10 ASTM D3350 PE 3608 Y.TEE - PE ENDS - <MFR Std - Plastic> PΕ PN10 ASTM D3350 PE 3608 GASKETS 12 FLAT NON MET. GASKET - ASME-B16.21 NEOPRENE 2 BOLTS ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368 ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED VALVES Size Data Sheet Item Description Rating/Facing from to GA-E-67701 Gate-BB-FB-Solid wdg-Integral seat - MSS SP FLGD CL150 FF Body: ASTM A395 128 Trim : Bronze - Rubber coated





		ОВ <b>2243</b>											
Pipi	ng C	Class	s:	0	01PD0H01								
				Rev.									
Sh.	2	of	2	Α	0	1	2	3					

#### GENERAL NOTES

- 1) If not already epoxy coated, buried metallic Flanges and Blind Flanges shall be FBE external coated in accordance with Specification MZ-000-CCX-MC-SPC-00004 External Coating for Buried Pipeline and Piping Components-FBE and FJC
  2) Gaskets are not required at joints between HDPE flange adaptors. Gasket are required when transitioning HDPE flange adapters to non-lined metallic flanges
  3) Bolts shall be torqued in accordance to HDPE manufacturer recommended torque values.
  4) HDPE Pipe and Fittings materials shall be in accordance with ASTM D3350 CL.345464C- PE 3608. CL. 445574C PE 4710 is considered an acceptable alternative.
  5) Wall thickness shall be determined by Supplier in accordance with IPS Sizing System (ASTM F714/D3261) and Dimension Ratio DR9.
  6) The Supplier shall be responsible for the design and the pressure rating of pipes and fittings. The components shall be resistant to full vacuum condition.
  7) The supplier shall have responsibility for performing pipe stress analysis of the HDPE piping system.



		ОВ <b>2243</b>							
Pipi	ng C	Class	s:	0	1PI	D0H	170		
						Rev.			
Sh.	1	of	1	Α	0	1	2	3	

Base Material :ASME B 31.3 2016 : HDPE Design code

Nom. Rating : CL150 **PWHT** Facing/Finishing : FF Valve Trim : Bronze Corrosion Allow. : 0 mm Welding Spec : ---

Temp. Limit : 0 °C to 35 °C

Service: FW - Fire Water (UG)

Pipe Thickness

NPS Thk.mn 3 4 10 12 14 16 18 20 SCH.

Nipple Thickness

NPS Thk.mm SCH.

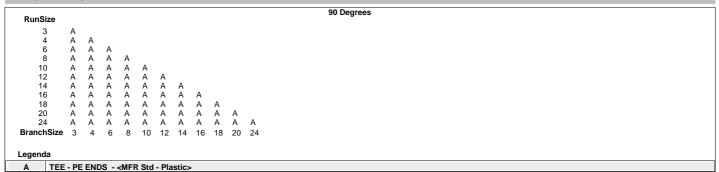
PRESSURE - TEMPERATURE Ratings

NPS Press. bar 16 3 · 24 Temp. °C 35

3 '	24 Temp	J. U	50			
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	3	24	PIPE - PE ENDS - <mfr -="" plastic="" std=""></mfr>	PE	PN16	ASTM D3350 PE 3608 - Fire Water - FM Certified
FLAN	IGES					
	3	24	LJ FLANGE - ASME-B16.5 HDPE-PN16			ASTM A536 GR.65-45-12
	3	24	BLIND FLANGE - ASME-B16.5 HDPE-PN16		CL150 FF	ASTM A536 GR.65-45-12
FITTII	NGS					
	3	24	FLANGE ADAPTER - PE END - ASTM F2880	PE\FLGD	CL150 FF	ASTM D3350 PE 3608 - Fire Water - FM Certified
	3	24	ELBOW - PE ENDS - <mfr -="" plastic="" std=""></mfr>	PE	PN16	ASTM D3350 PE 3608 - Fire Water - FM Certified
	3	24	REDUCER - PE ENDS - <mfr -="" plastic="" std=""></mfr>	PE	PN16	ASTM D3350 PE 3608 - Fire Water - FM Certified
	3	24	CAP - PE END - <mfr -="" plastic="" std=""></mfr>	PE	PN16	ASTM D3350 PE 3608 - Fire Water - FM Certified
	3	24	TEE - PE ENDS - <mfr -="" plastic="" std=""></mfr>	PE	PN16	ASTM D3350 PE 3608 - Fire Water - FM Certified
GASK	KETS					
	3	24	FLAT NON MET. GASKET - ASME-B16.21			NEOPRENE
BOLT	rs					
	1/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	4	24		Gate-BB-FB-Solid wdg-Integral seat - MSS SP 128 - UL/FM Certified - Extended stem	FLGD		Body: ASTM A395 Trim : Bronze - Rubber coated

#### **BRANCH TABLES**



#### GENERAL NOTES

- 1) If not already Epoxy coated, buried metallic Flanges and Blind Flanges shall be FBE external coated in accordance with Specification MZ-000-CCX-MC-SPC-00004 External Coating for Buried Pipeline and Piping Components-FBE and FJC
  2) Gaskets are not required at joints between HDPE flange adaptors. Gasket are required when transitioning HDPE flange adapters to non-lined metallic flanges

- 3) Bolts shall be torqued in accordance to HDPE manufacturer recommended torque values.
  4) HDPE Pipe and Fittings materials shall be in accordance with ASTM D3350 CL.345464C PE 3608. CL. 445574C PE 4710 is considered an acceptable alternative.
- 5) Wall thickness shall be determined by Supplier in accordance with IPS Sizing System (ASTM F714/D3261) and Dimension Ratio DR7.
  6) The Supplier shall be responsible for the design and the pressure rating of pipes and fittings. The components shall be resistant to full vacuum condition.
  7) The supplier shall have responsibility for performing pipe stress analysis of the HDPE piping system.



JOB **032243** Piping Class: 01SA0B01 Rev Α 0 1 2 3

Base Material : STAINLESS STEEL 304/304L DUAL GRADE Design code : ASME B 31.3 2016

Nom. Rating : CL150 **PWHT** Facing/Finishing: RF Valve Trim : 12 - SS316/HF Corrosion Allow. : 0 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -196 °C to 230 °C

Service: BCF - Dry Liquid Blowdown Flare CF - Dry (Cold) Flare FL - Flare MR - Mixed Refrigerant NG - Natural Gas

Pipe Thickness

14 16 4.78 4.78 10S 10S 
 18
 20
 24

 4.78
 5.54
 6.35

 10S
 10S
 10S
 NPS Thk.mm 1/2 3/4 2.77 2.87 4.57 7.92 15.88 15.88 3.68 3.76 4.19 7.92 9.53 9.53 11.13 12.7 12.7 14.27 
 40S
 40S
 40S
 40S

 64
 66
 68
 72

 17.48
 17.48
 17.48
 19.05
 SCH. 40S 10S 10S 10S 10S 10S 10S 10S

Nipple Thickness

NPS 1/2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 18.96 15.86 14.13 13.1 ASME B16.5/ASME B16.47 112 · 48 Temp. °C 37.78 93.33 148.9 204.4 Material Group 2.1 NPS Press. bar 10 52 · 64 Temp. °C NPS Press. bar 210 NPS Press. bar 66 · 72 Temp. °C 10.4 70

00				Ends Rati		
opt.	Si from	ze to	Item Description			Material
PIPE				lp.w/		
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	72	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN		,,_		PVV	-	ACTIVIAGGO IT SOU/ IT SOUL CELT BOAL CRADE - ET W
	1/2	24	WN FLANGE - ASME-B16.5	вw	CL150 RF	ASTM A182 F304/304L DUAL GRADE
	26	60	WN FLANGE - ASME-B16.47 series.A	вw	CL150 RF	ASTM A182 F304/304L DUAL GRADE
	72	72	SPECIAL WN FLANGE - <mfr std=""> GA-E-060013</mfr>	вw	CL150 RF	ASTM A182 F304/304L DUAL GRADE
3	1/2	24	WN FLANGE - ASME-B16.5	вw	CL300 RF	ASTM A182 F304/304L DUAL GRADE
3	26	60	WN FLANGE - ASME-B16.47 series.A	вw	CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
5	26	60	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	1/2	1/2	THD FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A182 F304/304L DUAL GRADE
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
73	1/2	24	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
73	30	36	SPECIAL WN FLANGE - <mfr std=""> GA-E-060018</mfr>	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
73	52	52	SPECIAL WN FLANGE - <mfr std=""> GA-E-060018</mfr>	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
995	1/2	24	WN FLANGE - ASME-B16.5	вw	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A182 F304/304L DUAL GRADE
	26	60	BLIND FLANGE - ASME-B16.47 series.A		CL150 RF	ASTM A182 F304/304L DUAL GRADE
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF CL150 RF		ASTM A182 F304/304L DUAL GRADE
SPEC	TACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A240 TP304
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 TP304
	48	48	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A240 TP304
	52	52	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A240 TP304
	56	56	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A240 TP304
	72	72	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A240 TP304
2	1/2	14	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 TP304
3	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A240 TP304
3	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP304
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP304
23	3	3	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP304
25	3	6	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
FITTI				1	1	
	1/2	2	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50	72	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
5	1	1	SPECIAL LARGE RADIUS ELBOW - <mfr std=""></mfr>	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
5	2	2	BEND - WITH R=5 DN - TB RAC 5023	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50	72	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	48	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	50	72	CAP - TB RAC 5064	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM/PE		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95			ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	6	- ASME-B16.9 BW			ASTM A403 WP304S/304LS DUAL GRADE - SMLS



		DB 2 <b>243</b>							
Pipi	ng C	Class	s:	0	15/	40E	301		
						Rev.			
Sh.	2	of	4	Α	0	1	2	3	

		ize	Item Description	Ends	Rating/Facing	Material			
opt.	from	to							
ITTI	INGS								
	8	48	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD			
	52	72	TEE - TB RAC 5061	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD			
	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE			
ASI	KETS								
	28	60	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE			
	72   72   FLAT GASKET - GROOVED - <mfr std=""> GA-E-060013   AISI 316L+GRAPHITE</mfr>								
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING			
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304			
73	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304			
73	30	36	OCTAGONAL RJ GASKET - <mfr std=""> GA-E-060018</mfr>			AISI 304			
73	52	52	OCTAGONAL RJ GASKET - <mfr std=""> GA-E-060018</mfr>			AISI 304			
BOL	TS								
	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 B8 CL.2 + ASTM A194 GR.8			
	1 5/8	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660			
995	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660 - PTFE COATED			

VALVE	ES						
pos.	Si:	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60142	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
1	2	24	GA-E-60143	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A351 CF8M Trim: 316 / HF
2	26	48	GA-E-60505	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - API609	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Metal seat - 316 - 316 disc
2	50	56	GA-E-60522	Special Butterfly-Flanged-Triple Off Set-Int.seat- Fire safe - <mfr std=""></mfr>	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Metal seat - 316 - 316 disc
4	1/2	1 1/2	GA-E-60234	Globe-BB-Red BThdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
4	2		GA-E-60235	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
5	1/2		GA-E-67204	Globe-BB-Red.B-Needle-Thdd seat - ASME- B16.34	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
6	1/2		GA-E-60341	Check-BB-Red.B-Piston-Thdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
6	2		GA-E-60342	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
6	12		GA-E-60343	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
7 7	6	3 6	GA-E-60438 GA-E-60438	Ball-Split body-Red.B-Floating ball - API6D Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A351 CF8M
7	8		GA-E-60439	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A351 CF8M
8	1/2		GA-E-60437	Ball-End entry -FB-Float.ball -Frgd body - API608		CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A182 F316/F316L DUAL GRADE
8	6	24	GA-E-60784	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A351 CF8M
10	1/2		GA-E-67026	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW/TH	CL800	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A182 F316/F316L DUAL GRADE
13	2	24	GA-E-60150	Gate-BB-FB-Flex wdg-Thdd seat - API600	DF FLGD	CL300 RF	Trim : 316 / HF Body: ASTM A351 CF8M
14	1/2	1 1/2	GA-E-60140	Gate-Stem Extension-BB-Red.B-Solid wdg-	BW	CL800	Trim:316 / HF Body: ASTM A182 F316/F316L DUAL GRADE
14	2	24	GA-E-67002	Exp.seat - API602 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Trim : 316 / HF Body: ASTM A351 CF8M
62	2	10	GA-E-60700	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A351 CF8M Trim: 316 / HF
62	12	24	GA-E-60741	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
63	2	2	GA-E-60355	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim: :316 / HF
80	1/2	1 1/2	GA-E-67129	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE  Trim : Soft seat-316 trim - RPTFE seats
82	1/2	1 1/2	GA-E-67130	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
82	6		GA-E-60785	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2		GA-E-60476	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2		GA-E-60593	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
101	2		GA-E-60590	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600		CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
103	2	2	GA-E-60594	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600		CL300 RF	Body: ASTM A351 CF8M Trim: 316 / HF
140	3	4	GA-E-67358	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
141	3/4	3/4	GA-E-67702	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602-Interlock System	BW	CL800	Body: <b>ASTM A182 F316/F316L DUAL GRADE</b> Trim : <b>316 / HF</b>



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	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
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01	56	56	GA-E-60532		FLGD	CL150 RF	Body: ASTM A351 CF8M
				Off Set-Int.seat-Fire safe - <mfr std=""></mfr>			Trim : Metal seat - 316 - 316 disc
241	56	56	GA-E-60544	Special Butterfly-Limit Swithch-Interlock	FLGD	CL150 RF	Body: ASTM A351 CF8M
				System-Flanged-Triple Off Set-Int.seat-Fire safe - <mfr std=""></mfr>			Trim : Metal seat - 316 - 316 disc
401	2	12	GA-E-60280	Globe-Stem Extension-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
701	3	6	GA-E-67166		FLGD	CL150 RF	Body: ASTM A351 CF8M
	_			ball - API6D			Trim : Soft seat-316 trim - RPTFE seats
701	8	24	GA-E-67254		FLGD	CL150 RF	Body: ASTM A351 CF8M
	4 /0	4.4/0	04 5 07404	ball - API6D		01.450.05	Trim : Soft seat-316 trim - RPTFE seats
801	1/2	1 1/2	GA-E-67131	Ball-Stem Extension-End entry -FB-Float.ball - Frqd body - API608	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - RPTFE seats
801	2	2	GA-E-67255	0	FLGD	CL150 RF	Body: ASTM A351 CF8M
	_	_		API6D	. 205	02.00	Trim : Soft seat-316 trim - RPTFE seats
801	6	24	GA-E-67110	Ball-Stem Extension-Split body-FB-Trunnion ball -	FLGD	CL150 RF	Body: ASTM A351 CF8M
				API6D			Trim : Soft seat-316 trim - RPTFE seats
824	4	4	GA-E-67612	Ball-Split body-FB-Floating ball - API6D - Interlock	FLGD	CL150 RF	Body: ASTM A351 CF8M
				System			Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
824	6	12	GA-E-67608	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL150 RF	Body: ASTM A351 CF8M
				Interlock System			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
840	8	14	GA-E-67609		FLGD	CL150 RF	Body: ASTM A351 CF8M
				Interlock System			Trim : Soft seat-316 trim - RPTFE seats
841	16	16	GA-E-67610	Ball-Stem Extension-Split body-FB-Trunnion ball -	FLGD	CL150 RF	Body: ASTM A351 CF8M
				API6D - Interlock System			Trim : Soft seat-316 trim - RPTFE seats
907	2	6	GA-E-69007	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M
							Trim : Soft seat-316 trim - RPTFE seats
936	6	6	GA-E-69099		FLGD	CL300 RF	Body: ASTM A351 CF8M
				Trunnion ball - API6D			Trim : Soft seat-316 trim - RPTFE seats
972	8	24	GA-E-69048	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M
	_	_					Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
973	2	6	GA-E-69047	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A351 CF8M
						1	Trim : Soft seat-316 trim - PTFE seats

Ends

BW

Rating/Facing

CL150 RF

Material

Body: ASTM A403 WP304S/304LS DUAL GRADE - SMLS Screen: 316 - CLOTH - MESH 3

**BRANCH TABLES** 

STRAINERS

from

6

pos.

Size to

Data Sheet

GA-E-60629

Item Description

T Strainer-BW - <MFR Std - Metallic>



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6	4	W	W	W	W	W	W	W	W	W	Р	P	Р	Р	Р	Р	Р	Р	Р	Р	T1	T1	T1	T1	T1	T1	T1	T1						
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### GENERAL NOTES

- Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
   The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
   NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
   Specified Thickness are suitable to withstand Full Vacuum condition.



**PWHT** 

Valve Trim

:12 - SS316/HF

JOB **032243** Piping Class: 01SA0B30 Rev Α 0 1 2 3

STAINLESS STEEL 304/304L DUAL GRADE Base Material Design code : ASME B 31.3 2016

Nom. Rating : CL150 Facing/Finishing: RF

Corrosion Allow.: 0 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -196 °C to 175 °C

Service: [Cryogenic Service] BOG - Boil Off Gas LIN - Liquid Nitrogen LNG - Liquefied Natural Gas MR - Mixed Refrigerant

Pipe Thickness

NPS 1/2 3/4 Thk.mm 2.77 2.87 14 16 4.78 4.78 10S 10S 
 18
 20
 24

 4.78
 5.54
 6.35

 10S
 10S
 10S
 10 12 4.19 4.57 52 54 12.7 14.27 3.76 6.35 6.35 7.92 9.53 9.53 11.13 11.13 12.7 40S 40S 56 60 14.27 15.88 SCH. 40S 40S 40S 10S 10S 10S 10S 10S 10S

Nipple Thickness

NPS 1/2 3/4 1 1 1/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

52	60 Temp	0. ℃ 1	75			
	Si	ze	Item Description	Ends	Rating/Facing	Material
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PIPE						
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	60	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN	GES				_	
	1/2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A182 F304/304L DUAL GRADE
	26	60	WN FLANGE - ASME-B16.47 series.A	BW	CL150 RF	ASTM A182 F304/304L DUAL GRADE
3	1/2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
3	26	60	WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
5	26	60	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	1/2	1/2	THD FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A182 F304/304L DUAL GRADE
73	1/2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A182 F304/304L DUAL GRADE
	26	60	BLIND FLANGE - ASME-B16.47 series.A		CL150 RF	ASTM A182 F304/304L DUAL GRADE
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
3	2	2	WN REDUCING FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A182 F304/304L DUAL GRADE
34	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 F304/304L DUAL GRADE
SPEC	TACLE	BLIND				
	1/2	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 TP304
	28	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A240 TP304
	36	36	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A240 TP304
	40	40	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A240 TP304
	52	52	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A240 TP304
	60	60	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A240 TP304
3	1/2	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP304
5	1/2	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
FITTIN	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50	60	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50	60	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	48	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	50	60	CAP - TB RAC 5064	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	52	60	TEE - TB RAC 5061	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE
GASK	ETS					
	26	60	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - 304 OUT.RING
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
BOLT						
	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 B8 CL.2 + ASTM A194 GR.8
	1 5/8	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660



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/ALV	ES						
	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to		·			
1	1/2	1 1/2	GA-E-60144	Cryo.Gate-Extend.BB-Red.B-Solid wdg-Wldd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
1	2	24	GA-E-60145	Cryo.Gate-Extend.BB-FB-Flex wdg-Thd seat - API600	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
1	26	30	GA-E-67008	Cryo.Gate-Extend.BB-FB-Flex wdg-Thd seat - API600	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
2	26	48	GA-E-60507	Cryog.Butterfly-Flanged-Triple Off Set-Int.seat-	FLGD	CL150 RF	Body: ASTM A351 CF8M
2	50	60	GA-E-60528	Fire safe - API609 Cryog.Butterfly-Flanged-Triple Offset-Int.seat-Fire	FLGD	CL150 RF	Trim: Metal seat - 316 - 316 disc Body: ASTM A351 CF8M
4	1/2	1 1/2	GA-E-60236	safe - <mfr std=""> Cryo.Globe-Extend.BB-Red.B-Thdd seat - API602</mfr>	BW	CL800	Trim: Metal seat - 316 - 316 disc Body: ASTM A182 F316/F316L DUAL GRADE
4	2	12	GA-E-60238	Cryo.Globe-Extend.BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Trim:316/HF Body:ASTM A351 CF8M
	4 /0	4.4/0	0.4 5 00044	O OL LODGO LOGGO TILL A ADIOCO			Trim: 316 / HF
6	1/2	1 1/2	GA-E-60344	Cryo.Check-BB-Red.B-Piston-Thdd seat - API602		CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
6	2	10	GA-E-60345	Cryo.Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
6	12	24	GA-E-60346	Cryo.Check-Flanged-Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
7	2	4	GA-E-60441	Cryo.Ball-Ext.bnt-Split body-Red.B-Float.ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats
7	6	6	GA-E-60441	Cryo.Ball-Ext.bnt-Split body-Red.B-Float.ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats
7	8	24	GA-E-60442	Cryo.Ball-Ext.bnt-Split body-Red.B-Trun.ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats
8	1/2	1 1/2	GA-E-60440	Cryo.Ball-Ext.bnt-Split body-FB-Floating ball - API608	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Crio Soft seal-316 trim - KEL.F seats
8	2	3	GA-E-67147	Cryo.Ball-Ext.bnt-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: Crio Soft seal-316 trim - KEL.F seats
8	6	24	GA-E-67148	Cryo.Ball-Ext.bnt-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats
11	1	1	GA-E-67349	Cryo.Gate-Extend.BB-Red.B-Solid wdg-Wldd seat	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
19	1/2	1 1/2	GA-E-67041	Cryo.Gate-Extend.BB-Red.B-Solid wdg-Wldd seat	BW/TH	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
62	2	10	GA-E-60701	Cryo.Check-Flanged-Dual plate-Wldd seat - API594	FLGD	CL150 RF	Trim:316/HF Body: ASTM A351 CF8M
73	2	2	GA-E-60450	Cryo.Ball-Ext.bnt-Split body-Red.B-Float.ball -	FLGD	CL300 RF	Trim :316 / HF Body: ASTM A351 CF8M
73	3	3	GA-E-60450	API6D Cryo.Ball-Ext.bnt-Split body-Red.B-Float.ball -	FLGD	CL300 RF	Trim : Crio Soft seal-316 trim - KEL.F seats Body: ASTM A351 CF8M
83	1/2	1 1/2	GA-E-60449	API6D Cryo.Ball-Ext.bnt-Split body-FB-Floating ball -	FLGD	CL300 RF	Trim : Crio Soft seal-316 trim - KEL.F seats Body: ASTM A182 F316/F316L DUAL GRADE
140	4	4	GA-E-67359	API608 Cryo.Gate-Extend.BB-FB-Flex wdg-Thd seat -	FLGD	CL150 RF	Trim: Crio Soft seal-316 trim - KEL.F seats Body: ASTM A351 CF8M
240	36	36	GA-E-60542	API600- Interlock System Cryog.Butterfly-Flanged-Triple Off Set-Int.seat-	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A351 CF8M
241	60	60	GA-E-60545	Fire safe - API609 - Interlock System  Cryog.Butterfly-Interlock System-Limit Switch-	EI GD	CL150 RF	Trim : Metal seat - 316 - 316 disc Body: ASTM A351 CF8M
241	00	00	GA-E-00343	Flanged-Triple Offset-Int.seat-Fire safe - <mfr std=""></mfr>	LGD	OLIJU KI	Trim : Metal seat - 316 - 316 disc
840	8	12	GA-E-67611	Cryo.Ball-Ext.bnt-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats
920	24	24	GA-E-69084	Cryog.Butterfly-Flanged-Triple Off Set-Int.seat- Fire safe - API609	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: Metal seat - 316 - 316 disc
920	30	30	GA-E-69083	Cryog.Butterfly-Flanged-Triple Off Set-Int.seat-	FLGD	CL150 RF	Body: ASTM A351 CF8M
		- 50		Fire safe - API609			Trim : Metal seat - 316 - 316 disc

STRA	STRAINERS											
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material					
1	36	36	GA-E-60633	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen:316 - CLOTH - MESH 3					

BRANCH TABLES



		ов <b>2243</b>						
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26	3	W	W	W	W	W	W	W	W	W	Ρ	Т	Т	Т	Т	Т	Т	Т															
28	3	W	W	W	W	W	W	W	W	W	Ρ	Т	Т	Т	Т	Т	Т	Т	Т														
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40	)	W	W	W	W	W	W	W	W	W	Р	Р	Р	P	1	Ţ	1	Ţ	1	1	Ţ	1	1	_									
42	2	W	W	W	W	W	W	W	W	W	Р	P	Р	Ī	ı	Ī	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	_								
48 52	5	W	W	W	W	W	W	W	W	W	Р	P	P	P	Ρ	P	Τ.	T4	I T4	I T4	Τ.	I T4	I T4	T4	T <sub>4</sub>	т.							
54		W W	W	W	W	W	W	۷۷	VV	VV	P	P	P	P	P	P	11	T4	T 1	T 1	T4	T4	T4	T 1	T 1	T1	т.						
56		W	W	W	W	W	W	VV \//	۷۷	VV VA/	P	P	P	P	P	P	P	T1	T1	1 I	T1	T1	T1	T1	11 T1	1 I	T1	T1					
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### GENERAL NOTES

1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
2) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
3) Specified Thickness are suitable to withstand Full Vacuum condition.



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Pipi	ng (	Class	s:	0	15/	A0E	860	
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Base Material : STAINLESS STEEL 304/304L DUAL GRADE Design code : ASME B 31.3 2016

Nom. Rating : CL150 :NO **PWHT** Facing/Finishing: RF Valve Trim :12 - SS316/HF

Corrosion Allow. : 0 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -196 °C to 210 °C

Service: [AIV] BCF - Dry Liquid Blowdown Flare CF - Dry (Cold) Flare FL - Flare MR - Mixed Refrigerant NG - Natural Gas

Pipe Thickness

14 16 4.78 4.78 10S 10S 
 18
 20
 24

 4.78
 5.54
 6.35

 10S
 10S
 10S
 NPS 1/2 3/4 Thk.mm 2.77 2.87 1 1/2 2 3 4 3.68 3.91 3.05 3.05 56 4.19 4.57 7.92 9.53 11.13 12.7 3.76 6.35 7.92 14.27 15.88 15.88 17.48 40S 40S 40S 66 68 72 17.48 17.48 19.05 SCH. 40S 40S 10S 10S 10S 10S 10S 10S 10S

Nipple Thickness

NPS 1/2 3/4 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 18.96 15.86 14.13 13.1 ASME B16.5/ASME B16.47 112 · 48 Temp. °C 37.78 93.33 148.9 204.4 Material Group 2.1 NPS Press. bar 10 52 · 64 Temp. °C 210

NPS Press. bar 10.4 66 - 72 Temp. °C 70

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opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	6	PIPE	вw		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	72	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN	IGES					
	1/2	24	WN FLANGE - ASME-B16.5	вw	CL150 RF	ASTM A182 F304/304L DUAL GRADE
	26	60	WN FLANGE - ASME-B16.47 series.A	вW	CL150 RF	ASTM A182 F304/304L DUAL GRADE
3	1/2	24	WN FLANGE - ASME-B16.5	вW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
3	26	60	WN FLANGE - ASME-B16.47 series.A	вW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
5	26	60	WN FLANGE - ASME-B16.47 series.A	вW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	1/2	1/2	THD FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A182 F304/304L DUAL GRADE
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
73	1/2	6	WN FLANGE - ASME-B16.5	вW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
995	1/2	24	WN FLANGE - ASME-B16.5	вW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A182 F304/304L DUAL GRADE
	26	60	BLIND FLANGE - ASME-B16.47 series.A		CL150 RF	ASTM A182 F304/304L DUAL GRADE
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A182 F304/304L DUAL GRADE
SPEC	TACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A240 TP304
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 TP304
	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A240 TP304
	52	52	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A240 TP304
	56	56	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A240 TP304
2	1/2	14	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 TP304
3	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A240 TP304
FITTI	NGS					
	1/2	2	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50	72	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50	72	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	48	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	50	72	CAP - TB RAC 5064	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	52	72	TEE - TB RAC 5061	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
0.4.6:	2	36	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW		ASTM A182 F304/304L DUAL GRADE
GASI	KETS			1	1	
	30	60	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
73	1/2	6	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304



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BOLT	S					
	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 B8 CL.2 + ASTM A194 GR.8
	1 5/8	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660
995	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660 - PTFE COATED

VALV	-				,		
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60142	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
1	2	24	GA-E-60143	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
2	26	48	GA-E-60505	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - API609	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Metal seat - 316 - 316 disc
2	50	56	GA-E-60522	Special Butterfly-Flanged-Triple Off Set-Int.seat- Fire safe - <mfr std=""></mfr>	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Metal seat - 316 - 316 disc
4	1/2	1 1/2	GA-E-60234	Globe-BB-Red BThdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
4	2	12	GA-E-60235	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
5	1/2	1 1/2	GA-E-67204	Globe-BB-Red.B-Needle-Thdd seat - ASME- B16.34	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
6	1/2	1 1/2	GA-E-60341	Check-BB-Red.B-Piston-Thdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim :316 / HF
6	2	10	GA-E-60342	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
6	12	24	GA-E-60343	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
7	2	6	GA-E-60438	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M
7	8	24	GA-E-60439	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Trim: Soft seat-316 trim - RPTFE seats Body: ASTM A351 CF8M
8	1/2	1 1/2	GA-E-60437	Ball-End entry -FB-Float.ball -Frgd body - API608		CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A182 F316/F316L DUAL GRADE
8	6	24	GA-E-60784	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A351 CF8M
10	1/2	1 1/2	GA-E-67026	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW/TH	CL800	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A182 F316/F316L DUAL GRADE
13	2	24	GA-E-60150	Gate-BB-FB-Flex wdg-Thdd seat - API600	DF FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A351 CF8M
14	1/2	1 1/2	GA-E-60140	Gate-Stem Extension-BB-Red.B-Solid wdg-	BW	CL800	Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE
14	2	24	GA-E-67002		FLGD	CL150 RF	Trim:316 / HF Body:ASTM A351 CF8M
62	2	10	GA-E-60700	- API600 Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL150 RF	Trim:316/HF Body: ASTM A351 CF8M
80	1/2	1 1/2	GA-E-67129	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL150 RF	Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE
82	1/2	1 1/2	GA-E-67130	Frgd body - API608 Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A182 F316/F316L DUAL GRADE
82	6	24	GA-E-60785	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A351 CF8M
89	1/2	1 1/2	GA-E-60476	Ball-End entry -FB-Float.ball -Frgd body+nipples -		CL800	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A182 F316/F316L DUAL GRADE
101	1/2	1 1/2	GA-E-60593	API608 Gate-Stem Extension-BB-Red.B-Solid wdg-	DF BW	CL800	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A182 F316/F316L DUAL GRADE
101	2	24	GA-E-60590	Exp.seat - API602 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Trim:316 / HF Body: ASTM A351 CF8M
103	2	2	GA-E-60594	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Trim :316 / HF Body: ASTM A351 CF8M Trim :316 / HF
140	8	8	GA-E-67358	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL150 RF	Body: ASTM A351 CF8M
250	56	56	GA-E-60534	Special Butterfly-Ext. Stem (2100mm)-Flanged-	FLGD	CL150 RF	Trim:316 / HF Body: ASTM A351 CF8M
401	2	12	GA-E-60280	Triple Off Set-Int.seat-Fire safe - <mfr std=""> Globe-Stem Extension-BB-Disk-Thdd seat - API 623</mfr>	FLGD	CL150 RF	Trim : Metal seat - 316 - 316 disc Body: ASTM A351 CF8M Trim : 316 / HF
701	6	6	GA-E-67166	Ball-Stem Extension-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
701	24	24	GA-E-67254	Ball-Stem Extension-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M
801	1/2	1 1/2	GA-E-67131	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - RPTFE seats
801	6	24	GA-E-67110	Ball-Stem Extension-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M
824	6	20	GA-E-67608	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A351 CF8M Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
850	12	12	GA-E-67264	Ball-Ext. Stem (1300mm)-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Inm::Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A351 CF8M Trim::Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
853	12	12	GA-E-67644	Ball-Ext. Stem (1300mm)-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	I nm : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A351 CF8M Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.



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STR	AINERS						
pos.	from	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	6	6	GA-E-60629	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A403 WP304S/304LS DUAL GRADE - SMLS Screen: 316 - CLOTH - MESH 3

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BRANCH TAI	DLLS																												
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48					SW SW					SW	SW	SW	÷	÷	÷	÷	÷	т											
52					SW SW							SW	T1	T1	T1	T1	T1	T1	T1										
54					SW SW								SW	Ť1	Ť1	Ť1	Ť1	Ť1	Ť1	T1									
56					SW SW									T1	T1	T1	T1	T1	T1	T1	T1								
60					SW SW										SW	T1	T1	T1	T1	T1	T1	T1							
64					SW SW											SW	T1	T1	T1	T1	T1	T1	T1						
66					SW SW												T1	T1	T1	T1	T1	T1	T1	T1					
68					SW SW													T1	T1	T1	T1	T1	T1	T1	T1				
72					SW SW													T1	T1	T1	T1	T1	T1	T1	T1				
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Legenda																													
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PP	PIPE TO PIPE WITH FULL ENCIRCLEMENT SLEEVE:TS-COR-ENG-PIPMT-012-E

### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  4) Specified Thickness are suitable to withstand Full Vacuum condition.
  5) This piping class is created for lines subjected to Acoustic Induced Vibration.



:NO

**PWHT** 

		ов <b>2243</b>						
Pipi	ng (	Class	s:	0	15/	A0E	861	
						Rev.		
Sh.	1	of	2	Α	0			

Design code : ASME B 31.3 2016 Base Material : STAINLESS STEEL 304/304L DUAL GRADE

Nom. Rating : CL150

Facing/Finishing: RF Valve Trim :12 - SS316/HF Corrosion Allow. : 0 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -196 °C to 175 °C

Service: [AIV] [Cryogenic Service] BOG - Boil Off Gas LIN - Liquid Nitrogen LNG - Liquefied Natural Gas MR - Mixed Refrigerant

Pipe Thickness

NPS 1/2 3/4 Thk.mm 2.77 2.87 1 11/2 2 3 4 3.38 3.68 3.91 3.05 3.05 14 16 4.78 4.78 18 20 4.78 5.54 10S 10S 10 4.19 3.76 SCH. 40S 40S 40S 40S 40S 10S 10S 10S 10S 10S 10S 10S 10S 10S 10S

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 18.96 15.86 14.13 ASME B16.5 1/2 · 24 Temp. °C 37.78 93.33 148.9 Material Group 2.1

- 1/2	2-7		1			
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
i	8	60	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN	• 1	00	, <u>-</u>	,544	_	NOTHINGGO IT GOTH TO THE GET BONE GIVINE ET W
	1/2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A182 F304/304L DUAL GRADE
3	1/2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	1/2	1/2	THD FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A182 F304/304L DUAL GRADE
73	1/2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
İ	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A182 F304/304L DUAL GRADE
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
3	2	2	WN REDUCING FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A182 F304/304L DUAL GRADE
34	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 F304/304L DUAL GRADE
SPEC	TACLE	BLIND		<u> </u>		
	1/2	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 TP304
3	1/2	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP304
5	1/2	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	24	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	24	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	24	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	2	8	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW		ASTM A182 F304/304L DUAL GRADE
GASK						
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - 304 OUT.RING
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20	1	1	AISI 304
BOLT		4.4/6	OT DOLT O MUTO. AMOLTINAL TO DUIL 5000			ACTIVACCO DO CUES ACTIVACA CO O
	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 B8 CL.2 + ASTM A194 GR.8
$\vdash$	1 5/8	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60144	Cryo.Gate-Extend.BB-Red.B-Solid wdg-Wldd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
1	2	24	GA-E-60145	Cryo.Gate-Extend.BB-FB-Flex wdg-Thd seat - API600	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
4	1/2	1 1/2	GA-E-60236	Cryo.Globe-Extend.BB-Red.B-Thdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
4	2	12	GA-E-60238	Cryo.Globe-Extend.BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
6	1/2	1 1/2	GA-E-60344	Cryo.Check-BB-Red.B-Piston-Thdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
6	2	10	GA-E-60345	Cryo.Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim :316 / HF
6	12	24	GA-E-60346	Cryo.Check-Flanged-Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
7	2	4	GA-E-60441	Cryo.Ball-Ext.bnt-Split body-Red.B-Float.ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats
7	6	6	GA-E-60441	Cryo.Ball-Ext.bnt-Split body-Red.B-Float.ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats



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Pipi	ng C	Class	s:	0	15	A0E	861	
						Rev.		
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ALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
7	8	24	GA-E-60442	Cryo.Ball-Ext.bnt-Split body-Red.B-Trun.ball - API6D	FLGD		Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats
8	1/2	1 1/2	GA-E-60440	Cryo.Ball-Ext.bnt-Split body-FB-Floating ball - API608	FLGD		Body: ASTM A182 F316/F316L DUAL GRADE Trim : Crio Soft seal-316 trim - KEL.F seats
8	2	3	GA-E-67147	Cryo.Ball-Ext.bnt-Split body-FB-Floating ball - API6D	FLGD		Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats
8	6	24	GA-E-67148	Cryo.Ball-Ext.bnt-Split body-FB-Trunnion ball - API6D	FLGD		Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats

### **BRANCH TABLES**

RunSize															9	) Deg	rees						
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3/4	÷	т																					
3/4	÷	Ť	Т																				
				-																			
1 1/2			Т		_																		
2					<u> </u>	_																	
3					+	<u> </u>	_																
4					SW	<u> </u>	<u>+</u>	_															
6 8						SW	<u>+</u>	<u>+</u>	_														
						SW		<u> </u>	<u>'</u>	_													
10 12							SW	<u>+</u>	<u> </u>	<u>+</u>	_												
14							SW		<u>+</u>	÷	÷	т											
16							SW		÷	÷	÷	÷	т										
18							SW		<u> </u>	÷	÷	÷	÷	т									
20							SW			÷	÷	÷	÷	÷	т								
20 24									SW	÷	÷	÷	÷	÷	÷	т							
	4/0	2/4	4							10	10	1 4 4	10	10	20	24							
BranchSize	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24							
egenda																							
SW SPE	CIAL	SW	EEPC	DLET	- <m< td=""><td>FR S</td><td>Std&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></m<>	FR S	Std>																
T TEE	- AS	ME-E	316.9																				

### GENERAL NOTES

- Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
   NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
   Specified Thickness are suitable to withstand Full Vacuum condition.



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Pipi	ng (	Class	s:	0	15	A0S	01	
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Base Material : STAINLESS STEEL 304/304L DUAL GRADE :ASME B 31.3 2016 Design code

Nom. Rating : CL150 **PWHT** Facing/Finishing : RF Valve Trim :12 - SS316/HF

Corrosion Allow. : 0 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -101 °C to 230 °C

ervice: AG - Acid Gas BD - Blowdown CH - Chemical CI - Chemical Injection DMW - Demineralized Water DR - Potentially Contaminated Open Drain HV - Hydrocarbon Vapour IA - Instrument Air ME - Methanol N - Nitrogen NG - Natural Gas PA - Plant Air PC - Process Condensate PG - Process Gas / Purge Gas PRW - Process Water V - Vent WF -

Pipe Thickness												
NPS   1/2   3/4   1   1 1/2   2   3   4   6   8   10   12   14   16   18   20   24   30   36   42   48   52	56											
Thk.mm   2.77   2.87   3.38   3.68   3.91   3.05   3.05   3.4   3.76   4.19   4.57   4.78   4.78   4.78   5.54   6.35   7.92   9.53   11.13   12.7   12.7	15.88											
SCH.   40S   40S   40S   40S   40S   10S   10S   10S   10S   10S   10S   10S   10S   10S   10S   10S   10S   10S   10S												

Nipple Thickness

| NPS | 1/2 | 3/4 | 1 | 1 1/2 | 2 | Thk.mm | 3.73 | 3.91 | 4.55 | 5.08 | 5.54 | SCH. | 80S | 80S | 80S | 80S | RESSURE - TEMPERATURE Ratings

 
 NPS
 Press. bar
 18.96
 15.86
 14.13
 13.1
 ASME B16.5/ASME B16.47

 1/2 · 48
 Temp. °C
 37.78
 93.33
 148.9
 204.4
 Material Group 2.1

 NPS
 Press. bar
 10
 52 - 56 Temp. °C 220

32	36					
		ize i to	Item Description	Ends	Rating/Facing	Material
opt.	from	το				
PIPE	1.0	١ .	loine	lova		ACTIVACAGE TRACALEROSAL BUAN CRARE. CAN C
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
FLAN	8 IGES	56	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	AOTAL A400 FOO 4/0041 PUAL OP APE
	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A182 F304/304L DUAL GRADE
	26	56	WN FLANGE - ASME-B16.5 WN FLANGE - ASME-B16.47 series.A	BW	CL150 RF	ASTM A182 F304/304L DUAL GRADE
3	26 1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL150 RF	ASTM A482 F304/304L DUAL GRADE
3	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE ASTM A182 F304/304L DUAL GRADE
3	26	56	WN FLANGE - ASME-B16.5 WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A182 F304/304L DUAL GRADE ASTM A182 F304/304L DUAL GRADE
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
12	1/2	24	WN FLANGE - ASME-B16.5	BW	CL000 RF	ASTM A182 F304/304L DUAL GRADE
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A162 F304/304L DUAL GRADE ASTM A182 F304/304L DUAL GRADE
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL300 RJ (F)	ASTM A182 F304/304L DUAL GRADE  ASTM A182 F304/304L DUAL GRADE
73	2	24	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE  ASTM A182 F304/304L DUAL GRADE
73	36	36	SPECIAL WN FLANGE - <mfr std=""> GA-E-060018</mfr>	BW	` '	ASTM A182 F304/304L DUAL GRADE
,,,	1/2	24	BLIND FLANGE - ASME-B16.5		CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE ASTM A182 F304/304L DUAL GRADE
	26	56	BLIND FLANGE - ASME-B16.47 series.A		CL150 RF	ASTM A182 F304/304L DUAL GRADE
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 F304/304L DUAL GRADE
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A182 F304/304L DUAL GRADE
	TACLE	-	THIRD INED. I EARGE - AGME-D10.0	וטווון	OL 130 IKI	ASTINIATOZ I 304/304L DOAL GIVADE
00	1/2	14	SPECTACLE BLIND - ASME-B16.48	1	CL150 RF	ASTM A240 TP304
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 TP304
	30	36	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>			ASTM A240 TP304
	52	52	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A240 TP304
2	1/2	14	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 TP304
3	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A240 TP304
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP304
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50	56	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
5	1	1	SPECIAL LARGE RADIUS ELBOW - <mfr std=""></mfr>	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
5	2	2	BEND - WITH R=5 DN - TB RAC 5023	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50	56	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	48	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	50	56	CAP - TB RAC 5064	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	COUPLING - THD ENDS - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	1/2	2	NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD



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Pipi	ng C	Class	s:	0	15	A0S	01		
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	s	ize	Item Description	Ends	Rating/Facing	Material						
opt.	from	to										
ITTI	NGS			·								
	52   56   TEE - TB RAC 5061   BW   ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD											
	2	8	WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE						
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A182 F304/304L DUAL GRADE						
MISC	ELLANI	EOUS										
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)						
SASK	KETS											
12	1/2	24	FLAT NON MET. GASKET - ASME-B16.21			ARAMIDIC FIBER (13%)						
	26	56	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE						
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING						
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304						
73	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304						
73	36	36	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304						
BOLT	ΓS											
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED						

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60146	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
1	2	24	GA-E-60143	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
1	30	30	GA-E-67348	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
2	36	36	GA-E-60505	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - API609	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Metal seat - 316 - 316 disc
2	52	52	GA-E-60522	Special Butterfly-Flanged-Triple Off Set-Int.seat- Fire safe - <mfr std=""></mfr>	FLGD	CL150 RF	Body: ASTM A351 CF8M  Trim: Metal seat - 316 - 316 disc
4	1/2	1 1/2	GA-E-60239	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
4	2	12	GA-E-60235	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
5	1/2	1 1/2	GA-E-67202	Globe-BB-Red.B-Needle-Thdd seat - ASME-B16.34	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
6	1/2	1 1/2	GA-E-60347	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
6	2	10	GA-E-60342	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim :316 / HF
6	12	24	GA-E-60343	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M
7	2	6	GA-E-60438	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
7	8	24	GA-E-60439	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60437	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE  Trim: Soft seat-316 trim - RPTFE seats
8	2	4	GA-E-60783	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M  Trim : Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-60784	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M  Trim: Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60178	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
11	1/2	1 1/2	GA-E-67022	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE
11	2	10	GA-E-60195	Gate-BB-FB-Flex wdg-Thdd seat - API600	BW	CL150	Body: ASTM A351 CF8M Trim: 316 / HF
13	2	24	GA-E-60150	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim: 316 / HF
14	2	24	GA-E-67002	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim :316 / HF
43	2	2	GA-E-60243	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim :316 / HF
62	1	1	GA-E-60723	Check-BB-Red.B-Swing-Thdd seat - API602	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim :316 / HF
62	2	3	GA-E-60700	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim :316 / HF
62	20	20	GA-E-60741	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
82	6	24	GA-E-60785	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M  Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60475	Ball-End entry -FB-Float.ball -Frgd body+nipples -API608	PE/THD	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67016	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
101	2	3	GA-E-60590		FLGD	CL150 RF	Body: ASTM A351 CF8M Trim :316 / HF
103	2	2	GA-E-60594	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
110	1/2	1 1/2	GA-E-67325	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
130	1/2	1 1/2	GA-E-67083	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF



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ALV	ES						
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140	2	12	GA-E-67358		FLGD	CL150 RF	Body: ASTM A351 CF8M
				Interlock System			Trim: 316 / HF
144	3	3	GA-E-67360	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL150 RF	Body: ASTM A351 CF8M
160	3	8	GA-E-67310	,	FLGD	CL150 RF	Body: ASTM A351 CF8M
	ŭ		0,12 0,010	seat - API600	LOD	OL 100 IVI	Trim: 316 / HF
241	52	52	GA-E-60546	Special Butterfly-Interlock System-Limit	FLGD	CL150 RF	Body: ASTM A351 CF8M
				Switch-Flanged-Triple Off Set-Int.seat-Fire safe			Trim: Metal seat - 316 - 316 disc
				- <mfr std=""></mfr>			
801	1/2	1 1/2	GA-E-67131	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE
				Frgd body - API608			Trim : Soft seat-316 trim - RPTFE seats
810	4	4	GA-E-67270	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M
							Trim : Soft seat-316 trim - RPTFE seats
824	4	4	GA-E-67612	Ball-Split body-FB-Floating ball - API6D - Interlock	FLGD	CL150 RF	Body: ASTM A351 CF8M
				System			Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
824	8	16	GA-E-67608	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL150 RF	Body: ASTM A351 CF8M
				Interlock System			Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
840	2	2	GA-E-67613	Ball-Split body-FB-Floating ball - API6D - Interlock	FLGD	CL150 RF	Body: ASTM A351 CF8M
				System			Trim : Soft seat-316 trim - RPTFE seats
840	6	6	GA-E-67609	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL150 RF	Body: ASTM A351 CF8M
				Interlock System			Trim : Soft seat-316 trim - RPTFE seats
840	14	14	GA-E-67609		FLGD	CL150 RF	Body: ASTM A351 CF8M
				Interlock System			Trim : Soft seat-316 trim - RPTFE seats
907	2	6	GA-E-69007	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M
							Trim : Soft seat-316 trim - RPTFE seats
973	2	6	GA-E-69047	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A351 CF8M
							Trim : Soft seat-316 trim - PTFE seats

STRA	RAINERS													
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material							
1	3	6	GA-E-60629	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body: ASTM A403 WP304S/304LS DUAL GRADE - SMLS Screen: 316 - CLOTH - MESH 3							

### **BRANCH TABLES**

RunS	ize															9	0 De	gree	5						
RunS 1/2 3/3 11/2 11/2 6 6 8 11/2 11/2 12 14 11/2 22 23 33 34 44 44	2 4 4 1 1 2 2 2 2 3 3 3 4 4 5 5 5 6 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	$A \mathrel{A} A A A S S S S S S S S$	A  A  A  G	AATSSSSSSSSSSSSSSSS	ATSSSSSSSSSSSSSSSSSS	T W W W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	T T P P T T P P P P	T T P T T T P P P P	T T T T T P P P P	T T T T T P T P	T T T T P T P	T T T P T P	T T P T T	T T T T	T T T	T	Т				
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Branch			3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	3 5	52	56	
Legend	la																								
A	TEE	- SV	V EN	DS -	ASM	E-B1	6.11																		
P								ING F	PAD-	TS-C	OR-E	NG-F	PIPM	Γ-012	:-E										
S		CKOL																							
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### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  4) Specified Thickness are suitable to withstand Full Vacuum condition.



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Base Material : STAINLESS STEEL 304/304L DUAL GRADE Design code : ASME B 31.3 2016

Nom. Rating : CL150 **PWHT** :NO Facing/Finishing: RF Valve Trim :12 - SS316/HF

Corrosion Allow.: 0 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -5 °C to 180 °C

Service: [Amine Service] AD - Amine Drain AG - Acid Gas AL - Amine Lean AR - Amine Rich DMW - Demineralized Water PRW - Process Water

Pipe Thickness

18 20 4.78 5.54 10S 10S NPS 1/2 3/4 1 11/2 2 3 4 Thk.mm 2.77 2.87 3.38 3.68 3.91 3.05 3.05 14 16 4.78 4.78 10 12 4.19 4.57 3.76 SCH. 40S 40S 40S 40S 40S 10S 10S 10S 10S 10S 10S 10S 10S 10S 10S

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 18.96 15.86 14.13 ASME B16.5 1/2 · 24 Temp. °C 37.78 93.33 148.9 Material Group 2.1

	6:	70	Item Description	Ends	Rating/Facing	Matorial
pt.	from	ze to	item Description	Elius	Rating/Facing	Material
Έ						
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	24	PIPE	BW		ASTM A312 TF304/TF304L DUAL GRADE - SMLS ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
ΔΝ	IGES	24	PIPE	DVV		ASTM A358 TP304/TP304L CL.T DUAL GRADE - EFW
•	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A182 F304/304L DUAL GRADE
	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	
						ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
3	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A182 F304/304L DUAL GRADE
	1/2 24 BLIND FLANGE - ASME-B16.5			CL300 RF	ASTM A182 F304/304L DUAL GRADE	
	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
	2	2	SW REDUCING FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
1	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A182 F304/304L DUAL GRADE
ŀ	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 F304/304L DUAL GRADE
EC	CTACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A240 TP304
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 TP304
3	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A240 TP304
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP304
TI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	24	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
	2	24	CAP - ASME-B16.9	BW	0000	ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/304L DUAL GRADE - SMLS
	1/2	2	NIPPLE - THDD/THDD - ASME-B36.10	THDM		
						ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	24	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	2	8	WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE
	3	8	SPECIAL LATROLET - <mfr std=""></mfr>	BW		ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	2	LATROLET - SW END - MSS-SP97	SW\BW	3000	ASTM A182 F304/304L DUAL GRADE
C	ELLANE				_	
_	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
SI	KETS		1		1	
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
3	3	24	OCTAGONAL RJ GASKET - ASME-B16.20		<u> </u>	AISI 304
L.	TS					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED



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os.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60146	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim :316 / HF
1	2	24	GA-E-60143	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A351 CF8M
4	1/2	1 1/2	GA-E-60239	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
4	2	12	GA-E-60235	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A351 CF8M
5	1/2	1 1/2	GA-E-67202	Globe-BB-Red.B-Needle-Thdd seat - ASME- B16.34	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
6	1/2	1 1/2	GA-E-60347	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
6	2	10	GA-E-60342	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
6	12	24	GA-E-60343	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
7	6	6	GA-E-60444	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
7	8	24	GA-E-60445	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60443	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-67276	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60178	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
13	2	24	GA-E-60150	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
14	2	24	GA-E-67002	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
15	2	2	GA-E-60154	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
44	2	2	GA-E-60294	Globe-Dead Man Quick Opening Valve-BB-Disk- Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
82	6	24	GA-E-60785	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60475	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	F		Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67016	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW		Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
101	2	2	GA-E-60590	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600		CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
103	2	2	GA-E-60594	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600		CL300 RF	Body: ASTM A351 CF8M Trim: 316 / HF
113	1/2	1 1/2	GA-E-60597	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
130	1/2	1 1/2	GA-E-67083	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF		Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
744	2	2	GA-E-67237	Ball-Dead Man Quick Opening Valve-Split body- Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
801	1/2	1 1/2	GA-E-67132	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim: Soft seat-316 trim - RPTFE seats
840	6	8	GA-E-67609	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	10	12	GA-E-60604	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD Screen:316 - CLOTH - MESH 3

### BRANCH TABLES



90 Degrees

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Runs	ıze																											
1/. 3/- 1 1/.	2 4 1 1 2 2 3 3 4 6 6 8 0 2 4 4 6 8 0 7 4 4 7 8 7 8 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9	A A A A S S S S S S S S S S S S S S S S	A A A S S S S S S S S S S S S S S S S S	A A T S S S S S S S S S S S 1	A T S S S S S S S S S S S S S S S S S S	T W W W W W W W W W W 2	T T W W W W W W W W 3	T T W W W W W W	T T W W W W W W	T T W W W W W	T T P T T P	T T P T T T T	T T T T T T	T T T T 16	T T T 18	T T 20	T 2	- 4										
Α	TEE	- SW	END	S - <i>i</i>	ASME	E-B1	6.11																					П
Р	PIPE							NG F	PAD-	TS-C	OR-E	NG-F	PIPM	Γ-012	-E													٦
S	SOC	KOLE	ET - S	SW E	ND	- MS	S-SF	97																				7
T	TEE	- ASI	иЕ-В	16.9																								٦
W	WEL	DOL	ET - 1	иss	-SP9	7																						
	Size						_									4	5 de	egrees										
	3	Ŀ	Ŀ	L	Ŀ	P		F																				
1	4	-	-						PF																			
	6	Ĺ	ī.	ī	Ė					PF																		
	8	ī	ī	ī	ī	i				PP	PF																	
	Λ	-	-	-	-			- :	:	-																		

10		L	L	L	L	L	LS	LS	LS	PF	PF							
12		L	L	L	L	L	LS	LS	LS	LS	PF	PF						
14		L	L	L	L	L	LS	LS	LS	LS	PP	PF	PF					
16		L	L	L	L	L	LS	LS	LS	LS	PP	PP	PF	PF				
18		L	L	L	L	L	LS	LS	LS	LS	PP	PP	PF	PF	PF			
20		L	L	L	L	L	LS	LS	LS	LS	PP	PP	PP	PF	PF	PF		
24		L	L	L	L	L	LS	LS	LS	LS	PP	PP	PP	PP	PP	PF	PF	
BranchSi	ize 1	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	
Legenda																		
L	LATR	OLE.	T - S	W EN	ID - M	1SS-S	SP97											
LB I	LATR	OLE.	T - B	W EN	ND - N	ISS-S	SP97											
LS :	SPECI	IAL L	ATR	OLE	T - <n< td=""><td>MFR</td><td>Std&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><th></th><th></th></n<>	MFR	Std>											
PF I	PF PIPE TO PIPE.FULL ENCIR PLT.TS-COR-ENG-PIPMT-012-E																	
PP I	PIPE 1	го Р	IPE.F	REINI	F PLT	. TS	-COR	-ENG	-PIPI	MT-01	2-E							

### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).

  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.

  4) Specified Thickness are suitable to withstand Full Vacuum condition.



		ов <b>2243</b>						
Pipi	ng (	Class	s:	0	15	A0S	60	
						Rev.		
Sh.	1	of	3	Α	0			

Base Material : STAINLESS STEEL 304/304L DUAL GRADE :ASME B 31.3 2016 Design code

Nom. Rating : CL150 **PWHT** Facing/Finishing: RF Valve Trim :12 - SS316/HF

Corrosion Allow. : 0 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -101 °C to 230 °C

Service: [AIV] AG - Acid Gas BD - Blowdown CH - Chemical CI - Chemical Injection DMW - Demineralized Water DR - Potentially Contaminated Open Drain FG - Fuel Gas HV - Hydrocarbon Vapour IA - Instrument Air ME - Methanol N - Nitrogen NG - Natural Gas PA - Plant Air PC - Process Condensate PG - Process Gas / Purge Gas PRW -

Process Water V - Vent WF - Wet (Warm) Flare

 
 1/2
 3/4
 1
 1 1/2

 2.77
 2.87
 3.38
 3.68

 40S
 40S
 40S
 40S
 8 10 3.76 4.19 10S 10S 14 4.78 10S 16 4.78 10S 18 4.78 10S NPS Thk.mm 3.91 40S 3.05 3.05 10S 10S 4.57 10S 3.4 5.54 6.35 7.92 9.53 11.13 12.7 12.7 15.88 10S SCH. 10S 10S 10S

Nipple Thickness

Pipe Thickness

| NPS | 1/2 | 3/4 | 1 | 1 1/2 | 2 | 2 | 2 | 2 | 2 | 3/4 | 4.55 | 5.08 | 5.5 | SCH. | 80S | 80S | 80S | 80S | 80S | 80S | RESSURE - TEMPERATURE Ratings 5.54 80S

NPS Press, bar 18.96 15.86 14.13 13.1 ASME B16.5/ASME B16.47 1/2 · 48 Temp. °C 37.78 93.33 148.9 204.4 Material Group 2.1

Press. bar 10 52 - 56 Temp. °C 220

32	36   1011					
4	Si from	ize ⊢ to	Item Description	Ends	Rating/Facing	Material
opt.	Irom	το				
PIPE				,		
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	56	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN	IGES					
	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL150 RF	ASTM A182 F304/304L DUAL GRADE
	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A182 F304/304L DUAL GRADE
	26	56	WN FLANGE - ASME-B16.47 series.A	BW	CL150 RF	ASTM A182 F304/304L DUAL GRADE
3	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
3	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
3	26	56	WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
73	2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A182 F304/304L DUAL GRADE
	26	56	BLIND FLANGE - ASME-B16.47 series.A		CL150 RF	ASTM A182 F304/304L DUAL GRADE
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 F304/304L DUAL GRADE
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A182 F304/304L DUAL GRADE
SPEC	TACLE	BLIND			·	
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A240 TP304
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 TP304
	52	52	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A240 TP304
2	1/2	14	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 TP304
3	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A240 TP304
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP304
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50	56	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50	56	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	48	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	50	56	CAP - TB RAC 5064	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	1/2	2	NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	52	56	TEE - TB RAC 5061	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	2	24	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	3000	ASTM A182 F304/304L DUAL GRADE
MISC	ELLANE	EOUS		-		
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
GASE						
	26	56	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE



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Pipi	ng C	Class	s:	0	15	A0S	60	
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Sh.	2	of	3	Α	0			

opt.	from S	ize i to	Item Description	Ends	Rating/Facing	Material			
<u> </u>									
GAS	KETS								
	1/2	1/2 24 SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B1				304 SS+GRAPH 98% - C.S. OUT.RING			
63	3	3 24 OCTAGONAL RJ GASKET - ASME-B16.20				AISI 304			
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304			
BOL	TS .								
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED			

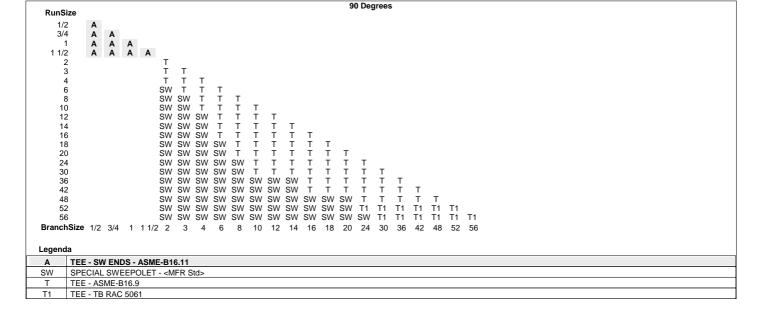
ναι νι	ALVES											
VALVI	Si		Data Sheet	Item Description	Ends	Rating/Facing	Material					
pos.	from	to		·								
1	1/2	1 1/2	GA-E-60146	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF					
1	2	24	GA-E-60143	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A351 CF8M					
2	52	52	GA-E-60522	Special Butterfly-Flanged-Triple Off Set-Int.seat-	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A351 CF8M					
2	52	52	GA-E-60322	Fire safe - <mfr std=""></mfr>	FLGD	CL150 KF	Trim : Metal seat - 316 - 316 disc					
4	1/2	1 1/2	GA-E-60239	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE					
4	2	12	GA-E-60235	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A351 CF8M					
5	1/2	1 1/2	GA-E-67202	Globe-BB-Red.B-Needle-Thdd seat - ASME-	sw	CL800	Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE					
_	4/0	4.4/0	04 5 00047	B16.34	CVA	01.000	Trim: 316 / HF					
6	1/2	1 1/2	GA-E-60347	Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF					
6	2	10	GA-E-60342	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF					
6	12	24	GA-E-60343	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M					
7	2	6	GA-E-60438	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A351 CF8M					
							Trim : Soft seat-316 trim - RPTFE seats					
7	8	24	GA-E-60439	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M					
8	1/2	1 1/2	GA-E-60437	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A182 F316/F316L DUAL GRADE					
	.,_		0712 00 101	2.10 cm., 12 1.10am2am 1.1ga 20a, 7.11.1000	. 202	02.00	Trim : Soft seat-316 trim - RPTFE seats					
8	2	4	GA-E-60783	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M					
8	6	24	GA-E-60784	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A351 CF8M					
	-						Trim : Soft seat-316 trim - RPTFE seats					
10	1/2	1 1/2	GA-E-60178	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE					
11	1/2	1 1/2	GA-E-67022	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE					
							Trim : 316 / HF					
11	2	10	GA-E-60195	Gate-BB-FB-Flex wdg-Thdd seat - API600	BW	CL150	Body: ASTM A351 CF8M Trim : 316 / HF					
13	2	24	GA-E-60150	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A351 CF8M					
43	2	2	GA-E-60243	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A351 CF8M					
73	-		GA-L-00243	Globe-bb-blak-midd acat - Ai 1 025	LGD	CL300 KI	Trim:316 / HF					
62	1	1	GA-E-60723	Check-BB-Red.B-Swing-Thdd seat - API602	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE					
62	2	3	GA-E-60700	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A351 CF8M					
02	-		C/( 2 00/00	Onook Flanged Badi plate Wild scale 71 1004	LOD	OL 130 IXI	Trim: 316 / HF					
82	6	24	GA-E-60785	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M					
89	1/2	1 1/2	GA-E-60475	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THE	CI 800	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A182 F316/F316L DUAL GRADE					
03	1/2	1 1/2	GA-L-00413	API608	F	OLOGO	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.					
101	1/2	1 1/2	GA-E-67016	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE					
101	2	3	GA-E-60590		FLGD	CL150 RF	Trim: 316 / HF Body: ASTM A351 CF8M					
103	2	2	GA-E-60594	- API600 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	ELGD	CL300 RF	Trim: 316 / HF Body: ASTM A351 CF8M					
103	۷		GA-E-00394	- API600	FLGD	CL300 KF	Trim : 316 / HF					
130	1/2	1 1/2	GA-E-67083	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF					
250	50	52	GA-E-60534	Special Butterfly-Ext. Stem (2100mm)-Flanged-	FLGD	CL150 RF	Body: ASTM A351 CF8M					
				Triple Off Set-Int.seat-Fire safe - <mfr std=""></mfr>			Trim : Metal seat - 316 - 316 disc					
801	1/2	1 1/2	GA-E-67131	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - RPTFE seats					
824	8	20	GA-E-67608	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL150 RF	Body: ASTM A351 CF8M					
				Interlock System			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.					

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	3	6	GA-E-60629	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A403 WP304S/304LS DUAL GRADE - SMLS Screen: 316 - CLOTH - MESH 3



		ОВ <b>2243</b>						
Pipi	ng C	Class	S:	O	1S	A0S	60	
						Rev.		
Sh.	3	of	3	Α	0			

#### BRANCH TABLES



#### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  4) Specified Thickness are suitable to withstand Full Vacuum condition.
  5) This piping class is created for lines subjected to Acoustic Induced Vibration.



: -29 °C to 125 °C

### PIPING MATERIAL SPECIFICATION

	-	ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	1SI	D0E	302	
						Rev.		
Sh.	1	of	2	Α	0			

Base Material : STAINLESS STEEL 316/316L DUAL GRADE Design code : ASME B 31.3 2016

Nom. Rating : CL150
Facing/Finishing : RF

PWHT : NO
Valve Trim : 12 - SS316/HF

Corrosion Allow.: 0 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Service: LO - Lube Oil Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 5 6 8 10 12 14 Thk.mm 3.73 3.91 4.55 3.68 3.91 3.05 3.05 3.4 3.4 3.76 4.19 4.57 4.78 SCH. 80S 80S 80S 80S 40S 40S 10S 10S 10S 10S 10S 10S 10S 10S

Nipple Thickness

Temp. Limit

NPS 1/2 3/4 1 1 1 1/2 2 Thk.mm 3.73 3.91 4.55 3.68 3.91 SCH. 80S 80S 80S 40S 40S

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 18.96 ASME B16.5

1/2 ·	14 Temp	o. °C 3	7.78 Material Group 2.2			
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	6	PIPE	BW		ASTM A312 TP316/TP316L DUAL GRADE - SMLS
	8	14	PIPE	BW		ASTM A358 TP316/TP316L CL.1 DUAL GRADE - EFW
FLAN	IGES					
	1/2	14	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A182 F316/F316L DUAL GRADE
3	1/2	14	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F316/F316L DUAL GRADE
	1/2	14	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A182 F316/F316L DUAL GRADE
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A182 F316/F316L DUAL GRADE
SPE	CTACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A240 TP316
FITTI	NGS					
ii	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A182 F316/F316L DUAL GRADE
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	8	14	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	8	14	REDUCER - ASME-B16.9	BW		ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD
	1/2	14	CAP - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F316/F316L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP316/TP316L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	1/2	6	TEE - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	8	14	TEE - ASME-B16.9	BW		ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD
	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A182 F316/F316L DUAL GRADE
MISC	ELLANE	OUS				
	1/2	14	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
GAS	KETS					
	1/2	14	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			316 SS+GRAPH 98% - C.S. OUT.RING
BOL'	TS					
	1/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALV	ES						
	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to		•		J J	
1	1/2	1 1/2	GA-E-60142	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim: 316 / HF
1	2	14	GA-E-60143	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A351 CF8M
	_						Trim: 316 / HF
6	2 2		GA-E-60342	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M
							Trim : 316 / HF

**BRANCH TABLES** 



		ов <b>2243</b>						
Pipi	ng C	Class	s:	0	1SI	D0E	802	
						Rev.		
Sh.	2	of	2	Α	0			

															90 Degrees
RunSi	ze														
1/2		Т													
3/4	ļ	Т	Т												
1		Т	Т	Т											
1 1/2		Т	Т	Т	Т										
2		W	W	Т	Т	Т	_								
3		W	W	W	W	W	T	_							
4		W	W	W	W	W	Τ	T	_						
5		W	W	W	W	W	W		1	_					
6		W	W	W	W	W	W	W		<u> </u>	_				
8		W	W	W	W	W	W	W	W	1	1	_			
10		W	VV	VV	VV	VV	W	VV	W	VV	. I	<u> </u>	_		
12		W	W	W	W	W	W	VV	W	W	W	I P	<u> </u>	_	
14		W	W	W	W	W	W	VV	W	W	W		1	1	
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	5	6	8	10	12	14	
Legenda	а														
Р	PIPE	ТО	PIPE	WIT	TH RE	INF	ORCI	NG F	PAD-	TS-C	OR-E	NG-F	PIPM	Γ-012	
T	TEE	- AS	ME-E	316.9	)										
W	WFI	DOI	FT -	MSS	S-SP9	7									

#### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).

  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.

  4) Specified Thickness are suitable to withstand Full Vacuum condition.



		ОВ <b>2243</b>							
Pipi	ng (	Class	s:	0	151	D0S	02		
						Rev.			
Sh.	1	of	3	Α	0	1	2	3	

Base Material :ASME B 31.3 2016 : STAINLESS STEEL 316/316L DUAL GRADE Design code

Nom. Rating : CL150 :NO **PWHT** Facing/Finishing : RF Valve Trim :12 - SS316/HF

Corrosion Allow. : 0 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 400 °C

Service: AV - Atmospheric Vent BR - Brine CD - Closed Drain CF - Dry (Cold) Flare CH - Chemical CI - Chemical Injection CWR - Cooung Water Return CWS - Cooling Water Supply DMW - Demineralized Water DR - Potentially Contaminated Open Drain FG - Fuel Gas FL - Flare HL - Hydrocarbon Liquid MEG - Monoethylene Glycol N - Nitrogen PG - Process Gas / Purge Gas PRW - Process Water RV - Relief Vent SW - Service Water V - Vent WEG - Water / Ethylene Glycol

Pipe ir	ncknes	55																
NPS	1/2	3/4	1	1 1/2	2	3	4	5	6	8	10	12	14	16	18	20	24	34
Thk.mm	2.77	2.87	3.38	3.68	3.91	3.05	3.05	3.4	3.4	3.76	4.19	4.57	4.78	4.78	4.78	5.54	6.35	7.92
Isch.	40S	40S	40S	40S	40S	10S	10S	10S	10S	10S	10S	10S	10S	10S	10S	10S	10S	

Nipple Thickness

NPS Press. bar 18.96 16.2 14.82 13.44 11.72 9.65 8.62 7.58 6.55 ASME B16.5/ASME B16.47 1/2 · 34 Temp. °C 37.78 93.33 148.9 204.4 260 315.6 343.3 371.1 398.9 Material Group 2.2

Si	ze	Item Description	Ends	Rating/Facing	Material
from	to	nem bescription	Liius	Kating/r acing	material
1/2	6	PIPE	вw		ASTM A312 TP316/TP316L DUAL GRADE - SMLS
8	34	PIPE	BW		ASTM A358 TP316/TP316L CL.1 DUAL GRADE - EFW
GES			, i	· ·	
1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A182 F316/F316L DUAL GRADE
2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A182 F316/F316L DUAL GRADE
26	34	WN FLANGE - ASME-B16.47 series.A	BW	CL150 RF	ASTM A182 F316/F316L DUAL GRADE
1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A182 F316/F316L DUAL GRADE
2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F316/F316L DUAL GRADE
26	34	WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A182 F316/F316L DUAL GRADE
1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A182 F316/F316L DUAL GRADE
2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F316/F316L DUAL GRADE
8	8	WN FLANGE - ASME-B16.5	BW	CL150 FF	ASTM A182 F316/F316L DUAL GRADE
1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A182 F316/F316L DUAL GRADE
26	34	BLIND FLANGE - ASME-B16.47 series.A		CL150 RF	ASTM A182 F316/F316L DUAL GRADE
1/2	3	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 F316/F316L DUAL GRADE
2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A182 F316/F316L DUAL GRADE
TACLE	BLIND				
1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A240 TP316
16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 TP316
1/2	14	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 TP316
1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A240 TP316
1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP316
IGS		1		_	
	3				ASTM A182 F316/F316L DUAL GRADE
				3000	ASTM A182 F316/F316L DUAL GRADE
		LONG RADIUS ELBOW - ASME-B16.9			ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	-				ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD
				3000	ASTM A182 F316/F316L DUAL GRADE
					ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
					ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD
					ASTM A182 F316/F316L DUAL GRADE
				3000	ASTM A182 F316/F316L DUAL GRADE
					ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
					ASTM A182 F316/F316L DUAL GRADE
				3000	ASTM A182 F316/F316L DUAL GRADE
					ASTM A182 F316/F316L DUAL GRADE
					ASTM A312 TP316/TP316L DUAL GRADE - SMLS
					ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
					ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
			1	3000	ASTM A182 F316/F316L DUAL GRADE
			1		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
			1		ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD
	-		1	0000	ASTM A182 F316/F316L DUAL GRADE
		200KOLE1 - 2M END - M22-254	200/RNA	P000	ASTM A182 F316/F316L DUAL GRADE
		MIT FOR INICIA ATING FLANGE AGME DAGE		CL 450 DE	ODE LAMINATED TEE (MAY T 400 O)
					GRE LAMINATED + TFE (MAX T 180 C)
- 1	0	SPECIAL IEMPURARY STRAINER - CMPR Std - Metallic>		CL 130 KF	ASTM A240 TP316
	0	ELAT NON MET CARKET ARME DIG 24		T	ADAMIDIC FIRED (139/)
					ARAMIDIC FIBER (13%)
					316 SS+GRAPH 98% - C.S. OUT.RING 316 SS+GRAPH 98% - C.S. OUT.RING
	34	SF.WOOND GONT-WILLIOUT. & INN.KINGO - AOME-D16.20		1	310 33TGKAFR 30% - C.3. OUT.KING
1/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED
	1/2 8 6ES 1/2 2 26 1/2 2 26 1/2 2 8 1/2 2 1/2 2 1/2 2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 2 1/2 1/2 1/2 2 1/2 2 1/	1/2 6 8 34  GES  1/2 1 1/2 2 24  26 34  1/2 1 1/2 2 24  26 34  1/2 1 1/2 2 24  26 34  1/2 1 1/2 1 1/2  2 24  8 8 8  1/2 24  26 34  1/2 1 1/2 3  2 FACLE BLIND  1/2 14  16 24  1/2 12  1/2 12  1/2 8  IGS  1/2 3 3  1/2 1 1/2  2 6 8 34  1/2 1 1/2  2 6 8 34  1/2 1 1/2  2 6 8 34  1/2 1 1/2  2 6 8 34  1/2 1 1/2  2 6 8 34  1/2 1 1/2  2 6 8 34  1/2 1 1/2  2 6 8 34  1/2 1 1/2  2 6 8 34  1/2 1 1/2  2 6 8 34  1/2 1 1/2  2 6 8 34  1/2 1 1/2  2 6 8 34  1/2 1 1/2  2 6 8 34  1/2 1 1/2  1/2 1 1/2  1/2 1 1/2  1/2 1 1/2  1/2 1 1/2  1/2 1 1/2  1/2 1 1/2  1/2 2 34  1/2 1 1/2  1/2 1 1/2  1/2 1 1/2  1/2 1 1/2  1/2 1 1/2  1/2 1 1/2  1/2 2 6  8 8 4  1/2 1 1/2  1/2 1 1/2  1/2 1 1/2  1/2 1 1/2  1/2 1 1/2  1/2 1 1/2  1/2 1 1/2  1/2 2 6  8 8 8  1/2 1 1/2  2 4 6  6 6  ETS  8 8 8  1/2 24  34 34  S	1/2 6 PIPE 8 34 PIPE 8 SES 11/2 1 1/2 SW FLANGE - ASME-B16.5 11/2 1 1/2 SW FLANGE - ASME-B16.5 26 34 WN FLANGE - ASME-B16.5 27 24 WN FLANGE - ASME-B16.5 28 34 WN FLANGE - ASME-B16.5 29 34 WN FLANGE - ASME-B16.5 30 WN FLANGE - ASME-B16.5 31/2 11/2 SW FLANGE - ASME-B16.5 31/2 11/2 SW FLANGE - ASME-B16.5 31/2 24 WN FLANGE - ASME-B16.5 38 WN FLANGE - ASME-B16.5 39 WN FLANGE - ASME-B16.5 30 WN FLANGE - ASME-B16.5 31/2 24 BLIND FLANGE - ASME-B16.5 31/2 3 BLIND FLANGE - ASME-B16.5 31/2 3 BLIND FLANGE - ASME-B16.5 31/2 14 SPECTACLE BLIND - ASME-B16.5 31/2 14 SPECTACLE BLIND - ASME-B16.48 31/2 14 BLIND & SPACER - ASME-B16.48 31/2 12 SPECTACLE BLIND - ASME-B16.48 31/2 12 SPECTACLE BLIND - ASME-B16.48 31/2 12 SPECTACLE BLIND - ASME-B16.48 31/2 12 SPECTACLE BLIND - ASME-B16.48 31/2 11/2 ELBOW - SW ENDS - ASME-B16.9 31/2 11/2 ELBOW - SW ENDS - ASME-B16.9 31/2 11/2 FEMALE CAP - THD END - ASME-B16.11 31/2 11/2 FEMALE CAP - WE ND - ASME-B16.11 31/2 11/2 FEMALE CAP - WE ND - ASME-B16.11 31/2 11/2 COUPLING - SW WINDS - ASME-B16.11 31/2 11/2 COUPLING - SW WINDS - ASME-B16.11 31/2 11/2 FEMALE CAP - WE ND - ASME-B16.11 31/2 11/2 COUPLING - SW WINDS - ASME-B16.11 31/2 11/2 FEMALE CAP - WE ND - ASME-B16.11 31/2 11/2 FEMALE CAP - WE	1/2	1/2



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	151	D0S	02	
						Rev.		
Sh.	2	of	3	Α	0	1	2	3

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60146	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
1	2	24	GA-E-60143	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
4	1/2	1 1/2	GA-E-60239	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
4	2	12	GA-E-60235	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
5	1/2	1 1/2	GA-E-67202	Globe-BB-Red.B-Needle-Thdd seat - ASME- B16.34	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim :316 / HF
6	1/2	1 1/2	GA-E-60347	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
6	2	10	GA-E-60342	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim :316 / HF
6	12	24	GA-E-60343	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim: 316 / HF
7	2	6	GA-E-60438	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
7	8	24	GA-E-60439	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60437	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - RPTFE seats
8	2	4	GA-E-60783	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-60784	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60178	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
11	1/2	1 1/2	GA-E-67022	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
13	2	24	GA-E-60150	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
44	2	2	GA-E-60294	Globe-Dead Man Quick Opening Valve-BB-Disk- Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
62	2	2	GA-E-60700	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
89	1/2	1 1/2	GA-E-60475	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	F	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67016	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
101	2	4	GA-E-60590	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600		CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
103	2	2	GA-E-60594	- API600	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
110	2	2	GA-E-67344	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
130	1/2	1 1/2	GA-E-67083	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF		Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
140	6	6	GA-E-67358	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
740	2	2	GA-E-67614	Ball-Split body-Red.B-Floating ball - API6D - Interlock System	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
801	1/2	1 1/2	GA-E-67131	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat: 316 trim : RPTFE seats
840	3	3	GA-E-67613	Ball-Split body-FB-Floating ball - API6D - Interlock System		CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
840	16	16	GA-E-67609	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
907	2	6	GA-E-69091	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PTFE seats
908	2	6	GA-E-69008	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats

STRA	INERS									
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material			
1	2	2	GA-E-60639	Y Strainer - Bolted cover - ASME-B16.34	FLGD		Body: ASTM A182 F316/F316L DUAL GRADE Screen: 316 - CLOTH - MESH 3			
1	4 8 GA-E-60604		GA-E-60604	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD Screen:316 - CLOTH - MESH 3			
9	9 2 2 GA-E-60649		GA-E-60649	Special Strainer, Basket Type-Bolted Cover - <mfr std=""></mfr>	FLGD		Body: ASTM A351 CF8M Screen: 316 - PERF.PLATE - 18 Holes/Cm2			

### BRANCH TABLES



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	151	D0S	02	
						Rev.		
Sh.	3	of	3	Α	0	1	2	3

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RunS	ize															•	ی کارو	,						
1/2	2	Α																						
3/4		Α	Α																					
1		Α	Α	Α																				
1 1/2		Α	Α	Α	Α																			
2		S	S	Т	Т	Т																		
3	3	S	S	S	S	W	Ţ	_																
4		S	S	S	S	W	I VA/	<u> </u>	_															
5		5	S	S S	S	W	VV VA/	ļ	<u> </u>	_														
6		0	S	S	S	W	W	١ ١٨/	۱ ۱۸/	T	т													
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12	2	Š	Š	Š	Š	W	W	W	W	W	w	Ť	Т											
14	ļ	S	S	S	S	W	W	W	W	W	W	Р	Т	Т										
16	3	S	S	S	S	W	W	W	W	W	W	Ρ	Ρ	Т	Т									
18 20 24	3	S	S	S	S	W	W	W	W	W	W	Т	Т	Т	Т	Т								
20	)	S	S	S	S	W	W	W	W	W	W	T	T	T	T	T	T	_						
24		S	S	S	S	W	W	W	W	W	W	Р	Ţ	Ţ	T	T	T	T	_					
34		S	S	S	S	W	W	W	W	VV	W	г	Ρ	Ρ	!	!	1	1	1					
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	5	6	8	10	12	14	16	18	20	24	34					
Legend	a																							
Α	TEE	- SW	ENE	DS	ASM	E-B1	6.11																	
Р	PIPE	ТО	PIPE	WIT	H RE	EINF	ORCI	ING F	AD-	rs-co	OR-E	NG-P	'IPMT	Γ-012	-E									
S	SOC	KOLI	ET - :	SW E	END	- MS	S-SF	97																
T	TEE	- ASI	ME-B	16.9																				
W	WEL					7																		

### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  4) Specified Thickness are suitable to withstand Full Vacuum condition.



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	C	15	D0S	05	
						Rev.		
Sh.	1	of	2	Α	0	1		

: STAINLESS STEEL 316/316L DUAL GRADE Design code : ASME B 31.3 2016 Base Material

Nom. Rating : CL150 Facing/Finishing : FF PWHT :NO Valve Trim :12 - SS316/HF

Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

: 0 °C to 70 °C Service: DW - Drinking Water

Corrosion Allow. : 0 mm

Pipe Thickness

Temp. Limit

18 20 4.78 5.54 10S 10S NPS 1/2 3/4 1 11/2 2 3 Thk.mm 2.77 2.87 3.38 3.68 3.91 3.05 SCH. 40S 40S 40S 40S 40S 10S 14 16 4.78 4.78 10 4.19 3.05 3.76 10S 10S 10S 10S 10S 10S 10S

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 18.96 ASME B16.5 1/2 · 24 Temp. °C 37.78 Material Group 2.2

	Q;	ze	Item Description	Ends	Rating/Facing	Material
pt.	from	to	nem Description	Liius	nating/racing	material
PE			·			
	1/2	6	PIPE	BW		ASTM A312 TP316/TP316L DUAL GRADE - SMLS
	8	24	PIPE	BW		ASTM A358 TP316/TP316L CL.1 DUAL GRADE - EFW
LAN	NGES					
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 FF	ASTM A182 F316/F316L DUAL GRADE
	2	24	WN FLANGE - ASME-B16.5	BW	CL150 FF	ASTM A182 F316/F316L DUAL GRADE
3	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL300 FF	ASTM A182 F316/F316L DUAL GRADE
3	2	24	WN FLANGE - ASME-B16.5	BW	CL300 FF	ASTM A182 F316/F316L DUAL GRADE
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 FF	ASTM A182 F316/F316L DUAL GRADE
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 FF	ASTM A182 F316/F316L DUAL GRADE
12	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A182 F316/F316L DUAL GRADE
2	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A182 F316/F316L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 FF	ASTM A182 F316/F316L DUAL GRADE
3	1/2	3	BLIND FLANGE - ASME-B16.5		CL300 FF	ASTM A182 F316/F316L DUAL GRADE
2	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A182 F316/F316L DUAL GRADE
E(	CTACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 FF	ASTM A240 TP316
	16	24	BLIND & SPACER - ASME-B16.48		CL150 FF	ASTM A240 TP316
2	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A240 TP316
ΓTI	INGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL150 FF	ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F316/F316L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	8	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD
	1/2	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F316/F316L DUAL GRADE
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	8	24	REDUCER - ASME-B16.9	BW		ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F316/F316L DUAL GRADE
	2	24	CAP - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F316/F316L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP316/TP316L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/THDD - MSS-SP95	THDM		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F316/F316L DUAL GRADE
	2	6	TEE - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	8	24	TEE - ASME-B16.9	BW		ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD
	2	8	WELDOLET - MSS-SP97	BW		ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A182 F316/F316L DUAL GRADE
SC	ELLANE	OUS				
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 FF	GRE LAMINATED + TFE (MAX T 180 C)
ASI	KETS					
	1/2	24	FLAT NON MET. GASKET - ASME-B16.21			ARAMIDIC FIBER (13%) - Potable Water Certified
12	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			ARAMIDIC FIBER (13%) - Potable Water Certified
DL.	TS					
	1/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALV	ES						
	Si	ze	Data Sheet	Item Description		Rating/Facing	Material
pos.	from	to		•		3 44 3	
1	1 1/2 1 1/2		GA-E-67033	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim: 316 / HF
1	2	24	GA-E-67034	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 FF	Body: ASTM A351 CF8M
							Trim: 316 / HF
4	1/2	1 1/2 GA-E-60240		Globe-BB-Red BThdd seat - API602		CL800	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim: 316 / HF
4	2	12	GA-E-60241	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 FF	Body: ASTM A351 CF8M
							<u>Trim</u> :316/HF



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	Si	70	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to	Data Sileet	item bescription	Elius	Rating/Facing	Waterial
5	1/2	1 1/2	GA-E-67207	Globe-BB-Red.B-Needle-Thdd seat - ASME- B16.34	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
6	1/2	1 1/2	GA-E-60715	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
6	2	24	GA-E-60716	Check-BB- FB- Swing - API594	FLGD	CL150 FF	Body: ASTM A351 CF8M Trim : 316 / HF
10	1/2	1 1/2	GA-E-67047	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
11	1/2	1 1/2	GA-E-67301	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL150 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
12	2	2	GA-E-67385	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A351 CF8M Trim : 316 / HF
101	1/2	1 1/2	GA-E-67084	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim :316 / HF
101	2	24	GA-E-67056	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 FF	Body: ASTM A351 CF8M Trim :316 / HF
160	4	4	GA-E-67311	Gate-Ext. Stem (1400mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 FF	Body: ASTM A351 CF8M Trim :316 / HF
401	2	12	GA-E-60244	Globe-Stem Extension-BB-Disk-Thdd seat - API 623	FLGD		Body: ASTM A351 CF8M Trim : 316 / HF

STRA	INERS						
pos.	from Size to		Data Sheet	Item Description	Ends	Rating/Facing	Material
1	10	10	GA-E-60604	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD Screen: 316 - CLOTH - MESH 3

90 Degrees

RunSize												9	υeg	rees
RuiiSize														
1/2	Α													
3/4	Α	Α												
1	Α	Α	Α											
1 1/2	Α	Α	Α	Α										
2	S	S	Т	Т	Т									
3	S	S	S	S	W	Т								
4	S	S	S	S	W	Т	Т							
6	S	S	S	S	W	W	Т	Т						
Ŕ	S	S	S	S	W	W	W	т	т					

10 12 14 16 18 20 24 S S S S S S S 1 W W W W W W W W W W W W W W T W W W W W

Legend	la
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BRANCH TABLES

Legend	d						
Α	TEE - SW ENDS - ASME-B16.11						
P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E							
S SOCKOLET - SW END - MSS-SP97							
T TEE - ASME-B16.9							
W WELDOLET - MSS-SP97							

### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
- 2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).

  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.

  4) Specified Thickness are suitable to withstand Full Vacuum condition.



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Base Material : DUPLEX STAINLESS STEEL UNS S31803 Design code : ASME B 31.3 2016

Nom. Rating : CL150 PWHT : NO

Facing/Finishing: RF Valve Trim: UNS S31803 (duplex)

Corrosion Allow. : 0 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00011/00013

Temp. Limit : 0 °C to 180 °C

Service: CD - Closed Drain V - Vent WEG - Water / Ethylene Glycol

Pipe Thickness

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 19.99 17.93 15.86 ASME B16.5 1/2 · 24 Temp. °C 37.78 93.33 148.9 Material Group 2.8

1/2	24 16111	). U 3	7.76   93.33   146.9   Material Group 2.0			
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	6	PIPE	BW		ASTM A790 UNS S31803 - SMLS
	8	24	PIPE	BW		ASTM A928 UNS S31803 CL.1 - EFW
FLAN	IGES				_	
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A182 GR.F51 (UNS S31803)
	2	24	WN FLANGE - ASME-B16.5	вW	CL150 RF	ASTM A182 GR.F51 (UNS S31803)
3	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A182 GR.F51 (UNS S31803)
3	2	24	WN FLANGE - ASME-B16.5	вW	CL300 RF	ASTM A182 GR.F51 (UNS S31803)
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A182 GR.F51 (UNS S31803)
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 GR.F51 (UNS S31803)
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A182 GR.F51 (UNS S31803)
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A182 GR.F51 (UNS S31803)
SPEC	CTACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A240 UNS S31803
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 UNS S31803
3	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A240 UNS S31803
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 UNS S31803
FITTI	NGS		1		1	
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A182 GR.F51 (UNS S31803)
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 GR.F51 (UNS S31803)
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A815 UNS S31803 - SMLS
	8	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A815 UNS S31803 WP-WX
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 GR.F51 (UNS S31803)
	2	6	REDUCER - ASME-B16.9	BW		ASTM A815 UNS S31803 - SMLS
	8	24	REDUCER - ASME-B16.9	BW		ASTM A815 UNS S31803 WP-WX
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A182 GR.F51 (UNS S31803)
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 GR.F51 (UNS S31803)
	2	24	CAP - ASME-B16.9	BW SW	0000	ASTM A815 UNS S31803 - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW\THDF	3000 3000	ASTM A182 GR.F51 (UNS S31803)
	1/2 1/2	1 1/2 1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11 THD MALE PLUG - RND HEAD - ASME-B16.11	THDM	3000	ASTM A182 GR.F51 (UNS S31803)
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A182 GR.F51 (UNS S31803) ASTM A790 UNS S31803 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A815 UNS S31803 - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A815 UNS S31803 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A815 UNS S31803 - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 GR.F51 (UNS S31803)
	2	6	TEE - ASME-B16.9	вw	0000	ASTM A815 UNS S31803 - SMLS
	8	24	TEE - ASME-B16.9	BW		ASTM A815 UNS S31803 WP-WX
	2	8	WELDOLET - MSS-SP97	BW		ASTM A182 GR.F51 (UNS S31803)
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A182 GR.F51 (UNS S31803)
MISC	ELLANE				1	
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
	12	12	SPECIAL TEMPORARY STRAINER - <mfr -="" metallic="" std=""></mfr>		CL150 RF	ASTM A240 UNS S31803
GASI	KETS					
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			S31803+GRAPH 99,8% - C.S. OUT. RING
BOL <sup>-</sup>					·	·
	1/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED
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<b>VALV</b>	ES						
pos.	oos. from to		Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1 1/2 1 1/2 GA		GA-E-60160	Gate-BB-Red.B-Solid wdg-Exp.seat - API602		CL800	Body: ASTM A182 GR.F51 (UNS S31803) Trim : Duplex S.31803
1	2	24	GA-E-60161	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL150 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN) Trim : Duplex S.31803
4	1/2	1 1/2	GA-E-60253	Globe-BB-Red BThdd seat - API602		CL800	Body: ASTM A182 GR.F51 (UNS S31803) Trim : Duplex S.31803
4	2	12	GA-E-60254	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN) Trim : Duplex S.31803
6	6 1/2 1 1/2 GA-E-6		GA-E-60366	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A182 GR.F51 (UNS S31803) Trim : Duplex S.31803



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/ALV	ES						
		ze .	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to					
6	2	10	GA-E-60367	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
_							Trim : Duplex S.31803
6	12	24	GA-E-60368	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
_		_	0.4 = 07440	D    0    1   D   D    1   1   1   1   1   1			Trim : Duplex S.31803
7	2	6	GA-E-67113	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
7	8	24	GA-E-67114	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL150 RF	Trim: Soft seat-S.31803 trim - PEEK seats
′	0	24	GA-E-07114	Ball-Split body-Red.B-11dilliloit ball - AF16D	FLGD	CL150 KF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN) Trim : Soft seat-S.31803 trim - PEEK seats
8	1/2	1 1/2	GA-E-67112	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A182 GR.F51 (UNS S31803)
٥	1/2	1 1/2	GA-L-07112	Ball-Elid elitiy -i B-i loat.ball -i Igd body - AF 1000	I LGD	CL130 KI	Trim : Soft seat-S.31803 trim - PEEK seats
8	2	3	GA-E-67158	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
١	-	U	G/( E 0/ 100	Ball Opin body 1 B 1 loading ball 74 lob	1 200	OL 100 IV	Trim : Soft seat-S.31803 trim - PEEK seats
8	6	24	GA-E-67157	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL150 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
•	ı ı		0,12 0, 101	San Opin Soay 1 S 11ammon San 711 10S	. 200	02.00.1	Trim : Soft seat-S.31803 trim - PEEK seats
10	1/2	1 1/2	GA-E-60571	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A182 GR.F51 (UNS S31803)
					DF		Trim: Duplex S.31803
13	2	24	GA-E-60570	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
							Trim: Duplex S.31803
44	2	2	GA-E-60296	Globe-Dead Man Quick Opening Valve-BB-Disk-	FLGD	CL150 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
				Thdd seat - API 623			Trim: Duplex S.31803
62	2	2	GA-E-60702	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
							Trim: Duplex S.31803
73	2	4	GA-E-67249	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
							Trim : Soft seat-S.31803 trim - PEEK seats
82	2	3	GA-E-67256	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
	_	_					Trim : Metal seat-S.31803 trim-GRAPH.
83	2	2	GA-E-67261	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
	4/0	4.4/0	04 5 00477	Dall Ford autor FD Flood ball Food back as inclea	DE ŒUE	01.000	Trim : Soft seat-S.31803 trim - PEEK seats
89	1/2	1 1/2	GA-E-60477	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	PE/THD	CL800	Body: ASTM A182 GR.F51 (UNS S31803) Trim : Metal seat-S.31803 trim-GRAPH.
101	1/2	1 1/2	GA-E-67015	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A182 GR.F51 (UNS S31803)
101	1/2	1 1/2	GA-E-07015	Exp.seat - API602	SVV	CLOUU	Trim : Duplex S.31803
101	2	2	GA-E-67043	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	ELGD	CL150 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
	-	_	J. L 070-10	- API600	. 200	02130 Ki	Trim : Duplex S.31803
103	2	2	GA-E-67042	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
	-	_		- API600	-05		Trim : Duplex S.31803
110	1/2	1 1/2	GA-E-67326	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A182 GR.F51 (UNS S31803)
							Trim : Duplex S.31803
140	6	6	GA-E-67361	Gate-BB-FB-Flex wdg-Thdd seat - API600 -	FLGD	CL150 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
				Interlock System	1		Trim: Duplex S.31803
810	2	4	GA-E-67271	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
							Trim : Soft seat-S.31803 trim - PEEK seats
813	4	4	GA-E-67272	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
					1		Trim : Soft seat-S.31803 trim - PEEK seats
820	2	4	GA-E-67287	Ball-Split body-FB-Floating ball - API6D	FLGD	CL150 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
							Trim : Metal seat-S.31803 trim-GRAPH.
907	2	6	GA-E-69092	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
							Trim : Soft seat-S.31803 trim - PEEK seats

**BRANCH TABLES** 



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Pipi	ng C	Class	s:	C	15	P0S	01		
						Rev.			
Sh.	3	of	3	Α	0	1	2	3	

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RunSi	ze															9	0 Degrees	3							
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3/4			Α																						
1		A	A	Α																					
1 1/2		A	A	A	Α																				
2		S	S	Т	Т	Т																			
3		Š	Š	S	S	W	Т																		
4		Š	Š	Š	Š	W	Ť	Т																	
6		S	S	S	S	W	W	Т	Т																
8		S	S	S	S	W	W	W	Т	Т															
10		S	S	S	S	W	W	W	W	Т	Т														
12		S	S	S	S	W	W	W	W	W	Т	Т													
14		S	S	S	S	W	W	W	W	W	Ρ	Т	Т												
16		S	S	S	S	W	W	W	W	W	Ρ	Ρ	Т	Т											
18 20		S	S	S	S	W	W	W	W	W	Т	Т	Т	Т	Т										
20		S	S	S	S	W	W	W	W	W	Т	Т	Т	Т	Т	Т									
24			S	S	S	W	W	W	W	W	Ρ	Т	Т	Т	Т	Т	T								
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24								
Legend	а																								
Α	TEE -	- SW	END	S - A	ASM	E-B1	6.11																		
Р	PIPE								PAD-	TS-C	OR-E	NG-F	'IPM	Γ-012	-E										
S	SOCI	KOLE	T - S	SW E	ND	- MS	S-SF	297																	
Т	TEE -	- ASN	ΛΕ-Β	16.9														·	 						
W	WEL	DOLE	T - 1	uss.	-SP9	7																			

### GENERAL NOTES

Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
 NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
 Specified Thickness are suitable to withstand Full Vacuum condition.



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	15\	V0E	310	
						Rev.		
Sh.	1	of	2	Α	0	1		

Base Material : SUPER DUPLEX STAINLESS STEEL UNS S32750 Design code : ASME B 31.3 2016

Nom. Rating : CL150 PWHT

Facing/Finishing: RF Valve Trim: UNS S32750 (superduplex)

 Corrosion Allow. : 0 mm
 Welding Spec : MZ-000-CCX-MC-SPC-00009/00011/00013

Temp. Limit : 0 °C to 70 °C

Service: [Caustic Service] CI - Chemical Injection

Pipe Thickness

Nipple Thickness

NPS 1/2 3/4 1 1 1 1/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

#### PRESSURE - TEMPERATURE Ratings

1/2 ·	24 remp	i. °C 3	7.78 Material Group 2.8			
opt.	Siz from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	6	PIPE	BW		ASTM A790 UNS S32750 - SMLS
	8	24	PIPE	BW		ASTM A928 UNS S32750 CL.1 - EFW
FLAN	IGES					
	1/2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A182 GR.F53 (UNS S32750)
3	1/2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 GR.F53 (UNS S32750)
5	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 GR.F53 (UNS S32750)
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A182 GR.F53 (UNS S32750)
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 GR.F53 (UNS S32750)
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A182 GR.F53 (UNS S32750)
SPEC	TACLE	BLIND			_	
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A240 UNS S32750
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 UNS S32750
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A182 GR.F53 (UNS S32750)
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A815 UNS S32750 - SMLS
	8	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A815 UNS S32750 WP-WX
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A815 UNS S32750 - SMLS
	8	24	REDUCER - ASME-B16.9	BW		ASTM A815 UNS S32750 WP-WX
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 GR.F53 (UNS S32750)
	1/2	24	CAP - ASME-B16.9	BW		ASTM A815 UNS S32750 - SMLS
	1/2	1 1/2	COUPLING - THD ENDS - ASME-B16.11	THDF	3000	ASTM A182 GR.F53 (UNS S32750)
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 GR.F53 (UNS S32750)
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A790 UNS S32750 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A815 UNS S32750 - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A815 UNS S32750 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A815 UNS S32750 - SMLS
	1/2	6	TEE - ASME-B16.9	BW		ASTM A815 UNS S32750 - SMLS
	8	24	TEE - ASME-B16.9	BW		ASTM A815 UNS S32750 WP-WX
	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A182 GR.F53 (UNS S32750)
GASK						
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20	<u> </u>	1	S32750+GRAPH 98%-S32750 OUT.RING
BOLT		4	OT DOLT O AUGUST AND THAT TO DUE 5000			AOTH AGO DE AOTH AGO OD OU DEED OOATED
	1/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALV	/ALVES											
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material					
1	1/2	1 1/2	GA-E-67064	Gate-BB-Red.B-Solid wdg-Exp.seat + Nipples - API602	BW	CL800	Body: ASTM A182 GR.F53 (UNS S32750) Trim : Duplex S.32750					
1	2	24	GA-E-67065	Gate-BB-FB-Flex wdg-Wldd seat - API600	FLGD	CL150 RF	Body: ASTM A995 GR.5A (UNS J93404, CE3MN) Trim : Duplex S.32750					
4	1/2	1 1/2	GA-E-60248	Globe-BB-Red BIntegral seat + Nipples - API602	BW	CL800	Body: ASTM A182 GR.F53 (UNS S32750) Trim : Duplex S.32750					
4	2	12	GA-E-60269	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A995 GR.5A (UNS J93404, CE3MN) Trim : Duplex S.32750					
6	1/2	1 1/2	GA-E-60727	Check-BB-Red.B-Piston-Integral seat + Nipples - API602	BW	CL800	Body: ASTM A182 GR.F53 (UNS S32750) Trim : Duplex S.32750					
6	2	10	GA-E-60728	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A995 GR.5A (UNS J93404, CE3MN) Trim : Duplex S.32750					
6	12	24	GA-E-60729	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL150 RF	Body: ASTM A995 GR.5A (UNS J93404, CE3MN) Trim : Duplex S.32750					
7	6	6	GA-E-67692	Ball-Split body-Red.B-Floating ball - API608	FLGD	CL150 RF	Body: ASTM A995 GR.5A (UNS J93404, CE3MN)  Trim : Soft seat-S.32750 trim - RPTFE seats					
7	8	24	GA-E-67231	Ball-Split body-Red.B-Trunnion ball - API608	FLGD	CL150 RF	Body: ASTM A995 GR.5A (UNS J93404, CE3MN) Trim: Soft seat-S.32750 trim - RPTFE seats					
8	1/2	1 1/2	GA-E-67232	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A182 GR.F53 (UNS S32750) Trim : Soft seat-S.32750 trim - PTFE seats					



		DB 2 <b>243</b>						
Pipi	ng C	Class	s:	0	15\	NOE	310	
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Sh.	2	of	2	Α	0	1		

RANCH TA	BLES	3																			
RunSize															90	Degre	es				
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1 1/2	÷	÷	÷	т																	
2	w	w	÷	+	т																
3	W	W	w	w	w	Т															
4	W	w	W	W	w	Ť	Т														
6	W	W	W	W	W	W	Ť	Т													
8	W	W	W	W	W	W	W	Т	Т												
10	W	W	W	W	W	W	W	W	Т	Т											
12	W	W	W	W	W	W	W	W	W	Т	Т										
14	W	W	W	W	W	W	W	W	W	Ρ	Т	Т									
16	W	W	W	W	W	W	W	W	W	Р	Р	Т	Т								
18	W	W	W	W	W	W	W	W	W	Т	Т	Т	Т	Т							
20	W	W	W	W	W	W	W	W	W	Т	Т	Т	Т	Т	Т						
24	W	W	W	W	W	W	W	W	W	Р	Т	Т	Т	Т	Т	Т					
BranchSize	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24					
Legenda																					
P PIP	Е ТО	PIPE	WIT	TH FL	JLL E	NCII	RCLE	MEN	T - TI	3 PIP	5012	2									
T TE	- AS	ME-E	316.9	)																	
	LDOL				7																

### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  3) Specified Thickness are suitable to withstand Full Vacuum condition.



		ОВ <b>2243</b>							
Pipi	ng (	Class	s:	0	15\	NOS	<b>301</b>		
						Rev.			
Sh.	1	of	2	Α	0	1	2	3	

: SUPER DUPLEX STAINLESS STEEL UNS S32750 Design code : ASME B 31.3 2016 Base Material

Nom. Rating : CL150 **PWHT** 

Facing/Finishing: RF Valve Trim : UNS S32750 (superduplex)

Corrosion Allow. : 0 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00011/00013 : 0 °C to 180 °C

Temp. Limit

Service: CI - Chemical Injection PRW - Process Water

Pipe Thickness

NPS 3/8 1/2 3/4 1 Thk.mm 2.31 2.77 2.87 3.38 1 1/2 2 3.68 3.91 3.76 4.19 4.78 4.78 | 4.78 SCH. 40S 40S 40S 40S 40S 10S 10S 10S 10S 10S 10S

Nipple Thickness

3/8 1/2 3/4 1 1 11/2 2 2.31 3.73 3.91 4.55 5.08 5.54 80S 80S 80S 80S 80S NPS Thk.mm 2.31 SCH.

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 19.99 17.93 15.86 ASME B16.5/ASME B16.47 3/8 · 30 Temp. °C 37.78 93.33 148.9 Material Group 2.8

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						<u> </u>
	3/8	6	PIPE	BW		ASTM A790 UNS S32750 - SMLS
	8		PIPE	BW		ASTM A928 UNS S32750 CL.1 - EFW
FLAN		30	II	DVV		ACTIVI A320 0110 032730 0E.T - ET W
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL150 RF	ASTM A182 GR.F53 (UNS S32750)
	2	24	WN FLANGE - ASME-B16.5	BW	CL150 RF	ASTM A182 GR.F53 (UNS S32750)
	26	30	WN FLANGE - ASME-B16.47 series.A	BW	CL150 RF	ASTM A182 GR.F53 (UNS S32750)
3	1/2		SW FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A182 GR.F53 (UNS S32750)
3	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 GR.F53 (UNS S32750)
3	26	30	WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A182 GR.F53 (UNS S32750)
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A182 GR.F53 (UNS S32750)
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 GR.F53 (UNS S32750)
	1/2	24	BLIND FLANGE - ASME-B16.5		CL150 RF	ASTM A182 GR.F53 (UNS S32750)
	26		BLIND FLANGE - ASME-B16.47 series.A		CL150 RF	ASTM A182 GR.F53 (UNS S32750)
3	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 GR.F53 (UNS S32750)
3	26	30	BLIND FLANGE - ASME-B16.47 series.A		CL300 RF	ASTM A182 GR.F53 (UNS S32750)
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL150 RF	ASTM A182 GR.F53 (UNS S32750)
SPEC	TACLE	BLIND				
	1/2	14	SPECTACLE BLIND - ASME-B16.48		CL150 RF	ASTM A240 UNS S32750
	16	24	BLIND & SPACER - ASME-B16.48		CL150 RF	ASTM A240 UNS S32750
	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060013</mfr>		CL150 RF	ASTM A240 UNS S32750
3	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A240 UNS S32750
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL150 RF	ASTM A182 GR.F53 (UNS S32750)
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 GR.F53 (UNS S32750)
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A815 UNS S32750 - SMLS
	8	30	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A815 UNS S32750 WP-WX
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 GR.F53 (UNS S32750)
	2	6	REDUCER - ASME-B16.9	BW		ASTM A815 UNS S32750 - SMLS
	8	30	REDUCER - ASME-B16.9	BW		ASTM A815 UNS S32750 WP-WX
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A182 GR.F53 (UNS S32750)
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 GR.F53 (UNS S32750)
	2	30	CAP - ASME-B16.9	BW		ASTM A815 UNS S32750 - SMLS
	1/2		COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 GR.F53 (UNS S32750)
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 GR.F53 (UNS S32750)
	1/2	1 1/2	COUPLING - THD ENDS - ASME-B16.11	THDF	3000	ASTM A182 GR.F53 (UNS S32750)
	1/2		THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 GR.F53 (UNS S32750)
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A790 UNS S32750 - SMLS
	3/8	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A815 UNS S32750 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A815 UNS S32750 - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A815 UNS S32750 - SMLS
	1/2		TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 GR.F53 (UNS S32750)
	2	6	TEE - ASME-B16.9	BW		ASTM A815 UNS S32750 - SMLS
	8	30	TEE - ASME-B16.9	BW		ASTM A815 UNS S32750 WP-WX
	2	8	WELDOLET - MSS-SP97	BW		ASTM A182 GR.F53 (UNS S32750)
MICC	1/2		SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A182 GR.F53 (UNS S32750)
MISC	ELLANE		LUT FOR MOUNTAINS FLANCE, AGME DAGE	ı	0.450.05	ODE LAMBUATED. TEE (MAY T 400 O)
GASE	1/2   (ETS	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL150 RF	GRE LAMINATED + TFE (MAX T 180 C)
JAJI	26	30	FLAT GASKET - GROOVED - <mfr std=""></mfr>		I	S-32750 + GRAPHITE
	1/2	30 24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			S32750+GRAPH 98%-S32750 OUT.RING
BOL1		<b>4</b>	OF .44 CONTENDED GONTEWN OUT . WINN. NING - MOINE-D10.20	I	1	DVII/7.1 00 00/1500-0/00 11 17/10-00 1500
BOL	1/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60162	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw		Body: ASTM A182 GR.F53 (UNS S32750) Trim : Duplex S.32750
1	2	24	GA-E-60163	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD		Body: ASTM A995 GR.5A (UNS J93404, CE3MN) <u>Trim :</u> Duplex S.32750



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	15\	NOS	<b>301</b>	
						Rev.		
Sh.	2	of	2	Α	0	1	2	3

/ALVES											
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material				
4	1/2	1 1/2	GA-E-60255	Globe-BB-Red BThdd seat - API602	SW	CL800	Body: ASTM A182 GR.F53 (UNS S32750)				
							Trim: Duplex S.32750				
4	2	12	GA-E-60256	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL150 RF	Body: ASTM A995 GR.5A (UNS J93404, CE3MN)				
							Trim: Duplex S.32750				
6	1/2	1 1/2	GA-E-60369	Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Body: ASTM A182 GR.F53 (UNS S32750)				
							Trim: Duplex S.32750				
6	2	10	GA-E-60370	Check-BB- FB- Swing - API594	FLGD	CL150 RF	Body: ASTM A995 GR.5A (UNS J93404, CE3MN)				
							Trim: Duplex S.32750				
6	12	24	GA-E-60371	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL150 RF	Body: ASTM A995 GR.5A (UNS J93404, CE3MN)				
							Trim: Duplex S.32750				
7	6	6	GA-E-67122	Ball-Split body-Red.B-Floating ball - API608	FLGD	CL150 RF	Body: ASTM A995 GR.5A (UNS J93404, CE3MN)				
							Trim : Soft seat-S.32750 trim - RPTFE seats				
7	8	24	GA-E-67123	Ball-Split body-Red.B-Trunnion ball - API608	FLGD	CL150 RF	Body: ASTM A995 GR.5A (UNS J93404, CE3MN)				
							Trim : Soft seat-S.32750 trim - RPTFE seats				
8	1/2	1 1/2	GA-E-60752	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL150 RF	Body: ASTM A182 GR.F53 (UNS S32750)				
							Trim : Soft seat-S.32750 trim - PTFE seats				
10	1/2	1 1/2	GA-E-60573	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A182 GR.F53 (UNS S32750)				
					DF		Trim: Duplex S.32750				
13	2	24	GA-E-60572	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A995 GR.5A (UNS J93404, CE3MN)				
							Trim: Duplex S.32750				
89	1/2	1 1/2	GA-E-60753	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A182 GR.F53 (UNS S32750)				
				API608	F		Trim : Metal seat-S.32750 trim-GRAPH.				
101	1/2	1 1/2	GA-E-67017	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A182 GR.F53 (UNS S32750)				
				Exp.seat - API602			Trim: Duplex S.32750				
101	2	2	GA-E-67045		FLGD	CL150 RF	Body: ASTM A995 GR.5A (UNS J93404, CE3MN)				
				- API600			Trim: Duplex S.32750				
103	2	2	GA-E-67044	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A995 GR.5A (UNS J93404, CE3MN)				
				- API600			Trim: Duplex S.32750				
130	1/2	1 1/2	GA-E-67085	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A182 GR.F53 (UNS S32750)				
				Exp.seat - API602	DF		Trim : Duplex S.32750				
801	1/2	1 1/2	GA-E-67133	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL150 RF	Body: ASTM A182 GR.F53 (UNS S32750)				
				Frgd body - API608			Trim : Soft seat-S.32750 trim - PTFE seats				

RunSi	7e															90	) De	grees	
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3/4			Α	Α															
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8			S	S	S	S	W	W	W	Т	Т								
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18			S	S	S	S	W	W	W	W	W	Ť	Ť	÷	÷	Т			
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24			S	S	S	S	W	W	W	W	W	Р	Т	Т	Т	Т	Т	Т	
_ 30			S	S	S	S	W	W	W	W	W	Р	Р	Р	Т	Т	Т	Т	Т
Branch	Size	3/8	1/2	3/4	1	1 1/	2 2	3	4	6	8	10	12	14	16	18	20	24	30
egend																			
Α						IE-B1													
									PAD-	TS-C	OR-E	NG-F	PIPM	Γ-012	-E				
S						- MS	SS-SI	P97											
T	TEE																		
W	WEL	DOL	ET -	MSS	-SPS	97													

### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  3) Specified Thickness are suitable to withstand Full Vacuum condition.



JOB **032243** Piping Class: 03CA1S01 Rev. Α 0 1 2 3

Design code : ASME B 31.3 2016 Base Material : LOW TEMP. CARBON STEEL Nom. Rating :CL300 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing : RF Valve Trim :12 - SS316/HF

Corrosion Allow. : 1.5 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 220 °C

Service: HL - Hydrocarbon Liquid MEG - Monoethylene Glycol O - Oil PC - Process Condensate PG - Process Gas / Purge Gas PR - Propane Refrigerant

Pipe Thickness

NPS	1/2	3/4	1	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	22	24	26	28	30	36	40	42	48	52	
Thk.mm	3.73	3.91	4.55	5.08	5.54	5.16	5.49	6.02	7.11	8.18	9.27	9.53	9.53	12.7	12.7	12.7	14.27	15.88	9.53	9.53	12.7	12.7	12.7	15.88	15.88	14.27	
SCH.	XS	XS	XS	XS	XS	STD	STD	STD	STD	STD	STD	STD	STD	XS	XS	XS			STD	STD	XS	XS	XS			i l	
	56	60	64	68	72																						
ı	45.00	4 - 00	47 40	47 40	4005	1																					

Nipple Thickness

NPS 1/2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160

PRESSURE - TEMPERATURE Ratings

 NPS
 Press. bar
 51.02
 51.02
 46.88
 45.16
 43.78
 ASME B16.5

 1/2 · 24
 Temp. \*C
 -28.9
 37.78
 93.33
 148.9
 204.4
 Material Group 1.1

 NPS
 Press. bar
 25

NPS Press. bar 25 26 · 72 Temp. °C 180

∠0 .	72 Tem	p. °C 1	80			
		ize	Item Description	Ends	Rating/Facing	Material
opt.	from	to	·			
PIPE						
	1/2	24	PIPE	BW		ASTM A333 GR.6 - SMLS
	26	72	PIPE	BW		ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)
FLAN	IGES			1	1	
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A350 LF2 - CL.1
	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A350 LF2 - CL.1
	26	60	WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A350 LF2 - CL.1
	68	68	SPECIAL WN FLANGE - <mfr std=""> GA-E-060015</mfr>	BW	CL300 RF	ASTM A350 LF2 - CL.1
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A350 LF2 - CL.1
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A350 LF2 - CL.1
	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A350 LF2 - CL.1
	26	60	BLIND FLANGE - ASME-B16.47 series.A		CL300 RF	ASTM A350 LF2 - CL.1
3	3/4	3/4	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A350 LF2 - CL.1
5	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A350 LF2 - CL.1
	2	2	SW REDUCING FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A350 LF2 - CL.1
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A350 LF2 - CL.1
SPEC	CTACLE	BLIND				
i I	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060015</mfr>		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	36	36	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060015</mfr>		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	48	48	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060015</mfr>		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	52	52	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060015</mfr>		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	68	68	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060015</mfr>		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
2	1/2	12	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
25	2	2	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS				•	
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A350 LF2 - CL.1
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	50	72	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1
	2	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	50	72	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A350 LF2 - CL.1
	2	48	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	50	72	CAP - TB RAC 5064	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A350 LF2 - CL.1
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1
	2	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	28	48	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	52	72	TEE - TB RAC 5061	BW		ASTM A420 WPL6W - WLDD
	2	8	WELDOLET - MSS-SP97	BW		ASTM A350 LF2 - CL.1
	2	2	LATROLET - BW END - MSS-SP97	BW	3000	
	3	8		BW	5000	ASTM A350 LF2 - CL.1
	3 1/2	1 1/2	SPECIAL LATROLET - <mfr std=""></mfr>	SW\BW	3000	ASTM A350 LF2 - CL.1
لــــــا	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	244/044	_5000	ASTM A350 LF2 - CL.1



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		ze	Item Description	Ends	Rating/Facing	Material
opt.	from	to				
FITTII	NGS					
	1/2	1 1/2	LATROLET - SW END - MSS-SP97	SW\BW	3000	ASTM A350 LF2 - CL.1
MISC	ELLANE	OUS				
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL300 RF	GRE LAMINATED + TFE (MAX T 180 C)
GASK	ETS					
	26	60	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	68	68	FLAT GASKET - GROOVED - <mfr std=""> GA-E-060015</mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
BOLT	·s					
	1/2	2 1/8	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALVE	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60100	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A350 LF2 - CL.1
1	2	24	GA-E-60104	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Trim :316 / HF Body: ASTM A352 LCC Trim :316 / HF
2	26	48	GA-E-60509	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - API609	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : Metal seat - 316 - LT C.S. disc
2	52	52	GA-E-60538	Special Butterfly-Flanged-Triple Off Set-Int.seat- Fire safe - <mfr std=""></mfr>	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : Metal seat - 316 - LT C.S. disc
2	68	68	GA-E-60527	Special Butterfly-Flanged-Triple Off Set-Int.seat- Fire safe - <mfr std=""></mfr>	FLGD	CL300 RF	Body: ASTM A352 LCC
4	1/2	1 1/2	GA-E-60200	Globe-BB-Red BThdd seat - API602	sw	CL800	Trim : Metal seat - 316 - LT C.S. disc Body: ASTM A350 LF2 - CL.1
4	2	12	GA-E-60204	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Trim:316 / HF Body:ASTM A352 LCC
6	1/2	1 1/2	GA-E-60300	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Trim :316 / HF Body: ASTM A350 LF2 - CL.1 Trim :316 / HF
6	2	10	GA-E-60306	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
6	12	24	GA-E-60307	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
6	26	36	GA-E-60384	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
6	52	52	GA-E-60720	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
7	2	4	GA-E-60404	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC
7	6	24	GA-E-60405	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Trim: Soft seat-316 trim - RPTFE seats Body: ASTM A352 LCC
8	1/2	1 1/2	GA-E-60403	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A350 LF2 - CL.1
8	2	4	GA-E-67257	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A352 LCC
8	6	24	GA-E-60787	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A352 LCC
10	1/2	1 1/2	GA-E-60173	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A350 LF2 - CL.1
11	1/2	1 1/2	GA-E-67345	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	DF FLGD	CL300 RF	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
14	1/2	1 1/2	GA-E-60174	Gate-Stem Extension-BB-Red.B-Solid wdg-	sw	CL800	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
14	2	24	GA-E-60574	Exp.seat - API602 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A352 LCC
15	2	2	GA-E-60105	- API600 Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Trim: 316 / HF Body: ASTM A352 LCC
19	1/2	1 1/2	GA-E-60176	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
62	10	10	GA-E-60712	Exp.seat - API602 Check-Flanged -Dual plate-Widd seat - API594	DF FLGD	CL300 RF	Trim : 316 / HF Body: ASTM A352 LCC
64	52	52	GA-E-60725	Nozzle Check-Long-Axial non slam-Thdd seat -		CL300 RF	Trim: 316 / HF Body: ASTM A352 LCC
69	52	52	GA-E-60717	<mfr -="" metallic="" std=""> Check-Flanged -Dual plate-Wldd seat - API594</mfr>	FLGD	CL300 RF	Trim :316 / HF Body: ASTM A352 LCC
80	1/2	1 1/2	GA-E-60480	Ball-Stem Extension-End entry-FB-Float.ball-Frgd		CL300 RF	Trim :316 / HF Body: ASTM A350 LF2 - CL.1
82	1/2	1 1/2	GA-E-60754	body - API608  Ball-End entry -FB-Float.ball -Frgd body - API608		CL300 RF	Trim : Soft seat-316 trim - RPTFE seats
84	1/2		GA-E-60754 GA-E-67680	Ball-Stem Extension-End entry-FB-Float.ball-Frgd		CL300 RF	Body: ASTM A350 LF2 - CL.1 Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A350 LF2 - CL.1
89	1/2	1 1/2	GA-E-67680 GA-E-60496	body - API608  Ball-End entry -FB-Float.ball -Frgd body+nipples -			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A350 LF2 - CL.1 Body: ASTM A350 LF2 - CL.2
		1 1/2	GA-E-60147	API608	F		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2		Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1 Trim: 316 / HF
101	2	24	GA-E-60592	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600		CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
102	2	24	GA-E-60118	Gate-BB-FB-Flex wdg-Thdd seat - API600	BW	CL300	Body: ASTM A352 LCC Trim: 316 / HF
111	1/2	1 1/2	GA-E-67391	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
114	1/2	1 1/2	GA-E-67389	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1 <u>Trim :</u> 316 / HF



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ALVI	ES						
	Si	ize	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to					
130	1/2	1 1/2	GA-E-67074	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
			0.4 = 07000	Exp.seat - API602	DF		Trim: 316 / HF
140	3	3	GA-E-67362	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL300 RF	Body: ASTM A352 LCC
142	3	4	GA-E-60118	Gate-BB-FB-Flex wdg-Thdd seat - API600	вw	CL300	Trim: 316 / HF Body: ASTM A352 LCC
142	3	4	GA-E-00110	Gate-DB-FB-Flex wag-Thad Seat - AF1000	DVV	CL300	Trim: 316 / HF
144	3	12	GA-E-67363	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A352 LCC
٠	Ū		0.12 0.000	- API600 - Interlock System	1 200	02000 141	Trim:316/HF
145	2	2	GA-E-60577	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL600 RF	Body: ASTM A352 LCC
				- API600			Trim: 316 / HF
162	6	6	GA-E-67312	Gate-Ext. Stem (1800mm)-BB-FB-Flex wdg-Thdd	FLGD	CL300 RF	Body: ASTM A352 LCC
				seat - API600			Trim : 316 / HF
162	12	12	GA-E-67312	Gate-Ext. Stem (1800mm)-BB-FB-Flex wdg-Thdd	FLGD	CL300 RF	Body: ASTM A352 LCC
				seat - API600			Trim: 316 / HF
201	30	30	GA-E-60533	Butterfly-Stem Extension-Flanged-Triple Off Set-	FLGD	CL300 RF	Body: ASTM A352 LCC
				Int.seat-Fire safe - API609	L		Trim : Metal seat - 316 - LT C.S. disc
201	42	42	GA-E-60533	Butterfly-Stem Extension-Flanged-Triple Off Set-	FLGD	CL300 RF	Body: ASTM A352 LCC
	410	4 4 40	04 5 07 100	Int.seat-Fire safe - API609	014/	01 000	Trim : Metal seat - 316 - LT C.S. disc
401	1/2	1 1/2	GA-E-67409	Globe-Stem Extension-BB-Red BThdd seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1
401	2	12	GA-E-60282	Globe-Stem Extension-BB-Disk-Thdd seat - API	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A352 LCC
+01	2	12	GA-E-60282	623	FLGD	CL300 KF	Trim: 316 / HF
701	10	12	GA-E-67258	Ball-Stem Extension-Split body-Red.B-Trunnion	FLGD	CL300 RF	Body: ASTM A352 LCC
'01	10	12	GA-L-07236	ball - API6D	FLGD	CL300 KF	Trim : Soft seat-316 trim - RPTFE seats
780	2	3	GA-E-67655	DBL Block&Bleed Ball valve-SplitBdy-RB-	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1
00	_		OA-L-07033	Float.ball - <mfr std=""></mfr>	LOD	CL300 KI	Trim : Soft seat-316 trim - RPTFE seats
781	2	2	GA-E-67658	DBL Block&Bleed Ball valve-SplitBdy-RB-	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1
٠. ا	-	_	G/( E 0/000	Float.ball - <mfr std=""></mfr>	1 200	02000 141	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
782	2	2	GA-E-67688	DBL Block&Bleed Ball valve-Stem Extension-	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1
	=	_		SplitBdy-RB-Float.ball - <mfr std=""></mfr>			Trim : Soft seat-316 trim - RPTFE seats
783	2	3	GA-E-67654	DBL Block&Bleed Ball valve-Stem Extension-	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1
				SplitBdy-RB-Float.ball - <mfr std=""></mfr>			Trim : Soft seat-316 trim - RPTFE seats
784	2	2	GA-E-67657	DBL Block&Bleed Ball valve-Stem Extension-	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1
				SplitBdy-RB-Float.ball - <mfr std=""></mfr>			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
785	2	3	GA-E-67656	DBL Block&Bleed Ball valve-Stem Extension-	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1
				SplitBdy-RB-Float.ball - <mfr std=""></mfr>			Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
301	1/2	1 1/2	GA-E-67134	Ball-Stem Extension-End entry-FB-Float.ball-Frgd	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1
				body - API608			Trim : Soft seat-316 trim - RPTFE seats
301	8	8	GA-E-67259	Ball-Stem Extension-Split body-FB-Trunnion ball -	FLGD	CL300 RF	Body: ASTM A352 LCC
			04 5 07040	API6D	EL 0.D	01 000 DE	Trim : Soft seat-316 trim - RPTFE seats
340	4	4	GA-E-67616	Ball-Split body-FB-Floating ball - API6D - Interlock	GFLGD	CL300 RF	Body: ASTM A352 LCC
340	6	10	GA-E-67615	System  Rall Solit body ER Truppion ball - ARIGO -	ELCD	CI 200 DE	Trim : Soft seat-316 trim - RPTFE seats
J4U	U	10	GA-E-0/013	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
841	8	8	GA-E-67617	Ball-Stem Extension-Split body-FB-Trunnion ball -	FLCD	CL300 RF	Body: ASTM A352 LCC
J-1	J	"	OA-L-0/01/	API6D - Interlock System	LGD	OLJUU KF	Trim : Soft seat-316 trim - RPTFE seats
890	1/2	1 1/2	GA-E-67681	Ball-Stem Extension-End entry -FB-Float.ball -	PE/THD	CI 800	Body: ASTM A350 LF2 - CL.1
	.,_	' '/-	27.2 37001	Frgd body+ Nipple - API608	F		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
907	2	6	GA-E-69009	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC
	_		2 30000				Trim : Soft seat-316 trim - RPTFE seats
907	10	10	GA-E-69078	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC
				, , , , , , , , , , , , , , , , , , , ,			Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
917	8	24	GA-E-69049	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL300	Body: ASTM A352 LCC
				API6D			Trim : Soft seat-316 trim - RPTFE seats
972	6	8	GA-E-69100	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
976	6	8	GA-E-69097	Ball-Stem Extension-Split body-Red.B-	FLGD	CL300 RF	Body: ASTM A352 LCC
				Trunnion ball - API6D			Trim : Soft seat-316 trim - RPTFE seats
991	1	1	GA-E-69101	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	6	12	GA-E-60605	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3
1	36	48	GA-E-60610	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	1	Body :ASTM A420 WPL6W - WLDD Screen:316 - CLOTH - MESH 3
2	30	36	GA-E-60611	Angle T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A420 WPL6W - WLDD Screen: 316 - CLOTH - MESH 3

**BRANCH TABLES** 



		ов 2 <b>243</b>							
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48		S	S	S	S	W	W	W	W	W	W	Р	Р	Р	Р	Ρ	Р	Р	Р		Ρ	Ρ	Р	Ρ	Т	Т								
5	2	S	S	S	S	W	W	W	W	W	W	Р	Р	Р	Р	Р	Р	Р	T1		T1	T1	T1	T1	T1	T1	T1	<b>T4</b>						
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6		S	S	S	S	W	W	W	W	W	W	P	P	P	P	P	P	P	P		P	P	P	T1	T1	T1	T1	T1	T1	T1				
68	В	s	S	s	s	W	W	W	W	W	W	P	P	P	P	P	P	P	P		P	P	P	T1	T1	T1	T1	T1	T1	T1	T1			
7:		S	S	S	S	W	W	W	W	W	W	Р	Ρ	Р	Ρ	Р	Р	Р	Р		Ρ	Р	Ρ	T1	T1	T1	T1	T1	T1	T1		T1		
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Legend																																		
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Р	PIPE								PAD-T	S-C	OR-E	NG-F	IPMT	-012	-E																			
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24		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP															
28		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP														
30		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP													
36		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP												
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64	4	Ĺ	Ē	Ē	Ĺ	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP					
68		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP				
72	2	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP			
Branch5	Size	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	28	30	36	40	42	48	52	56	60	64	68	72			
Legenda																														 		
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LB						ASS-S																								 		
LS						MFR S																								 		
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#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



	-	ОВ <b>2243</b>						
Pipi	ng (	Class	s:	0	3C	<b>A1</b> S	<b>602</b>	
						Rev.		
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Design code : ASME B 31.3 2016 Base Material : LOW TEMP. CARBON STEEL Nom. Rating : CL300 PWHT : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 12 - SS316/HF

Corrosion Allow. : 1.5 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 70 °C Service: PR - Propane Refrigerant

Pipe Thickness

| NPS | 1/2 | 3/4 | 1 | 11/2 | 2 | 3 | 4 | 6 | 8 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 10 12 15.09 17.48 80 80

Nipple Thickness

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ont	Si from	ze to	Item Description	Ends	Rating/Facing	Material
opt.	IIOIII	10				
PIPE			I	h	1	1
	1/2	12	PIPE	BW		ASTM A333 GR.6 - SMLS
FLAN			laura 1110a -	la	la ==	1.00
	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A350 LF2 - CL.1
_	2	12	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A350 LF2 - CL.1
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A350 LF2 - CL.1
5	2	12	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A350 LF2 - CL.1
	1/2	12	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A350 LF2 - CL.1
3	3/4	3/4	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A350 LF2 - CL.1
5	1/2	12	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A350 LF2 - CL.1
	2	2	SW REDUCING FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A350 LF2 - CL.1
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A350 LF2 - CL.1
SPEC	TACLE		I	1	I	 
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
2	1/2	12	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI			I	1	1	 
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A350 LF2 - CL.1
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1
	2	12	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1
	2	12	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A350 LF2 - CL.1
	2	12	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A350 LF2 - CL.1
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A420 WPL6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1
	2	12	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	2	8	WELDOLET - MSS-SP97	BW		ASTM A350 LF2 - CL.1
	2	2	LATROLET - BW END - MSS-SP97	BW	3000	ASTM A350 LF2 - CL.1
	3	8	SPECIAL LATROLET - <mfr std=""></mfr>	BW		ASTM A350 LF2 - CL.1
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	LATROLET - SW END - MSS-SP97	SW\BW	3000	ASTM A350 LF2 - CL.1
GASH	KETS					
	1/2	12	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
BOL <sub>1</sub>						
$\Box$	1/2	2 1/8	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60100	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1 Trim :316 / HF
1	2	12	GA-E-60104	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : 316 / HF
4	1/2	1 1/2	GA-E-60200	Globe-BB-Red BThdd seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
4	2	12	GA-E-60204	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : 316 / HF
6	1/2	1 1/2	GA-E-60300	Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
6	2	10	GA-E-60306	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : 316 / HF
6	12	12	GA-E-60307	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
7	2	2	GA-E-60404	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats



		JC <b>032</b>	B <b>243</b>						
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							Rev.		
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VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
7	6	12	GA-E-60405	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60403	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1 Trim : Soft seat-316 trim - RPTFE seats
8	2	4	GA-E-67257	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
8	6	12	GA-E-60787	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC  Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60173	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A350 LF2 - CL.1  Trim : 316 / HF
11	1/2	1 1/2	GA-E-67345	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1 Trim: 316 / HF
14	1/2	1 1/2	GA-E-60174	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	sw	CL800	Body: ASTM A350 LF2 - CL.1  Trim: 316 / HF
14	2	12	GA-E-60574	l '	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
15	2	2	GA-E-60105	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A352 LCC Trim: 316 / HF
19	1/2	1 1/2	GA-E-60176	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A350 LF2 - CL.1  Trim: 316 / HF
62	10	10	GA-E-60712	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : 316 / HF
80	1/2	1 1/2	GA-E-60480	Ball-Stem Extension-End entry-FB-Float.ball-Frgd body - API608	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1 Trim : Soft seat-316 trim - RPTFE seats
82	1/2	1 1/2	GA-E-60754	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1  Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60496	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	PE/THD	CL800	Body: ASTM A350 LF2 - CL.1  Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-60147	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	sw	CL800	Body: ASTM A350 LF2 - CL.1 Trim: 316 / HF
101	2	12	GA-E-60592	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
102	2	12	GA-E-60118	Gate-BB-FB-Flex wdg-Thdd seat - API600	BW	CL300	Body: ASTM A352 LCC Trim: 316 / HF
130	1/2	1 1/2	GA-E-67074	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A350 LF2 - CL.1 Trim: 316 / HF
140	3	3	GA-E-67362	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
142	3	4	GA-E-60118	Gate-BB-FB-Flex wdg-Thdd seat - API600	BW	CL300	Body: ASTM A352 LCC Trim : 316 / HF
144	3	12	GA-E-67363	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
145	2	2	GA-E-60577	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL600 RF	Body: ASTM A352 LCC Trim: 316 / HF
162	6	6	GA-E-67312		FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
162	12	12	GA-E-67312	Gate-Ext. Stem (1800mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
401	2	12	GA-E-60282	Globe-Stem Extension-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
701	10	12	GA-E-67258	Ball-Stem Extension-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
801	1/2	1 1/2	GA-E-67134	Ball-Stem Extension-End entry-FB-Float.ball-Frgd body - API608	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1  Trim : Soft seat-316 trim - RPTFE seats
801	8	8	GA-E-67259	Ball-Stem Extension-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats

BRANCH TABLES



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Pipi	ng C	Class	s:	C	3C	A18	<b>602</b>	
						Rev.		
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RunSize																								 
1/2	Runs	Size													90	Degree	s							
1 A A A 11/2 A A A A 2 S S T T T T 3 S S S S W T 4 S S S S W T T 6 S S S S W W T T 10 S S S S W W W T T 112 S S S S W W W W T T 12 S S S S W W W W T T 12 S S S S W W W W T T 13 BranchSize 1/2 3/4 1 11/2 2 3 4 6 8 10 12  Legenda  A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9			Α																					
11/2	3/	4		Α																				
2 S S T T T T 3 S S S S W T 4 S S S S W T T 6 S S S S W W T T 8 S S S S W W T T 10 S S S S W W W T T 12 S S S S W W W W T T 12 S S S S W W W W T T BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12  Legenda  A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9		1																						
3 S S S S W T T 4 S S S S W T T T 6 S S S S W W T T T 8 S S S S W W T T T 10 S S S S S W W W T T T 10 S S S S S W W W T T T 12 S S S S W W W W T T T 12 S S S S W W W W T T T 12 S S S S W W W W T T T 12 S S S S W W W W T T T 14 S S S S S W W W W T T T 15 S S S S W W W W W T T T 16 S S S S S W W W W W T T T 17 S S S S S W W W W W T T T 18 S S S S W W W W W T T T 18 S S S S S W W W W W T T T 19 S S S S S W W W W W T T T 19 S S S S S W W W W W T T T 19 S S S S S S S S S S S S S S S S S S					A T	A T	т																	
4 S S S S W T T 6 S S S S W W T T 8 S S S S W W T T 10 S S S S W W W T T 112 S S S S W W W W T T 12 S S S S W W W W T T 15 BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12  Legenda  A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9					s	Ś	w	Т																
8 S S S S W W W T T 10 S S S S W W W W T T 12 S S S S W W W W T T BranchSize 1/2 3/4 1 11/2 2 3 4 6 8 10 12  Legenda  A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9		4	S	S	S		W	Т	Т															
10 S S S S W W W W T T 12 S S S S W W W W T T BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12  Legenda  A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9					-	-	W	• • •	Т	T	_													
12 S S S S W W W W W T T T  BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12  Legenda  A TEE - SW ENDS - ASME-B16.11  P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E  S SOCKOLET - SW END - MSS-SP97  T TEE - ASME-B16.9						-	W	• • •		Ι \Λ/	I T	т												
Legenda         A         TEE - SW ENDS - ASME-B16.11           P         PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E           S         SOCKOLET - SW END - MSS-SP97           T         TEE - ASME-B16.9					S		W	W	W		w	Ť	Т											
A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9	Branc	hSize	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12											
A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9																								
P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9	Legen	da																						
S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9	Α	TEE	- SW	END	OS -	ASM	E-B1	6.11																
T TEE - ASME-B16.9	Р									AD-T	S-CO	OR-EN	NG-PI	MT-012-E										
	S						- MS	SS-SI	97															
W WELDOLFT MOO OPOZ	Т																							
W WELDOLET - MSS-SP97	W	WEL	DOL	ET -	MSS	S-SP9	97																	

												45	degrees	s						
Runs																				
4	2	L	L	L	L	PP														
3	3	L	L	L	L	LB	PP													
	4	L	L	L	L	LB	LS	PP												
	6	L	L	L	L	LB	LS	LS	PP											
	8	L	L	L	L	LB	LS	LS	LS	PP										
10	0	L	L	L	L	LB	LS	LS	LS	LS	PP									
12	2	L	L	L	L	LB	LS	LS	LS	LS	PP	PP								
Branch	Size	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12								
Legenda	a																			
L	LATR	OLE	T - SV	N EN	1D - N	ISS-S	SP97													
LB	LATR	OLE	T - BV	N EN	1D - N	ISS-S	SP97					-								
LS	LS SPECIAL LATROLET - <mfr std=""></mfr>																			
PP	PIPE	TO F	PIPE V	NITH	l FUL	LEN	CIRCI	LEME	NT S	SLEE	VE:TS	COR-ENG-PIPMT-01	2-E							

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



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 Base Material
 : LOW TEMP. CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL300
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 12 - SS316/HF

Corrosion Allow.: 1.5 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 220 °C

Service: [AIV] MEG - Monoethylene Glycol O - Oil PC - Process Condensate PG - Process Gas / Purge Gas PR - Propane Refrigerant

Pipe Thickness

		-																									
NPS	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	28	30	36	40	42	48	52	56	60	64	Π
Thk.mm	3.73	3.91	4.55	5.08	5.54	5.49	6.02	7.11	8.18	9.27	9.53	9.53	12.7	12.7	12.7	15.88	9.53	12.7	12.7	12.7	15.88	15.88	14.27	15.88	15.88	17.48	
SCH.	XS	XS	XS	XS	XS	STD	STD	STD	STD	STD	STD	STD	XS	XS	XS		STD	XS	XS	XS							
	68	72																									
	17.48	19.05																									

Nipple Thickness

NPS	1/2	3/4	1	1 1/2	2	
Thk.mm	4.78	5.56	6.35	7.14	8.74	
SCH.	160	160	160	160	160	

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 51.02 51.02 46.88 45.16 43.78 ASME B16.5 1/2 · 24 Temp. °C -28.9 37.78 93.33 148.9 204.4 Material Group 1.1 NPS Press. bar 25

28 · 72 Temp. °C 180

		ze	Item Description	Ends	Rating/Facing	Material
opt.	from	to				
PIPE			1		_	
	1/2	24	PIPE	BW		ASTM A333 GR.6 - SMLS
	26	72	PIPE	BW		ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)
FLAN	IGES		1		1	
	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A350 LF2 - CL.1
	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A350 LF2 - CL.1
	26	60	WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A350 LF2 - CL.1
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A350 LF2 - CL.1
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A350 LF2 - CL.1
	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A350 LF2 - CL.1
	26	60	BLIND FLANGE - ASME-B16.47 series.A		CL300 RF	ASTM A350 LF2 - CL.1
	2	2	SW REDUCING FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A350 LF2 - CL.1
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A350 LF2 - CL.1
SPEC	TACLE	BLIND				
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
2	1/2	12	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A350 LF2 - CL.1
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
li	26	48	LONG RADIUS ELBOW - ASME-B16.9	вW		ASTM A420 WPL6W - WLDD
li	50	72	LONG RADIUS ELBOW - TB RAC 5060	вW		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1
	2	24	REDUCER - ASME-B16.9	вw		ASTM A420 WPL6 - SMLS
l	26	48	REDUCER - ASME-B16.9	вw		ASTM A420 WPL6W - WLDD
	50	72	REDUCER, LARGE BORE - TB RAC 5062	вw		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A350 LF2 - CL.1
	2	48	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
l	50	72	CAP - TB RAC 5064	BW		ASTM A420 WPL6W - WLDD
i	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A350 LF2 - CL.1
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE PE		ASTM A420 WPL6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1
	2	24	TEE - ASME-B16.9	BW	5000	ASTM A420 WPL6 - SMLS
	28	48	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS ASTM A420 WPL6W - WLDD
	52	72	TEE - TB RAC 5061	BW		ASTM A420 WPL6W - WLDD
	5∠ <b>2</b>	36	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	3000	ASTM A350 LF2 - CL.1
GASK		30	GELOIAL SWELFOLET - CWIFK SIUS	DAA	5000	ASTINI ASSULTZ - CL.1
JAJI	26	60	FLAT GASKET - GROOVED - <mfr std=""></mfr>		1	AISI 316L+GRAPHITE
		24				
DOI -	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20		1	304 SS+GRAPH 98% - C.S. OUT.RING
BOL <sub>1</sub>	Γ <b>S</b> 1/2	2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A402 P7 + ASTM A404 CP 2H (HotDin 452)
	1/2	I/Z	OT. DOE 172 NOTO - ANOLITINA - TO DUE 3300			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60100	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1
							Trim : 316 / HF
1	2	24	GA-E-60104	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A352 LCC
							Trim: 316 / HF
2	26	48	GA-E-60509	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe	FLGD	CL300 RF	Body: ASTM A352 LCC
				- API609			Trim : Metal seat - 316 - LT C.S. disc



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ALV	ES						
oos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
2	68	68	GA-E-60527	Special Butterfly-Flanged-Triple Off Set-Int.seat-	FLGD	CL300 RF	Body: ASTM A352 LCC
4	1/2	1 1/2	GA-E-60200	Fire safe - <mfr std=""> Globe-BB-Red BThdd seat - API602</mfr>	SW	CL800	Trim : Metal seat - 316 - LT C.S. disc Body: ASTM A350 LF2 - CL.1
4	2	12	GA-E-60204	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Trim : 316 / HF Body: ASTM A352 LCC
6	1/2	1 1/2	GA-E-60300	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
6	2	10	GA-E-60306	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A352 LCC
6	12	24	GA-E-60307	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Trim : 316 / HF Body: ASTM A352 LCC
6	26	36	GA-E-60384	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A352 LCC
6	52	52	GA-E-60720	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Trim : 316 / HF Body: ASTM A352 LCC
7	6	24	GA-E-60405	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Trim:316 / HF Body: ASTM A352 LCC
8	1/2	1 1/2	GA-E-60403	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A350 LF2 - CL.1
8	6	24	GA-E-60787	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Trim: Soft seat-316 trim - RPTFE seats Body: ASTM A352 LCC
10	1/2	1 1/2	GA-E-60173	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Trim: Soft seat-316 trim - RPTFE seats Body: ASTM A350 LF2 - CL.1
14	1/2	1 1/2	GA-E-60174	Gate-Stem Extension-BB-Red.B-Solid wdg-	DF SW	CL800	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
14	2	24	GA-E-60574	Exp.seat - API602 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A352 LCC
19	1/2	1 1/2	GA-E-60176	- API600 Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
62	10	10	GA-E-60712	Exp.seat - API602 Check-Flanged -Dual plate-Widd seat - API594	DF FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A352 LCC
64	68	68	GA-E-60725	Nozzle Check-Long-Axial non slam-Thdd seat -	FLGD	CL300 RF	Trim:316/HF Body:ASTM A352 LCC
69	52	52	GA-E-60717	<mfr -="" metallic="" std=""> Check-Flanged -Dual plate-Wldd seat - API594</mfr>	FLGD	CL300 RF	Trim:316/HF Body:ASTM A352 LCC
80	1/2	1 1/2	GA-E-60480	Ball-Stem Extension-End entry-FB-Float.ball-Frgd	FLGD	CL300 RF	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
82	1/2	1 1/2	GA-E-60754	body - API608 Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A350 LF2 - CL.1
89	1/2	1 1/2	GA-E-60496	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A350 LF2 - CL.1
101	1/2	1 1/2	GA-E-60147	API608 Gate-Stem Extension-BB-Red.B-Solid wdg-	F SW	CL800	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A350 LF2 - CL.1
101	2	24	GA-E-60592	Exp.seat - API602 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A352 LCC
102	2	24	GA-E-60118	- API600 Gate-BB-FB-Flex wdg-Thdd seat - API600	вW	CL300	Trim:316 / HF Body:ASTM A352 LCC
130	1/2	1 1/2	GA-E-67074	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH DF	CL800	Trim: 316 / HF Body: ASTM A350 LF2 - CL.1
201	30	30	GA-E-60533	Exp.seat - API602 Butterfly-Stem Extension-Flanged-Triple Off Set- Int.seat-Fire safe - API609	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A352 LCC
401	2	12	GA-E-60282	Globe-Stem Extension-BB-Disk-Thdd seat - API	FLGD	CL300 RF	Trim : Metal seat - 316 - LT C.S. disc Body: ASTM A352 LCC
701	12	24	GA-E-67258	623 Ball-Stem Extension-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A352 LCC Trim: Soft seat-316 trim - RPTFE seats
801	1/2	1 1/2	GA-E-67134	Ball-Stem Extension-End entry-FB-Float.ball-Frgd body - API608	FLGD	CL300 RF	I rim : Soft seat-316 trim - RPTFE seats Body: ASTM A350 LF2 - CL.1 Trim : Soft seat-316 trim - RPTFE seats

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	6	12	GA-E-60605	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3
1	36	48	GA-E-60610	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body: ASTM A420 WPL6W - WLDD Screen: 316 - CLOTH - MESH 3

#### BRANCH TABLES



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RunS	i70															9	0 Deg	grees	5													
1/2		A																														
3/4		A	A																													
1 1/2		A	A	A	Α																											
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	3					SW	Ė	÷	Т																							
8							sw	' Ť	Ť	Т																						
10							SW		Т	Т	Т																					
12						SW	SW	SW	Т	Т	Т	Т																				
14	1					SW	SW	SW	Т	Т	Т	Т	Т																			
16							SW		Т	Т	Т	Т	Т	Т																		
18							SW			Т	Т	Т	Т	Т	Т																	
20	)						SW			Т	T	T	T	T	T	T	_															
24							SW				T	T	T	T	T	T	T	_														
28	3						SW					1	<u> </u>	1	<u> </u>	1	1	<u> </u>	_													
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48											SW			SW	SW	SW	Ť	÷	Ť	Ť	÷	Ť	т									
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56						SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	T1	T1	T1	T1	T1	T1	T1	T1							
60	)					SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	T1	T1	T1	T1	T1	T1	T1						
64																					T1	T1	T1	T1	T1	T1	T1					
68											SW										T1	T1	T1	T1	T1	T1	T1	T1				
72						SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	T1	T1	T1	T1	T1	T1	T1	T1	T1			
Branch	Size	1/2	3/4	1	1 1	/2 2	3	4	6	8	10	12	14	16	18	20	24	28	30	36	40	42	48	52	56	60	64	68	72			
Legend	la																															
A	TEE	- SV	V EN	DS -	ASI	/IE-B1	6.11																									1
SW						T - <n< th=""><th></th><th>Std&gt;</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>٦</th></n<>		Std>																								٦
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#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.
  6) This piping class is created for lines subjected to Acoustic Induced Vibration.



	-	ОВ <b>2243</b>						
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 Base Material
 : LOW TEMP. CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL300
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 12 - SS316/HF

Corrosion Allow.: 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 230 °C
Service: WF - Wet (Warm) Flare

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 Thk.mm 4.78 5.56 4.55 5.08 5.54 5.49 6.02 7.11 8.18 9.27 10.31 11.13 12.7 14.27 15.09 17.48 SCH. 160 160 XS XS XS XS STD STD STD STD STD 40 40 XS 40 40 40

Nipple Thickness

NPS 1/2 3/4 1 1 1 1/2 2 Thk.mm 7.47 7.82 6.35 7.14 8.74 SCH. XXS XXS 160 160 160

PRESSURE - TEMPERATURE Ratings

NPS Press. bar | 51.02 | 51.02 | 46.88 | 45.16 | 43.78 | ASME B16.5 | 1/2 · 24 | Temp. °C | -28.9 | 37.78 | 93.33 | 148.9 | 204.4 | Material Group 1.1

	Size Item Description Ends Rating/Facing Material											
opt.	Si from	ize ∣ to	Item Description	Ends	Rating/Facing	Material						
$\vdash$												
PIPE				1								
	1/2	24	PIPE	BW		ASTM A333 GR.6 - SMLS						
FLAN			I	1	1							
	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A350 LF2 - CL.1						
	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A350 LF2 - CL.1						
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A350 LF2 - CL.1						
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A350 LF2 - CL.1						
	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A350 LF2 - CL.1						
	2	2	SW REDUCING FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A350 LF2 - CL.1						
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A350 LF2 - CL.1						
SPEC	TACLE	BLIND	1	1	1							
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)						
	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)						
2	1/2	12	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)						
FITTI	NGS			_								
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A350 LF2 - CL.1						
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1						
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS						
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1						
	2	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS						
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1						
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A350 LF2 - CL.1						
	2	24	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS						
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1						
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A350 LF2 - CL.1						
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1						
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS						
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A420 WPL6 - SMLS						
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS						
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1						
	2	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS						
	2	8	WELDOLET - MSS-SP97	BW		ASTM A350 LF2 - CL.1						
	2	2	LATROLET - BW END - MSS-SP97	BW	3000	ASTM A350 LF2 - CL.1						
	3	8	SPECIAL LATROLET - <mfr std=""></mfr>	BW		ASTM A350 LF2 - CL.1						
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A350 LF2 - CL.1						
	1/2	1 1/2	LATROLET - SW END - MSS-SP97	SW\BW	3000	ASTM A350 LF2 - CL.1						
GASK	KETS											
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING						
BOL <sub>1</sub>												
	1/2	2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)						

VALV	ES						
pos.	Si:	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60100	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A350 LF2 - CL.1 Trim: 316 / HF
1	2	24	GA-E-60104	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A352 LCC Trim :316 / HF
4	1/2	1 1/2	GA-E-60200	Globe-BB-Red BThdd seat - API602		CL800	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
4	2	12	GA-E-60204	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
6	1/2	1 1/2	GA-E-60300	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A350 LF2 - CL.1 Trim :316 / HF
6	2	10	GA-E-60306	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : 316 / HF
6	12	24	GA-E-60307	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A352 LCC Trim :316 / HF
7	6	24	GA-E-60405	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60403	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1 <u>Trim :</u> Soft seat-316 trim - RPTFE seats



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pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
8	6	24	GA-E-60787	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60173	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
					DF		Trim : 316 / HF
14	1/2	1 1/2	GA-E-60174	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602			Trim : 316 / HF
14	2	24	GA-E-60574	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A352 LCC
				- API600			Trim : 316 / HF
19	1/2	1 1/2	GA-E-60176	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602	DF		Trim : 316 / HF
62	10	10	GA-E-60712	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL300 RF	Body: ASTM A352 LCC
							Trim: 316 / HF
80	1/2	1 1/2	GA-E-60480	Ball-Stem Extension-End entry-FB-Float.ball-Frgd	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1
				body - API608	_		Trim : Soft seat-316 trim - RPTFE seats
82	1/2	1 1/2	GA-E-60754	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60496	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A350 LF2 - CL.1
				API608	F		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-60147	Gate-Stem Extension-BB-Red.B-Solid wdg-	sw	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602			Trim : 316 / HF
101	2	24	GA-E-60592	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A352 LCC
				- API600	_		Trim: 316 / HF
102	2	24	GA-E-60118	Gate-BB-FB-Flex wdg-Thdd seat - API600	вw	CL300	Body: ASTM A352 LCC
							Trim : 316 / HF
401	2	12	GA-E-60282	Globe-Stem Extension-BB-Disk-Thdd seat - API	FLGD	CL300 RF	Body: ASTM A352 LCC
				623			Trim : 316 / HF
801	1/2	1 1/2	GA-E-67134	Ball-Stem Extension-End entry-FB-Float.ball-Frgd	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1
				body - API608			Trim : Soft seat-316 trim - RPTFE seats
907	2	4	GA-E-69009	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC
				, , , , , , , , , , , , , , , , , , , ,			Trim : Soft seat-316 trim - RPTFE seats
976	2	4	GA-E-69050	Ball-Stem Extension-Split body-Red.B-Floating	FLGD	CL300 RF	Body: ASTM A352 LCC
- 1				ball - API6D			Trim : Soft seat-316 trim - RPTFE seats

RANCH 1	ГАВІ	LES																
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8		S	S	S	S	W	W	W	Т	T	_							
10		S	S	S	S	W	W	W	W	T	T	_						
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16			S	S	S	W	W	W	W	W	Р	P	Ť	т				
18		S S	S	S	s	w	w	w	W	W	P	P	P	÷	т			
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24		S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т	
BranchS	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	
Legenda																		
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P I	PIPE	TOI	PIPE	WIT	H RI	EINF	ORC	NG F	PAD-	TS-C	OR-E	NG-F	PIPM	Γ-012	-E			
S S	SOC	(OLE	= T - :	SW E	END	- MS	S-SF	97										
Т .	TEE -	ASI	ИЕ-В	16.9	)													
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	2	L	L	L	L	PP												
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	4	L	L	L	L	LB	LS	PP										
	6	L	L	L	L	LB	LS	LS	PP									
	8	L	L	L	L	LB	LS	LS	LS	PP								
10	0	L	L	L	L	LB	LS	LS	LS	LS	PP							
1:	2	L	L	L	L	LB	LS	LS	LS	LS	PP	PP						
1-	4	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP					
10	6	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP				
18	8	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP			
20	0	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP		
2	4	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	
Legenda	a																	
L	LATE	ROLE	T - S\	N EN	ND - N	MSS-S	SP97											
LB	LATE	ROLE	T - B\	N EN	ND - N	MSS-S	SP97											
LS	SPEC	CIAL	LATR	OLE	T - <l< th=""><th>MFR S</th><th>Std&gt;</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></l<>	MFR S	Std>											
PP	PIPE	TO F	PIPE \	NITH	l FUL	LL EN	CIRC	LEME	ENT S	SLEE\	VE:TS	G-COF	R-EN	G-PIP	MT-0	12-E		

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



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Design code : ASME B 31.3 2016 Base Material : LOW TEMP. CARBON STEEL Nom. Rating : CL300 **PWHT** :AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim :12 - SS316/HF

Corrosion Allow. : 6 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 90 °C

Service: HL - Hydrocarbon Liquid

Pipe Thickness

NPS 1/2 3/4 1 1 1/2 2 3 4 6 8 Thk.mm 7.47 7.82 9.09 10.15 8.74 11.13 11.13 10.97 12.7 10 12.7 14 16 18 20 24 15.09 15.88 17.48 17.48 20.62 14.27 SCH. XXS XXS XXS XXS 160 160 120 XS 60 60

Nipple Thickness

NPS 1/2 3/4 1 1 11/2 2 Thk.mm 7.47 7.82 9.09 10.15 8.74 SCH. XXS XXS XXS XXS 160

1/2 ·	24   i emp	i. *C  -2	8.9   37.78   Material Group 1.1			
opt.	Siz from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	24	PIPE	вw		ASTM A333 GR.6 - SMLS
FLAN	GES					
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A350 LF2 - CL.1
	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A350 LF2 - CL.1
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A350 LF2 - CL.1
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A350 LF2 - CL.1
	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A350 LF2 - CL.1
	2	2	SW REDUCING FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A350 LF2 - CL.1
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A350 LF2 - CL.1
SPEC	TACLE	BLIND				
	1/2	12	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	14	24	BLIND & SPACER - ASME-B16.48 GA-E-060011		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
2	1/2	12	BLIND & SPACER - ASME-B16.48 GA-E-060011		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTII	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A350 LF2 - CL.1
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	2	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	6000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	2	24	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A350 LF2 - CL.1
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	2	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	2	8	WELDOLET - MSS-SP97	BW		ASTM A350 LF2 - CL.1
	1/2	1 1/2	SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A350 LF2 - CL.1
GASK	ETS					
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
BOLT						
	1/2	2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60109	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW	CL1500	Body: ASTM A350 LF2 - CL.1 Trim: 316 / HF
1	2	24	GA-E-67387	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
4	1/2	1 1/2	GA-E-60206	Globe-WB-Red.B-Thdd seat - API602	sw	CL1500	Body: ASTM A350 LF2 - CL.1  Trim::316 / HF
4	2	12	GA-E-67406	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
6	1/2	1 1/2	GA-E-67506	Check-WB-Red.B-Piston-Int seat - API602	sw	CL1500	Body: ASTM A350 LF2 - CL.1 Trim: 316 / HF
6	2	10	GA-E-67507	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
6	12	24	GA-E-67508	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: 316 / HF
7	6	24	GA-E-67647	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC Trim: Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-67648	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A350 LF2 - CL.1  Trim: Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-67649	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A352 LCC   Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60183	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL1500	Body: ASTM A350 LF2 - CL.1  Trim: 316 / HF



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VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
14	1/2	1 1/2	GA-E-60578	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	SW		Body: ASTM A350 LF2 - CL.1 Trim :316 / HF
19	1/2	1 1/2	GA-E-60579	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF		Body: ASTM A350 LF2 - CL.1 Trim :316 / HF
101	1/2	1 1/2	GA-E-67031	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	sw		Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF

BRANCH	TAB	LES																							
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6	6	S	S	S	S	W	W	Т	Т																
8	3	S	S	S	S	W	W	W	Т	Т															
10		S	S	S	S	W	W	W	W	Т	Т														
12	2	S	S	S	S	W	W	W	W	W	Т	Т													
14		S	S	S	S	W	W	W	W	W	Р	Т	Т												
16		S	S	S	S	W	W	W	W	W	Р	Р	Т	Т											
18		S	S	S	S	W	W	W	W	W	Ρ	Ρ	Р	T	T	_									
20		S	S	S	S	W	W	W	W	W	Р	Р	Р	Р	T	T	_								
_ 24		S	S	S	S	W	W	W	W	W	Р	Р	Р	Р	Р	Т	Т								
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24								
Legend	а																								
Α	TEE -	SW	ENI	os -	ASME	E-B16	6.11																		
Р	PIPE	TO I	PIPE	WIT	TH RE	INFO	ORCI	NG F	AD-	rs-co	DR-EI	NG-F	IPMI	Γ-012	-E										
S	SOCI	KOLE	ET - :	sw i	END -	- TB I	RAC	5380																	
Т	TEE -	ASN	ME-E	16.9	)																				

#### GENERAL NOTES

WELDOLET - MSS-SP97

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL300 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing : RF Valve Trim : 8 - 13Cr/ HF

Corrosion Allow. : 1.5 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 230 °C

Service: BOG - Boil Off Gas DFG - Dry Fuel Gas MR - Mixed Refrigerant NG - Natural Gas PC - Process Condensate WF - Wet (Warm) Flare

Pipe Thickness

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 10
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 16
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 36
 42
 48

 6.02
 7.11
 8.18
 9.27
 9.53
 9.53
 12.7
 12.7
 12.7
 17.48
 15.88
 17.48
 19.05
 19.05
 22.23
 25.4

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Nipple Thickness

NPS 1/2 3/4 1 11/2 2
Thk.mm 4.78 5.56 6.35 7.14 8.74
SCH. 160 160 160 160 160
PRESSURE - TEMPERATURE Ratings

NPS Press. bar 71.02 51.02 46.88 45.16 43.78 ASME B16.5/ASME B16.47 1/2 - 30 Temp. °C -28.9 37.78 93.33 148.9 204.4 Material Group 1.1 NPS Press. bar 45

36 ·	56 Temp		50			
	Si		Item Description	Ends	Rating/Facing	Material
opt.	from	to	·			
PIPE	1			1	1	
	1/2	20	PIPE	BW		ASTM A106 GR.B - SMLS
	22	24	PIPE	BW		ASTM A333 GR.6 - SMLS
	26	42	PIPE	BW		ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)
- A A A	44	56	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
FLAN		4.4/0	DW ELANOE AGME DAGE	lova	OL 000 DE	ACTM AMOS N
	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	26 1/2	56 1 1/2	WN FLANGE - ASME-B16.47 series.A	BW SW	CL300 RF CL600 RF	ASTM A105 Normalized
5	2	24	SW FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
5	26	56	WN FLANGE - ASME-B16.5 WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW		ASTM A105 Normalized
13	1/2	24	BLIND FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A105 Normalized
	26	56	BLIND FLANGE - ASME-B16.3 BLIND FLANGE - ASME-B16.47 series.A		CL300 RF	ASTM A105 Normalized ASTM A105 Normalized
3	3/4		BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
5	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A105 Normalized
	2	2	SW REDUCING FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Normalized
	TACLE		THE RED. I LANCE - ACINE-D10.3	ITTIDI	OLSOO IXI	ASTW A 103 Normalized
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060015</mfr>		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
2	1/2		BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTII		.=			,	
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
	2	20	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	24	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	50	56	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	20	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	24	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	30	48	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	50	56	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	20	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	24	48	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	50	56	CAP - TB RAC 5064	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	1/2		THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	1/2	2	NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	1	3000	ASTM A105 Normalized
		20	TEE - ASME-B16.9			ASTM A234 WPB - SMLS
			TEE - ASME-B16.9	1		
	26	48	TEE - ASME-B16.9			
	56		TEE - TB RAC 5061	1		
				1		
				1	3000	
$\Box$	1/2	1 1/2	SOCKOLE F - SW END - MSS-SP97	SW/BW	3000	ASTM A105 Normalized
	1/2 2 24 26	1 1/2 20 24 48 56 8 2	TEE - SW ENDS - ASME-B16.11 TEE - ASME-B16.9 TEE - ASME-B16.9 TEE - ASME-B16.9	SW BW BW BW BW BW BW SW\BW	3000 3000 3000	ASTM A105 Normalized



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	Si	ize	Item Description	Ends	Rating/Facing	Material
opt.	from	to	·			
FITTI	NGS					
	1/2	1 1/2	LATROLET - SW END - MSS-SP97	SW\BW	3000	ASTM A105 Normalized
GASI	KETS					
	26	56	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	1 1/2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOL.	ΓS					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALVE	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60112	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized
1	2	24	GA-E-60117	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Trim:13CR / HF Body:ASTM A216 WCB Trim:13CR / HF
2	26	48	GA-E-60511	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - API609	FLGD	CL300 RF	Body: ASTM A216 WCB
4	1/2	1 1/2	GA-E-60209	Globe-BB-Red BThdd seat - API602	sw	CL800	Trim : Metal seat - 13CR - C.S. disc Body: ASTM A105 Normalized
4	2	12	GA-E-60217	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Trim : 13CR / HF Body: ASTM A216 WCB Trim : 13CR / HF
5	1/2	1 1/2	GA-E-67200	Globe-BB-Red.B-Needle-Thdd seat - ASME- B16.34	sw	CL800	Body: ASTM A105 Normalized Trim::13CR / HF
6	1/2	1 1/2	GA-E-60312	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
6	2	10	GA-E-60322	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
6	12	24	GA-E-60323	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
7	4	4	GA-E-60420	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
7	6	24	GA-E-60421	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
7	30	30	GA-E-67198	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
8	1/2	1 1/2	GA-E-60419	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats
8	2	4	GA-E-67170	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
8	6	24	GA-E-60786	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
10	1/2	1 1/2	GA-E-60177	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A105 Normalized  Trim: 13CR / HF
11	1/2	1 1/2	GA-E-60583	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim::13CR / HF
14	1/2	1 1/2	GA-E-60148	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim::13CR / HF
14	2	8	GA-E-67061	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim: 13CR / HF
15	2	2	GA-E-60126	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : 13CR / HF
19	1/2	1 1/2	GA-E-67001	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A105 Normalized Trim :13CR / HF
62	2	10	GA-E-60703	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
64	42	56	GA-E-60383	Nozzle Check-Long-Axial non slam-Thdd seat - API 6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
69	42	42	GA-E-60349	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
69	56	56	GA-E-60718	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
80	1/2	1 1/2	GA-E-67196	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats
82	1/2	1 1/2	GA-E-60755	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
82	4	4	GA-E-67168	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	F	CL800	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67011	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
101	2	2	GA-E-60591	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600		CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
130	1/2	1 1/2	GA-E-67075	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	DF	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
140	2	6	GA-E-67364	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
163	3	3	GA-E-67313	Gate-Ext. Stem (2300mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
780	2	3	GA-E-67659	DBL Block&Bleed Ball valve-SplitBdy-RB- Float.ball - <mfr std=""></mfr>	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats



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pos.	from Si	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
			04 5 07405	Dall Otana Fatanaian Fadantas FD Floot ball	FLOD	01 000 DE	Double ACTM AACE Normalined
801	1/2	1 1/2	GA-E-67135	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized
	_		0.4 = 0=000	,			Trim : Soft seat-316 trim - RPTFE seats
840	3	3	GA-E-67693	Ball-Interlock System-Split body-FB-Floating	FLGD	CL300 RF	Body: ASTM A216 WCB
				ball - API6D			Trim : Soft seat-316 trim - RPTFE seats
840	10	10	GA-E-67294	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL300 RF	Body: ASTM A216 WCB
				Interlock System			Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
890	1/2	1 1/2	GA-E-67653	Ball-Stem Extension-End entry -FB-Float.ball -	PE/THD	CL800	Body: ASTM A105 Normalized
				Frgd body+ Nipple - API608	F		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
902	30	42	GA-E-69079	Butterfly-Flanged-Triple Off Set-Int.seat-Fire	FLGD	CL300 RF	Body: ASTM A216 WCB
				safe - API609			Trim : Metal seat - 13CR - C.S. disc
907	6	14	GA-E-69011	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
977	6	6	GA-E-69102	Ball-Stem Extension-Split body-Red.B-	FLGD	CL300 RF	Body: ASTM A216 WCB
				Trunnion ball - API6D			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
991	1	1	GA-E-69045	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	3	24	GA-E-60607	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	1	Body: ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3
1	30	56	GA-E-60610	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	1	Body: ASTM A420 WPL6W - WLDD Screen: 316 - CLOTH - MESH 3
2	24	24	GA-E-60644	Angle T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	1	Body: ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3
8	56	56	GA-E-60611	Angle T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	1	Body: ASTM A420 WPL6W - WLDD Screen: 316 - CLOTH - MESH 3

BRANCH	TAR	I FS																								
DIVANCE	IAD	LLG																								
RunSi	7 <b>e</b>															90	0 De	grees	•							
RunSi: 1/2 3/4/1 1 11/2 2 2 1/2 3 3 4 6 8 8 100 12 144 266 28 300 366 42 48		A A A A S	AAA6	AAT SSSSSSSSSSSSSSSSSS	AT SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS	T		T T W W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	T T P P P P P P P P P P P	T T P P P P P P P P P	T T P P P P P P P P P	T T P P P P P P P P	T T P P P P P P P	T T P P P P P P	T T P P P P P	T T P P P P	T T P P	T T P	T T P	TT	Т		
56		S	S	S	S	W		W	W	W	W	Ρ	Ρ	Ρ	Ρ	Р	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	T1	T1	T1	
Branch	Size	1/2	3/4	1	1 1/2	2 2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	36	42	48	56	;
Legenda	a																									
Α	TEE	- SW	/ ENI	DS -	ASM	E-B1	6.11																			
Р	PIPE	ТО	PIPE	WI	TH RE	EINF	ORCII	NG F	AD-T	rs-c	OR-E	NG-F	PIPM	Γ-012	-E											
S	SOC	KOL	ET -	SW	END	- MS	S-SP	97																		
	TEE																									<u> </u>
T1	TEE	- TB	RAC	506	1																					
W	WEL	DOL	ET -	MSS	S-SPS	7																				



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	3CI	B1S	<b>601</b>	
						Rev.		
Sh.	4	of	4	Α	0	1	2	3

															4	5 deg	rees							
Runs																								
2		L	L	L	L	PP																		
3		L	L	L	L	LB	PP																	
4		L	L	L	L	LB	LS	PP																
6		L	L	L	L	LB	LS	LS	PP															
8		L	L	L	L	LB	LS	LS	LS	PP														
10		L	L	L	L	LB	LS	LS	LS	LS	PP													
12		L	L	L	L	LB	LS	LS	LS	LS	PP	PP												
14		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP											
16		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP										
18		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP									
20		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP								
24		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP							
26		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	-					
30		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP					
36		L	L	L	L	LB	LS	LS	LS	LS	ГГ	PP	PP	PP	PP	PP	PP	PP	PP	PP				
42		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	-		
48		L	L	L	L	LB I B	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP PP	PP PP	PP PP	PP PP	PP PP	PP PP	-	
56		Ŀ	L	L	L	LB	LS	LS	LS	LS LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP PP	
		1/2	2//	1	1 1/2		3	4	6	8	10	12	14	16	18	20	24	26	28	30	36	42	48	56
Branch	oize	1/2	3/4		1 1/2	. 2	3	4	U	O	10	12	14	10	10	20	24	20	20	30	30	42	40	30
Legenda	ì																							
L	LATE	ROLE	T - S\	N E	ND - N	MSS-S	SP97																	
LB	LATE	ROLE	T - B\	N EI	ND - N	MSS-S	SP97																	
LS	LS SPECIAL LATROLET - <mfr std=""></mfr>																							
PP	PIPE	TO F	PIPE \	WITH	H FUL	L EN	CIRC	LEME	NT S	LEE\	/E:TS	-COF	R-ENG	3-PIP	MT-0	12-E								

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



		ов <b>2243</b>						
Pipi	ng C	Class	3:	0	3C	B15	<b>602</b>	
						Rev.		
Sh.	1	of	3	Α	0	1	2	3

: CARBON STEEL Design code : ASME B 31.3 2016 Base Material Nom. Rating : CL300 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing : RF Valve Trim :8 - 13Cr/ HF

Corrosion Allow. : 1.5 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

: 0 °C to 250 °C Temp. Limit

Service: BOG - Boil Off Gas HO - Hot Oil HOR - Hot Oil Return HOS - Hot Oil Supply MEG - Monoethylene Glycol PC - Process Condensate

Pipe Thickness

| NPS | 1/2 | 3/4 | 1 | 11/2 | 2 | 2 1/2 | 3 | Thk.mm | 3.73 | 3.91 | 4.55 | 5.08 | 5.54 | 5.16 | 5.49 | SCH. | XS | XS | XS | XS | XS | STD | STD | 4 6 8 10 12 14 6.02 7.11 8.18 9.27 9.53 9.53 STD STD STD STD STD STD 16 18 20 24 30 12.7 12.7 12.7 17.48 19.05 XS XS XS 40

Nipple Thickness

NPS 1/2 3/4 1 11/2 2
Thk.mm 4.78 5.56 6.35 7.14 8.74
SCH. 160 160 160 160 160
PRESSURE - TEMPERATURE Ratings

pt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
IPE						
	1/2	24	PIPE	BW	T	ASTM A106 GR.B - SMLS
	26	42	PIPE	BW		ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)
LAN	IGES	72	II	B * * *	_	NOT
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
	26	42	WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A105 Normalized
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
5	26	42	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	. ,	ASTM A105 Normalized
73	2	2	WN FLANGE - ASME-B16.5	BW	` '	ASTM A105 Normalized
, ,	1/2	24	BLIND FLANGE - ASME-B16.5	BVV	CL300 RF	ASTM A105 Normalized
	26	42	BLIND FLANGE - ASME-B16.47 series.A		CL300 RF	ASTM A105 Normalized
5	1 1/2	1 1/2	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A105 Normalized ASTM A105 Normalized
14	2	2		THDF		
	TACLE		THDD RED. FLANGE - ASME-B16.5	ппог	CL300 RF	ASTM A105 Normalized
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	1/2	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	30	30			CL300 RF	, ,
	1		SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060015</mfr>			ASTM A516 GR.70 + S5 (-46°C)
5	36	36	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060015</mfr>		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	1/2   NGS	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
• • •		0	DDID DING. TD DDI 5044		CL300 RF	ACTAL ALOS Normalina d
	1/2	3	DRIP-RING - TB DRI 5011	sw	3000 KF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11		3000	ASTM A105 Normalized
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	26	42	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	30	42	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	26	42	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
	2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	30	42	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A105 Normalized
ASŁ	KETS					
	26	42	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
OL1	ΓS					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)



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						Rev.		
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/ALV	-						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60112	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized
1	2	24	GA-E-60117	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Trim : 13CR / HF Body: ASTM A216 WCB Trim : 13CR / HF
2	26	42	GA-E-60511	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - API609	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Metal seat - 13CR - C.S. disc
4	1/2	1 1/2	GA-E-60209	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A105 Normalized
4	2	14	GA-E-60217	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Trim : 13CR / HF Body: ASTM A216 WCB Trim : 13CR / HF
6	1/2	1 1/2	GA-E-60312	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
6	2	10	GA-E-60322	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
6	12	24	GA-E-60323	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
7	6	24	GA-E-60421	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
8	1/2	1 1/2	GA-E-60419	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-60786	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
10	1/2	1 1/2	GA-E-60177	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A105 Normalized  Trim::13CR / HF
11	1/2	1 1/2	GA-E-60583	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim: 13CR / HF
41	1 1/2	1 1/2	GA-E-67412	Globe-BB-Red BThdd seat - API602	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim:13CR / HF
62	3	3	GA-E-60703	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim: 13CR / HF
62	12	24	GA-E-60322	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim: 13CR / HF
72	2	2	GA-E-67167	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB   Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
82	1/2	1 1/2	GA-E-60755	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized  Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
82	2	2	GA-E-67168	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB   Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
82	6	24	GA-E-67169	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB   Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	PE/THD	CL800	Body: ASTM A105 Normalized Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67011	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized  Trim: 13CR / HF
101	2	24	GA-E-60591	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim: 13CR / HF
102	2	2	GA-E-67089	Gate-BB-FB-Flex wdg-Thdd seat - API600	BW	CL300	Body: ASTM A216 WCB Trim: 13CR / HF
130	1/2	1 1/2	GA-E-67075	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
140	2	4	GA-E-67364	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL300 RF	Body: ASTM A216 WCB Trim::13CR / HF
159	2	2	GA-E-67314		FLGD	CL300 RF	Body: ASTM A216 WCB Trim: 13CR / HF
159	10	10	GA-E-67314	Gate-Ext. Stem (1200mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim: 13CR / HF
160	6	6	GA-E-67315		FLGD	CL300 RF	Body: ASTM A216 WCB Trim: 13CR / HF
450	2	2	GA-E-60298	Globe-Ext. Stem (1200mm)-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A216 WCB
780	2	2	GA-E-67659	DBL Block&Bleed Ball valve-SplitBdy-RB- Float.ball - <mfr std=""></mfr>	FLGD	CL300 RF	Body: ASTM A105 Normalized  Trim : Soft seat-316 trim - RPTFE seats
781	2	3	GA-E-67660	DBL Block&Bleed Ball valve-SplitBdy-RB- Float.ball - <mfr std=""></mfr>	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
801	1/2	1 1/2	GA-E-67135	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL300 RF	Inm : Metal seat-316+W CARB. Iffili-(AMT9 stein)-GRAPH.  Body: ASTM A105 Normalized  Trim : Soft seat-316 trim - RPTFE seats
824	14	14	GA-E-67618	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL300 RF	Inm : Soil sear-316 tillin - REFEE seats Body: ASTM A216 WCB Trim : Metal sear-316+W CARB. trim-(XM19 stem)-GRAPH.
907	2	4	GA-E-69010	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB  Trim: Soft seat-316 trim - RPTFE seats
907	6	24	GA-E-69011	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB  Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
908	24	24	GA-E-69094	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
972	2	4	GA-E-69051	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A216 WCB.  CARB. trim-(XM19 stem)-GRAPH.
972	6	24	GA-E-69052	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A216 WCB



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STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	4	16	GA-E-60634	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A234 WPB - SMLS Screen: 316 - CLOTH - MESH 3
1	30	30	GA-E-60635	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A420 WPL6W - WLDD Screen:316 - CLOTH - MESH 3

RunSiz	е															90	) Deg	grees						
1/2		Α																						
3/4		A	Α																					
1		Α	Α	Α																				
1 1/2		Α	Α	Α	Α																			
2		S	S	Т	Т	Т																		
2 1/2		S	S	S	S	Т	Т																	
3		S	S	S	S	W	Т	Т																
4		S	S	S	S	W	W	T	T	_														
6		S	S	S	S	W	W	W	I VA/	1	_													
8 10		S S	S S	S S	S	W	W	W.	W	۱ ۱۸/	T T	т												
12		S	S	S	S	W	W	W	W	۱۸/	١٨/	÷	т											
14		S	S	S	s	W	W	W	W	W	W	P	÷	т										
16		Š	Š	Š	Š	W	w	W	w	W	W	P	P	Ť	Т									
18		S	S	S	S	W	W	W	W	W	W	Ρ	Ρ	Ρ	Т	Т								
20		S	S	S	S	W	W	W	W	W	W	Р	Р	Ρ	Ρ	Т	Т							
24		S	S	S	S	W	W	W	W	W	W	Р	Р	Р	Р	Р	Т	Т						
30		S	S	S	S	W	W	W	W	W	W	P	Р	Р	Р	Р	Р	Ţ	T	_				
32		S	S	S	S	W	W	W	W	W	W	-	Р	Р	Р	Р	Р	Р	ı	<u> </u>	_			
36 42		S S	S S	S S	S	W	W	W	W	W	W	P	P P	P P	P P	P P	P P	P P	P P	I P	T	т		
ranch	izo		3/4		-	2 2	• • •	* *	4		8	10	12	14	•	18	20	24	30	32	36	42		
ancin	1126	1/2	3/4	- 1	1 1/.	2 2	2 1/	2 3	4	6	0	10	12	14	16	10	20	24	30	32	30	42		
egenda																								
_		0144					0.44																	
	TEE -																							
									AD-	ıs-c	OR-E	NG-F	'IPMT	-012	-E									
	SOCI					- MS	SS-SF	297																
Г	TEE -	ASI	ME-E ET -		)																			

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



		ОВ <b>2243</b>										
Pipir	ng C	Class	s:	03CB1S05								
						Rev.						
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 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL300
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 12 - SS316/HF

Corrosion Allow.: 1.5 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : 0 °C to 180 °C
Service: MEG - Monoethylene Glycol

Pipe Thickness

NPS 1/2 3/4 1 1 1/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 6 7.11 STD 10 9.27 20 12.7 6.02 STD 12.7 8.18 9.53 9.53 12.7 XS SCH. XS XS XS XS STD STD 40

Nipple Thickness

PRESSURE - TEMPERATURE Ratings

1/2						
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE					_	
	1/2	24	PIPE	BW		ASTM A106 GR.B - SMLS
FLAN				211		, item miles on the one
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
12	2	24	WN FLANGE - ASME-B16.5	BW	CL300 FF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	` '	ASTM A105 Normalized
73	2	2	WN FLANGE - ASME-B16.5	BW	` '	ASTM A105 Normalized
'3	1/2	24		DVV	CL300 R5 (F)	ASTM A105 Normalized
_	1/2	24	BLIND FLANGE - ASME-B16.5			
5			BLIND FLANGE - ASME-B16.5	TUDE	CL600 RF	ASTM A105 Normalized
14	2 TACLE	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Normalized
SPEC	-		lanana a a a a a a a a a a		OL 000 DE	I
	1/2	12	SPECTACLE BLIND - ASME-B16.48			ASTM A516 GR.70 + S5 (-46°C)
_	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI			I	1	1	
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
	2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A105 Normalized
MISC	ELLANE	OUS				
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL300 RF	GRE LAMINATED + TFE (MAX T 180 C)
	6	6	SPECIAL TEMPORARY STRAINER - <mfr -="" metallic="" std=""></mfr>		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
GASK	-				_	
12	2	24	FLAT NON MET. GASKET - ASME-B16.21	1		ARAMIDIC FIBER (13%)
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOL1		_	1222323 67.67.62. 77.67.62 57.67.62	1	1	1 ===
5021	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
VALV			,			1

VALV	ES						
	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to		•		J 3	
1	1/2	1 1/2	GA-E-60167	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized
							Trim : 316 / HF
1	2	2 24 GA-E-60119		Gate-BB-FB-Flex wdg-Thdd seat - API600		CL300 RF	Body: ASTM A216 WCB
							Trim : 316 / HF
4	1/2	1 1/2	GA-E-60259	Globe-BB-Red BThdd seat - API602	SW	CL800	Body: ASTM A105 Normalized
							Trim : 316 / HF
4	2	12	GA-E-60219	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : 316 / HF
5	1/2	1 1/2	GA-E-67205	Globe-BB-Red.B-Needle-Thdd seat - ASME-	sw	CL800	Body: ASTM A105 Normalized
				B16.34			Trim · 316 / HF



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VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
6 6	1/2	1 1/2	GA-E-60375	Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Body: ASTM A105 Normalized
١	1/2	1 1/2	GA-E-00313	Official Defice and Financial Seat - Air 1002	Ovv	02000	Trim: 316 / HF
6	2	10	GA-E-60325	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim: 316 / HF
6	12	24	GA-E-60326	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB
7	2	4	GA-E-60420	Ball-Split body-Red.B-Floating ball - API6D	EL OD	01 000 DE	Trim: 316 / HF
·		4	GA-E-00420	Ball-Split body-Red.B-Floating ball - AF10D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
7	6	24	GA-E-67117	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60419	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized
							Trim : Soft seat-316 trim - RPTFE seats
8	3	4	GA-E-67170	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
10	3/4	1 1/2	GA-E-60197	Cata DD Dad D Calid unda Fun aget ADICO2	SW/TH	01.000	Trim: Soft seat-316 trim - RPTFE seats Body: ASTM A105 Normalized
, 10	3/4	1 1/2	GA-E-00197	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	DF	CL800	Trim: 316 / HF
14	2	2	GA-E-67392	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	1	CL300 RF	Body: ASTM A216 WCB
	-	_	0,120,002	- API600	. 202	02000 111	Trim : 316 / HF
15	2	2	GA-E-60128	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A216 WCB
							Trim: 316 / HF
62	3	3	GA-E-60704	Check-Flanged -Dual plate-Wldd seat - API594	FLGD		Body: ASTM A216 WCB
72	2	4	04 5 07407	Dell Cells has to Dest D. Flooding hall ADIOD	EL 0.D		Trim: 316 / HF
12	2	4	GA-E-67167	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
72	6	6	GA-E-67171	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
			0,120,111	San Opin Soay Moais Training San Turios	1 202	02000 141	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
82	1/2	1 1/2	GA-E-60755	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized
							Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A105 Normalized
101	1/2	1 1/2	GA-E-67012	API608	F CVA/	01.000	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-6/012	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW	CL800	Body: ASTM A105 Normalized Trim : 316 / HF
101	2	24	GA-E-67027	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A216 WCB
	_			- API600	. 202	02000 111	Trim : 316 / HF
130	1/2	1 1/2	GA-E-67077	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A105 Normalized
				Exp.seat - API602	DF		Trim: 316 / HF
410	1/2	1 1/2	GA-E-67400	Globe-BB-Red BThdd seat - API602	SW	CL800	Body: ASTM A105 Normalized
710	2	2	CA E 67272	Pall Split hady Red B Floating hall ADISD	FLCD	CL300 RF	Trim:316 / HF
/10			GA-E-67273	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 KF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
801	1/2	1 1/2	GA-E-67135	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL300 RF	Body: ASTM A105 Normalized
				Frgd body - API608			Trim : Soft seat-316 trim - RPTFE seats
907	2	4	GA-E-69010	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats
907	12	16	GA-E-69011	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD		Body: ASTM A216 WCB
			<u> </u>			I	Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
CTD 4	INERS						
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pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
-	-						

BW

CL300 RF

Body : ASTM A234 WPB - SMLS Screen: 316 - CLOTH - MESH 3

#### **BRANCH TABLES**

6

GA-E-60634

T Strainer-BW - <MFR Std - Metallic>



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12			S S			W	W	W	W	W	Ī	<u> </u>	_													
14			S S		_	W	W	W	W	W	P	I	1	_												
16			S S		S S	W	W	W	W	W	P	P	I D	+	_											
20			SS			W	W	W	W	W	г Б	P	P D	P	÷	т										
18 20 24			SS			W	W	W.	W	W/	P	P	P	P	P	÷	т									
Branch			8/4		1/2	2	3	1	6	8	10	12	14	16	18	20	24									
Branon	0.20	1/2	,, ¬	٠.	1/2	_	3	7	·	U	10	12		10	10	20	27									
	_																									
Legend																							 	 	 	
Α	TEE -																						 	 	 	
Р	PIPE								PAD-	TS-C	<u> </u>	NG-F	'IPM	<u>г-012</u>	:-E									 	 	
S	SOC	(OLE	T - SV	/ EN	1D -	- MS	S-SF	97_																		
T	TEE -	ASM	E-B16	6.9																						
W	WEL	OOLE	T - MS	SS-S	P97	7																				

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL300 **PWHT** :AS PER CODE (NOTE 1)

Facing/Finishing : RF Valve Trim :8 - 13Cr/ HF

Corrosion Allow. : 1.5 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 230 °C

Service: [AIV] BOG - Boil Off Gas DFG - Dry Fuel Gas MR - Mixed Refrigerant NG - Natural Gas PC - Process Condensate WF - Wet (Warm) Flare

Pipe Thickness

NPS 1/2 3/4 1 1 1 1/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. XS XS XS XS XS 18 20 24 26 28 30 36 42 48 12.7 12.7 17.48 15.88 17.48 19.05 19.05 22.23 25.4 6 8 10 12 14 16 7.11 8.18 9.27 9.53 9.53 12.7 STD STD STD STD STD XS 5.49 6.02 STD STD 25.4 XS XS 40 40

Nipple Thickness

NPS 1/2 3/4 1 11/2 2
Thk.mm 4.78 5.56 6.35 7.14 8.74
SCH. 160 160 160 160 160
PRESSURE - TEMPERATURE Ratings

NPS Press. bar 71.02 51.02 46.88 45.16 43.78 ASME B16.5/ASME B16.47 1/2 - 30 Temp. °C -28.9 37.78 93.33 148.9 204.4 Material Group 1.1 NPS Press. bar 45

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trom		Item Description	Ends	Rating/Facing	Material
	to				
4/0	00	DIDE	DV4	1	LOTAL ALOS OR R. CHILO
1/2	20	PIPE	BW		ASTM A106 GR.B - SMLS
i					ASTM A333 GR.6 - SMLS
					ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)
	36	PIPE	DVV		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
- 1	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RE	ASTM A105 Normalized
1			1		ASTM A105 Normalized
1		i e			ASTM A105 Normalized
i		i e	1		ASTM A105 Normalized
1		i e	1		ASTM A105 Normalized
1					ASTM A105 Normalized
i		i i		i	ASTM A105 Normalized
i i		i e			ASTM A105 Normalized
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i i		i e			ASTM A105 Normalized
i		i e		1	ASTM A105 Normalized
		i e			ASTM A105 Normalized
1			SW		ASTM A105 Normalized
1					ASTM A105 Normalized
		THE RES. I ENTOC FROME BIO.S	IIIIDI	OLOGO I KI	AOTIVI A103 NOTHAILZEG
- 1		SPECTACLE BLIND - ASME-B16 48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
					ASTM A516 GR.70 + S5 (-46°C)
					ASTM A516 GR.70 + S5 (-46°C)
1					ASTM A516 GR.70 + S5 (-46°C)
NGS		SEINE & GLAGERY FIGHE BIGHTS		02000111	
1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A105 Normalized
1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
i			вw		ASTM A234 WPB - SMLS
24	24		вW		ASTM A420 WPL6 - SMLS
26	48		вW		ASTM A420 WPL6W - WLDD
50	56		вW		ASTM A420 WPL6W - WLDD
3/4	1 1/2		sw	3000	ASTM A105 Normalized
i	20		BW		ASTM A234 WPB - SMLS
24	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
30	48	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
50	56	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A420 WPL6W - WLDD
1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A105 Normalized
2	20	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
24	48	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
50	56	CAP - TB RAC 5064	BW		ASTM A420 WPL6W - WLDD
1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
1/2	2	NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A106 GR.B - SMLS
3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
2	20	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
24	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
26	48	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
56	56	TEE - TB RAC 5061	BW		ASTM A420 WPL6W - WLDD
2	24	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	3000	ASTM A105 Normalized
KETS					
26	56	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
	1/2 14 30 1/2 NGS 1/2 1/2 2 24 26 50 3/4 2 24 30 50 1/2 1/2 2/2 1/2 2/2 1/2 1/2 1/2 1/2 1/2	26	26	26	### SECOND CONTRICT OF THE PROPERTY OF THE PR



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opt.	Size from to			Item Description	Ends	Rating/Facing	Material
GASK	ETS						
63	3		24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2		2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOLT	S						
	1/2		4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ALVES												
VALV		ze	Data Sheet	Item Description	Ends	Rating/Facing	Material						
pos.	from	to				-							
1	1/2	1 1/2	GA-E-60112	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF						
1	2	24	GA-E-60117	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB						
_	20	40	CA E 60544	Dutterfly Florged Triple Off Cat Interest Fire cafe	FLOD	CL300 RF	Trim: 13CR / HF						
2	26	48	GA-E-60511	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - API609	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Metal seat - 13CR - C.S. disc						
4	1/2	1 1/2	GA-E-60209	Globe-BB-Red BThdd seat - API602	SW	CL800	Body: ASTM A105 Normalized						
4	2	12	GA-E-60217	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Trim:13CR / HF Body: ASTM A216 WCB						
~		12	OA-E-00217	Globe-DB-Disk-111dd Seat - Al 1 025	LGD	CL300 KI	Trim: 13CR / HF						
5	1/2	1 1/2	GA-E-67200	Globe-BB-Red.B-Needle-Thdd seat - ASME-	SW	CL800	Body: ASTM A105 Normalized						
6	1/2	1 1/2	GA-E-60312	B16.34 Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Trim:13CR / HF Body: ASTM A105 Normalized						
							Trim: 13CR / HF						
6	2	10	GA-E-60322	Check-BB- FB- Swing - API594	FLGD		Body: ASTM A216 WCB Trim : 13CR / HF						
6	12	24	GA-E-60323	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	1	Body: ASTM A216 WCB						
7	4	4	CA F 60420	Dell Calit hads Ded D Flooting hall ADICD	EL OD	01 000 DE	Trim: 13CR / HF						
′	4	4	GA-E-60420	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats						
7	6	24	GA-E-60421	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB						
7	30	30	GA-E-67198	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats Body: ASTM A216 WCB						
'		00	0712 07100			OLOGO IVI	Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats						
8	1/2	1 1/2	GA-E-60419	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats						
8	4	4	GA-E-67170	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB						
							Trim : Soft seat-316 trim - RPTFE seats						
8	6	24	GA-E-60786	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats						
10	1/2	1 1/2	GA-E-60177	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A105 Normalized						
,,	1/0	4.4/0	CA E 60502	Cata DD Dad D Calid unda Fun acet ADICO2	DF	CL 200 DE	Trim: 13CR / HF						
11	1/2	1 1/2	GA-E-60583	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : 13CR / HF						
14	1/2	1 1/2	GA-E-60148	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A105 Normalized						
14	2	8	GA-E-67061	Exp.seat - API602 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Trim:13CR/HF Body:ASTM A216 WCB						
'-	-	Ü	0712 07001	- API600	LOD	OLSOO KI	Trim: 13CR / HF						
15	2	2	GA-E-60126	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : 13CR / HF						
19	1/2	1 1/2	GA-E-67001	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A105 Normalized						
		40	0.4 5 00700	Exp.seat - API602	DF	01 000 05	Trim: 13CR / HF						
62	2	10	GA-E-60703	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF						
64	42	56	GA-E-60383	Nozzle Check-Long-Axial non slam-Thdd seat -	FLGD	CL300 RF	Body: ASTM A216 WCB						
69	42	42	GA-E-60349	API 6D Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL300 RF	Trim:13CR/HF Body:ASTM A216 WCB						
03	42	42	GA-L-00349	Check-i langed -Duai plate-Widd Seat - AF 1594	FLGD	CL300 KF	Trim: 13CR / HF						
69	56	56	GA-E-60718	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB						
80	1/2	1 1/2	GA-E-67196	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL300 RF	Trim : 13CR / HF Body: ASTM A105 Normalized						
				Frgd body - API608			Trim : Soft seat-316 trim - RPTFE seats						
82	1/2	1 1/2	GA-E-60755	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.						
82	4	4	GA-E-67168	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB						
	1/0	4.4/0	CA E 60474	Dell Ford entry FD Floot hell Freed heady unimples	DE/TUD	CI 800	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.						
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	F	CL800	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.						
101	1/2	1 1/2	GA-E-67011	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A105 Normalized						
101	2	2	GA-E-60591	Exp.seat - API602 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FI GD	CL300 RF	Trim:13CR / HF Body: ASTM A216 WCB						
	-	-		- API600			Trim: 13CR / HF						
130	1/2	1 1/2	GA-E-67075	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A105 Normalized						
140	2	6	GA-E-67364	Gate-BB-FB-Flex wdg-Thdd seat - API600 -	FLGD	CL300 RF	Trim:13CR / HF Body: ASTM A216 WCB						
				Interlock System			Trim: 13CR / HF						
163	3	3	GA-E-67313	Gate-Ext. Stem (2300mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF						
780	2	2	GA-E-67659	DBL Block&Bleed Ball valve-SplitBdy-RB-	FLGD	CL300 RF	Body: ASTM A105 Normalized						
801	1/2	1 1/2	GA-E-67135	Float.ball - <mfr std=""> Ball-Stem Extension-End entry -FB-Float.ball -</mfr>	FLGD	CL300 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A105 Normalized						
801	1/2	1 1/2	OA-E-07 133	Frgd body - API608	1 100	OLOU KF	Trim : Soft seat-316 trim - RPTFE seats						

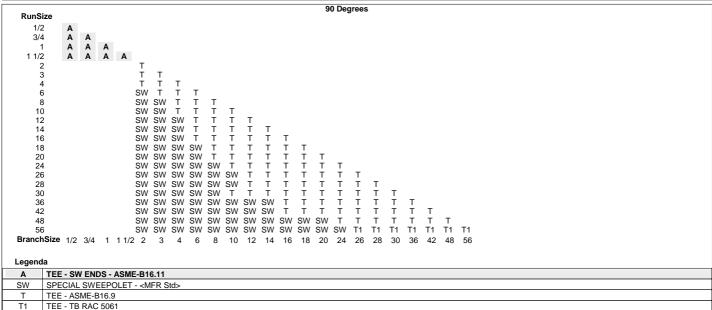


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						Rev.		
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VALVES												
pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material					
840	10	10	GA-E-67294	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats					
890	1/2	1 1/2	GA-E-67653	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body+ Nipple - API608	PE/THD F	CL800	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.					
907	2	6	GA-E-69010	Ball-Split body-Red.B-Floating ball - API6D	FLGD		Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats					

STRA	STRAINERS												
pos.	from	ize to	Data Sheet	Item Description		Rating/Facing	Material						
1	3	24	GA-E-60607	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL300 RF	Body : ASTM A420 WPL6 - SMLS						
							Screen: 316 - CLOTH - MESH 3						
1	30 56 GA-E-60610			T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL300 RF	Body : ASTM A420 WPL6W - WLDD						
							Screen: 316 - CLOTH - MESH 3						
2	24	24	GA-E-60644	Angle T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL300 RF	Body : ASTM A420 WPL6 - SMLS						
							Screen: 316 - CLOTH - MESH 3						
8	56	56	GA-E-60611	Angle T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL300 RF	Body : ASTM A420 WPL6W - WLDD						
							Screen: 316 - CLOTH - MESH 3						

#### **BRANCH TABLES**



	TEE - IB NAO 3001
	45 degrees
Run Branch	Size Size
Legend	a
L	LATROLET - SW END - MSS-SP97
LB	LATROLET - BW END - MSS-SP97
LS	SPECIAL LATROLET - <mfr std=""></mfr>
PP	PIPE TO PIPE WITH FULL ENCIRCLEMENT SLEEVE:TS-COR-ENG-PIPMT-012-E

#### **GENERAL NOTES**

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exceed 200°C).

  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.

  5) Specified Thickness are suitable to withstand Full Vacuum condition.

  6) This piping class is created for lines subjected to Acoustic Induced Vibration



		ов <b>2243</b>								
Pipir	ng C	Class	s:	03CB2B03						
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Sh.	1	of	2	Α	0	1	2	3		
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: CARBON STEEL Design code : ASME B 31.3 2016 Base Material Nom. Rating : CL300 PWHT :YES (NOTE 1) Facing/Finishing : RF Valve Trim : 12 - SS316/HF

Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 130 °C

Service: [Amine Service] AL - Amine Lean (AG) PRW - Process Water

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 Thk.mm 4.78 5.56 4.55 5.08 5.54 5.49 6.02 7.11 8.18 9.27 SCH. 160 160 XS XS XS STD STD STD STD STD 10 12 14 16 9.27 10.31 11.13 12.7 18 20 24 14.27 15.09 17.48 40 40 40 40 40

Nipple Thickness

1/2 ·	24 Temp	. °C  -2	28.9 37.78 Material Group 1.1			
opt.	Si: from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	16	PIPE	BW		ASTM A106 GR.B - SMLS
	18	24	PIPE	BW		ASTM A333 GR.6 - SMLS
FLAN	GES					
	1/2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
14	1/2	1/2	THD FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Normalized
SPEC	TACLE				_	
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS					
	1/2	2	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A105 Normalized
	1/2	16	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	18	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	3/4	16	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	18	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	16	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	3/4	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	18	24	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2		THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	16	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	18	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
0 4 01	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
GASK				-	1	
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20	1	1	SOFT IRON
BOL <sub>1</sub>		4	CT DOLT : 2 MILTO ANICI THAIL TO DITL 5200			AOTAL A400 PZ - AOTAL A404 OP OH /H-/Pi- 450)
$\vdash$	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60124	Gate-BB-Red.B-Solid wdg-Exp.seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim :316 / HF
1	2	24	GA-E-60119	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 316 / HF
4	1/2	1 1/2	GA-E-60211	Globe-BB-Red BThdd seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim : 316 / HF
4	2	12	GA-E-60219	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 316 / HF
5	1/2	1 1/2	GA-E-67211	Globe-BB-Red.B-Needle-Thdd seat+Nipples -	BW	CL800	Body: ASTM A105 Normalized
				ASME-B16.34			Trim: 316 / HF
6	1/2	1 1/2	GA-E-60315	Check-BB-Red.B-Piston-Thdd seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim :316 / HF
6	2	10	GA-E-60325	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 316 / HF
6	12	24	GA-E-60326	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim :316 / HF
7	6	24	GA-E-60424	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60422	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-67023	Gate-BB-Red.B-Solid wdg-Exp.seat + Nipples - API602	BW/TH DF	CL800	Body: ASTM A105 Normalized Trim :316 / HF
82	1/2	1 1/2	GA-E-60755	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.



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VALV	ES						
pos.	Si: from	ze to	Data Sheet	Item Description		Rating/Facing	Material
89	1/2	1 1/2	GA-E-60796	Ball-End entry -FB-Float.ball -Frgd body+ Nipple - API608	BW/TH DF	CL800	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
140	4	4	GA-E-67365	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD		Body: ASTM A216 WCB Trim :316 / HF
159	4	4	GA-E-67316	Gate-Ext. Stem (1200mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD		Body: ASTM A216 WCB Trim :316 / HF
160	4	4	GA-E-67317	Gate-Ext. Stem (1400mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 316 / HF
907	2	2	GA-E-69010	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats

															90	) Deg	rees
RunSize															•	ug	
1/2	Т																
3/4	Т	Т															
1	Т	Т	Т														
1 1/2	Т	Τ	Т	Т													
2	W	W	Т	Т	Т												
3	W	W	W	W	W	T	_										
4	W	W	W	W	W	Т	T	_									
6	W	W	W	W	W	W	T	T	_								
8	W	W	W	W	V V	VV	VV	1	I T	_							
10 12	W	W	W	W	W	VV VV/	۷۷	W	W/	<u> </u>	т						
14	W	W	W	W	W	W/	VV	W	W	P	ť	т					
16	W	W	w	W	W	w	w	w	W	P	P	Ť	Т				
18	W	w	w	w	W	w	w	w	w	Р	Р	P	Ť	Т			
20	W	W	W	W	W	W	W	W	W	P	P	P	P	Ť	Т		
24	W	W	W	W	W	W	W	W	W	Р	Ρ	Ρ	Ρ	Ρ	Т	Т	
BranchSize	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	
_egenda																	
	E TO	PIPE	WIT	H RE	INFO	ORC	ING F	AD-1	rs-co	DR-EI	NG-P	IPMT	-012	·E			
	- AS																
		ET -															

#### GENERAL NOTES

- 1) PWHT is mandatory for all tihickness.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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Pipi	ng C	Class	s:	0	03CB2B09						
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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL300 **PWHT** : YES (NOTE 1) Facing/Finishing : RF Valve Trim :12 - SS316/HF Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -5 °C to 130 °C

Service: [Amine Service] AL - Amine Lean (UG)

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 Thk.mm 4.78 5.56 4.55 5.08 5.54 5.49 6.02 SCH. 160 160 XS XS XS STD STD 10 12 9.27 10.31 14 16 11.13 12.7 18 20 24 14.27 15.09 17.48 8.18 STD 40 40 XS 40 40 40

Nipple Thickness

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
IPE						
	1/2	24	PIPE	BW		ASTM A106 GR.B - SMLS
LAN	IGES			'		
	1/2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Normalized
PEC	CTACLE	BLIND				
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
ITTI	NGS					
	1/2	2	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A105 Normalized
	1/2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
ASI	KETS					
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOL	TS					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

١	/ALVI	ES						
	pos.	Siz from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
	1	3/4	3/4	GA-E-60124	Gate-BB-Red.B-Solid wdg-Exp.seat + Nipples - API602	BW	1	Body: ASTM A105 Normalized Trim : 316 / HF

**BRANCH TABLES** 



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	3C	B2E	309	
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D0																90	90 Degrees
RunS																	
1/2		T	_														
3/4	4	T	T	_													
	1	<u> </u>	<u> </u>	<u> </u>	_												
1 1/2		1	W	T	ļ	_											
	2 3	W	W	W	w	W	_										
	3 4	W	W	W	W	W	÷	т									
	6	W	W	W	w	w	w	÷	т								
	8	W	w	W	w	w	w	w	Ť	Т							
10		W	W	W	W	W	W	W	W	Ť	Т						
1:	2	W	W	W	W	W	W	W	W	W	Т	Т					
14		W	W	W	W	W	W	W	W	W	Ρ	Т	Т				
10	6	W	W	W	W	W	W	W	W	W	Ρ	Ρ	Т	Т			
18	8	W	W	W	W	W	W	W	W	W	Р	Р	Р	Т	Т		
20	0	W	W	W	W	W	W	W	W	W	Р	Р	Р	Р	Ţ	T	
_ 2		W	W	W	W	W	W	W	W	W	Р	Р	Р	Р	Р	Т	Т
Brancl	hSize	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	0 24
Legend	la																
Р	PIPE	ТО	PIPE	WIT	'H RE	INFO	ORCI	NG F	AD-1	rs-co	OR-E	NG-F	IPMI	Γ-012	-E		
Т	TEE																
W	WEL					7											

#### GENERAL NOTES

- 1) PWHT is mandatory for all tihickness.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

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Pipi	ng C	Class	s:	0	3CI	B2E	310	
						Rev.		
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 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL300
 PWHT
 : YES (NOTE 1)

 Facing/Finishing : RF
 Valve Trim
 : 9 - Monel

Corrosion Allow. : 3 mm
Temp. Limit : 0 °C to 75 °C

Service: [Caustic Service] NA - Caustic

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 Thk.mm 4.78 5.56 4.55 5.08 5.54 5.49 6.02 7.11 8.18 9.27 10.31 11.13 12.7 14.27 15.09 17.48 SCH. 160 160 XS XS XS STD STD STD STD STD STD 40 40 XS 40 40 40

Nipple Thickness

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 51.02 ASME B16.5

1/2 ·	24 Temp	o. °C 3	7.78 Material Group 1.1			
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	24	PIPE	вw		ASTM A106 GR.B - SMLS
FLAN	IGES					
	1/2	24	WN FLANGE - ASME-B16.5	вW	CL300 RF	ASTM A105 Normalized
5	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	вW	CL900 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS					
	1/2	2	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A105 Normalized
	1/2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
GAS	KETS					
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOL <sub>1</sub>						
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ES						
pos.	Si: from	e to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60169	Gate-BB-Red.B-Solid wdg-Integral seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim : Monel
1	2	24	GA-E-60191	Gate-BB-FB-Flex wdg-Wldd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Monel
4	1/2	1 1/2	GA-E-60261	Globe-BB-Red BIntegral seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim : Monel
4	2	12	GA-E-60272	Globe-BB-Disk-Wldd seat - API 623	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Monel
6	1/2	1 1/2	GA-E-60377	Check-BB-Red.B-Piston-Integral seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim :Monel
6	2	10	GA-E-60396	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Monel
6	12	24	GA-E-60397	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Monel
7	6	24	GA-E-60494	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-MONEL trim - RPTFE seats
8	1/2	1 1/2	GA-E-60495	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Soft seat-MONEL trim - RPTFE seats



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	3CI	B2E	310	
						Rev.		
Sh.	2	of	2	Α	0	1		

#### BRANCH TABLES

RunSi	7e															90	) Degr	ees					
		_																					
1/2		1	_																				
3/4		1	<u> </u>	_																			
1		1	<u> </u>	1	_																		
1 1/2						_																	
2		W	W				_																
3		W	W	W	W	W	T	_															
4		W	W	W	W	W	Т	Ţ	_														
6		W	W	W	W	W	W	Т	Т														
8		W	W	W	W	W	W	W	Т	Τ													
10		W	W	W	W	W	W	W	W	Τ	Т												
12		W	W	W	W	W	W	W	W	W	Т	Т											
14		W	W	W	W	W	W	W	W	W	Ρ	Т	Т										
16		W	W	W	W	W	W	W	W	W	Ρ	Ρ	Т	Τ									
18 20 24		W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Τ	Т								
20		W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Т	Т							
24		W	W	W	W	W	W	W	W	W	Р	Ρ	Ρ	Ρ	Р	Τ	Т						
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24						
Legenda	а																						
Р	PIPE	ТО	PIPE	WIT	H RE	EINF	ORC	ING F	AD-7	rs-co	DR-E	NG-P	IPMI	-012	-E								
Т	TEE	- AS	ME-E	16.9	)																		
W	WFI					17																	

#### GENERAL NOTES

- 1) PWHT is mandatory for all tihickness.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



		ов <b>2243</b>						
Pipi	ng C	Class	s:	0	3CI	B2S	<b>601</b>	
						Rev.		
Sh.	1	of	2	Α	0	1	2	3

 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL300
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim: 8 - 13Cr/ HF

Corrosion Allow.: 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 210 °C

Service: BWF - Liquid Blowdown Warm Flare HL - Hydrocarbon Liquid HV - Hydrocarbon Vapour NG - Natural Gas

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 Thk.mm 4.78 5.56 4.55 5.08 5.54 5.49 6.02 7.11 8.18 9.27 10.31 11.13 12.7 14.27 15.09 17.48 SCH. 160 160 XS XS XS STD STD STD STD STD 40 40 XS 40 40 40

Nipple Thickness

NPS 1/2 3/4 1 1 1 1/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 51.02 | 51.02 | 46.88 | 45.16 | ASME B16.5 | 1/2 · 24 | Temp. °C | -28.9 | 37.78 | 93.33 | 148.9 | Material Group 1.1

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	16	PIPE	BW		ASTM A106 GR.B - SMLS
	18	24	PIPE	вW		ASTM A333 GR.6 - SMLS
FLAN	IGES				_	
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
7	2	24	WN FLANGE - ASME-B16.5	BW	CL1500 RF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTII	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized
	2	16	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	18	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized
	2	16	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	18	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	6000	ASTM A105 Normalized
	2	16	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	18	24	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	6000	ASTM A105 Normalized
	2	16	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	18	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	6000	ASTM A105 Normalized
GASK	KETS					
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20	<u> </u>	<u> </u>	SOFT IRON
BOLT						
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60112	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
1	2	24	GA-E-60117	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD		Body: ASTM A216 WCB Trim : 13CR / HF
4	1/2	1 1/2	GA-E-60209	Globe-BB-Red BThdd seat - API602	SW	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
4	2	12	GA-E-60217	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
6	1/2	1 1/2	GA-E-60312	Check-BB-Red.B-Piston-Thdd seat - API602	SW		Body: ASTM A105 Normalized Trim :13CR / HF
6	2	10	GA-E-60322	Check-BB- FB- Swing - API594	FLGD	1	Body: ASTM A216 WCB Trim : 13CR / HF



		ов <b>2243</b>									
Pipi	ng C	Class	s:	0	03CB2S01						
						Rev.					
Sh.	2	of	2	Α	0	1	2	3			

<b>ALV</b>	ES						
os.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
6	12	24	GA-E-60323	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
7	6	24	GA-E-60421	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB  Trim: Soft seat-CS ENP 76,2µm trim-RPTFE seats
8	1/2	1 1/2	GA-E-60419	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized  Trim : Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-60786	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB  Trim : Soft seat-CS ENP 76.2um trim-RPTFE seats
10	1/2	1 1/2	GA-E-60177	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
62	2	2	GA-E-60703	Check-Flanged -Dual plate-Widd seat - API594	I .	CL300 RF	Body: ASTM A216 WCB
							Trim: 13CR / HF
82	1/2	1 1/2	GA-E-60755	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67011	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized  Trim: 13CR / HF
101	2	2	GA-E-60591		FLGD	CL300 RF	Body: ASTM A216 WCB
130	1/2	1 1/2	GA-E-67075	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A105 Normalized  Trim:13CR/HF
140	3	3	GA-E-67364	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL300 RF	Body: ASTM A216 WCB
159	3	3	GA-E-67314	1	FLGD	CL300 RF	Body: ASTM A216 WCB Trim: 13CR / HF
301	1/2	1 1/2	GA-E-67135	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats
907	2	6	GA-E-69010	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB  Trim : Soft seat-316 trim - RPTFE seats
972	2	6	GA-E-69051	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB  Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
972	8	24	GA-E-69052	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD		Body: ASTM A216 WCB  Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

STR	AINERS						
pos	from	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	6	6	GA-E-60634	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A234 WPB - SMLS Screen:316 - CLOTH - MESH 3

90 Degrees

В	RANCH TABLES	
	RunSize	

1/2	Α															
3/4	Α	Α														
1	Α	Α	Α													
1 1/2	Α	Α	Α	Α												
2	S	S	Т	Т	Т											
3	S	S	S	S	W	Т										
4	S	S	S	S	W	Т	Т									
6	S	S	S	S	W	W	Т	Т								
8	S	S	S	S	W	W	W	Т	Т							
10	S	S	S	S	W	W	W	W	Т	Т						
12	S	S	S	S	W	W	W	W	W	Т	Т					
14	S	S	S	S	W	W	W	W	W	Ρ	Т	Т				
16	S	S	S	S	W	W	W	W	W	Р	Р	Т	Т			
18	S	S	S	S	W	W	W	W	W	Р	Р	Р	Т	Т		
20	S	S	S	S	W	W	W	W	W	Р	Р	Р	Р	Т	Т	
24	S	S	S	S	W	W	W	W	W	Р	Р	Ρ	Ρ	Ρ	Т	Т
BranchSize	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24

Legen	da							
Α	A TEE - SW ENDS - ASME-B16.11							
Р	P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E							
S	SOCKOLET - SW END - MSS-SP97							
Т	T TEE - ASME-B16.9							
W	WELDOLET - MSS-SP97							

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



		ОВ <b>2243</b>							
Pipi	ng C	Class	s:	0	3CI	B2S	<b>602</b>		
						Rev.			
Sh.	1	of	3	Α	0	1	2	3	

 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL300
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim: 8 - 13Cr/ HF

Corrosion Allow.: 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : 0 °C to 180 °C

Service: FG - Fuel Gas HL - Hydrocarbon Liquid NG - Natural Gas PRW - Process Water V - Vent

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 Thk.mm 4.78 5.56 4.55 5.08 5.54 5.49 6.02 7.11 8.18 9.27 10.31 11.13 12.7 14.27 15.09 17.48 SCH. 160 160 XS XS XS STD STD STD STD STD STD 40 40 XS 40 40 40

Nipple Thickness

NPS 1/2 3/4 1 1 1 1/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160

PRESSURE - TEMPERATURE Ratings

NPS Press. bar | 51.02 | 46.88 | 45.16 | ASME B16.5 | 1/2 · 24 | Temp. °C | 37.78 | 93.33 | 148.9 | Material Group 1.1

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE				_		
	1/2	24	PIPE	BW		ASTM A106 GR.B - SMLS
FLAN	GES					'
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
73	1/2 1 1/2		SW FLANGE - ASME-B16.5	SW	CL1500 RJ (F)	ASTM A105 Normalized
73	2 24		WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A105 Normalized
	1/2 24		BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
5	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A105 Normalized
	2	2	SW REDUCING FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	12	SPECTACLE BLIND - ASME-B16.48			ASTM A516 GR.70 + S5 (-46°C)
	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTIN						
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized
	2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	6000	ASTM A105 Normalized
	2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	3	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized
	2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	2	8	WELDOLET - MSS-SP97	BW	0000	ASTM A105 Normalized
GASK	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	6000	ASTM A105 Normalized
GASK		24	CD WOLIND COLT WAS OUT & INNI DINICO ACME DAG CO			204 SS CRADIL 2007 CS OUT DING
00	1/2	24 24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63 73	1/2	24	OCTAGONAL RIGASKET - ASME-B16.20			SOFT IRON
- 1	- 1	24	OCTAGONAL RJ GASKET - ASME-B16.20	<u> </u>	1	SOFT IRON
BOLT	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
\/A!\/		-	OT.BOLT+2 NOTO - ANOT HIRE - TO BOL 5500			NOTINI A 193 BT + NOTINI A 194 GK.2FT (FIGURE)

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description		Rating/Facing	Material
1	1/2	1 1/2	GA-E-60112	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
1	2	24	GA-E-60117	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
4	1/2	1 1/2	GA-E-60209	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim :13CR / HF
4	2	12	GA-E-60217	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
6	1/2	1 1/2	GA-E-60312	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
6	2	10	GA-E-60322	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
6	12	24	GA-E-60323	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF



		DB 2 <b>243</b>									
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/ALV	ES		,				
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
7	6	24	GA-E-60421	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
8	1/2	1 1/2	GA-E-60419	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized
							Trim : Soft seat-316 trim - RPTFE seats
8	2	2	GA-E-67170	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-60786	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
10	1/2	1 1/2	GA-E-60177	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A105 Normalized
					DF		Trim: 13CR / HF
15	2	2	GA-E-60126	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A216 WCB
							Trim: 13CR / HF
62	2	4	GA-E-60739	Check-Lug wafer-Dual plate-Wldd seat - API594		CL300 RF	Body: ASTM A216 WCB
					LUG		Trim: 13CR / HF
82	1/2	1 1/2	GA-E-60755	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A105 Normalized
	4 /0	4.4/0	04 5 07044	API608	F	01.000	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67011	Gate-Stem Extension-BB-Red.B-Solid wdg-	sw	CL800	Body: ASTM A105 Normalized
101	2	2	GA-E-60591	Exp.seat - API602 Gate-Stem Extension-BB-FB-Flex wdq-Thdd seat	FLOD	01 000 DE	Trim: 13CR / HF
101			GA-E-60591	- API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
130	1/2	1 1/2	GA-E-67075	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CLOOO	Body: ASTM A105 Normalized
130	1/2	1 1/2	GA-E-07075	Exp.seat - API602	DF	CL800	Trim: 13CR / HF
780	2	2	GA-E-67659	DBL Block&Bleed Ball valve-SplitBdy-RB-		CL300 RF	Body: ASTM A105 Normalized
700			GA-L-07039	Float.ball - <mfr std=""></mfr>	LGD	CL300 KI	Trim : Soft seat-316 trim - RPTFE seats
801	1/2	1 1/2	GA-E-67135		FLGD	CL300 RF	Body: ASTM A105 Normalized
001	1/2	1 1/2	GA-L-07 133	Frgd body - API608	LOD	OLSOO IXI	Trim : Soft seat-316 trim - RPTFE seats
840	6	10	GA-E-67294	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL300 RF	Body: ASTM A216 WCB
0.0			0.12 0.201	Interlock System	. 202	02000 111	Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
840	12	12	GA-E-67294	1	FLGD	CL300 RF	Body: ASTM A216 WCB
١.٠		·-	22 0.20 7	Interlock System	. 202	22300 111	Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
907	2	6	GA-E-69010	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
	.	•		,			Trim : Soft seat-316 trim - RPTFE seats
907	12	16	GA-E-69011	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
				,,			Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats

STRA	STRAINERS												
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material						
1	1 3 3 GA-E-60634		GA-E-60634	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A234 WPB - SMLS Screen: 316 - CLOTH - MESH 3						

## BRANCH TABLES

RunSi	ze															9	90 Degrees
1/2		Α															
3/4	ļ	A	A														
1 1 1/2		A	A	A A	^												
1 1/2		A S	A S	T	A	т											
3		S	S	s	s	w	Т										
4		S	S	S	S	W	Т	Т									
6		S	S	S	S	W	W	Т	Т								
8	}	S	S	S	S	W	W	W	T	T	_						
10		S	S	S	S	W	W	W	W	I	<u> </u>	_					
12 14		S S	S	S S	S S	W	W	W	W	W	I P	+	т				
16	;	S	S	s	S	w	w	W	W	w	P	P	Ť	Т			
18	3	S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Т	Т		
20	)	S	S	S	S	W	W	W	W	W	Р	Ρ	Ρ	Ρ	Т	Т	
_ 24		S	S	S	S	W	W	W	W	W	Р	Р	Р	Р	Р	Т	T
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	0 24
Legend	а																
Α	TEE -	- SW	/ ENI	DS	ASM	E-B1	6.11										
	PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E																
S	SOCI	KOL	ET -	SW E	END	- MS	SS-SI	97									
Т	TEE -	- AS	ME-E	16.9													
W	WEL	DOL	ET -	MSS	-SP9	7											

### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).



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4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



		ОВ <b>2243</b>							
Pipi	ng C	Class	s:	0	3C	B2S	<b>305</b>		
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 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL300
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 12 - SS316/HF

Corrosion Allow.: 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 180 °C

Service: HL - Hydrocarbon Liquid MEG - Monoethylene Glycol OW - Oily Water WEG - Water/Ethylene Glycol WF - Wet (Warm) Flare

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 Thk.mm 4.78 5.56 4.55 5.08 5.54 5.49 6.02 7.11 8.18 9.27 10.31 11.13 12.7 14.27 15.09 17.48 SCH. 160 160 XS XS XS XS STD STD STD STD STD STD 40 40 XS 40 40 40

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160

PRESSURE - TEMPERATURE Ratings

1/2 ·	1/2 · 24   Temp. °C   37.78   93.33   148.9   Material Group 1.1												
	9	ze	Item Description	Ends	Rating/Facing	Material							
opt.	from	to	Rem Description	Liids	Rating/Facing	Material							
PIPE													
	1/2	16	PIPE	BW		ASTM A106 GR.B - SMLS							
	18	24	PIPE	BW		ASTM A333 GR.6 - SMLS							
FLAN	IGES	27	n 11 C	DW		ACTIVI ACCOUNTS							
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized							
	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized							
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A105 Normalized							
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized							
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized							
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	` '	ASTM A105 Normalized							
'	1/2	24	BLIND FLANGE - ASME-B16.5	0,,	CL300 RF	ASTM A105 Normalized							
	2	2	SW REDUCING FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized							
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Normalized							
	CTACLE		THIDD RED. I EARGE - ASIME-D10.3	וטווון	OLSOO KI	ASTWI A103 NOTHALIZED							
J. 20	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)							
	1/2	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM AS16 GR.70 + S5 (-46°C)							
5	4	4	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)							
FITTI		-	SPECTAGE BEIND - ASME-B10.40		OLOUU KI	A31M A310 GR.70 + 33 (-40 G)							
	1/2	3	DRIP-RING - TB DRI 5011	I	CL300 RF	ASTM A105 Normalized							
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	6000	ASTM A105 Normalized							
	2	16	LONG RADIUS ELBOW - ASME-B16.9	BW	0000	ASTM A234 WPB - SMLS							
	18	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS							
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized							
	2	16	REDUCER - ASME-B16.9	BW	0000	ASTM A234 WPB - SMLS							
	18	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS							
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized							
	1/2	1 1/2	FEMALE CAP - THIS END - ASME-B16.11	SW	6000	ASTM A105 Normalized							
	2	16	CAP - ASME-B16.9	BW	0000	ASTM A234 WPB - SMLS							
	18	24	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS							
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized							
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000								
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM	6000	ASTM A105 Normalized							
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A105 Normalized ASTM A106 GR.B - SMLS							
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE									
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS ASTM A234 WPB - SMLS							
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	6000								
	2	16	TEE - ASME-B16.9	BW	0000	ASTM A334 WDB SMIS							
	18	24		BW		ASTM A234 WPB - SMLS							
	2	8	TEE - ASME-B16.9 WELDOLET - MSS-SP97	BW		ASTM A420 WPL6 - SMLS							
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	6000	ASTM A105 Normalized							
MISC	ELLANE		JOOROLL 1 - GW END - WOG-GF81	200/000	μουου	ASTM A105 Normalized							
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL300 RF	GRE LAMINATED + TFE (MAX T 180 C)							
	6	6	SPECIAL TEMPORARY STRAINER - <mfr -="" metallic="" std=""></mfr>		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)							
GASI	KETS	U	OF LOTAL TEINT OTAKT OTKANINETY - CIVIL IX OLU - IVIOLIAIIICS		OLSOO IXI	NOTINI 2010 OIN. 70 T 00 (*40 O)							
JAJI	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20	T	I	304 SS+GRAPH 98% - C.S. OUT.RING							
5	4	4	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING							
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON							
<b>73</b>	1/2	1 1/2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON							
		1 1/2	OUT AGGINE NO GAGNET - AGME-D 10.20			JOET INON							
BOL.	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)							
			12			(Total (Total) Too)							

VALV	ALVES													
pos.	Size from to		Data Sheet	Item Description		Rating/Facing	Material							
1	1/2	1 1/2	GA-E-60167	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim: 316 / HF							
1	2	24	GA-E-60119	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD		Body: ASTM A216 WCB Trim : 316 / HF							
4	4 1/2 1 1/2		GA-E-60259	Globe-BB-Red BThdd seat - API602	sw		Body: ASTM A105 Normalized Trim: 316 / HF							



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VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
4	2	12	GA-E-60219	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A216 WCB
_							Trim: 316 / HF
5	1/2	1 1/2	GA-E-67205	Globe-BB-Red.B-Needle-Thdd seat - ASME- B16.34	SW	CL800	Body: ASTM A105 Normalized Trim : 316 / HF
6	1/2	1 1/2	GA-E-60375	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A105 Normalized
"	1/2	1 1/2	GA-L-00373	Check-DB-Neu.B-Fision-Thau seat - AF1002	SVV	CLOUU	Trim:316 / HF
6	2	10	GA-E-60325	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A216 WCB
•	_				. 202	02000 111	Trim:316/HF
6	12	24	GA-E-60326	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : 316 / HF
7	2	4	GA-E-60420	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats
7	6	24	GA-E-67117	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60419	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized
8	2	3	GA-E-67170	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A216 WCB
°	-	3	GA-E-0/1/0	Bail-Split body-FB-Floating bail - AF10D	FLGD	CL300 KF	Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60197	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A105 Normalized
''	1/2	1 1/2	GA-L-00137	Gate-bb-red.b-oolid wdg-Exp.seat - Ai 1002	DF	OLOGO	Trim: 316 / HF
62	2	10	GA-E-60704	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : 316 / HF
72	2	4	GA-E-67167	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
72	6	24	GA-E-67171	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
82	1/2	1 1/2	GA-E-60755	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized
00	4/0	4.4/0	04 5 00474	Dell Ford auton FD Flood ball Food bad accidents	DE ŒUE	01.000	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	PE/THL	CL800	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67012	Gate-Stem Extension-BB-Red.B-Solid wdg-	sw	CL800	Body: ASTM A105 Normalized
'0'	1/2	1 1/2	GA-E-07012	Exp.seat - API602	0	OLOGO	Trim:316/HF
101	2	2	GA-E-67027	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A216 WCB
	-	_		- API600			Trim : 316 / HF
130	1/2	1 1/2	GA-E-67077	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A105 Normalized
				Exp.seat - API602	DF		Trim : 316 / HF
801	1/2	1 1/2	GA-E-67135	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL300 RF	Body: ASTM A105 Normalized
				Frgd body - API608			Trim : Soft seat-316 trim - RPTFE seats
907	6	6	GA-E-69011	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
					1		Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats

DKAN	СП	IADLES
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16	i		S	S	S	W	W	W	W	W	P	P	I P	<u> </u>	_			
18 20	i		S S	S S	S	W	W	W	W	W	P	P	P	I P	+	_		
24			S	S	S	W/	W	W	W/	W	P	P	P	P	P	+	т	
Branch			-	_	1 1/2	2 2	3	1	6	8	10	12	14	16	18	20	24	
Dranon	0.20	1/2 、	J/ <del>T</del>		1 1/2		3	7	U	U	10	12	17	10	10	20	27	
Legend	а																	
Α	TEE -	SW	END	S - <i>I</i>	ASMI	E-B10	6.11											
Р	PIPE	TO P	IPE	WIT	H RE	EINFO	ORC	NG F	AD-T	S-CO	DR-E	NG-F	PIPM	T-012	-E			
S	SOCK	OLE	T - 8	W E	END	- MS	S-SF	97										
Т	TEE -	ASM	IE-B	16.9														
W	WELD					7												



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	3CI	B2S	05	
						Rev.		
Sh.	3	of	3	Α	0	1	2	3

<sup>1)</sup> PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.

2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).

4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



	-	ОВ <b>2243</b>						
Pipi	ng (	Class	s:	0	3CI	B2S	60	
						Rev.		
Sh.	1	of	2	Α	0			

 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL300
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim: 8 - 13Cr/ HF

Corrosion Allow.: 3 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : 0 °C to 130 °C

Service: [AIV] FG - Fuel Gas HL - Hydrocarbon Liquid NG - Natural Gas PRW - Process Water

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 Thk.mm 4.78 5.56 4.55 5.08 5.54 5.49 6.02 7.11 8.18 9.27 10.31 11.13 12.7 14.27 15.09 17.48 SCH. 160 160 XS XS XS STD STD STD STD STD 40 40 XS 40 40 40

Nipple Thickness

NPS 1/2 3/4 1 1 1 1/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160

PRESSURE - TEMPERATURE Ratings

| NPS | Press. bar | 51.02 | 46.88 | 45.16 | ASME B16.5 | 1/2 · 24 | Temp. °C | 37.78 | 93.33 | 148.9 | Material Group 1.1

			1.76 93.33 140.9 Westernal Group 1.1	Fuels	D-11/F- :	M-4-1-1
opt.	from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	24	PIPE	BW	1	ASTM A106 GR.B - SMLS
FLAN		24	1110	DVV		ACTIVI ATOU CIV.D - CIVILLO
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	вW	CL900 RJ (F)	ASTM A105 Normalized
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A105 Normalized
73	2	24	WN FLANGE - ASME-B16.5	вW	CL1500 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
	2	2	SW REDUCING FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTII	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	6000	ASTM A105 Normalized
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	6000	ASTM A105 Normalized
	2	24	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	6000	ASTM A105 Normalized
	2	24	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	6000	ASTM A105 Normalized
	2	24	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	2	8	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	6000	ASTM A105 Normalized
GASK						
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20	1	<u> </u>	SOFT IRON
BOLT			OT DOLT O MUTO. ANOLTH HE TO DUE 5000			AOTH A 400 DT - AOTH A 404 OD OH (14 4D) - 450)
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ES						
pos.	Si:	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60112	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
1	2	24	GA-E-60117	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
4	1/2	1 1/2	GA-E-60209	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
4	2	12	GA-E-60217	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
6	1/2	1 1/2	GA-E-60312	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim :13CR / HF
6	2	10	GA-E-60322	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
6	12	24	GA-E-60323	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
7	6	24	GA-E-60421	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
8	1/2	1 1/2	GA-E-60419	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats



		JC <b>032</b>							
	Pipin	g C	lass	S:	0	3CI	B2S	60	
							Rev.		
;	Sh.	2	of	2	Α	0			

ALV	-					1	
	Si.		Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to					
8	6	24	GA-E-60786	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
10	1/2	1 1/2	GA-E-60177	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A105 Normalized
					DF		Trim: 13CR / HF
82	1/2	1 1/2	GA-E-60755	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A105 Normalized
				API608	F		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67011	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A105 Normalized
				Exp.seat - API602			Trim: 13CR / HF
101	2	2	GA-E-60591	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A216 WCB
				- API600			Trim: 13CR / HF
130	1/2	1 1/2	GA-E-67075	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A105 Normalized
				Exp.seat - API602	DF		Trim: 13CR / HF
801	1/2	1 1/2	GA-E-67135	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL300 RF	Body: ASTM A105 Normalized
				Frgd body - API608			Trim : Soft seat-316 trim - RPTFE seats

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	3	3	GA-E-60634	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A234 WPB - SMLS Screen: 316 - CLOTH - MESH 3

#### **BRANCH TABLES**

RunSize																9	0 Deg	grees
1/2	Α																	
3/4	Α																	
1	A			A	^													
1 1/2 2	Α		١.	Α	Α	_												
3						÷	т											
4						÷	÷	т										
6						sw	÷	÷	т									
8							SW	Ť	Ť	Т								
10						SW	SW	Т	Т	Т	Т							
12								SW		Т	Т	Т						
14								SW		Т	Т	Т	Т					
16								SW		T	T	T	T	T	_			
18								SW		T	T	T	T	T	T	_		
20								SW		I Olar	1	1	1	1	1	Ţ	_	
24										SW		!	!	!	1	1	1	
BranchSiz	e 1/	2 3	/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	
Legenda																		
A TE	E - 8	SW E	ND	S - <i>i</i>	ASME	-B16	5.11											
SW SF	PECI	AL S	WE	EPC	LET -	- <m< th=""><th>FR S</th><th>Std&gt;</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></m<>	FR S	Std>										
T TE	E - /	ASME	E-B1	6.9														

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) This piping class is created for lines subjected to Acoustic Induced Vibration.



	-	ОВ <b>2243</b>							
Pipii	ng C	Class	s:	0	3CI	B4S	01		
						Rev.			
Sh.	1	of	2	Α	0	1	2	3	
									_

Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL300 PWHT : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 8 - 13Cr/ HF

Corrosion Allow. : 6 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013 : -29 °C to 90 °C Temp. Limit

Service: HV - Hydrocarbon Vapour

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 Thk.mm 7.47 7.82 9.09 10.15 8.74 11.13 11.13 10.97 12.7 10 12.7 15.09 SCH. XXS XXS XXS XXS 160 160 120 XS 60 60

Nipple Thickness

NPS 1/2 3/4 1 1 1 1/2 2 Thk.mm 7.47 7.82 9.09 10.15 8.74 SCH. XXS XXS XXS XXS 160

PRESSURE - TEMPERATURE Ratings

NPS Press. bar | 51.02 | 51.02 | 46.88 | 45.16 | ASME B16.5 |
1/2 · 14 | Temp. °C | -28.9 | 37.78 | 93.33 | 148.9 | Material Group 1.1

opt.	Si: from	ze to	Item Description	Ends	Rating/Facing	Material					
PIPE											
	1/2	10	PIPE	вw		ASTM A106 GR.B - SMLS					
	12	14	PIPE	BW		ASTM A333 GR.6 - SMLS					
FLAN			, <u>-</u>								
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized					
	2	14	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized					
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized					
5	2	14	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized					
	1/2	14	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized					
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Normalized					
SPEC	TACLE	BLIND									
	1/2	12	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)					
	14	14	BLIND & SPACER - ASME-B16.48 GA-E-060011		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)					
FITTI	NGS										
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A105 Normalized					
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized					
	2	10	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS					
	12	14	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized					
	2	10	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS					
	12	14	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	6000	ASTM A105 Normalized					
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	9000	ASTM A105 Normalized					
	2	10	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS					
	12	14	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized					
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized					
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized					
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS					
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS					
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS					
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized					
	2	10	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS					
	12	14	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized					
	1/2	1 1/2	SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A105 Normalized					
GASK											
	1/2	14	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING					
BOL <sub>1</sub>			1								
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)					

VALV	ES						
pos.	Siz from	ze to	Data Sheet	Item Description		Rating/Facing	Material
1	1/2	1 1/2	GA-E-60164	Gate-WB-Red.B-Solid wdg-Exp.seat - API602		CL1500	Body: ASTM A105 Normalized Trim:13CR stellited
1	2	14	GA-E-60125	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim: 13CR / HF
4	1/2	1 1/2	GA-E-60220	Globe-WB-Red.B-Thdd seat - API602	sw	CL1500	Body: ASTM A105 Normalized Trim : 13CR stellited
4	2	14	GA-E-60221	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
6	1/2	1 1/2	GA-E-60348	Check-WB-Red.B-Piston-Int seat - API602	sw	CL1500	Body: ASTM A105 Normalized Trim : 13CR stellited
6	2	14	GA-E-60327	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 13CR / HF
7	6	14	GA-E-60427	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats
8	1/2	1 1/2	GA-E-60425	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats
8	2	2	GA-E-67172	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats



		DB 2 <b>243</b>									
Pipi	ng C	Class	s:	0	03CB4S01						
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ALV	=5		1									
		ze	Data Sheet	Item Description	Ends	Rating/Facing	Material					
pos.	from	to										
8	6	14	GA-E-67115	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB					
							Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats					
10	1/2	1 1/2	GA-E-60182	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL1500	Body: ASTM A105 Normalized					
					DF		Trim: 13CR stellited					
82 1/2 1 1/2 GA-E-60756 Ball-End entry -FB-Float.ball -Frgd body - API608 FLGD CL300 RF Body: ASTM A105 Normalized												
							Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.					
89	1/2	1 1/2	GA-E-67120	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL1500	Body: ASTM A105 Normalized					
				ASME-B16.34	F		Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.					
101	1/2	1 1/2	GA-E-67013	Gate-Stem Extension-WB-Red.B-Solid wdg-	SW	CL1500	Body: ASTM A105 Normalized					
				Exp.seat - API602			Trim: 13CR stellited					
101	2	2	GA-E-67028	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A216 WCB					
				- API600			Trim: 13CR / HF					
130	1/2	1 1/2	GA-E-67079	Gate-Stem Extension-WB-Red.B-Solid wdg-	SW/TH	CL1500	Body: ASTM A105 Normalized					
				Exp.seat - API602	DF		Trim: 13CR stellited					
801	1/2	1 1/2	GA-E-67136	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL300 RF	Body: ASTM A105 Normalized					
				Frgd body - API608			Trim : Soft seat-316 trim - RPTFE seats					
840	10	10	GA-E-67619	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL300 RF	Body: ASTM A216 WCB					
				Interlock System			Trim : Soft seat-CS ENP 76,2µm trim-RPTFE seats					

#### **BRANCH TABLES**

RunS	76													90 Degrees
1/2		Α												
3/4		A	Α											
1		Α	Α	Α										
1 1/2		Α	Α	Α	Α									
2		S	S	T	T	T	_							
3		S S	S	S S	S	I W	Ţ	_						
6		S	S	S	S	W	w	Ť	т					
8		Š	Š	Š	Š	W	W	w	Ť	Т				
10	)	S	S	S	S	W	W	W	W	Т	Т			
12		S	S	S	S	W	W	W	W	W	Т	T	_	
14		S	S	S	S	W	W	W	W	W	Р	Т	Т	
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	
Legend														
Α	TEE -	SW	ENE	)S	ASM	E-B1	6.11							
Р	PIPE									rs-co	DR-E	NG-F	PIPMT	)12-E
S	SOCI	(OLI	ET - 3	SW E	END	- TB	RAC	5380	)					
T	TEE -													
W	WELI	DOL	ET -	MSS	-SP9	7								

### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



		ОВ <b>2243</b>								
Pipii	ng C	Class	s:	03CB4S02						
						Rev.			_	
Sh.	1	of	2	Α	0	1	2	3		

 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL300
 PWHT
 : AS PER CODE (NOTE 1)

 Facing/Finishing : RF
 Valve Trim
 : UNS S31803 (duplex)

Corrosion Allow. : 6 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : 0 °C to 180 °C

Service: CH - Chemical MEG - Monoethylene Glycol WEG - Water / Ethylene Glycol

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 Thk.mm 7.47 7.82 9.09 10.15 8.74 11.13 11.13 10.97 12.7 12.7 14.27 SCH. XXS XXS XXS XXS XXS 160 160 120 XS XS XS XS 60

Nipple Thickness

V/AL V/EQ

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 51.02 46.88 45.16 ASME B16.5

1/2 ·	12 Temp	. °C 37	7.78 93.33 148.9 Material Group 1.1						
opt.	Siz from	ze to	Item Description	Ends	Rating/Facing	Material			
PIPE									
	1/2	12	PIPE	BW		ASTM A106 GR.B - SMLS			
FLAN			, <u>-</u>			, ichim // ico child child			
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized			
	2	12	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized			
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized			
5	2	12	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized			
	1/2	12	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized			
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Normalized			
SPEC	TACLE	BLIND							
	1/2	12	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)			
FITTII	NGS								
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A105 Normalized			
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized			
	2	12	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS			
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized			
	2	12	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS			
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	9000	ASTM A105 Normalized			
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	6000	ASTM A105 Normalized			
	2	12	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS			
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized			
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized			
	1/2		THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized			
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS			
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS			
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS			
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized			
	2	12	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS			
	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized			
	1/2		SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A105 Normalized			
MISC	ELLANE				la	1.0-1.1			
GASK	10	12	SPECIAL TEMPORARY STRAINER - <mfr -="" metallic="" std=""></mfr>		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)			
GASH		40	OR WOULD COUT IN OUT A BUILDING AGAIN FIRE		I	COLLEGE OF A PILL SON, COLLEGE OLIT PILLO			
	1/2	12	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20	1	1	S31803+GRAPH 98%-S31803 OUT.RING			
BOLT		4	CT DOLT 2 MILTO ANGLITHM TO DUIL 5260			ASTM A403 P7 + ASTM A404 CB 3H (HotDin 153)			
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)			

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60122	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW	CL1500	Body: ASTM A105 Normalized
							Trim: Duplex S.31803
1	2	12	GA-E-60168	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Duplex S.31803
4	1/2	1 1/2	GA-E-60215	Globe-WB-Red.B-Thdd seat - API602	SW	CL1500	Body: ASTM A105 Normalized
							Trim : Duplex S.31803
4	2	8	GA-E-60260	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Duplex S.31803
6	1/2	1 1/2	GA-E-60320	Check-WB-Red.B-Piston-Int seat - API602	SW	CL1500	Body: ASTM A105 Normalized
							Trim: Duplex S.31803
6	2	12	GA-E-60376	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim: Duplex S.31803
7	2	3	GA-E-67173	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Soft seat-S.31803 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60759	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized
							Trim : Soft seat-S.31803 trim - RPTFE seats
8	2	2	GA-E-67174	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Soft seat-S.31803 trim - RPTFE seats
8	6	12	GA-E-67159	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Soft seat-S.31803 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60576	Gate-WB-Red.B-Solid wdg-Exp.seat - API602		CL1500	Body: ASTM A105 Normalized
					DF		Trim: Duplex S.31803



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Pipi	ng C	Class	s:	0	03CB4S02						
						Rev.					
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VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
62	2	8	GA-E-60738	Check-Lug wafer-Dual plate-Wldd seat - API594	WAFER	CL300 RF	Body: ASTM A216 WCB
- J	-	Ü	0.12 00.00	Chook 2ag Maior 2aar plato Triad coat 711 loc 1	LUG	02000 111	Trim : Duplex S.31803
82	1/2	1 1/2	GA-E-60758	Ball-End entry -FB-Float.ball -Frqd body - API608	FLGD	CL300 RF	Body; ASTM A105 Normalized
				3 ,			Trim : Metal seat-S.31803 trim-GRAPH.
82	2	3	GA-E-67190	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Metal seat-S.31803 trim-GRAPH.
82	6	12	GA-E-67191	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Metal seat-S.31803 trim-GRAPH.
89	1/2	1 1/2	GA-E-60498	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL1500	Body: ASTM A105 Normalized
				ASME-B16.34	F		Trim : Metal seat-S.31803 trim-GRAPH.
101	1/2	1 1/2	GA-E-67014		SW	CL1500	Body: ASTM A105 Normalized
				Exp.seat - API602			Trim : Duplex S.31803
101	2	2	GA-E-67029	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A216 WCB
				- API600			Trim : Duplex S.31803
130	1/2	1 1/2	GA-E-67080			CL1500	Body: ASTM A105 Normalized
					DF		Trim: Duplex S.31803
801	1/2	1 1/2	GA-E-67137		FLGD	CL300 RF	Body: ASTM A105 Normalized
	4 /0	4.4/0	0.4 = 0707.4	Frgd body - API608	E1 0 D	01 000 DE	Trim : Soft seat-S.31803 trim - RPTFE seats
810	1/2	1 1/2	GA-E-67274	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized
810	12	12	GA-E-67275	Ball-Split body-FB-Trunnion ball - API6D	EL 0.D	CL300 RF	Trim : Soft seat-S.31803 trim - RPTFE seats Body: ASTM A216 WCB
810	12	12	GA-E-0/2/5	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Trim : Soft seat-S.31803 trim - RPTFE seats
820	1/2	1 1/2	GA-E-67289	Ball-End entry -FB-Float.ball -Frgd body - API608	ELCD	CL300 RF	Body: ASTM A105 Normalized
020	1/2	1 1/2	GA-L-07209	Ball-Elid elitiy -i B-i loat.ball -i igd body - Ar lood	FLGD	CL300 KF	Trim : Metal seat-S.31803 trim-GRAPH.
820	12	12	GA-E-67288	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
020	'-	12	O/ L 0/200	Bail Opin Body 1 B Trainion Bail 711 10B	LOD	OLSOO IXI	Trim : Metal seat-S.31803 trim-GRAPH.
824	2	2	GA-E-67621	Ball-Split body-FB-Floating ball - API6D - Interlock	FLGD	CL300 RF	Body: ASTM A216 WCB
024	-	-	O/( E 0/02)	System	. 202	02000 141	Trim : Metal seat-S.31803 trim-GRAPH.
824	8	8	GA-E-67622	1-3	FLGD	CL300 RF	Body: ASTM A216 WCB
	-	-		Interlock System			Trim : Metal seat-S.31803 trim-GRAPH.
907	6	8	GA-E-69012	,	FLGD	CL300 RF	Body: ASTM A216 WCB
							Trim : Metal seat-S.31803 trim-RPTFE
908	2	2	GA-E-69077	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB
				,,			Trim : Soft seat-316 trim - RPTFE seats

### **BRANCH TABLES**

												90 Degrees
RunSi	ze											-
1/2	Α											
3/4	A	Α										
1	Α	Α	Α									
1 1/2	Α	Α	Α	Α								
2		S	Т	Т	Т							
3			S	S	Т	Т						
4			S	S	W	Т	Т					
6			S	S	W	W	Т	Т				
8			S	S	W	W	W	Т	Τ			
10			S	S	W	W	W	W	Т	Т		
12		_	S	S	W	W	W	W	W	Т	Т	
Branch	Size 1/	2 3/4	1	1 1/2	2 2	3	4	6	8	10	12	
Legend	а											
Α	TEE - S	W EN	DS -	ASM	E-B1	6.11						
S	SOCKOLET - SW END - TB RAC 5380											
Т	TEE - A	SME-	B16.9	9								
W	WELDO	DLET -	MSS	S-SP9	97							

#### GENERAL NOTES

- PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
   Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
   NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
   Specified Thickness are suitable to withstand Full Vacuum condition.



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						Rev.					
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 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL300
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 12 - SS316/HF

Corrosion Allow.: 6 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 220 °C

Service: HL - Hydrocarbon Liquid WEG - Water / Ethylene Glycol

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 Thk.mm 7.47 7.82 9.09 10.15 8.74 11.13 11.13 10.97 12.7 12.7 14.27 15.09 15.88 17.48 17.48 20.62 SCH. XXS XXS XXS XXS 160 160 120 XS XS XS XS 60 60

Nipple Thickness

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 51.02 51.02 46.88 45.16 43.78 ASME B16.5 1/2 · 24 Temp. °C -28.9 37.78 93.33 148.9 204.4 Material Group 1.1

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	10	PIPE	BW		ASTM A106 GR.B - SMLS
	12	24	PIPE	BW		ASTM A333 GR.6 - SMLS
FLAN	IGES					
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A105 Normalized
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
63	3	10	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	12	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
	14	24	BLIND & SPACER - ASME-B16.48 GA-E-060011		CL300 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized
	2	10	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	12	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized
	2	10	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	12	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	6000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	9000	ASTM A105 Normalized
	2	10	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	12	24	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
	2	10	TEE - ASME-B16.9	BW	1	ASTM A234 WPB - SMLS
	12	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
	1/2	1 1/2	SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A105 Normalized
GAS					1	
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			316 SS+GRAPH 98% - C.S. OUT.RING
63	3	10	OCTAGONAL RJ GASKET - ASME-B16.20		1	AISI 316
BOL <sup>7</sup>						
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60186	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	sw	CL1500	Body: ASTM A105 Normalized Trim : 316 / HF
1	2	24	GA-E-60192	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 316 / HF
4	1/2	1 1/2	GA-E-60267	Globe-WB-Red.B-Thdd seat - API602	SW	CL1500	Body: ASTM A105 Normalized Trim : 316 / HF
4	2	12	GA-E-60273	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 316 / HF
6	1/2	1 1/2	GA-E-60390	Check-WB-Red.B-Piston-Int seat - API602	SW	CL1500	Body: ASTM A105 Normalized Trim : 316 / HF
6	2	24	GA-E-60398	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : 316 / HF
7	2	2	GA-E-60426	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats
7	6	24	GA-E-67118	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats



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ALVE	ES						
pos.	Siz from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
8	1/2	1 1/2	GA-E-60425	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats
8	2	2	GA-E-67172	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB  Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-67059	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL1500	Body: ASTM A105 Normalized
11	1/2	1 1/2	GA-E-60189	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	1	CL300 RF	Body: ASTM A105 Normalized Trim : 316 / HF
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67082	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	sw	CL1500	Body: ASTM A105 Normalized
102	2	2	GA-E-67327	Gate-BB-FB-Flex wdg-Thdd seat - API600	BW	CL300	Body: ASTM A216 WCB Trim: 316 / HF
140	2	6	GA-E-67367	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL300 RF	Body: ASTM A216 WCB Trim: 316 / HF
780	2	2	GA-E-67661	DBL Block&Bleed Ball valve-SplitBdy-RB- Float.ball - <mfr std=""></mfr>	FLGD	CL300 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - RPTFE seats
907	6	6	GA-E-69010	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - RPTFE seats

#### **BRANCH TABLES**

D 01																9	90 Degrees
RunSi																	
1/2		Α															
3/4		Α	Α														
1		Α	Α	Α													
1 1/2		Α	Α	Α	Α	_											
2		S	S	Т	T	T											
3		S	S	S	S	W	T	_									
4		S	S	S	S	W	Τ	Ţ	_								
6		S	S	S	S	W	W	ı,	1	_							
8		S	S	S	S	W	W	W			_						
10		S	S	S	S	W	W	W	W	I.	1	_					
12		S	S	S	S	W	W	W	W	VV	Ī	1	_				
14		S	S	S	S	W	W	W	W	W	Ρ.	I	<u> </u>	_			
16		S	S	S	S	W	• •	VV	VV	• • •	Р	P	I D	<u> </u>	_		
18 20		S S	S S	5	S	W	W	W	W	W	P	P	P	ı	ļ	_	
20		S	S	0	S	VV V/	W	۷۷	۷۷	۷۷	P	P	P	P	I D	<u>+</u>	т
				3	-	* *	v v	٧٧	۷۷	۷۷	۲,	г	г	40	- 10	1	
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	) 24
Legenda	а																
Α	TEE	- SW	/ ENI	)S	ASM	E-B1	6.11										
Р	PIPE	TO	PIPE	WIT	HRE	EINF	ORC	ING F	PAD-	rs-co	DR-E	NG-F	PIPM	Γ-012	2-E		
S	SOC	KOL	ET - :	SW E	END	- TB	RAC	5380	)								
Т	TEE	- AS	ME-E	16.9													<u> </u>
W	WEL					7											

### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



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Base Material : CARBON STEEL PTFE LINED :ASME B 31.3 2016 Design code

Nom. Rating : CL300 **PWHT** 

Facing/Finishing : FF : SPECIAL Trim-PTFE LINED Valve Trim

Corrosion Allow. : 0 mm Welding Spec : ---

: 0 °C to 90 °C Temp. Limit

Service: MEG - Monoethylene Glycol (MEG HCL Injection point)

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 Thk.mm 2.77 2.87 3.38 3.68 3.91 5.49 6.02 7.11 7.04 SCH. STD STD STD STD STD STD STD STD STD 30

Nipple Thickness

NPS Thk.mm SCH.

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 51.02 ASME B16.5

1/2 ·	8 Temp	o. °C 37	7.78 Material Group 1.1			
opt.	Si from	ze to	Item Description	Ends Rating/Facing M		Material
PIPE						
	1/2	8	PIPE CL300-FF	BW		ASTM A106 GR.B - SMLS - PTFE Lined
FLAN	GES					
	1/2	8	LJ FLANGE - ASME-B16.5			ASTM A105 Normalized
	1/2	8	BLIND FLANGE - ASME-B16.5		CL300 FF	ASTM A105 Normalized - PTFE LINED
SPEC	TACLE	BLIND				
	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL300 FF	ASTM A516 GR.70 + S5 (-46°C) - PTFE LINED
FITTI	NGS					
	1/2	8	LJ STUB.END-BW END - SHORT TP - ASME-B16.9	BW\FLGD	CL300 FF	ASTM A234 WPB - SMLS - PTFE Lined
	1/2	8	FLANGED ELBOW - LINED - <mfr -="" metallic="" std=""> CL300-FF</mfr>	FLGD	CL300 FF	ASTM A234 WPB - SMLS - PTFE Lined
	3/4	8	FLANGED REDUCER - LINED - <mfr -="" metallic="" std=""> CL300-FF</mfr>	FLGD	CL300 FF	ASTM A234 WPB - SMLS - PTFE Lined
	1	8	FLANGED TEE - LINED - <mfr -="" metallic="" std=""> CL300-FF</mfr>	FLGD	CL300 FF	ASTM A234 WPB - SMLS - PTFE Lined
	2	8	INSTRUMENT TEE - LINED - <mfr -="" metallic="" std=""></mfr>	FLGD	CL300 FF	ASTM A105 Normalized - PTFE LINED
<b>BOLT</b>	s					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	2	2	GA-E-67705	Gate-PTFE LINED-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 FF	Body: ASTM A216 WCB
							Trim: SPECIAL Trim-PTFE LINED
2	8	8	GA-E-60540	Butterfly-Lug wafer-Sleeve type-Centered disk -	WAFER	CL300 FF	Body: ASTM A216 WCB
				PTFE Lined - <mfr std=""></mfr>	LUG		Trim : Sleeve PTFE - PTFE lined disc
6	2	8	GA-E-67502	Check-Fully Lined-Axial ball type - PTFE Lined -	FLGD	CL300 FF	Body: ASTM A216 WCB
				<mfr -="" metallic="" std=""></mfr>			Trim : Body Lined PTFE-PTFE shutter
8	1	2	GA-E-67298	Ball-Split body-FB-Floating ball - PTFE Lined	FLGD	CL300 FF	Body: ASTM A216 WCB
							Trim : Body lined PTFE - PTFE trim
62	2	2	GA-E-67510	Check-Wafer-Axial.dsk&Spring - PTFE Lined -	WAFER	CL300 FF	Body: ASTM A216 WCB
				<mfr -="" metallic="" std=""></mfr>			Trim : Body Lined PTFE-PTFE shutter
907	8	8	GA-E-69053	Ball-Split body-Red.B-Floating balll - PTFE Lined	FLGD	CL300 FF	Body: ASTM A216 WCB
				- API6D			Trim : Body lined PTFE - PTFE trim

#### **BRANCH TABLES**

											·
										90 Degrees	
RunSi	ze									· ·	
1/2											
3/4											
1		Т	Т								
1 1/2		Т	Т	Т							
2		ΙT	Т	Т	Т						
3			T	T	T	T	_				
4			Τ		T		T	_			
6						Т	T	T	_		
8				ΙT			Т	Т	T		
Branch	Size 1/2	3/4	1	1 1/2	2 2	3	4	6	8		
Legend	a										
IT	INSTRU	MENT	TEE	E - LII	NED.	- <mf< th=""><th>R St</th><th>d - M</th><th>etallic&gt;</th><th></th><th></th></mf<>	R St	d - M	etallic>		
Т	FLANGE	D TE	E - LI	INED	- <n< th=""><th>IFR S</th><th>Std - N</th><th>/letall</th><th>ic&gt; + Cl</th><th>00-FF</th><th></th></n<>	IFR S	Std - N	/letall	ic> + Cl	00-FF	



		ов 2 <b>243</b>						
Pipi	ng C	Class	s:	(	)3L	T0F	50	
						Rev.		
Sh.	2	of	2	Α	0	1	2	3

### GENERAL NOTES

- 1) Plastic lining in pipe shall be in accordance with ASTM F1545 standard specification for PTFE plastic-lined ferrous metal pipe, fittings, and flanges. Pipe shall have Class 300 flanged ends.
  2) Welding or heating of metal surfaces of plastic-lined pipe shall not be permitted.
  3) Piping layout configuration shall ensure lining integrity



**PWHT** 

JOB **032243** Piping Class: 03SA0B01 Rev. Α 0 1 2 3

Base Material : STAINLESS STEEL 304/304L DUAL GRADE Design code : ASME B 31.3 2016

Nom. Rating : CL300 Facing/Finishing : RF

Valve Trim : 12 - SS316/HF Corrosion Allow. : 0 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -175 °C to 230 °C

Service: ER - Ethane / Ethilene Refrigerant MR - Mixed Refrigerant NG - Natural Gas PG - Process Gas / Purge Gas PR - Propane Refrigerant

Pipe Thickness
----------------

1/2 3/4 2.77 2.87 40S 40S 66 68 NPS Thk.mm 1 1 1/2 3.38 3.68 18 20 9.53 12.7 6 7.11 52 56 12.7 | 11.13 | 12.7 | 14.27 | 15.88 | 15.88 | **15.88** 17.48 19.05 3.05 6.35 6.35 8.38 7.92 9.53 15.88 17.48 SCH. 40S 40S 40S 10S 10S 40S 40S 80S 80S

Nipple Thickness

19.05 20.62

NPS 1/2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

 
 NPS
 Press. bar large
 49.64 | 49.64 | 41.37 | 37.23 | ASME B16.5 | 49.64 | 49.64 | 41.37 | 37.23 | ASME B16.5 | 49.64 | 41.37 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 48.9 | 30 36 Temp. °C NPS Press. bar 230 30 42 - 68 Temp. °C

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	6	PIPE	вw	1	ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	68	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN	IGES		, <del>-</del>			7.01.117.000 11 00 11 10 12 02.11 00 12 01 11 12
	1/2	24	WN FLANGE - ASME-B16.5	вw	CL300 RF	ASTM A182 F304/304L DUAL GRADE
	26	60	WN FLANGE - ASME-B16.47 series.A	вw	CL300 RF	ASTM A182 F304/304L DUAL GRADE
	68	68	SPECIAL WN FLANGE - <mfr std=""> GA-E-060015</mfr>	вw	CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	24	WN FLANGE - ASME-B16.5	вw	CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	1/2	1/2	THD FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 F304/304L DUAL GRADE
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 F304/304L DUAL GRADE
	26	60	BLIND FLANGE - ASME-B16.47 series.A		CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	3/4		THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 F304/304L DUAL GRADE
SPEC	CTACLE	BLIND				
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A240 TP304
	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP304
2	1/2	12	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP304
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP304
25	1/2	8	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
FITTI	NGS			1	1	
	1/2		DRIP-RING - TB DRI 5011		CL300 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8		LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50	68	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
5	1		SPECIAL LARGE RADIUS ELBOW - <mfr std=""></mfr>	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
5	2		BEND - WITH R=5 DN - TB RAC 5023	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4		REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50		REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2		CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	50		CAP - TB RAC 5064	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2		THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4		SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4		SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4 1/2	2 6	SWAGE NIPPLE - PE/PE - MSS-SP95	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8		TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
		48 68	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	54 1/2		TEE - TB RAC 5061 WELDOLET - MSS-SP97	BW		
	1/2			BW		ASTM A182 F304/304L DUAL GRADE ASTM A182 F304/304L DUAL GRADE
	3	8	LATROLET - BW END - MSS-SP97 SPECIAL LATROLET - <mfr std=""></mfr>	BW		
GASI	KETS	0	PELOIAL LATROLET - SWER SIUS	PAA	1	ASTM A182 F304/304L DUAL GRADE
CAGI	26	60	FLAT GASKET - GROOVED - <mfr std=""></mfr>		I	AISI 316L+GRAPHITE
	68	68	FLAT GASKET - GROOVED - <mfr std=""> FLAT GASKET - GROOVED - <mfr std=""> GA-E-060015</mfr></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
BOL		44	DO MOSTAL NO ONOILE - NOIME-D10.20		1	AUOI 300T
BUL	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 B8 CL.2 + ASTM A194 GR.8
	1 5/8	4	ST.BOLT+2 NOTS - ANSI Third - TB BUL 5368			ASTM A453 GR. 660
	2 1/8		ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660



		ов 2 <b>243</b>						
Pipi	ng C	Class	s:	0	38	A0E	301	
						Rev.		
Sh.	2	of	3	Α	0	1	2	3

VALV	ES						
	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to		·			
1	1/2	1 1/2	GA-E-60142	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
1	2	24	GA-E-60150	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A351 CF8M
'	_	27	OA-E-00130	Gale-BB-FB-Flex wag-filed seat - Al 1000	LOD	OLSOO IXI	Trim: 316 / HF
4	1/2	1 1/2	GA-E-60234	Globe-BB-Red BThdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
	_						Trim: 316 / HF
4	2	12	GA-E-60243	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
6	1/2	1 1/2	GA-E-60341	Check-BB-Red.B-Piston-Thdd seat - API602	вW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim : 316 / HF
6	2	10	GA-E-60355	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A351 CF8M
6	12	24	GA-E-60356	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A351 CF8M
	12	27	OA-L-00330	Official langed - Dual plate-Wild Seat - Al 1994	LOD	OLSOO IXI	Trim:316 / HF
7	6	24	GA-E-60448	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A351 CF8M
							Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60446	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-67026	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW/TH	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
'					DF		Trim : 316 / HF
14	2	6	GA-E-60179	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A351 CF8M
80	1/2	1 1/2	GA-E-60472	- API600 Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE
00	1/2	1 1/2	GA-E-60472	Frgd body - API608	FLGD	CL300 KF	Trim : Soft seat-316 trim - RPTFE seats
82	1/2	1 1/2	GA-E-60760	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60476	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	BW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
101	1/2	1 1/2	GA-E-60593	Gate-Stem Extension-BB-Red.B-Solid wdg-	BW	CL800	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A182 F316/F316L DUAL GRADE
	1,72	1 1/2	C/ ( L 00000	Exp.seat - API602	J.,	02000	Trim : 316 / HF
101	2	24	GA-E-60594		FLGD	CL300 RF	Body: ASTM A351 CF8M
106	8	8	GA-E-67703	- API600 Gate-Stem Extension-BB-FB-Flex wdg-Thdd	FLGD	CL 000 B L (E)	Trim: 316 / HF
100	0	0	GA-E-07703	seat - API600	FLGD	CL900 RJ (F)	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
401	1/2	1 1/2	GA-E-60283	Globe-Stem Extension-BB-Red BThdd seat -	вW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
				API602			Trim: 316 / HF
401	2	12	GA-E-60284	Globe-Stem Extension-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
701	6	24	GA-E-60788	Ball-Stem Extension-Split body-Red.B-Trunnion	FLGD	CL300 RF	Body: ASTM A351 CF8M
				ball - API6D			Trim : Soft seat-316 trim - RPTFE seats
801	1/2	1 1/2	GA-E-67138	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
801	6	24	GA-E-60789	Frgd body - API608 Ball-Stem Extension-Split body-FB-Trunnion ball -	EL GD	CL300 RF	Trim: Soft seat-316 trim - RPTFE seats Body: ASTM A351 CF8M
001	U	24	CA-L-00109	API6D	FLGD	CL300 KF	Trim : Soft seat-316 trim - RPTFE seats
841	8	10	GA-E-67623	Ball-Stem Extension-Split body-FB-Trunnion ball -	FLGD	CL300 RF	Body: ASTM A351 CF8M
				API6D - Interlock System			Trim : Soft seat-316 trim - RPTFE seats
920	26	48	GA-E-69013	Butterfly-Stem Extension-Flanged-Triple Off Set- Int.seat-Fire safe - API609	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : Metal seat - 316 - 316 disc
920	50	60	GA-E-69044	Special Butterfly-Stem Extension-Flanged-Triple	FLGD	CL300 RF	Body: ASTM A351 CF8M
				Off Set-Int.seat-Fire safe - <mfr std=""></mfr>			Trim : Metal seat - 316 - 316 disc
920	62	68	GA-E-69014	Special Butterfly-Stem Extension-Flanged-Triple	FLGD	CL300 RF	Body: ASTM A351 CF8M
972	2	6	GA-E-69015	Off Set-Int.seat-Fire safe - <mfr std=""> Ball-Split body-Red.B-Floating ball - API6D</mfr>	FLGD	CL300 RF	Trim: Metal seat - 316 - 316 disc Body: ASTM A351 CF8M
312			CA-L-03013	Dan Opin Body-Nedi D-1 Todding Bail - AFTOD	LGD	OLSOU KI	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
976	2	2	GA-E-69098	Ball-Stem Extension-Split body-Red.B-Floating	FLGD	CL300 RF	Body: ASTM A351 CF8M
				ball - API6D			Trim : Soft seat-316 trim - RPTFE seats
976	6	8	GA-E-69099	Ball-Stem Extension-Split body-Red.B-	FLGD	CL300 RF	Body: ASTM A351 CF8M
				Trunnion ball - API6D			Trim : Soft seat-316 trim - RPTFE seats

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	68	68	GA-E-60612	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen: 316 - CLOTH - MESH 3
2	68	68	GA-E-60627	Angle T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen: 316 - CLOTH - MESH 3

**BRANCH TABLES** 



00 Dames

		ов 2 <b>243</b>							
Pipi	ng C	Class	s:	0	38	40E	801		
						Rev.			
Sh.	3	of	3	Α	0	1	2	3	

RunS	ize															9	0 De	grees	•															
1/2 3/4 1 1/2 2	2 4 1 1 2 2 2 3 3 3 4 4 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	TTTTTWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	T T T W W W W W W W W W W W W W W W W W	T T T W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	T W W W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	T T W W W W W W W	T T P P P P P P P P	T T P P P P P P P P	T T P P P P P P P	T T P P P P P P	TTPPPPP	T T P P P P	TTPPP	TTPPP	T T P	TTTT	T	Т												
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6	LB	LB	LB	LB	LB	LS	LS	PP																						
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10	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP																				
12	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP																			
14	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP																		
16	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP																	
18	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP																
20	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP															
24	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP														
30	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP													
36	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP												
42	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP											
46	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP										
48	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP									
54 LB LB LB LB LS LS LS LS PP PP PP PP PP PP PP PP PP PP PP PP PP																														
56 60	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP							
62	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP						
66	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	-				
68	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	-			
	LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP			
BranchSize	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	30	36	42	46	48	54	56	60	62	66	68			
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#### GENERAL NOTES

- Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
   The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
   NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
   Specified Thickness are suitable to withstand Full Vacuum condition.



:NO

**PWHT** 

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Base Material : STAINLESS STEEL 304/304L DUAL GRADE Design code : ASME B 31.3 2016

Nom. Rating : CL300
Facing/Finishing : RF

 Facing/Finishing : RF
 Valve Trim
 :12 - SS316/HF

 Corrosion Allow. : 0 mm
 Welding Spec
 :MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -175 °C to 220 °C

Service: [Cryogenic Service] ER - Ethane / Ethilene Refrigerant LNG - Liquefied Natural Gas MR - Mixed Refrigerant PC - Process Condensate

Pipe Thickness

 
 NPS
 1/2
 3/4
 1
 1 1/2
 2
 2 1/2
 3

 Thk.mm
 2.77
 2.87
 3.38
 3.68
 3.91
 3.05
 3.05

 SCH.
 40S
 40S
 40S
 40S
 10S
 10S
 4 6 3.05 7.11 16 18 9.53 9.53 8.38 7.92 12.7 14.27 6.35 6.35 12.7 12.7 9.53 9.53 10S 40S 40S 40S 80S 80S

Nipple Thickness

 NPS
 1/2
 3/4
 1
 1 1/2
 2

 Thk.mm
 3.73
 3.91
 4.55
 5.08
 5.54

 SCH.
 80S
 80S
 80S
 80S
 80S

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 49.64 49.64 41.37 37.23 34.13 ASME B16.5 1/2 · 24 Temp. °C -28.9 37.78 93.33 148.9 204.4 Material Group 2.1 NPS Press. bar 30

		). °C '	70			
ont	Siz	ze to	Item Description	Ends	Rating/Facing	Material
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PIPE	4 (0		bine	lov.		
	1/2 8	6 42	PIPE PIPE	BW BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLANG	- 1	42	FIFE	DVV		ASTM A338 TP304/TP304L CL.T DUAL GRADE - EFW
	1/2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
	26	42	WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
5	26	42	WN FLANGE - ASME-B16.47 series.A	вw	CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	1/2	1/2	THD FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 F304/304L DUAL GRADE
73	1/2	24	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
99	1/2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
99	26	42	WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
995	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
995	26	42	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 F304/304L DUAL GRADE
_	26	42	BLIND FLANGE - ASME-B16.47 series.A		CL300 RF	ASTM A182 F304/304L DUAL GRADE
5 73	1/2 1/2	24 24	BLIND FLANGE - ASME-B16.5 BLIND FLANGE - ASME-B16.5		CL600 RF CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE ASTM A182 F304/304L DUAL GRADE
99	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 F304/304L DUAL GRADE  ASTM A182 F304/304L DUAL GRADE
99	26	42	BLIND FLANGE - ASME-B16.47 series.A		CL300 RF	ASTM A182 F304/304L DUAL GRADE
995	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
995	26	42	BLIND FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A182 F304/304L DUAL GRADE
	2	2	WN REDUCING FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 F304/304L DUAL GRADE
99	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 F304/304L DUAL GRADE
995	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A182 F304/304L DUAL GRADE
SPECT	TACLE	BLIND				
	1/2	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP304
5	1/2	8	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
99	1/2	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP304
995 FITTIN	1/2	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
111111	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A182 F304/304L DUAL GRADE
99	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	вw	OLOGO IVI	ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	42	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	6	REDUCER - ASME-B16.9	вW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	42	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	42	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	42	TEE - ASME-B16.9	BW BW		ASTM A493 WP304WX/304LWX DUAL GRADE - WLDD
GASKI	1/2   <b>ETS</b>	8	WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE
	26	42	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - 304 OUT.RING
14	2	2	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - 304 OUT.RING
73	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
BOLTS	S					
	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 B8 CL.2 + ASTM A194 GR.8
	1 5/8	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660
99	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660 - PTFE COATED
995	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660 - PTFE COATED



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/ALV	ES						
	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to					
1	1/2	1 1/2	GA-E-60144	Cryo.Gate-Extend.BB-Red.B-Solid wdg-Wldd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
1	2	24	GA-E-60152	Cryo.Gate-Extend.BB-FB-Flex wdg-Thd seat -	FLGD	CL300 RF	Body: ASTM A351 CF8M
•	-		G/( E 00102	API600	. 202	02000111	Trim: 316 / HF
2	26	42	GA-E-60513	Cryog.Butterfly-Flanged-Triple Off Set-Int.seat-	FLGD	CL300 RF	Body: ASTM A351 CF8M
				Fire safe - API609			Trim : Metal seat - 316 - 316 disc
4	1/2	1 1/2	GA-E-60236	Cryo.Globe-Extend.BB-Red.B-Thdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
.		4.0	04 5 00045	O OLL 5 . IDD DI L TI II . ADI 000	E1 0 D	01 000 05	Trim: 316 / HF
4	2	18	GA-E-60245	Cryo.Globe-Extend.BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
6	1/2	1 1/2	GA-E-60344	Cryo.Check-BB-Red.B-Piston-Thdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
Ŭ	1/2	/2	O/ L 000++	Oryo. Orlean BB Neal B Fision Thad seat 711 1002		02000	Trim : 316 / HF
6	2	10	GA-E-60352	Cryo.Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A351 CF8M
							Trim: 316 / HF
6	12	24	GA-E-60353	Cryo.Check-Flanged-Dual plate-Wldd seat -	FLGD	CL300 RF	Body: ASTM A351 CF8M
	00	00	04 5 00000	API594	E1 0D	01 000 05	Trim: 316 / HF
6	26	36	GA-E-60392	Cryo.Check-Flanged-Dual plate-Wldd seat - API594	FLGD	CL300 RF	Body: ASTM A351 CF8M
7	2	4	GA-E-60450	Cryo.Ball-Ext.bnt-Split body-Red.B-Float.ball -	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A351 CF8M
′	-	-	C/ (-L-00450	API6D	. 200	CLOOD IXI	Trim : Crio Soft seal-316 trim - KEL.F seats
7	6	24	GA-E-60451	Cryo.Ball-Ext.bnt-Split body-Red.B-Trun.ball -	FLGD	CL300 RF	Body: ASTM A351 CF8M
				API6D			Trim : Crio Soft seal-316 trim - KEL.F seats
8	1/2	1 1/2	GA-E-60449	Cryo.Ball-Ext.bnt-Split body-FB-Floating ball -	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
	_			API608			Trim : Crio Soft seal-316 trim - KEL.F seats
8	2	3	GA-E-67239	Cryo.Ball-Ext.bnt-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A351 CF8M
8	6	24	GA-E-67175	Cryo.Ball-Ext.bnt-Split body-FB-Trunnion ball -	FLGD	CL300 RF	Trim : Crio Soft seal-316 trim - KEL.F seats Body: ASTM A351 CF8M
١	O		GA-E-07173	API6D	LGD	CL300 KI	Trim : Crio Soft seal-316 trim - KEL.F seats
11	1/2	1 1/2	GA-E-67350	Cryo.Gate-Extend.BB-Red.B-Solid wdg-Wldd seat	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
				- API602			Trim: 316 / HF
15	3	3	GA-E-60156	Cryo.Gate-Extend.BB-FB-Flex wdg-Thd seat -	FLGD	CL600 RF	Body: ASTM A351 CF8M
				API600			Trim: 316 / HF
17	2	2	GA-E-60596	Cryo.Gate-Extend.BB-FB-Flex wdg-Thd seat - API600	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M
19	1/2	1 1/2	GA-E-67041	Cryo.Gate-Extend.BB-Red.B-Solid wdg-Wldd seat	D\A//TLI	CL800	Trim: 316 / HF
19	1/2	1 1/2	GA-E-07041	- API602	DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
62	2	10	GA-E-60705	Cryo.Check-Flanged-Dual plate-Wldd seat -	FLGD	CL300 RF	Body: ASTM A351 CF8M
				API594			Trim : 316 / HF
69	18	18	GA-E-60748	Cryo.Check-Flanged-Dual plate-Widd seat -	FLGD	CL300 RF	Body: ASTM A351 CF8M
				API594			Trim : 316 / HF
162	2	2	GA-E-67322	Cryo.Gate-Extend. Stem (1800mm)-BB-FB-Flex	FLGD	CL300 RF	Body: ASTM A351 CF8M
780	2	3	GA-E-67662	wdg-Thd seat - API600 Cryo.DBL Block&Bleed Ball valve-Ext.bnt-	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE
, 00	4		GA-L-07002	SplitBdy-RB-Float.ball - <mfr std=""></mfr>	LGD	OLSOU IXI	Trim : Crio Soft seal-316 trim - KEL.F seats
781	2	2	GA-E-67663	Cryo.DBL Block&Bleed Ball valve-Ext.bnt-	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
				SplitBdy-RB-Float.ball - <mfr std=""></mfr>			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
840	10	10	GA-E-67624	Cryo.Ball-Ext.bnt-Split body-FB-Trunnion ball -	FLGD	CL300 RF	Body: ASTM A351 CF8M
				API6D - Interlock System			Trim : Crio Soft seal-316 trim - KEL.F seats
907	1	1	GA-E-69103	Cryo.Ball-Ext.bnt-Split body-Red.B-Float.ball -	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
907	3	3	GA-E-69089	API6D Cryo.Ball-Ext.bnt-Split body-Red.B-Float.ball -	FLGD	CL300 RF	Trim : Crio Soft seal-316 trim - KEL.F seats Body: ASTM A351 CF8M
301	J	3	OA-L-09009	API6D	rLGD	CL300 KF	Trim : Crio Soft seal-316 trim - KEL.F seats
907	6	20	GA-E-69087	Cryo.Ball-Ext.bnt-Split body-Red.B-Trun.ball -	FLGD	CL300 RF	Body: ASTM A351 CF8M
	•			API6D			Trim : Crio Soft seal-316 trim - KEL.F seats
908	8	8	GA-E-69088	Cryo.Ball-Ext.bnt-Split body-FB-Trunnion ball -	FLGD	CL300 RF	Body: ASTM A351 CF8M
				API6D			Trim : Crio Soft seal-316 trim - KEL.F seats
917	2	6	GA-E-69054	Cryo.Ball-Top Entry-Ext.bnt-Red.B-Float.ball -	BW	CL300	Body: ASTM A351 CF8M
				API6D + Pup Pieces			Trim : Crio Soft seal-316 trim - KEL.F seats
920	36	42	GA-E-69086	Cryog.Butterfly-Flanged-Triple Off Set-Int.seat-	FLGD	CL300 RF	Body: ASTM A351 CF8M
				Fire safe - API609	1	1	Trim: Metal seat - 316 - 316 disc

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1	1	GA-E-60648	Y Strainer - Bolted cover - ASME-B16.34	FLGD		Body : ASTM A182 F316/F316L DUAL GRADE Screen: 316 - CLOTH - MESH 3
1	6	6	GA-E-60622	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A403 WP304S/304LS DUAL GRADE - SMLS Screen: 316 - CLOTH - MESH 3
1	8	8	GA-E-60614	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen: 316 - CLOTH - MESH 3
1	24	24	GA-E-60614	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	I .	Body : ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen: 316 - CLOTH - MESH 3

### BRANCH TABLES



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14		W	W	W	W	W		W	W	W	W	Р	1	<u> </u>	_													
16	j	W	W	W	W	W		W	W	W	W	Р	Р	Ī	1	_												
18		W	W	W	W	W		W	W	W	W	Р	Р	P	I P	1	_											
20		W	W	W	W	W		W	W	W	W	Р	г			ı	<u> </u>	_										
24	1	W	W	W	W	W		W	W	W	W	Р	P	P P	Р	P	Ī	1	_									
28	3	W	W	W	W	W		W	W	W	W	P	P	P	Р	P	P	<u> </u>	<u> </u>	_								
28 30 36	,	W	W	W	W	W		W	W	W	W	P	P	P	P P	P	P	I P	I P	- I	_							
42	)		W	W	W	W		W	W	W	W	P	P	P	P	P	P	P	P	I P	<u> </u>	т						
		W				W		W		• • •	W	•	г	•	г	г	۲		•			•						
Branch	ısıze	1/2	3/4	1	1 1/2	2 2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	28	30	36	42						
Legend	la																											
Р						INF	ORCIN	IG P	AD-T	rs-c	OR-E	NG-F	IPMT	T-012	-E													
T	TEE	- AS	ME-E	316.9	)																							
W	WEL	DOL	ET -	MSS	S-SP9	7	,																,	,	,			

### GENERAL NOTES

<sup>1)</sup> Use of threaded connections is prohibited except for instrument impulse lines.
2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	38	A0E	<b>360</b>	
						Rev.		
Sh.	1	of	3	Α	0	1		

STAINLESS STEEL 304/304L DUAL GRADE Design code : ASME B 31.3 2016 Base Material Nom. Rating : CL300 **PWHT** :NO Facing/Finishing: RF Valve Trim : 12 - SS316/HF Corrosion Allow. : 0 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013 Temp. Limit : -175 °C to 230 °C Service: [AIV] ER - Ethane / Ethilene Refrigerant MR - Mixed Refrigerant PG - Process Gas / Purge Gas PR - Propane Refrigerant Pipe Thickness NPS 1/2 3/4
Thk.mm 2.77 2.87
SCH. 40S 40S
66 68
19.05 20.62 1 1 1/2 2 3 4 3.38 3.68 3.91 3.05 3.05 6 8 7.11 6.35 18 20 9.53 12.7 
 24
 30
 36
 40
 42
 46
 48
 54
 56
 60
 62

 12.7
 11.13
 12.7
 14.27
 14.27
 15.88
 15.88
 15.88
 17.48
 17.48
 19.05
 9.53 6.35 8.38 7.92 40S 40S 40S 10S 10S 40S 40S 40S 80S 80S

Nipple Thickness

 NPS
 1/2
 3/4
 1
 1 1/2
 2

 Thk.mm
 3.73
 3.91
 4.55
 5.08
 5.54

 SCH.
 80S
 80S
 80S
 80S
 80S

PRESSURE - TEMPERATURE Ratings

NPS						ASME B16.5
1/2 · 24	Temp. °C	-28.9	37.78	93.33	148.9	Material Group 2.1
NPS	Press. bar	25				
30 · 36	Temp. °C	230				
NPS	Press. bar	30				
40 68	Temp. °C	180				

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE		ı				
	1/2	6	PIPE	BW	1	ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	68	PIPE	BW		ASTM A352 TF304/TF304L DUAL GRADE - SMLS
FLAN	- 1	00		DW.		ASTIM ASSO TESO4/TESO4E CE.T DOAL GRADE FET W
	1/2	24	WN FLANGE - ASME-B16.5	ВW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
	26	60	WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
	68	68	SPECIAL WN FLANGE - <mfr std=""> GA-E-060015</mfr>	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	1/2	1/2	THD FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 F304/304L DUAL GRADE
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5	J.,	CL300 RF	ASTM A182 F304/304L DUAL GRADE
	26	60	BLIND FLANGE - ASME-B16.47 series.A		CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 F304/304L DUAL GRADE
	TACLE		THE REEL PERIOD FROME BIOLO	ļii i Bi	02000111	THE THINK TO BE TOO TO OUT BOTH BE
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A240 TP304
	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP304
	68	68	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060015</mfr>		CL300 RF	ASTM A240 TP304
2	1/2	12	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP304
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP304
25	1/2	8	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
FITTI			BEIND & OF ACENT - ACINE-D10.40		02000111	NOTIVI A2+0 11 30+
	1/2	2	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	вw	02000111	ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50	68	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50	68	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	48	CAP - ASME-B16.9	BW	3000	ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	50	68	CAP - TB RAC 5064	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A102 T 304/304E DOAE GRADE  ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	1/2	2	NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	TEE - ASME-B16.9	BW		ASTM A403 WP3045/304LS DUAL GRADE - SMLS ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	54	68	TEE - TB RAC 5061	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	2	36	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW		ASTM A182 F304/304L DUAL GRADE
GASI		30	SPECIAL SWEEPULET - < WIFK Std>	D VV		ASTINI ATOZ FSU4/SU4L DUAL GRADE
JAOI	26	60	FLAT GASKET - GROOVED - <mfr std=""></mfr>		T	AISI 316L+GRAPHITE
	68	68	FLAT GASKET - GROOVED - <mfr std=""> GA-E-060015</mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING AISI 304
		24	OCTAGONAL NJ GAONET - AONIE-B10.20	1	1	AIOI 304
BOL <sup>-</sup>	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 B8 CL.2 + ASTM A194 GR.8
	1 5/8	11/2	ST.BOLT+2 NUTS - ANSI Tridd - TB BUL 5368			ASTM A453 GR. 660
	1 3/0		01.50E11211010 - A1101 Hidd - 15 50E 5500			100 TWI 1750 OT. 000



		DB 2 <b>243</b>						
Pipi	ng C	Class	s:	0	38	40E	<b>360</b>	
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Body: ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen: 316 - CLOTH - MESH 3

Body: ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen: 316 - CLOTH - MESH 3

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60142	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
1	2	24	GA-E-60150	Gate-BB-FB-Flex wdq-Thdd seat - API600	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A351 CF8M
ı.	_		C/1 2 00 100	Cate BB 1 B 1 lex wag 11lad seat 74 less	. 205	02000 111	Trim: 316 / HF
4	1/2	1 1/2	GA-E-60234	Globe-BB-Red BThdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
4	2	12	GA-E-60243	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A351 CF8M
6	1/2	1 1/2	GA-E-60341	Check-BB-Red.B-Piston-Thdd seat - API602	BW	CL800	Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE
Ü	1/2	1 1/2	OA-L-00341	Officer-bb-red.b-r islon-riidu seat - Ar isoz	D**	OLOGO	Trim:316/HF
6	2	10	GA-E-60355	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
6	12	24	GA-E-60356	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A351 CF8M
7	6	24	GA-E-60448	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A351 CF8M
			C/1 2 00440	Jan Opin Body Ned. B Trainion Ban 74 10B	LOD	OLSOO IXI	Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60446	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-67026	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW/TH	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
					DF		Trim : 316 / HF
80	1/2	1 1/2	GA-E-60472	Ball-Stem Extension-End entry -FB-Float.ball - Frqd body - API608	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - RPTFE seats
82	1/2	1 1/2	GA-E-60760	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
89	1/2	1 1/2	GA-E-60476	Ball-End entry -FB-Float.ball -Frgd body+nipples -	BW/TH	CL800	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A182 F316/F316L DUAL GRADE
				API608	DF		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-60593	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
101	2	24	GA-E-60594	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 RF	Body: ASTM A351 CF8M
130	1/2	1 1/2	GA-E-67393	- API600 Gate-Stem Extension-BB-Red.B-Solid wdq-	BW/TH	CL800	Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE
				Exp.seat - API602	DF		Trim : 316 / HF
401	1/2	1 1/2	GA-E-60283	Globe-Stem Extension-BB-Red BThdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
401	2	12	GA-E-60284	Globe-Stem Extension-BB-Disk-Thdd seat - API	FLGD	CL300 RF	Body: ASTM A351 CF8M
701	6	24	GA-E-60788	623 Ball-Stem Extension-Split body-Red.B-Trunnion	FLGD	CL300 RF	Trim: 316 / HF Body: ASTM A351 CF8M
				ball - API6D			Trim : Soft seat-316 trim - RPTFE seats
801	1/2	1 1/2	GA-E-67138	Ball-Stem Extension-End entry -FB-Float.ball - Frqd body - API608	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - RPTFE seats
801	6	24	GA-E-60789	Ball-Stem Extension-Split body-FB-Trunnion ball -	FLGD	CL300 RF	Body: ASTM A351 CF8M
			1	API6D		<u> </u>	Trim : Soft seat-316 trim - RPTFE seats
STRA	INERS		I =	h. 5			
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material

BW

BW

**CL300 RF** 

CL300 RF

T Strainer-BW - <MFR Std - Metallic>

T Strainer-BW - <MFR Std - Metallic>

**BRANCH TABLES** 

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GA-E-60652

GA-E-60653



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		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	C	38	A0E	<b>360</b>	
						Rev.		
Sh.	3	of	3	Α	0	1		

RunSize													9	0 De	grees	•													
1/2	T																												
3/4	T T																												
1		T																											
1 1/2	ТТ	T T																											
2			Т																										
3			Т	Т																									
4			Т	Т	Т																								
6			SW	Т	Т	Т																							
8			SW	SW	Т	Т	Т																						
10			SW		Т	Т	Т	Т																					
12				SW		Т	Т	Т	Т																				
14				SW		Т	Т	Т	Т	Т																			
16				SW		Т	T	T	T	T	T	_																	
18				SW			T	T	T	T	T	T	_																
20				SW			T	T	T	T	T	T	T	_															
24						SW		OVA	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	_														
30 36						SW SW			CVV	CVV	Ţ	Ţ	ļ	- I	T	_													
40						SW					SW	T	÷	T	<u>+</u>	T	т												
42						SW					JVV	÷	÷	÷	÷	÷	÷	т											
46											SW	SIV	S/V/	÷	+	+	÷	÷	т										
48											SW			÷	÷	÷	÷	÷	÷	т									
54											SW			SW	T1	T1	T1	T1	T1	T1	T1								
56											SW				T1	T1	T1	T1	T1	T1	T1	T1							
60											SW					T1	T1	T1	T1	T1	T1	T1	T1						
62											SW						T1	Ť1	T1	T1	T1	T1	T1	T1					
66											SW							T1	T1	T1	T1	T1	T1	T1	T1				
68											SW						T1	T1	T1	T1	T1	T1	T1	T1		T1			
BranchSiz	e 1/2 3/4	1 1 1/2		3	4	6	8	10	12	14	16	18	20		30		40	42	46	48	54	56	60	62		68			
	1/2 0/4	,2	-	Ü	-	Ü	Ü	10	12		10		20		00	00	-10	72	40	-10	0-1	00	00	02	00	00			
Legenda																													
	TOTAL OWE	-EDOLET		-D 0	4 -1																								
	ECIAL SWE		- <ivi< td=""><td>FR S</td><td>ta&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></ivi<>	FR S	ta>																								
	E - ASME-B																												
T1 TE	E - TB RAC	5061																											

### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  4) Specified Thickness are suitable to withstand Full Vacuum condition.
  5) This piping class is created for lines subjected to Acoustic Induced Vibration.



| JOB | 032243 | Piping Class: | 03SA0S01 | | Rev. | Sh. | 1 | of | 4 | | A | 0 | 1 | 2 | 3 |

Base Material : STAINLESS STEEL 304/304L DUAL GRADE Design code : ASME B 31.3 2016

 Nom. Rating
 : CL300
 PWHT
 : NO

 Facing/Finishing: RF
 Valve Trim
 : 12 - S

 Facing/Finishing : RF
 Valve Trim
 :12 - SS316/HF

 Corrosion Allow. : 0 mm
 Welding Spec
 :MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -101 °C to 230 °C

ervice: BD - Blowdown CI - Chemical injection DMW - Demineralized Water ER - Ethane / Ethelene Refrigerant FG - Fuel Gas HL - Hydrocarbon Liquid HV - Hydrocarbon Vapour PC - Process Condensate PG - Process Gas / Purge Gas PRW - Process Water

PC - Process Condensate PG - Process Gas / Purge Gas PRW - Process Wate Pipe Thickness

NPS	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	26	30	36	40	42	46	48	54	56	60	Π
Thk.mm	2.77	2.87	3.38	3.68	3.91	3.05	3.05	7.11	6.35	6.35	8.38	7.92	9.53	9.53	12.7	12.7	9.53	11.13	12.7	14.27	14.27	15.88	15.88	15.88	17.48	17.48	
SCH.	40S	40S	40S	40S	40S	10S	10S	40S	1				40S	40S	80S	80S		l '	1	1							
	62	66	68			•		•	•	•			•			•	•		•	•	•						

19.05 19.05 20.62

Nipple	Thickn	ess				
NPS	1/2	3/4	1	1 1/2		Γ
Thk.mm SCH.	3.73	3.91	4.55	5.08	5.54	
IISCH.	808	808	808	80.5	208	ı

PRESSURE - TEMPERATURE Ratings

				J -								
NPS												ASME B16.5
1/2 · 24	Temp. °C	-28.9	37.78	93.33	148.9	204.4	260	315.6	343.3	371.1	398.9	Material Group 2.1
NPS	Press. bar	35										
26 - 26	Temp. °C	120										
NPS	Press. bar	30										
30 · 68	Temp. °C	180										

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
FIFE	1/2	6	PIPE	вw		ACTM A242 TD204/TD204/ DHAL CDADE CMIC
	8		PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN		00	rife	DVV		ASTIM ASSO TESU4/TESU4L CL. I DUAL GRADE - EFW
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A182 F304/304L DUAL GRADE
1	2		WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
	26		WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
	68		SPECIAL WN FLANGE - <mfr std=""> GA-E-060015</mfr>	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2		SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
5	2		WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
63	3		WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
73	1/2		SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
73	2		WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2		BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 F304/304L DUAL GRADE
	26		BLIND FLANGE - ASME-B16.47 series.A		CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	2		BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	2		THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 F304/304L DUAL GRADE
SPEC	TACLE					
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A240 TP304
	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP304
2	1/2	12	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP304
5	2	6	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP304
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50	68	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	50	68	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
	2		CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	50	68	CAP - TB RAC 5064	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	1/2		COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2		NIPPLE - PE/PE - ASME-B36.10	PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	1/2		NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	1/2		NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4		SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4		SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4		SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4		SWAGE NIPPLE - THDD/THDD - MSS-SP95	THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2		TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2		TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8		TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	54		TEE - TB RAC 5061	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	2		WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE
	2		LATROLET - BW END - MSS-SP97	BW	3000	ASTM A182 F304/304L DUAL GRADE
	3	8	SPECIAL LATROLET - <mfr std=""></mfr>	BW		ASTM A182 F304/304L DUAL GRADE



101

101

105

130

140

140

141

1/2

2

2

1/2

1

2

2

1 1/2

24

2

1 1/2

2

GA-E-60593

GA-E-60594

GA-E-60155

GA-E-67083

GA-E-67368

GA-E-67369

GA-E-67370

Gate-Stem Extension-BB-Red.B-Solid wdg-

Gate-Stem Extension-BB-Red.B-Solid wdg-

Gate-BB-FB-Flex wdg-Thdd seat - API600 -

Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat

Exp.seat - API602 Gate-BB-Red.B-Solid wdg-Exp.seat - API602 -

Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat | FLGD

Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600

Exp.seat - API602

Interlock System

Interlock System

API600 - Interlock System

- API600

## PIPING MATERIAL SPECIFICATION

		ов <b>2243</b>							
Pipi	ng C	Class	s:	C	38	A0S	01		
						Rev.			
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pt.	Si: from	ze to	Item Descriptio	n	Ends	s R	tating/Facing	g Material
TTI	NGS							
	1/2	1 1/2	SOCKOLET - SW	END - MSS-SP97	SW\B	30 S	000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	LATROLET - SW	END - MSS-SP97	SW\B	30 SW	000	ASTM A182 F304/304L DUAL GRADE
ASK	ETS							
	26	60	FLAT GASKET - 0	GROOVED - <mfr std=""></mfr>				AISI 316L+GRAPHITE
j	68	68	FLAT GASKET - 0	GROOVED - <mfr std=""> GA-E-060015</mfr>				AISI 316L+GRAPHITE
ı	1/2	24		CT-with OUT.& INN.RINGS - ASME-B16.20				304 SS+GRAPH 98% - C.S. OUT.RING
5	1/2	24		CT-with OUT.& INN.RINGS - ASME-B16.20				304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24		GASKET - ASME-B16.20				AISI 304
73	1/2			GASKET - ASME-B16.20				AISI 304
OLT			DOTAGONAL NO	CACKET - ACINE-B10.20				Aloi 304
OLI	1/2	2 1/8	ST BOLT+2 NUT	S - ANSI Thdd - TB BUL 5368				ASTM A320 L7 + ASTM A194 GR.7 - PTFE COATED
		2 170	101120211211011	7.110.11110 12.2000				NOTHINGES EN THE HIM MOTORIAL THE COMMED
'ALV								
<b>n</b> oo		ize	Data Sheet	Item Description	Ends	Rating/F	acing Ma	terial
pos.	from	to	04 5 00440	Onto DD Dod D Onlidenda Ferrancet ADICCO	014/	01.000		ACTIVA 400 FOAG/FOAG/ BUAY OBABE
1	1/2	1 1/2	GA-E-60146	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800		ASTM A182 F316/F316L DUAL GRADE
1	2	24	GA-E-60150	Cata BB EB Flox wdg Thdd agot ABI600	FLGD	CL300 R		316 / HF ASTM A351 CF8M
'		24	GA-E-00130	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 K		316 / HF
4	1/2	1 1/2	GA-E-60239	Globe-BB-Red BThdd seat - API602	sw	CL800		ASTM A182 F316/F316L DUAL GRADE
•	··-	'	10200		1			316 / HF
4	2	12	GA-E-60243	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 R		ASTM A351 CF8M
							Trim :	316 / HF
6	1/2	1 1/2	GA-E-60347	Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Body:	ASTM A182 F316/F316L DUAL GRADE
								316 / HF
6	2	10	GA-E-60355	Check-BB- FB- Swing - API594	FLGD	CL300 R		ASTM A351 CF8M
_								316 / HF
6	12	24	GA-E-60356	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 R		ASTM A351 CF8M
7	2	_	CA F 60447	Doll Calit hads Dad D Flooting hall ADICD	FLOD	CI 200 B		316 / HF
7		2	GA-E-60447	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 R		ASTM A351 CF8M Soft seat-316 trim - RPTFE seats
7	6	24	GA-E-60448	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 R		ASTM A351 CF8M
'	"	2-7	OA-L-00440	Bail-Opiit Body-Ned.B-Traillion bail - Al 10B	LGD	CL300 K		Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60446	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 R		ASTM A182 F316/F316L DUAL GRADE
				<b>3</b> ,				Soft seat-316 trim - RPTFE seats
8	2	2	GA-E-67260	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 R		ASTM A351 CF8M
							Trim :	Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-60790	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 R		ASTM A351 CF8M
								Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60178	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800		ASTM A182 F316/F316L DUAL GRADE
4.4	1/0	1 1/0	CA F 60507	Cata DD Dad D Calid unda Europeat ADICOS	DF	OL 000 D		316 / HF
11	1/2	1 1/2	GA-E-60597	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL300 R		ASTM A182 F316/F316L DUAL GRADE
14	1/2	1 1/2	GA-E-60127	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	1	316 / HF ASTM A182 F316/F316L DUAL GRADE
1-	1/2	' '/2	OA-L-00121	Exp.seat - API602	Ovv	CLOUD		316 / HF
14	2	24	GA-E-60179	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL300 R		ASTM A351 CF8M
• •	_			- API600				316 / HF
15	2	3	GA-E-60154	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 R	F Body:	ASTM A351 CF8M
							Trim :	316 / HF
19	1/2	1 1/2	GA-E-60134	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body:	ASTM A182 F316/F316L DUAL GRADE
				Exp.seat - API602	DF			316 / HF
62	1	1	GA-E-67512	Check-BB-Red.B-Swing-Thdd seat - API602	sw	CL800		ASTM A182 F316/F316L DUAL GRADE
00		_	CA F 60700	Check Floored Duel place Milds and ASISS	EL 05	01 200 5		316 / HF
62	2	2	GA-E-60706	Check-Flanged -Dual plate-Widd seat - API5		CL300 R		ASTM A351 CF8M
64	4	6	GA-E-60394	Nozzle Check-Long-Axial non slam-Thdd seat -	FLGD	CL300 R		316 / HF ASTM A351 CF8M
04	-	0	GA-L-00394	API 6D	LGD	CL300 K		316 / HF
69	4	6	GA-E-60706	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 R		ASTM A351 CF8M
				,		= 300 K		316 / HF
80	1/2	1 1/2	GA-E-60472	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL300 R		ASTM A182 F316/F316L DUAL GRADE
				Frgd body - API608	1			Soft seat-316 trim - RPTFE seats
82	1/2	1 1/2	GA-E-60760	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 R	1	ASTM A182 F316/F316L DUAL GRADE
			, , , , , , , , , , , , , , , , , , , ,					Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
84	1/2	1 1/2	GA-E-67682	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL300 R		ASTM A182 F316/F316L DUAL GRADE
				Frgd body - API608				Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2			PE/THD	CL800		ASTM A182 F316/F316L DUAL GRADE	
		API608  1/2 1 1 1/2 GA-E-60593 Gate-Stem Extension-RR-Red R-Solid wdg-			F	CI 800		Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1 1/2		Gate-Stem Extension-BR-Red B-Solid wdg-	RW/			

ВW

FLGD

SW/TH

sw

FLGD

FLGD

CL800

CL300 RF

CL600 RF

CL800

CL800

CL300 RF

CL300 RF

Body: ASTM A182 F316/F316L DUAL GRADE

Body: ASTM A182 F316/F316L DUAL GRADE

Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE

Trim : 316 / HF Body: ASTM A351 CF8M

Body: ASTM A351 CF8M

Body: ASTM A351 CF8M

Trim: 316 / HF Body: ASTM A351 CF8M Trim: 316 / HF

Trim:316/HF

Trim : 316 / HF

Trim : 316 / HF



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pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
145	2	2	GA-E-60188	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL600 RF	Body: ASTM A351 CF8M
145	3	3	GA-E-60188	- API600 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL600 RF	Trim:316 / HF Body: ASTM A351 CF8M
				- API600			Trim:316/HF
59	2	2	GA-E-67319	Gate-Ext. Stem (1200mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
163	6	8	GA-E-67318	Gate-Ext. Stem (2300mm)-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
01	1/2	1 1/2	GA-E-67410	Globe-Stem Extension-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
101	2	12	GA-E-60284	Globe-Stem Extension-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
701	8	24	GA-E-60788	Ball-Stem Extension-Split body-Red.B-Trunnion	FLGD	CL300 RF	Body: ASTM A351 CF8M
780	2	2	GA-E-67664	ball - API6D DBL Block&Bleed Ball valve-SplitBdy-RB-	FLGD	CL300 RF	Trim: Soft seat-316 trim - RPTFE seats Body: ASTM A182 F316/F316L DUAL GRADE
781	2	2	GA-E-67665	Float.ball - <mfr std=""> DBL Block&amp;Bleed Ball valve-SplitBdy-RB-</mfr>	FLGD	CL300 RF	Trim: Soft seat-316 trim - RPTFE seats Body: ASTM A182 F316/F316L DUAL GRADE
782	2	2	GA-E-67666	Float.ball - <mfr std=""> DBL Block&amp;Bleed Ball valve-Stem Extension-</mfr>	FLGD	CL300 RF	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A182 F316/F316L DUAL GRADE
				SplitBdy-RB-Float.ball - <mfr std=""></mfr>	L		Trim : Soft seat-316 trim - RPTFE seats
'83	2	2	GA-E-67689	DBL Block&Bleed Ball valve-Stem Extension- SplitBdy-RB-Float.ball - <mfr std=""></mfr>	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - RPTFE seats
85	2	2	GA-E-67667	DBL Block&Bleed Ball valve-Stem Extension- SplitBdy-RB-Float.ball - <mfr std=""></mfr>	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
301	1/2	1 1/2	GA-E-67138	Ball-Stem Extension-End entry -FB-Float.ball - Frqd body - API608	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - RPTFE seats
301	6	24	GA-E-60789	Ball-Stem Extension-Split body-FB-Trunnion ball -	- FLGD	CL300 RF	Body: ASTM A351 CF8M
340	6	10	GA-E-67625	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL300 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A351 CF8M
340	14	46	CA F 6760F	Interlock System	FLGD	CI 200 DE	Trim : Soft seat-316 trim - RPTFE seats
40	14	16	GA-E-67625	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
41	6	10	GA-E-67623	Ball-Stem Extension-Split body-FB-Trunnion ball	- FLGD	CL300 RF	Body: ASTM A351 CF8M
907	2	6	GA-E-69015	API6D - Interlock System Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Trim: Soft seat-316 trim - RPTFE seats Body: ASTM A351 CF8M
07	8	12	GA-E-69047	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A351 CF8M
107	•	12	GA-E-09047	Bail-Split body-Red.B-Trunnion bail - API6D	FLGD	CL300 KF	Trim : Soft seat-316 trim - PTFE seats
920	26	48	GA-E-69013	Butterfly-Stem Extension-Flanged-Triple Off Set-	FLGD	CL300 RF	Body: ASTM A351 CF8M
972	2	4	GA-E-69047	Int.seat-Fire safe - API609 Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Trim: Metal seat - 316 - 316 disc Body: ASTM A351 CF8M
972		24	CA F 600FF		EL 0.5	01 000 DE	Trim : Soft seat-316 trim - PTFE seats
972	6	24	GA-E-69055	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A351 CF8M   Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
TRA	INERS						
os.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	3	6	GA-E-60622	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL300 RF	Body: ASTM A403 WP304S/304LS DUAL GRADE - SMLS Screen: 316 - CLOTH - MESH 3
4	60	60	CA E 60646	T Chroiner DW Chariel - MED Chil Matallia	DIA	01 000 DE	D. J. ACTA A 400 M/D00 M/M/COAL M/V DLIAL OD ADE. M/LDD

BW

CL300 RF

#### **BRANCH TABLES**

68

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GA-E-60646

T Strainer-BW Special - <MFR Std - Metallic>

Report Name: SpcLinB Revision: 01.06.02 - 09/12/2021 Printed: 28/11/2024 15:18:43

Body: ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen: 316 - CLOTH - MESH 3



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PupSize 90 Degrees	
RunSize  1/2	
68 S S S S W W W W P P P P P P P P P P T1 T1 T1 T1 T1 T1 T1 T1 T1 T1 T1 T1 T1	
Legenda  A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97	
T TEE - ASME-B16.9	
T1 TEE - TB RAC 5061	
W WELDOLET - MSS-SP97	

														4	5 deg	rees															
RunSize																															
2	L	L	L	L	PP																										
3	L	L	L	L	LB	PP																									
4	L	L	L	L	LB	LS	PP																								
6	L	L	L	L	LB	LS	LS	PP																							
8	L	L	L	L	LB	LS	LS	LS	PP																						
10	L	L	L	L	LB	LS	LS	LS	LS	PP																					
12	L	L	L	L	LB	LS	LS	LS	LS	PP	PP																				
14	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP																			
16	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP																		
18	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP																	
20	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP																
24	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP															
26	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP														
30	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP													
36	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP												
40	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP											
42	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP										
46	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP									
48	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP								
54	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP							
56	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP						
	60 L L L LB LS LS LS PP PP PP PP PP PP PP PP PP PP PP PP PP																														
62	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP				
66 68	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP			
	L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP		
BranchSize	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	26	30	36	40	42	46	48	54	56	60	62	66	68		
Lawanda																															
Legenda	DOL 5	- T O	W		100.0	2007																									
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PP PIPE	E TO I	PIPE	WITH	I FUL	L EN	CIRC	LEME	ENT S	SLEE\	VE:TS	S-COF	R-ENG	3-PIP	MT-0	12-E																

### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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: 12 - SS316/HF

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Pipi	ng C	Class	s:	0	38	A0S	02	
						Rev.		
Sh.	1	of	3	Α	0	1	2	

Base Material : STAINLESS STEEL 304/304L DUAL GRADE Design code : ASME B 31.3 2016

Nom. Rating : CL300 PWHT
Facing/Finishing : RF Valve Trim

Corrosion Allow.: 0 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : 0 °C to 180 °C

Service: [Amine Service] AL - Amine Lean PRW - Process Water

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 Thk.mm 2.77 2.87 3.38 3.68 3.91 3.05 3.05 7.11 6.35 6.35 8.38 7.92 9.53 9.53 12.7 12.7 SCH. 40S 40S 40S 40S 40S 10S 10S 40S 40S 40S 40S 80S 80S

Nipple Thickness

NPS 1/2 3/4 1 1 1 1/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

		-	7.78   93.33   146.9   Material Croup 2.1		_	
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
		10				
PIPE			L	L	1	
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	24	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAP	IGES		l	I	1	
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A182 F304/304L DUAL GRADE
	2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A182 F304/304L DUAL GRADE
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 F304/304L DUAL GRADE
5	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 F304/304L DUAL GRADE
34	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 F304/304L DUAL GRADE
SPE	CTACLE	BLIND		1	1	
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A240 TP304
	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP304
5	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP304
5	10	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
FITT	INGS					
	1/2	2	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	24	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	2	24	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
1	2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
1	8	24	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	2	8	WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A182 F304/304L DUAL GRADE
GAS	KETS			· ·	•	
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
BOL.	TS		·			·
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED
-			•			

VALV	ES	·					
pos.	pos. Size Data Sheet to		Data Sheet	Item Description		Rating/Facing	Material
1	1/2	1 1/2	GA-E-60146	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW		Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
1	2	24	GA-E-60150	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD		Body: ASTM A351 CF8M Trim : 316 / HF
4	1/2	1 1/2	GA-E-60239	Globe-BB-Red BThdd seat - API602	SW		Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
4	2	16	GA-E-60243	Globe-BB-Disk-Thdd seat - API 623	FLGD		Body: ASTM A351 CF8M Trim : 316 / HF
6	1/2	1 1/2	GA-E-60347	Check-BB-Red.B-Piston-Thdd seat - API602	SW		Body: ASTM A182 F316/F316L DUAL GRADE Trim <u>:</u> 316 / HF



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oos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
6	2	10	GA-E-60355	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A351 CF8M
							Trim: 316 / HF
6	12	24	GA-E-60356	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL300 RF	Body: ASTM A351 CF8M
							Trim : 316 / HF
7	6	24	GA-E-60483	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A351 CF8M
							Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60481	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim : Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-67277	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A351 CF8M
							Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60178	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
					DF		Trim: 316 / HF
11	1/2	1 1/2	GA-E-60597	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
	_	_					Trim: 316 / HF
15	2	2	GA-E-60154	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A351 CF8M
	4/0	4.4/0	0.4 = 00404	0 + 0 + 5 + 1 + 55 5 + 15 0 11 + 1			Trim: 316 / HF
19	1/2	1 1/2	GA-E-60134	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
		4.0	04 5 00700	Exp.seat - API602	DF	01 000 DE	Trim: 316 / HF
62	2	10	GA-E-60706	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL300 RF	Body: ASTM A351 CF8M
	4/0	4.4/0	04 5 00700	Dall Ford auton ED Flood ball Found back ADICCO	EL 0.D	OL 000 DE	Trim: 316 / HF
82	1/2	1 1/2	GA-E-60760	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
89	1/2	1 1/2	GA-E-60475	Ball-End entry -FB-Float.ball -Frgd body+nipples -	DE/TUD	CI 000	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A182 F316/F316L DUAL GRADE
09	1/2	1 1/2	GA-E-00475	API608	PE/IND	CL800	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67016	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
101	1/2	1 1/2	GA-L-07010	Exp.seat - API602	3**	CLOOO	Trim: 316 / HF
130	1/2	1 1/2	GA-E-67083	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CI 800	Body: ASTM A182 F316/F316L DUAL GRADE
.00	.,,_	/2	O/ ( E 0/ 000	Exp.seat - API602	DF	02000	Trim: 316 / HF
140	4	4	GA-E-67369	Gate-BB-FB-Flex wdg-Thdd seat - API600 -	1	CL300 RF	Body: ASTM A351 CF8M
	.	·	0.12 0.000	Interlock System	. 200	02000 111	Trim :316 / HF
701	8	24	GA-E-67278	1	FLGD	CL300 RF	Body: ASTM A351 CF8M
	-			ball - API6D	. 200	02000 111	Trim : Soft seat-316 trim - RPTFE seats
801	1/2	1 1/2	GA-E-67279	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
-				Frgd body - API608			Trim : Soft seat-316 trim - RPTFE seats
840	6	8	GA-E-67625	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL300 RF	Body: ASTM A351 CF8M
-	-			Interlock System			Trim : Soft seat-316 trim - RPTFE seats

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	3	3	GA-E-60613	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body: ASTM A403 WP304S/304LS DUAL GRADE - SMLS Screen: 316 - CLOTH - MESH 3
1	12	12	GA-E-60614	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	1	Body :ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen:316 - CLOTH - MESH 3

#### **BRANCH TABLES**

RunSi																9(	) Deg	rees
1/2		Ą																
3/4		4 /																
1				4														
1 1/2				4	Α													
2			3	Γ	Т	Т												
3					S	W	Т											
4				S	S	W	Т	Т										
6				S	S	W	W	Т	Т									
8				S	S	W	W	W	Т	Т								
8 10 12 14		S S		S	S	W	W	W	W	Т	Т							
12				S	S	W	W	W	W	W	T	T	_					
14		s s	-	S	S	W	W	W	W	W	Р	Т	Т					
16	i			S	S	W	W	W	W	W	Р	Р	T	T	_			
18		S S		S	S	W	W	W	W	W	T	T	T	T	T	_		
18 20 24			3	S	S	W	W	W	W	W	Ţ	T	T	T	T	T	_	
			-	S	S	W	W	W	W	VV	Р	ı	ı	ı	ı	ı	ı	
Branch	Size	/2 3	/4	1 1	1/2	2	3	4	6	8	10	12	14	16	18	20	24	
Legend	а																	
Α	TEE -	SW E	NDS	S - A	SME	-B16	5.11											
Р	PIPE :	го РІ	PE V	VITH	RE	INFO	ORCI	NG F	PAD-1	rs-Co	OR-E	NG-F	PIPMT	-012	-E			·
S	SOCK																	
Т	TEE -																	
W	WELD				SP97	7												
		<u> </u>			C. 01													

#### GENERAL NOTES

1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipmen



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2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
4) Specified Thickness are suitable to withstand Full Vacuum condition.



		ов <b>2243</b>						
Pipi	ng (	Class	s:	0	38	A0S	60	
						Rev.		
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Base Material : STAINLESS STEEL 304/304L DUAL GRADE :ASME B 31.3 2016 Design code

Nom. Rating Facing/Finishing: RF Corrosion Allow. : 0 mm PWHT :NO Valve Trim :12 - SS316/HF Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit :-101°C to 230 °C

Service: [AIV] BD - Blowdown CI - Chemical injection DMW - Demineralized Water ER - Ethane / Ethelene Refrigerant FG - Fuel Gas HL - Hydrocarbon Liquid HV - Hydrocarbon Vapour PC - Process Condensate PG - Process Gas / Purge Gas PRW - Process Water

Pipe Thickness

NPS	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	26	30	36	40	42	46	48	54	56	60
Thk.mm	2.77	2.87	3.38	3.68	3.91	3.05	3.05	7.11	6.35	6.35	8.38	7.92	9.53	9.53	12.7	12.7	9.53	11.13	12.7	14.27	14.27	15.88	15.88	15.88	17.48	17.48
SCH.	40S	40S	40S	40S	40S	10S	10S	40S					40S	40S	80S	80S										
1	62	66	68									•														
	19.05	19.05	20.62																							

Nipple Thickness

NPS	1/2	3/4	1	1 1/2	2	Г
Thk.mm	3.73	3.91	4.55	5.08	5.54	l
SCH.	80S	80S	80S	80S	80S	l

PRESSURE - TEMPERATURE Ratings

- 12														
Г	NPS	Press.	bar	49.64	49.64	41.37	37.23	34.13	32.06	30.34	29.65	28.96	28.61	ASME B16.5
	1/2 · 24	Temp.	°C	-28.89	37.78	93.33	148.89	204.44	260	315.56	343.33	371.11	398.89	Material Group 2.1
Г	NPS	Press.	bar	35										
L	26 · 26	Temp.	°C	120										
Г	NPS	Press.	bar	30										
L	30 · 68	Temp.	°C	180										

Pipe	30 -	68   FIII	JC	100			
PIPE				Item Description	Ends	Rating/Facing	Material
1/2		from	to				
B	PIPE						
12		1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
1/2			68	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
2	FLAN	IGES					
26   60		1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
68   68   SPECIAL WY FLANGE - AMER Std- GA-E-080015   BW		2	24	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
1		26	60	WN FLANGE - ASME-B16.47 series.A	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
5		68	68	SPECIAL WN FLANGE - <mfr std=""> GA-E-060015</mfr>	BW	CL300 RF	ASTM A182 F304/304L DUAL GRADE
33	5	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
172	5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
Table   Tabl	63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
1/2	73	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
26	73	2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
5		1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 F304/304L DUAL GRADE
14		26	60	BLIND FLANGE - ASME-B16.47 series.A		CL300 RF	ASTM A182 F304/304L DUAL GRADE
1/2   12   12   12   12   12   12   13   12   13   15   15   15   15   15   15   15	5	2	2	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
1/2	14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 F304/304L DUAL GRADE
14	SPEC	TACLE	BLIND				
2		1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A240 TP304
The part of the		14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP304
1/2   3	2	1/2	12	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP304
1/2   3   DRIP-RING - TB DRI 5011   SW   3000   ASTM A182 F304/304L DUAL GRADE   ASTM A182 F304/3	5	2	6	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP304
1/2	FITTI	NGS				_	
2   6   LONG RADIUS ELBOW - ASME-B16.9   BW   ASTM A403 WP304S/304LS DUAL GRADE - SMLS		1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A182 F304/304L DUAL GRADE
8		1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
STM A403 WP304WX/304LWX DUAL GRADE - WLDD		2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
3/4		8	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
2 6 REDUCER - ASME-B16.9 BW ASTM A403 WP304S/304LS DUAL GRADE - SMLS 8 48 REDUCER - ASME-B16.9 BW ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD 50 68 REDUCER, LARGE BORE - TB RAC 5062 BW ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD 1/2 11/2 FEMALE CAP - SW END - ASME-B16.11 SW 3000 ASTM A182 F304/304L DUAL GRADE - WLDD 1/2 11/2 FEMALE CAP - THD END - ASME-B16.11 THDF 3000 ASTM A182 F304/304L DUAL GRADE ASTM A403 WP304S/304LS DUAL GRADE - SMLS CAP - ASME-B16.9 BW ASTM A403 WP304S/304LS DUAL GRADE - SMLS ASTM A403 WP304S/304LS DUAL GRADE - WLDD 1/2 11/2 COUPLING - SW ENDS - ASME-B16.11 SW 3000 ASTM A182 F304/304L DUAL GRADE - WLDD 1/2 11/2 COUPLING - SW ENDS - ASME-B16.11 SW/THDF 3000 ASTM A182 F304/304L DUAL GRADE - WLDD 1/2 2 THD MALE PLUG - RND HEAD - ASME-B16.11 THDM ASTM A182 F304/304L DUAL GRADE - SMLS NIPPLE - PE/PE - ASME-B36.10 THDM ASTM A182 F304/304L DUAL GRADE - SMLS NIPPLE - THDD/THDD - MSS-SP95 PE\THDM ASTM A312 TP304/TP304L DUAL GRADE - SMLS 3/4 2 SWAGE NIPPLE - PE/THDD - MSS-SP95 PE\THDM ASTM A403 WP304S/304LS DUAL GRADE - SMLS 3/4 2 SWAGE NIPPLE - THDD/THDD - MSS-SP95 PE\THDM ASTM A403 WP304S/304LS DUAL GRADE - SMLS 3/4 2 SWAGE NIPPLE - THDD/THDD - MSS-SP95 PE\THDM ASTM A403 WP304S/304LS DUAL GRADE - SMLS 3/4 2 SWAGE NIPPLE - THDD/THDD - MSS-SP95 PE\THDM ASTM A403 WP304S/304LS DUAL GRADE - SMLS 3/4 2 SWAGE NIPPLE - THDD/THDD - MSS-SP95 PE\THDM ASTM A403 WP304S/304LS DUAL GRADE - SMLS 3/4 2 SWAGE NIPPLE - THDD/THDD - MSS-SP95 PE\THDM ASTM A403 WP304S/304LS DUAL GRADE - SMLS 3/4 2 SWAGE NIPPLE - THDD/THDD - MSS-SP95 PE\THDM ASTM A403 WP304S/304LS DUAL GRADE - SMLS 3/4 2 SWAGE NIPPLE - THDD/THDD - MSS-SP95 PE\THDM ASTM A403 WP304S/304LS DUAL GRADE - SMLS 3/4 2 SWAGE NIPPLE - THDD/THDD - MSS-SP95 PE\THDM ASTM A403 WP304S/304LS DUAL GRADE - SMLS 3/4 2 SWAGE NIPPLE - THDD/THDD - MSS-SP95 PE\THDM ASTM A403 WP304S/304LS DUAL GRADE - SMLS 3/4 2 SWAGE NIPPLE - THDD/THDD - MSS-SP95 PE ASTM A403 WP304S/304LS DUAL GRADE - SMLS 3/4 2 SWAGE NIPPLE - THDD/THDD - MSS-SP95 PE ASTM A403 WP304S/304LS DUAL GRADE - SMLS 3		50	68	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
8		3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
50		2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
1/2		8	48	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
1/2		50	68	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
2		1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
50		1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
1/2		2	48	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
1/2		50	68	CAP - TB RAC 5064	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
1/2   2	İ	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
1/2   2		1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 F304/304L DUAL GRADE
1/2   2		1/2	2		THDM		ASTM A182 F304/304L DUAL GRADE
1/2   2		1/2	2	NIPPLE - PE/PE - ASME-B36.10	PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
3/4   2   SWAGE NIPPLE - PE/THDD - MSS-SP95   PE\THDM   ASTM A403 WP304S/304LS DUAL GRADE - SMLS		1/2	2		THDM\PE		
3/4   2   SWAGE NIPPLE - THDD/THDD - MSS-SP95   THDM   ASTM A403 WP304S/304LS DUAL GRADE - SMLS		1/2	2	NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
3/4   2   SWAGE NIPPLE - THDD/THDD - MSS-SP95   THDM   ASTM A403 WP304S/304LS DUAL GRADE - SMLS					PE\THDM		
3/4   2   SWAGE NIPPLE - THDD/PE - MSS-SP95   THDM/PE   ASTM A403 WP304S/304LS DUAL GRADE - SMLS					1		
3/4   2   SWAGE NIPPLE - PE/PE - MSS-SP95   PE   ASTM A403 WP304S/304LS DUAL GRADE - SMLS		3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
1/2		3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
2     6     TEE - ASME-B16.9     BW     ASTM A403 WP304S/304LS DUAL GRADE - SMLS       8     48     TEE - ASME-B16.9     BW     ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD       54     68     TEE - TB RAC 5061     BW     ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD       2     24     SPECIAL SWEEPOLET - <mfr std="">     BW     3000     ASTM A182 F304/304L DUAL GRADE</mfr>		1/2	1 1/2		SW	3000	
8       48       TEE - ASME-B16.9       BW       ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD         54       68       TEE - TB RAC 5061       BW       ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD         2       24       SPECIAL SWEEPOLET - <mfr std="">       BW       3000       ASTM A182 F304/304L DUAL GRADE</mfr>					1		
54 68 TEE - TB RAC 5061 BW ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD 2 24 SPECIAL SWEEPOLET - <mfr std=""> BW 3000 ASTM A182 F304/304L DUAL GRADE</mfr>					1		
2 24 SPECIAL SWEEPOLET - <mfr std=""> BW 3000 ASTM A182 F304/304L DUAL GRADE</mfr>		54	68		BW		
			24		1	3000	
GASKETS	GASK	KETS		·		•	



		ов <b>2243</b>						
Pipi	ng C	Class	s:	C	38	A0S	60	
						Rev.		
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	Si	ize	Item Description	Ends	Rating/Facing	Material						
opt.	from	to	·									
GASI	KETS											
	26	60	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE						
	68   68   FLAT GASKET - GROOVED - <mfr std=""> GA-E-060015   AISI 316L+GRAPHITE</mfr>											
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING						
5	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING						
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304						
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304						
BOL'	TS											
	1/2	2 1/8	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 L7 + ASTM A194 GR.7 - PTFE COATED						

VALV	ES						
pos.	Si from	ize   to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60146	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
1	2	24	GA-E-60150	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Trim :316 / HF Body: ASTM A351 CF8M
4	1/2	1 1/2	GA-E-60239	Globe-BB-Red BThdd seat - API602	sw	CL800	Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
4	2	12	GA-E-60243	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim: 316 / HF
6	1/2	1 1/2	GA-E-60347	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
6	2	10	GA-E-60355	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim :316 / HF
6	12	24	GA-E-60356	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
7	2	2	GA-E-60447	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
7	6	24	GA-E-60448	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60446	Ball-End entry -FB-Float.ball -Frgd body - API608		CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - RPTFE seats
8	2	2	GA-E-67260	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
8	6	24	GA-E-60790	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
10	1/2	1 1/2	GA-E-60178	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF		Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
11	1/2	1 1/2	GA-E-60597	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
14	1/2	1 1/2	GA-E-60127	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
14	2	24	GA-E-60179	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600		CL300 RF	Body: ASTM A351 CF8M Trim: 316 / HF
15	2	2	GA-E-60154	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD SW/TH	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
19 62	1/2	1 1/2	GA-E-60134	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	DF SW		Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
62	2	2	GA-E-67512 GA-E-60706	Check-BB-Red.B-Swing-Thdd seat - API602 Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL800 CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF Body: ASTM A351 CF8M
64	4	6	GA-E-60394	Nozzle Check-Long-Axial non slam-Thdd seat -	FLGD	CL300 RF	Trim :316 / HF Body: ASTM A351 CF8M
80	1/2	1 1/2	GA-E-60472	API 6D  Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL300 RF	Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE
82	1/2	1 1/2	GA-E-60760	Frgd body - API608  Ball-End entry -FB-Float.ball -Frgd body - API608		CL300 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A182 F316/F316L DUAL GRADE
84	1/2	1 1/2	GA-E-67682	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL300 RF	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A182 F316/F316L DUAL GRADE
89	1/2	1 1/2	GA-E-60475	Frgd body - API608  Ball-End entry -FB-Float.ball -Frgd body+nipples -			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A182 F316/F316L DUAL GRADE
101	1/2	1 1/2	GA-E-60593	API608 Gate-Stem Extension-BB-Red.B-Solid wdg-	F BW	CL800	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A182 F316/F316L DUAL GRADE
101	2	24	GA-E-60594	Exp.seat - API602 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat		CL300 RF	Trim :316 / HF Body: ASTM A351 CF8M
105	2	2	GA-E-60155	- API600 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat		CL600 RF	Trim: 316 / HF Body: ASTM A351 CF8M
130	1/2	1 1/2	GA-E-67083	- API600 Gate-Stem Extension-BB-Red.B-Solid wdg-		CL800	Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE
140	1	1	GA-E-67368	Exp.seat - API602 Gate-BB-Red.B-Solid wdg-Exp.seat - API602 -	DF SW	CL800	Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE
140	2	4	GA-E-67369	Interlock System Gate-BB-FB-Flex wdg-Thdd seat - API600 -	FLGD	CL300 RF	Trim : 316 / HF Body: ASTM A351 CF8M
141	2	2	GA-E-67370		FLGD	CL300 RF	Trim:316 / HF Body: ASTM A351 CF8M
145	2	2	GA-E-60188	- API600 - Interlock System Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL600 RF	Trim: 316 / HF Body: ASTM A351 CF8M
145	3	3	GA-E-60188	- API600 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL600 RF	Trim :316 / HF Body: ASTM A351 CF8M
159	2	2	GA-E-67319		FLGD	CL300 RF	Trim :316 / HF Body: ASTM A351 CF8M
				seat - API600			Trim: 316 / HF



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	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
os.	from	to	Data Officer	nem bescription	Liius	realing/r acing	Material
163	6	8	GA-E-67318		FLGD	CL300 RF	Body: ASTM A351 CF8M
				seat - API600			Trim: 316 / HF
401	1/2	1 1/2	GA-E-67410	Globe-Stem Extension-BB-Red BThdd seat -	SW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
				API602			Trim: 316 / HF
401	2	12	GA-E-60284		FLGD	CL300 RF	Body: ASTM A351 CF8M
				623			Trim: 316 / HF
701	8	24	GA-E-60788		FLGD	CL300 RF	Body: ASTM A351 CF8M
				ball - API6D			Trim : Soft seat-316 trim - RPTFE seats
780	2	2	GA-E-67664	DBL Block&Bleed Ball valve-SplitBdy-RB-	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
				Float.ball - <mfr std=""></mfr>			Trim : Soft seat-316 trim - RPTFE seats
781	2	2	GA-E-67665		FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
				Float.ball - <mfr std=""></mfr>			Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
782	2	2	GA-E-67666	DBL Block&Bleed Ball valve-Stem Extension-	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
				SplitBdy-RB-Float.ball - <mfr std=""></mfr>			Trim : Soft seat-316 trim - RPTFE seats
783	2	2	GA-E-67689	DBL Block&Bleed Ball valve-Stem Extension-	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
				SplitBdy-RB-Float.ball - <mfr std=""></mfr>			Trim : Soft seat-316 trim - RPTFE seats
785	2	2	GA-E-67667	DBL Block&Bleed Ball valve-Stem Extension-	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
				SplitBdy-RB-Float.ball - <mfr std=""></mfr>			Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
801	1/2	1 1/2	GA-E-67138	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE
				Frgd body - API608			Trim : Soft seat-316 trim - RPTFE seats
801	6	24	GA-E-60789	Ball-Stem Extension-Split body-FB-Trunnion ball -	FLGD	CL300 RF	Body: ASTM A351 CF8M
				API6D			Trim : Soft seat-316 trim - RPTFE seats
840	6	10	GA-E-67625	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL300 RF	Body: ASTM A351 CF8M
				Interlock System			Trim : Soft seat-316 trim - RPTFE seats
840	14	14	GA-E-67625	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL300 RF	Body: ASTM A351 CF8M
	_			Interlock System		l	Trim : Soft seat-316 trim - RPTFE seats
841	6	10	GA-E-67623	Ball-Stem Extension-Split body-FB-Trunnion ball -	FLGD	CL300 RF	Body: ASTM A351 CF8M
		_	04 5 00045	API6D - Interlock System			Trim : Soft seat-316 trim - RPTFE seats
907	2	6	GA-E-69015	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A351 CF8M
		40	04 5 00040	D # # 0: E	EL 0.D	01 000 DE	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
920	26	48	GA-E-69013	Butterfly-Stem Extension-Flanged-Triple Off Set- Int.seat-Fire safe - API609	FLGD	CL300 RF	Body: ASTM A351 CF8M
			04 5 00045	l l	EL 0.E	01 000 DE	Trim : Metal seat - 316 - 316 disc
972	2	4	GA-E-69047	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A351 CF8M
		0.4	04 5 00055	Dall Cally has to Day I D. Tarranian hall ADICO	EL 0.5	01 000 DE	Trim : Soft seat-316 trim - PTFE seats
972	6	24	GA-E-69055	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A351 CF8M
- 1						1	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

STRA	STRAINERS														
pos.	from S	ize to	Data Sheet	Item Description		Rating/Facing	Material								
1	3	6	GA-E-60622	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body: ASTM A403 WP304S/304LS DUAL GRADE - SMLS Screen: 316 - CLOTH - MESH 3								
1	68	68	GA-E-60646	T Strainer-BW Special - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen:316 - CLOTH - MESH 3								

### BRANCH TABLES



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Pipi	ng C	Class	s:	C	03SA0S60									
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RunSi	90 Degrees RunSize																																
1/2		Α																															
3/4		Â	Α																														
1		A	A	Α																													
1 1/2		Α	Α	Α	Α																												
2						Т																											
3						Т	Т																										
4						Т	Т	Т																									
6						SW	Т	Т	Т																								
8							SW	Т	Т	Т																							
10							SW		T	T	Ţ	_																					
12								SW		T	Ţ	Ţ	_																				
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16								SW		<u> </u>	<u> </u>	1	1	1	_																		
20								SW		<u> </u>	T T	T	+	+	T T	т																	
24									SW	SW	÷	÷	÷	÷	÷	÷	т																
26										SW	sw	Ť	÷	÷	Ť	÷	Ť	т															
30									SW		T	Ť	Ť	Ť	Ť	Ť	Ť	Ė	Т														
36											SW	SW	SW	Ť	Ť	Ť	Ť	Ť	Ť	Т													
40											SW			SW	Т	Т	Т	Т	Т	Т	Т												
42						SW	SW	SW	SW	SW	SW	SW	SW	Т	Т	Т	Т	Т	Т	Т	Т	Т											
46	i					SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	Т	Т	Т	Т	Т	Т	Т										
48														SW			T	Т	Т	Т	Т	Т	Т	Т									
54														SW				T1	T1	T1	T1	T1	T1	T1	T1								
56														SW				T1	T1	T1	T1	T1	T1	T1	T1	T1							
60														SW						T1	T1	T1	T1	T1	T1	T1	T1						
62														SW						T1	T1	T1	T1	T1	T1	T1	T1	T1					
66														SW							T1	11	11	11	11	11	11	11	T1	<b>T4</b>			
68		4 /0	0/4						SW		SW							00	00	00	T1	T1	T1	11	- 11	T1	T1	T1	T1	T1			
Branch	Size	1/2	3/4	1	1 1/	2 2	3	4	6	8	10	12	14	16	18	20	24	26	30	36	40	42	46	48	54	56	60	62	66	68			
Legend	а																																
Α	TEE	- SW	ENI	os -	ASM	E-B1	6.11																										
SW	SPE	CIAL	SWE	EPC	)LE1	- <n< td=""><td>IFR S</td><td>Std&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></n<>	IFR S	Std>																									
Т	TEE	- AS	ME-E	316.9																													
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	T1   TEE - TB RAC 5061																																

	45 degrees	
RunSize BranchSize		
Logonda		

### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).

  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.

  4) This piping class is created for lines subjected to Acoustic Induced Vibration.



:12 - SS316/HF

		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	C	3SI	D0S	01	
						Rev.		
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Base Material : STAINLESS STEEL 316/316L DUAL GRADE Design code : ASME B 31.3 2016

Nom. Rating : CL300 PWHT
Facing/Finishing : RF Valve Trim

Corrosion Allow.: 0 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 400 °C

Service: AV - Atmospheric Vent DMW - Demineralized Water FG - Fuel Gas MR - Mixed Refrigerant PR - Propane Refrigerant PRW - Process Water

Pipe Thickness

NPS 1/2 3/4 1 1 1/2 Thk.mm 2.77 2.87 3.38 3.68 4 3.05 6 7.11 3.91 3.05 9.53 6.35 6.35 7.14 7.92 9.53 11.13 12.7 SCH. 40S 40S 40S 40S 40S 10S 10S 40S 40S 40S 80S

Nipple Thickness

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 49.64 49.64 42.75 38.61 35.51 33.09 31.03 30.34 29.99 29.3 ASME B16.5 1/2 · 24 Temp. °C -28.9 37.78 93.33 148.9 204.4 260 315.6 343.3 371.1 398.9 Material Group 2.2

opt.	Si: from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
FIFE	4/0	0	PIPE	BW	1	ACTM ACAG TROAC/TROACI RIVAL CRARE, CMI C
	1/2	6		· ·		ASTM A312 TP316/TP316L DUAL GRADE - SMLS
FLAN	8	24	PIPE	BW		ASTM A358 TP316/TP316L CL.1 DUAL GRADE - EFW
FLAN		4.4/0	OW ELANGE AGME DAGE	sw	lou acco DE	AOTM A400 F040/F040L DUAL ODADE
	1/2	1 1/2	SW FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 F316/F316L DUAL GRADE
-	2	24	WN FLANGE - ASME-B16.5		CL300 RF	ASTM A182 F316/F316L DUAL GRADE
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A182 F316/F316L DUAL GRADE
5	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F316/F316L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 F316/F316L DUAL GRADE
14	2 TACLE	2 BLIND	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 F316/F316L DUAL GRADE
SPEC	-		ODECTACLE DUND. ACMEDIA	ı	0,000 05	
	1/2	12	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A240 TP316
_	14	24	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP316
2	1/2	12	BLIND & SPACER - ASME-B16.48		CL300 RF	ASTM A240 TP316
FITTI				1	la ==	
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F316/F316L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	8	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD
	1/2	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F316/F316L DUAL GRADE
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	8	24	REDUCER - ASME-B16.9	BW		ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A182 F316/F316L DUAL GRADE
	2	24	CAP - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F316/F316L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP316/TP316L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F316/F316L DUAL GRADE
	2	6	TEE - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	8	24	TEE - ASME-B16.9	BW		ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD
	2	8	WELDOLET - MSS-SP97	BW		ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A182 F316/F316L DUAL GRADE
GASE	KETS					
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			316 SS+GRAPH 98% - C.S. OUT.RING
BOL <sub>1</sub>						
	1/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60146	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
1	2	24	GA-E-60150	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
4	1/2	1 1/2	GA-E-60239	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
4	2	12	GA-E-60243	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
6	1/2	1 1/2	GA-E-60347	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
6	2	10	GA-E-60355	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
6	12	24	GA-E-60356	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : 316 / HF
7	6	24	GA-E-60448	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - RPTFE seats
8	1/2	1 1/2	GA-E-60446	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - RPTFE seats



		DB 2 <b>243</b>							
Pipi	ng C	Class	s:	03SD0S01					
						Rev.			
Sh.	2	of	2	Α	0	1			

ALV	ES									
pos.	Si from	ze to	Data Sheet	Item Description		Rating/Facing	Material			
10	1/2	1 1/2	GA-E-60178		SW/TH DF	1	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF			
11	1/2	1 1/2	GA-E-60597	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF			
89	1/2	1 1/2	GA-E-60475	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	PE/THD F	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.			
101	1/2	1 1/2	GA-E-67016	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF			
801	1/2	1 1/2	GA-E-67138	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL300 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - RPTFE seats			

RANCH '	TAB	LES																	
RunSiz	70	_	_	_	_		_	_	_	_	_	_	_	_	_	_	9(	) Deg	grees
1/2		Α																	
3/4			Α																
1		A	Ā	Α															
1 1/2		A	A	Α	Α														
2		S	S	Т	Т	Т													
3		S	S	S	S	W	Т												
4			S	S	S	W	Т	Т											
6		S	S	S	S	W	W	T	Ţ										
8			S	S	S	W	W	W	ı,	, 1		_							
10 12		S S	S S	S S	S	W	W	VV V/	V	/ I	, 1		_						
14		S	S	S	S	W	W	W.	V		, ,		÷	т					
16		S	S	S	S	W	W	W	v			>	P	÷	т				
18		Š	Š	Š	Š	W	W	W	V	/ V	/ 1	Γ.	T	Ť	Ť	Т			
20		S	S	S	S	W	W	W	V	/ V	/ 1	Г	Т	Т	Т	Т	Т		
24		S	S	S	S	W	W	W	V	/ V	/ F		Т	Т	Т	Т	Т	Т	
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	(	6 6	3 1	0	12	14	16	18	20	24	
Legenda	<b>a</b>																		
Α	TEE -	- SW	ENE	)S	ASM	E-B1	6.11												
Р	PIPE	TO F	PIPE	WIT	H R	EINF	ORC	ING	PAC	-TS-	COR	-ENG	G-PII	PMT	-012	-E			
S	SOCI	KOLE	ET - 3	SW E	END	- MS	SS-S	P97											
Т	TEE -	ASN	<b>ЛЕ-В</b>	16.9															
	WELI					97													

### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  4) Specified Thickness are suitable to withstand Full Vacuum condition.



		ОВ <b>2243</b>								
Pipi	ng C	Class	s:	03SP0S01						
						Rev.				
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Base Material : DUPLEX STAINLESS STEEL UNS S31803 Design code : ASME B 31.3 2016

Nom. Rating : CL300 PWHT

Facing/Finishing: RF Valve Trim: UNS S31803 (duplex)

Corrosion Allow. : 0 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00011/00013

Temp. Limit : 0 °C to 250 °C

Service: GD - Glycol Drain WEG - Water / Ethylene Glycol

Pipe Thickness

Nipple Thickness

NPS 1/2 3/4 1 1 1 1/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 51.71 51.37 45.85 42.4 ASME B16.5 1/2 · 10 Temp. °C 37.78 93.33 148.9 204.4 Material Group 2.8

		ze	Item Description	Ends	Rating/Facing	Material
opt.	from	to	• •			
PIPE						
	1/2	6	PIPE	BW		ASTM A790 UNS S31803 - SMLS
	8	10	PIPE	вw		ASTM A928 UNS S31803 CL.1 - EFW
FLAN	IGES					
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL300 RF	ASTM A182 GR.F51 (UNS S31803)
	2	10	WN FLANGE - ASME-B16.5	BW	CL300 RF	ASTM A182 GR.F51 (UNS S31803)
5	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A182 GR.F51 (UNS S31803)
5	2	10	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 GR.F51 (UNS S31803)
	1/2	10	BLIND FLANGE - ASME-B16.5		CL300 RF	ASTM A182 GR.F51 (UNS S31803)
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL300 RF	ASTM A182 GR.F51 (UNS S31803)
SPEC	TACLE	BLIND				
	1/2	10	SPECTACLE BLIND - ASME-B16.48		CL300 RF	ASTM A240 UNS S31803
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL300 RF	ASTM A182 GR.F51 (UNS S31803)
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 GR.F51 (UNS S31803)
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A815 UNS S31803 - SMLS
	8	10	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A815 UNS S31803 WP-WX
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 GR.F51 (UNS S31803)
	2	6	REDUCER - ASME-B16.9	BW		ASTM A815 UNS S31803 - SMLS
	8	10	REDUCER - ASME-B16.9	BW		ASTM A815 UNS S31803 WP-WX
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 GR.F51 (UNS S31803)
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A182 GR.F51 (UNS S31803)
	2	10	CAP - ASME-B16.9	BW		ASTM A815 UNS S31803 - SMLS
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 GR.F51 (UNS S31803)
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 GR.F51 (UNS S31803)
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 GR.F51 (UNS S31803)
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A790 UNS S31803 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A790 UNS S31803 - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A815 UNS S31803 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A815 UNS S31803 - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 GR.F51 (UNS S31803)
	2	6	TEE - ASME-B16.9	BW		ASTM A815 UNS S31803 - SMLS
	8	10	TEE - ASME-B16.9	BW		ASTM A815 UNS S31803 WP-WX
	2	8	WELDOLET - MSS-SP97	BW		ASTM A182 GR.F51 (UNS S31803)
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A182 GR.F51 (UNS S31803)
MISC	ELLANE	OUS			_	
	1/2	10	KIT FOR INSULATING FLANGE - ASME-B16.5		CL300 RF	GRE LAMINATED + TFE (MAX T 180 C)
GAS	KETS				1	
	1/2	10	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20		I	S31803+GRAPH 99,8% - C.S. OUT. RING
BOLT		4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED
	1/4	4	01.DUL1+2 NU10 - ANOI 11100 - 10 DUL 0300			MOTIVIATED DI + MOTIVIATES GK.ZH - PTE COATED

VALV	ES						
pos.	Si: from	ze to	Data Sheet	Item Description		Rating/Facing	Material
1	1/2	1 1/2	GA-E-60160	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A182 GR.F51 (UNS S31803) Trim : Duplex S.31803
1	2	10	GA-E-60570	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL300 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN) Trim : Duplex S.31803
4	1/2	1 1/2	GA-E-60253	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A182 GR.F51 (UNS S31803) Trim : Duplex S.31803
4	2	10	GA-E-60271	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL300 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN) Trim : Duplex S.31803
6	1/2	1 1/2	GA-E-60366	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A182 GR.F51 (UNS S31803) Trim : Duplex S.31803
6	2	10	GA-E-60730	Check-BB- FB- Swing - API594	FLGD	CL300 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN) Trim : Duplex S.31803
8	1/2	1 1/2	GA-E-67290	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL300 RF	Body: ASTM A182 GR.F51 (UNS S31803) Trim : Soft seat-S.31803 trim - PEEK seats
8	2	3	GA-E-67261	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN) Trim: Soft seat-S.31803 trim - PEEK seats
8	6	10	GA-E-67262	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN) Trim: Soft seat-S.31803 trim - PEEK seats



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	C	38	P0S	01	
						Rev.		
Sh.	2	of	2	Α	0	1		

	Si		Data Sheet	Item Description	Ends	Rating/Facing	Material
oos.	from	to					
10	1/2	1 1/2	GA-E-60571	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A182 GR.F51 (UNS S31803)
					DF		Trim: Duplex S.31803
82	2	4	GA-E-60407	Ball-Split body-FB-Floating ball - API6D	FLGD	CL300 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
							Trim : Metal seat-S.31803 trim-GRAPH.
82	6	10	GA-E-67299	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL300 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
							Trim : Metal seat-S.31803 trim-GRAPH.
89	1/2	1 1/2	GA-E-60477	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A182 GR.F51 (UNS S31803)
				API608	F		Trim : Metal seat-S.31803 trim-GRAPH.
840	2	2	GA-E-67627	Ball-Split body-FB-Floating ball - API6D - Interlock	FLGD	CL300 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
				System			Trim : Soft seat-S.31803 trim - PEEK seats
840	10	10	GA-E-67626	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL300 RF	Body: ASTM A995 GR.4A (UNS J92205, CD3MN)
				Interlock System			Trim : Soft seat-S.31803 trim - PEEK seats

#### **BRANCH TABLES**

RunS	90 Degrees
1/2	, A
3/4	A A
1	A A A
1 1/2	A
2	S S T T T
3	S S S S W T
4	S S S S W T T
6	S S S S W W T T S S S S W W W T T
10	S S S S W W W T T S S S S W W W W T T
Branci	ize 1/2 3/4 1 1 1/2 2 3 4 6 8 10
1	
Legend	
Α	EE - SW ENDS - ASME-B16.11
Р	PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E
S	OCKOLET - SW END - MSS-SP97
Т	EE - ASME-B16.9
W	VELDOLET - MSS-SP97

#### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  3) Specified Thickness are suitable to withstand Full Vacuum condition.



		ОВ <b>2243</b>							
Pipi	ng (	Class	s:	0	6C	<b>A1</b> S	<b>601</b>		
						Rev.			
Sh.	1	of	3	Α	0	1	2	3	

 Base Material
 : LOW TEMP. CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL600
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 12 - SS316/HF

Corrosion Allow.: 1.5 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 220 °C

Service: CF - Dry (Cold) Flare MR - Mixed Refrigerant NG - Natural Gas PR - Propane Refrigerant

Pipe Thickness

 
 NPS
 1/2
 3/4
 1
 11/2
 2
 3
 4
 6
 8
 10
 12
 14
 16
 18
 20
 24
 26
 28

 Thk.mm
 3.73
 3.91
 4.55
 5.08
 5.54
 5.49
 8.56
 10.97
 12.7
 15.09
 17.48
 19.05
 14.27
 15.88
 17.48
 20.62
 22.23
 22.23
 30 25.4 30.18 39 SCH. XS XS XS XS XS STD XS XS XS 80 80 80

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160

PRESSURE - TEMPERATURE Ratings

 NPS
 Press. bar
 102.0
 102.0
 93.77
 90.32
 87.22
 83.08
 78.26
 75.84
 ASME B16.5

 1/2 · 14
 Temp. °C
 -28.9
 37.78
 93.33
 148.9
 204.4
 260
 315.6
 343.3
 Material Group 1.1

 NPS
 Press bar
 75

NP	14 Temp		28.9 37.78 93.33 148.9 204.4 260 315.6 343.3 Waterial Group			
II.	S Press 48 Temp		75 85			
		ze	Item Description	Ends	Rating/Facing	Material
opt.	from	to				
PIPE	1				1	
	1/2	24	PIPE	BW		ASTM A333 GR.6 - SMLS
	26	28	PIPE	BW		ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)
FLAN	30	48	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
FLAN	- 1	1 1/2	OW ELANCE ASMEDIAGE	sw	CL600 RF	ACTM A250 LE2 CL 4
	1/2 2	1 1/2 24	SW FLANGE - ASME-B16.5 WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1
	26	48	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM AS50 LF2 - CL.1 ASTM A350 LF2 - CL.1
6	3	20	WN FLANGE - ASME-B16.5	BW	CL900 RF	ASTM A350 LF 2 - CL.1
6	26	48	WN FLANGE - ASME-B16.47 series.A	BW	CL900 RF	ASTM A350 LF2 - CL.1
7	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RF	ASTM A350 LF2 - CL.1
7	2	20	WN FLANGE - ASME-B16.5	вw	CL1500 RF	ASTM A350 LF2 - CL.1
63	3	20	WN FLANGE - ASME-B16.5	вW	CL900 RJ (F)	ASTM A350 LF2 - CL.1
63	26	36	WN FLANGE - ASME-B16.47 series.A	BW	CL900 RJ (F)	ASTM A350 LF2 - CL.1
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A350 LF2 - CL.1
73	2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A350 LF2 - CL.1
	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A350 LF2 - CL.1
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A350 LF2 - CL.1
SPEC	TACLE	BLIND		1	1	
	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.60 + S5 (-46°C)
	10	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.60 + S5 (-46°C)
	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060016</mfr>		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	36	36	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060016</mfr>		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	48	48	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060016</mfr>		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
2 FITTI	1/2 NGS	8	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A350 LF2 - CL.1
	1/2	ء 1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000 Ki	ASTM A350 LF2 - CL.1
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW	0000	ASTM A420 WPL6 - SMLS
	26	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1
	2	24	REDUCER - ASME-B16.9	вw		ASTM A420 WPL6 - SMLS
	26	48	REDUCER - ASME-B16.9	вW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1
	2	48	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A350 LF2 - CL.1
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1
	2	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	TEE - ASME-B16.9	BW BW		ASTM A420 WPL6W - WLDD
	2 2	8 2	WELDOLET - MSS-SP97 LATROLET - BW END - MSS-SP97	BW	3000	ASTM A350 LF2 - CL.1
	3	8	SPECIAL LATROLET - <mfr std=""></mfr>	BW	5000	ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1
	1/2	o 1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1
	1/2	1 1/2	LATROLET - SW END - MSS-SP97	SW\BW	3000	ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1
MISC	ELLANE		PRINCELL - OW FIND - MICO-OL 37	D ** (D * *	2000	/ 10 1 10 7 1000 El 2 - OE.1
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL600 RF	GRE LAMINATED + TFE (MAX T 180 C)
GAS	- 1	40	FLAT CARKET ODGOVED MED COL			AIGUARA ODARIJETE
	26	48	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
62	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63 73	3 1/2	36 2	OCTAGONAL RJ GASKET - ASME-B16.20 OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
[13]	1/2		OUTAGONAL NO GAGNET - AGNE-D10.20			SOFT IRON



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Pipi	ng C	Class	s:	0	6C	A15	<b>601</b>	
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Sh.	2	of	3	Α	0	1	2	3

opt.	Size from to	Item Description	Ends	Rating/Facing	Material
BOL	TS				
	1/2 2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
	2 3/4   4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7M + ASTM A194 GR.2HM (HotDip 153)

/ALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60100	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
1	2	24	GA-E-60105	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A352 LCC Trim: 316 / HF
2	26	48	GA-E-60515	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - ASME-B16.34	FLGD	CL600 RF	Body: ASTM A352 LCC
4	1/2	1 1/2	GA-E-60200	Globe-BB-Red BThdd seat - API602	sw	CL800	Trim: Metal seat - 316 - LT C.S. disc Body: ASTM A350 LF2 - CL.1
4	2	12	GA-E-60205	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Trim:316/HF Body:ASTM A352 LCC
6	1/2	1 1/2	GA-E-60300	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
6	2	10	GA-E-60308	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Trim:316/HF Body:ASTM:A352 LCC
6	12	24	GA-E-60309	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Trim:316/HF Body:ASTM:A352 LCC
6	26	36	GA-E-60324	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Trim:316/HF Body: ASTM A352 LCC
7	2	2	GA-E-67645	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL600 RF	Trim:316/HF Body:ASTM A352 LCC
7	6	24	GA-E-60408	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A352 LCC
8	1/2	1 1/2	GA-E-60406	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A350 LF2 - CL.1
10	1/2	1 1/2	GA-E-60173	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A350 LF2 - CL.1
14	1/2	1 1/2	GA-E-60174	Gate-Stem Extension-BB-Red.B-Solid wdg-	DF SW	CL800	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
14	2	24	GA-E-60577	Exp.seat - API602 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat		CL600 RF	Trim : 316 / HF Body: ASTM A352 LCC
19	1/2	1 1/2	GA-E-60176	- API600 Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
64	36	36	GA-E-60722	Exp.seat - API602 Nozzle Check-Long-Axial non slam-Thdd seat -	DF FLGD	CL600 RF	Trim : 316 / HF Body: ASTM A352 LCC
69	36	36	GA-E-60350	API 6D Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Trim : 316 / HF Body: ASTM A352 LCC
80	1/2	1 1/2	GA-E-60761	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
				Frgd body - API608			Trim : Soft seat-316 trim - PEEK seats
82	1/2	1 1/2	GA-E-67119	Ball-End entry -FB-Float.ball -Frgd body - API608		CL600 RF	Body: ASTM A350 LF2 - CL.1 Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60496	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	PE/THD F		Body: ASTM A350 LF2 - CL.1 Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-60147	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	sw		Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
101	2	3	GA-E-60598	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600		CL600 RF	Body: ASTM A352 LCC Trim: 316 / HF
130	1/2	1 1/2	GA-E-67074	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF		Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
140	4	4	GA-E-67371	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL600 RF	Body: ASTM A352 LCC Trim : 316 / HF
201	26	36	GA-E-60523	Butterfly-Stem Extension-Flanged-Triple Off Set- Int.seat-Fire safe - ASME-B16.34	FLGD	CL600 RF	Body: ASTM A352 LCC Trim : Metal seat - 316 - LT C.S. disc
401	2	2	GA-E-60285	Globe-Stem Extension-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A352 LCC Trim :316 / HF
782	2	2	GA-E-67690	DBL Block&Bleed Ball valve-Stem Extension- SplitBdy-RB-Float.ball - <mfr std=""></mfr>	FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1 Trim : Soft seat-316 trim - PEEK seats
801	1/2	1 1/2	GA-E-67139	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1 Trim : Soft seat-316 trim - PEEK seats
907	17 2 4 GA-E-69016 Ball-Split body-Red.B-Floating ball - API6D		FLGD	CL600 RF	Body: ASTM A352 LCC Trim : Soft seat-316 trim - PEEK seats		
908	908 1 1 GA-E-69104 Ball-Split body-FB-Floating ball - API6D F		FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1 Trim : Soft seat-316 trim - PEEK seats		

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	3	24	GA-E-60615	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3
1	30	30	GA-E-60616	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A420 WPL6W - WLDD Screen:316 - CLOTH - MESH 3



90 Degrees

		ОВ <b>2243</b>							
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### BRANCH TABLES

RunSize

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8 S S S S W W W W T T 10 S S S S W W W W T T 112 S S S S W W W W W T T 114 S S S S W W W W W P T T 116 S S S S W W W W W P P T T 118 S S S S W W W W W P P T T 118 S S S S W W W W W P P P T T 120 S S S S W W W W W P P P T T 121 S S S S W W W W W P P P P P P P T T 122 S S S S W W W W W P P P P P P P T T 123 S S S S W W W W W P P P P P P P P P P T T 130 S S S S W W W W W P P P P P P P P P P T T 140 S S S S W W W W W P P P P P P P P P P P						S		I.	1	_																
10 S S S S W W W W T T 12 S S S S W W W W W T T 14 S S S S W W W W W P T T 14 S S S S W W W W W P T T 16 S S S S W W W W W P P T T 18 S S S S W W W W W P P T T 20 S S S S W W W W W P P P T T 20 S S S S W W W W W P P P P T T 24 S S S S W W W W W P P P P P P T T 26 S S S S W W W W W P P P P P P P T T 28 S S S S W W W W W P P P P P P P P T T 30 S S S S W W W W W P P P P P P P P P T T 30 S S S S W W W W W P P P P P P P P P T T 40 S S S S W W W W W P P P P P P P P P P T T 42 S S S S W W W W W P P P P P P P P P P T T 42 S S S S W W W W W P P P P P P P P P P P						5	VV	VV	, I	<u> </u>	_															
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24 S S S S W W W W W P P P P P P P T T 26 S S S S W W W W W P P P P P P P T T 28 S S S S W W W W W P P P P P P P P T T 30 S S S S W W W W W P P P P P P P P T T 30 S S S S W W W W W P P P P P P P P T T 40 S S S S W W W W W P P P P P P P P P P T T 42 S S S S W W W W W P P P P P P P P P P P			S		S	S	W	W	W	W	W	Р	Ρ	Р	Ρ	Т	Т									
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Legenda           A         TEE - SW ENDS - ASME-B16.11           P         PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E           S         SOCKOLET - SW END - MSS-SP97           T         TEE - ASME-B16.9					•	1 1/2	) Y	۷۷	4	6	• •	10	12	1/	•	1Ω	20	24	26	28		•	•	12	٠,	
A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9	Branon	0.20	1/2	3/4		1 1/2		3	4	U	0	10	12	14	10	10	20	24	20	20	30	30	40	42	40	<del>,</del>
P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9	Legend	а																								
S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9	Α																									
S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9	Р	PIPE :	<u>TO</u> F	PIPE	WIT	H RE	INF	ORC	NG F	AD-T	S-CO	R-EN	NG-P	IPMT	-012	-E										
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#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



2 1/2

ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368

ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368

1/2

2 3/4

## PIPING MATERIAL SPECIFICATION

		ОВ <b>2243</b>						
Pipi	ng (	Class	s:	C	)6C	<b>A1</b> S	02	
						Rev.		
Sh.	1	of	3	Α	0	1		

Base Material :ASME B 31.3 2016 : LOW TEMP, CARBON STEEL Design code Nom. Rating : AS PER CODE (NOTE 1) : CL600 **PWHT** Facing/Finishing: RF Valve Trim : 12 - SS316/HF Corrosion Allow. : 1.5 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013 Temp. Limit : -45 °C to 100 °C Service: NG - Natural Gas Pipe Thickness NPS 1/2 3.73 3/4 18 10.97 15.09 17.48 19.05 16.66 25.4 3.91 5.08 8.56 19.05 20.62 24.61 27 28.58 Thk.mn SCH. XS XS XS XS XS STD XS XS XS 80 80 80 60 60 60 Nipple Thickness NPS 1/2 3/4 m 4.78 5.56 6.35 160 160 160 7.14 160 8.74 160 SCH. PRESSURE - TEMPERATURE Ratings 102.0 102.0 93.77 90.32 87.22 83.08 78.26 75.84 ASME B16.5 Press, bar 14 Temp. °C -28.9 37.78 93.33 148.9 204.4 260 315.6 343.3 Material Group 1.1 Press. bar 89 16 - 24 Temp. °C Press bar NPS 26 · 36 Temp. °C 70 Ends Rating/Facing Material Size Item Description from to PIPE ASTM A333 GR.6 - SMLS 1/2 24 PIPE PIPE вw ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C) 26 36 **FLANGES** sw CL600 RF SW FLANGE - ASME-B16.5 ASTM A350 LF2 - CL.1 1/2 1 1/2 WN FLANGE - ASME-B16.5 CL600 RF вw ASTM A350 LF2 - CL.1 2 24 WN FLANGE - ASME-B16.47 series.A CL600 RF 26 36 вw ASTM A350 LF2 - CL.1 WN FLANGE - ASME-B16.5 6 3 24 RW CI 900 RF ASTM A350 LF2 - CL.1 WN FLANGE - ASME-B16 47 series A 26 36 RW CI 900 RF ASTM A350 LF2 - CL.1 7 1/2 1 1/2 SW FLANGE - ASME-B16.5 sw CL1500 RF ASTM A350 LF2 - CL 1 2 20 WN FLANGE - ASME-B16.5 вw CL1500 RF ASTM A350 LF2 - CL.1 63 3 24 WN FLANGE - ASME-B16.5 вw CL900 RJ (F) ASTM A350 LF2 - CL.1 WN FLANGE - ASME-B16.47 series.A вw CL900 RJ (F) ASTM A350 LF2 - CL.1 63 26 36 73 1/2 1 1/2 SW FLANGE - ASME-B16.5 sw CL1500 RJ (F) ASTM A350 LF2 - CL.1 2 2 WN FLANGE - ASME-B16.5 вw CL1500 RJ (F) ASTM A350 LF2 - CL.1 1/2 14 BLIND FLANGE - ASME-B16.5 CL600 RF ASTM A350 LF2 - CL.1 THDD RED. FLANGE - ASME-B16.5 THDE CL600 RF ASTM A350 LF2 - CL.1 SPECT ACL **BLIND** SPECTACLE BLIND - ASME-B16.48 CL600 RF ASTM A516 GR.60 + S5 (-46°C) 1/2 8 BLIND & SPACER - ASME-B16.48 CL600 RF 10 24 ASTM A516 GR.60 + S5 (-46°C) BLIND & SPACER - ASME-B16.48 CL600 RF 1/2 8 ASTM A516 GR.70 + S5 (-46°C) **FITTINGS** DRIP-RING - TB DRI 5011 1/2 3 CI 600 RF ASTM A350 LF2 - CL 1 1/2 1 1/2 FLBOW - SW ENDS - ASME-B16 11 SW 3000 ASTM A350 LE2 - CL 1 2 24 LONG RADIUS ELBOW - ASME-B16.9 вw ASTM A420 WPL6 - SMLS 26 36 LONG RADIUS ELBOW - ASME-B16.9 вw ASTM A420 WPL6W - WLDD 3/4 1 1/2 RED. COUPLING - SW ENDS - ASME-B16.11 sw 3000 ASTM A350 LF2 - CL.1 REDUCER - ASME-B16.9 ASTM A420 WPL6 - SMLS 2 вw 26 36 REDUCER - ASME-B16.9 вw ASTM A420 WPL6W - WLDD FEMALE CAP - THD END - ASME-B16.11 1/2 1 1/2 THDF 3000 ASTM A350 LF2 - CL.1 1/2 1 1/2 FEMALE CAP - SW END - ASME-B16.11 sw 3000 ASTM A350 LF2 - CL.1 CAP - ASME-B16.9 вw ASTM A420 WPL6 - SMLS 2 36 COUPLING - SW/THDD ENDS - ASME-B16.11 SW\THDF ASTM A350 LF2 - CL.1 1/2 1 1/2 3000 COUPLING - SW ENDS - ASME-B16.11 1/2 sw ASTM A350 LF2 - CL.1 1 1/2 3000 THD MALE PLUG - RND HEAD - ASME-B16.11 тном 1/2 2 ASTM A350 LF2 - CL.1 1/2 2 NIPPLE - THDD/PE - ASME-B36.10 THDM\PE ASTM A333 GR.6 - SMLS 3/4 SWAGE NIPPLE - PE/PE - MSS-SP95 PF ASTM A420 WPL6 - SMLS SWAGE NIPPLE - PE/THDD - MSS-SP95 3/4 2 PE\THDM ASTM A420 WPL6 - SMLS 1/2 1 1/2 TEE - SW ENDS - ASME-B16.11 sw 3000 ASTM A350 LF2 - CL.1 2 TEE - ASME-B16.9 вw ASTM A420 WPL6 - SMLS 24 26 TEE - ASME-B16.9 вw ASTM A420 WPL6W - WLDD 36 WELDOLET - MSS-SP97 вw ASTM A350 LF2 - CL.1 2 8 LATROLET - BW END - MSS-SP97 ASTM A350 LF2 - CL.1 2 вw 3000 3 8 SPECIAL LATROLET - <MFR Std> вw ASTM A350 LF2 - CL.1 1/2 1 1/2 SOCKOLET - SW END - MSS-SP97 sw\bw 3000 ASTM A350 LF2 - CL.1 1/2 LATROLET - SW END - MSS-SP97 SW\BW 1 1/2 3000 ASTM A350 LF2 - CL.1 MISCELLANEOUS KIT FOR INSULATING FLANGE - ASME-B16.5 **CL600 RF** GRE LAMINATED + TFE (MAX T 180 C) 1/2 24 GASKETS 26 36 FLAT GASKET - GROOVED - <MFR Std> AISI 316L+GRAPHITE 1/2 24 SP.WOUND GSKT-with OUT. & INN.RINGS - ASME-B16.20 304 SS+GRAPH 98% - C.S. OUT.RING 63 3 36 OCTAGONAL RJ GASKET - ASME-B16.20 SOFT IRON 73 1/2 2 OCTAGONAL RJ GASKET - ASME-B16.20 SOFT IRON BOLT

> Report Name: SpcLinB Revision: 01.06.02 - 09/12/2021 Printed: 28/11/2024 15:18:43

ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

ASTM A193 B7M + ASTM A194 GR.2HM (HotDip 153)



		ОВ <b>2243</b>						
Pip	ing C	Class	s:	C	6C	A15	<b>602</b>	
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VALVE	ES						
	from Si	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from 1/2	1 1/2	GA-E-60100	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1
'	1/2	1 1/2	GA-E-60100	Gale-BB-Red.B-Solid Wag-Exp.seal - API602	SVV	CL800	Trim: 316 / HF
1	2	24	GA-E-60105	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A352 LCC
				3			Trim : 316 / HF
2	26	36	GA-E-60515	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe	FLGD	CL600 RF	Body: ASTM A352 LCC
				- ASME-B16.34			Trim : Metal seat - 316 - LT C.S. disc
4	1/2	1 1/2	GA-E-60200	Globe-BB-Red BThdd seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1
4	2	12	GA-E-60205	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Trim : 316 / HF Body: ASTM A352 LCC
"	-	'-	O/ L 00200	Clobe BB Blok Thad Sout 74 T 020	1 200	OLOGO IVI	Trim:316/HF
6	1/2	1 1/2	GA-E-60300	Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1
							Trim:316 / HF
6	2	10	GA-E-60308	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A352 LCC
6	12	24	GA-E-60309	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Trim: 316 / HF Body: ASTM A352 LCC
6	12	24	GA-E-00309	Check-Flanged -Dual plate-Widd Seat - AF1594	FLGD	CL600 KF	Trim : 316 / HF
6	26	36	GA-E-60324	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL600 RF	Body: ASTM A352 LCC
							Trim : 316 / HF
7	6	24	GA-E-60408	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A352 LCC
	4 (0	4.4/0	0.4 5 00 400	D    E	E1 0B	01 000 DE	Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2	GA-E-60406	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1 Trim : Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-60173	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
	.,_	,_	0.1.2 00.1.0	Sale 22 Hours Cond may 2xplocat 711 1002	DF	02000	Trim : 316 / HF
14	1/2	1 1/2	GA-E-60174	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602			Trim: 316 / HF
14	2	24	GA-E-60577	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A352 LCC
19	1/2	1 1/2	GA-E-60176	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
'3	1/2	1 1/2	GA-E-00170	Exp.seat - API602	DF	02000	Trim: 316 / HF
64	36	36	GA-E-60722	Nozzle Check-Long-Axial non slam-Thdd seat -	FLGD	CL600 RF	Body: ASTM A352 LCC
				API 6D			Trim:316 / HF
69	36	36	GA-E-60350	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL600 RF	Body: ASTM A352 LCC
80	1/2	1 1/2	GA-E-60761	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
00	1/2	1 1/2	GA-E-00701	Frgd body - API608	LGD	CLOOD KI	Trim : Soft seat-316 trim - PEEK seats
82	1/2	1 1/2	GA-E-67119	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60496	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A350 LF2 - CL.1
101	1/2	1 1/2	CA E 60147	API608	F SW	C1 800	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-60147	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SVV	CL800	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
101	2	24	GA-E-60598	Gate-Stem Extension-BB-FB-Flex wdg-Thdd	FLGD	CL600 RF	Body: ASTM A352 LCC
				seat - API600			Trim : 316 / HF
201	26	36	GA-E-60523	Butterfly-Stem Extension-Flanged-Triple Off Set-	FLGD	CL600 RF	Body: ASTM A352 LCC
,,			0.4 5 00005	Int.seat-Fire safe - ASME-B16.34	E1 0E	01 000 05	Trim : Metal seat - 316 - LT C.S. disc
401	2	2	GA-E-60285	Globe-Stem Extension-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A352 LCC Trim : 316 / HF
801	1/2	1 1/2	GA-E-67139	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1
"	.,_	,_	2.72 07.00	Frgd body - API608			Trim : Soft seat-316 trim - PEEK seats
907	2	2	GA-E-69081	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - PEEK seats
907	24	24	GA-E-69081	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A352 LCC
			1		1	I	Trim : Soft seat-316 trim - PEEK seats

**BRANCH TABLES** 



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26	3	S	s	S	S	W	W	۱۸/	۱۸/	W	P	P	P	P	P	Þ	÷	т				
25	3	S	s	s	s	w	w	w	W	w	P	P	P	P	P	P	Þ	÷	т			
26 28 30	i i	S	s	s	s	w	W	w	w	w	P	P	P	P	P	P	P	÷	÷	т		
36	3	Š	s	s	s	w	w	w	w	w	P	P	P	P	P	P	P	P	P	Ť	Т	
Branch		1/2			1 1/:	2 2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	36	
Branoi	.0.20	1/2	5/4		1 1/2		3	7	U	U	10	12		10	10	20	27	20	20	30	50	
Lawren	1-																					
Legend																						
A	TEE																					
Р	PIPE	TO	PIPE	WIT	H RI	EINF	ORC	ING F	PAD-	TS-C	DR-E	NG-F	PIPMT	-012	-E							
S	SOC	KOL	ET -	SW I	END	- MS	SS-SI	P97														
Т	TEE	- AS	ME-E	316.9	)																	
W	WEL					97																
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20	Ī	. i		Ĺ	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP						
24	Ī			Ē	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP					
26	L			. L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP				
28	L			. L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP			
30	L			. L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP		
36	L			. L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	
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Legenda																					
L LATROLET - SW END - MSS-SP97																					
				END - N																	
				.ET - <1																	
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### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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 Base Material
 : LOW TEMP. CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL600
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim :12 - SS316/HF
Corrosion Allow.: 1.5 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 220 °C

Service: [AIV] CF - Dry (Cold) Flare MR - Mixed Refrigerant NG - Natural Gas PR - Propane Refrigerant

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 26 28 30 36 40 42 48 Thk.mm 3.73 3.91 4.55 5.08 5.54 5.49 8.56 10.97 12.7 15.09 17.48 19.05 14.27 15.88 17.48 20.62 22.23 22.23 25.4 30.18 33 35 39 SCH. XS XS XS XS XS XS STD XS XS XS 80 80 80 80

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160

PRESSURE - TEMPERATURE Ratings

 NPS
 Press. bar
 102.04
 102.04
 102.04
 93.77
 90.32
 87.22
 83.08
 78.26
 75.84
 ASME B16.5

 1/2 · 14
 Temp. °C
 -28.89
 37.78
 93.33
 148.89
 204.44
 260
 315.56
 343.33
 Material Group 1.1

 NPS
 Press. bar
 75

16 ·			75   85			
	Si		Item Description	Ends	Rating/Facing	Motorial
opt.	from	to	item bescription	Liius	Rating/Facing	Material
PIPE						
	1/2	24	PIPE	BW		ASTM A333 GR.6 - SMLS
	26	28	PIPE	BW		ASTM A671 GR.CC65 CL.12 - EFW + S2 (-46°C)
	30	48	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
FLAN	GES					
	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A350 LF2 - CL.1
	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A350 LF2 - CL.1
	26	48	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A350 LF2 - CL.1
6	3	20	WN FLANGE - ASME-B16.5	BW	CL900 RF	ASTM A350 LF2 - CL.1
6	26		WN FLANGE - ASME-B16.47 series.A	BW	CL900 RF	ASTM A350 LF2 - CL.1
7	1/2		SW FLANGE - ASME-B16.5	SW	CL1500 RF	ASTM A350 LF2 - CL.1
7	2		WN FLANGE - ASME-B16.5	BW	CL1500 RF	ASTM A350 LF2 - CL.1
63	3		WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A350 LF2 - CL.1
63	26		WN FLANGE - ASME-B16.47 series.A	BW	1	ASTM A350 LF2 - CL.1
73	1/2		SW FLANGE - ASME-B16.5	SW		ASTM A350 LF2 - CL.1
73	2		WN FLANGE - ASME-B16.5	BW		ASTM A350 LF2 - CL.1
	1/2		BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A350 LF2 - CL.1
14	2		THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A350 LF2 - CL.1
SPEC	TACLE		ODEOTAGLE DUND. AGME DAG 49		lou 000 DE	1.0714 4540 OD 00 . 05 ( 4000)
	1/2		SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.60 + S5 (-46°C)
	10		BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.60 + S5 (-46°C)
	30		SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060016</mfr>		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	36		SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060016</mfr>		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
2	48		SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060016</mfr>		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTII	1/2	8	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
1	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A350 LF2 - CL.1
	1/2		ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1
	2		LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1
	2	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1
	2		CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1
	1/2		COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A350 LF2 - CL.1
	1/2		THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS
	3/4		SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A420 WPL6 - SMLS
	1/2		TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A350 LF2 - CL.1
	2		TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26		TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	2	20	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	3000	ASTM A350 LF2 - CL.1
MISC	ELLANE					
	1/2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		CL600 RF	GRE LAMINATED + TFE (MAX T 180 C)
GASK	KETS				_	
	26		FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3		OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20	1	<u> </u>	SOFT IRON
BOLT		0.17	OT DOLT AND TO AND THE TOTAL TOTAL			
	1/2		ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
	2 3/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7M + ASTM A194 GR.2HM (HotDip 153)



		DB 2 <b>243</b>						
Pipi	ng C	Class	s:	0	6C	<b>A1</b> S	60	
						Rev.		
Sh.	2	of	3	Α				

VALV	ES						
	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to		·			
1	1/2	1 1/2	GA-E-60100	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1
1	2	24	GA-E-60105	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Trim: 316 / HF Body: ASTM A352 LCC
.	-		0/12 00100	Sale 22 : 2 : 10x mag : mad coak 7 ii 1000	. 202	02000 111	Trim : 316 / HF
2	26	48	GA-E-60515	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe	FLGD	CL600 RF	Body: ASTM A352 LCC
4	1/2	1 1/2	GA-E-60200	- ASME-B16.34 Globe-BB-Red BThdd seat - API602	sw	CL800	Trim: Metal seat - 316 - LT C.S. disc
4	1/2	1 1/2	GA-E-60200	Globe-BB-Red BTildd Seat - AF1002	SVV	CL800	Body: ASTM A350 LF2 - CL.1 Trim: 316 / HF
4	2	12	GA-E-60205	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A352 LCC
	4/0	4.4/0	04 5 00000	Oharda DD Dard D Distant Third and A DICCO	0144	01.000	Trim: 316 / HF
6	1/2	1 1/2	GA-E-60300	Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1 Trim: 316 / HF
6	2	10	GA-E-60308	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A352 LCC
							Trim: 316 / HF
6	12	24	GA-E-60309	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL600 RF	Body: ASTM A352 LCC Trim : 316 / HF
6	26	36	GA-E-60324	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A352 LCC
				3			Trim : 316 / HF
7	2	2	GA-E-67645	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL600 RF	Body: ASTM A352 LCC
7	6	24	GA-E-60408	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Trim: Soft seat-316 trim - PEEK seats Body: ASTM A352 LCC
'	Ü		O/1 E 00400	Dan Opin Sody Rod. B Transion Sail 71 10B	1 200	02000 111	Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2	GA-E-60406	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1
10	1/2	1 1/2	GA-E-60173	Coto PR Rod R Solid wdg Eyn coot ARISO2	CWATL	CL BOO	Trim : Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-60173	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
14	1/2	1 1/2	GA-E-60174	Gate-Stem Extension-BB-Red.B-Solid wdg-	sw	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602			Trim: 316 / HF
14	2	24	GA-E-60577	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A352 LCC Trim : 316 / HF
19	1/2	1 1/2	GA-E-60176	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602	DF		Trim : 316 / HF
64	36	36	GA-E-60722	Nozzle Check-Long-Axial non slam-Thdd seat - API 6D	FLGD	CL600 RF	Body: ASTM A352 LCC Trim : 316 / HF
69	36	36	GA-E-60350	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A352 LCC
							Trim : 316 / HF
80	1/2	1 1/2	GA-E-60761	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1
82	1/2	1 1/2	GA-E-67119	Frgd body - API608  Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A350 LF2 - CL.1
02	1/2	1 1/2	0/12 0/110	Ban End chary 1 B 1 load.Ban 1 1ga Body 74 1000	1 200	02000 111	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60496	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A350 LF2 - CL.1
101	1/2	1 1/2	GA-E-60147	API608 Gate-Stem Extension-BB-Red.B-Solid wdg-	F SW	CL800	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A350 LF2 - CL.1
101	1/2	1 1/2	GA-L-00147	Exp.seat - API602	300	CL800	Trim : 316 / HF
101	2	3	GA-E-60598	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL600 RF	Body: ASTM A352 LCC
120	1/0	1.1/0	CA F 67074	- API600	OM/T::	01.000	Trim: 316 / HF
130	1/2	1 1/2	GA-E-67074	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
140	4	4	GA-E-67371	Gate-BB-FB-Flex wdg-Thdd seat - API600 -	FLGD	CL600 RF	Body: ASTM A352 LCC
				Interlock System			Trim: 316 / HF
201	26	36	GA-E-60523	Butterfly-Stem Extension-Flanged-Triple Off Set- Int.seat-Fire safe - ASME-B16.34	FLGD	CL600 RF	Body: ASTM A352 LCC Trim : Metal seat - 316 - LT C.S. disc
401	2	2	GA-E-60285	Globe-Stem Extension-BB-Disk-Thdd seat - API	FLGD	CL600 RF	Body: ASTM A352 LCC
				623			Trim : 316 / HF
782	2	2	GA-E-67690	DBL Block&Bleed Ball valve-Stem Extension-	FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1
801	1/2	1 1/2	GA-E-67139	SplitBdy-RB-Float.ball - <mfr std=""> Ball-Stem Extension-End entry -FB-Float.ball -</mfr>	FLGD	CL600 RF	Trim: Soft seat-316 trim - PEEK seats Body: ASTM A350 LF2 - CL.1
001	1/2	' '/-	J. L 07 100	Frgd body - API608	. 205	22000 111	Trim : Soft seat-316 trim - PEEK seats
907	2	4	GA-E-69016	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL600 RF	Body: ASTM A352 LCC
		l	1		1		Trim : Soft seat-316 trim - PEEK seats

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	3	24	GA-E-60615	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3
1	30	30	GA-E-60616	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body: ASTM A420 WPL6W - WLDD Screen: 316 - CLOTH - MESH 3

**BRANCH TABLES** 



		ОВ <b>2243</b>						
Pipi	ng (	Class	s:	0	)6C	<b>A1</b> S	60	
						Rev.		
Sh.	3	of	3	Α				

RunSi	ze															91	n Deí	grees	•						
1/2		Α																							
3/4		Α	Α																						
1		Α	Α	Α																					
1 1/2		Α	Α	Α	Α	_																			
2						Ţ	_																		
3						<u> </u>	T	_																	
4						SW	<u> </u>	<u>+</u>	_																
8							SW	÷	Ť	т															
10							SW		+	+	т														
12								sw	Ť	Ť	Ť	Т													
14								SW		Ť	Ť	Ť	Т												
16						SW	SW	SW	Т	Т	Т	Т	Т	Т											
18								SW		Т	Т	Т	Т	Т	Т										
20								SW		Т	Т	Т	Т	Т	Т	Т									
24									٠		Т	T	T	T	T	T	T	_							
26										SW		T	T	T	T	T	T	T	_						
28									SW	SW	SW	I T	I T	ı T	Ţ	I T	I T	I T	I T	_					
26 28 30 36 40										SW	S/V/	SW	SW	T T	+	T T	T	T	T T	Ť	т				
40										SW			SW	SW	÷	÷	÷	+	÷	÷	÷	т			
42										SW				T	÷	÷	÷	÷	÷	÷	÷	÷	т		
48										SW				SW	SW	SW	Ť	Ť	Ť	Ť	Ť	Ť	Ť	Т	
Branch	Size	1/2	3/4	1	1 1/	/2 2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	36	40	42	48	
Legend	а																								
Α	TEE -	- SW	ENI	os -	ASN	/IE-B1	6.11																		$\neg$
SW	SPEC							Std>																	$\neg$
Т	TEE -																								

45 degrees
RunSize BranchSize
Legenda

## GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) This piping class is created for lines subjected to Acoustic Induced Vibration.



		ОВ <b>2243</b>							
Pipi	ng (	Class	s:	0	6C	A25	01		
						Rev.			
Sh.	1	of	3	Α	0	1	2	3	

Base Material: LOW TEMP. CARBON STEELDesign code: ASME B 31.3 2016Nom. Rating: CL600PWHT: AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 12 - SS316/HF

Corrosion Allow. : 3 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 70 °C

Service: HL - Hydrocarbon Liquid NG - Natural Gas

Pipe Thickness

NPS 1/2 3/4 1 1 1/2 Thk.mm 4.78 5.56 6.35 7.14 10 12 15.09 17.48 14 18 19.05 19.05 20.62 22.23 26.97 30.18 8.74 7.62 8.56 10.97 160 160 SCH. 160 160 160 80 XS XS 80 80 80

Nipple Thickness

VALVES

pos

4

Size from | to

1 1/2

24

1 1/2

12

1/2

2

1/2

2

**Data Sheet** 

GA-E-60100

GA-F-60105

GA-E-60200

GA-E-60205

Item Description

Gate-BB-Red.B-Solid wdg-Exp.seat - API602

Gate-BB-FB-Flex wdg-Thdd seat - API600

Globe-BB-Red B.-Thdd seat - API602

Globe-BB-Disk-Thdd seat - API 623

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 102.0 102.0 ASME B16.5 -28.9 NPS Press. bar 91

16 · 30 Temp. °C 70

10	30 10111	-	10					
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material		
PIPE	PE		·					
	1/2	24	PIPE	вw		ASTM A333 GR.6 - SMLS		
	26	30	PIPE	вW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)		
FLAN	IGES				·	,		
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A350 LF2 - CL.1		
	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A350 LF2 - CL.1		
	30	30	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A350 LF2 - CL.1		
63	3	14	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A350 LF2 - CL.1		
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A350 LF2 - CL.1		
73	2	6	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A350 LF2 - CL.1		
	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A350 LF2 - CL.1		
	30	30			CL600 RF	ASTM A350 LF2 - CL.1		
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A350 LF2 - CL.1		
SPEC	TACLE	BLIND						
	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.60 + S5 (-46°C)		
	10 24 BLIND & SPACER - ASME-B16.48			CL600 RF	ASTM A516 GR.60 + S5 (-46°C)			
2	1/2	8	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)		
27	2	2	BLIND & SPACER - ASME-B16.48		CL1500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)		
FITTI	NGS							
	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A350 LF2 - CL.1		
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	6000	ASTM A350 LF2 - CL.1		
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS		
	30	30	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD		
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	6000	ASTM A350 LF2 - CL.1		
	2	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS		
	30	30	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD		
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	6000	ASTM A350 LF2 - CL.1		
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A350 LF2 - CL.1		
	2	30	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS		
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A350 LF2 - CL.1		
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	6000	ASTM A350 LF2 - CL.1		
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1		
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS		
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS		
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A420 WPL6 - SMLS		
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	6000	ASTM A350 LF2 - CL.1		
	2	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS		
	26	30	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD		
	2	8	WELDOLET - MSS-SP97	BW		ASTM A350 LF2 - CL.1		
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	6000	ASTM A350 LF2 - CL.1		
GAS	_							
	30	30 FLAT GASKET - GROOVED - <mfr std=""></mfr>				AISI 316L+GRAPHITE		
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING		
63	3	14	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON		
73	1/2	6	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON		
BOL			1					
	1/2	2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368		ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)			
	2 3/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368		ASTM A193 B7M + ASTM A194 GR.2HM (HotDip 153)			

Rating/Facing

CL800

CL800

CL600 RF

CL600 RF

Ends

FLGD

FLGD

sw

SW

Material

Trim: 316 / HF Body: ASTM A352 LCC

Trim : 316 / HF

Trim : 316 / HF

Body: ASTM A350 LF2 - CL.1

Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF Body: ASTM A352 LCC



		ов <b>2243</b>								
Pipi	ng C	Class	s:	C	06CA2S01					
						Rev.				
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/ALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
6	1/2	1 1/2	GA-E-60300	Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1
							Trim:316/HF
6	2	10	GA-E-60308	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A352 LCC
	40	0.4	04 5 00000	Oharda Element Durahalata Wildelanat ADISO4	EL 0.D	01 000 DE	Trim: 316 / HF
6	12	24	GA-E-60309			Body: ASTM A352 LCC Trim: 316 / HF	
7	6	24	GA-E-60408	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A352 LCC
·	ŭ		0.12 00 100	San Opini Soay Moans Mannion San 711105		02000 141	Trim : Soft seat-316 trim - PEEK seats
7	30	30	GA-E-67678	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2	GA-E-60406	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1
							Trim : Soft seat-316 trim - PEEK seats
8	6	24	GA-E-67250	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-60173	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
					DF		Trim:316/HF
14	1/2	1 1/2	GA-E-60174	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A350 LF2 - CL.1
	0	4.4	04 5 00577	Exp.seat - API602	EL 0.D	01 000 DE	Trim: 316 / HF
14	2	14	GA-E-60577	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A352 LCC Trim: 316 / HF
19	1/2	1 1/2	GA-E-60176	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CI 800	Body: ASTM A350 LF2 - CL.1
13	1/2	1 1/2	GA-E-00170	Exp.seat - API602	DF	CLOOO	Trim : 316 / HF
80	1/2	1 1/2	GA-E-60761	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1
				Frgd body - API608	. 205	02000 111	Trim : Soft seat-316 trim - PEEK seats
82	1/2	1 1/2	GA-E-67119	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60496	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A350 LF2 - CL.1
				API608	F		Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-60147	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A350 LF2 - CL.1
	_	_		Exp.seat - API602			Trim:316/HF
101	2	3	GA-E-60598	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL600 RF	Body: ASTM A352 LCC
130	1/2	1 1/2	GA-E-67074	- API600 Gate-Stem Extension-BB-Red.B-Solid wdg-	OME	01.000	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
130	1/2	1 1/2	GA-E-6/0/4	Exp.seat - API602	SW/TH DF	CL800	Trim : 316 / HF
101	2	2	GA-E-60285	Globe-Stem Extension-BB-Disk-Thdd seat - API		CL600 RF	Body: ASTM A352 LCC
101	2		GA-L-00203	623	LGD	CL000 KI	Trim: 316 / HF
301	1/2	1 1/2	GA-E-67139	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1
.	.,_	. 1/2	02 37 100	Frad body - API608	- 200	22000 141	Trim : Soft seat-316 trim - PEEK seats
301	6	24	GA-E-60423	Ball-Stem Extension-Split body-FB-Trunnion ball -	FLGD	CL600 RF	Body: ASTM A352 LCC
	-			API6D			Trim : Soft seat-316 trim - PEEK seats
907	2	6	GA-E-69016	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL600 RF	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - PEEK seats

STR	AINERS						
pos.	pos.   Size   Data Shee		Data Sheet	Item Description	Ends	Rating/Facing	Material
1	12	12	GA-E-60615	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A420 WPL6 - SMLS Screen:316 - CLOTH - MESH 3

BRANCH	TAB	LES	;																
RunSi	ize															9	0 De	grees	s
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3/4		A A	Α																
3/4		Â	Â	Α															
1 1/2	•	Ä	A	A	Α														
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3		S	S	s	s	w	Т												
4		Š	Š	Š	Š	W	Ť	Т											
6	6	S	S	S	S	W	W	Т	Т										
8		S	S	S	S	W	W	W	Т	Т									
10		S	S	S	S	W	W	W	W	Т	Т								
12		S	S	S	S	W	W	W	W	W	T	T	_						
14		S	S	S	S	W	W	W	W	W	Р	T	T	_					
16	j	S S	S	S	S	W	W	W	W	W	P P	Р	Ī	<u> </u>	_				
18	5 1	S	S S	S S	S	W	W	W	W	W	P	P P	P P	P	+	_			
20 24	,	S	S	S	S	W	W	W/	W	W	Р	P	Р	P	P	÷	т		
30		S	S	s	S	W	W	W	W	W	P	P	P	P	P	P	÷	т	
Branch				-	1 1/2	• • •	3	4	6	8	10	12	14	16	18	20	24	30	
D. a.ioii	.0.20	1/2	3/4		1 1/2		3	4	U	0	10	12	14	10	10	20	24	30	
Legend	а																		
A	TEE	- SW	ENI	os -	ASM	E-B1	6.11												
	PIPE							ING F	PAD-	rs-co	DR-F	NG-F	PIPM	Γ-012	-E				
	SOC																		
T	TEE					1410		<u> </u>											
w	WEL					17													



		ОВ <b>2243</b>							
Pipi	ng C	Class	s:	06CA2S01					
						Rev.			
Sh.	3	of	3	Α	0	1	2	3	

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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Design code : ASME B 31.3 2016 Base Material : LOW TEMP. CARBON STEEL Nom. Rating :CL600 :AS PER CODE (NOTE 1) **PWHT** 

Facing/Finishing : RF Valve Trim :12 - SS316/HF

Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 70 °C

Service: [AIV] HL - Hydrocarbon Liquid NG - Natural Gas

Pipe Thickness

 
 NPS
 1/2
 3/4
 1
 1 /2
 2
 3

 Thk.mm
 4.78
 5.56
 6.35
 7.14
 8.74
 7.62

 SCH.
 160
 160
 160
 160
 80
 10 12 14 16 18 20 24 15.09 17.48 19.05 19.05 20.62 22.23 26.97 8.56 10.97 12.7 XS 80 80 80

Nipple Thickness

| NPS | Press. bar | 102.0 | 102.0 | ASME B16.5 | 1/2 · 14 | Temp. °C | -28.9 | 37.78 | Material Group 1.1 | NPS | Press. bar | 91 |

		1 1000.		91
16	- 24	Temp.	°C	70

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	24	PIPE	BW		ASTM A333 GR.6 - SMLS
FLAN	IGES					
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A350 LF2 - CL.1
	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A350 LF2 - CL.1
63	3	14	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A350 LF2 - CL.1
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL1500 RJ (F)	ASTM A350 LF2 - CL.1
73	2	6	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A350 LF2 - CL.1
	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A350 LF2 - CL.1
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A350 LF2 - CL.1
SPEC	PECTACLE BLIND					
	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.60 + S5 (-46°C)
	10 24		BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.60 + S5 (-46°C)
2			BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI	ITTINGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A350 LF2 - CL.1
	1/2		ELBOW - SW ENDS - ASME-B16.11	SW	6000	ASTM A350 LF2 - CL.1
	2 24		LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW BW	6000	ASTM A350 LF2 - CL.1
	2	24	REDUCER - ASME-B16.9			ASTM A420 WPL6 - SMLS
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	6000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A350 LF2 - CL.1
	2	24	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	6000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A350 LF2 - CL.1
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A420 WPL6 - SMLS
	1/2		TEE - SW ENDS - ASME-B16.11	SW	6000	ASTM A350 LF2 - CL.1
	2	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	2	8	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	6000	ASTM A350 LF2 - CL.1
GAS						1
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	14	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	6	OCTAGONAL RJ GASKET - ASME-B16.20		1	SOFT IRON
BOLTS						AOTAL A400 PZ - AOTAL A404 OP OU (U-1P'- 450)
	1/2 2 1/2		ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
	2 3/4 4		ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7M + ASTM A194 GR.2HM (HotDip 153)

VALVES			
2 3/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368	ASTM A193 B7M + ASTM A194 GR.2HM (HotDip 153)
1/2	2 1/2	101.BOETTE NOTO TINGO TIB BOE 0000	(Hotelp 100)

pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60100	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A350 LF2 - CL.1
							Trim: 316 / HF
1	2	24	GA-E-60105	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A352 LCC
							Trim: 316 / HF
4	1/2	1 1/2	GA-E-60200	Globe-BB-Red BThdd seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1
							Trim: 316 / HF
4	2	12	GA-E-60205	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A352 LCC
							Trim: 316 / HF
6	1/2	1 1/2	GA-E-60300	Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Body: ASTM A350 LF2 - CL.1
							Trim: 316 / HF
6	2	10	GA-E-60308	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A352 LCC
							Trim: 316 / HF
6	12	24	GA-E-60309	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL600 RF	Body: ASTM A352 LCC
							Trim: 316 / HF
7	6	24	GA-E-60408	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2	GA-E-60406	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1
					1		- O ( CONTACT DEEK )

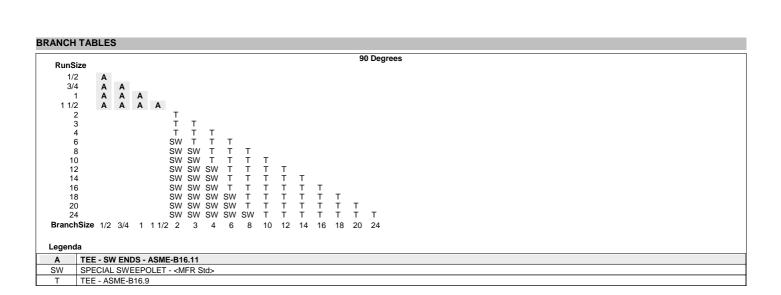
Report Name: SpcLinB Revision: 01.06.02 - 09/12/2021 Printed: 28/11/2024 15:18:43

Trim : Soft seat-316 trim - PEEK seats



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	Ç.	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
oos.	from	to	Data Sneet	item Description	Enas	Rating/Facing	Material
8	6	24	GA-E-67250	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-60173	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
					DF		Trim : 316 / HF
14	1/2	1 1/2	GA-E-60174	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602			Trim: 316 / HF
14	2	14	GA-E-60577	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL600 RF	Body: ASTM A352 LCC
				- API600			Trim: 316 / HF
19	1/2	1 1/2	GA-E-60176	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602	DF		Trim : 316 / HF
80	1/2	1 1/2	GA-E-60761	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1
				Frgd body - API608			Trim : Soft seat-316 trim - PEEK seats
82	1/2	1 1/2	GA-E-67119	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1
							Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60496	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A350 LF2 - CL.1
				API608	F		Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-60147	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602		1	Trim : 316 / HF
101	2	3	GA-E-60598		FLGD	CL600 RF	Body: ASTM A352 LCC
				- API600			Trim : 316 / HF
130	1/2	1 1/2	GA-E-67074		SW/TH	CL800	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602	DF		Trim : 316 / HF
401	2	2	GA-E-60285		FLGD	CL600 RF	Body: ASTM A352 LCC
				623			Trim : 316 / HF
801	1/2	1 1/2	GA-E-67139		FLGD	CL600 RF	Body: ASTM A350 LF2 - CL.1
ļ				Frgd body - API608			Trim : Soft seat-316 trim - PEEK seats
301	6	24	GA-E-60423	Ball-Stem Extension-Split body-FB-Trunnion ball -	FLGD		Body: ASTM A352 LCC
				API6D			Trim : Soft seat-316 trim - PEEK seats



#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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Pipi	ng C	Class	s:	0	6CI	B15	01		
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 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL600
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim: 8 - 13Cr/ HF

Corrosion Allow.: 1.5 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 320 °C

Service: BOG - Boil Off Gas MR - Mixed Refrigerant NG - Natural Gas PC - Process Condensate PG - Process Gas / Purge Gas

Pipe Thickness

NPS 1/2 3/4 1 1 11/2 2 3 Thk.mm 3.73 3.91 4.55 5.08 5.54 7.62 
 4
 6
 8
 10
 12
 14
 16
 18
 20
 22
 24
 26

 8.56
 10.97
 12.7
 15.09
 17.48
 19.05
 17.48
 19.05
 20.62
 23.83
 24.61
 26
 30 28 30.18 30.18 SCH. XS XS XS XS XS XS XS XS XS 80 80 80 60 60 60

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 3 Thk.mm 4.78 5.56 6.35 7.14 8.74 7.62 SCH. 160 160 160 160 160 XS

PRESSURE - TEMPERATURE Ratings

NPS									ASME B16.5
1/2 14	Temp. °C	-28.9	37.78 93	.33 14	8.9 20	04.4	260	315.6	Material Group 1.1
NPS	Press. bar	91							
16 - 30	Temp. °C	70	1						
NPS	Press. bar	75							
36 - 56	Temp. °C	150							

pt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
IPE						
	1/2	8	PIPE	вw	T	ASTM A106 GR.B - SMLS
	- 1		PIPE	BW		
	10	24				ASTM A333 GR.6 - SMLS
1 A N	26 I <b>GES</b>	56	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
LAI		1.1/0	OW ELANOE ACME DAGE	sw	CL COO DE	AOTAL AAOE Normalina d
	1/2	1 1/2	SW FLANGE - ASME-B16.5		CL600 RF	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
_	26	56	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A105 Normalized
6	3	20	WN FLANGE - ASME-B16.5	BW	CL900 RF	ASTM A105 Normalized
6	26	36	WN FLANGE - ASME-B16.47 series.A	BW	CL900 RF	ASTM A105 Normalized
7	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL1500 RF	ASTM A105 Normalized
7	2	20	WN FLANGE - ASME-B16.5	BW	CL1500 RF	ASTM A105 Normalized
3	3	20	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
3	26	36	WN FLANGE - ASME-B16.47 series.A	BW	CL900 RJ (F)	ASTM A105 Normalized
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A105 Normalized
73	2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A105 Normalized
	26	56	BLIND FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A105 Normalized
	6	6	WN REDUCING FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A105 Normalized
PEC	TACLE	BLIND				
	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	10	20	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	24	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060016</mfr>		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	36	36	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060016</mfr>		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
2	1/2	8	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
ITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
İ	2	8	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
İ	10	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	LONG RADIUS ELBOW - ASME-B16.9	вw		ASTM A420 WPL6W - WLDD
İ	50	56	LONG RADIUS ELBOW - TB RAC 5060	вw		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
	2	8	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	50	56	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	8	CAP - ASME-B16.9	BW	5000	ASTM A234 WPB - SMLS
	10	48	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	50	56		BW		
			CAP - TB RAC 5064	SW	2000	ASTM A420 WPL6W - WLDD
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	1	3000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A106 GR.B - SMLS
	3/4	3	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
	2	8	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	42	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	56			BW		



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Pipi	ng C	Class	s:	0	6C	B15	01		
						Rev.			
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	s	ize	Item Description	Ends	Rating/Facing	Material	
opt.	from	to	·				
FITTI	NGS						
	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized	
	2	2	LATROLET - BW END - MSS-SP97	BW	3000	ASTM A105 Normalized	
	3	8	SPECIAL LATROLET - <mfr std=""></mfr>	BW	3000	ASTM A105 Normalized	
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	SW\BW 3000 ASTM A105 Normalized		
	1/2	1 1/2	LATROLET - SW END - MSS-SP97	SW\BW	3000	ASTM A105 Normalized	
SASP	KETS						
	26	56	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE	
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING	
63	3	36	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON	
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON	
BOL <sub>1</sub>	ΓS						
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)	

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60112	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized
1	2	24	GA-E-60126	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Trim:13CR / HF Body:ASTM A216 WCB Trim:13CR / HF
2	26	42	GA-E-60517	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - ASME-B16.34	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Metal seat - 13CR - C.S. disc
4	1/2	1 1/2	GA-E-60209	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
4	2	12	GA-E-60223	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A216 WCB Trim: 13CR / HF
6	1/2	1 1/2	GA-E-60312	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
6	2	10	GA-E-60329	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : 13CR / HF
6	12	24	GA-E-60330	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : 13CR / HF
7	2	2	GA-E-60429	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats
7	6	24	GA-E-60430	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
8	1/2	1 1/2	GA-E-60428	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats
8	4	4	GA-E-60792	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
8	6	24	GA-E-60792	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
10	1/2	1 1/2	GA-E-60177	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
11	1/2	1 1/2	GA-E-60599	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim :13CR / HF
14	1/2	1 1/2	GA-E-60148	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
14	2	24	GA-E-60149	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : 13CR / HF
17	2	2	GA-E-67704	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL1500 RJ (F)	Body: ASTM A216 WCB
19	1/2	1 1/2	GA-E-67001	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Trim: 13CR / HF Body: ASTM A105 Normalized Trim: 13CR / HF
64	8	12	GA-E-60393	Nozzle Check-Long-Axial non slam-Thdd seat - API 6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim: 13CR / HF
64	36	36	GA-E-60743	Nozzle Check-Long-Axial non slam-Thdd seat - API 6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim: 13CR / HF
69	8	12	GA-E-67511	Check-Lug wafer-Dual plate-Widd seat -	WAFER	CL600 RF	Body: ASTM A216 WCB
69	36	56	GA-E-60331	API594 Check-Flanged -Dual plate-Widd seat - API594	LUG FLGD	CL600 RF	Trim:13CR / HF Body: ASTM A216 WCB
80	1/2	1 1/2	GA-E-60757	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Trim : 13CR / HF Body: ASTM A105 Normalized
82	1/2	1 1/2	GA-E-60762	Frgd body - API608 Ball-End entry -FB-Float.ball -Frgd body - API608		CL600 RF	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A105 Normalized
82	6	24	GA-E-60793	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A216 WCB
84	1/2	1 1/2	GA-E-67683	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A105 Normalized
89	1/2	1 1/2	GA-E-60474	Frgd body - API608  Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A105 Normalized
101	1/2	1 1/2	GA-E-67011	API608 Gate-Stem Extension-BB-Red.B-Solid wdg-	F SW	CL800	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A105 Normalized
101	2	24	GA-E-60151		FLGD	CL600 RF	Trim: 13CR / HF Body: ASTM A216 WCB
130	1/2	1 1/2	GA-E-67075	- API600 Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Trim: 13CR / HF Body: ASTM A105 Normalized
140	2	4	GA-E-67372	Exp.seat - API602 Gate-BB-FB-Flex wdg-Thdd seat - API600 -	DF FLGD	CL600 RF	Trim : 13CR / HF Body: ASTM A216 WCB
161	10	10	GA-E-67320	Interlock System Gate-Ext. Stem (1600mm)-BB-FB-Flex wdg-Thdd	FLGD	CL600 RF	Trim:13CR/HF Body: ASTM A216 WCB
				_seat - API600		<u> </u>	Trim: 13CR / HF



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VALVI	FS						
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201	26	42	GA-E-60524	Butterfly-Stem Extension-Flanged-Triple Off Set- Int.seat-Fire safe - ASME-B16.34	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Metal seat - 13CR - C.S. disc
401	2	12	GA-E-60218	Globe-Stem Extension-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : 13CR / HF
701	6	24	GA-E-60768	Ball-Stem Extension-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
740	2	2	GA-E-67628	Ball-Split body-Red.B-Floating ball - API6D - Interlock System	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats
740	12	12	GA-E-67629	Ball-Split body-Red.B-Trunnion ball - API6D - Interlock System	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats
801	1/2	1 1/2	GA-E-67140	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats
824	8	8	GA-E-67630	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
840	2	2	GA-E-67694	Ball-Interlock System-Split body-FB-Floating	FLGD	CL600 RF	Body: ASTM A216 WCB
				ball - API6D			Trim : Soft seat-316 trim - PEEK seats
840	4	8	GA-E-67631	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
907	8	12	GA-E-69080	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB
					1		Trim : Soft seat-316 trim - PEEK seats

STRA	TRAINERS											
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1	4	4	GA-E-60617	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A234 WPB - SMLS Screen:316 - CLOTH - MESH 3					
1	8	8	GA-E-60617	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A234 WPB - SMLS Screen: 316 - CLOTH - MESH 3					
1	10	24	GA-E-60615	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A420 WPL6 - SMLS Screen:316 - CLOTH - MESH 3					
2	24	24	GA-E-60645	Angle T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A420 WPL6 - SMLS Screen:316 - CLOTH - MESH 3					
2	30	42	GA-E-60628	Angle T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A420 WPL6W - WLDD Screen:316 - CLOTH - MESH 3					

BRANCH TABLES	
	90 Degrees
RunSize	
1 1/2 A A A A A A A A A A A A A A A A A A A	A A A T T T T T S S W T T T S S W W W W W P P P P P T T T T S S W W W W W P P P P P P P T T T T S S W W W W W P P P P P P P P T T T T T S S W W W W W P P P P P P P P P T T T T T S S W W W W W P P P P P P P P P P T T T T T
Legenda	
A TEE - SW ENDS	'S - ASME-B16.11
	WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E
	SW END - MSS-SP97
T TEE - ASME-B16	
T1 TEE - TB RAC 5	
W WELDOLET - M	MSS-SP97



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															4	5 deg	rees							
Run																								
	2	L	L	L	L	PP																		
	3	L	L	L	L	LB	PP																	
	4	L	L	L	L	LB	LS	PP																
	6	L	L	L	L	LB	LS	LS	PP															
	8	L	L	L	L	LB	LS	LS	LS	PP														
10		L	L	L	L	LB	LS	LS	LS	LS	PP													
1:		L	L	L	L	LB	LS	LS	LS	LS		PP												
1.		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP											
10		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP										
11		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP									
20		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP								
2:		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP							
24 21		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP						
2		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP					
3		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP				
3		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	-		
4:		L	L	L	L	LB I B	LS LS	LS LS	LS LS	LS LS	PP PP	PP PP	PP PP	PP PP	PP PP	PP PP	PP PP	PP PP	PP PP	PP PP	PP PP	PP PP	DD	
5		L	L	L	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP PP	PP
Branch		1/2	3/4	1	1 1/2		3	LO	6	8	10	12	14	16	18	20	22	24	26	28	30	36	42	56
branch	Size	1/2	3/4		1 1/2		3	4	U	o	10	12	14	10	10	20	22	24	20	20	30	30	42	30
Legenda	Legenda																							
L	L LATROLET - SW END - MSS-SP97																							
LB	LATE	OLE	T - B'	M EI	1 - DV	MSS-S	SP97																	
LS	SPEC	CIAL	LATR	OLE	T - <	MFR S	Std>																	
PP	PIPE	TO F	PIPE '	WITH	l FUI	L EN	CIRC	LEME	NT S	SLEE\	VE:TS	-COF	R-ENG	3-PIP	MT-0	12-E								

### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL600 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 8 - 13Cr/ HF

Corrosion Allow. : 1.5 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 320 °C

Service: [AIV] BOG - Boil Off Gas MR - Mixed Refrigerant NG - Natural Gas PC - Process Condensate PG - Process Gas / Purge Gas

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 22 24 26 Thk.mm 3.73 3.91 4.55 5.08 5.54 7.62 8.56 10.97 12.7 15.09 17.48 19.05 17.48 19.05 20.62 23.83 24.61 26 SCH. XS XS XS XS XS XS XS XS XS XS XS 80 80 80 60 60 60 28 30.18 30.18

Nipple Thickness

| NPS | 1/2 | 3/4 | 1 | 1 1/2 | 2 | 3 | 3 | 3 | 4 | 1 | 1 1 1/2 | 2 | 3 | 3 | 4 | 1 | 1 1 1/2 | 2 | 3 | 3 | 4 | 1 | 1 1 1/2 | 4 | 5 | 5 | 6 | 6 | 6 | 5 | 7 | 1 | 4 | 8 | 7 | 7 | 6 | 5 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 |

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NPS									ASME B16.5
1/2 14	Temp. °C	-28.9	37.78	93.33	148.9	204.4	260	315.6	Material Group 1.1
NPS	Press. bar	91							
16 30	Temp. °C	70							
NPS	Press. bar	75							
36 56	Temp. °C	150							

36	<b>36</b> 1 Citik	o. °C   1	50			
	Si		Item Description	Ends	Rating/Facing	Material
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PIPE						
	1/2	8	PIPE	BW		ASTM A106 GR.B - SMLS
	10	24	PIPE	BW		ASTM A333 GR.6 - SMLS
İ	26	56	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
FLAN			, <u>-</u>			
	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW		ASTM A105 Normalized
	26	56	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A105 Normalized
6	3	20	WN FLANGE - ASME-B16.5	BW	CL900 RF	ASTM A105 Normalized
6	26	36	WN FLANGE - ASME-B16.47 series.A	BW	CL900 RF	ASTM A105 Normalized
7	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RF	ASTM A105 Normalized
7	2	20	WN FLANGE - ASME-B16.5	BW	CL1500 RF	ASTM A105 Normalized
63	3	20	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
63	26	36	WN FLANGE - ASME-B16.47 series.A	BW	CL900 RJ (F)	ASTM A105 Normalized
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A105 Normalized
73	2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A105 Normalized
l i	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A105 Normalized
	26	56	BLIND FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A105 Normalized
	6	6	WN REDUCING FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	10	20	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	24	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	36	36	SPECIAL BLIND & SPACER - <mfr std=""></mfr>		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
2	1/2	8	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTIN	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	8	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	50	56	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	8	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	50	56	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	2	8	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	48	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	50	56	CAP - TB RAC 5064	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	1/2	2	NIPPLE - THDD/THDD - ASME-B36.10	THDM		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	3	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	8	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	42	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
		EC	TEE - TB RAC 5061	BW		ASTM A420 WPL6W - WLDD
	56 <b>2</b>	56 <b>8</b>	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	3000	



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c		Item Description	Ends	Rating/Facing	Material
from	to	·			
SS					
10	24	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW		ASTM A350 LF2 - CL.1
TS					
26	56	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
3	36	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
1	10 FS 26 1/2 3 1/2	10 24 TS 26 56 1/2 24 3 36 1/2 2	10	10	10

VALV	ES						
pos.	Si from	ize ∣ to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60112	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
1	2	24	GA-E-60126	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A216 WCB
2	26	42	GA-E-60517	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - ASME-B16.34	FLGD	CL600 RF	Trim: 13CR / HF Body: ASTM A216 WCB Trim: Metal seat - 13CR - C.S. disc
4	1/2	1 1/2	GA-E-60209	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
4	2	12	GA-E-60223	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A216 WCB Trim: 13CR / HF
6	1/2	1 1/2	GA-E-60312	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
6	2	10	GA-E-60329	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A216 WCB Trim: 13CR / HF
6	12	24	GA-E-60330	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : 13CR / HF
7	2	2	GA-E-60429	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats
7	6	24	GA-E-60430	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
8	1/2	1 1/2	GA-E-60428	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats
8	4	4	GA-E-60792	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
8	6	24	GA-E-60792	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
10	1/2	1 1/2	GA-E-60177	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
11	1/2	1 1/2	GA-E-60599	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : 13CR / HF
14	1/2	1 1/2	GA-E-60148	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
14	2	24	GA-E-60149	- API600		CL600 RF	Body: ASTM A216 WCB Trim : 13CR / HF
19	1/2	1 1/2	GA-E-67001	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
69	8	12	GA-E-60721	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : 13CR / HF
69	36	42	GA-E-60331	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : 13CR / HF
80	1/2	1 1/2	GA-E-60757	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats
82	1/2	1 1/2	GA-E-60762			CL600 RF	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
82	6	24	GA-E-60793	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
84	1/2	1 1/2	GA-E-67683	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	F		Body: ASTM A105 Normalized Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67011	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
101	2	24	GA-E-60151	- API600		CL600 RF	Body: ASTM A216 WCB Trim: 13CR / HF
130	1/2 26	1 1/2	GA-E-67075 GA-E-60524	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602 Butterfly-Stem Extension-Flanged-Triple Off Set-	SW/TH DF FLGD	CL800 CL600 RF	Body: ASTM A105 Normalized Trim: 13CR / HF Body: ASTM A216 WCB
401	26	12	GA-E-60524 GA-E-60218	Int.seat-Fire safe - ASME-B16.34 Globe-Stem Extension-BB-Disk-Thdd seat - API		CL600 RF	Body: ASTM A216 WCB Trim : Metal seat - 13CR - C.S. disc Body: ASTM A216 WCB
701	6	24	GA-E-60218 GA-E-60768	623 Ball-Stem Extension-Split body-Red.B-Trunnion	FLGD	CL600 RF	Trim : 13CR / HF Body: ASTM A216 WCB
801	1/2	1 1/2	GA-E-60768 GA-E-67140	ball - API6D  Ball-Stem Extension-Split body-Red.B-1 runnion ball - API6D  Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats Body: ASTM A105 Normalized
601	1/2	1 1/2	GA-E-0/ 140	Frgd body - API608	FLGD	CLOUU KF	Trim : Soft seat-316 trim - PEEK seats



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STRA	STRAINERS													
pos.	from	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material							
1	4	4	GA-E-60617	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body: ASTM A234 WPB - SMLS Screen: 316 - CLOTH - MESH 3							
1	8	8	GA-E-60617	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	вw	CL600 RF	Body :ASTM A234 WPB - SMLS Screen: 316 - CLOTH - MESH 3							
1	10	10	GA-E-60615	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL600 RF	Body: ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3							
8	42	42	GA-E-60628	Angle T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	вw	CL600 RF	Body: ASTM A420 WPL6W - WLDD Screen: 316 - CLOTH - MESH 3							

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6					SW		Т	Т																				
8						SW		Т	Т																			
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26						SW				SW	Т	Т	Т	Т	Т	Т	Т	Т										
28					SW	SW	SW	SW	SW	SW	Т	Т	Т	Т	Т	Т	Т	Т	Т									
30						SW				Т	Т	Т	Т	Т	Т	Т	Т	Τ	Т	Т								
36						SW						SW	T	T	T	T	T	T	T	T	T	_						
42						SW							T	T	T	T	T	T	T	T	T	T						
56						SW										SW	SW	11	11	11	11		T1					
BranchSiz	e 1/:	2 3/4	. 1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	22	24	26	28	30	36	42	56					
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SW SF	ECIA	L SW	EEP	OLET	- <n< td=""><td>IFR S</td><td>Std&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></n<>	IFR S	Std>																					
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### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.
  6) This piping class is created for lines subjected to Acoustic Induced Vibration.



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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL600 **PWHT** : YES (NOTE 1) Facing/Finishing : RF Valve Trim : 12 - SS316/HF

Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 130 °C

Service: [Amine Service] NG - Natural Gas PRW - Process Water

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 30 Thk.mm 4.78 5.56 6.35 7.14 8.74 7.62 8.56 10.97 12.7 15.09 17.48 19.05 19.05 20.62 22.23 26.97 31.75 SCH. 160 160 160 160 160 XS XS XS XS XS 80 80 80 80

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 |

		ize	Item Description	Ends	Rating/Facing	Material
opt.	from	to				
PIPE						
	1/2	8	PIPE	BW		ASTM A106 GR.B - SMLS
	10	24	PIPE	BW		ASTM A333 GR.6 - SMLS
	26	36	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
FLAN	IGES					
	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
	26	36	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
73	1/2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A105 Normalized
	26	36	BLIND FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A105 Normalized
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	10	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	36	36	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060019</mfr>		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS					
	1/2	2	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A105 Normalized
	1/2	8	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	36	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	3/4	8	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	36	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	1/2	8	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	36	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	8	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	30	36	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
GASK	KETS					
	26	36	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOLT		,				
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ALVES												
pos.	Si:	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material						
1	1/2		GA-E-60124	Gate-BB-Red.B-Solid wdg-Exp.seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim : 316 / HF						
1	2	24	GA-E-60128	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A216 WCB Trim: 316 / HF						
4	1/2	1 1/2	GA-E-60211	Globe-BB-Red BThdd seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim : 316 / HF						
4	2	16	GA-E-60225	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A216 WCB Trim :316 / HF						
6	1/2	1 1/2	GA-E-60315	Check-BB-Red.B-Piston-Thdd seat + Nipples - API602	BW	CL800	Body: ASTM A105 Normalized Trim :316 / HF						
6	2	10	GA-E-60332	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A216 WCB Trim :316 / HF						
6	12	24	GA-E-60333	Check-Flanged -Dual plate-Widd seat - API594		CL600 RF	Body: ASTM A216 WCB Trim : 316 / HF						



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VALV	/ALVES												
pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material						
7	6	24	GA-E-60433	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats						
8	1/2	1 1/2	GA-E-60431	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats						
10	1/2	1/2 1 1/2 GA-E-67023		Gate-BB-Red.B-Solid wdg-Exp.seat + Nipples - API602			Body: ASTM A105 Normalized Trim : 316 / HF						
82	1/2 1 1/2 GA-E-60762		GA-E-60762	Ball-End entry -FB-Float.ball -Frgd body - API608		CL600 RF	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.						
89	1/2	1 1/2	GA-E-60796	Ball-End entry -FB-Float.ball -Frgd body+ Nipple - API608	BW/TH DF		Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.						
140				Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD		Body: ASTM A216 WCB Trim: 316 / HF						

#### **BRANCH TABLES**

P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E T TEE - ASME-B16.9																										
1/2	Duncia																90	) Dec	grees	i						
3/4																										
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2 W W T T T T 3 W W W W W W T T 4 W W W W W T T 5 B W W W W W W T T 10 W W W W W W W T T 11 T 10 W W W W W W W W T T 11 T 11 W W W W W W W W T 11 T 11	3/4		T	T	_																					
2 W W T T T T 3 W W W W W W T T 4 W W W W W T T 5 B W W W W W W T T 10 W W W W W W W T T 11 T 10 W W W W W W W W T T 11 T 11 W W W W W W W W T 11 T 11			T	T	T	_																				
3 W W W W W T T 4 W W W W W T T 5 W W W W W W T T 6 W W W W W W W T T 10 W W W W W W W T T 112 W W W W W W W W T T 114 W W W W W W W W W T T 16 W W W W W W W W P T T 16 W W W W W W W W P T T 16 W W W W W W W W P P T T 16 W W W W W W W W P P T T 16 W W W W W W W W P P P T T 18 W W W W W W W W P P P P T T 20 W W W W W W W W W P P P P P T T 20 W W W W W W W W W P P P P P P T T 24 W W W W W W W W P P P P P P P T T 36 W W W W W W W W P P P P P P P T T 36 W W W W W W W W W P P P P P P P T T 36 W W W W W W W W W P P P P P P P T T 36 W W W W W W W W W P P P P P P P P T T 36 W W W W W W W W W W P P P P P P P P T T 36 W W W W W W W W W W P P P P P P P T T 36 W W W W W W W W W W P P P P P P P P T T 36 W W W W W W W W W W P P P P P P P T T 36 W W W W W W W W W W W P P P P P P P T T 36 W W W W W W W W W W W W P P P P P P P			1	1	1	1	_																			
4 W W W W W W T T 6 W W W W W W T T 8 W W W W W W W T T 10 W W W W W W W T T 112 W W W W W W W W T T 114 W W W W W W W W P P T T 16 W W W W W W W W P P T T 18 W W W W W W W W P P T T 18 W W W W W W W W P P P T T 18 W W W W W W W W P P P P T T 20 W W W W W W W W P P P P P T T 20 W W W W W W W W P P P P P T T 24 W W W W W W W W P P P P P P T T 25 W W W W W W W W P P P P P P T T 36 W W W W W W W W P P P P P P P T T 36 W W W W W W W W W P P P P P P P T T 36 W W W W W W W W W P P P P P P P T T 36 W W W W W W W W W P P P P P P P T T 36 W W W W W W W W W P P P P P P P P T T 36 W W W W W W W W W P P P P P P P P T T 36 W W W W W W W W W P P P P P P P P T T 36 W W W W W W W W W P P P P P P P P T T 36 W W W W W W W W W P P P P P P P P T T 36 W W W W W W W W W W P P P P P P P P T T 36 W W W W W W W W W W P P P P P P P P T T 36 W W W W W W W W W W P P P P P P P P T T 36 W W W W W W W W W W P P P P P P P P T T 36 W W W W W W W W W W W P P P P P P P P	2			• •	T	T	Τ	_																		
6 W W W W W W W T T T 10 W W W W W W W T T 11 T 12 W W W W W W W W W T T 14 W W W W W W W W W P T 16 W W W W W W W W W P P T 17 T 18 W W W W W W W W W P P P T 18 W W W W W W W W P P P T 18 W W W W W W W W P P P T 19 PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E  T TEE - ASME-B16.9							W	1	_																	
8  W W W W W W W W W T T 10  W W W W W W W W T T 12  W W W W W W W W T T 14  W W W W W W W W W P T T 16  W W W W W W W W P P T T 16  W W W W W W W W P P T T 18  W W W W W W W W P P P T T 20  W W W W W W W W P P P P T T 20  W W W W W W W W P P P P P T T 24  W W W W W W W W P P P P P P T T 25  W W W W W W W W P P P P P P T T 26  W W W W W W W W P P P P P P T T 27  W W W W W W W W W P P P P P P P T T 28  W W W W W W W W W W P P P P P P P T T 39  W W W W W W W W W P P P P P P P T T 30  W W W W W W W W W P P P P P P P T T 31  W W W W W W W W W W W P P P P P P P P						• • •	۷V	I	ı T	_																
10 W W W W W W W W W W W T T T 12 W W W W W W W W W W W T T T 14 W W W W W W W W W W P T T 16 W W W W W W W W P P T T 16 W W W W W W W W P P T T 18 W W W W W W W W P P P P T T 20 W W W W W W W W P P P P T T 20 W W W W W W W W P P P P P T T 24 W W W W W W W W P P P P P P T T 30 W W W W W W W W P P P P P P P T T 30 W W W W W W W W W P P P P P P P T T 36 W W W W W W W W W P P P P P P P T T 37 BranchSize 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 30 36  Legenta  P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E  T TEE - ASME-B16.9						VV VV	VV		1 1/1	<u> </u>	_															
12  W W W W W W W W W W W P T T  14  W W W W W W W W W W P P T T  16  W W W W W W W W W W P P T T  18  W W W W W W W W W P P P T T  20  W W W W W W W W W P P P P T T  24  W W W W W W W W W P P P P P T T  30  W W W W W W W W W P P P P P P T T  36  W W W W W W W W W P P P P P P P T T  36  W W W W W W W W W W P P P P P P P T T  37  W W W W W W W W W W P P P P P P P T T  38  W W W W W W W W W W P P P P P P P T T  39  W W W W W W W W W W P P P P P P P T T  30  W W W W W W W W W W W W P P P P P P P					• •	۷۷	VV	• • •	VV	1 1 1 1	<u> </u>	_														
14  W W W W W W W W W W P T T T 16  W W W W W W W W W P P T T T 18  W W W W W W W W W P P P T T 20  W W W W W W W W W P P P P T T 24  W W W W W W W W W P P P P P T T 30  W W W W W W W W P P P P P P T T 30  W W W W W W W W P P P P P P P T T 36  W W W W W W W W W P P P P P P P T T 36  W W W W W W W W W W P P P P P P P T T 36  W W W W W W W W W W P P P P P P P T T 36  W W W W W W W W W W W P P P P P P P T T 36  W W W W W W W W W W W W P P P P P P P	10				• • •	۷۷	۷۷	v v	۷۷	۷۷	١ ١٨/	<u> </u>	_													
16  W W W W W W W W W P P P T T T 18 W W W W W W W W P P P P T T T 19 W W W W W W W W W P P P P T T 19 W W W W W W W W W P P P P P T T 19 W W W W W W W W W P P P P P T T 19 W W W W W W W W W P P P P P P T T 19 W W W W W W W W W P P P P P P P P T T 19 W W W W W W W W W W P P P P P P P P P						۷۷	٧٧		٧٧	۷۷		D	÷	т												
18						۱۸/	۱۸/	v v	۱۸/	۱۸/		P	Þ	÷	т											
20 W W W W W W W W W W P P P P P T T T 24 W W W W W W W W W P P P P P T T 30 W W W W W W W W W P P P P P T T 36 W W W W W W W W W W P P P P P P T T 36 W W W W W W W W W W P P P P P P T T BranchSize 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 30 36  Legenda  P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E  T TEE - ASME-B16.9				• •	W	W	W	W	W	W		Р	Р	P	÷	т										
24 W W W W W W W W W P P P P P P T T T 30 W W W W W W W P P P P P P T T T 36 W W W W W W W P P P P P P P T T T BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12 14 16 18 20 24 30 36  Legenda  P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E T TEE - ASME-B16.9	20					w	w	w	w	w	• • •	P	P	P	P	÷	т									
30 W W W W W W W W W P P P P P P P T T 36 W W W W W W W W P P P P P P P P T T T BranchSize 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 30 36  Legenda  P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E  T TEE - ASME-B16.9	24					w	w	w	w	w		P	P	P	P	P	Ť	Т								
36 W W W W W W W W W W P P P P P P P T T  BranchSize 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 30 36  Legenda  P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E  T TEE - ASME-B16.9	30				w	w	w	w	w	w		P	P	P	P	P	P	Ť	Т							
BranchSize   1/2   3/4   1   1   1/2   2   3   4   6   8   10   12   14   16   18   20   24   30   36					W	W	W	W	W	W		P	P	P	P	P	P	P	Ť	Т						
Legenda  P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E T TEE - ASME-B16.9			1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	30	36						
P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E T TEE - ASME-B16.9			.,	5/4	•	. 1/2	-	Ü	-	Ü	·	.0			.0	.0	_0		50							
T TEE - ASME-B16.9	Legenda	a																								
T TEE - ASME-B16.9	Р	P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-FNG-PIPMT-012-F																								
W WELDOLET - MSS-SP97							7																			

#### GENERAL NOTES

- 1) PWHT is mandatory for all tihickness.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL600 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing : RF Valve Trim :8 - 13Cr/ HF

Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 320 °C

Service: [SEVERE CYCLIC SERVICE] NG - Natural Gas

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 Thk.mm 4.78 5.56 6.35 7.14 8.74 7.62 4 6 8 8.56 10.97 12.7 10 12 14 16 15.09 17.48 19.05 19.05 12.7 15.09 15.88 SCH. 160 160 160 160 160 XS XS XS XS 80 80 80 40

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 102.0 | 37.78 | 93.33 | 148.9 | 204.4 | 260 | 315.6 | ASME B16.5 |
NPS Press. bar 16 · 24 | Temp. °C | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 320 | 32

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE		_	L	<b>_</b>	1	1
	1/2	8	PIPE	BW		ASTM A106 GR.B - SMLS
FLAN	10	24	PIPE	BW		ASTM A333 GR.6 - SMLS
FLAN			h ====	<b>L</b>	la	1
	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
63	3		WN FLANGE - ASME-B16.5	BW	` '	ASTM A105 Normalized
73	1/2	2	WN FLANGE - ASME-B16.5	BW		ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5	L	CL600 RF	ASTM A105 Normalized
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A105 Normalized
SPEC	TACLE		1		I	1
	1/2	8	SPECTACLE BLIND - ASME-B16.48		1	ASTM A516 GR.70 + S5 (-46°C)
CITTU	10	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI			L		la ==	1
	1/2	2	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A105 Normalized
	1/2	8	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	3/4	8	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	8	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	8	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
GASK	-				1	
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	16	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
<b>BOLT</b>						
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALVI	VALVES												
	Siz		Data Sheet	Item Description	Ends	Rating/Facing	Material						
pos.	from	to		<u> </u>									
1	1/2	1 1/2	GA-E-60129	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW	CL800	Body: ASTM A105 Normalized						
							Trim: 13CR / HF						
1	2	14	GA-E-60126	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A216 WCB						
							Trim: 13CR / HF						
4	1/2	1 1/2	GA-E-60222	Globe-BB-Red BThdd seat - API602	BW	CL800	Body: ASTM A105 Normalized						
							Trim: 13CR / HF						
4	2	12	GA-E-60223	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A216 WCB						
							Trim: 13CR / HF						
6	1/2	1 1/2	GA-E-60328	Check-BB-Red.B-Piston-Thdd seat - API602	BW	CL800	Body: ASTM A105 Normalized						
							Trim: 13CR / HF						
6	2	10	GA-E-60329	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A216 WCB						
							Trim: 13CR / HF						
6	12	14	GA-E-60330	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A216 WCB						
							Trim: 13CR / HF						
7	6	14	GA-E-60430	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB						
							Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats						
8	1/2	1 1/2	GA-E-60428	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized						
							Trim : Soft seat-316 trim - PEEK seats						
10	1/2	1 1/2	GA-E-67030	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW/TH	CL800	Body: ASTM A105 Normalized						
					DF		Trim: 13CR / HF						
72	6	14	GA-E-67108	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB						
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.						
80	1/2	1 1/2	GA-E-60757	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Body: ASTM A105 Normalized						
				Frgd body - API608			Trim : Soft seat-316 trim - PEEK seats						



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ALVES													
oos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material						
82	1/2	1 1/2	GA-E-60762	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.						
82	6	14	GA-E-60793	Ball-Split body-FB-Trunnion ball - API6D	FLGD		Body: ASTM A216 WCB						
89	1/2 1 1/2 GA-E-60796		GA-E-60796	Ball-End entry -FB-Float.ball -Frgd body+ Nipple -			Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A105 Normalized						
004	40	40	0.4 5.07000		DF	1	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.						
824	10	10	GA-E-67636	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD		Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.						

#### BRANCH TABLES

RunSize															90	Degrees						
	_																					
1/2	T	_																				
3/4	1	1	_																			
/-	T	T	T	_																		
1 1/2			1	<u> </u>	_																	
2	W	W				_																
3	W	W	W	W	W	1	_															
4	W	W	W	W	W	T	T	_														
6	W	W	W	W	W	W	T	T	_													
8	W	W	W	W	W	W	W	T	T	_												
10	W	W	W	W	W	W	W	W	Т	T	_											
12	W	W	W	W	W	W	W	W	W	Ţ	T	_										
14	W	W	W	W	W	W	W	W	W	Р	1	<u> </u>	_									
16	W	W	W	W	W	W	W	W	W	Р	Р	Ī	1	_								
18	W	W	W	W	W	W	W	W	W	Р	P	P	Ī	1	_							
20	W	W	W	VV	VV	vv	W	VV	W	Р	г	-	Р	1		_						
24	W	W	W	W	W	W	W	W	W	Р	Р	Р	Р	Р	ı	I						
BranchSize	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24						
Legenda																						
P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E																						
		ME-E																				
				-SP9	7																	

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) This piping Class is for SEVERE CYCLIC SERVICE (Severe Cyclic Service definition: More than 7000 cycles expected during service life).
  3) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  4) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  5) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL600 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim :8 - 13Cr/ HF Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 320 °C

Service: [AIV] [SEVERE CYCLIC SERVICE] NG - Natural Gas

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 Thk.mm 4.78 5.56 6.35 7.14 8.74 7.62 8.56 10.97 12.7 15.09 17.48 19.05 19.05 SCH. 160 160 160 160 160 XS XS XS XS 80 80 80 20 15.09 15.88 40

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160

PRESSURE - TEMPERATURE Ratings

| NPS | Press. bar | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 | 102.04 |

	24 1.0					
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	8	PIPE	BW		ASTM A106 GR.B - SMLS
	10	24	PIPE	BW		ASTM A333 GR.6 - SMLS
FLAN	IGES					
	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
63	3	16	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
73	1/2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A105 Normalized
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A105 Normalized
SPEC	CTACLE	BLIND				
	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	10	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS					
	1/2	2	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A105 Normalized
	1/2	8	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	3/4	8	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	8	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	8	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	2	8	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW		ASTM A105 Normalized
GASI	KETS					
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	16	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOL.	TS					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ES						
		ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to		·			
1	1/2	1 1/2	GA-E-60129	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
1	2	14	GA-E-60126	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A216 WCB Trim: 13CR / HF
4	1/2	1 1/2	GA-E-60222	Globe-BB-Red BThdd seat - API602	BW	CL800	Body: ASTM A105 Normalized   Trim: 13CR / HF
4	2	12	GA-E-60223	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A216 WCB
6	1/2	1 1/2	GA-E-60328	Check-BB-Red.B-Piston-Thdd seat - API602	BW	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
6	2	10	GA-E-60329	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A216 WCB
6	12	14	GA-E-60330	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A216 WCB
7	6	14	GA-E-60430	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB   Trim: Soft seat-CS ENP 76,2µm trim-PEEK seats
8	1/2	1 1/2	GA-E-60428	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized  Trim: Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-67030	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW/TH DF	CL800	Body: ASTM A105 Normalized
72	6	14	GA-E-67108	Ball-Split body-Red.B-Trunnion ball - API6D	1	CL600 RF	Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
80	1/2	1 1/2	GA-E-60757	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats



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Pipi	ng C	Class	s:	0	6CI	B2E	860	
						Rev.		
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		ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
os.	from	to					
82	1/2	1 1/2	GA-E-60762	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
82	6	14	GA-E-60793	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60796	Ball-End entry -FB-Float.ball -Frgd body+ Nipple -	BW/TH	CL800	Body: ASTM A105 Normalized
				API608	DF		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
824	10	10	GA-E-67636	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL600 RF	Body: ASTM A216 WCB
				Interlock System			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

#### BRANCH TABLES

RunSize															90	) Degre	es					
	_																					
1/2	1	_																				
3/4			_																			
		I T		_																		
1 1/2	ı	I	ı	ı	_																	
2					1	_																
3							_															
4					I	I T	1	_														
6					SW		<u> </u>	<u> </u>	_													
8					SW			<u> </u>	<u> </u>	_												
10					SW			<u> </u>	<u> </u>	<u> </u>	_											
12							SW		<u> </u>	<u> </u>	<u> </u>	_										
14							SW		<u> </u>	<u> </u>	<u> </u>	<u> </u>	_									
16							SW		<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	_								
18							SW		<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>+</u>	_							
20							SW		OW	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	-						
24								SW		- 1	- 1	- 1	- 1	- 1	- 1	ı						
BranchSize	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24						
Legenda																						
SW SPE	CIAL	SW	EEPC	LET	- <m< td=""><td>IFR S</td><td>Std&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></m<>	IFR S	Std>															
T TEE	- AS	ME-E	316.9																			

## GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) This piping Class is for SEVERE CYCLIC SERVICE (Severe Cyclic Service definition: More than 7000 cycles expected during service life).
  3) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  4) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  5) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  6) This piping class is created for lines subjected to Acoustic Induced Vibration.



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Pipi	ng (	Class	s:	0	6C	B2S	<b>601</b>		
						Rev.			
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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL600 **PWHT** :AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim : 8 - 13Cr/ HF

Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 320 °C

Service: HL - Hydrocarbon Liquid HV - Hydrocarbon Vapour NG - Natural Gas PRW - Process Water

Pipe Thickness

NPS 1/2 3/4 1 1 11/2 Thk.mm 4.78 5.56 6.35 7.14 SCH. 160 160 160 160 
 2
 3
 4
 6
 8
 10
 12
 14
 16
 18
 20
 24
 30

 8.74
 7.62
 8.56
 10.97
 12.7
 15.09
 17.48
 19.05
 19.05
 20.62
 22.23
 26.97
 31.75
 160 160 160 XS XS XS XS 80 80 80

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 3 Thk.mm 4.78 5.56 6.35 7.14 8.74 7.62 SCH. 160 160 160 160 160 XS

PRESSURE - TEMPERATURE Ratings

 NPS
 Press. bar 102.0 102.0 93.77 90.32 87.22 83.08 ASME B16.5 1/2 · 14 Temp. °C -28.9 37.78 93.33 148.9 204.4 260 Material Group 1.1
 ASME B16.5 Material Group 1.1

 NPS
 Press. bar 91

16 ·	36 Tem		70			
	S	ize	Item Description	Ends	Rating/Facing	Material
opt.	from	to	2000.p.1011		a.mg/. aomg	1
PIPE						
	1/2	8	PIPE	вW		ASTM A106 GR.B - SMLS
	10	24	PIPE	BW		ASTM A333 GR.6 - SMLS
	26	36	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
FLAN		1			1	
	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
-	26	36	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A105 Normalized
<b>7</b> 63	<b>2</b> 3	<b>2</b> 24	WN FLANGE - ASME-B16.5 WN FLANGE - ASME-B16.5	<b>BW</b> BW	CL1500 RF CL900 RJ (F)	ASTM A105 Normalized ASTM A105 Normalized
63	26	36	WN FLANGE - ASME-B16.47 series.A	BW	1 ' '	ASTM A105 Normalized
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW		ASTM A105 Normalized
73	2	2	WN FLANGE - ASME-B16.5	BW		ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A105 Normalized
	26	36	BLIND FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	8	SPECTACLE BLIND - ASME-B16.48		i	ASTM A516 GR.70 + S5 (-46°C)
	10	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060019</mfr>		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
2	1/2	8	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
7	2	2	SPECTACLE BLIND - ASME-B16.48		CL1500 RF	ASTM A516 GR.70 + S5 (-46°C)
27 73	2 1/2	2 8	BLIND & SPACER - ASME-B16.48			ASTM A546 CD 70 + S5 (46°C)
FITTII		0	SPECTACLE BLIND - ASME-B16.48		CE 1500 KJ (F)	ASTM A516 GR.70 + S5 (-46°C)
1	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A105 Normalized
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	6000	ASTM A105 Normalized
	2	8	LONG RADIUS ELBOW - ASME-B16.9	вW		ASTM A234 WPB - SMLS
İ	10	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	36	LONG RADIUS ELBOW - ASME-B16.9	вW		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	6000	ASTM A105 Normalized
	2	8	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	36	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	6000	ASTM A105 Normalized
	2 10	8 36	CAP - ASME-B16.9 CAP - ASME-B16.9	BW BW		ASTM A234 WPB - SMLS ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	3	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized
	2	8	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	10	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	36	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
GASK	1/2 (FTS	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	6000	ASTM A105 Normalized
GASI	26	36	FLAT GASKET - GROOVED - <mfr std=""></mfr>		T	AICL 24CL CRAPHITE
	26 1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			AISI 316L+GRAPHITE 304 SS+GRAPH 98% - C.S. OUT.RING
63	3	36	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOLT				1	<u> </u>	
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	6CI	B2S	<b>601</b>	
						Rev.		
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VALV	-						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60112	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
1	2	24	GA-E-60126	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A216 WCB Trim: 13CR / HF
2	26	36	GA-E-60517	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - ASME-B16.34	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Metal seat - 13CR - C.S. disc
4	1/2	1 1/2	GA-E-60209	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
4	2	12	GA-E-60223	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A216 WCB Trim: 13CR / HF
6	1/2	1 1/2	GA-E-60312	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF
6	2	10	GA-E-60329	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A216 WCB Trim :13CR / HF
6	12	24	GA-E-60330	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : 13CR / HF
7	6	24	GA-E-60430	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
7	30	30	GA-E-60473	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
8	1/2	1 1/2	GA-E-60428	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats
8	6	24	GA-E-60792	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
10	1/2	1 1/2	GA-E-60177	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
11	1/2	1 1/2	GA-E-60599	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : 13CR / HF
72	6	24	GA-E-67108	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
82	1/2	1 1/2	GA-E-60762	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	PE/THC	CL800	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67011	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW	CL800	Body: ASTM A105 Normalized Trim : 13CR / HF
101	2	3	GA-E-60151	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600		CL600 RF	Body: ASTM A216 WCB Trim : 13CR / HF
111	1/2	1 1/2	GA-E-67394	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : 13CR / HF
130	1/2	1 1/2	GA-E-67075	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF		Body: ASTM A105 Normalized Trim : 13CR / HF
140	3	4	GA-E-67372	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : 13CR / HF
201	30	30	GA-E-60524	Butterfly-Stem Extension-Flanged-Triple Off Set- Int.seat-Fire safe - ASME-B16.34	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Metal seat - 13CR - C.S. disc
401	2	2	GA-E-60218	Globe-Stem Extension-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : 13CR / HF
780	2	2	GA-E-67668	DBL Block&Bleed Ball valve-SplitBdy-RB- Float.ball - <mfr std=""></mfr>	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats
781	2	2	GA-E-67669	DBL Block&Bleed Ball valve-SplitBdy-RB-Float.ball - <mfr std=""></mfr>	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
782	2	2	GA-E-67670	DBL Block&Bleed Ball valve-Stem Extension- SplitBdy-RB-Float.ball - <mfr std=""></mfr>	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats
801	1/2	1 1/2	GA-E-67140	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats
840	6	6	GA-E-67631	Ball-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
907	2	6	GA-E-69017	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats
972	2	4	GA-E-69056	Ball-Split body-Red.B-Floating ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB  Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

STRA	TRAINERS													
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material							
1	6	6	GA-E-60617	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A234 WPB - SMLS Screen: 316 - CLOTH - MESH 3							

### BRANCH TABLES



		ов 2 <b>243</b>						
Pipi	ng C	Class	s:	0	6CI	B2S	<b>601</b>	
						Rev.		
Sh.	3	of	3	Α	0	1	2	3

RunSi	ze															90	) Dec	rees	į								
1/2		Α																									
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		Α	Α	Α																							
1 1/2		A	A	A	A	_																					
2		S S	S S	S	S	W	т																				
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8		S	S	S	S	W	W	W	Т	Т																	
10		S	S	S	S	W	W	W	W	Т	T	_															
12 14		S	S S	S	S	W	W	W	W	W	I	Ţ	_														
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18		S	S	S	s	W	W	w	w	W	P	P	P	Ť	Т												
20 24		S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Т	Т											
24		S	S	S	S	W	W	W	W	W	Р	Р	Р	Р	Р	Т	Т										
30		S	S	S	S	W	W	W	W	W	P	P	P	Р	P P	P	T	T	_								
36 Branch		S	S	S	S	W	W	VV	VV	VV	г	-	г	г	•	•	-	I	I								
Diancii	SIZE	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	30	36								
Legend	а																										
A	TEE -	- SW	FND	S - /	ASMI	F-B1	6 11	-	-		-		-						-						-	 -	-
	PIPE							ING F	PAD-	TS-C	OR-F	NG-F	PIPM	Γ-012	-F											 	 
S	SOCI										, L			. 512												 	 
T	TEE -							<u> </u>																		 	 
W	WEL					97																				 	 
	· · ·		<u> </u>		-, 0																					 	 

## GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



		ов <b>2243</b>						
Pipi	ng C	Class	s:	0	6C	B2S	660	
						Rev.		
Sh.	1	of	3	Α	0			

Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL600 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim :8 - 13Cr/ HF

Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 320 °C

Service: [AIV] HL - Hydrocarbon Liquid HV - Hydrocarbon Vapour NG - Natural Gas PRW - Process Water

Pipe Thickness

NPS 1/2 3/4
Thk.mm 4.78 5.56
SCH. 160 160 
 1
 1 1/2
 2
 3
 4
 6
 8
 10
 12
 14
 16
 18
 20
 24
 30

 6.35
 7.14
 8.74
 7.62
 8.56
 10.97
 12.7
 15.09
 17.48
 19.05
 19.05
 20.62
 22.23
 26.97
 31.75

 160
 160
 160
 XS
 XS
 XS
 80
 80
 80
 80

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 3
Thk.mm 4.78 5.56 6.35 7.14 8.74 7.62
SCH. 160 160 160 160 160 XS
PRESSURE - TEMPERATURE Ratings

| NPS | Press. bar | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 102.0 | 1

	10 · 30   cmp. c   70										
opt.	Size from to		Item Description	Ends	Rating/Facing	Material					
PIPE											
	1/2	8	PIPE	вw	T	ASTM A106 GR.B - SMLS					
	10	24	PIPE	BW		ASTM A333 GR.6 - SMLS					
	26	36	PIPE	BW							
FLAN		30	PIPE	IDVV		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)					
LAI	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ACTM A405 Normalized					
	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized					
	26	36		BW	CL600 RF	ASTM A105 Normalized					
60		36 24	WN FLANGE - ASME-B16.47 series.A	BW		ASTM A105 Normalized					
63	3		WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized					
63	26	36	WN FLANGE - ASME-B16.47 series.A		CL900 RJ (F)	ASTM A105 Normalized					
73	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	, ,	ASTM A105 Normalized					
73	2	2	WN FLANGE - ASME-B16.5	BW	, ,	ASTM A105 Normalized					
	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A105 Normalized					
	26	36	BLIND FLANGE - ASME-B16.47 series.A	L	CL600 RF	ASTM A105 Normalized					
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A105 Normalized					
SPEC	TACLE				I						
	1/2	8	SPECTACLE BLIND - ASME-B16.48			ASTM A516 GR.70 + S5 (-46°C)					
	10	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)					
FITTI					1						
	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A105 Normalized					
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized					
	2	8	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS					
	10	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
	26	36	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD					
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	6000	ASTM A105 Normalized					
	2	8	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS					
	10	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
	26	36	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD					
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	6000	ASTM A105 Normalized					
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A105 Normalized					
	2	8	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS					
	10	36	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	6000	ASTM A105 Normalized					
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized					
li	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized					
l	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS					
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS					
	3/4	3	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS					
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	6000	ASTM A105 Normalized					
	2	8	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS					
	10	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
	30	36	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD					
	2	8	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	6000	ASTM A105 Normalized					
	10	14	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW		ASTM A350 LF2 - CL.1					
GASK			o. Touris on the first of the f								
	26	36	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE					
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING					
63	3	36	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON					
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20		1	SOFT IRON					
BOL1			100 CO. W. E. T. O. MONE E. T. O. E. E.	I	1						
DOLI	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)					
<u> </u>	1/4		01.D0E11214010 - Alfoi Hidd - 1D D0E 3000			MOTHER TOO BY THO THE ATOM A TOTAL CHILD TOO					

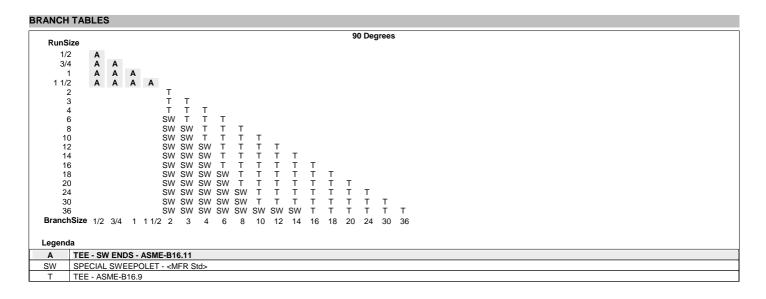
VALVES											
pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material				
1	1/2	1 1/2	GA-E-60112	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A105 Normalized Trim: 13CR / HF				
1	2	24	GA-E-60126	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A216 WCB				



		ов <b>2243</b>									
Pipi	Piping Class:					06CB2S60					
			3			Rev.					
Sh.	2	of		Α	0						

VALVES Size Data Sheet Item Description Ends Rating/Facing Material									
oos.	from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material		
2	26	36	GA-E-60517	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe	FLGD	CL600 RF	Body: ASTM A216 WCB		
				- ASME-B16.34			Trim : Metal seat - 13CR - C.S. disc		
4	1/2	1 1/2	GA-E-60209	Globe-BB-Red BThdd seat - API602	SW	CL800	Body: ASTM A105 Normalized		
							Trim: 13CR / HF		
4	2	12	GA-E-60223	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A216 WCB		
_							Trim: 13CR / HF		
6	1/2	1 1/2	GA-E-60312	Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Body: ASTM A105 Normalized		
		4.0	0.4 5 00000	01 1 00 50 0 : 40504	EL 0.D	01 000 DE	Trim: 13CR / HF		
6	2	10	GA-E-60329	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A216 WCB Trim: 13CR / HF		
_	12	24	GA-E-60330	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF			
6	12	24	GA-E-60330	Check-rianged -Duai plate-wildd seat - API594	FLGD	CL600 KF	Body: ASTM A216 WCB  Trim : 13CR / HF		
7	6	24	GA-E-60430	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB		
'	O	24	GA-E-60430	Ball-Split body-Red.B-11utillion ball - AF16D	FLGD	CLOUU KF	Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats		
7	30	30	GA-E-60473	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB		
'	00	00	O/ L 004/0	Dan Opin body Ned. D Transion ball 74 105	LOD	OLOGO IXI	Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats		
8	1/2	1 1/2	GA-E-60428	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized		
_				, · - · · · · · · · · · · · · ·	. 200	02000 111	Trim : Soft seat-316 trim - PEEK seats		
8	6	24	GA-E-60792	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB		
							Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats		
10	1/2	1 1/2	GA-E-60177	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A105 Normalized		
					DF		Trim: 13CR / HF		
72	6	24	GA-E-67108	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB		
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.		
82	1/2	1 1/2	GA-E-60762	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized		
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.		
89	1/2	1 1/2	GA-E-60474	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A105 Normalized		
				API608	F		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.		
101	1/2	1 1/2	GA-E-67011	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW	CL800	Body: ASTM A105 Normalized		
404	0	0	04 5 00454	Exp.seat - API602	EL 0.D	OL 000 DE	Trim: 13CR / HF		
101	2	2	GA-E-60151	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A216 WCB Trim: 13CR / HF		
130	1/2	1 1/2	GA-E-67075	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CI 000	Body: ASTM A105 Normalized		
130	1/2	1 1/2	GA-L-0/0/5	Exp.seat - API602	DF	CLOUU	Trim: 13CR / HF		
201	30	30	GA-E-60524	Butterfly-Stem Extension-Flanged-Triple Off Set-	FLGD	CL600 RF	Body: ASTM A216 WCB		
	00	00	S. L 00024	Int.seat-Fire safe - ASME-B16.34		02000 IXI	Trim : Metal seat - 13CR - C.S. disc		
401	2	2	GA-E-60218		FLGD	CL600 RF	Body: ASTM A216 WCB		
	-	-	22.002.0	623	-05		Trim: 13CR / HF		
801	1/2	1 1/2	GA-E-67140	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Body: ASTM A105 Normalized		
-				Frgd body - API608			Trim : Soft seat-316 trim - PEEK seats		

ST	STRAINERS										
ро	s. froi	m Siz	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material			
1	6		6	GA-E-60617	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A234 WPB - SMLS Screen:316 - CLOTH - MESH 3			





		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	6C	B2S	60	
						Rev.		
Sh.	3	of	3	Α	0			

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.

  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).

  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.

  5) This piping class is created for lines subjected to Acoustic Induced Vibration.



		ов <b>2243</b>							
Pipi	ng C	Class	s:	0	6CI	B4S	01		
						Rev.			
Sh.	1	of	2	Α	0	1	2	3	

 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL600
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RF Valve Trim: 8 - 13Cr/ HF

Corrosion Allow.: 6 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 70 °C
Service: NG - Natural Gas

Pipe Thickness

 NPS
 1
 1 1/2
 2
 3
 4
 6
 8
 10
 12
 14
 16
 18
 20
 24
 30
 36
 40

 Thk.mm
 9.09
 10.15
 11.07
 11.13
 11.13
 14.27
 15.09
 18.26
 19.05
 20.62
 22.23
 23.83
 26.19
 30.18
 35
 39
 42

 SCH.
 XXS
 XXS
 XXS
 160
 120
 120
 100
 100
 100
 80
 80
 80

Nipple Thickness

VALVES

pos

from Size

2

1 1/2

24

Data Sheet

GA-E-60164

GA-E-60130

Item Description

Gate-WB-Red.B-Solid wdg-Exp.seat - API602

Gate-BB-FB-Flex wdg-Thdd seat - API600

NPS 1 1 1/2 2 Thk.mm 9.09 10.15 11.07 SCH. XXS XXS XXS

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 91

1 .	40 Temp	o. °C	70			
	Q.	ize	Item Description	Ends	Rating/Facing	Material
opt.	from	to	Kom Sesemption	Liida	aung/racing	matorial
PIPE		l				
	1	4	PIPE	вw	1	ASTM A106 GR.B - SMLS
	5	24	PIPE	вw		ASTM A333 GR.6 - SMLS
	26	40	PIPE	вW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
FLAN	IGES					` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` `
	1	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized
	26	40	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A105 Normalized
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized
63	26	36	WN FLANGE - ASME-B16.47 series.A	BW	CL900 RJ (F)	ASTM A105 Normalized
73	1	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A105 Normalized
73	2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A105 Normalized
	1	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A105 Normalized
	26	40	BLIND FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A105 Normalized
SPEC	TACLE					
	1	8	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	10	24	BLIND & SPACER - ASME-B16.48 GA-E-060011		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060099</mfr>		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
	36	36	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060099</mfr>		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)
63	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060099</mfr>		CL900 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
FITTI					1	
	1	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
	2	4	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	6	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	40	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	1 1/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized
	2	4	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	6	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	40	REDUCER - ASME-B16.9	BW	0000	ASTM A420 WPL6W - WLDD
	1	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	9000	ASTM A105 Normalized
	2	4	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	6	40	CAP - ASME-B16.9	BW	0000	ASTM A420 WPL6 - SMLS
	1	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF SW	6000 9000	ASTM A105 Normalized
	1	1 1/2 1 1/2	COUPLING - SW ENDS - ASME-B16.11 THD MALE PLUG - RND HEAD - ASME-B16.11	THDM	9000	ASTM A105 Normalized
	1	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A105 Normalized
	1	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A106 GR.B - SMLS ASTM A234 WPB - SMLS
	1	2	SWAGE NIPPLE - PE/FFE - MSS-SP95	PE\THDM		
	1	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	9000	ASTM A234 WPB - SMLS ASTM A105 Normalized
	2	4	TEE - ASME-B16.9	BW	9000	ASTM A234 WPB - SMLS
	6	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	30	40	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	2	8	WELDOLET - MSS-SP97	BW		ASTM A420 WPLOW - WLDD
	1	1 1/2	SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A105 Normalized
GAS		1 1/2	000.00221 011 210 101010 0000	O11 (D11	, COOO	pro Financia Normalizad
	26	40	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	36	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
73	1	2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOLT			· · · · · · · · · · · · · · · · · · ·			
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
			•			` ' '

Rating/Facing

CL600 RF

FLGD

Body: ASTM A105 Normalized

Trim: 13CR stellited Body: ASTM A216 WCB

Trim: 13CR / HF



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	Qi	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to	Data Sileet	item bescription	Liius	Kating/r acing	Waterial
4	1	1 1/2	GA-E-60220	Globe-WB-Red.B-Thdd seat - API602	SW	CL1500	Body: ASTM A105 Normalized
							Trim: 13CR stellited
4	2	12	GA-E-60226	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A216 WCB
							Trim : 13CR / HF
6	1	1 1/2	GA-E-60348	Check-WB-Red.B-Piston-Int seat - API602	SW	CL1500	Body: ASTM A105 Normalized
							Trim: 13CR stellited
6	2	24	GA-E-60334	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A216 WCB
							Trim : 13CR / HF
7	6	24	GA-E-60436	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB
							Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
8	1	1 1/2	GA-E-60434	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized
				3, 11,			Trim : Soft seat-316 trim - PEEK seats
8	6	24	GA-E-67109	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB
	-						Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
10	1	1 1/2	GA-E-60182	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL1500	Body: ASTM A105 Normalized
					DF		Trim: 13CR stellited
11	1	1 1/2	GA-E-60115	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL600 RF	Body: ASTM A105 Normalized
							Trim: 13CR stellited
82	1	1 1/2	GA-E-67248	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized
-				3, 11,			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1	1 1/2	GA-E-67120	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL1500	Body: ASTM A105 Normalized
				ASME-B16.34	F		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	2	2	GA-E-67048	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL600 RF	Body: ASTM A216 WCB
				- API600			Trim: 13CR / HF
780	2	2	GA-E-67671	DBL Block&Bleed Ball valve-SplitBdy-RB-	FLGD	CL600 RF	Body: ASTM A105 Normalized
				Float.ball - <mfr std=""></mfr>			Trim : Soft seat-316 trim - PEEK seats
801	1	1 1/2	GA-E-67154	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Body: ASTM A105 Normalized
				Frgd body - API608			Trim : Soft seat-316 trim - PEEK seats
340	6	6	GA-E-67295	Ball-Split body-FB-Trunnion ball - API6D -	FLGD	CL600 RF	Body: ASTM A216 WCB
				Interlock System			Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats

# **BRANCH TABLES**

DunSi	70														9	0 Deg	grees	S
RunSi:  1 11/2 2 3 3 4 6 8 8 10 12 12 14 16 18 20 24 30 366 40	######################################	A T S S S S S S S S S S S S S S S S S S	T W W W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	T T W W W W W W W W W W W W W W W W W W	T T W W W W W W W	T T W W W W W W W W	T T P P P P P P P P	T T P P P P P P P	T T P P P P	T T P P P	T T P P P	T T P P	T T P P	T T P	ŢŢ	Т	
Branch: Legenda		1 11	/2 2	3	4	6	8	10	12	14	16	18	20	24	30	36	40	
	TEE - :	SW FI	NDS -	ASM	F-B1	6 11												
	PIPE T						ING F	PAD-1	rs-co	OR-E	NG-F	PIPM	T-012	:-E				
	SOCK																	
	TEE -																	
	WELD				97													

## GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



Valve Trim

:8 - 13Cr/ HF

Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

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 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL600
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing : RF Corrosion Allow. : 6 mm

Temp. Limit : -29 °C to 70 °C
Service: [AIV] NG - Natural Gas

Pipe Thickness

NPS 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 30 36 40 Thk.mm 9.09 10.15 11.07 11.13 11.13 14.27 15.09 18.26 19.05 20.62 22.23 23.83 26.19 30.18 35 39 42 SCH. XXS XXS XXS XXS 160 120 120 100 100 100

Nipple Thickness

VALVES

NPS 1 1 11/2 2 Thk.mm 9.09 10.15 11.07 SCH. XXS XXS XXS

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 91 1 · 40 Temp. °C 70

1 ·	40 Temp	o. °C	70						
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material			
PIPE									
	1	4	PIPE	вW		ASTM A106 GR.B - SMLS			
	5	24	PIPE	BW		ASTM A333 GR.6 - SMLS			
	26	40	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)			
FLAN	IGES			T.					
	1	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A105 Normalized			
	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A105 Normalized			
	26	40	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A105 Normalized			
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A105 Normalized			
63	26	36	WN FLANGE - ASME-B16.47 series.A	BW	CL900 RJ (F)	ASTM A105 Normalized			
73	1	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A105 Normalized			
73	2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A105 Normalized			
	1	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A105 Normalized			
	26	40	BLIND FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A105 Normalized			
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A105 Normalized			
SPEC	TACLE								
	1	8	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)			
	10	24	BLIND & SPACER - ASME-B16.48 GA-E-060011		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)			
	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060099</mfr>		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)			
	36	36	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060099</mfr>		CL600 RF	ASTM A516 GR.70 + S5 (-46°C)			
63	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060099</mfr>		CL900 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)			
FITTI	NGS				,				
	1	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized			
	2	4	LONG RADIUS ELBOW - ASME-B16.9	вW		ASTM A234 WPB - SMLS			
	6	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS			
	26	40	LONG RADIUS ELBOW - ASME-B16.9	вW		ASTM A420 WPL6W - WLDD			
	1 1/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized			
	2	4	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS			
	6	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS			
	26	40	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD			
	1	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	9000	ASTM A105 Normalized			
	2	4	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS			
	6	40	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS			
	1	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized			
	1	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized			
	1	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized			
	1	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS			
	1	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE PE		ASTM A234 WPB - SMLS			
	1	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS			
	1	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized			
	2	4	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS			
	6	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS			
	30	40	TEE - ASME-B16.9	BW		ASTM A420 WPL6V - WLDD			
	2	40	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	9000	ASTM A420 WPLOW - WLDD			
	5	16	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	0000	ASTM A350 LF2 - CL.1			
GAS	KETS	10	JOS ESTRET OFFI ANTICOMY	المارين	1				
_, .J.	26	40	FLAT GASKET - GROOVED - <mfr std=""></mfr>		1	AISI 316L+GRAPHITE			
	1	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING			
63	3	36	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON			
73	1	2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON			
- 1	' '		OCTAGONAL NJ GAGNET - AGINE-DTO.20	1	I	JOH T INOIN			
BOL	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)			
	1/2	-	01.D0L1+2 N010 - ANOI HIGG - TD D0L 3300			AO TIVI A 130 DT + AO TIVI A 134 GR.2FI (FIOLDIP 130)			

Size from to Data Sheet Rating/Facing Item Description GA-E-60164 Gate-WB-Red.B-Solid wdg-Exp.seat - API602 Body: ASTM A105 Normalized 1 1/2 Trim: 13CR stellited Body: ASTM A216 WCB 2 GA-E-60130 Gate-BB-FB-Flex wdg-Thdd seat - API600 FLGD 24 CL600 RF Trim: 13CR / HF



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	c:	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
os.	from	to	Data Sneet	item Description	Enas	Rating/Facing	Material
4	1	1 1/2	GA-E-60220	Globe-WB-Red.B-Thdd seat - API602	sw	CL1500	Body: ASTM A105 Normalized
							Trim: 13CR stellited
4	2	12	GA-E-60226	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A216 WCB
							Trim: 13CR / HF
6	1	1 1/2	GA-E-60348	Check-WB-Red.B-Piston-Int seat - API602	SW	CL1500	Body: ASTM A105 Normalized
							Trim: 13CR stellited
6	2	24	GA-E-60334	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A216 WCB
							Trim: 13CR / HF
7	6	24	GA-E-60436	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB
							Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
8	1	1 1/2	GA-E-60434	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A105 Normalized
							Trim : Soft seat-316 trim - PEEK seats
8	6	24	GA-E-67109	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A216 WCB
		4.4/0	0.4 5 00400	0 / WD D / D 0 // / D 0 //			Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
10	1	1 1/2	GA-E-60182	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL1500	Body: ASTM A105 Normalized
11	1	1 1/2	GA-E-60115	Cata DD Dad D Calid wide Fire and ADICOS	I .	01 000 DE	Trim: 13CR stellited
11	'	1 1/2	GA-E-00115	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL600 RF	Body: ASTM A105 Normalized Trim : 13CR stellited
82	1	1 1/2	GA-E-67248	Ball-End entry -FB-Float.ball -Frgd body - API608	ELCD	CL600 RF	Body: ASTM A105 Normalized
02	'	1 1/2	GA-L-07240	Ball-Elid elitiy -i B-i loat.ball -i Igd body - AF 1000	LGD	CLOOD IXI	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1	1 1/2	GA-E-67120	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THE	CI 1500	Body: ASTM A105 Normalized
00	•	,	G/( L G/ 120	ASME-B16.34	F	021000	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	2	2	GA-E-67048	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL600 RF	Body: ASTM A216 WCB
	_	_		- API600	. 202	02000 111	Trim: 13CR / HF
780	2	2	GA-E-67671	DBL Block&Bleed Ball valve-SplitBdy-RB-	FLGD	CL600 RF	Body: ASTM A105 Normalized
				Float.ball - <mfr std=""></mfr>	_		Trim : Soft seat-316 trim - PEEK seats
801	1	1 1/2	GA-E-67154	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Body: ASTM A105 Normalized
				Frgd body - API608			Trim : Soft seat-316 trim - PEEK seats
840	6	6	GA-E-67295		FLGD	CL600 RF	Body: ASTM A216 WCB
				Interlock System			Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats

# **BRANCH TABLES**

															9(	) Deg	grees	
RunS	ize																	
1	l A	A																
1 1/2			A															
2	2 7	Γ.	ΤТ															
3	3		Т	Т														
4	ļ		Т	Т	Т													
(			SV		Т	Т												
8				/ SW		Т	Т											
10				/ SW		T	T	T	_									
12				/ SW		T	T	T	T	_								
14				/ SW		1	1	1			_							
16				/ SW		I Olar	1	Ţ	Ţ	1	1	_						
18				/ SW			<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	_					
20 24				/ SW / SW			CVA	T	ļ	<u> </u>	<u> </u>	<u> </u>	<u> </u>	_				
30				/ SW				- I	· +	<u> </u>	<u> </u>	<u> </u>	<u> </u>	+	_			
36				/ SW				CIVI	CIVI	CIVI	<u>+</u>	<u>+</u>	<u>+</u>	+	<u>+</u>	_		
40				/ SW							SW	÷	÷	÷	÷	÷	т	
Branch												18	20	24	30	1	40	
Branci	ISIZE	1 1	1/2 2	3	4	6	8	10	12	14	16	10	20	24	30	36	40	
Legend	а																	
Α	TEE -	SW E	ENDS	- ASM	IE-B1	6.11												
Р	PIPE T	O P	IPE W	TH R	EINF	ORCI	NG F	AD-T	S-CO	DR-E	NG-F	IPMT	-012	-E				
S	SOCK	OLE.	T - SW	END	- TB	RAC	5380											
SW	SPECI	AL S	WEEF	OLET	- <n< th=""><th>IFR S</th><th>td&gt;</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></n<>	IFR S	td>											
Т	TEE -	ASM	E-B16	9														
W	WELD	OLE	T - MS	S-SP	97													

## GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) This piping class is created for lines subjected to Acoustic Induced Vibration.



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Pipi	ng C	Class	s:	0	)6S	A0E	301		
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Design code : ASME B 31.3 2016 Base Material : STAINLESS STEEL 304/304L DUAL GRADE

Nom. Rating : CL600 Facing/Finishing : RF

Valve Trim : 12 - SS316/HF Corrosion Allow. : 0 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -196 °C to 220 °C

Service: BOG - Boil Off Gas CF - Dry (Cold) Flare MR - Mixed Refrigerant NG - Natural Gas PC - Process Condensate PG - Process Gas / Purge Gas PR - Propane Refrigerant

**PWHT** 

:NO

Pipe Thickness

NPS 1/2 3/4 Thk.mm 2.77 2.87 1 1 1/2 2 3 4 3.38 3.68 3.91 5.49 6.02 6 8 7.11 10.31 
 10
 12
 14
 16
 18
 20
 24
 26
 28
 30
 36
 40

 12.7
 14.27
 15.09
 16.66
 19.05
 20.62
 24.61
 20.62
 22.23
 23.83
 28.58
 31.75
 SCH. 40S 40S 40S 408 40S 40S 40S 40S 80S

Nipple Thickness

NPS 1/2 3/4 Thk.mm 3.73 3.91 4.55 5.08 SCH. 80S 80S 80S 80S 5.54 80S

PRESSURE - TEMPERATURE Ratings

 NPS
 Press. bar 1/2 · 24
 99.28
 99.28
 92.24
 99.28
 62.74
 74.12
 68.6
 ASME B16.5

 NPS
 Press. bar 75
 37.78
 93.33
 148.9
 204.4
 Material Group 2.1

26 - 48 Temp. °C 70

20	46	p. C	70			
opt.	S from	ize to	Item Description	Ends	Rating/Facing	Material
PIPE						
FIFE	1/2	6	PIPE	BW	T	ASTM A242 TD204/TD204LDLIAL CDADE SMLS
	8	48	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN		40	FIFE	рvv		ASTM A338 TP304/TP304L CL.T DUAL GRADE - EFW
LAI	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	26	48	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	1/2	1/2	THD FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A182 F304/304L DUAL GRADE
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
99	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	26	48	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5	J.,	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	26	48	BLIND FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	26	48	BLIND FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	TACLE	1		11121	Je=000 1	71011111110211001100112001120111012
	1/2	8	SPECTACLE BLIND - ASME-B16.48	1	CL600 RF	ASTM A240 TP304
	10	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
	26	26	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060016</mfr>		CL600 RF	ASTM A240 TP304
	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060016</mfr>		CL600 RF	ASTM A240 TP304
2	1/2	8	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
2	30	30	SPECIAL BLIND & SPACER - <mfr std=""></mfr>		CL600 RF	ASTM A240 TP304
99	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP304
99	10	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
FITTI	NGS				_	
	1/2	2	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	48	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE
MISC	ELLANE	1	1	1		
	30	30	SPECIAL TEMPORARY STRAINER - <mfr -="" metallic="" std=""></mfr>		CL600 RF	ASTM A240 TP304
GAS	-	1	L			
	26	48	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20	1	1	AISI 304
BOLT		4.4/6	OT DOLT O MUTO. ANOLTH 11 TO DUIL 5000			140714 4000 PO OL O 40714 4404 OD O
	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 CB, 660
99	1 5/8 1/2	4   4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368  ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660 ASTM A453 GR. 660 - PTFE COATED
99	1/2	. 4	OT.BOLITZ NOTO - ANOI INIU - ID DOL 0000			ASTINIA400 GIV. 000 - FIFE CONTED

V	ALVES													
		Size		Data Sheet	Item Description	Ends	Rating/Facing	Material						
	pos.	from	to		•		J 44 3							
$\  \ $	1	1/2	1 1/2	GA-E-60142	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE						
								Trim : 316 / HF						
		,			!		•							



		DB <b>2243</b>						
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/ALV					_		
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	2	24	GA-E-60154	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A351 CF8M
4	1/2	1 1/2	GA-E-60234	Globe-BB-Red BThdd seat - API602	BW	CL800	Trim :316 / HF Body: ASTM A182 F316/F316L DUAL GRADE Trim :316 / HF
4	2	12	GA-E-60247	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
6	1/2	1 1/2	GA-E-60341	Check-BB-Red.B-Piston-Thdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
6	2	10	GA-E-60358	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
6	12	24	GA-E-60359	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
6	26	36	GA-E-60351	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
7	3	3	GA-E-60454	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
7	6	24	GA-E-60454	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2	GA-E-60452	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-67026	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
11	1/2	1 1/2	GA-E-60153	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
14	1/2	1 1/2	GA-E-60140	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
14	2	24	GA-E-60188	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
19	1/2	1 1/2	GA-E-67081	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	BW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
62	2	10	GA-E-60710	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
62	36	36	GA-E-67503	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
69	30	36	GA-E-60395	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
80	1/2	1 1/2	GA-E-60797	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - RPTFE seats
82	1/2	1 1/2	GA-E-60763	Ball-End entry -FB-Float.ball -Frgd body - API608		CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60476	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-60593	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
101	2	24	GA-E-60155	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600		CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
111	1/2	1 1/2	GA-E-67303	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
201	26	36	GA-E-60525	Butterfly-Stem Extension-Flanged-Triple Off Set- Int.seat-Fire safe - ASME-B16.34	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Metal seat - 316 - 316 disc
401	2	12	GA-E-60224	Globe-Stem Extension-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
701	6	24	GA-E-60799	Ball-Stem Extension-Split body-Red.B-Trunnion ball - API6D  Ball Stem Extension Split body Red B Trunnion	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: Soft seat-316 trim - PEEK seats
701	26 1/2	36 1 1/2	GA-E-67111 GA-E-67141	Ball-Stem Extension-Split body-Red.B-Trunnion ball - API6D  Ball Stem Extension End entry - FR-Float ball	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: Soft seat-316 trim - PEEK seats
801	6			Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim: Soft seat-316 trim - PEEK seats
801	6	24 8	GA-E-67632	Ball-Stem Extension-Split body-FB-Trunnion ball - API6D  Ball Stem Extension Split body FB-Trunnion ball		CL600 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats Body: ASTM A351 CF8M
041	О	0	GA-E-67632	Ball-Stem Extension-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CLOUU KF	Trim: Soft seat-316 trim - PEEK seats

STRAINERS												
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material					
1	30	36	GA-E-60618	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen:316 - CLOTH - MESH 40					

# BRANCH TABLES



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RunS	ize															9	0 Deg	grees	5					
1/2		т																						
3/4		÷	т																					
3/-		÷	÷	т																				
1 1/2		÷	÷	÷	т																			
	2	w	w	÷	÷	т																		
	3	W	W	w	w	w	т																	
	4	w	W	w	W	w	÷	т																
	5	W	W	W	w	w	w	÷	Т															
	3	W	W	w	w	w	w	w	Ť	Т														
10		W	w	w	w	w	w	w	w	Ť	Т													
12	2	W	w	W	w	w	w	w	W	w	Ť	Т												
14		W	W	W	W	W	W	W	W	W	P	Ť	Т											
16		W	W	W	W	W	W	W	W	W	Ρ	Р	Т	Т										
18	В	W	W	W	W	W	W	W	W	W	Р	Р	Р	Т	Т									
20	0	W	W	W	W	W	W	W	W	W	Р	Р	Р	Ρ	Т	Т								
20 24	4	W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т							
		W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т						
28	В	W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т	Т					
26 28 30 36	0	W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т				
36	6	W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т			
40		W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т		
48		W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т	
Branch	nSize	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	36	40	48	
Legend	la																							
P	PIPE	ТО	PIPE	WIT	TH RE	INF	ORC	ING F	PAD-T	rs-co	OR-E	NG-F	'IPM	-012	-E									$\neg$
Ť	TEE																							ᅥ
w						7																		$\dashv$
v V	W WELDOLET - MSS-SP97																							

### GENERAL NOTES

1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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						Rev.			
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31 75

33

38

Base Material : STAINLESS STEEL 304/304L DUAL GRADE :ASME B 31.3 2016 Design code

6 7.11

Nom. Rating : CL600 **PWHT** Facing/Finishing : RF Valve Trim : 12 - SS316/HF

> 5 49 6.02

Corrosion Allow. : 0 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

10.31

10 12.7

Temp. Limit : -175 °C to 220 °C

Service: [Cryogenic Service] ER - Ethane / Ethilene Refrigerant LNG - Liquefied Natural Gas MR - Mixed Refrigerant NG - Natural Gas PC - Process Condensate PR - Propane

15 09 16 66

14 27

19 05 20 62

23 83 24 61

22.23 23.83

25.4 28 58

Refrigerant Pipe Thickness 2 87

1/2 nm 2.77

40S 40S

Thk mm

SCH.

40S Nipple Thickness NPS 1/2 3/4

3.38

3 68

40S 40S

5.08 80S 5.49 40S Thk.mm 3.73 3.91 4.55 5.54 SCH 808 80S 80S

PRESSURE - TEMPERATURE Ratings

Press. bar 99.28 99.28 82.74 74.12 68.6 ASME B16.5 1/2 · 24 Temp. °C -28.9 37.78 93.33 148.9 204.4 Material Group 2.1 NPS Press, bar 75

3 91

5.16

40S 40S 40S

28 · 48 Temp. °C 70 Rating/Facing Material Size Item Description Ends to opt. from PIPE 1/2 PIPE BW ASTM A312 TP304/TP304L DUAL GRADE - SMLS PIPE ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW FLANGES 1/2 WN FLANGE - ASME-B16.5 CL600 RF ASTM A182 F304/304L DUAL GRADE 26 48 WN FLANGE - ASME-B16.47 series.A вw CL600 RF ASTM A182 F304/304L DUAL GRADE WN FLANGE - ASME-B16.5 вw CL900 RF ASTM A182 F304/304L DUAL GRADE 24 3 THD FLANGE - ASME-B16.5 ASTM A182 F304/304L DUAL GRADE 1/2 THDF CL600 RF 14 1/2 WN FLANGE - ASME-B16.5 ASTM A182 F304/304L DUAL GRADE 63 24 ВW CL900 RJ (F) 3 WN FLANGE - ASME-B16.5 73 вw CL1500 RJ (F) ASTM A182 F304/304L DUAL GRADE 1/2 2 WN FLANGE - ASME-B16.5 ASTM A182 F304/304L DUAL GRADE 99 1/2 24 ВW CL600 RF 99 26 48 WN FLANGE - ASME-B16.47 series.A вw CL600 RF ASTM A182 F304/304L DUAL GRADE 1/2 24 BLIND FLANGE - ASME-B16.5 CI 600 RF ASTM A182 F304/304L DUAL GRADE 26 48 BLIND FLANGE - ASME-B16.47 series.A CL600 RF ASTM A182 F304/304L DUAL GRADE gg 1/2 24 BLIND FLANGE - ASME-B16.5 CL600 RF ASTM A182 F304/304L DUAL GRADE 99 48 BLIND FLANGE - ASME-B16.47 series.A CL600 RF ASTM A182 F304/304L DUAL GRADE 26 2 WN REDUCING FLANGE - ASME-B16.5 вw CL600 RF ASTM A182 F304/304L DUAL GRADE 2 3/4 THDD RED. FLANGE - ASME-B16.5 THDF CL600 RF ASTM A182 F304/304L DUAL GRADE 3/4 THDD RED. FLANGE - ASME-B16.5 THDF CL600 RF ASTM A182 F304/304L DUAL GRADE SPECTACLE BLIND BLIND & SPACER - ASME-B16.48 CL600 RF ASTM A240 TP304 1/2 20 BLIND & SPACER - ASME-B16.48 CL600 RF 24 ASTM A240 TP304 24 SPECIAL BLIND & SPACER - <MFR Std> GA-E-060016 CL600 RF ASTM A240 TP304 28 28 SPECIAL BLIND & SPACER - <MFR Std> GA-E-060016 CL600 RF ASTM A240 TP304 36 36 SPECIAL BLIND & SPACER - < MER Std> GA-E-060016 42 42 CI 600 RF ASTM A240 TP304 SPECIAL BLIND & SPACER - <MFR Std> GA-E-060016 CL600 RF 48 48 ASTM A240 TP304 99 1/2 20 BLIND & SPACER - ASME-B16 48 CI 600 RF ASTM A240 TP304 FITTINGS DRIP-RING - TB DRI 5011 CI 600 RE ASTM A182 F304/304L DUAL GRADE 1/2 3 99 1/2 3 DRIP-RING - TB DRI 5011 CL600 RF ASTM A182 F304/304L DUAL GRADE LONG RADIUS ELBOW - ASME-B16.9 вw ASTM A403 WP304S/304LS DUAL GRADE - SMLS 1/2 6 8 48 LONG RADIUS ELBOW - ASME-B16.9 вw ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD SHORT RADIUS ELBOW - <MFR Std> 40 40 BW ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD 3/4 6 REDUCER - ASME-B16.9 вw ASTM A403 WP304S/304LS DUAL GRADE - SMLS REDUCER - ASME-B16.9 вw ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD 8 48 1/2 48 CAP - ASME-B16.9 вw ASTM A403 WP304S/304LS DUAL GRADE - SMLS FEMALE CAP - THD END - ASME-B16.11 THDF 2 3000 1/2 ASTM A182 F304/304L DUAL GRADE THD MALE PLUG - RND HEAD - ASME-B16.11 2 тном ASTM A182 F304/304L DUAL GRADE 1/2 2 NIPPLE - THDD/PE - ASME-B36.10 THDM\PE ASTM A312 TP304/TP304L DUAL GRADE - SMLS 1/2 SWAGE NIPPLE - PE/PE - MSS-SP95 3 3/4 PE ASTM A403 WP304S/304LS DUAL GRADE - SMLS SWAGE NIPPLE - THDD/PE - MSS-SP95 THDM\PE 3/4 2 ASTM A403 WP304S/304LS DUAL GRADE - SMLS 3/4 2 SWAGE NIPPLE - THDD/THDD - MSS-SP95 THDM ASTM A403 WP304S/304LS DUAL GRADE - SMLS 3/4 2 SWAGE NIPPLE - PE/THDD - MSS-SP95 PE\THDM ASTM A403 WP304S/304LS DUAL GRADE - SMLS 1/2 6 TEE - ASME-B16.9 вw ASTM A403 WP304S/304LS DUAL GRADE - SMLS 48 TEE - ASME-B16.9 вw ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD 8 1/2 8 WELDOLET - MSS-SP97 вw ASTM A182 F304/304L DUAL GRADE LATROLET - BW END - MSS-SP97 вw 1/2 2 ASTM A182 F304/304L DUAL GRADE SPECIAL LATROLET - <MFR Std> ASTM A182 F304/304L DUAL GRADE MISCELLANEOUS SPECIAL TEMPORARY STRAINER - <MFR Std - Metallic> CL600 RF 36 ASTM A240 TP304 36 GASKETS FLAT GASKET - GROOVED - <MFR Std> AISI 316L+GRAPHITE 26 48 SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20 304 SS+GRAPH 98% - 304 OUT.RING 1/2 24 24 OCTAGONAL RJ GASKET - ASME-B16.20 AISI 304 63 3 73 1/2 2 OCTAGONAL RJ GASKET - ASME-B16.20 **AISI 304** 



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Pipi	ng C	Class	s:	0	6S/	A0E	30	
						Rev.		
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opt.	_	ize to	Item Description	Ends	Rating/Facing	Material
BOI	.TS					
	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 B8 CL.2 + ASTM A194 GR.8
	1 5/8	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660
99	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660 - PTFE COATED
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VALV	VALVES											
	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material					
pos.	from	to				"						
1	1/2	1 1/2	GA-E-60144	Cryo.Gate-Extend.BB-Red.B-Solid wdg-Wldd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF					
1	2	24	GA-E-60156	Cryo.Gate-Extend.BB-FB-Flex wdg-Thd seat - API600	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF					
2	26	42	GA-E-60519	Cryog.Butterfly-Flanged-Triple Offset-Int.seat-Fire safe - ASME-B16.34	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Metal seat - 316 - 316 disc					
4	1/2	1 1/2	GA-E-60236	Cryo.Globe-Extend.BB-Red.B-Thdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE  Trim: 316 / HF					
4	2	12	GA-E-60249	Cryo.Globe-Extend.BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A351 CF8M					
6	1/2	1 1/2	GA-E-60344	Cryo.Check-BB-Red.B-Piston-Thdd seat - API602	BW	CL800	Trim: 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF					
6	2	10	GA-E-60361	Cryo.Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF					
6	12	24	GA-E-60362	Cryo.Check-Flanged-Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF					
6	26	36	GA-E-60354	Cryo.Check-Flanged-Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M					
7	2	2	GA-E-60456	Cryo.Ball-Ext.bnt-Split body-Red.B-Float.ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M					
7	3	24	GA-E-60457	Cryo.Ball-Ext.bnt-Split body-Red.B-Trun.ball - API6D	FLGD	CL600 RF	Trim : Crio Soft seal-316 trim - KEL.F seats Body: ASTM A351 CF8M					
8	1/2	1 1/2	GA-E-60455	Cryo.Ball-Ext.bnt-Split body-FB-Floating ball -	FLGD	CL600 RF	Trim : Crio Soft seal-316 trim - KEL.F seats Body: ASTM A182 F316/F316L DUAL GRADE					
	2	•	04 5 07005	API608		01 000 05	Trim : Crio Soft seal-316 trim - KEL.F seats					
8	2	2	GA-E-67695	Cryo.Ball-Ext.bnt-Split body-FB-Floating ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats					
8	3	24	GA-E-60765	Cryo.Ball-Ext.bnt-Split body-FB-Trunnion ball -	FLGD	CL600 RF	Body: ASTM A351 CF8M					
11	1/2	1 1/2	GA-E-67351	API6D Cryo.Gate-Extend.BB-Red.B-Solid wdg-Wldd seat	FLGD	CL600 RF	Trim : Crio Soft seal-316 trim - KEL.F seats Body: ASTM A182 F316/F316L DUAL GRADE					
19	1/2	1 1/2	GA-E-67041	- API602 Cryo.Gate-Extend.BB-Red.B-Solid wdg-Wldd seat		CL800	Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE					
62	2	10	GA-E-60711	- API602 Cryo.Check-Flanged-Dual plate-Widd seat -	DF FLGD	CL600 RF	Trim:316/HF Body:ASTM A351 CF8M					
62	36	36	GA-E-67504	API594 Cryo.Check-BB- FB- Swing - API594	FLGD	CL600 RF	Trim:316/HF Body: ASTM A351 CF8M					
69	12	24	GA-E-60736	Cryo.Check-Flanged-Dual plate-Wldd seat -	FLGD	CL600 RF	Trim : 316 / HF Body: ASTM A351 CF8M					
69	36	36	GA-E-60737	API594 Cryo.Check-Flanged-Dual plate-Wldd seat -	FLGD	CL600 RF	Trim : 316 / HF Body: ASTM A351 CF8M					
140	4	4	GA-E-67374	API594 Cryo.Gate-Extend.BB-FB-Flex wdg-Thd seat -	FLGD	CL600 RF	Trim: 316 / HF Body: ASTM A351 CF8M					
	·			API600 - Interlock System			Trim: 316 / HF					
162	24	24	GA-E-67323	Cryo.Gate-Extend. Stem (1800mm)-BB-FB-Flex wdg-Thd seat - API600	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF					
780	2	2	GA-E-67672	Cryo.DBL Block&Bleed Ball valve-Ext.bnt- SplitBdy-RB-Float.ball - <mfr std=""></mfr>	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Crio Soft seal-316 trim - KEL.F seats					
780	3	3	GA-E-67901	Cryo.DBL Block&Bleed Ball valve-Ext.bnt-	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE					
781	2	2	GA-E-67673	SplitBdy-RB-Trunnion - <mfr std=""> Cryo.DBL Block&amp;Bleed Ball valve-Ext.bnt-</mfr>	FLGD	CL600 RF	Trim : Crio Soft seal-316 trim - KEL.F seats Body: ASTM A182 F316/F316L DUAL GRADE					
840	6	6	GA-E-67633	SplitBdy-RB-Float.ball - <mfr std=""> Cryo.Ball-Ext.bnt-Split body-FB-Trunnion ball -</mfr>	FLGD	CL600 RF	Trim :Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A351 CF8M					
				API6D - Interlock System			Trim : Crio Soft seal-316 trim - KEL.F seats					
902	30	30	GA-E-69090		FLGD	CL600 RF	Body: ASTM A351 CF8M					
1				Fire safe - ASME-B16.34		1	Trim: Metal seat - 316 - 316 disc					

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	2	2	GA-E-60623	Y Strainer-Bolted cover - ASME-B16.34	FLGD	CL600 RF	Body : ASTM A351 CF8M
							Screen: 316 - PERF.PLATE - 18 Holes/Cm2
1	3	6	GA-E-60640	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL600 RF	Body : ASTM A403 WP304S/304LS DUAL GRADE - SMLS
							Screen: 316 - CLOTH - MESH 3
4	14	14	GA-E-60641	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL600 RF	Body : ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
							Screen: 316 - CLOTH - MESH 40
4	24	24	GA-E-60656	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL600 RF	Body : ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
							Screen: 316 - CLOTH - MESH 40
4	36	36	GA-E-60618	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL600 RF	Body : ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
							Screen: 316 - CLOTH - MESH 40
5	14	14	GA-E-60654	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL600 RF	Body : ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
							Screen: 316 - CLOTH - MESH 40



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STRA	INERS					
pos.	from Size to	Data Sheet	Item Description	Ends	Rating/Facing	Material
13	16 16	GA-E-60624	Angle T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen: 316 - CLOTH - MESH 40

BRANCH TA	BLE	S																											
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RunSize															31	o Dei	Jiees	•											
1/2	Т																												
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1	Т	Т	Т																										
1 1/2	Т	Т	Т	Т																									
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8	W	W	W	W	W		W	w	÷	т																			
10	W	W	W	W	W		W	W	w	Ť	Т																		
12	W	W	W	W	W		W	W	W	W	Ť	Т																	
14	W	W	W	W	W		W	W	W	W	Ρ	Т	Т																
16	W	W	W	W	W		W	W	W	W	Р	Р	Т	Т															
18	W	W	W	W	W		W	W	W	W	Р	Р	Р	Ţ	T	_													
20	W	W	W	W	W		W	W	W	W	Р	P	P P	P P	I	I	_												
22 24	W	W	W	W	W		W W	W	W	۷۷	P	P	P	P	P	+	<u> </u>	_											
28	W	W	W	W	W		W	W	W	W	Р	Р	P	P	Р	P	P	÷	т										
30	W	W	W	W	W		W	w	W	W	P	P	P	P	P	P	P	÷	÷	т									
32	W	W	W	W	W		w	W	W	W	P	P	P	P	P	P	P	P	P	Ť	Т								
36	W	W	W	W	W		W	W	W	W	Р	Р	Р	Ρ	Р	Р	Р	Р	Р	Т	Т	Т							
40	W	W	W	W	W		W	W	W	W	Ρ	Р	Ρ	Р	Р	Ρ	Ρ	Ρ	Ρ	Ρ		Т	Т						
42	W	W	W	W	W		W	W	W	W	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р		Т	Т	Т					
48	W	W	W	W	W		W	W	W	W	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р		Р	Р	Т	Т				
BranchSiz	<b>e</b> 1/2	3/4	1	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	22	24	28	30	32	36	40	42	48				
Legenda																													
P PIF	PE TO	PIPE	WIT	HRE	INFO	ORCIN	G P	AD-T	S-C	DR-E	NG-F	IPMT	-012	-E															
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RunS	izo.														4	o deg	jiees								
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3		LB	LB	LB	LB	PP	-																		
4		LB	LB	LB	LB	LB	PP																		
6		LB	LB	LB	LB	LB	LS	PP																	
8		LB	LB	LB	LB	LB	LS	LS	PP																
10		LB	LB	LB	LB	LB	LS	LS	LS	PP															
12		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP														
14		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	-												
16		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP												
18		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP											
20		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP										
22		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP									
24		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	-							
28		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP							
30		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP						
32		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP					
36	LB LB LB LB LS LS LS LS PP PP PP PP PP PP PP PP PP PP PP																								
40						LB	LS								PP	PP	PP	PP		PP					
42		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP		
48		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	
		LB	LB	LB	LB	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	
3ranchSi	ize	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	22	24	28	30	32	36	40	42	48
.egenda																									
	LATR	OLE	T - B\	N EN	1D - N	ISS-S	SP97																		
	SPEC																								
								LEVIE	NIT C	el EEV	/E·T		-ENI	2.010	NAT_O	12 E	DIDE	TO D	DE V	VITU	EI II I	ENIC	IDCI	EME	NT SLEEVE:TS-COR-ENG-PIPMT-012-E

## GENERAL NOTES

- 1) Use of threaded connections is prohibited except for instrument impulse lines.
   2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
   3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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Design code : ASME B 31.3 2016 Base Material : STAINLESS STEEL 304/304L DUAL GRADE

Nom. Rating : CL600 Facing/Finishing : RF

PWHT :NO Valve Trim :12 - SS316/HF

Corrosion Allow. : 0 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013 Temp. Limit : -175 °C to 105 °C

Service: [Cryogenic Service] NG - Natural Gas

Pipe Thickness

NPS 1/2 3/4 1 1 1/2 Thk.mm 2.77 2.87 3.38 3.68 6 7.11 10 12.7 
 14
 16
 18
 20
 22
 24
 28

 15.09
 16.66
 19.05
 20.62
 23.83
 24.61
 23.83
 30 32 36 25.4 26.97 30.18 10.31 14.27 SCH. 40S 40S 40S 40S 40S 40S 40S

Nipple Thickness

 
 NPS
 1/2
 3/4
 1
 1 1/2

 Thk.mm
 3.73
 3.91
 4.55
 5.08

 SCH.
 80S
 80S
 80S
 80S
 5.54 5.49 80S 40S

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 80 1988 38.38 188.9 204.4 Material Group 2.1 172 - 24 1 189.0 189.28 18

	30 1011		103			
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	6	PIPE	BW	T	ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	36	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN	IGES					
	1/2	24	WN FLANGE - ASME-B16.5	вw	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	26	36	WN FLANGE - ASME-B16.47 series.A	вW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
6	3	24	WN FLANGE - ASME-B16.5	вw	CL900 RF	ASTM A182 F304/304L DUAL GRADE
14	1/2	1/2	THD FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A182 F304/304L DUAL GRADE
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
99	1/2	24	WN FLANGE - ASME-B16.5	вW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	26	36	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
	26	36	BLIND FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	26	36	BLIND FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A182 F304/304L DUAL GRADE
	2	2	WN REDUCING FLANGE - ASME-B16.5	вW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	TACLE		THE REST ENTED FROM STORE	1	02000111	NOTHIN TOZ T GO 4/OUTE BONE GIVE
1	1/2	20	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
	24	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
99	1/2	20	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
FITTI	-		BEIND & GI MOERC MOME DIG. 40		OLUGO I II	7.01W7/240 11 004
	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A182 F304/304L DUAL GRADE
"	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	вW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	36	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	3	SWAGE NIPPLE - PE/PE - MSS-SP95	PE PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE
MISC	ELLANE		WEEDOLE 1 - 1833-3F 97	DVV		A31W A1021 304/304E DOAL GRADE
5	36	36	SPECIAL TEMPORARY STRAINER - <mfr -="" metallic="" std=""></mfr>		CL600 RF	ASTM A240 TP304
GASE		50	J. 252 TEIM GIVART GITTAMAER - NIM IX Old - Michalile		DEGGG IXI	/ WO T MI 7 12-70 T I OUT
JJ.	26	36	FLAT GASKET - GROOVED - <mfr std=""></mfr>		1	AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - 304 OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
BOL1		24	OF THE ONE IN COUNTRY   POINTED 10.20		ı	Aloi oo <del>t</del>
BUL	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 B8 CL.2 + ASTM A194 GR.8
	1 5/8	2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660
99	1/2	2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660 - PTFE COATED
			1			1

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	n Material
1	1/2	1 1/2	GA-E-60144	Cryo.Gate-Extend.BB-Red.B-Solid wdg-Wldd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
1	2	24	GA-E-60156	Cryo.Gate-Extend.BB-FB-Flex wdg-Thd seat - API600	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
2	26	36	GA-E-60519	Cryog.Butterfly-Flanged-Triple Offset-Int.seat-Fire safe - ASME-B16.34	FLGD	CL600 RF	Body: ASTM A351 CF8M



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4	1/2	1 1/2	GA-E-60236	Cryo.Globe-Extend.BB-Red.B-Thdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
4	2	12	GA-E-60249	Cryo.Globe-Extend.BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A351 CF8M
6	1/2	1 1/2	GA-E-60344	Cryo.Check-BB-Red.B-Piston-Thdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim :316 / HF
6	2	10	GA-E-60361	Cryo.Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M
6	12	24	GA-E-60362	Cryo.Check-Flanged-Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
6	26	36	GA-E-60354	Cryo.Check-Flanged-Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
7	6	24	GA-E-60457	Cryo.Ball-Ext.bnt-Split body-Red.B-Trun.ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats
8	1/2	1 1/2	GA-E-60455	Cryo.Ball-Ext.bnt-Split body-FB-Floating ball - API608	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Crio Soft seal-316 trim - KEL.F seats
8	6	24	GA-E-60765	Cryo.Ball-Ext.bnt-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats
19	1/2	1 1/2	GA-E-67041	Cryo.Gate-Extend.BB-Red.B-Solid wdg-Wldd seat - API602	BW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
62	2	10	GA-E-60711	Cryo.Check-Flanged-Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
69	36	36	GA-E-60737	Cryo.Check-Flanged-Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF

STRA	INERS						
pos.	from	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	3	3	GA-E-60623	Y Strainer-Bolted cover - ASME-B16.34	FLGD		Body: ASTM A351 CF8M Screen: 316 - PERF.PLATE - 18 Holes/Cm2
1	36	36 36 GA-E-60618		T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen: 316 - CLOTH - MESH 40
2	14 24 GA-E-60624		GA-E-60624	Angle T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	1	Body :ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen:316 - CLOTH - MESH 40

															9	) Deg	grees	•					
Size																							
1/2	Т																						
3/4	Ţ	T	_																				
1	T	T	T	_																			
1/2	Т	T	T	T	_																		
2	W	W				_																	
3	VV	W	W	W	W	<u> </u>	_																
4	W	W	W	W	W	1	<u> </u>	_															
6	W	W	W	W	W	VV	I VA/	1	_														
8	W	W	W	W	VV	۷V	۷V	\ I	<u> </u>	_													
10 12	W	W	W	W	W	W	VV	W	W	ļ	_												
14	W	W	W	W	VV VV/	۷۷	W	W	W	I D	+	_											
16	W	W	W	W	W	۷۷	۷۷	۷۷	W	P	I D	÷	_										
18	W	W	W	W	۱۸/	٧٧/	۱۸/	W	W	Ь	Ь	b	÷	т									
20	W	W	W	W	W	W	W	W	w	P	P	P	Þ	÷	т								
22	W	w	w	w	W	w	w	w	w	P	P	P	P	P	÷	т							
24	W	W	w	w	w	w	w	w	w	P	P	P	P	P	Ť	Ť	т						
28	W	W	W	W	W	W	W	W	W	P	P	P	P	P	P	P	Ť	Т					
30	W	W	W	W	W	W	W	W	W	Р	Р	Р	Р	Р	Р	Ρ	Т	Т	Т				
32	W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т			
36	W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т	Т		
chSize	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	22	24	28	30	32	36	6	
nda																							
		DID=	10/1-			200	NO.			3D E		UDA 47	- 040	_									
PIPE					EINF(	JRC	ING F	AD-	S-C	JK-E	NG-F	'IPM	-012	-E									
TEE	- AS	ME-E	316.9	1																			

## GENERAL NOTES

WELDOLET - MSS-SP97

1) Use of threaded connections is prohibited except for instrument impulse lines.
2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



**PWHT** 

		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	C	6S/	A0E	360	
						Rev.		
Sh.	1	of	3	Α	0			

Base Material : STAINLESS STEEL 304/304L DUAL GRADE Design code : ASME B 31.3 2016

Nom. Rating : CL600 Facing/Finishing : RF

Valve Trim : 12 - SS316/HF

:NO

Corrosion Allow. : 0 mm

Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -196 °C to 220 °C

Service: [AIV] BOG - Boil Off Gas DFG - Dry Fuel Gas MR - Mixed Refrigerant NG - Natural Gas PC - Process Condensate PG - Process Gas / Purge Gas PR - Propane Refrigerant Pipe Thickness

Nipple Thickness

 NPS
 1/2
 3/4
 1
 1 1/2
 2

 Thk.mm
 3.73
 3.91
 4.55
 5.08
 5.54

 SCH.
 80S
 80S
 80S
 80S
 80S

PRESSURE - TEMPERATURE Ratings

 NPS
 Press. bar 1/2 · 24
 99.28
 99.28
 92.24
 99.28
 62.74
 74.12
 68.6
 ASME B16.5

 NPS
 Press. bar 75
 37.78
 93.33
 148.9
 204.4
 Material Group 2.1

26 - 48 Temp. °C 70

20	40 1011		70		_	
		ze	Item Description	Ends	Rating/Facing	Material
opt.	from	to				
PIPE						
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	48	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN	IGES					
	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	26	48	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	1/2	1/2	THD FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A182 F304/304L DUAL GRADE
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
99	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	26	48	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
	26	48	BLIND FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	26	48	BLIND FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	TACLE			111121		THE THINK TO E TO THOS TE BOTHE ON THE
Ī	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP304
	10	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
	26	26	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060016</mfr>		CL600 RF	ASTM A240 TP304
i	30	36	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060016</mfr>		CL600 RF	ASTM A240 TP304
2	1/2	8	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
99	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP304
99	10	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
FITTII	- 1	27	DELIVE & OF ACENT - ACIVIE-B10.40		OLOGO IXI	NOTIVI A240 11 304
1	1/2	2	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A182 F304/304L DUAL GRADE
, 55	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW	02000111	ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - WEDD
	8	48	REDUCER - ASME-B16.9	BW		ASTM A403 WP3045/304LS DOAL GRADE - SMLS
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	48	CAP - ASME-B16.9	BW	3000	ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A403 WF3045/304LS DOAL GRADE - SMLS
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A162 F304/304L DUAL GRADE ASTM A312 TP304/TP304L DUAL GRADE - SMLS
		2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		
	3/4 3/4	2		THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	-, .		SWAGE NIPPLE - PE/THDD - MSS-SP95			ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	48	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
MICC	2   ELLANE	20	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW		ASTM A182 F304/304L DUAL GRADE
IVIIOCI	-		ODEOLAL TEMPODADY OTDAINED - MED OLD Marchia		OL 600 DE	ACTIVACIO TROCI
GASK	30	30	SPECIAL TEMPORARY STRAINER - <mfr -="" metallic="" std=""></mfr>		CL600 RF	ASTM A240 TP304
GASI	- 1	40	ELAT GAGUET, GROOVER, MER OU			
	26	48	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20	<u> </u>	1	AISI 304
BOLT		4.4/5	OT DOLT CANUTS AND THAT TO DAY 5000			
- 1	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 B8 CL.2 + ASTM A194 GR.8
'	4 5 /0		OT DOLT, O MUTO AMOLTICAL TO DUE 5000			
99	1 5/8 1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368 ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660 ASTM A453 GR. 660 - PTFE COATED

VALV	'ES						
	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to		·			
1	1/2	1 1/2	GA-E-60142	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim : 316 / HF
1	2 24 GA-E-60154		GA-E-60154	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A351 CF8M
							Trim: 316 / HF



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Pipi	ng C	Class	s:	0	6S/	A0E	60	
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/ALV	ES						
pos.	Si	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from 1/2	1 1/2	GA-E-60234	Globe-BB-Red BThdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
4	2	12	GA-E-60247	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Trim :316 / HF Body: ASTM A351 CF8M
6	1/2	1 1/2	GA-E-60341	Check-BB-Red.B-Piston-Thdd seat - API602	BW	CL800	Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE
6	2	10	GA-E-60358	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Trim: 316 / HF Body: ASTM A351 CF8M
6	12	24	GA-E-60359	Check-Flanged -Dual plate-Wildd seat - API594	FLGD	CL600 RF	Trim: 3316 / HF Body: ASTM A351 CF8M
	26	36			FLGD		Trim: 316 / HF
6			GA-E-60351	Check-Flanged -Dual plate-Widd seat - API594		CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
7	3	3	GA-E-60454	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
7	6	24	GA-E-60454	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2	GA-E-60452	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-67026	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	BW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
11	1/2	1 1/2	GA-E-60153	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
14	1/2	1 1/2	GA-E-60140	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
14	2	24	GA-E-60188	· ·	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
19	1/2	1 1/2	GA-E-67081	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	BW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
62	2	10	GA-E-60710	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
69	36	36	GA-E-60395	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M
80	1/2	1 1/2	GA-E-60797	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE
82	1/2	1 1/2	GA-E-60763	Frgd body - API608 Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Trim : Soft seat-316 trim - RPTFE seats Body: ASTM A182 F316/F316L DUAL GRADE
89	1/2	1 1/2	GA-E-60476	Ball-End entry -FB-Float.ball -Frgd body+nipples -		CL800	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A182 F316/F316L DUAL GRADE
101	1/2	1 1/2	GA-E-60593	API608 Gate-Stem Extension-BB-Red.B-Solid wdg-	DF BW	CL800	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A182 F316/F316L DUAL GRADE
101	2	24	GA-E-60155	Exp.seat - API602 Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL600 RF	Trim: 316 / HF Body: ASTM A351 CF8M
201	26	36	GA-E-60525	- API600 Butterfly-Stem Extension-Flanged-Triple Off Set-	FLGD	CL600 RF	Trim : 316 / HF Body: ASTM A351 CF8M
101	2	12	GA-E-60224	Int.seat-Fire safe - ASME-B16.34 Globe-Stem Extension-BB-Disk-Thdd seat - API	FLGD	CL600 RF	Trim : Metal seat - 316 - 316 disc Body: ASTM A351 CF8M
701	6	24	GA-E-60799	623 Ball-Stem Extension-Split body-Red.B-Trunnion	FLGD	CL600 RF	Trim: :316 / HF Body: ASTM A351 CF8M
701	26	36	GA-E-67111	ball - API6D  Ball-Stem Extension-Split body-Red.B-Trunnion	FLGD	CL600 RF	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A351 CF8M
301	1/2	1 1/2	GA-E-67111	ball - API6D  Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A182 F316/F316L DUAL GRADE
				Frgd body - API608			Trim : Soft seat-316 trim - PEEK seats
801	6	24	GA-E-60798	Ball-Stem Extension-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M  Trim : Soft seat-316 trim - PEEK seats
ΓRΑ	INERS						
os.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	36	36	GA-F-60618	T Strainer-BW - <mer -="" metallic="" std=""></mer>	RW	CI 600 RF	Body - ASTM A403 WP304WX/304I WX DHAL GRADE - WLDD

CL600 RF

BW

### **BRANCH TABLES**

36

36

GA-E-60618

T Strainer-BW - <MFR Std - Metallic>

Report Name: SpcLinB Revision: 01.06.02 - 09/12/2021 Printed : 28/11/2024 15:18:43

Body : ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen: 316 - CLOTH - MESH 40



		ов <b>2243</b>						
Pipi	ng C	Class	s:	0	6S/	A0E	60	
						Rev.		
Sh.	3	of	3	Α	0			

															90	) Deg	grees	;										П
RunSize																												
1/2	Т																											
3/4	Т	Т																										
1	Т	Т	Т																									
1 1/2	Т	Т	Т	Т																								
2					Т																							
3					Т	Т																						
4					Т	Т	Т																					
6					SW	Т	T	T	_																			
8						SW		T	T	_																		
10						SW		<u> </u>	 	1	_																	
12							SW	<u> </u>	I T	Ţ	I T	_																
14 16							SW	<u>+</u>	<u> </u>	+	<u>+</u>	+	-															
18							SW	SW	÷	÷	÷	÷	÷	т														
							SW			÷	Ť	÷	÷	÷	т													
20 24							SW			÷	÷	÷	÷	÷	÷	т												
26									SW	SW	Ť	Ť	Ť	Ť	Ť	Ť	Т											
28									SW		Ť	Ť	Ť	Ť	Ť	Ť	Ť	Т										
26 28 30					SW	SW	SW	SW	SW	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т									
36 40									SW				Т	Т	Т	Т	Τ	Т	Т	Т								
40									SW					Т	Т	Т	Т	Т	Т	Т	Т							
48					SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	Т	Т	Т	Т	Т	Т	Т						
BranchSize	1/2	3/4	1	1 1/	2 2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	36	40	48						
Legenda																												
	CIAL	SWI	EEP	OLE1	Γ - <n< th=""><th>1FR S</th><th>Std&gt;</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th> </th><th><math>\neg</math></th></n<>	1FR S	Std>																				 	$\neg$
	- AS																										 	ᅥ
1 166	AS	IVIE-E	0.	<u> </u>																							 	

### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).

  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.

  4) This piping class is created for lines subjected to Acoustic Induced Vibration.



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	6S	A0E	61	
						Rev.		
Sh.	1	of	2	Α	0			

Base Material : STAINLESS STEEL 304/304L DUAL GRADE Design code : ASME B 31.3 2016

Nom. Rating : CL600 PWHT : NO
Facing/Finishing : RF Valve Trim : 12 - SS316/HF

Corrosion Allow.: 0 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -175 °C to 220 °C

Service: [AIV] [Cryogenic Service] ER - Ethane / Ethilene Refrigerant LNG - Liquefied Natural Gas MR - Mixed Refrigerant NG - Natural Gas PC - Process Condensate PR - Propane

Refrigerant Pipe Thickness

NPS 1/2 3/4 Thk.mm 2.77 2.87 SCH. 40S 40S 14 16 15.09 16.66 18 20 24 19.05 20.62 24.61 10 12.7 12 14.27 2 3.91 3 5.49 4 6.02 6 7.11 8 10.31 3.38 3.68 40S 40S 40S 408 40S 40S 80S

Nipple Thickness

 NPS
 1/2
 3/4
 1
 1 1/2
 2
 3

 Thk.mm
 3.73
 3.91
 4.55
 5.08
 5.54
 5.49

 SCH.
 80S
 80S
 80S
 80S
 80S
 40S

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 99.28 99.28 82.74 74.12 68.6 ASME B16.5 1/2 · 24 Temp. °C -28.9 37.78 93.33 148.9 204.4 Material Group 2.1

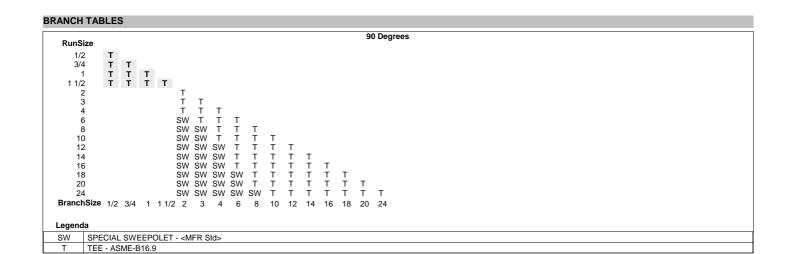
					1	
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	48	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN	GES					
	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
6	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RF	ASTM A182 F304/304L DUAL GRADE
14	1/2	1/2	THD FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A182 F304/304L DUAL GRADE
63	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
73	1/2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
99	1/2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	1/2	24	BLIND FLANGE - ASME-B16.5	DIA.	CL600 RF	ASTM A182 F304/304L DUAL GRADE
,,	2 3/4	2	WN REDUCING FLANGE - ASME-B16.5	BW THDF	CL600 RF CL600 RF	ASTM A182 F304/304L DUAL GRADE
14 99	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	TACLE		THDD RED. FLANGE - ASME-B16.5	וחטר	CL600 RF	ASTM A182 F304/304L DUAL GRADE
00	1/2	20	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
	24	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
99	1/2	20	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
FITTI		20	DEINE & OF MOERC MOME BIO.40		DEGGG IVI	NOTHINE TO 11 304
	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A182 F304/304L DUAL GRADE
99	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	24	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	24	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	3	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	24	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
0 4 01	2	8	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW		ASTM A182 F304/304L DUAL GRADE
GAS		0.4	CD MOUND COVE with OUT & IAIN BINGS ASSAURT BAS SS		1	204 CC - CD ADI L 000/ 204 OUT DING
14	1/2 2	24 2	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20 SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - 304 OUT.RING 304 SS+GRAPH 98% - 304 OUT.RING
63	3	24	OCTAGONAL RJ GASKET - ASME-B16.20			304 SS+GRAPH 98% - 304 OUT.RING   AISI 304
73	3 1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20 OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
BOL <sup>1</sup>			OCTAGONAL NJ GASKET - ASIVIE-DT0.20		1	NIOI 304
BUL	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 B8 CL.2 + ASTM A194 GR.8
	1 5/8	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660
99	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660 - PTFE COATED
			,			I .

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60144	Cryo.Gate-Extend.BB-Red.B-Solid wdg-Wldd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
1	2	24		Cryo.Gate-Extend.BB-FB-Flex wdg-Thd seat - API600	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
2	26	42		Cryog.Butterfly-Flanged-Triple Offset-Int.seat-Fire safe - ASME-B16.34	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Metal seat - 316 - 316 disc
4	1/2	1 1/2	GA-E-60236	Cryo.Globe-Extend.BB-Red.B-Thdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
4	2	12	GA-E-60249	Cryo.Globe-Extend.BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim :316 / HF
6	1/2	1 1/2	GA-E-60344	Cryo.Check-BB-Red.B-Piston-Thdd seat - API602	BW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF



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VALVES  Size Data Sheet Item Description Ends Deting/Essing Material												
pos.	s. from to Data Sheet		Data Sheet	Item Description	Ends	Rating/Facing	Material					
6	2	10	GA-E-60361	Cryo.Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim :316 / HF					
6	12	24	GA-E-60362	Cryo.Check-Flanged-Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim :316 / HF					
6	26	36	GA-E-60354	Cryo.Check-Flanged-Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF					
7	2	2	GA-E-60456	Cryo.Ball-Ext.bnt-Split body-Red.B-Float.ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats					
7	3	24	GA-E-60457	Cryo.Ball-Ext.bnt-Split body-Red.B-Trun.ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats					
8	1/2	1 1/2	GA-E-60455	Cryo.Ball-Ext.bnt-Split body-FB-Floating ball - API608	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Crio Soft seal-316 trim - KEL.F seats					
8	3	24	GA-E-60765	Cryo.Ball-Ext.bnt-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats					



# GENERAL NOTES

- 1) Use of threaded connections is prohibited except for instrument impulse lines.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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Design code : ASME B 31.3 2016 Base Material : STAINLESS STEEL 304/304L DUAL GRADE

Nom. Rating : CL600 Facing/Finishing: RF

Valve Trim :12 - SS316/HF Corrosion Allow. : 0 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -101 °C to 230 °C

Service: FG - Fuel Gas HL - Hydrocarbon Liquid HV - Hydrocarbon Vapour NG - Natural Gas WF - Wet (Warm) Flare

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 Thk.mm 2.77 2.87 3.38 3.68 3.91 5.49 6.02 7.11 10.31 10 12 14 16 18 20 24 28 30 36 12.7 14.27 15.09 16.66 19.05 20.62 24.61 22.23 23.83 28.58 SCH. 40S 40S 40S 40S 40S 40S 40S 40S 80S

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 79,28 99,28 93,74 74.12 68.6 ASME B16.5 NPS Press. bar 75

28 -	36 Tem		70			
		ize	Item Description	Ends	Rating/Facing	Material
opt.	from	to				
PIPE			loupe	bu	1	
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
FI AN	8 IGES	36	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	26	36	WN FLANGE - ASME-B16.47 series.A	вw	CL600 RF	ASTM A182 F304/304L DUAL GRADE
6	6	6	WN FLANGE - ASME-B16.5	BW	CL900 RF	ASTM A182 F304/304L DUAL GRADE
63	6	6	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
73	1/2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5	J.,	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	26	36	BLIND FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	CTACLE		THE RESIDENCE FROM STORE	,	02000111	THE THE THE POST OF THE STATE STATES
	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP304
	10	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
	36	36	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060016</mfr>		CL600 RF	ASTM A240 TP304
2	1/2	8	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
6	6	6	SPECTACLE BLIND - ASME-B16.48		CL900 RF	ASTM A240 TP304
73	2	2	SPECTACLE BLIND - ASME-B16.48			ASTM A240 TP304
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
	2	24	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	TEE - ASME-B16.9	вw		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	2	8	WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE
	2	2	LATROLET - BW END - MSS-SP97	BW	3000	ASTM A182 F304/304L DUAL GRADE
	3	8	SPECIAL LATROLET - <mfr std=""></mfr>	BW		ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	LATROLET - SW END - MSS-SP97	SW\BW	3000	ASTM A182 F304/304L DUAL GRADE
GASI	KETS					
	26	36	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
6	6	6	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
63	6	6	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
BOL.						
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 L7 + ASTM A194 GR.7 - PTFE COATED



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VALV	ES						
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1	1/2	1 1/2	GA-E-60146	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
1	2	24	GA-E-60154	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A351 CF8M   Trim : 316 / HF
4	1/2	1 1/2	GA-E-60239	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
4	2	12	GA-E-60247	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim :316 / HF
6	1/2	1 1/2	GA-E-60347	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
6	2	10	GA-E-60358	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
6	12	24	GA-E-60359	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
6	26	36	GA-E-60351	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
7	6	24	GA-E-60454	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2	GA-E-60452	Ball-End entry -FB-Float.ball -Frgd body - API608		CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats
8	6	24	GA-E-67100	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-60178	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
14	2	24	GA-E-60188	- API600	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
62	2	10	GA-E-60710	Check-Flanged -Dual plate-Wild seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
64		6	GA-E-60389	Nozzle Check-Long-Axial non slam-Thdd seat - API 6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
69	6	6	GA-E-67513	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
69	36	36	GA-E-60395	Check-Flanged -Dual plate-Wldd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim :316 / HF
82	1/2	1 1/2	GA-E-60763	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60475	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	PE/THC	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67016	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
101	2	24	GA-E-60155	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat - API600		CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
130	1/2	1 1/2	GA-E-67083	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
140	2	3	GA-E-67375	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
201	26	36	GA-E-60529	Butterfly-Stem Extension-Flanged-Triple Off Set- Int.seat-Fire safe - ASME-B16.34	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: Metal seat - 316 - 316 disc
401	2	12	GA-E-60224	Globe-Stem Extension-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
701	8	8	GA-E-60799	Ball-Stem Extension-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: Soft seat-316 trim - PEEK seats
780	1/2	2 1 1/2	GA-E-67674 GA-E-67141	DBL Block&Bleed Ball valve-SplitBdy-RB- Float.ball - <mfr std=""> Ball-Stem Extension-End entry -FB-Float.ball -</mfr>	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim: Soft seat-316 frim - PEEK seats
801	3	24	GA-E-67141 GA-E-60798	Frgd body - API608  Ball-Stem Extension-End entry -FB-Float.oall - Frgd body - API608  Ball-Stem Extension-Split body-FB-Trunnion ball -	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats Body: ASTM A351 CF8M
841	6	6	GA-E-60798 GA-E-67632	API6D  Ball-Stem Extension-Split body-FB-Trunnion ball - Ball-Stem Extension-Split body-FB-Trunnion ball -		CL600 RF	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A351 CF8M Body: ASTM A351 CF8M
				API6D - Interlock System			Trim : Soft seat-316 trim - PEEK seats
907	2	6	GA-E-69018	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M  Trim : Soft seat-316 trim - PEEK seats

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pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	6	6	GA-E-60640	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A403 WP304S/304LS DUAL GRADE - SMLS Screen: 316 - CLOTH - MESH 3
1	30	36	GA-E-60618	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen:316 - CLOTH - MESH 40

**BRANCH TABLES** 



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	24	S	S	S	S	W	W	W	W	W	Ρ	Ρ	Р	Ρ	Ρ	Т	T	_			
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	3 4	L	L	L	. L			PP .													
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	8	L	L		. L					PP LS I	PP										
		L	L		. L	. L	D L	.o 1	_O	LO											

	4	L	L	L	L	LB	LS	PP																			
	6	L	L	L	L	LB	LS	LS	PP																		
	8	L	L	L	L	LB	LS	LS	LS	PP																	
1	10	L	L	L	L	LB	LS	LS	LS	LS	PP																
1	12	L	L	L	L	LB	LS	LS	LS	LS	PP	PP															
1	14	Ē	L	Ĺ	L	LB	LS	LS	LS	LS	PP	PP	PP														
1	16	Ē	L	Ĺ	L	LB	LS	LS	LS	LS	PP	PP	PP	PP													
1	18	Ē	L	Ĺ	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP												
2	20	Ē	L	Ĺ	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP											
2	24	Ē	L	Ĺ	L	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP										
2	28	ī	ī	ī	ī	ΙB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP									
3	30	ī	ī	ī	ī	LB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP								
3	36	ī	ī	ī	ī	ΙB	LS	LS	LS	LS	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP							
Branch	Size	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	28	30	36							
Branor	10120	.,_	٠, .	•	,_	_	•		Ů	•									-	00							
Legend	la																										
L	LATE	ROLE	T - S\	N EN	ND - N	1SS-S	SP97																				
LB	LATE	ROLE	T - B\	N EN	1D - N	ISS-S	SP97																				
LS	SPE	CIAL	LATR	OLE	T - <n< th=""><th>/IFR S</th><th>Std&gt;</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></n<>	/IFR S	Std>																				
PP	PIPE	TO F	PIPE \	NITH	1 FUL	L EN	CIRC	LEME	NT S	LEEV	E:TS	-COF	R-ENC	3-PIP	MT-0	12-E											

## GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	C	)6S	A0S	60	
						Rev.		
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Base Material : STAINLESS STEEL 304/304L DUAL GRADE :ASME B 31.3 2016 Design code

Nom. Rating : CL600 **PWHT** :NO Facing/Finishing : RF Valve Trim :12 - SS316/HF

Corrosion Allow. : 0 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

: -100 °C to 220 °C Temp. Limit

Service: [AIV] FG - Fuel Gas HV - Hydrocarbon Vapour NG - Natural Gas

Pipe Thickness

NPS 1/2 3/4 Thk.mm 2.77 2.87 1 1 1/2 2 3 4 3.38 3.68 3.91 5.49 6.02 6 8 7.11 10.31 10 12 12.7 14.27 
 14
 16
 18
 20
 24
 28
 30
 36

 15.09
 16.66
 19.05
 20.62
 24.61
 22.23
 23.83
 28.58
 SCH. 40S 40S 40S 40S 40S 40S 40S 40S 80S

Nipple Thickness

 
 NPS
 1/2
 3/4
 1
 1 1/2

 Thk.mm
 3.73
 3.91
 4.55
 5.08

 SCH.
 80S
 80S
 80S
 80S
 5.54 80S

PRESSURE - TEMPERATURE Ratings

NPS	Press. bar	99.28	99.28	82.74	74.12	ASME B16.5
1/2 · 24	Temp. °C	-28.9	37.78	93.33	148.9	Material Group 2.1
NPS	Press. bar	75				
28 · 36	Temp. °C	70				

		•	1			
opt.	from S	ize ∣ to	Item Description	Ends	Rating/Facing	Material
	IIOIII	10				
PIPE					1	
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	36	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN	IGES					
	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
	26	36	WN FLANGE - ASME-B16.47 series.A	BW	CL600 RF	ASTM A182 F304/304L DUAL GRADE
73	1/2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F304/304L DUAL GRADE
	26	36	BLIND FLANGE - ASME-B16.47 series.A		CL600 RF	ASTM A182 F304/304L DUAL GRADE
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A182 F304/304L DUAL GRADE
SPEC	TACLE	BLIND				
	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP304
	10	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
	36	36	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060016</mfr>		CL600 RF	ASTM A240 TP304
2	1/2	8	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP304
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	24	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	2	14	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	3000	ASTM A182 F304/304L DUAL GRADE
GASK	KETS				1	
	26	36	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
<b>BOLT</b>						
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 L7 + ASTM A194 GR.7 - PTFE COATED

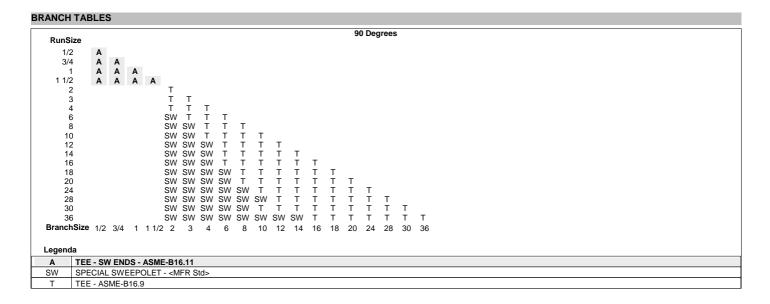
VALV	ES						
	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to		·			
1	1/2	1 1/2	GA-E-60146	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim: 316 / HF
1	2	24	GA-E-60154	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL600 RF	Body: ASTM A351 CF8M
							Trim : 316 / HF
4	1/2	1 1/2	GA-E-60239	Globe-BB-Red BThdd seat - API602	SW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim : 316 / HF
4	2	12	GA-E-60247	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A351 CF8M
							Trim: 316 / HF
6	1/2	1 1/2	GA-E-60347	Check-BB-Red.B-Piston-Thdd seat - API602	SW	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim : 316 / HF
6	2	10	GA-E-60358	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M
	1						Trim · 316 / HF



		ов <b>2243</b>						
Pipi	ng C	Class	s:	0	)6S	A0S	60	
						Rev.		
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s.	Si:	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
3	12	24	GA-E-60359	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M
				3	_		Trim: 316 / HF
;	26	36	GA-E-60351	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M
				3	_		Trim : 316 / HF
.	6	24	GA-E-60454	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M
					_		Trim : Soft seat-316 trim - PEEK seats
3	1/2	1 1/2	GA-E-60452	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE
				, , , , , , , , , , , , , , , , , , , ,	_		Trim : Soft seat-316 trim - PEEK seats
3	6	24	GA-E-67100	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M
					_		Trim : Soft seat-316 trim - PEEK seats
0	1/2	1 1/2	GA-E-60178	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
					DF		Trim: 316 / HF
4	2	24	GA-E-60188	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL600 RF	Body: ASTM A351 CF8M
				- API600	_		Trim: 316 / HF
2	2	10	GA-E-60710	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M
					_		Trim: 316 / HF
9	36	36	GA-E-60395	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M
							Trim : 316 / HF
2	1/2	1 1/2	GA-E-60763	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH
1	1/2	1 1/2	GA-E-60475	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE/THD	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
				API608	F		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH
1	1/2	1 1/2	GA-E-67016	Gate-Stem Extension-BB-Red.B-Solid wdg-	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
				Exp.seat - API602			Trim : 316 / HF
1	2	24	GA-E-60155	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat	FLGD	CL600 RF	Body: ASTM A351 CF8M
				- API600			Trim: 316 / HF
80	1/2	1 1/2	GA-E-67083	Gate-Stem Extension-BB-Red.B-Solid wdg-	SW/TH	CL800	Body: ASTM A182 F316/F316L DUAL GRADE
				Exp.seat - API602	DF		Trim: 316 / HF
1	26	36	GA-E-60529	Butterfly-Stem Extension-Flanged-Triple Off Set-	FLGD	CL600 RF	Body: ASTM A351 CF8M
				Int.seat-Fire safe - ASME-B16.34			Trim : Metal seat - 316 - 316 disc
1	2	12	GA-E-60224	Globe-Stem Extension-BB-Disk-Thdd seat - API	FLGD	CL600 RF	Body: ASTM A351 CF8M
				623			Trim : 316 / HF
1	6	24	GA-E-60799	Ball-Stem Extension-Split body-Red.B-Trunnion	FLGD	CL600 RF	Body: ASTM A351 CF8M
				ball - API6D			Trim : Soft seat-316 trim - PEEK seats
1	1/2	1 1/2	GA-E-67141	Ball-Stem Extension-End entry -FB-Float.ball -	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE
			1	Frgd body - API608			Trim : Soft seat-316 trim - PEEK seats

STRA	STRAINERS												
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material						
5	36	36	GA-E-60655	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen: 316 - CLOTH - MESH 30						



# GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment. 2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).



		ОВ <b>2243</b>								
Pipi	ng C	Class	s:	O	06SA0S60					
						Rev.				
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NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
 This piping class is created for lines subjected to Acoustic Induced Vibration.



PWHT

:NO

		ов <b>2243</b>								
Pipi	ng C	Class	s:	06SD0S01						
						Rev.				
Sh.	1	of	2	Α	0					

Design code : ASME B 31.3 2016 Base Material : STAINLESS STEEL 316/316L DUAL GRADE

Nom. Rating : CL600

Facing/Finishing: RF Valve Trim :12 - SS316/HF Corrosion Allow. : 0 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

: -29 °C to 150 °C Temp. Limit

Service: MR - Mixed Refrigerant

Pipe Thickness

 
 NPS
 1/2
 3/4
 1
 1 1/2

 Thk.mm
 2.77
 2.87
 3.38
 3.68

 SCH.
 40S
 40S
 40S
 40S
 6 7.11 10 12.7 14 16 18 20 15.09 17.48 19.05 20.62 14.27 6.02 25.4 40S 40S 80S

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 99.28 99.28 85.49 77.22 ASME B16.5 1/2 · 24 Temp. °C -28.9 37.78 93.33 148.9 Material Group 2.2

	s	ize	Item Description	Ends	Rating/Facing	Material
opt.	from	to			J	
PIPE				·		
	1/2	6	PIPE	вw		ASTM A312 TP316/TP316L DUAL GRADE - SMLS
	8	24	PIPE	вW		ASTM A358 TP316/TP316L CL.1 DUAL GRADE - EFW
LAN	IGES			<u> </u>		'
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL600 RF	ASTM A182 F316/F316L DUAL GRADE
	2	24	WN FLANGE - ASME-B16.5	BW	CL600 RF	ASTM A182 F316/F316L DUAL GRADE
73	1/2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F316/F316L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL600 RF	ASTM A182 F316/F316L DUAL GRADE
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL600 RF	ASTM A182 F316/F316L DUAL GRADE
PEC	TACLE	BLIND				
	1/2	8	SPECTACLE BLIND - ASME-B16.48		CL600 RF	ASTM A240 TP316
	10	24	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP316
2	1/2	8	BLIND & SPACER - ASME-B16.48		CL600 RF	ASTM A240 TP316
ITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		CL600 RF	ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F316/F316L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	8	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F316/F316L DUAL GRADE
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	8	24	REDUCER - ASME-B16.9	BW		ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A182 F316/F316L DUAL GRADE
	2	24	CAP - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F316/F316L DUAL GRADE
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F316/F316L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP316/TP316L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - THDD/PE - MSS-SP95	THDM\PE		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F316/F316L DUAL GRADE
	2	6	TEE - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	8	24	TEE - ASME-B16.9	BW		ASTM A403 WP316WX/WP316LWX DUAL GRADE - WLDD
	2	8	WELDOLET - MSS-SP97	BW		ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A182 F316/F316L DUAL GRADE
ASK	KETS					
	1/2	24	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			316 SS+GRAPH 98% - C.S. OUT.RING
73	1/2	2	OCTAGONAL RJ GASKET - ASME-B16.20		<u> </u>	AISI 316
BOLT		,				
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALVI	ES						
pos.	Si: from	ze to	Data Sheet	Item Description		Rating/Facing	Material
1	1/2	1 1/2	GA-E-60146	Gate-BB-Red.B-Solid wdg-Exp.seat - API602		CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim :316 / HF
1	1 2 24 GA-E-60154		GA-E-60154	Gate-BB-FB-Flex wdg-Thdd seat - API600		CL600 RF	Body: ASTM A351 CF8M Trim :316 / HF
4	1/2	1 1/2	GA-E-60239	Globe-BB-Red BThdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
4	2	12	GA-E-60247	Globe-BB-Disk-Thdd seat - API 623	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
6	1/2	1 1/2	GA-E-60347	Check-BB-Red.B-Piston-Thdd seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
6	2	10	GA-E-60358	Check-BB- FB- Swing - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
6	12	24	GA-E-60359	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : 316 / HF
7	6	24	GA-E-60454	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
8	8 1/2 1 1/2 GA-E		GA-E-60452	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE <u>Trim :</u> Soft seat-316 trim - PEEK seats



		DB 2 <b>243</b>								
Pipi	ng C	Class	s:	06SD0S01						
						Rev.				
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/ALVI	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
8	6	24	GA-E-67100	Ball-Split body-FB-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M  Trim : Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-60178	Gate-BB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
14	2	24	GA-E-60188	Gate-Stem Extension-BB-FB-Flex wdg-Thdd seat		CL600 RF	Body: ASTM A351 CF8M
62	2	10	GA-E-60710	1	FLGD	CL600 RF	Body: ASTM A351 CF8M
64	6	6	GA-E-60389	Nozzle Check-Long-Axial non slam-Thdd seat - API 6D	FLGD	CL600 RF	Body: ASTM A351 CF8M
82	1/2	1 1/2	GA-E-60763	Ball-End entry -FB-Float.ball -Frgd body - API608	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60475	Ball-End entry -FB-Float.ball -Frgd body+nipples - API608	PE/THD F	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67016	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	sw	CL800	Body: ASTM A182 F316/F316L DUAL GRADE  Trim : 316 / HF
101	2	24	GA-E-60155	· ·	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
130	1/2	1 1/2	GA-E-67083	Gate-Stem Extension-BB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL800	Body: ASTM A182 F316/F316L DUAL GRADE Trim :316 / HF
140	2	3	GA-E-67375	Gate-BB-FB-Flex wdg-Thdd seat - API600 - Interlock System	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
401	2	12	GA-E-60224	1	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim: 316 / HF
701	8	8	GA-E-60799	Ball-Stem Extension-Split body-Red.B-Trunnion ball - API6D	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
801	1/2	1 1/2	GA-E-67141	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body - API608	FLGD	CL600 RF	Body: ASTM A182 F316/F316L DUAL GRADE  Trim : Soft seat-316 trim - PEEK seats
801	3	24	GA-E-60798	Ball-Stem Extension-Split body-FB-Trunnion ball -	FLGD	CL600 RF	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
841	6	6	GA-E-67632	Ball-Stem Extension-Split body-FB-Trunnion ball - API6D - Interlock System	FLGD	CL600 RF	Body: ASTM A351 CF8M  Trim: Soft seat-316 trim - PEEK seats

### **BRANCH TABLES**

D6:															90	) Deg	grees
RunSi																	
1/2		4															
3/4			Α														
1			Α Α														
1 1/2			A /		` _												
2			3 1	. !													
3			S S														
4			5 5		, ,,		, Т	_									
			5 5			-		÷	т								
8 10			5 5		S W			w	Ť	т							
12			3 5		5 W			w	w	Ť	Т						
14			3		3 W		/ W	W	W	P	Ť	Т					
16			S S	5 5	s w	/ W	/ W	W	W	Р	Р	Т	Т				
18	: ;	s s	S S	5 5	S W	/ W	/ W	W	W	Ρ	Ρ	Ρ	Т	Τ			
20	١ ;		s s					W	W	Ρ	Ρ	Ρ	Р	Т	Т		
24		-	S S	•	3 W	/ W	/ W	W	W	Р	Р	Р	Р	Р	Т	Т	
Branch	Size 1	/2 3	/4	1 1	1/2 2	2 3	3 4	6	8	10	12	14	16	18	20	24	
Legend	а																
Α	TEE -	SW E	ENDS	- AS	ME-B	16.1	1										
Р	PIPE -	ГО Р	PE W	'ITH	REINI	FOR	CING	PAD-	TS-C	OR-E	NG-F	PIPM	T-012	-E			
S	SOCK																
Т	TEE -	ASM	E-B16	6.9													
W	WELD				P97												

## GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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Base Material Design code : ASME B 31.3 2016 : LOW TEMP. CARBON STEEL Nom. Rating :CL900 : AS PER CODE (NOTE 1) **PWHT** 

Facing/Finishing : RJ (F) Valve Trim :12 - SS316/HF Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 70 °C

Service: NG - Natural Gas

Pipe Thickness NPS 1/2 3/4 Thk.mm 4.78 5.56 1 1 1/2 6.35 7.14 2 3 4 6 8 10 12 8.74 11.13 11.13 14.27 15.88 20.62 22.23 14 16 18 20 23.83 26.19 29.36 32.54 SCH. 160 160 160 160 160 160 120 120 100 100 100 100

Nipple Thickness

PRESSURE - TEMPERATURE Ratings

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	24	PIPE	BW		ASTM A333 GR.6 - SMLS
FLAN	IGES					
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A350 LF2 - CL.1
	2	24	WN FLANGE - ASME-B16.5	BW	(2->2 1/2)	ASTM A350 LF2 - CL.1
					CL1500 RJ (F)	
					(3->24)	
7	_	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A350 LF2 - CL.1
'	.   -		BLIND FLANGE - ASME-B16.5	DVV	` '	ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1
	1/2 24		BLIND FLANGE - ASIVIE-B 10.5		(1/2->2 1/2) CL1500 RJ (F)	ASTM A350 LF2 - CL.1
					(3->24)	
					CL900 RJ (F)	
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A350 LF2 - CL.1
SPEC	TACLE	BLIND				
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		CL1500 RJ (F)	ASTM A516 GR.60 + S5 (-46°C)
	2	24	BLIND & SPACER - ASME-B16.48		(2->2 1/2)	ASTM A516 GR.60 + S5 (-46°C)
					CL1500 RJ (F) (3->24)	
					(3->24) CL900 RJ (F)	
7	2	24	BLIND & SPACER - ASME-B16.48		. ,	ASTM A516 GR.70 + S5 (-46°C)
FITTI					( )	
	2	2	DRIP-RING - TB DRI 5011		CL1500 RJ (F)	ASTM A350 LF2 - CL.1
	1/2		ELBOW - SW ENDS - ASME-B16.11	SW	9000	ASTM A350 LF2 - CL.1
li	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
l	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	2	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	6000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	2	24	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A420 WPL6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	9000	ASTM A350 LF2 - CL.1
	2	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	2	8	WELDOLET - MSS-SP97	BW		ASTM A350 LF2 - CL.1
	1/2	1 1/2	SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A350 LF2 - CL.1
GAS	KETS					
	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOL <sub>1</sub>						
	1/2	2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
	2 3/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7M + ASTM A194 GR.2HM (HotDip 153)

V	'ALVI	ES						
Г	pos.	Si from	ze to	Data Sheet	Item Description		Rating/Facing	Material
-	pos.			04 5 00400	O-4- M/D D-4-D O-1544- Fra4 ADISON	014500		D + 40TM 40F0   F0   01 4
	1 1/2 1/2 GA-E-60193		GA-E-60193	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW	CL1500	Body: ASTM A350 LF2 - CL.1	
							Trim : 316 / HF	
	1	2	2	GA-E-60194	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34		CL1500	Body: ASTM A352 LCC
								Trim: 316 / HF
	1	3	24	GA-E-67066	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A352 LCC
								Trim : 316 / HF
	4	1/2	1 1/2	GA-E-60274	Globe-WB-Red.B-Thdd seat - API602	SW	CL1500	Body: ASTM A350 LF2 - CL.1
		172 172 0772 00274						Trim: 316 / HF

Body: ASTM A352 LCC 2 2 GA-E-60275 Globe-PS-Disk-Integral seat - ASME-B16.34 вw CL1500 Trim : 316 / HF Body: ASTM A352 LCC Trim: 316 / HF 3 12 GA-E-60281 Globe-PS-Disk-Integral seat - ASME-B16.34 BW CL900



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		ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
oos.	from	to		<u> </u>			
6	2	2	GA-E-60399	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A352 LCC
							Trim: 316 / HF
6	3	24	GA-E-60731	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A352 LCC
							Trim: 316 / HF
8	1/2	1 1/2	GA-E-67238	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE	CL1500	Body: ASTM A350 LF2 - CL.1
				ASME-B16.34			Trim : Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-67073	Gate-WB-Red.B-Solid wdg-Exp.seat - API602		CL1500	Body: ASTM A350 LF2 - CL.1
					DF		Trim: 316 / HF
11	2	2	GA-E-67396	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A352 LCC
							Trim: 316 / HF
64	10	10	GA-E-60388	Nozzle Check-Long-Axial non slam-Thdd seat -	FLGD		Body: ASTM A352 LCC
				API 6D		1	Trim: 316 / HF
89	1/2	1 1/2	GA-E-67247		PE/THD	CL1500	Body: ASTM A350 LF2 - CL.1
				ASME-B16.34	F		Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67302	Gate-Stem Extension-WB-Red.B-Solid wdg-	SW	CL1500	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602			Trim : 316 / HF
111	2	2	GA-E-67342	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	FLGD	CL1500 RJ (F)	Body: ASTM A352 LCC
				- ASME-B16.34			Trim : 316 / HF
801	1	1	GA-E-67292	Ball-Stem Extension-End entry -FB-Float.ball -	PE	CL1500	Body: ASTM A350 LF2 - CL.1
				Frgd body+nipples - ASME-B16.34			Trim : Soft seat-316 trim - PEEK seats
907	2	2	GA-E-69020	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL1500	Body: ASTM A352 LCC
				API6D			Trim : Soft seat-316 trim - PEEK seats
907	3	24	GA-E-69019		BW	CL900	Body: ASTM A352 LCC
				API6D			Trim : Soft seat-316 trim - PEEK seats
917	2	2	GA-E-69021	Ball-Top entry-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - PEEK seats
917	3	24	GA-E-69022	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL900 RJ (F)	Body: ASTM A352 LCC
					L		Trim : Soft seat-316 trim - PEEK seats
974	3	24	GA-E-69057	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD		Body: ASTM A352 LCC
							Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

# **BRANCH TABLES**

																9	0 Deg	grees
RunS																		
1/2		Α																
3/4	4	Α	Α															
	1	Α	A	A														
1 1/2		A	A	A	A	_												
:	<u>2</u> 3	S S	S	S	S	w	_											
'	1	S	S	S	S	W	<u>+</u>	_										
	<del>*</del> 5	S	S	S	S	W	w	+	т									
'		S	S	S	S	W	W	w	÷	т								
10		S	s	s	S	w	W	w	w	÷	т							
1:	2	S	Š	s	S	w	w	w	w	w	Ť	Т						
14		Š	Š	Š	Š	W	W	W	W	W	P	Ť	Т					
10	3	S	S	S	S	W	W	W	W	W	Р	Р	Т	Т				
10	3	S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Т	Т			
20	)	S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Т	Т		
24		S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т	
Branci	ıSize	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	
Legend	la																	
Α	TEE	- SV	√ ENI	os -	ASM	E-B1	6.11											
Р	PIPE	Е ТО	PIPE	WIT	HR	EINF	ORC	ING F	PAD-	rs-co	OR-E	NG-F	PIPM	T-012	2-E			
S		CKOL																
Т		- AS																
W		LDOL				97												

### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



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Design code : ASME B 31.3 2016 Base Material : LOW TEMP. CARBON STEEL Nom. Rating : CL900 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing : RJ (F) Valve Trim : 12 - SS316/HF

Corrosion Allow. : 6 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013 Temp. Limit : -45 °C to 90 °C

Service: FG - Fuel Gas HL - Hydrocarbon Liquid NG - Natural Gas

Pipe Thickness

NPS 1 1 11/2 2 3 4 6 8 10 12 14 16 18 20 Thk.mm 9.09 10.15 11.07 15.24 17.12 18.26 20.62 25.4 25.4 27.79 30.96 34.93 38.1 SCH. XXS XXS XXS XXS XXS XXS 160 140 XXS XXS XXS 120 120 120 120 NPS Thk.mm Nipple Thickness

NPS 1 1 1/2 2 Thk.mm 9.09 10.15 11.07 SCH. XXS XXS XXS

8 -	48 Tem	p. °C	90			
opt.	Si from	ize to	Item Description	Ends	Rating/Facing	Material
	II OIII					
PIPE	4	24	PIPE	BW	I	40TM 4000 OD 0 OM 0
	1 26	24 48	PIPE	BW		ASTM A333 GR.6 - SMLS
FLAN		40	FIFE	DVV		API 5L GR.X65 PSL2 - SAW
	1	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 R.L(E)	ASTM A350 LF2 - CL.1
	2	24	WN FLANGE - ASME-B16.5	BW	(2->2 1/2)	ASTM A350 LF2 - CL.1
	-		7.0 2.1.02 7.0 2.10.10	J.,	CL1500 RJ (F)	7.67.07.000 Et 2 - 0E.1
					(3->24)	
			WW 51 AND 5 ADM 5 B40 45	B.44	CL900 RJ (F)	
	26	36	WN FLANGE - ASME-B16.47 series.A	BW		ASTM A350 LF2 - CL.1
	38	38	SPECIAL WN FLANGE - <mfr std=""> GA-E-060099 SPECIAL WN FLANGE - <mfr std=""> GA-E-060099</mfr></mfr>	BW BW		ASTM A350 LF2 - CL.1
7	42 3	48 24	WN FLANGE - ASME-B16.5	BW	1	ASTM A350 LF2 - CL.1
7	30	30	SPECIAL WN FLANGE - <mfr std=""> GA-E-060099</mfr>	BW	1	ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1
′	1	24	BLIND FLANGE - ASME-B16.5	DVV	(1->2 1/2)	ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1
	'	24	BEIND I EANGE - ASME-B10.3		CL1500 RJ (F)	A31W A330 LF2 - CL.1
					(3->24)	
					CL900 RJ (F)	
	26	36	BLIND FLANGE - ASME-B16.47 series.A			ASTM A350 LF2 - CL.1
	42	42	SPECIAL BLIND FLANGE - <mfr std=""> GA-E-060099</mfr>		1 ' '	ASTM A350 LF2 - CL.1
14	2	2 DI IND	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A350 LF2 - CL.1
SPEC	TACLE	1	CDECTACLE DUND ASMEDIA 49 CA F 000044		CL 1500 B L (5)	ASTM A516 GR.60 + S5 (-46°C)
	1 2	1 1/2	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		` '	, ,
	2	24	BLIND & SPACER - ASME-B16.48 GA-E-060011		(2->2 1/2) CL1500 RJ (F)	ASTM A516 GR.60 + S5 (-46°C)
					(3->24)	
					CL900 RJ (F)	
	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060099</mfr>		CL900 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
2	2	2	BLIND & SPACER - ASME-B16.48		CL1500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
7	12	12	BLIND & SPACER - ASME-B16.48		CL1500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS					
		١ _	DDID DING. TO DDI 5044		OL4500 D L(E)	10714 1050 150 01 4
	2	2	DRIP-RING - TB DRI 5011	0144		ASTM A350 LF2 - CL.1
	1	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	CL1500 RJ (F) 9000	ASTM A350 LF2 - CL.1
	1 2	1 1/2 24	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS
	1 2 26	1 1/2 24 48	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9	BW BW	9000	ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD
	1 2 26 1	1 1/2 24 48 1 1/2	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11	BW BW SW		ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1
	1 2 26 1 2	1 1/2 24 48 1 1/2 24	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9	BW BW SW BW	9000	ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS
	1 2 26 1 2	1 1/2 24 48 1 1/2 24 48	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9	BW BW SW BW BW	9000	ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD
	1 2 26 1 2 26 1	1 1/2 24 48 1 1/2 24 48 1 1/2	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9 FEMALE CAP - THD END - ASME-B16.11	BW BW SW BW THDF	9000	ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1
	1 2 26 1 2 26 1	1 1/2 24 48 1 1/2 24 48 1 1/2 1 1/2	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9 FEMALE CAP - THD END - ASME-B16.11 FEMALE CAP - SW END - ASME-B16.11	BW BW SW BW THDF SW	9000	ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A660 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1
	1 2 26 1 2 26 1 1 1	1 1/2 24 48 1 1/2 24 48 1 1/2 1 1/2 24	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9 FEMALE CAP - THD END - ASME-B16.11 FEMALE CAP - SW END - ASME-B16.11 CAP - ASME-B16.9	BW BW SW BW THDF SW BW	9000	ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS
	1 2 26 1 2 26 1 1 2 26	1 1/2 24 48 1 1/2 24 48 1 1/2 1 1/2 24 48	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9 FEMALE CAP - THD END - ASME-B16.11 FEMALE CAP - SW END - ASME-B16.11 CAP - ASME-B16.9 CAP - ASME-B16.9	BW BW SW BW THDF SW BW BW	9000 9000 6000 9000	ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A420 WPL6 - SMLS
	1 2 26 1 2 26 1 1 2 26 1	1 1/2 24 48 1 1/2 24 48 1 1/2 1 1/2 24 48 1 1/2	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9 FEMALE CAP - THD END - ASME-B16.11 FEMALE CAP - SW END - ASME-B16.11 CAP - ASME-B16.9 CAP - ASME-B16.9 COUPLING - SW/THDD ENDS - ASME-B16.11	BW BW SW BW THDF SW BW SW/THDF	9000 9000 6000 9000	ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A420 WPL6 - SMLS ASTM A420 WPL6 - SMLS ASTM A420 WPL6 - SMLS ASTM A350 LF2 - CL.1
	1 2 26 1 2 26 1 1 2 26	1 1/2 24 48 1 1/2 24 48 1 1/2 1 1/2 24 48 1 1/2 1 1/2	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9 FEMALE CAP - THD END - ASME-B16.11 FEMALE CAP - SW END - ASME-B16.11 CAP - ASME-B16.9 CAP - ASME-B16.9 COUPLING - SW/THDD ENDS - ASME-B16.11 COUPLING - SW ENDS - ASME-B16.11	BW BW SW BW THDF SW BW BW	9000 9000 6000 9000	ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A350 LF2 - SMLS ASTM A860 WPH65 - SMLS ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1
	1 2 26 1 1 2 26 1 1 1	1 1/2 24 48 1 1/2 24 48 1 1/2 1 1/2 24 48 1 1/2 1 1/2 1 1/2	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9 FEMALE CAP - THD END - ASME-B16.11 FEMALE CAP - SW END - ASME-B16.11 CAP - ASME-B16.9 CAP - ASME-B16.9 COUPLING - SW/THDD ENDS - ASME-B16.11 COUPLING - SW/ENDS - ASME-B16.11 THD MALE PLUG - RND HEAD - ASME-B16.11	BW BW SW BW THDF SW BW SW\THDF SW	9000 9000 6000 9000	ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A420 WPL6 - SMLS ASTM A420 WPL6 - SMLS ASTM A420 WPL6 - SMLS ASTM A350 LF2 - CL.1
	1 2 26 1 1 2 26 1 1 1 1 1	1 1/2 24 48 1 1/2 24 48 1 1/2 1 1/2 24 48 1 1/2 1 1/2 2 1 1/2 2 1 1/2	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9 FEMALE CAP - THD END - ASME-B16.11 FEMALE CAP - SW END - ASME-B16.11 CAP - ASME-B16.9 CAP - ASME-B16.9 COUPLING - SW/THDD ENDS - ASME-B16.11 COUPLING - SW ENDS - ASME-B16.11 THD MALE PLUG - RND HEAD - ASME-B16.11 NIPPLE - THDD/PE - ASME-B36.10	BW BW SW BW THDF SW BW SW\THDF SW THDM THDM\PE	9000 9000 6000 9000	ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A450 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1
	1 2 26 1 2 26 1 2 26 1 1 1 1 1 1	1 1/2 24 48 1 1/2 24 48 1 1/2 1 1/2 24 48 1 1/2 1 1/2 1 1/2	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9 FEMALE CAP - THD END - ASME-B16.11 FEMALE CAP - SW END - ASME-B16.11 CAP - ASME-B16.9 CAP - ASME-B16.9 COUPLING - SW/THDD ENDS - ASME-B16.11 THD MALE PLUG - RND HEAD - ASME-B16.11 NIPPLE - THDD/PE - ASME-B36.10 SWAGE NIPPLE - PE/PE - MSS-SP95	BW BW SW BW THDF SW BW SW\THDF SW THDM	9000 9000 6000 9000	ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A660 WPHY65 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1
	1 2 26 1 2 26 1 1 2 26 1 1 1 1 1 1 1	1 1/2 24 48 1 1/2 24 48 1 1/2 1 1/2 24 48 1 1/2 1 1/2 2 1 1/2 2 1 1/2 2 2	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9 FEMALE CAP - THD END - ASME-B16.11 FEMALE CAP - SW END - ASME-B16.11 CAP - ASME-B16.9 CAP - ASME-B16.9 COUPLING - SW/THDD ENDS - ASME-B16.11 COUPLING - SW ENDS - ASME-B16.11 THD MALE PLUG - RND HEAD - ASME-B16.11 NIPPLE - THDD/PE - ASME-B36.10	BW BW SW BW THDF SW BW SW\THDF SW THDM THDM\PE	9000 9000 6000 9000	ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A450 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1
	1 2 26 1 2 26 1 1 2 26 1 1 1 1 1 1 1 1	1 1/2 24 48 1 1/2 24 48 1 1/2 1 1/2 24 48 1 1/2 1 1/2 2 1 1/2 2 1 1/2 2 2 2 2	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9 FEMALE CAP - THD END - ASME-B16.11 FEMALE CAP - SW END - ASME-B16.11 CAP - ASME-B16.9 CAP - ASME-B16.9 COUPLING - SW/THDD ENDS - ASME-B16.11 COUPLING - SW/THDD ENDS - ASME-B16.11 THD MALE PLUG - RND HEAD - ASME-B16.11 NIPPLE - THDD/PE - ASME-B36.10 SWAGE NIPPLE - PE/PE - MSS-SP95 SWAGE NIPPLE - PE/THDD - MSS-SP95	BW BW SW BW THDF SW BW SW\THDF SW THDM THDM\PE PE PE\THDM	9000 9000 6000 9000	ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS
	1 2 26 1 2 26 1 1 2 26 1 1 1 1 1 1 1 1 1	1 1/2 24 48 1 1/2 24 48 1 1/2 24 48 1 1/2 2 1 1/2 2 1 1/2 2 1 1/2 2 2 2 2 1 1/2	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9 FEMALE CAP - THD END - ASME-B16.11 FEMALE CAP - SW END - ASME-B16.11 CAP - ASME-B16.9 CAP - ASME-B16.9 COUPLING - SW/THDD ENDS - ASME-B16.11 COUPLING - SW ENDS - ASME-B16.11 THD MALE PLUG - RND HEAD - ASME-B16.11 NIPPLE - THDD/PE - ASME-B36.10 SWAGE NIPPLE - PE/PE - MSS-SP95 SWAGE NIPPLE - PE/THDD - MSS-SP95 TEE - SW ENDS - ASME-B16.11	BW BW SW BW THDF SW BW SW\THDF SW THDM THDM PE PE PE\THDM SW	9000 9000 6000 9000	ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A350 LF2 - CL.1
	1 2 26 1 2 26 1 1 2 26 1 1 1 1 1 1 1 1 2	1 1/2 24 48 1 1/2 24 48 1 1/2 1 1/2 24 48 1 1/2 1 1/2 2 1 1/2 2 2 1 1/2 2	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9 FEMALE CAP - THD END - ASME-B16.11 FEMALE CAP - SW END - ASME-B16.11 CAP - ASME-B16.9 CAP - ASME-B16.9 COUPLING - SW/THDD ENDS - ASME-B16.11 COUPLING - SW ENDS - ASME-B16.11 THD MALE PLUG - RND HEAD - ASME-B16.11 NIPPLE - THDD/PE - ASME-B36.10 SWAGE NIPPLE - PE/FE - MSS-SP95 SWAGE NIPPLE - PE/THDD - MSS-SP95 TEE - SW ENDS - ASME-B16.11 TEE - ASME-B16.9	BW BW SW BW THDF SW BW SW\THDF SW THDM THDM\PE PE PE\THDM SW BW	9000 9000 6000 9000	ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - WLDD ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A420 WPL6 - SMLS ASTM A860 WPHY65 - SMLS ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A350 LF2 - CL.1 ASTM A420 WPL6 - SMLS ASTM A420 WPL6 - SMLS ASTM A420 WPL6 - SMLS
	1 2 26 1 2 26 1 1 2 26 1 1 1 1 1 1 1 2 28	1 1/2 24 48 1 1/2 24 48 1 1/2 2 1 1/2 2 1 1/2 2 1 1/2 2 2 1 1/2 2 4 48	ELBOW - SW ENDS - ASME-B16.11 LONG RADIUS ELBOW - ASME-B16.9 LONG RADIUS ELBOW - ASME-B16.9 RED. COUPLING - SW ENDS - ASME-B16.11 REDUCER - ASME-B16.9 REDUCER - ASME-B16.9 FEMALE CAP - THD END - ASME-B16.11 FEMALE CAP - SW END - ASME-B16.11 CAP - ASME-B16.9 CAP - ASME-B16.9 COUPLING - SW/THDD ENDS - ASME-B16.11 THD MALE PLUG - RND HEAD - ASME-B16.11 NIPPLE - THDD/PE - ASME-B36.10 SWAGE NIPPLE - PE/PE - MSS-SP95 SWAGE NIPPLE - PE/THDD - MSS-SP95 TEE - SW ENDS - ASME-B16.11 TEE - ASME-B16.9 TEE - ASME-B16.9	BW BW SW BW THDF SW BW SW\THDF SW THDM THDM\PE PE PE\THDM SW BW BW BW	9000 9000 6000 9000	ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPH65 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS
MISC	1 2 26 1 2 26 1 1 2 26 1 1 1 1 1 1 1 1 1	1 1/2 24 48 1 1/2 24 48 1 1/2 1 1/2 2 1 1/2 2 1 1/2 2 2 1 1/2 2 2 1 1/2 2 8 8 1 1/2	ELBOW - SW ENDS - ASME-B16.11  LONG RADIUS ELBOW - ASME-B16.9  LONG RADIUS ELBOW - ASME-B16.9  RED. COUPLING - SW ENDS - ASME-B16.11  REDUCER - ASME-B16.9  REDUCER - ASME-B16.9  FEMALE CAP - THD END - ASME-B16.11  FEMALE CAP - SW END - ASME-B16.11  CAP - ASME-B16.9  CAP - ASME-B16.9  COUPLING - SW ENDS - ASME-B16.11  THD MALE PLUG - RND HEAD - ASME-B16.11  NIPPLE - THDD/PE - ASME-B36.10  SWAGE NIPPLE - PE/PE - MSS-SP95  SWAGE NIPPLE - PE/THDD - MSS-SP95  TEE - SW ENDS - ASME-B16.11  TEE - ASME-B16.9  TEE - ASME-B16.9	BW BW SW BW THDF SW BW SW\THDF SW THDM THDM\PE PE PE\THDM SW BW BW BW	9000 9000 6000 9000 6000 9000	ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS
MISC	1 2 26 1 2 26 1 1 2 26 1 1 1 1 1 1 1 2 28 2 1 1	1 1/2 24 48 1 1/2 24 48 1 1/2 1 1/2 2 1 1/2 2 1 1/2 2 2 1 1/2 2 2 1 1/2 2 8 8 1 1/2	ELBOW - SW ENDS - ASME-B16.11  LONG RADIUS ELBOW - ASME-B16.9  LONG RADIUS ELBOW - ASME-B16.9  RED. COUPLING - SW ENDS - ASME-B16.11  REDUCER - ASME-B16.9  REDUCER - ASME-B16.9  FEMALE CAP - THD END - ASME-B16.11  FEMALE CAP - SW END - ASME-B16.11  CAP - ASME-B16.9  CAP - ASME-B16.9  COUPLING - SW ENDS - ASME-B16.11  THD MALE PLUG - RND HEAD - ASME-B16.11  NIPPLE - THDD/PE - ASME-B36.10  SWAGE NIPPLE - PE/PE - MSS-SP95  SWAGE NIPPLE - PE/THDD - MSS-SP95  TEE - SW ENDS - ASME-B16.11  TEE - ASME-B16.9  TEE - ASME-B16.9	BW BW SW BW THDF SW BW SW\THDF SW THDM THDM\PE PE PE\THDM SW BW BW BW	9000 9000 6000 9000 9000 9000	ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS
MISC	1 2 26 1 2 26 1 1 2 26 1 1 1 1 1 1 1 2 28 2 1 ELLANE	1 1/2 24 48 1 1/2 24 48 1 1/2 24 48 1 1/2 21 1/2 21 1 1/2 2 2 1 1/2 24 48 1 1/2 5 2 5 3 1 1/2 5 4 5 8 5 1 1/2	ELBOW - SW ENDS - ASME-B16.11  LONG RADIUS ELBOW - ASME-B16.9  LONG RADIUS ELBOW - ASME-B16.9  RED. COUPLING - SW ENDS - ASME-B16.11  REDUCER - ASME-B16.9  REDUCER - ASME-B16.9  FEMALE CAP - THD END - ASME-B16.11  FEMALE CAP - SW END - ASME-B16.11  CAP - ASME-B16.9  CAP - ASME-B16.9  COUPLING - SW/THDD ENDS - ASME-B16.11  THD MALE PLUG - RND HEAD - ASME-B16.11  NIPPLE - THDD/PE - ASME-B36.10  SWAGE NIPPLE - PE/PE - MSS-SP95  SWAGE NIPPLE - PE/THDD - MSS-SP95  TEE - SW ENDS - ASME-B16.11  TEE - ASME-B16.9  WELDOLET - MSS-SP97  SOCKOLET - SW END - TB RAC 5380	BW BW SW BW THDF SW BW SW\THDF SW THDM THDM\PE PE PE\THDM SW BW BW BW	9000 9000 6000 9000 6000 9000 9000 (2->2 1/2) CL1500 RJ (F)	ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A4350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1
MISC	1 2 26 1 2 26 1 1 2 26 1 1 1 1 1 1 1 2 28 2 1 ELLANE	1 1/2 24 48 1 1/2 24 48 1 1/2 24 48 1 1/2 21 1/2 21 1 1/2 2 2 1 1/2 24 48 1 1/2 5 2 5 3 1 1/2 5 4 5 8 5 1 1/2	ELBOW - SW ENDS - ASME-B16.11  LONG RADIUS ELBOW - ASME-B16.9  LONG RADIUS ELBOW - ASME-B16.9  RED. COUPLING - SW ENDS - ASME-B16.11  REDUCER - ASME-B16.9  REDUCER - ASME-B16.9  FEMALE CAP - THD END - ASME-B16.11  FEMALE CAP - SW END - ASME-B16.11  CAP - ASME-B16.9  CAP - ASME-B16.9  COUPLING - SW/THDD ENDS - ASME-B16.11  THD MALE PLUG - RND HEAD - ASME-B16.11  NIPPLE - THDD/PE - ASME-B36.10  SWAGE NIPPLE - PE/PE - MSS-SP95  SWAGE NIPPLE - PE/THDD - MSS-SP95  TEE - SW ENDS - ASME-B16.11  TEE - ASME-B16.9  WELDOLET - MSS-SP97  SOCKOLET - SW END - TB RAC 5380	BW BW SW BW THDF SW BW SW\THDF SW THDM THDM\PE PE PE\THDM SW BW BW BW	9000 9000 6000 9000 6000 9000 9000 (2->2 1/2) CL1500 RJ (F) (3->24)	ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A4350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1
MISC	1 2 26 1 2 26 1 1 2 26 1 1 1 1 1 1 1 2 28 2 1 ELLANE 2	1 1/2 24 48 1 1/2 24 48 1 1/2 24 48 1 1/2 21 1/2 21 1 1/2 2 2 1 1/2 24 48 1 1/2 5 2 5 3 1 1/2 5 4 5 8 5 1 1/2	ELBOW - SW ENDS - ASME-B16.11  LONG RADIUS ELBOW - ASME-B16.9  LONG RADIUS ELBOW - ASME-B16.9  RED. COUPLING - SW ENDS - ASME-B16.11  REDUCER - ASME-B16.9  REDUCER - ASME-B16.9  FEMALE CAP - THD END - ASME-B16.11  FEMALE CAP - SW END - ASME-B16.11  CAP - ASME-B16.9  CAP - ASME-B16.9  COUPLING - SW/THDD ENDS - ASME-B16.11  THD MALE PLUG - RND HEAD - ASME-B16.11  NIPPLE - THDD/PE - ASME-B36.10  SWAGE NIPPLE - PE/PE - MSS-SP95  SWAGE NIPPLE - PE/THDD - MSS-SP95  TEE - SW ENDS - ASME-B16.11  TEE - ASME-B16.9  WELDOLET - MSS-SP97  SOCKOLET - SW END - TB RAC 5380	BW BW SW BW THDF SW BW SW\THDF SW THDM THDM\PE PE PE\THDM SW BW BW BW	9000 9000 6000 9000 6000 9000 9000 (2->2 1/2) CL1500 RJ (F)	ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A4350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1
	1 2 26 1 2 26 1 1 2 26 1 1 1 1 1 1 1 2 28 2 1 ELLANE 2	1 1/2 24 48 1 1/2 24 48 1 1/2 24 48 1 1/2 21 1/2 21 1 1/2 2 2 1 1/2 2 4 8 1 1/2 2 5 0 1 1/2 5 0 US	ELBOW - SW ENDS - ASME-B16.11  LONG RADIUS ELBOW - ASME-B16.9  LONG RADIUS ELBOW - ASME-B16.9  RED. COUPLING - SW ENDS - ASME-B16.11  REDUCER - ASME-B16.9  REDUCER - ASME-B16.9  FEMALE CAP - THD END - ASME-B16.11  FEMALE CAP - SW END - ASME-B16.11  CAP - ASME-B16.9  CAP - ASME-B16.9  COUPLING - SW/THDD ENDS - ASME-B16.11  THD MALE PLUG - RND HEAD - ASME-B16.11  NIPPLE - THDD/PE - ASME-B36.10  SWAGE NIPPLE - PE/PE - MSS-SP95  SWAGE NIPPLE - PE/THDD - MSS-SP95  TEE - SW ENDS - ASME-B16.11  TEE - ASME-B16.9  WELDOLET - MSS-SP97  SOCKOLET - SW END - TB RAC 5380	BW BW SW BW THDF SW BW SW\THDF SW THDM THDM\PE PE PE\THDM SW BW BW BW	9000 9000 6000 9000 6000 9000 9000 (2->2 1/2) CL1500 RJ (F) (3->24)	ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - WLDD  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A860 WPHY65 - SMLS  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A420 WPL6 - SMLS  ASTM A4350 LF2 - CL.1  ASTM A350 LF2 - CL.1  ASTM A350 LF2 - CL.1



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Pipi	ng C	Class	s:	0	9C	A45	<b>601</b>	
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		ze	Item Description	Ends	Rating/Facing	Material
opt.	from	to				
GASK	ETS					
7	30	48	OCTAGONAL RJ GASKET - <mfr std=""> GA-E-060099</mfr>			SOFT IRON
BOLT	S					
	1/2	2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
	2 3/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7M + ASTM A194 GR.2HM (HotDip 153)

pos.							
PO3.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1	1 1/2	GA-E-60109	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW	CL1500	Body: ASTM A350 LF2 - CL.1
1	2	2	GA-E-60110	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Trim :316 / HF Body: ASTM A352 LCC
1	3	32	GA-E-60111	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34		CL900	Trim: 316 / HF Body: ASTM A352 LCC
4	1	1 1/2	GA-E-60206	Globe-WB-Red.B-Thdd seat - API602	sw	CL1500	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
4	2	2	GA-E-60207	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Trim : 316 / HF Body: ASTM A352 LCC
4	3	12	GA-E-60208		BW		Trim : 316 / HF
						CL900	Body: ASTM A352 LCC Trim: 316 / HF
6	2	2	GA-E-60311	Check-PS-FB-Swing-Integral seat - ASME-B16.34		CL1500	Body: ASTM A352 LCC Trim: 316 / HF
6	3	30	GA-E-60310	Check-PS-FB-Swing-Integral seat - ASME-B16.34		CL900	Body: ASTM A352 LCC Trim: 316 / HF
7	2	2	GA-E-67103	API6D	BW	CL1500	Body: ASTM A352 LCC Trim : Soft seat-316 trim - PEEK seats
7	6	24	GA-E-60458	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW	CL900	Body: ASTM A352 LCC Trim : Soft seat-316 trim - PEEK seats
8	1	1 1/2	GA-E-60409	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A350 LF2 - CL.1 Trim : Soft seat-316 trim - PEEK seats
8	2	2	GA-E-67188	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW	CL1500	Body: ASTM A352 LCC Trim : Soft seat-316 trim - PEEK seats
8	6	24	GA-E-67102	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW	CL900	Body: ASTM A352 LCC Trim : Soft seat-316 trim - PEEK seats
10	1	1 1/2	GA-E-60183		SW/TH DF	CL1500	Body: ASTM A350 LF2 - CL.1 Trim :316 / HF
11	2	2	GA-E-60190	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A352 LCC Trim: 316 / HF
14	1	1 1/2	GA-E-60578	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	sw	CL1500	Body: ASTM A350 LF2 - CL.1
14	2	2	GA-E-60108	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL1500	Trim: 316 / HF Body: ASTM A352 LCC
19	1	1 1/2	GA-E-60579	- ASME-B16.34 Gate-Stem Extension-WB-Red.B-Solid wdg-		CL1500	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
80	1	1 1/2	GA-E-60764	Ball-Stem Extension-End entry -FB-Float.ball -	DF PE	CL1500	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
82	1	1 1/2	GA-E-67684	Frgd body+nipples - ASME-B16.34 Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE	CL1500	Trim: Soft seat-316 trim - PEEK seats Body: ASTM A350 LF2 - CL.1
89	1	1 1/2	GA-E-67101	ASME-B16.34 Ball-End entry -FB-Float.ball -Frgd body+ Nipple -	PE/THD	CL1500	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A350 LF2 - CL.1
101	1	1 1/2	GA-E-67031	ASME-B16.34 Gate-Stem Extension-WB-Red.B-Solid wdg-	F SW	CL1500	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A350 LF2 - CL.1
101	2	2	GA-E-67004	Exp.seat - API602 Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL1500	Trim :316 / HF Body: ASTM A352 LCC
101	3	42	GA-E-67003	- ASME-B16.34 Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat		CL900	Trim: 316 / HF Body: ASTM A352 LCC
111	2	2	GA-E-67397	- ASME-B16.34 Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat			Trim : 316 / HF Body: ASTM A352 LCC
114	2	2	GA-E-67088	- ASME-B16.34			Trim : 316 / HF
				Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34			Body: ASTM A352 LCC Trim: 316 / HF
141	2	2	GA-E-67376	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34 - Interlock System		CL1500	Body: ASTM A352 LCC Trim: 316 / HF
141	12	12	GA-E-67377	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34 - Interlock System		CL900	Body: ASTM A352 LCC Trim: 316 / HF
201	42	42	GA-E-60548	Butterfly-Stem Extension-BWend-Triple Off Set-Int.seat-Fire safe - ASME-B16.34	BW	CL900	Body: ASTM A352 LCC Trim : Metal seat - 316 - LT C.S. disc
401	1	1 1/2	GA-E-67403	Globe-Stem Extension-WB-Red.B-Thdd seat - API602	SW	CL1500	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
401	2	2	GA-E-60202	Globe-Stem Extension-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A352 LCC Trim : 316 / HF
401	3	12	GA-E-60237		BW	CL900	Body: ASTM A352 LCC Trim: :316 / HF
701	30	30	GA-E-67236		BW	CL900	Body: ASTM A352 LCC Trim: Soft seat-316 trim - PEEK seats
801	1	1 1/2	GA-E-60766	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A350 LF2 - CL.1 Trim: Soft seat-316 trim - PEEK seats
801	2	2	GA-E-67176	Ball-Stem Extension-Top entry-FB-Trunnion ball + Pup Pieces - API6D	вw	CL1500	Body: ASTM A352 LCC
801	6	24	GA-E-60791	Ball-Stem Extension-Top entry-FB-Trunnion ball + Pup Pieces - API6D	вw	CL900	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A352 LCC Trim : Soft seat-316 trim - PEEK seats



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os.	Siz from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
330	1	1 1/2	GA-E-67240	Ball-Stem Extension-End entry -FB-Float.ball -	PE/THD	CL1500	Body: ASTM A350 LF2 - CL.1
				Frgd body+nipple - ASME-B16.34	F		Trim : Soft seat-316 trim - PEEK seats
840	8	8	GA-E-67634	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL900	Body: ASTM A352 LCC
				API6D - Interlock System			Trim : Soft seat-316 trim - PEEK seats
841	6	16	GA-E-67635	Ball-Stem Extension-Top entry-FB-Trunnion ball +	BW	CL900	Body: ASTM A352 LCC
				Pup Pieces - API6D - Interlock System			Trim : Soft seat-316 trim - PEEK seats
902	26	36	GA-E-69023	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe	FLGD	CL900 RJ (F)	Body: ASTM A352 LCC
				- ASME-B16.34			Trim: Metal seat - 316 - 316 disc
902	38	48	GA-E-69024	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe	FLGD	CL900 RJ (F)	Body: ASTM A352 LCC
				- ASME-B16.34			Trim: Metal seat - 316 - 316 disc
907	2	2	GA-E-69020	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL1500	Body: ASTM A352 LCC
				API6D			Trim : Soft seat-316 trim - PEEK seats
907	3	24	GA-E-69019	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL900	Body: ASTM A352 LCC
				API6D			Trim : Soft seat-316 trim - PEEK seats
917	2	2	GA-E-69021	Ball-Top entry-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - PEEK seats
917	3	24	GA-E-69022	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL900 RJ (F)	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - PEEK seats
921	30	42	GA-E-69059	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe	BW	CL900	Body: ASTM A352 LCC
				- ASME-B16.34			Trim: Metal seat - 316 - 316 disc
972	3	24	GA-E-69058	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL900	Body: ASTM A352 LCC
				API6D			Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
974	3	24	GA-E-69057	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL900 RJ (F)	Body: ASTM A352 LCC
							Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

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RunSize																•									
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6	S	S	W	W	Т	T	_																		
8	S	S	W	W	W	Τ	T	_																	
10	S	S	W	W	٧V	٧V	1	1	_																
12	S	S	W	W	۷V	۷V	۷V	I	1	_															
14	S	S	W	W	۷V	۷V	W	P	I	Ţ	_														
16 18	S S	S S	W	W	VV VA/	W	W	P	P	I P	+	_													
20	S	S	W	W	W/	W	W	P	P	P	P	÷	т												
24	S	S	W	W	۱۸/	۱۸/	W	P	Р	Р	P	b	÷	т											
28	S	S	W	W	W	W	W	P	P	P	P	P	Þ	÷	т										
30	s	s	W	W	w	w	W	P	P	P	P	P	P	÷	Ť	т									
32	Š	Š	W	W	W	W	W	P	P	P	P	P	P	P	P	Ť	Т								
36	S	S	W	W	W	W	W	Р	Р	Р	Р	Р	Р	Р	Т	Т	Т	Т							
38	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т	Т	Т	Т						
40	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т	Т					
42	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т	Т				
46	S	S	W	W	W	W	W	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Т	Т	Т	Т			
48	S	S	W	W	W	W	W	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Т	Т	Т	Т	Т		
anchSize	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	28	30	32	36	38	40	42	46	48		
genda																									
TEE	- SV	/ EN	DS - A	ASMI	E-B10	5.11																			
PIPE	TO	PIPE	WIT	HRE	INFO	DRCI	NG F	AD-T	S-CC	R-E	NG-P	IPMT	T-012	-E											
SOC	KOL	ET -	SW E	ND -	- ТВ	RAC	5380																		
TEE	- ΔS	ME-E	216 Q																						

### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
- 2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exceed 200°C).

  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.

  5) Specified Thickness are suitable to withstand Full Vacuum condition.



		ов <b>2243</b>							
Pipir	ng C	Class	s:	0	9C	<b>A4</b> S	40		
						Rev.			
Sh.	1	of	2	Α	0	1	2	3	
									_

 Base Material
 : LOW TEMP. CARBON STEEL
 Design code
 : ASME B 31.8-2018

 Nom. Rating
 : CL900
 PWHT
 : AS PER CODE

 Facing/Finishing
 : RJ (F)
 Valve Trim
 : 12 - SS316/HF

 Corrosion Allow.
 : 6 mm
 Welding Spec
 : MZ-010-CCX-MC-SPC-00001

Temp. Limit : -45 °C to 70 °C

Service: [ASME B31.8] VT - Vessel Trim - (Aboveground)

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 30 Thk.mm 7.47 7.82 9.09 10.15 11.07 11.13 13.49 14.27 43 SCH. XXS XXS XXS XXS XXS 160 160 120

Nipple Thickness

PRESSURE - TEMPERATURE Ratings

 NPS
 Press. bar
 140

 1/2 · 30
 Temp. °C
 70

1/2	30 Leur	). U	70			
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	24	PIPE	BW		ASTM A333 GR.6 - SMLS
	26	30	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
FLAN			ı <u>-</u>	,		
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL 1500 R.I.(F)	ASTM A350 LF2 - CL.1
	2	6	WN FLANGE - ASME-B16.5	BW	(2->2 1/2)	ASTM A350 LF2 - CL.1
	_				CL1500 ŔJ (F) (3->24) CL900 RJ (F)	
	1/2	6	BLIND FLANGE - ASME-B16.5		(1/2->2 1/2) CL1500 RJ (F) (3->24) CL900 RJ (F)	ASTM A350 LF2 - CL.1
SPEC	TACLE	BLIND				
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		CL1500 RJ (F)	ASTM A516 GR.60 + S5 (-46°C)
	2	6	BLIND & SPACER - ASME-B16.48 GA-E-060011		(2->2 1/2)	ASTM A516 GR.60 + S5 (-46°C)
					CL1500 RJ (F)	
					(3->24) CL900 RJ (F)	
FITTI	NGS			1	OE300 103 (1 )	
	2	3	DRIP-RING - TB DRI 5011	1	(2->2 1/2)	ASTM A350 LF2 - CL.1
					CL1500 RJ (F) (3->24) CL900 RJ (F)	
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	2	6	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	2	6	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	9000	ASTM A350 LF2 - CL.1
	2	6	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	2	6	WELDOLET - MSS-SP97	BW		ASTM A350 LF2 - CL.1
	1/2	1 1/2	SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A350 LF2 - CL.1
GAS	KETS					
	1/2	6	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOL <sup>1</sup>						
	1/2	2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
	2 3/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7M + ASTM A194 GR.2HM (HotDip 153)

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60109	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	sw	CL1500	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
1	2	2	GA-E-60110	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A352 LCC Trim : 316 / HF
10	1/2	1 1/2	GA-E-60183	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL1500	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
11	2	2	GA-E-60190	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A352 LCC Trim : 316 / HF
11	3	3	GA-E-67090	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL900 RJ (F)	Body: ASTM A352 LCC Trim : 316 / HF
82	1/2	1 1/2	GA-E-67686	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A350 LF2 - CL.1 Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-67687	Ball-End entry -FB-Float.ball -Frgd body+ Nipple - ASME-B16.34	PE/THD F	CL1500	Body: ASTM A350 LF2 - CL.1 Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.



SOCKOLET - SW END - TB RAC 5380

TEE - ASME-B16.9

WELDOLET - MSS-SP97

# PIPING MATERIAL SPECIFICATION

		DB <b>2243</b>						
Pipi	ng C	Class	s:	0	9C	<b>A4</b> S	40	
						Rev.		
Sh.	2	of	2	Α	0	1	2	3

**BRANCH TABLES** 90 Degrees RunSize 1/2 3/4 AAAASSSS A A A S S S S 1 1/2 2 3 4 6 30 anches A A T S S A T S S T W W W W BranchSize 1/2 3/4 1 11/2 2 3 4 TEE - SW ENDS - ASME-B16.11 PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E

### GENERAL NOTES

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1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.



	-	ОВ <b>2243</b>						
Pipi	ng (	Class	s:	0	9C	A45	60	
						Rev.		
Sh.	1	of	3	Α				

 Base Material
 : LOW TEMP. CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL900
 PWHT
 : AS PER CODE (NOTE 1)

 Facing/Finishing : RJ (F)
 Valve Trim
 : 12 - SS316/HF

 Corrosion Allow. : 6 mm
 Welding Spec
 : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 90 °C

Service: [AIV] FG - Fuel Gas HL - Hydrocarbon Liquid NG - Natural Gas

Pipe Thickness

Nipple Thickness

NPS 1 1 11/2 2 Thk.mm 9.09 10.15 11.07 SCH. XXS XXS XXS

PRESSURE - TEMPERATURE Ratings

	NPS	Press. ba	ır '	153.06	153.06	140.31	135.48	131	124.8	117.56	113.76	ASME B16.5
	1 · 6	Temp. °0		-28.89	37.78	93.33	148.89	204.44	260	315.56	343.33	Material Group 1.1
	NPS	Press. ba	ır	140								
-	0 . 10	Tomn ∘r		an l								

8 -	48 Temp	o. °C	90			
	Si	ze	Item Description	Ends	Rating/Facing	Material
opt.	from	to				
IPE						
	1	24	PIPE	BW		ASTM A333 GR.6 - SMLS
	26	48	PIPE	BW		API 5L GR.X65 PSL2 - SAW
LAN	IGES				1	
	1	1 1/2	SW FLANGE - ASME-B16.5	sw	1 ' ' '	ASTM A350 LF2 - CL.1
	2	24	WN FLANGE - ASME-B16.5	BW	(2->2 1/2)	ASTM A350 LF2 - CL.1
					CL1500 RJ (F) (3->24)	
					(3->24) CL900 RJ (F)	
	26	36	WN FLANGE - ASME-B16.47 series.A	вW		ASTM A350 LF2 - CL.1
	38	38	SPECIAL WN FLANGE - <mfr std=""> GA-E-060099</mfr>	BW		ASTM A350 LF2 - CL.1
	42	48	SPECIAL WN FLANGE - <mfr std=""> GA-E-060099</mfr>	вW		ASTM A350 LF2 - CL.1
7	3	24	WN FLANGE - ASME-B16.5	BW	` '	ASTM A350 LF2 - CL.1
7	30	30	SPECIAL WN FLANGE - <mfr std=""> GA-E-060099</mfr>	вW	` '	ASTM A350 LF2 - CL.1
	1	24	BLIND FLANGE - ASME-B16.5		(1->2 1/2)	ASTM A350 LF2 - CL.1
					CL1500 ŔJ (F)	
					(3->24)	
			DUND FLANCE AGNE DAG 47		CL900 RJ (F)	
	26	36	BLIND FLANGE - ASME-B16.47 series.A			ASTM A350 LF2 - CL.1
	42	42	SPECIAL BLIND FLANGE - <mfr std=""> GA-E-060099</mfr>	T. I.D.E.		ASTM A350 LF2 - CL.1
14	2	2 DI IND	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A350 LF2 - CL.1
PEC	TACLE		ODECTA OLE DUND. AGNE DAG AG GA E COCCAA		01 4500 D 1 (5)	ACTIL AS 40 CD 00 . OS / 4000)
	1	1 1/2	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		, ,	ASTM A516 GR.60 + S5 (-46°C)
	2	24	BLIND & SPACER - ASME-B16.48 GA-E-060011		(2->2 1/2) CL1500 RJ (F)	ASTM A516 GR.60 + S5 (-46°C)
					(3->24)	
					CL900 RJ (F)	
	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060099</mfr>		CL900 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
2	2	2	BLIND & SPACER - ASME-B16.48		CL1500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
7	12	12	BLIND & SPACER - ASME-B16.48		CL1500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
ITTI	NGS					
	2	2	DRIP-RING - TB DRI 5011		CL1500 RJ (F)	ASTM A350 LF2 - CL.1
	1	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A860 WPHY65 - WLDD
	1	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	2	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	REDUCER - ASME-B16.9	BW		ASTM A860 WPHY65 - WLDD
	1	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	1	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	6000	ASTM A350 LF2 - CL.1
	2	24	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	CAP - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS
	1	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A350 LF2 - CL.1
	1	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	9000	ASTM A350 LF2 - CL.1
	1	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1
	1	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS
	1	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A420 WPL6 - SMLS
	1	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS
	1	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	9000	ASTM A350 LF2 - CL.1
	2	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	48	TEE - ASME-B16.9	BW		ASTM A860 WPHY65 - WLDD
100	2	20	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	9000	ASTM A350 LF2 - CL.1
13C	ELLANE		WIT FOR INDIVIDUAL ATTING FLANGE AGAIN DAGE		10 0 10	
	2	24	KIT FOR INSULATING FLANGE - ASME-B16.5		(2->2 1/2) CL1500 RJ (F)	GRE LAMINATED + TFE (MAX T 180 C)
					(3->24)	
					CL900 RJ (F)	
ASI	KETS				_	
-0			DOCTACONIAL DI CACKET. ACME DAGGO	1	1	COET IDON
7	1 30	36 48	OCTAGONAL RJ GASKET - ASME-B16.20 OCTAGONAL RJ GASKET - <mfr std=""> GA-E-060099</mfr>			SOFT IRON SOFT IRON



		DB 2 <b>243</b>						
Pipi	ng C	Class	s:	0	9C	<b>A4</b> S	60	
						Rev.		
Sh.	2	of	3	Α				

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
BOL1	S					
	1/2	2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
	2 3/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7M + ASTM A194 GR.2HM (HotDip 153)

VALV	FS						
	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to	0.4 5 00400			-	
1	1	1 1/2	GA-E-60109	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW	CL1500	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
1	2	2	GA-E-60110	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A352 LCC Trim :316 / HF
1	3	32	GA-E-60111	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A352 LCC
4	1	1 1/2	GA-E-60206	Globe-WB-Red.B-Thdd seat - API602	SW	CL1500	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
4	2	2	GA-E-60207	Globe-PS-Disk-Integral seat - ASME-B16.34	BW		Trim: 316 / HF Body: ASTM A352 LCC
							Trim : 316 / HF
4	3	12	GA-E-60208	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A352 LCC Trim : 316 / HF
6	2	2	GA-E-60311	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A352 LCC Trim : 316 / HF
6	3	30	GA-E-60310	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A352 LCC Trim :316 / HF
7	2	2	GA-E-67103	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL1500	Body: ASTM A352 LCC
7	6	24	GA-E-60458	API6D Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL900	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A352 LCC
8	1	1 1/2	GA-E-60409	API6D Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE	CL1500	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A350 LF2 - CL.1
	2			ASME-B16.34			Trim : Soft seat-316 trim - PEEK seats
8	2	2	GA-E-67188	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW		Body: ASTM A352 LCC Trim : Soft seat-316 trim - PEEK seats
8	6	24	GA-E-67102	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW	CL900	Body: ASTM A352 LCC Trim : Soft seat-316 trim - PEEK seats
10	1	1 1/2	GA-E-60183	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL1500	Body: ASTM A350 LF2 - CL.1 Trim : 316 / HF
11	2	2	GA-E-60190	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A352 LCC
14	1	1 1/2	GA-E-60578	Gate-Stem Extension-WB-Red.B-Solid wdg-	sw	CL1500	Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
14	2	2	GA-E-60108	Exp.seat - API602 Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL1500	Trim: 316 / HF Body: ASTM A352 LCC
19	1	1 1/2	GA-E-60579	- ASME-B16.34 Gate-Stem Extension-WB-Red.B-Solid wdg-	SW/TH	CL1500	Trim :316 / HF Body: ASTM A350 LF2 - CL.1
80	1	1 1/2	GA-E-60764	Exp.seat - API602 Ball-Stem Extension-End entry -FB-Float.ball -	DF PE		Trim : 316 / HF Body: ASTM A350 LF2 - CL.1
				Frgd body+nipples - ASME-B16.34			Trim : Soft seat-316 trim - PEEK seats
82	1	1 1/2	GA-E-67684	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A350 LF2 - CL.1 Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1	1 1/2	GA-E-67101	Ball-End entry -FB-Float.ball -Frgd body+ Nipple - ASME-B16.34	PE/THD F	CL1500	Body: ASTM A350 LF2 - CL.1 Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1	1 1/2	GA-E-67031	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	SW	CL1500	Body: ASTM A350 LF2 - CL.1
101	2	2	GA-E-67004	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL1500	Trim:316/HF Body:ASTM A352 LCC
101	3	42	GA-E-67003	- ASME-B16.34 Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL900	Trim: 316 / HF Body: ASTM A352 LCC
111	2	2	GA-E-67397	- ASME-B16.34 Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	FI GD	CL 1500 R.I.(F)	Trim: 316 / HF Body: ASTM A352 LCC
				- ASME-B16.34		, ,	Trim : 316 / HF
114	2	2	GA-E-67088	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34			Body: ASTM A352 LCC Trim: 316 / HF
141	2	2	GA-E-67376	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34 - Interlock System	BW	CL1500	Body: ASTM A352 LCC Trim : 316 / HF
141	12	12	GA-E-67377	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34 - Interlock System	BW	CL900	Body: ASTM A352 LCC Trim : 316 / HF
201	42	42	GA-E-60548	Butterfly-Stem Extension-BWend-Triple Off Set- Int.seat-Fire safe - ASME-B16.34	BW	CL900	Body: ASTM A352 LCC
401	1	1 1/2	GA-E-67403	Globe-Stem Extension-WB-Red.B-Thdd seat -	sw	CL1500	Trim : Metal seat - 316 - LT C.S. disc Body: ASTM A350 LF2 - CL.1
401	2	2	GA-E-60202	API602 Globe-Stem Extension-PS-Disk-Integral seat -	BW	CL1500	Trim:316/HF Body:ASTM A352 LCC
401	3	12	GA-E-60237	ASME-B16.34 Globe-Stem Extension-PS-Disk-Integral seat -	BW	CL900	Trim: 316 / HF Body: ASTM A352 LCC
701	30	30	GA-E-67236	ASME-B16.34 Ball-Stem Extension-Top entry-Red.B-Trunnion	BW		Trim : 316 / HF Body: ASTM A352 LCC
				ball + Pup Pieces - API6D			Trim : Soft seat-316 trim - PEEK seats
801	1	1 1/2	GA-E-60766	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A350 LF2 - CL.1 Trim : Soft seat-316 trim - PEEK seats
801	2	2	GA-E-67176	Ball-Stem Extension-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW	CL1500	Body: ASTM A352 LCC Trim : Soft seat-316 trim - PEEK seats
801	6	24	GA-E-60791	Ball-Stem Extension-Top entry-FB-Trunnion ball +	BW	CL900	Body: ASTM A352 LCC
				Pup Pieces - API6D			Trim : Soft seat-316 trim - PEEK seats



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Pipi	ng C	Class	s:	C	9C	<b>A4</b> S	60	
						Rev.		
Sh.	3	of	3	Α				

	Si	70	Data Sheet	Item Description	Ends	Rating/Facing	Material
os.	from	to	Data Sileet	item bescription	Liius	Kating/r acing	Material
30	1	1 1/2	GA-E-67240	Ball-Stem Extension-End entry -FB-Float.ball -	PE/THD	CL1500	Body: ASTM A350 LF2 - CL.1
				Frgd body+nipple - ASME-B16.34	F		Trim : Soft seat-316 trim - PEEK seats
840	8	8	GA-E-67634	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL900	Body: ASTM A352 LCC
				API6D - Interlock System			Trim : Soft seat-316 trim - PEEK seats
841	6	16	GA-E-67635	Ball-Stem Extension-Top entry-FB-Trunnion ball +	BW	CL900	Body: ASTM A352 LCC
				Pup Pieces - API6D - Interlock System			Trim : Soft seat-316 trim - PEEK seats
902	26	36	GA-E-69023	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe	FLGD	CL900 RJ (F)	Body: ASTM A352 LCC
				- ASME-B16.34			Trim: Metal seat - 316 - 316 disc
902	38	48	GA-E-69024	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe	FLGD	CL900 RJ (F)	Body: ASTM A352 LCC
				- ASME-B16.34			Trim: Metal seat - 316 - 316 disc
907	2	2	GA-E-69020	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL1500	Body: ASTM A352 LCC
				API6D			Trim : Soft seat-316 trim - PEEK seats
907	3	24	GA-E-69019		BW	CL900	Body: ASTM A352 LCC
				API6D			Trim : Soft seat-316 trim - PEEK seats
917	2	2	GA-E-69021	Ball-Top entry-Red.B-Trunnion ball - API6D	FLGD		Body: ASTM A352 LCC
						1	Trim : Soft seat-316 trim - PEEK seats
917	3	24	GA-E-69022	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL900 RJ (F)	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - PEEK seats
921	30	42	GA-E-69059	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe	BW	CL900	Body: ASTM A352 LCC
				- ASME-B16.34			Trim: Metal seat - 316 - 316 disc
972	3	24	GA-E-69058	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL900	Body: ASTM A352 LCC
	_			API6D			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
974	3	24	GA-E-69057	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD		
974	3	24	GA-E-69057	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD		Body: ASTM A352 LCC Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRA

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#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.
  6) This piping class is created for lines subjected to Acoustic Induced Vibration.



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Pipir	ng C	Class	s:	0	9CI	B10	04	
						Rev.		
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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating :CL900 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing : RJ (F) Valve Trim :5 - 13Cr Stel

Corrosion Allow. : 1.5 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 320 °C

Service: [SEVERE CYCLIC SERVICE] NG - Natural Gas

Pipe Thickness

| NPS | 1/2 | 3/4 | 1 | 11/2 | 2 | 3 | 4 | 6 | 6 | 1/2 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 8 10 12 18.26 14.27 15.88 14 18 17.48 19.05 20.62 23.83 26.97 120

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 4.78 5.56 6.35 7.14 8.74 SCH. 160 160 160 160 160 PRESSURE - TEMPERATURE Ratings

NPS Press. bar NPS Press. bar 10 · 30 Temp. °C 230

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE					•	
	1/2	6	PIPE	BW		ASTM A106 GR.B - SMLS
	8	24	PIPE	BW		ASTM A333 GR.6 - SMLS
	26	30	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
FLAN	IGES					
	1/2	24	WN FLANGE - ASME-B16.5	BW	(1/2->2 1/2) CL1500 RJ (F) (3->24) CL900 RJ (F)	ASTM A105 Normalized
	26	30	WN FLANGE - ASME-B16.47 series.A	BW	CL900 RJ (F)	ASTM A105 Normalized
	1/2 24		BLIND FLANGE - ASME-B16.5		(1/2->2 1/2) CL1500 RJ (F) (3->24) CL900 RJ (F)	ASTM A105 Normalized
	26	30	BLIND FLANGE - ASME-B16.47 series.A		CL900 RJ (F)	ASTM A105 Normalized
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		CL1500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
	2	24	BLIND & SPACER - ASME-B16.48		(2->2 1/2) CL1500 RJ (F) (3->24) CL900 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS				02000 110 (1)	
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	8	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	30	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	8	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	30	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	1/2	6	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	8	30	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	6	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	8	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	30	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
GAS	KETS				1	
	1/2	30	OCTAGONAL RJ GASKET - ASME-B16.20	1	1	SOFT IRON
BOLT	Γ <b>S</b> 1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
	1/2	4	OT. DOLITZ NOTO - ANOT THUU - TO DOL 3300			NO TIVI A 193 DT + NO TIVI A 194 GK.ZFT (FIOLDIP 199)

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	_		2. =				
1	1/2	1 1/2	GA-E-60131	Gate-WB-Red.B-Solid wdg-Exp.seat - API602		CL1500	Body: ASTM A105 Normalized
							Trim: 13CR stellited
1	1 2 2		GA-E-60132	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB
							Trim: 13CR stellited
1	3	24	GA-E-60133	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB
							Trim: 13CR stellited
4	1/2	1 1/2	GA-E-60227	Globe-WB-Red.B-Thdd seat - API602	BW	CL1500	Body: ASTM A105 Normalized
							Trim: 13CR stellited
4	2	2	GA-E-60228	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB
							Trim: 13CR stellited
4	3	8	GA-E-60229	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB
				9			Trim : 13CR stellited
6	1/2	1 1/2	GA-E-60335	Check-WB-Red.B-Piston-Int seat - API602	вw	CL1500	Body: ASTM A105 Normalized
							Trim : 13CR stellited



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Pip	ing C	Class	s:	0	09CB1D04					
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Sh.	2	of	2	Α	0	1	2	3		

ALV	ES						
pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
6	2	2	GA-E-60336	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB Trim : 13CR stellited
6	3	24	GA-E-60337	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB Trim : 13CR stellited
7	6	24	GA-E-60460	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW	CL900	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76.2µm trim-PEEK seats
8	1/2	1 1/2	GA-E-60459	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	BW	CL1500	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats
11	2	2	GA-E-60580	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A216 WCB Trim : 13CR stellited
62	16	16	GA-E-60387	Check-Flanged -Dual plate-Widd seat - API594	FLGD	CL900 RJ (F)	Body: ASTM A216 WCB Trim : 13CR stellited
80	1/2	1 1/2	GA-E-67142	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body+nipples - ASME-B16.34	BW	CL1500	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats
82	1/2	1 1/2	GA-E-60771	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	BW	CL1500	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-67146	Ball-End entry -FB-Float.ball -Frgd body+ Nipple - ASME-B16.34	BW/TH DF	CL1500	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

#### **BRANCH TABLES**

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6		W	W	W	W	W	W	Т	Т									
8		W	W	W	W	W	W	W	Т	Т								
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12		W	W	W	W	W	W	W	W	W	Т	Т						
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24		W	W	W	W	W	W	W	W	W	P	P	P	Р	P	+	т	
30		W	W	W	W	W	W	W	W	W	P	P	P	P	P	P	+	т
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ı	TEE																	
W	WEL	.DOL	.ET -	MSS	S-SP9	7												

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) This piping Class is for SEVERE CYCLIC SERVICE (Severe Cyclic Service definition: More than 7000 cycles expected during service life).
  3) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  4) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  5) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



		ОВ <b>2243</b>						
Pipir	ng C	Class	s:	0	9CI	B1S	01	
						Rev.		
Sh.	1	of	3	Α	0	1	2	3

Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL900 **PWHT** :AS PER CODE (NOTE 1)

Facing/Finishing: RJ (F) Valve Trim : 5 - 13Cr Stel

Corrosion Allow. : 1.5 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 220 °C Service: FG - Fuel Gas NG - Natural Gas

Pipe Thickness

10 12.7 12 14.27 14 16 18 20 24 15.09 17.48 19.05 22.23 24.61 18.26 120 60 60 60 60

Nipple Thickness

opt.			Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	6	PIPE	BW		ASTM A106 GR.B - SMLS
	8		PIPE	BW		ASTM A333 GR.6 - SMLS
FLAN			, <del>-</del>	<b></b>		NOTHINGOO CITES CIMES
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A105 Normalized
	2		WN FLANGE - ASME-B16.5	BW	(2->2 1/2)	ASTM A105 Normalized
					CL1500 ŔJ (F)	
					(3->24)	
_			MAN ELANOS AGNE DAGE	D144	CL900 RJ (F)	
7	3		WN FLANGE - ASME-B16.5	BW		ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		(1/2->2 1/2) CL1500 RJ (F)	ASTM A105 Normalized
					(3->24)	
					CL900 RJ (F)	
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		CL1500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
	2	24	BLIND & SPACER - ASME-B16.48		(2->2 1/2)	ASTM A516 GR.70 + S5 (-46°C)
					CL1500 RJ (F)	
					(3->24) CL900 RJ (F)	
FITTI	NGS				JO2000 1 (1 )	
	1/2	3	DRIP-RING - TB DRI 5011		(1/2->2 1/2)	ASTM A105 Normalized
					CL1500 RJ (F)	
					(3->24)	
	4.00	4.4/0	EL BOWL OW ENDO AGNE DAGAA	0144	CL900 RJ (F)	AOTA A 405 N
	1/2		ELBOW - SW ENDS - ASME-B16.11	SW BW	3000	ASTM A105 Normalized
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	8	24	LONG RADIUS ELBOW - ASME-B16.9	SW\THDF	3000	ASTM A420 WPL6 - SMLS
	3/4 3/4	1 1/2 1 1/2	RED. COUPLING - SW/THDD - ASME-B16.11 RED. COUPLING - SW ENDS - ASME-B16.11	SWITHDE	3000	ASTM A105 Normalized ASTM A105 Normalized
	2	6	REDUCER - ASME-B16.9	BW	3000	ASTM A234 WPB - SMLS
	8	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	6000	ASTM A105 Normalized
	1/2	2	FEIWALE CAF - THU END - ASIVIE-BT0.TT		3000	ASTM A103 Normalized
1	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A105 Normalized
1	2		CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
l i	8	24	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2		COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized
					3000	
	1/2		COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	1/2		THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4		SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4		SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2		TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2		TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	8		TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	2		WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
0.40	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A105 Normalized
GASK	- 1	0.	207400141 21040777 4045 717 77		I	OOFT IDOM
	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20		<u> </u>	SOFT IRON
BOLT			CT DOLT 2 MILTO ANOLTH A TD DILL F2C2			AOTM A400 PZ - AOTM A404 OP OU (U-1P'- 450)
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	VALVES											
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material					
1	1/2	1 1/2	GA-E-60120	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	sw		Body: ASTM A105 Normalized Trim :13CR stellited					
1	2	2	GA-E-60132	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW		Body: ASTM A216 WCB Trim : 13CR stellited					



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/ALVES												
	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material					
pos.	from	to		·								
1	3	24	GA-E-60136	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB Trim : 13CR stellited					
4	1/2	1 1/2	GA-E-60213	Globe-WB-Red.B-Thdd seat - API602	SW	CL1500	Body: ASTM A105 Normalized Trim : 13CR stellited					
4	2	2	GA-E-60228	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB Trim : 13CR stellited					
4	3	12	GA-E-60229	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB					
6	1/2	1 1/2	GA-E-60318	Check-WB-Red.B-Piston-Int seat - API602	sw	CL1500	Trim : 13CR stellited Body: ASTM 105 Normalized					
6	2	2	GA-E-60336	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Trim : 13CR stellited Body: ASTM A216 WCB					
6	3	24	GA-E-60337	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL900	Trim : 13CR stellited Body: ASTM A216 WCB					
7	6	24	GA-E-60460	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL900	Trim:13CR stellited Body: ASTM A216 WCB					
8	1/2	1 1/2	GA-E-60461	API6D Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE	CL1500	Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats Body: ASTM A105 Normalized					
				ASME-B16.34	_		Trim : Soft seat-316 trim - PEEK seats					
8	6	24	GA-E-67177	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW	CL900	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats					
10	1/2	1 1/2	GA-E-60180	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL1500	Body: ASTM A105 Normalized Trim : 13CR stellited					
11	2	2	GA-E-60580	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34		CL1500 RJ (F)	Body: ASTM A216 WCB Trim : 13CR stellited					
11	3	3	GA-E-60141	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL900 RJ (F)	Body: ASTM A216 WCB Trim: 13CR stellited					
82	1/2	1 1/2	GA-E-60478	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE	CL1500	Trim: 13CK steinled Body: ASTM A105 Normalized Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.					
89	1/2	1 1/2	GA-E-60769	Ball-End entry -FB-Float.ball -Frgd body+ Nipple - ASME-B16.34	PE/THD	CL1500	Body: ASTM A105 Normalized Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.					
101	1/2	1 1/2	GA-E-67018	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	sw	CL1500	Body: ASTM A105 Normalized  Trim: 13CR stellited					
101	2	2	GA-E-60135	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB					
111	2	2	GA-E-67091	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	FLGD	CL1500 RJ (F)	Trim :13CR stellited Body: ASTM A216 WCB					
114	2	2	GA-E-60114	- ASME-B16.34 Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	FLGD	CL1500 RJ (F)	Trim:13CR stellited Body: ASTM A216 WCB					
130	1/2	1 1/2	GA-E-67086	- ASME-B16.34 Gate-Stem Extension-WB-Red.B-Solid wdg-		CL1500	Trim:13CR stellited Body: ASTM A105 Normalized					
140	4	4	GA-E-67378		DF BW	CL900	Trim:13CR stellited Body: ASTM A216 WCB					
801	1/2	1 1/2	GA-E-67143	- Interlock System Ball-Stem Extension-End entry -FB-Float.ball -	PE	CL1500	Trim :13CR stellited Body: ASTM A105 Normalized					
830	1/2	1 1/2	GA-E-67241	Frgd body+nipples - ASME-B16.34 Ball-Stem Extension-End entry -FB-Float.ball -	PE/THD	CL1500	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A105 Normalized					
907	2	2	GA-E-69028	Frgd body+ Nipple - ASME-B16.34 Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	F BW	CL1500	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A216 WCB					
907	3	24	GA-E-69027	API6D	BW	CL900	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A216 WCB					
				API6D			Trim : Soft seat-316 trim - PEEK seats					
917	2	2	GA-E-69025	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD		Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats					
917	10	24	GA-E-69026	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD		Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats					

STRA	TRAINERS												
pos.	from Size to		Data Sheet	Item Description	Ends	Rating/Facing	Material						
1	14	14	GA-E-60620	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3						
1	18   18   GA-E-60620		GA-E-60620	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	. ,	Body : ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3						

**BRANCH TABLES** 



90 Degrees

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8 S S S S W W W W T T 10 S S S S W W W W T T 11 10 S S S S W W W W T T 12 S S S S W W W W W T T 14 S S S S W W W W W P T T 16 S S S S W W W W W P P T T 16 S S S S W W W W W P P P T T 18 S S S S W W W W W P P P P T T 20 S S S S W W W W W P P P P T T 21 S S S S W W W W W P P P P P T T 22 S S S S W W W W W P P P P P T T 24 S S S S W W W W W P P P P P T T 25 S SOCKOLET - SW ENDS - ASME-B16.11  P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9	6		S	S				w	÷	т									
10 S S S S W W W W T T T 12 S S S S W W W W W T T T 14 S S S S W W W W W P T T 16 S S S S W W W W P P T T 16 S S S S W W W W P P P T T 20 S S S S W W W W P P P P T T 22 S S S S W W W W W P P P P T T 24 S S S S W W W W W P P P P P T T 24 S S S S W W W W W P P P P P T T 25 S S S S W W W W W P P P P P T T 26 S S S S W W W W W P P P P P T T 27 T TEE - ASME-B16.9			S	S	S	_	w	w	w	÷	т								
16 S S S S W W W W W P P T T T 18 S S S S W W W W W P P P T T 20 S S S S W W W W W P P P P T T 24 S S S S W W W W W P P P P T T 24 S S S S W W W W W P P P P T T BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12 14 16 18 20 24  Legenda  A TEE-SW ENDS-ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET-SW END - MSS-SP97 T TEE-ASME-B16.9	10		Š	Š	Š	-	W	W	W	w	Ť	Т							
16 S S S S W W W W W P P T T T 18 S S S S W W W W W P P P T T 20 S S S S W W W W P P P P T T 24 S S S S W W W W W P P P P T T 24 S S S S W W W W W P P P P T T BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12 14 16 18 20 24  Legenda  A TEE-SW ENDS-ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET-SW END - MSS-SP97 T TEE-ASME-B16.9	12		S	S	S	S	W	W	W	W	W	Т	Т						
16 S S S S W W W W W P P T T T 18 S S S S W W W W W P P P T T 20 S S S S W W W W W P P P P T T 24 S S S S W W W W W P P P P T T 24 S S S S W W W W W P P P P T T BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12 14 16 18 20 24  Legenda  A TEE-SW ENDS-ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE-ASME-B16.9	14	;	S	S	S	S	W	W	W	W	W	Ρ	Т	Т					
24 S S S S W W W W P P P P P T T  BranchSize 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24  Legenda  A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9	16		S	S	S	S	W	W	W	W	W	Ρ	Ρ	Т	Т				
24 S S S S W W W W P P P P P T T  BranchSize 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24  Legenda  A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9	18	;	S	S	-	-	• •	W	W	W	W	Р		Р	Т	Т			
BranchSize   1/2   3/4   1   1   1/2   2   3   4   6   8   10   12   14   16   18   20   24	20		S	S	-	-	• •	W	W	W	W	Р		Р	Р	T	T	_	
Legenda			_	S	•	-	* *	W	W	W	W	Р	г	Р	Р	Р	Т	Т	
A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9	Branch5	Size 1	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	
A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9																			
P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9	Legenda	ı																	
P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9	Α .	TEE -	SW	END	S - /	ASME	E-B1	6.11											
S SOCKOLET - SW END - MSS-SP97 T TEE - ASME-B16.9									ING F	PAD-	TS-C	OR-E	NG-F	IPM	T-012	:-E			
I IEE - ASME-B10.9																			
	т .	TEE -	ASN	IE-B	16.9														
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#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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Pipi	ng C	Class	s:	0	9C	B15	02	
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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL900 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing: RJ (F) Valve Trim : 5 - 13Cr Stel

Corrosion Allow. : 1.5 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 250 °C

Service: HOR - Hot Oil Return HOS - Hot Oil Supply NG - Natural Gas

Pipe Thickness

30.96 80

 Nipple Thickness
 1/2
 3/4
 1
 1 1/2
 2

 Thk.mm
 7.47
 7.82
 9.09
 10.15
 11.07

 SCH.
 XXS
 XXS
 XXS
 XXS
 XXS

 PRESSURE - TEMPERATURE Ratings

I INEGGOIN	1 _ 141	. L.	~ 1 011	_ ivatiii	ıgə			
								ASME B16.5
1/2 8	Temp.	°C	-28.9	37.78	93.33	148.9	204.4	Material Group 1.1
NPS	Press.	bar	140					
10 10	Temp.	°C	70					
NPS	Press.	bar	110					
12 · 36	Temp.	°C	250					

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	6	PIPE	BW		ASTM A106 GR.B - SMLS
	8	24	PIPE	BW		ASTM A333 GR.6 - SMLS
l	26	36	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
FLAN					•	
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	(2->2 1/2)	ASTM A105 Normalized
					CL1500 ŔJ (F)	
					(3->24)	
					CL900 RJ (F)	
	26	36	WN FLANGE - ASME-B16.47 series.A	BW		ASTM A105 Normalized
7	3	24	WN FLANGE - ASME-B16.5	BW		ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		(1/2->2 1/2)	ASTM A105 Normalized
					CL1500 RJ (F)	
					(3->24) CL900 RJ (F)	
	26	36	BLIND FLANGE - ASME-B16.47 series.A			ASTM A105 Normalized
14	20	2	THDD RED. FLANGE - ASME-B16.5	THDF		ASTM A105 Normalized
	CTACLE	_	THE REP. I LANGE - ASIME-DIO.3	וטוזין	OL 1300 KJ (F)	INO TIVI A 100 INOTITIBILIZEU
JC	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		CL1500 R L(E)	ASTM A516 GR.70 + S5 (-46°C)
	2	24	BLIND & SPACER - ASME-B16.48		(2->2 1/2)	ASTM A516 GR.70 + S5 (-46°C)
		24	DELITE & GLACIN - ADMIL-D10.40		CL1500 RJ (F)	NOTIVI ACTO GIN.70 + 33 (*40 O)
					(3->24)	
					CL900 RJ (F)	
FITTI	NGS			,	,	
	1/2	3	DRIP-RING - TB DRI 5011		(1/2->2 1/2)	ASTM A105 Normalized
					CL1500 RJ (F)	
					(3->24) CL900 RJ (F)	
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A105 Normalized
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW	3000	ASTM A234 WPB - SMLS
	8	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	36		BW		
1			LONG RADIUS ELBOW - ASME-B16.9	SW	0000	ASTM A420 WPL6W - WLDD
}	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11		3000	ASTM A105 Normalized
	3/4	1 1/2	RED. COUPLING - SW/THDD - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	2	6	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	8	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	36	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	6000 3000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A105 Normalized
	2	6	CAP - ASME-B16.9	BW	5000	ASTM A234 WPB - SMLS
	8	36	CAP - ASME-B16.9	BW		
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A420 WPL6 - SMLS
				-		ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000 3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/FINDD - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	6	TEE - ASME-B16.11	BW	5000	ASTM A234 WPB - SMLS
				BW		
	8	24	TEE - ASME-B16.9	1		ASTM A420 WPL6 - SMLS
	26	36	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	2	6	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
	8	8	WELDOLET - MSS-SP97	BW	2000	ASTM A350 LF2 - CL.1
GAS	1/2 /ETS	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A105 Normalized
GASI	VE13		OCTACONAL DI CASVET. ASME DAS 20	1	I	COET IDON
			OCTAGONAL RJ GASKET - ASME-B16.20	L	_	SOFT IRON
						Report Name: Spcl inB



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opt.	from	Size	to	Item Description	Ends	Rating/Facing	Material
GASK	ETS						
	1/2		36				
BOL <sub>1</sub>	S						
	1/2		4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ES						
pos.	Si	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2		GA-E-60120	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	sw	CL1500	Body: ASTM A105 Normalized Trim: 13CR stellited
1	2	2	GA-E-60132	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB Trim: 13CR stellited
1	3	24	GA-E-60136	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB
4	1/2	1 1/2	GA-E-60213	Globe-WB-Red.B-Thdd seat - API602	sw	CL1500	Trim:13CR stellited Body: ASTM A105 Normalized
4	2	2	GA-E-60228	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Trim : 13CR stellited Body: ASTM A216 WCB
4	3	12	GA-E-60229	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Trim:13CR stellited Body: ASTM A216 WCB
6	1/2	1 1/2	GA-E-60318	Check-WB-Red.B-Piston-Int seat - API602	sw	CL1500	Trim:13CR stellited Body: ASTM A105 Normalized
6	2	2	GA-E-60336	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Trim:13CR stellited Body: ASTM A216 WCB
6	3	24	GA-E-60337	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL900	Trim:13CR stellited Body: ASTM A216 WCB
7	6	24	GA-E-60460	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW	CL900	Trim: 13CR stellited Body: ASTM A216 WCB
8	1/2	1 1/2	GA-E-60461	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE	CL1500	Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats Body: ASTM A105 Normalized
8	6	24	GA-E-67177		BW	CL900	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A216 WCB
10	1/2	1 1/2	GA-E-60180	Gate-WB-Red.B-Solid wdg-Exp.seat - API602		CL1500	Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats Body: ASTM A105 Normalized
11	2	2	GA-E-60580	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	DF FLGD	CL1500 RJ (F)	Trim:13CR stellited Body: ASTM A216 WCB
11	3	3	GA-E-60141	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL900 RJ (F)	Trim:13CR stellited Body: ASTM A216 WCB
82	1/2	1 1/2	GA-E-60478	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE	CL1500	Trim: 13CR stellited Body: ASTM A105 Normalized
89	1/2	1 1/2	GA-E-60769	Ball-End entry -FB-Float.ball -Frgd body+ Nipple -	PE/THD	CL1500	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A105 Normalized
101	1/2	1 1/2	GA-E-67018	ASME-B16.34 Gate-Stem Extension-WB-Red.B-Solid wdg-	SW	CL1500	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A105 Normalized
101	2	2	GA-E-60135	Exp.seat - API602 Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL1500	Trim:13CR stellited Body: ASTM A216 WCB
111	2	2	GA-E-67091	- ASME-B16.34 Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	FLGD	CL1500 RJ (F)	Trim: 13CR stellited Body: ASTM 2216 WCB
130	1/2	1 1/2	GA-E-67086	- ASME-B16.34 Gate-Stem Extension-WB-Red.B-Solid wdg-		CL1500	Trim : 13CR stellited Body: ASTM A105 Normalized
801	1/2	1 1/2	GA-E-67143		DF PE	CL1500	Trim:13CR stellited Body: ASTM A105 Normalized
830	1/2	1 1/2	GA-E-67241	Frgd body+nipples - ASME-B16.34 Ball-Stem Extension-End entry -FB-Float.ball -	PE/THD	CL1500	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A105 Normalized
974	2	2	GA-E-69061	Frgd body+ Nipple - ASME-B16.34 Ball-Split body-Red.B-Trunnion ball - API6D	F FLGD	CL1500 RJ (F)	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A216 WCB
974	4	24	GA-E-69060	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	14	14	GA-E-60620	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3
1	18	18	GA-E-60620	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A420 WPL6 - SMLS Screen:316 - CLOTH - MESH 3

**BRANCH TABLES** 



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	9CI	B1S	02	
						Rev.		
Sh.	3	of	3	Α	0			

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6	6	S	S	S	S	W	W	Т	Т																
8		S	S	S	S	W	W	W	Т	Т															
10	)	S	S	S	S	W	W	W	W	Т	Т														
12		S	S	S	S	W	W	W	W	W	Ţ	T	_												
14		S	S	S	S	W	W	VV	W	W	Р	1		_											
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18	) 1	S S	S S	S S	S S	W	W	W	W	W	P	P	P	P	T T	т									
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30	)	S	s	S	s	W	w	W	W	W	Р	Р	Р	Р	Р	P	Ť	т							
36	3	s	s	s	Š	W	w	w	w	w	P	P	P	P	P	P	P	Ť	Т						
Branch		1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	30	36						
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Α	TEE	- SW	/ ENI	DS	ASM	E-B1	6.11																 	 	
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w	WEL					7																	 	 	
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#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



**PWHT** 

Design code : ASME B 31.3 2016

Valve Trim : 5 - 13Cr Stel

: AS PER CODE (NOTE 1)

Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

		ОВ <b>2243</b>						
Pipi	ng (	Clas	s:	0	9CI	B15	60	
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Base Material : CARBON STEEL

Nom. Rating :CL900 Facing/Finishing : RJ (F)

Corrosion Allow. : 1.5 mm

Temp. Limit : -29 °C to 220 °C

Service: [AIV] FG - Fuel Gas NG - Natural Gas

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 Thk.mm 3.73 3.91 4.55 5.08 5.54 7.62 11.13 12.7 
 10
 12
 14
 16
 18
 20
 24

 12.7
 14.27
 15.09
 17.48
 19.05
 22.23
 24.61
 18.26 SCH. XS XS XS XS XS XS 120 120 60 60 60 60

Nipple Thickness

PRESSURE - TEMPERATURE Ratings

NPS	Press. bar	153.06	153.06	140.31	135.48	131	ASME B16.5
1/2 · 8	Temp. °C	-28.89	37.78	93.33	148.89	204.44	Material Group 1.1
NPS	Press. bar	91	10 · 24	Temp. °C	220		

	Si	ze	Item Description	Ends	Rating/Facing	Material
opt.	from	to	nem besorption	Liido	ruung/r uomg	material
PIPE						
	1/2	6	PIPE	вw		ASTM A106 GR.B - SMLS
	8	24	PIPE	BW		ASTM A333 GR.6 - SMLS
FLAN	-		<u> </u>			, to this to the control of the cont
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	(2->2 1/2)	ASTM A105 Normalized
					CL1500 ŔJ (F)	
					(3->24)	
_			WALELANGE AGME DAGE	D144	CL900 RJ (F)	
7	3	24	WN FLANGE - ASME-B16.5	BW	1	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		(1/2->2 1/2) CL1500 RJ (F)	ASTM A105 Normalized
					(3->24)	
					CL900 RJ (F)	
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A105 Normalized
SPEC	TACLE	BLIND				
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		CL1500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
	2	24	BLIND & SPACER - ASME-B16.48		(2->2 1/2)	ASTM A516 GR.70 + S5 (-46°C)
					CL1500 RJ (F)	
					(3->24) CL900 RJ (F)	
FITTI	NGS				02000110 (1)	
	1/2	3	DRIP-RING - TB DRI 5011		(1/2->2 1/2)	ASTM A105 Normalized
					CL1500 RJ (F)	
					(3->24)	
	4.00	4.4.0	FI DOW OW FNDO AGNE DAGA	0144	CL900 RJ (F)	AOTA A 405 N
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW BW	3000	ASTM A105 Normalized
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	8	24	LONG RADIUS ELBOW - ASME-B16.9	SW	3000	ASTM A420 WPL6 - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW\THDF	3000	ASTM A105 Normalized
	3/4 2	1 1/2 6	RED. COUPLING - SW/THDD - ASME-B16.11 REDUCER - ASME-B16.9	BW	3000	ASTM A105 Normalized ASTM A234 WPB - SMLS
	8	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	24	FEMALE CAP - THD END - ASME-B16.11	THDF	6000	ASTM A105 Normalized
	1/2	2	FEMALE CAP - THO END - ASIVE-BTO.TT	ITTIBI	3000	ASTIM A 103 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A105 Normalized
	2	6	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	8	24	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized
					3000	
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A105 Normalized
	2	6	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	8	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	2	6	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	3000	ASTM A105 Normalized
CASI	8   (ETC	8	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW		ASTM A350 LF2 - CL.1
GASK	-	24	OCTACONAL BLCASKET ASME BACKS		I	SOET IDON
DOI 7	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20	1	1	SOFT IRON
BOLT	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
	1/2	-				protimization by a notification of citation (Holdip 199)

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60120	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	sw		Body: ASTM A105 Normalized Trim: 13CR stellited
1	2	2	GA-E-60132	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB Trim: 13CR stellited



VALVES

#### PIPING MATERIAL **SPECIFICATION**

		DB 2 <b>243</b>						
Pipi	ng C	Class	s:	0	9CI	B1S	60	
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1   3   2   4   6.4E-60136   Gate-PS-FB-Flex wdg-Wildd seat - ASME-B16.34   BW   CL900   Trial: ISCR relatified   Gody-ASTM A216 WCB   Trial: ISCR relatified	VALV			1				
1	pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
4		3	24	GA-E-60136	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB
4								
4	4	1/2	1 1/2	GA-E-60213	Globe-WB-Red.B-Thdd seat - API602	SW	CL1500	
4   3   12   GA-E-00229   Globe-PS-Disk-Integral seat - ASME-B16.34   BW   CL900   Body-ASTM AVE NOB   Tim: 13CR stellified   Body-ASTM AVE NOB   Tim: 13CR stellified   Body-ASTM AVE NOB   Tim: 13CR stellified   Body-ASTM AVE NOB   Tim: 13CR stellified   Body-ASTM AVE NOB   Tim: 13CR stellified   Body-ASTM AVE NOB   Tim: 13CR stellified   Body-ASTM AVE NOB   Tim: 13CR stellified   Body-ASTM AVE NOB   Tim: 13CR stellified   Body-ASTM AVE NOB   Tim: 13CR stellified   Body-ASTM AVE NOB   Tim: 13CR stellified   Body-ASTM AVE NOB   Body-ASTM A	,	2	2	GA E 60228	Globa-PS-Disk-Intogral soat - ASME-R16 34	D\A/	CI 1500	
4   3   12   GA-E-00229   Globe-PS-Disk-Integral seat - ASME-B16.34   BW   CL900   Body-ASTM ACIS NUCB   Trim: 13CR stellined   Check-WB-Red B-Piston-Int seat - API602   SW   CL1500   Body-ASTM ACIS Nuclear   Check-WB-Red B-Piston-Int seat - ASME-B16.34   BW   CL1500   Body-ASTM ACIS Nuclear   Check-WB-Red B-Piston-Int seat - ASME-B16.34   BW   CL1500   Body-ASTM ACIS Nuclear   Check-WB-Red B-Piston-Int seat - ASME-B16.34   BW   CL1500   Body-ASTM ACIS Nuclear   Check-WB-Red B-Piston-Int seat - ASME-B16.34   BW   CL1500   Body-ASTM ACIS Nuclear   Check-WB-Red B-Piston-Int seat - ASME-B16.34   BW   CL1500   Body-ASTM ACIS Nuclear   Check-WB-Red B-Piston-Int seat - ASME-B16.34   BW   CL1500   Body-ASTM ACIS Nuclear   Check-WB-Red B-Piston-Int seat - ASME-B16.34   BW   CL1500   Body-ASTM ACIS Nuclear   Check-WB-Red B-Piston-Int seat - ASME-B16.34   BW   CL1500   Body-ASTM ACIS Nuclear   Check-WB-Red B-Piston-Int seat - ASME-B16.34   BW   CL1500   Body-ASTM ACIS Nuclear   Check-WB-Red B-Piston-Int seat - ASME-B16.34   CL1500	7	2		GA-L-00228	Globe-F-3-Disk-linegral seat - ASME-D10.34	DVV	CL1500	
6	4	3	12	GA-E-60229	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	
6								
6 2 2 2 GA-E-60336 Check-PS-FB-Swing-integral seal - ASME-B16.34 BW C1500 Body: ASTM A216 WCB Tim: 13CR stellined C1500 Body: ASTM A216 WCB Tim: 13CR stellined C1500 Body: ASTM A216 WCB Tim: 13CR stellined C1500 Body: ASTM A216 WCB Tim: 13CR stellined C1500 Body: ASTM A216 WCB Tim: 13CR stellined C1500 Body: ASTM A216 WCB Tim: 13CR stellined C1500 Body: ASTM A216 WCB Tim: 13CR stellined C1500 Body: ASTM A216 WCB Body: AST	6	1/2	1 1/2	GA-E-60318	Check-WB-Red.B-Piston-Int seat - API602	SW	CL1500	
6	6	2	2	CV E 60336	Chock-PS-ER-Swing-Intogral coat - ASME-R16-34	B\//	CI 1500	
Check-PS-FB-Swing-Integral sear 1-ASME-B16.34   BW	١	2		GA-L-00330	Check-F 3-1 B-3wing-integral seat - A3wiL-B10.34	DVV	CE1300	
Record   R	6	3	24	GA-E-60337	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL900	
A   1/2								
8	7	6	24	GA-E-60460		BW	CL900	
ASKE-B16.34   ASKE-B16.34   ASKE-B16.34   ASKE-B16.34   APIBO   APIB	۵	1/2	1 1/2	GA E 60461	1	DE	CI 1500	
8	°	1/2	1 1/2	GA-E-60461		PE	CLISOU	
APIGO	8	6	24	GA-E-67177	l .	BW	CL900	
11								
11	10	1/2	1 1/2	GA-E-60180	Gate-WB-Red.B-Solid wdg-Exp.seat - API602		CL1500	
11	44	,	_	CA E 00500	Coto DC ED Flow under Wildel cook. ACME D46 24	I .	CL 4500 D L (E)	
11   3   3   3   GAE-60141   Gate-PS-FB-Flex wdg-Wildd seat - ASME-B16.34   FLGD   CL900 RJ (F)   Birm: 13CR stellited   Body: ASTM A216 WCB   Trim: 13CR stellited   Body: ASTM A216 WCB   Trim: Soft seat-316 Flow CARB. trim-(XM19 stem)-GRAPH.   Ball-End entry: -FB-Float.ball - Frgd body+nipples - ASME-B16.34   SAME-B16.3	11	2	2	GA-E-60580	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	
1	11	3	3	GA-E-60141	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL900 RJ (F)	
ASME-B16.34   SAME-B16.34								
89	82	1/2	1 1/2	GA-E-60478		PE	CL1500	
ASME-B16.34   Superation								
11	89	1/2	1 1/2	GA-E-60769	Ball-End entry -FB-Float.ball -Frgd body+ Nipple -	PE/THD	CL1500	
Exp.seat - API602   Cate-Stern Extension-PS-FB-Flex wdg-Wildd seat   - ASME-B16.34   - Interlock System   Sall-Stern Extension-Flore dentry -FB-Float.ball - Fird body+nipples - ASME-B16.34   - Interlock System   Sall-Stern Extension-flore dentry -FB-Float.ball - Fird body+nipples - ASME-B16.34   - A	101	1/2	1 1/2	GA-F-67018	l .	SW	CI 1500	
ASME-916.34   ASME-916.34		.,_	,_	0.12 0.010			02.000	
111	101	2	2	GA-E-60135	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL1500	Body: ASTM A216 WCB
ASME-B16.34   Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat   FLGD   CL1500 RJ (F)   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A105 Normalized   Trim :13CR stellited   Body: ASTM A105 Normalized   Trim :13CR stellited   Body: ASTM A105 Normalized   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Body: ASTM A216 WCB   Trim :13CR stellited   Body: ASTM A216 WCB   Body: ASTM A2		_	_					
114	111	2	2	GA-E-67091		FLGD	CL1500 RJ (F)	
- ASME-B16.34  130	114	2	2	GA-E-60114		FLGD	CI 1500 R.I (F)	
Exp. seat - API602   Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34   BW   CL900   Body: ASTM A216 WCB   Trim : 13CR stellited   BW   CL900   Body: ASTM A216 WCB   Trim : 13CR stellited   BW   CL900   Body: ASTM A216 WCB   Trim : 13CR stellited   BW   CL900   Body: ASTM A216 WCB   Trim : 13CR stellited   BW   CL900   Body: ASTM A216 WCB   Trim : 13CR stellited   BW   CL900   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats   BW   CL900   Body: ASTM A105 Normalized   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A105 Normalized   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A105 Normalized   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A105 Normalized   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A105 Normalized   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A105 Normalized   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A105 Normalized   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats   BW   CL900   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A220 WPL6 - SMLS   Screen: 316 - CLOTH - MESH 3   Body: ASTM A420 WPL6 - SMLS   Body: ASTM A420 WPL6 - SMLS   Body: ASTM A420 WPL6 - SMLS   Body: ASTM A420 WPL6 - SMLS   Body: ASTM A420 WPL6 - SMLS   Body: ASTM A420 WPL6 - SMLS   Body: ASTM A420 WPL6 - SMLS   Body: ASTM A420 WPL6 - SMLS   Body: ASTM A420 WPL6 - SMLS   Bod		_	_			. 202	02.000.10(.)	
140	130	1/2	1 1/2	GA-E-67086			CL1500	
Interlock System					1 .	1		1
801	140	4	4	GA-E-6/3/8		BW	CL900	
STRAINERS   STRAINERS   Frgd body+nipples - ASME-B16.34   Ball-Split body-Red.B-Trunnion ball - API6D   FLGD   CL900 RJ (F)   Ball-Split body-Red.B-Trunnion ball - API6D   FLGD   CL900 RJ (F)   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BW   CL900 RJ (F)   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BW   CL900 RJ (F)   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BW   CL900 RJ (F)   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BW   CL900 RJ (F)   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BW   CL900 RJ (F)   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BODy: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BODy: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BODy: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BODy: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BODy: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BODy: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BODy: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BODy: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BODy: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BODy: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BODy: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   BODy: ASTM A220 WPL6 - SMLS   BODy	801	1/2	1 1/2	GA-F-67143		PF	CI 1500	
Price   Fright body		.,_				· -	02.000	
907   2   2   2   GA-E-69028   Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D   Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats   Trim : Soft seat-316 trim : PEEK seats   Trim : Soft seat-316 trim : PEEK	830	1/2	1 1/2	GA-E-67241		PE/THD	CL1500	
API6D	00-		6	04 5 00000		F	01.4500	
907   3	907	2	2	GA-E-69028		BW	CL1500	
917   2   2   GA-E-69025   Ball-Split body-Red.B-Trunnion ball - API6D   FLGD   CL1500 RJ (F)   Body-ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seat	907	3	24	GA-E-69027	l .	BW	CL900	
917   2   2   GA-E-69025   Ball-Split body-Red.B-Trunnion ball - API6D   FLGD   CL1500 RJ (F)   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim - PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim: PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim: PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim: PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim: PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim: PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim: PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim: PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim: PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim: PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim: PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim: PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim: PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-316 trim: PEEK seats   Body: ASTM A216 WCB   Trim: Soft seat-3	٠٠.	Ĭ		22 0002.		[ · · ·		
917   3   24   GA-E-69026   Ball-Split body-Red.B-Trunnion ball - API6D   FLGD   CL900 RJ (F)   Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats	917	2	2	GA-E-69025	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Body: ASTM A216 WCB
STRAINERS           pos.         from         Size to         Data Sheet         Item Description         Ends         Rating/Facing         Material           1         14         14         GA-E-60620         T Strainer-BW - <mfr -="" metallic="" std="">         BW         CL900 RJ (F)         Body :ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3           1         18         18         GA-E-60620         T Strainer-BW - <mfr -="" metallic="" std="">         BW         CL900 RJ (F)         Body :ASTM A420 WPL6 - SMLS</mfr></mfr>	917	3	24	GA-E-69026	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL900 RJ (F)	
pos.         From total         Size to large         Data Sheet         Item Description         Ends         Rating/Facing         Material           1         14         14         GA-E-60620         T Strainer-BW - <mfr -="" metallic="" std="">         BW         CL900 RJ (F)         Body : ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3           1         18         18         GA-E-60620         T Strainer-BW - <mfr -="" metallic="" std="">         BW         CL900 RJ (F)         Body : ASTM A420 WPL6 - SMLS</mfr></mfr>	ļ	ļ		I .	1	I	I	THIM : SOIL SEAL-3 TO THIM - PEEK SEALS
pos.         Size from         Data Sheet         Item Description         Ends         Rating/Facing         Material           1         14         14         GA-E-60620         T Strainer-BW - <mfr -="" metallic="" std="">         BW         CL900 RJ (F)         Body : ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3           1         18         18         GA-E-60620         T Strainer-BW - <mfr -="" metallic="" std="">         BW         CL900 RJ (F)         Body : ASTM A420 WPL6 - SMLS</mfr></mfr>								
pos.         From total         Size to large         Data Sheet         Item Description         Ends         Rating/Facing         Material           1         14         14         GA-E-60620         T Strainer-BW - <mfr -="" metallic="" std="">         BW         CL900 RJ (F)         Body : ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3           1         18         18         GA-E-60620         T Strainer-BW - <mfr -="" metallic="" std="">         BW         CL900 RJ (F)         Body : ASTM A420 WPL6 - SMLS</mfr></mfr>	STRA	INERS						
Pos.         from         to         Indicated by the control of the control		Si	ize	Data Sheet	Item Description	Ende	Rating/Eacing	Material
Screen: 316 - CLOTH - MESH 3  1 18 GA-E-60620 T Strainer-BW - <mfr -="" metallic="" std=""> BW CL900 RJ (F) Body :ASTM A420 WPL6 - SMLS</mfr>	pos.	from	to			Liids	naung/racing	IVIALGI IAI
1 18 GA-E-60620 T Strainer-BW - <mfr -="" metallic="" std=""> BW CL900 RJ (F) Body :ASTM A420 WPL6 - SMLS</mfr>	1	14	14	GA-E-60620	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL900 RJ (F)	
The state of the s						L		1
	1	18	18	GA-E-60620	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL900 RJ (F)	
				<u> </u>	_1	1	I	Screen: 310 - CLOTH - MESH 3

**BRANCH TABLES** 



00 Dames

		DB 2 <b>243</b>						
Pipi	ng C	Class	s:	0	9CI	B1S	60	
						Rev.		
Sh.	3	of	3	Α				

RunSize	
1/2 A	
3/4 A A	
1 A A A	
11/2 A A A A	
2	
3 <u>T T</u> _	
4   1   1	
6 SW T T T	
8 SW SW T T T 10 SW SW T T T T	
10 5W 5W 5W 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
8 SW SW T T T 10 SW SW T T T T 12 SW SW SW T T T T 14 SW SW SW T T T T	
16 SW SW SW T T T T T	
16 SW SW T T T T T T T T T T T T T T T T T	
20 SW SW SW T T T T T T	
24 SW SW SW SW T T T T T T	
BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12 14 16 18 20 24	
2.6.6.6.26 1/2 6/4 1 1 1/2 2 6 4 6 6 16 12 14 16 16 26 24	
Lt-	
Legenda	_
A TEE - SW ENDS - ASME-B16.11	Ц
SW   SPECIAL SWEEPOLET - <mfr std=""></mfr>	- 1
T TEE - ASME-B16.9	
W WELDOLET - MSS-SP97	П

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) This piping class is created for lines subjected to Acoustic Induced Vibration.



		ОВ <b>2243</b>							
Pipi	ng C	Class	s:	0	9CI	B2[	003		
						Rev.			
Sh.	1	of	2	Α	0	1	2	3	

Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating :CL900 **PWHT** :YES (NOTE 1) Facing/Finishing : RJ (F) Valve Trim :12 - SS316/HF

Corrosion Allow. : 3 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : 0 °C to 130 °C Service: [Amine Service] AL - Amine Lean

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 Thk.mm 7.47 5.56 6.35 7.14 8.74 11.13 11.13 14.27 18.26 SCH. XXS 160 160 160 160 160 120 120 120

Nipple Thickness

1/2	9 Lemb	. c 3	7.76 93.33 Material Group 1.1			
opt.	Siz from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE				<u> </u>	<u> </u>	
	1/2	8	PIPE	вw		ASTM A106 GR.B - SMLS
FLAN	IGES					
	1/2	8	WN FLANGE - ASME-B16.5	BW	(1/2->2 1/2) CL1500 RJ (F) (3->8) CL900 RJ (F)	ASTM A105 Normalized
	1/2	8	BLIND FLANGE - ASME-B16.5		(1/2->2 1/2) CL1500 RJ (F) (3->8) CL900 RJ (F)	ASTM A105 Normalized
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A105 Normalized
SPEC	CTACLE	BLIND				
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		CL1500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
	2	8	BLIND & SPACER - ASME-B16.48		(2->2 1/2) CL1500 RJ (F) (3->8) CL900 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS					
	1/2	8	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3/4	8	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	8	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	8	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	1/2	6	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
GASI	KETS					
	1/2	8	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOL.	TS					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ES						
	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to				J	
1	1/2	1 1/2	GA-E-60137	Gate-WB-Red.B-Solid wdg-Exp.seat + Nipples - API602	BW	CL1500	Body: ASTM A105 Normalized Trim :316 / HF
1	2	2	GA-E-60138	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB Trim : 316 / HF
1	3	8	GA-E-60139	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB Trim: 316 / HF
4	1/2	1 1/2	GA-E-60231	Globe-WB-Red.B-Thdd seat + Nipples - API602	BW	CL1500	Body: ASTM A105 Normalized Trim :316 / HF
4	2	2	GA-E-60232	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB Trim: 316 / HF
4	3	8	GA-E-60233	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB
6	1/2	1 1/2	GA-E-60338	Check-WB-Red.B-Piston-Int seat + Nipples - API602	BW	CL1500	Body: ASTM A105 Normalized
6	2	2	GA-E-60339	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB
6	3	8	GA-E-60340	Check-PS-FB-Swing-Integral seat - ASME-B16.34	вW	CL900	Body: ASTM A216 WCB
7	6	8	GA-E-60464	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	вW	CL900	Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2	GA-E-60463	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	вW	CL1500	Body: ASTM A105 Normalized  Trim: Soft seat-316 trim - PEEK seats
11	2	2	GA-E-60581	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A216 WCB
11	3	8	GA-E-60582	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL900 RJ (F)	Body: ASTM A216 WCB
82	1/2	1 1/2	GA-E-60770	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	вW	CL1500	Body: ASTM A105 Normalized   Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
82	6	8	GA-E-67105		BW	CL900	Body: ASTM A216 WCB  Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	9C	B2[	003	
						Rev.		
Sh.	2	of	2	Α	0	1	2	3

VALV	ES						
pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
89	1/2	1 1/2		Ball-End entry -FB-Float.ball -Frgd body+ Nipple - ASME-B16.34	BW/TH DF		Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

#### BRANCH TABLES

											90 Degrees
RunSi	ze										
1/2		Т									
3/4		Τ	Τ								
1		Τ	Т	Т							
1 1/2		Τ	Т	Т	Т						
2	١ ١	٧	W	Т	Т	Т					
3	١ ١	٧	W	W	W	W	Т				
4	. \	٧	W	W	W	W	Т	Т			
6	١ ١	٧	W	W	W	W	W	Т	Т		
8	١ ١	٧	W	W	W	W	W	W	Т	Τ	
Branch	Size	/2	3/4	1	1 1/2	2 2	3	4	6	8	
Legenda	_										
Р	PIPE :	TO F	PIPE	WIT	H RE	INF	ORC	ING F	AD-1	S-CO	R-ENG-PIPMT-012-E
T	TEE -	ASN	1E-B	16.9							
W	WELD	OLE	T - N	/ISS	-SP9	7					

#### GENERAL NOTES

- 1) PWHT is mandatory for all tihickness.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	9CI	B20	04	
						Rev.		
Sh.	1	of	2	Α	0	1	2	3

Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating :CL900 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing : RJ (F) Valve Trim :5 - 13Cr Stel

Corrosion Allow. : 3 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 320 °C

Service: [SEVERE CYCLIC SERVICE] NG - Natural Gas

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 17hk.mm 7.47 5.56 6.35 7.14 8.74 11.13 11.13 14.27 18.26 15.09 17.48 19.05 20.62 23.83 26.19 28.58 SCH. XXS 160 160 160 160 160 120 120 120 80 80 80 80 80 80

Nipple Thickness

NPS 1/2 3/4 1 11/2 2
Thk.mm 7.47 7.82 9.09 10.15 11.07
SCH. XXS XXS XXS XXS XXS
PRESSURE - TEMPERATURE Ratings

	10 30 Former & 320										
opt.	Si	ze to	Item Description	Ends	Rating/Facing	Material					
<u> </u>		10									
PIPE					1						
	1/2	4	PIPE	BW		ASTM A106 GR.B - SMLS					
	5	24	PIPE	BW		ASTM A333 GR.6 - SMLS					
	26	30	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)					
FLAN	IGES										
	1/2	24	WN FLANGE - ASME-B16.5	BW	(1/2->2 1/2)	ASTM A105 Normalized					
					CL1500 RJ (F)						
					(3->24) CL900 RJ (F)						
	26	30	WN FLANGE - ASME-B16.47 series.A	вw	CL900 RJ (F)	ASTM A105 Normalized					
	1/2	24	BLIND FLANGE - ASME-B16.5	DVV	(1/2->2 1/2)	ASTM A105 Normalized					
	1/2	24	BEIND I LANGE - AGME-B10.5		CL1500 RJ (F)	ASTIVI ATOS Normalized					
					(3->24)						
					CL900 RJ (F)						
	26	30	BLIND FLANGE - ASME-B16.47 series.A		CL900 RJ (F)	ASTM A105 Normalized					
14	3/4	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A105 Normalized					
SPEC	CTACLE	BLIND									
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		CL1500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)					
	2	24	BLIND & SPACER - ASME-B16.48		(2->2 1/2)	ASTM A516 GR.70 + S5 (-46°C)					
					CL1500 RJ (F)						
					(3->24) CL900 RJ (F)						
FITTI	NGS				CL900 K3 (I )						
	1/2	4	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS					
	6	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
	26	30	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD					
	3/4	4	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS					
	6	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
	26	30	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD					
	1/2	4	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS					
	6	30	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
	1/2	2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A420 WPL6 - SMLS					
		2		THDM\PE							
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	PE\THDM		ASTM A224 MADE CALLS					
	3/4		SWAGE NIPPLE - PE/THDD - MSS-SP95	PE(THDM		ASTM A234 WPB - SMLS					
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95			ASTM A234 WPB - SMLS					
	1/2	4	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS					
	5	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
	26	30	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD					
CACI	1/2 <b>KETS</b>	8	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized					
GASI		00	OCTACONAL DIGARKET AGAIN DAGGO			ACCET IDOM					
_	1/2	30	OCTAGONAL RJ GASKET - ASME-B16.20		I	SOFT IRON					
BOL.			OT DOLT AND TO AND THE TO DELL SOOS			A O TALA 400 D T. A O TALA 404 O D. O L. (14 a D). 450)					
1	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)					

	1/2	4	ST.BOLT+2 NUTS	- ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
VALV	ES						
	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to				J	
1	1/2	1 1/2	GA E 60131	Cate MR Pod R Solid wdg Eyn soat - ADI602	DW	CL 1500	Pody: ASTM A105 Normalized

1	1/2	1 1/2	GA-E-60131	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	BW	CL1500	Body: ASTM A105 Normalized
							Trim: 13CR stellited
1	2	2	GA-E-60132	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB
						l .	Trim: 13CR stellited
1	3	24	GA-E-60133	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW		Body: ASTM A216 WCB
						l .	Trim: 13CR stellited
4	1/2	1 1/2	GA-E-60227	Globe-WB-Red.B-Thdd seat - API602	BW	1	Body: ASTM A105 Normalized
						ı	Trim:13CR stellited
4	2	2	GA-E-60228	Globe-PS-Disk-Integral seat - ASME-B16.34	BW		Body: ASTM A216 WCB
							Trim: 13CR stellited
4	3	8	GA-E-60229	Globe-PS-Disk-Integral seat - ASME-B16.34	BW		Body: ASTM A216 WCB
						l .	Trim: 13CR stellited
6	1/2	1 1/2	GA-E-60335	Check-WB-Red.B-Piston-Int seat - API602	BW		Body: ASTM A105 Normalized
							Trim: 13CR stellited



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oos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
_							
6	2	2	GA-E-60336	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB
							Trim: 13CR stellited
6	3	24	GA-E-60337	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB
							Trim: 13CR stellited
7	6	24	GA-E-67185	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL900	Body: ASTM A216 WCB
				API6D			Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
8	1/2	1 1/2	GA-E-60459	Ball-End entry -FB-Float.ball -Frgd body+nipples -	BW	CL1500	Body: ASTM A105 Normalized
				ASME-B16.34			Trim : Soft seat-316 trim - PEEK seats
11	2	2	GA-E-60580	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A216 WCB
						\ \ \	Trim: 13CR stellited
11	3	3	GA-E-60141	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL900 RJ (F)	Body: ASTM A216 WCB
						\	Trim: 13CR stellited
80	1/2	1 1/2	GA-E-67142	Ball-Stem Extension-End entry -FB-Float.ball -	BW	CL1500	Body: ASTM A105 Normalized
				Frgd body+nipples - ASME-B16.34			Trim : Soft seat-316 trim - PEEK seats
82	1/2	1 1/2	GA-E-60771	Ball-End entry -FB-Float.ball -Frqd body+nipples -	BW	CL1500	Body: ASTM A105 Normalized
				ASME-B16.34			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
82	6	24	GA-E-60772	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL900	Body: ASTM A216 WCB
	-			API6D	[ · · ·		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-67146	Ball-End entry -FB-Float.ball -Frgd body+ Nipple -	BW/TH	CI 1500	Body: ASTM A105 Normalized
	.,,_	,	0.12 07 140		DF		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

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RunSi	70															9	0 Deg	grees
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6		W	W	W	W	W	W	Т	Т									
8		W	W	W	W	W	W	W	Т	Т								
10		W	W	W	W	W	W	W	W	Т	Т							
12		W	W	W	W	W	W	W	W	W	T	T	_					
14		W	W	W	W	W	W	W	W	W	Р	Ţ	T	_				
16		W	W	W	W	VV	W	W	W	W	P	P	Ī	<u> </u>	_			
18		W	W	W	VV	W	W	VV	W	W	P	P	P P	P	ļ	_		
20 24		W	W	W	۷۷	۷۷	W	۷۷	VV VA/	W	P	P	P	P	P	Ť	т	
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Branch					1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	30
	UU	1,2	U/T		. 1/2		J		·	0	10	12		10	10	20		-00
Legenda	a																	
	PIPE	то	PIPE	: WIT	TH RE	EINF	ORC	ING	PAD-	TS-C	OR-E	NG-F	PIPM	T-012	-E			
	TEE																	
	WFI					7												

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) This piping Class is for SEVERE CYCLIC SERVICE (Severe Cyclic Service definition: More than 7000 cycles expected during service life).
  3) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  4) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  5) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL900 **PWHT** : AS PER CODE (NOTE 1)

Facing/Finishing : RJ (F) Valve Trim : 5 - 13Cr Stel

Corrosion Allow. : 3 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 220 °C

Service: HV - Hydrocarbon Vapour NG - Natural Gas

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 Thk.mm 7.47 5.56 6.35 7.14 8.74 11.13 11.13 14.27 18.26 14.27 15.88 17.48 19.05 20.62 23.83 26.97 SCH. XXS 160 
 160
 160
 160
 120
 120
 120

Nipple Thickness

PRESSURE - TEMPERATURE Ratings

10 + 30   lemp. °C   220										
	Size	Item Description	Ends	Rating/Facing	Material					
om	to									
	,			_						
2	4	PIPE	BW		ASTM A106 GR.B - SMLS					
5	24	PIPE	BW		ASTM A333 GR.6 - SMLS					
6	30	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)					
S										
/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A105 Normalized					
2	24	WN FLANGE - ASME-B16.5	BW	(2->2 1/2)	ASTM A105 Normalized					
				CL1500 RJ (F)						
				(3->24)						
				CL900 RJ (F)						
6	30	WN FLANGE - ASME-B16.47 series.A	BW	CL900 RJ (F)	ASTM A105 Normalized					
2	24	BLIND FLANGE - ASME-B16.5		(1/2->2 1/2)	ASTM A105 Normalized					
				CL1500 RJ (F)						
				(3->24)						
_		DUND FLANCE AGNE DAG 47		CL900 RJ (F)						
6	30	BLIND FLANGE - ASME-B16.47 series.A		, ,	ASTM A105 Normalized					
2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A105 Normalized					
-	E BLIND			1						
2	1 1/2	SPECTACLE BLIND - ASME-B16.48			ASTM A516 GR.70 + S5 (-46°C)					
2	24	BLIND & SPACER - ASME-B16.48		(2->2 1/2)	ASTM A516 GR.70 + S5 (-46°C)					
				CL1500 RJ (F)						
				(3->24) CL900 RJ (F)						
^	20	CDECIAL DUND & CDACED MED CH. CA E 000040		, ,	ASTM AF46 CD 70 + CF ( 46%C)					
0	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060019</mfr>		CL900 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)					
	1 0	DDID DING. TD DDI 5044		(4/2 - 2.4/2)	AOTAA AAOF Namariina d					
2	3	DRIP-RING - TB DRI 5011		(1/2->2 1/2) CL1500 RJ (F)	ASTM A105 Normalized					
				(3->24)						
				CL900 RJ (F)						
/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized					
2	4	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS					
3	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
6	30	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD					
4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A420 WF LOW - WEDD					
	1	RED. COUPLING - SW ENDS - ASME-B16.11	SW\THDF	6000						
4	1 1/2			8000	ASTM A105 Normalized					
2	4	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS					
3	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
6	30	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD					
2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	6000	ASTM A105 Normalized					
2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	9000	ASTM A105 Normalized					
2	4	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS					
3	30	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized					
/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized					
/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized					
/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS					
4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS					
4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS					
/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized					
2	4	TEE - ASME-B16.9	BW	0000	ASTM A234 WPB - SMLS					
3	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS					
6	30	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD					
2	8	WELDOLET - MSS-SP97	BW	[	ASTM A105 Normalized					
2	1 1/2	SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A105 Normalized					
S										
/2	30	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON					
/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)					
		·								



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pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60120	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	sw	CL1500	Body: ASTM A105 Normalized
1	2	2	GA-E-60132	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Trim:13CR stellited Body: ASTM A216 WCB
1	3	24	GA-E-60136	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Trim:13CR stellited Body:ASTM A216 WCB
4	1/2	1 1/2	GA-E-60213	Globe-WB-Red.B-Thdd seat - API602	sw	CL1500	Trim : 13CR stelllited Body: ASTM A105 Normalized Trim : 13CR stellited
4	2	2	GA-E-60228	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB Trim: 13CR stellited
4	3	8	GA-E-60229	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB Trim : 13CR stellited
6	1/2	1 1/2	GA-E-60318	Check-WB-Red.B-Piston-Int seat - API602	sw	CL1500	Body: ASTM A105 Normalized Trim :13CR stellited
6	2	2	GA-E-60336	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB Trim : 13CR stellited
6	3	24	GA-E-60337	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB Trim : 13CR stellited
7	6	24	GA-E-67185	API6D	BW	CL900	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats
8	1/2	1 1/2	GA-E-60461	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34		CL1500	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-60180	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	DF	CL1500	Body: ASTM A105 Normalized Trim : 13CR stellited
11	2	2	GA-E-60580	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	, ,	Body: ASTM A216 WCB Trim : 13CR stellited
11	3	3	GA-E-60141		FLGD	, ,	Body: ASTM A216 WCB Trim : 13CR stellited
82	1/2	1 1/2	GA-E-60478	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34		CL1500	Body: ASTM A105 Normalized Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
82	6	24	GA-E-60772	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW	CL900	Body: ASTM A216 WCB Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89 101	1/2	1 1/2	GA-E-60769 GA-E-67018	Ball-End entry -FB-Float.ball -Frgd body+ Nipple - ASME-B16.34 Gate-Stem Extension-WB-Red.B-Solid wdg-	PE/THD F SW		Body: ASTM A105 Normalized Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A105 Normalized
101	2	2	GA-E-60135	Exp.seat - API602  Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat		CL1500 CL1500	Trim : 13CR stellited Body: ASTM A216 WCB
111	2	2	GA-E-67091	- ASME-B16.34  Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat			Trim : 13CR stellited  Body: ASTM A216 WCB
114	2	2	GA-E-60114	- ASME-B16.34  Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat		, ,	Trim : 13CR stellited  Body: ASTM A216 WCB
130	1/2	1 1/2	GA-E-67086	- ASME-B16.34 Gate-Stem Extension-WB-Red.B-Solid wdg-	SW/TH	CL1500 K3 (1 )	Trim : 13CR stellited Body: ASTM A105 Normalized
140	3	3	GA-E-67378	Exp.seat - API602	DF BW	CL900	Trim : 13CR stellited Body: ASTM A216 WCB
801	1/2	1 1/2	GA-E-67143	- Interlock System  Ball-Stem Extension-End entry -FB-Float.ball -	PE	CL1500	Trim : 13CR stellited Body: ASTM A105 Normalized
830	1/2	1 1/2	GA-E-67241	Frgd body+nipples - ASME-B16.34 Ball-Stem Extension-End entry -FB-Float.ball -		CL1500	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A105 Normalized
907	2	2	GA-E-69028	Frgd body+ Nipple - ASME-B16.34 Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	F BW	CL1500	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A216 WCB
907	3	24	GA-E-69027	API6D Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL900	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A216 WCB
917	2	2	GA-E-69025	API6D Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A216 WCB
917	3	24	GA-E-69026	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL900 RJ (F)	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A216 WCB
974	2	2	GA-E-69061	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A216 WCB
974	3	24	GA-E-69060	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

STRA	TRAINERS										
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing Material					
1	6	6	GA-E-60620	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW	CL900 RJ (F) Body :ASTM A420 WPL6 - SMLS Screen: 316 - CLOTH - MESH 3					

#### BRANCH TABLES



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	9CI	B2S	<b>601</b>	
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RunS	ze															9	Dec	grees	
1/2		Α																	
3/4	1	Α	Α																
		Α	Α	Α															
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8		S	S	S	S	W	W	١٨/	÷	т									
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16	i	S	S	S	S	W	W	W	W	W	Р	Ρ	Т	Т					
18 20	}	S	S	S	S	W	W	W	W	W	Р	Ρ	Р	Т	Т				
20	)	S	S	S	S	W	W	W	W	W	Р	Р	Р	Р	Т	Т			
24		S	S	S	S	W	W	W	W	W	P	Р	Р	Р	P	T	T	_	
_ 30		S	S	S	S	W	W	W	W	W	Р	Р	Р	Р	Р	Р	Т	Т	
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	30	
Legend	а																		
Α	TEE -	- SW	END	S	ASM	E-B1	6.11												
Р	PIPE	TOI	PIPE	WIT	'H RE	EINF	ORC	ING F	PAD-	TS-C	OR-E	NG-F	PMT!	Γ-012	-E				
S	SOCI	KOLI	ET - \$	SW E	END	- TB	RAC	5380	)										
Τ	TEE -	- ASI	ИЕ-В	16.9															
TR	TEE-	MSS	SP 7	<b>'</b> 5															
W	WEL				-SP9	7													

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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						Rev.		
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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating :CL900 : AS PER CODE (NOTE 1) **PWHT** 

Facing/Finishing : RJ (F) Valve Trim :5 - 13Cr Stel

Corrosion Allow. : 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 70 °C Service: HV - Hydrocarbon Vapour

Pipe Thickness

NPS 1/2 3/4 Thk.mm 7.47 5.56 1 1 1/2 6.35 7.14 2 3 4 6 8 10 12 8.74 11.13 11.13 14.27 18.26 20.62 22.23 14 16 18 20 23.83 26.19 29.36 32.54 SCH. XXS 160 160 160 160 160 120 120 120 100 100 100 100

Nipple Thickness

VALVES

1

Size

to

1 1/2

from

1/2

2

**Data Sheet** 

GA-E-60120

GA-E-60132

Item Description

Gate-WB-Red.B-Solid wdg-Exp.seat - API602

Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34

NPS 1/2 3/4 1 Thk.mm 7.47 7.82 9.09 SCH. XXS XXS XXS 1 1/2 2 10.15 11.07 XXS XXS

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 140
10 · 24 Temp. °C 70

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	4	PIPE	BW		ASTM A106 GR.B - SMLS
	5	24	PIPE	BW		ASTM A333 GR.6 - SMLS
FLAN	-		, <del>-</del>			7.65 T. 11.7 C. 11.25
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	(2->2 1/2)	ASTM A105 Normalized
					CL1500 ŔJ (F)	
					(3->24)	
	1/2	24	BLIND FLANGE - ASME-B16.5		CL900 RJ (F)	AOTM AAOS Namarika d
	1/2	24	BLIND FLANGE - ASIVIE-B10.5		(1/2->2 1/2) CL1500 RJ (F)	ASTM A105 Normalized
					(3->24)	
					CL900 RJ (F)	
14	2		THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A105 Normalized
SPEC	TACLE			1	1	
	1/2		SPECTACLE BLIND - ASME-B16.48		1 ' '	ASTM A516 GR.70 + S5 (-46°C)
	2	24	BLIND & SPACER - ASME-B16.48		(2->2 1/2)	ASTM A516 GR.70 + S5 (-46°C)
					CL1500 RJ (F) (3->24)	
					CL900 RJ (F)	
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		(1/2->2 1/2)	ASTM A105 Normalized
					CL1500 RJ (F)	
					(3->24) CL900 RJ (F)	
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
	2		LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	6	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
	3/4	1 1/2	RED. COUPLING - SW/THDD - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized
	2	4	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	6	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	6000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	9000	ASTM A105 Normalized
	2	4	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	6	24	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized
	1/2		COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized
	1/2		THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4		SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2		TEE - SW ENDS - ASME-B16.11	SW BW	9000	ASTM A334 WPB - SM S
	2	4	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	6 2	24 4	TEE - ASME-B16.9 WELDOLET - MSS-SP97	BW		ASTM A420 WPL6 - SMLS ASTM A105 Normalized
	5		WELDOLET - MSS-SP97 WELDOLET - MSS-SP97	BW		ASTM A350 LF2 - CL.1
	1/2		SOCKOLET - MSS-SP97 SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A350 LF2 - CL.1 ASTM A105 Normalized
GASE		1 1/2	POONOTET - OM END - ID KNO 0000	C * * * * D * *	2500	A COLIMATION MORNINGS
	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOL <sub>1</sub>	rs					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

Ends

sw

BW

Rating/Facing

CL1500

CL1500

Material

Body: ASTM A105 Normalized Trim: 13CR stellited

Body: ASTM A216 WCB Trim: 13CR stellited



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VALV	ES						
pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	3	24	GA-E-60136	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB Trim : 13CR stellited
4	1/2	1 1/2	GA-E-60213	Globe-WB-Red.B-Thdd seat - API602	sw	CL1500	Body: ASTM A105 Normalized
4	2	2	GA-E-60228	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Trim : 13CR stellited Body: ASTM A216 WCB
4	3	8	GA-E-60229	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Trim:13CR stellited Body: ASTM A216 WCB
6	1/2	1 1/2	GA-E-60318	Check-WB-Red.B-Piston-Int seat - API602	sw	CL1500	Trim : 13CR stellited Body: ASTM A105 Normalized
6	2	2	GA-E-60336	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Trim:13CR stellited Body: ASTM A216 WCB
6	3	24	GA-E-60337	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL900	Trim:13CR stellited Body: ASTM A216 WCB
7	6	24	GA-E-67185		BW	CL900	Trim : 13CR stellited Body: ASTM A216 WCB
8	1/2	1 1/2	GA-E-60461	API6D Ball-End entry -FB-Float.ball -Frgd body+nipples -	PF	CL1500	Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats Body: ASTM A105 Normalized
10	1/2	1 1/2	GA-E-60180	ASME-B16.34 Gate-WB-Red.B-Solid wdg-Exp.seat - API602		CL1500	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A105 Normalized
11	2	2	GA-E-60580		DF FLGD		Trim : 13CR stellited  Body: ASTM A216 WCB
						` ′	Trim: 13CR stellited
11	3	3	GA-E-60141		FLGD	, ,	Body: ASTM A216 WCB Trim : 13CR stellited
82	1/2	1 1/2	GA-E-60478	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34		CL1500	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
82	6	24	GA-E-60772	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW	CL900	Body: ASTM A216 WCB Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60769	Ball-End entry -FB-Float.ball -Frgd body+ Nipple - ASME-B16.34	PE/THD F	CL1500	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67018	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	SW	CL1500	Body: ASTM A105 Normalized Trim : 13CR stellited
101	2	2	GA-E-60135	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB Trim : 13CR stellited
401	2	2	GA-E-60276	Globe-Stem Extension-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB Trim : 13CR stellited
801	1/2	1 1/2	GA-E-67143	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats
830	1/2	1 1/2	GA-E-67241	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body+ Nipple - ASME-B16.34	PE/THD	CL1500	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats
974	2	2	GA-E-69061	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Body: ASTM A216 WCB  Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
974	3	24	GA-E-69060	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD		Body: ASTM A216 WCB  Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

**BRANCH TABLES** 



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						Rev.		
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RunSi	70															90	) Deç	grees
1/2		Α																
3/4			Α															
1			Α	Α														
1 1/2		Α	Α	Α	Α													
2		S	S	T	T	T	_											
3		S S	S S	S S	S S	W	+	_										
6		S	S S	S	S	W	w	+	т									
8		S	S	S	s	w	W	w	Ť	Т								
10	)	S	S	S	S	W	W	W	W	Т	Т							
12	2	S	S	S	S	W	W	W	W	W	T	T	_					
14		S	S	S	S	W	W	W	W	W	Р	T	T	_				
16	j ,	S S	S S	S S	S	W	W	W	W	W	P P	Р	I P	+	_			
18 20	)	S	S S	S	S	W	W	W	W	W	P	P	P	P	Ť	т		
24		S	s	Š	s	w	W	w	W	W	P	P	P	P	P	Ė	Т	
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	
Legend	а																	
A	TEE -	SW	END	S - /	ASMI	E-B1	6.11											
Р	PIPE							ING F	PAD-1	rs-co	DR-EI	NG-F	IPMT	-012	-E			
S	SOC																	
Т	TEE -	ASM	IE-B	16.9														
TR	TEE-I	MSS	SP 7	5														
W	WELD	OOLE	T - N	/ISS	-SP9	7												

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exceed 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

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Pipi	ng C	Class	s:	0	9CI	B2S	60	
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 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL900
 PWHT
 : AS PER CODE (NOTE 1)

 Facing/Finishing
 : RJ (F)
 Valve Trim
 : 5 - 13Cr Stel

Corrosion Allow. : 3 mm

Temp. Limit : -29 °C to 220 °C

Service: [AIV] HV - Hydrocarbon Vapour NG - Natural Gas

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 30 Thk.mm 7.47 5.56 6.35 7.14 8.74 11.13 11.13 14.27 18.26 14.27 15.88 17.48 19.05 20.62 23.83 26.97 32 SCH. XXS 160 160 160 160 160 160 120 120 120

Nipple Thickness

PRESSURE - TEMPERATURE Ratings

									ASME B16.5
1/2 · 8	Temp. °C	-28.89	37.78	93.33	148.89	204.44	260	315.56	Material Group 1.1
NDC	Droop bar	0.1							

INFO	F1633.	Dui	31
10 . 20	Temn	°C	220

10 ·	30 Tem	p. °C ∶	220			
pt.	Si from	ize   to	Item Description	Ends	Rating/Facing	Material
PE	110111					
-	1/0		PIPE	BW	I	ACTM A400 OD D. OMLO
	1/2	4	PIPE			ASTM A106 GR.B - SMLS
	5	24		BW		ASTM A333 GR.6 - SMLS
A A	26 IGES	30	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
An		4.4/0	OW ELANOE AGME DAGE	lovy	OL 4500 D.L (5)	AOTH AGEN III
	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW		ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	(2->2 1/2) CL1500 RJ (F)	ASTM A105 Normalized
					(3->24)	
					CL900 RJ (F)	
	26	30	WN FLANGE - ASME-B16.47 series.A	вW	CL900 RJ (F)	ASTM A105 Normalized
	1/2	24	BLIND FLANGE - ASME-B16.5		(1/2->2 1/2)	ASTM A105 Normalized
					CL1500 RJ (F)	
					(3->24)	
			DUND FLANCE AGNE DAG 47		CL900 RJ (F)	
	26	30	BLIND FLANGE - ASME-B16.47 series.A	T. 105		ASTM A105 Normalized
4	2	2 DI IND	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A105 Normalized
E	TACLE	1	ODEOTAGLE DUND. AGME DAG 10		014500 515	AOTM A540 OD 70 + O5 / 400C'
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48			ASTM A516 GR.70 + S5 (-46°C)
	2	24	BLIND & SPACER - ASME-B16.48		(2->2 1/2) CL1500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
					(3->24)	
					CL900 RJ (F)	
	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060019</mfr>		CL900 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
TTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		(1/2->2 1/2)	ASTM A105 Normalized
					CL1500 RJ (F)	
					(3->24)	
	4.00		FI DOW OW FNDO AGNE DAGA	0144	CL900 RJ (F)	AOTA A AOTA III
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized
	2	4	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	6	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	30	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized
	3/4	1 1/2	RED. COUPLING - SW/THDD - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized
	2	4	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	6	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	30	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	1/2	2	FEMALE CAP - THD END - ASME-B16.11	THDF	6000	ASTM A105 Normalized
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	9000	ASTM A105 Normalized
	2	4	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	6	30	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
	2	4	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	5	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	30	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	2	4	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	9000	ASTM A105 Normalized
	5	8	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW		ASTM A350 LF2 - CL.1
ASI	KETS					
	1/2	30	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
OL.						
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)



		DB 2 <b>243</b>								
Pipi	ng C	Class	s:	0	09CB2S60					
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VALV	ALVES											
	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material					
pos.	from 1/2	1 1/2	GA-E-60120	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	sw	CL1500	Body: ASTM A105 Normalized					
							Trim: 13CR stellited					
1	2	2	GA-E-60132	3	BW	CL1500	Body: ASTM A216 WCB Trim : 13CR stellited					
1	3	24	GA-E-60136	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB Trim : 13CR stellited					
4	1/2	1 1/2	GA-E-60213	Globe-WB-Red.B-Thdd seat - API602	sw	CL1500	Body: ASTM A105 Normalized Trim : 13CR stellited					
4	2	2	GA-E-60228	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB					
4	3	8	GA-E-60229	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Trim : 13CR stellited Body: ASTM A216 WCB					
6	1/2	1 1/2	GA-E-60318	Check-WB-Red.B-Piston-Int seat - API602	SW	CL1500	Trim:13CR stellited Body: ASTM A105 Normalized					
6	2	2	GA-E-60336	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Trim : 13CR stellited Body: ASTM A216 WCB					
6	3	24	GA-E-60337			CL900	Trim: 13CR stellited					
				Check-PS-FB-Swing-Integral seat - ASME-B16.34			Body: ASTM A216 WCB Trim : 13CR stellited					
7	6	24	GA-E-67185	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW	CL900	Body: ASTM A216 WCB Trim : Soft seat-CS ENP 76,2µm trim-PEEK seats					
8	1/2	1 1/2	GA-E-60461	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats					
10	1/2	1 1/2	GA-E-60180	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL1500	Body: ASTM A105 Normalized Trim :13CR stellited					
11	2	2	GA-E-60580	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A216 WCB					
11	3	3	GA-E-60141	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL900 RJ (F)	Trim : 13CR stellited Body: ASTM A216 WCB					
82	1/2	1 1/2	GA-E-60478	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE	CL1500	Trim: 13CR stellited Body: ASTM A105 Normalized					
82	6	24	GA-E-60772	ASME-B16.34 Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL900	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A216 WCB					
	1/2			API6D		CL1500	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.					
89		1 1/2	GA-E-60769	Ball-End entry -FB-Float.ball -Frgd body+ Nipple - ASME-B16.34	F		Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.					
101	1/2	1 1/2	GA-E-67018	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	SW	CL1500	Body: ASTM A105 Normalized Trim : 13CR stellited					
101	2	2	GA-E-60135	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB Trim : 13CR stellited					
111	2	2	GA-E-67091	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A216 WCB Trim : 13CR stellited					
114	2	2	GA-E-60114	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	FLGD	CL1500 RJ (F)	Body: ASTM A216 WCB					
130	1/2	1 1/2	GA-E-67086	- ASME-B16.34 Gate-Stem Extension-WB-Red.B-Solid wdg-	SW/TH	CL1500	Trim : 13CR stellited Body: ASTM A105 Normalized					
140	3	3	GA-E-67378	Exp.seat - API602 Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	DF BW	CL900	Trim:13CR stellited Body: ASTM A216 WCB					
801	1/2	1 1/2	GA-E-67143	- Interlock System Ball-Stem Extension-End entry -FB-Float.ball -	PE	CL1500	Trim : 13CR stellited Body: ASTM A105 Normalized					
				Frgd body+nipples - ASME-B16.34			Trim : Soft seat-316 trim - PEEK seats					
830	1/2	1 1/2	GA-E-67241	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body+ Nipple - ASME-B16.34	F	CL1500	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats					
907	2	2	GA-E-69028	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW	CL1500	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats					
907	3	24	GA-E-69027	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW	CL900	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats					
917	2	2	GA-E-69025	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats					
917	3	24	GA-E-69026	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL900 RJ (F)	Body: ASTM A216 WCB					
974	2	2	GA-E-69061	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A216 WCB					
974	3	24	GA-E-69060	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL900 RJ (F)	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A216 WCB					
				,			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.					

STRA	STRAINERS										
pos.	pos. from Size to		Data Sheet	Item Description		Rating/Facing	Material				
1	6	6	GA-E-60620	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A420 WPL6 - SMLS Screen:316 - CLOTH - MESH 3				

#### BRANCH TABLES



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	9CI	B2S	60	
						Rev.		
Sh.	3	of	3	Α				

																9	0 Deg	grees	8
RunS	ize																		
1/2		Α																	
3/4	4	Α	Α																
1	1	Α	Α	Α															
1 1/2		Α	Α	Α	Α	_													
2	2					Ţ	_												
3	3					<u> </u>	<u> </u>	_											
	+					SW	<u>+</u>	<u>+</u>	-										
8	)						SW	. <u>.</u>	<u>'</u>	_									
10	) 1						SW		+	+	т								
12	2						SW		, i	÷	÷	т							
14							SW			Ť	÷	Ť	т						
16								SW		Ť	Ť	Ť	Ť	Т					
18	3							SW		Ť	Ť	Ť	Ť	Ť	Т				
20	)								SW	Т	Т	Т	Т	Т	Т	Т			
18 20 24	4								SW		Т	Т	Т	Т	Т	Т	Т		
30	)					SW	SW	SW	SW	SW	Т	Т	Т	Т	Т	Т	Т	Т	
Branch	nSize	1/2	3/4	1	1 1/	2 2	3	4	6	8	10	12	14	16	18	20	24	30	
Legend	Legenda																		
Α	A TEE - SW ENDS - ASME-B16.11																		
SW																			
Т	TEE																		

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) This piping class is created for lines subjected to Acoustic Induced Vibration.



		ов <b>2243</b>						
Pipi	ng C	Class	s:	0	9CI	B4S	<b>601</b>	
						Rev.		
Sh.	1	of	3	Α	0	1		

 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL900
 PWHT
 : AS PER CODE (NOTE 1)

 Facing/Finishing
 : RJ (F)
 Valve Trim
 : 12 - SS316/HF

Corrosion Allow. : 6 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 90 °C

Service: HL - Hydrocarbon Liquid NG - Natural Gas

Pipe Thickness

Nipple Thickness

NPS 1 11/2 2 Thk.mm 9.09 10.15 11.07 SCH. XXS XXS XXS

PRESSURE - TEMPERATURE Ratings	
--------------------------------	--

NPS				ASME B16.5
1 · 6	Temp. °C	-28.9	37.78	Material Group 1.1
NPS	Press. bar	140		
8 24	Temp. °C	90		
NPS	Press. bar	140		
30 42	Temp. °C	70		

			B	- ·	- · ·	
pt.	Si   from	ze to	Item Description	Ends	Rating/Facing	Material
PE						
PE			<b> </b>	bu	1	
	1	2 1/2	PIPE	BW		ASTM A106 GR.B - SMLS
	3	24	PIPE	BW		ASTM A333 GR.6 - SMLS
	26	42	PIPE	BW		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
A٨	IGES					
	1	1 1/2	SW FLANGE - ASME-B16.5	SW	CL1500 RJ (F)	ASTM A105 Normalized
	2	24	WN FLANGE - ASME-B16.5	BW	(2->2 1/2)	ASTM A105 Normalized
					CL1500 RJ (F)	
					(3->24)	
	00	00	MALELANICE ACMEDIA AZ	DIA	CL900 RJ (F)	40TM 4405 N
	26	36	WN FLANGE - ASME-B16.47 series.A	BW		ASTM A105 Normalized
	42	42	SPECIAL WN FLANGE - <mfr std=""> GA-E-060099</mfr>	BW		ASTM A105 Normalized
7	3	24	WN FLANGE - ASME-B16.5	BW		ASTM A105 Normalized
	1	24	BLIND FLANGE - ASME-B16.5		(1->2 1/2)	ASTM A105 Normalized
					CL1500 RJ (F)	
					(3->24) CL900 RJ (F)	
	26	36	BLIND FLANGE - ASME-B16.47 series.A		1 ' '	ACTM A405 Normalized
	26					ASTM A105 Normalized
	42	42	SPECIAL BLIND FLANGE - <mfr std=""> GA-E-060099</mfr>	T. 105		ASTM A105 Normalized
4	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A105 Normalized
EC	CTACLE		I		I	
	1	1 1/2	SPECTACLE BLIND - ASME-B16.48			ASTM A516 GR.70 + S5 (-46°C)
	2	24	BLIND & SPACER - ASME-B16.48			ASTM A516 GR.70 + S5 (-46°C)
					CL1500 RJ (F)	
					(3->24) CL900 RJ (F)	
TTI	NGS				CL900 K3 (I )	
	1 1	3	DRIP-RING - TB DRI 5011		(1->2 1/2)	ASTM A105 Normalized
	'	3	DICH -ICHO - 10 DICH 3011		CL1500 RJ (F)	AO INI A 100 Normalized
					(3->24)	
					CL900 RJ (F)	
	1	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
İ	2	2	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS
İ	3	24	LONG RADIUS ELBOW - ASME-B16.9	вw		ASTM A420 WPL6 - SMLS
	26	42	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	1 1/2	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
	2	2	REDUCER - ASME-B16.9	BW	5000	ASTM A234 WPB - SMLS
	3	24		BW		
			REDUCER - ASME-B16.9			ASTM A420 WPL6 - SMLS
	26	42	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	1	2	FEMALE CAP - THD END - ASME-B16.11	THDF	6000	ASTM A105 Normalized
	1	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	9000	ASTM A105 Normalized
	2	2	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	3	42	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized
	1	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
	1	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
j	1	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	1 1/2	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1 1/2	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	1	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized
	2	2	TEE - ASME-B16.9	BW	2000	ASTM A234 WPB - SMLS
	3	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	30	42	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	2	8	WELDOLET - MSS-SP97	BW	[	ASTM A105 Normalized
• •	1	1 1/2	SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A105 Normalized
ASP	KETS		1		1	
	1	36	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 316
	42	42	OCTAGONAL RJ GASKET - <mfr std=""> GA-E-060099</mfr>		1	AISI 316



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	9C	B4S	01	
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opt.	Siz from	ze to	Item Description	Ends	Rating/Facing	Material
<b>BOL1</b>	·s					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

VALV	ES						
pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1	1 1/2	GA-E-60186	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW	CL1500	Body: ASTM A105 Normalized Trim : 316 / HF
1	2	2	GA-E-60587	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB Trim :316 / HF
1	3	30	GA-E-60588	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB Trim: 316 / HF
4	2	2	GA-E-60277	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB Trim: 316 / HF
4	3	10	GA-E-60278	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB Trim: 316 / HF
6	2	2	GA-E-60360	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB
6	3	24	GA-E-60357	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB Trim: 316 / HF
7	42	42	GA-E-67199	Ball-Top entry-Red.B-Trunnion ball + Pup Pieces - API6D	BW	CL900	Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats
8	1	1	GA-E-67242	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A105 Normalized
8	2	2	GA-E-67149	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL1500	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A216 WCB
10	1	1 1/2	GA-E-67059	API6D Gate-WB-Red.B-Solid wdg-Exp.seat - API602		CL1500	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A105 Normalized
11	2	2	GA-E-67092	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	DF FLGD	CL1500 RJ (F)	Trim:316 / HF Body: ASTM A216 WCB
82	1	1 1/2	GA-E-67243	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE	CL1500	Trim:316 / HF Body: ASTM A105 Normalized
101	2	2	GA-E-67009	ASME-B16.34 Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL1500	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A216 WCB
101	3	24	GA-E-60586	- ASME-B16.34 Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL900	Trim:316/HF Body:ASTM A216 WCB
140	2	2	GA-E-67379	- ASME-B16.34 Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Trim:316/HF Body:ASTM A216 WCB
140	4	10	GA-E-67380	- Interlock System Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Trim: 316 / HF Body: ASTM A216 WCB
141	3	3	GA-E-67381	- Interlock System Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL900	Trim:316/HF Body:ASTM A216 WCB
201	42	42	GA-E-67800	- ASME-B16.34 - Interlock System  Butterfly-Stem Extension-BWend-Triple Off	BW	CL900	Trim: 316 / HF Body: ASTM A216 WCB
				Set-Int.seat-Fire safe - ASME-B16.34			Trim: Metal seat - 316 - 316 disc
401	3	10	GA-E-60203	Globe-Stem Extension-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB Trim : 316 / HF
701	2	2	GA-E-67186	Ball-Stem Extension-Top entry-Red.B-Trunnion ball + Pup Pieces - API6D	BW	CL1500	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats
701	42	42	GA-E-67195	Ball-Stem Extension-Top entry-Red.B-Trunnion ball + Pup Pieces - API6D	BW	CL900	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats
801	2	2	GA-E-67149	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW	CL1500	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats
840	2	2	GA-E-67637	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D - Interlock System	BW	CL1500	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats
840	6	6	GA-E-67638	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D - Interlock System	BW	CL900	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats
902	26	36	GA-E-69030	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - ASME-B16.34	FLGD	CL900 RJ (F)	Body: ASTM A216 WCB Trim : Metal seat - 316 - 316 disc
902	38	42	GA-E-69029	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - ASME-B16.34	FLGD	CL900 RJ (F)	Body: ASTM A216 WCB Trim : Metal seat - 316 - 316 disc
907	2	2	GA-E-69028	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW	CL1500	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats
907	3	24	GA-E-69027	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW	CL900	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats
917	2	2	GA-E-69025	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats
917	3	24	GA-E-69026	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL900 RJ (F)	Body: ASTM A216 WCB   Trim : Soft seat-316 trim - PEEK seats
921	26	42	GA-E-69062	Butterfly-Flanged-Triple Off Set-Int.seat-Fire safe - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB   Trim: Metal seat - 316 - 316 disc
975	6	24	GA-E-69063	Ball-Stem Extension-Split body-Red.B-Trunnion ball - API6D	FLGD	CL900 RJ (F)	Body: ASTM A216 WCB Trim: Soft seat-316 trim - PEEK seats
	l		I .	Pain   1   10	1	1	Thin . Con Sour-Sto tilli- i EEN Souls

STR	STRAINERS										
pos	pos.   Size   Data Sheet   Item Description					Rating/Facing	Material				
1	2	2	GA-E-60619	Y Strainer-Bolted cover - ASME-B16.34	BW		Body :ASTM A216 WCB Screen: 316 - PERF.PLATE - 18 Holes/Cm2				



		JC <b>032</b>	)B 2 <b>43</b>							
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STRA	STRAINERS											
pos.	from Size to	Data Sheet	Item Description	Ends	Rating/Facing	Material						
1	10 10	GA-E-60620	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	вw		Body :ASTM A420 WPL6 - SMLS Screen:316 - CLOTH - MESH 3						

																	) De	
RunSiz	ze															90	) De	grees
1		Α																
1 1/2		Α	Α															
2		Т	Т	Т														
3		S	S	W	T	_												
4 6		S S	S S	W	I W	I T	т											
8		S	S	W	W	W	Ť	т										
10		S	s	W	w	W	w	Ť	Т									
12		S	S	W	W	W	W	W	Т	Т								
14		S	S	W	W	W	W	W	Р	T	T	_						
16		S S	S S	W	W	W	W	W	P	P P	I P	I T	_					
18 20		S	S	W	VV V/	W	VV VV	W	P	P	P	P	Ť	т				
24		Š	Š	W	W	W	W	W	P	P	P	P	P	Ť	Т			
30		S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т		
32		S	S	W	W	W	W	W	Р	Ρ	Р	Ρ	Ρ	Ρ	Р	T	T	_
42		S	S	W	W	W	W	W	Р	Р	Р	Р	Р	Р	Р	Т	Т	Т
Branch	Size	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	30	32	42
	_																	
Legenda		011	/ E.		^ 0 1 1	E D.	041											
	TEE										00.5				_			
P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E S SOCKOLET - SW END - TB RAC 5380																		
						- IB	KAC	, 5380	)									
	TEE					\ <del>-</del>												
v I	WEL	DOL	E1 -	MSS	5-SPS	97												

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Specified Thickness are suitable to withstand Full Vacuum condition.



	-	ОВ <b>2243</b>								
Pipii	ng C	Class	s:	09CB4S40						
						Rev.				
Sh.	1	of	2	Α	0	1	2	3		

Design code : ASME B 31.8-2018 Base Material : CARBON STEEL Nom. Rating :CL900 : AS PER CODE **PWHT** Facing/Finishing : RJ (F) Valve Trim :12 - SS316/HF Corrosion Allow. : 6 mm Welding Spec: MZ-010-CCX-MC-SPC-00001

Temp. Limit : -29 °C to 70 °C

Service: [ASME B31.8] NG - Natural Gas - (Aboveground)

Pipe Thickness

 NPS
 1/2
 3/4
 1
 1 1/2
 2
 3
 4
 6
 24

 Thk.mm
 7.47
 7.82
 9.09
 10.15
 11.07
 11.13
 13.49
 18.26
 22.23

 SCH.
 XXS
 XXS
 XXS
 XXS
 160
 160
 160

Nipple Thickness

NPS	Press. bar	140
NPS	Press. bar	140
24 - 24	Temp. °C	70

GA-E-67340

2

2

Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34

24	24 · 24   Temp. °C   70										
	Si		Item Description		Ends	s F	Rating/Facing	g Material			
opt.	from	to									
PIPE			1								
	1/2	20	PIPE		BW			ASTM A106 GR.B - SMLS			
	22	24	PIPE		BW			API 5L GR.X65 PSL2 - SAW			
FLAN	- 1		la =a		lavvi	ا					
	1/2	1 1/2	SW FLANGE - ASM		SW			ASTM A105 Normalized			
	2	20	WN FLANGE - ASM	IE-B16.5	BW		2->2 1/2) CL1500 RJ (F)	ASTM A105 Normalized			
							3->24)	'			
						Ċ	L900 RJ (F)				
	22	24	WN FLANGE - ASM		BW		L900 RJ (F)	ASTM A694 F65			
	1/2	20	BLIND FLANGE - A	SME-B16.5			1/2->2 1/2)	ASTM A105 Normalized			
							CL1500 RJ (F) 3->24)	)			
							L900 RJ (F)				
	22	24	BLIND FLANGE - A	SME-B16.5		c	L900 RJ (F)	ASTM A694 F65			
SPEC	TACLE	BLIND									
	1/2	1 1/2	l .	O - ASME-B16.48 GA-E-060011				ASTM A516 GR.70 + S5 (-46°C)			
	2	24	BLIND & SPACER	- ASME-B16.48 GA-E-060011			2->2 1/2)	ASTM A516 GR.70 + S5 (-46°C)			
							CL1500 RJ (F) 3->24)	)			
							CL900 RJ (F)				
FITTI	NGS				,						
	1/2	3	DRIP-RING - TB DR	RI 5011			1/2->2 1/2)	ASTM A105 Normalized			
							L1500 RJ (F)	)			
							3->24) CL900 RJ (F)				
	1/2	1 1/2	ELBOW - SW END:	S - ASME-B16 11	sw		000	ASTM A105 Normalized			
	2	6	LONG RADIUS ELE		BW	۲	000	ASTM A234 WPB - SMLS			
1	24	24	LONG RADIUS ELE		BW			ASTM A860 WPHY65 - WLDD			
2	24	24		ENDS - ASME B16.49	вw			API 5L GR.X65 PSL2 - SAW			
	3/4	1 1/2		SW ENDS - ASME-B16.11	sw	9	000	ASTM A105 Normalized			
	2	6	REDUCER - ASME-		вW			ASTM A234 WPB - SMLS			
	1/2	1 1/2	COUPLING - SW E	NDS - ASME-B16.11	SW	9	000	ASTM A105 Normalized			
	1/2	1 1/2	COUPLING - SW/T	HDD ENDS - ASME-B16.11	SW\T	HDF 6	000	ASTM A105 Normalized			
	1/2	1 1/2	THD MALE PLUG -	RND HEAD - ASME-B16.11	THDN			ASTM A105 Normalized			
	1/2	2	NIPPLE - THDD/PE		THDN			ASTM A106 GR.B - SMLS			
	3/4	2	SWAGE NIPPLE - F	PE/THDD - MSS-SP95	PE\TH	HDM		ASTM A234 WPB - SMLS			
	3/4	2	SWAGE NIPPLE - F		PE			ASTM A234 WPB - SMLS			
	1/2	1 1/2	TEE - SW ENDS - A	ASME-B16.11	SW	9	000	ASTM A105 Normalized			
	2	6	TEE - ASME-B16.9	T)/DE MED 0: 1	BW			ASTM A234 WPB - SMLS			
	24	24 24		TYPE - <mfr std=""></mfr>	BW BW			ASTM A860 WPHY65 - WLDD			
	24 2	24 6	TEE - ASME-B16.9	CDOZ	BW			ASTM A405 Normalized			
	1/2	0 1 1/2	WELDOLET - MSS- SOCKOLET - SW E		SW\B	w la	000	ASTM A105 Normalized ASTM A105 Normalized			
MISCI	ELLANE		DOGNOLL 1 - SW E	- 10 NAC 0000	OVV	···  9		AO TW A TOO INOTHIBITED			
	1/2	24	KIT FOR INSULATI	NG FLANGE - ASME-B16.5		C	1/2->2 1/2)	GRE LAMINATED + TFE (MAX T 180 C)			
						Ċ	L1500 RJ (F)				
							3->24)				
GASK	(FTS					C	CL900 RJ (F)				
CAGN	1/2	24	OCTAGONAL PLO	ASKET - ASME-B16.20				SOFT IRON			
BOLT		24	OCTAGONAL RJ G	ASINE - ASINE-D10.20				OUT   INUIN			
BOLI	1/2	4	ST.BOLT+2 NUTS	- ANSI Thdd - TB BUL 5368				ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)			
			,					[			
VALV	1		1		1_	L					
pos.	from	ize ∣ to	Data Sheet	Item Description	Ends	Rating/F	Facing Ma	aterial			
1	3/4	3/4	GA-E-67335	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	sw	CL1500	Body:	ASTM A105 Normalized			

Body: ASTM A105 Normalized Trim: 316 / HF Body: ASTM A216 WCB

Trim: 316 / HF

CL1500

вw



		ов 2 <b>243</b>										
Pipi	Piping Class:					09CB4S40						
						Rev.						
Sh.	2	of	2	Α	0	1	2	3				

/ALVES											
pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material				
1	3	4	GA-E-67341	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A216 WCB				
							Trim: 316 / HF				
8	1	1	GA-E-67282	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE	CL1500	Body: ASTM A105 Normalized				
				ASME-B16.34			Trim : Soft seat-316 trim - PEEK seats				
8	2	2	GA-E-67284	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL1500	Body: ASTM A216 WCB				
				API6D			Trim : Soft seat-316 trim - PEEK seats				
8	24	24	GA-E-67184	Ball-Top entry-FB-Trunnion ball+Pup Pieces -	BW	CL900	Body: ASTM A216 WCB				
				ASME-B16.34			Trim : Metal seat-316+W CARB. trim-(XM-19 stem)-GRAPH.				
10	1/2	1	GA-E-67336	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL1500	Body: ASTM A105 Normalized				
					DF		Trim: 316 / HF				
11	2	2	GA-E-67060	Gate-BB-FB-Flex wdg-Thdd seat - API600	FLGD	CL1500 RJ (F)	Body: ASTM A216 WCB				
							Trim: 316 / HF				
89	1/2	1 1/2	GA-E-67283	Ball-End entry -FB-Float.ball -Frgd body+ Nipple -	PE/THD	CL1500	Body: ASTM A105 Normalized				
				ASME-B16.34	F		Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.				
101	2	2	GA-E-67337	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL1500	Body: ASTM A216 WCB				
				- ASME-B16.34			Trim: 316 / HF				
101	4	4	GA-E-67338	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL900	Body: ASTM A216 WCB				
				- ASME-B16.34			Trim: 316 / HF				
801	2	2	GA-E-67178	Ball-Stem Extension-Top entry-FB-Trunnion ball +	BW	CL1500	Body: ASTM A216 WCB				
				Pup Pieces - API6D			Trim : Soft seat-316 trim - PEEK seats				
830	1	1	GA-E-67685	Ball-Stem Extension-End entry -FB-Float.ball -	PE/THD	CL1500	Body: ASTM A105 Normalized				
				Frgd body+ Nipple - ASME-B16.34	F		Trim : Soft seat-316 trim - PEEK seats				
907	2	2	GA-E-69028	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL1500	Body: ASTM A216 WCB				
				API6D			Trim : Soft seat-316 trim - PEEK seats				
907	3	24	GA-E-69027		BW	CL900	Body: ASTM A216 WCB				
				API6D			Trim : Soft seat-316 trim - PEEK seats				
917	2	2	GA-E-69025	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Body: ASTM A216 WCB				
							Trim : Soft seat-316 trim - PEEK seats				
917	3	24	GA-E-69026	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL900 RJ (F)	Body: ASTM A216 WCB				
							Trim : Soft seat-316 trim - PEEK seats				
918	3	24	GA-E-69064	Ball-Split body-FB-Trunnion ball - API6D	FLGD		Body: ASTM A216 WCB				
			1			1	Trim : Soft seat-316 trim - PEEK seats				

#### **BRANCH TABLES**

				On Degrees			
RunSi	е			90 Degrees			
1/2	Α						
3/4	A A						
1	A A A						
1 1/2	A $A$ $A$ $A$						
2	SSTT	T					
3	S S S S	T T					
4	S S S S	WTT	_				
6	S S S S	W W T	T				
_ 24	. S S S S	w w w v					
Branch	ize 1/2 3/4 1 1 1/2	2 3 4	6 24				
Legenda							
Α	TEE - SW ENDS - ASME	-B16.11					
Р	PIPE TO PIPE WITH RE	INFORCING PAR	D-TS-COR-ENG-PIPMT-012-E				
S	SOCKOLET - SW END -	TB RAC 5380					
Т	TEE - ASME-B16.9						
W	WELDOLET - MSS-SP97	7					

#### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) Pipes wall Thickness have been calculated in accordance with ASME B31.8 considering Design Factor=0.6
  3) Linepipe shall be in accordance with Specification MZ-010-CCX-PL-SPC-00005 Onshore Linepipe Specification
  4) Hot induction Bends shall be in accordance with Specification MZ-010-CCX-PL-SPC-00006 Onshore Pipelines Hot Induction Bend
  5) Barred Tee shall be in accordance with Specification MZ-010-CCX-PL-SPC-00007 Onshore Pipelines Barred Tee
  6) Pipeline Fittings and Flanges shall be in accordance with Specification MZ-010-CCX-PL-SPC-00009 Onshore Pipelines Fittings
  7) Monolithic Insulation Joints shall be in accordance with Specification MZ-010-CCX-PL-SPC-0008 Onshore Pipelines Monolithic Insulation Joint



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Pipi	ng C	Class	s:	0	09CB4S49						
						Rev.					
Sh.	1	of	2	Α	0	1					

Design code : ASME B 31.8-2018 Base Material : CARBON STEEL Nom. Rating :CL900 : AS PER CODE **PWHT** Facing/Finishing : RJ (F) Valve Trim :12 - SS316/HF Corrosion Allow. : 6 mm Welding Spec : MZ-010-CCX-MC-SPC-00001

Temp. Limit : -29 °C to 70 °C

Service: [ASME B31.8] NG - Natural Gas - (Underground)

Pipe Thickness

NPS 1/2 3/4 1 1 1/2 24 Thk.mm 7.47 7.82 9.09 10.15 22.23 SCH. XXS XXS XXS XXS

Nipple Thickness

NPS 1/2 3/4 1 1 1/2 Thk.mm 7.47 7.82 9.09 10.15 SCH. XXS XXS XXS XXS

opt.	Si from	ize to	Item Description	Ends	Rating/Facing	Material				
IPE										
	1/2	20	PIPE	BW		ASTM A106 GR.B - SMLS				
	22	24	PIPE	BW		API 5L GR.X65 PSL2 - SAW - EXTERNAL FBE COATED				
FLANGES										
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A105 Normalized				
	22	24	WN FLANGE - ASME-B16.5	BW	CL900 RJ (F)	ASTM A694 F65				
	1/2	1 1/2	BLIND FLANGE - ASME-B16.5		CL1500 RJ (F)	ASTM A105 Normalized				
	22	24	BLIND FLANGE - ASME-B16.5		CL900 RJ (F)	ASTM A694 F65				
ITTI	NGS									
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized				
2	24	24	HOT INDUCTION BENDS - ASME B16.49	BW		API 5L GR.X65 PSL2 - SAW - EXTERNAL FBE COATED				
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized				
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A105 Normalized				
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized				
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized				
	1/2	1 1/2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS				
	3/4	1 1/2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS				
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized				
	24	24	TEE - ASME-B16.9	BW		ASTM A860 WPHY65 - WLDD				
	1/2	1 1/2	SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A105 Normalized				
SASK	KETS									
	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON				
3OL1	ΓS									
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED				

VAL\	VALVES											
pos.	Size from to	Data Sheet	Item Description	Ends	Rating/Facing	Material						

#### BRANCH TABLES

RunSize 1/2 3/4 A A A A S A A S A A S A S BranchSize 1/2 3/4 1 11/2 24

Legenda TEE - SW ENDS - ASME-B16.11 Α PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E SOCKOLET - SW END - TB RAC 5380 TEE - ASME-B16.9 W WELDOLET - MSS-SP97

90 Degrees



		DB <b>243</b>						
Pipi	ng C	lass	s:	0	9C	B48	349	
						Rev.		
Sh.	2	of	2	Α	0	1		

#### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

  2) Pipes wall Thickness have been calculated in accordance with ASME B31.8 considering Design Factor=0.6

  3) Linepipe shall be in accordance with Specification MZ-010-CCX-PL-SPC-00005 Onshore Linepipe Specification

  4) Hot induction Bends shall be in accordance with Specification MZ-010-CCX-PL-SPC-00006 Onshore Pipelines Hot Induction Bend

  5) Barred Tee shall be in accordance with Specification MZ-010-CCX-PL-SPC-00007 Onshore Pipelines Barred Tee

  6) Pipeline Fittings and Flanges shall be in accordance with Specification MZ-010-CCX-PL-SPC-00009 Onshore Pipelines Fittings

  7) Monolithic Insulation Joints shall be in accordance with Specification MZ-010-CCX-PL-SPC-0008 Onshore Pipelines Monolithic Insulation Joint

  8) Buried Carbon Steel piping shall be FBE external coated in accordance with Specification MZ-000-CCX-MC-SPC-00004 \_External Coating for Buried Pipeline and Piping Components-FBE and FJC



	-	ов <b>2243</b>						
Pipi	ng (	Class	s:	C	98/	A0D	01	
						Rev.		
Sh.	1	of	2	Α	0	1		

Design code : ASME B 31.3 2016 Base Material : STAINLESS STEEL 304/304L DUAL GRADE

Nom. Rating : CL900 Facing/Finishing: RJ (F) **PWHT** :NO Valve Trim : 12 - SS316/HF

Corrosion Allow. : 0 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013 : -120 °C to 180 °C Temp. Limit

Service: MR - Mixed Refrigerant

Pipe Thickness

Nipple Thickness

PRESSURE - TEMPERATURE Ratings

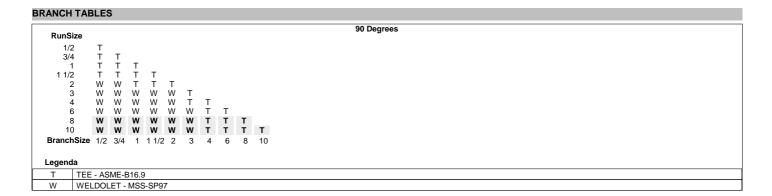
	Si	ze	Item Description	Ends	Rating/Facing	Material
opt.	from	to	item postription	Liido	rtating/r aoing	material
PIPE				<u> </u>		
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	10	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN	IGES					
	1/2	10	WN FLANGE - ASME-B16.5	BW	(1/2->2 1/2)	ASTM A182 F304/304L DUAL GRADE
					CL1500 RJ (F) (3->10) CL900 RJ (F)	
7	3	6	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	10	BLIND FLANGE - ASME-B16.5		(1/2->2 1/2)	ASTM A182 F304/304L DUAL GRADE
					CL1500 RJ (F) (3->10) CL900 RJ (F)	
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
SPEC	CTACLE	BLIND		1	1	
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		1 ' '	ASTM A240 TP304
	2	10	BLIND & SPACER - ASME-B16.48		(2->2 1/2)	ASTM A240 TP304
					CL1500 RJ (F) (3->10) CL900 RJ (F)	
FITTI	NGS				1	
	1/2	3	DRIP-RING - TB DRI 5011		(1/2->2 1/2) CL1500 RJ (F) (3->10) CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	10	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	6	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	10	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	3	WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE
GAS	KETS					
	1/2	10	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
BOL <sub>1</sub>						
	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 B8 CL.2 + ASTM A194 GR.8
	1 5/8	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660

VALV	ES						
pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-67067	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	BW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
1	2	2	GA-E-60158	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF
1	3	6	GA-E-60159	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M Trim : 316 / HF
4	1/2	1 1/2	GA-E-60289	Globe-WB-Red.B-Thdd seat - API602	BW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim :316 / HF
4	2	2	GA-E-60251	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim: 316 / HF
4	3	6	GA-E-60252	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M Trim: 316 / HF
6	1/2	1 1/2	GA-E-60732	Check-WB-Red.B-Piston-Int seat - API602	BW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
6	2	2	GA-E-60364	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M <u>Trim :</u> 316 / HF



		JC <b>032</b>	)B 2 <b>43</b>						
F	Pipir	ıg C	lass	s:	C	98	<b>40</b> E	01	
							Rev.		
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VALVI	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
6	3	6	GA-E-60365	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	1	Body: ASTM A351 CF8M Trim : 316 / HF
7	6	6		Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW		Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2		Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	BW		Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats



### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



		ов <b>2243</b>						
Pipi	ng C	Class	s:	0	98/	A0D	30	
						Rev.		
Sh.	1	of	2	Α	0	1		

Base Material : STAINLESS STEEL 304/304L DUAL GRADE Design code : ASME B 31.3 2016

Nom. Rating : CL900 Facing/Finishing : RJ (F) PWHT : NO
Valve Trim : 12 - SS316/HF

 Corrosion Allow. : 0 mm
 Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

 Temp. Limit : -100 °C to 190 °C
 to 190 °C

Service: [Cryogenic Service] ER - Ethane / Ethilene Refrigerant

 Pipe Thickness

 NPS
 1/2
 3/4
 1
 1 1/2
 2
 3
 4
 6

 Thk.mm
 2.77
 2.87
 3.38
 3.68
 3.91
 5.49
 8.56
 10.97

 SCH.
 40S
 40S
 40S
 40S
 40S
 80S
 80S

Nipple Thickness

NPS 1/2 3/4 1 1 1 1/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

NPS Press. bar | 148.9 | 148.9 | 124.1 | 111.4 | ASME B16.5 | 1/2 · 6 | Temp. °C | -28.9 | 37.78 | 93.33 | 148.9 | Material Group 2.1

1/2 ·	6 Temp	o. °C  -2	28.9   37.78   93.33   148.9   Material Group 2.1			
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
FLAN	IGES					
	1/2	6	WN FLANGE - ASME-B16.5	BW	(1/2->2 1/2) CL1500 RJ (F) (3->6) CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
7	3	6	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	6	BLIND FLANGE - ASME-B16.5		(1/2->2 1/2) CL1500 RJ (F) (3->6) CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
SPEC	TACLE	BLIND				
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		CL1500 RJ (F)	ASTM A240 TP304
	2	6	BLIND & SPACER - ASME-B16.48		(2->2 1/2) CL1500 RJ (F) (3->6) CL900 RJ (F)	ASTM A240 TP304
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		(1/2->2 1/2) CL1500 RJ (F) (3->6) CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	6	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
0.4.01	1/2	3	WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE
GAS			COTACONAL DI CACKET AGME DAG CO			AIOLOGA
DO!	1/2	6	OCTAGONAL RJ GASKET - ASME-B16.20		1	AISI 304
BOL1	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALV	ES						
pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-67068	Cryo.Gate-Extend.WB-Red.B-Solid wdg-Wldd seat - API602	BW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim :316 / HF
1	2	2	GA-E-67069	Cryo.Gate-Extend.BB-FB-Flex wdg-Thd seat - API600	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF
1	3	6	GA-E-67070	Cryo.Gate-Extend.PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M Trim : 316 / HF
4	1/2	1 1/2	GA-E-60290	Cryo.Globe-Extend.WB-Red.B-Thdd seat - API602	BW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
4	2	2	GA-E-60270	Cryo.Globe-Extend.BB-Disk-Thdd seat-API623	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF
4	3	6	GA-E-60292	Cryo.Globe-Extend.PS-Disk-Integral seat - ASME- B16.34	BW	CL900	Body: ASTM A351 CF8M Trim : 316 / HF
6	1/2	1 1/2	GA-E-60733	Cryo.Check-WB-Red.B-Piston-Int seat - API602	BW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
6	2	2	GA-E-60734	Cryo.Check-Extend.PS-FB-Swing-Thdd seat - API594	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF
6	3	6	GA-E-60735	Cryo.Check-PS-FB-Swing-Integral seat - ASME- B16.34	BW	CL900	Body: ASTM A351 CF8M Trim : 316 / HF
7	2	2	GA-E-67646	Cryo.Ball-Top Entry-Ext.bnt-Red.B-Trun.ball+ Pup Pieces - API6D	BW	CL1500	Body: ASTM A351 CF8M Trim : Crio Soft seal-316 trim - KEL.F seats
8	1/2	1 1/2	GA-E-67165	Cryo.Ball-End Entry-Ext.bnt-FB-Float.ball+nipples - ASME-B16.34	BW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Crio Soft seal-316 trim - KEL.F seats
89	1/2	1 1/2	GA-E-67643	Cryo.Ball-End Entry-Ext.bnt-FB-Float.ball+nipple - ASME-B16.34	BW/TH DF	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim :Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	98/	<b>40</b> D	30	
						Rev.		
Sh.	2	of	2	Α	0	1		

VALVE	ES						
pos.	from	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material

									90 Degrees
RunSize									30 Degrees
1/2	Т								
3/4	Т	Т							
1	Т	Т	Т						
1 1/2	Т	Т	Т	Т					
2	W	W	Т	Т	Т				
3	W	W	W	W	W	Т			
4	W	W	W	W	W	Т	Т		
6	W	W	W	W	W	W	Т	Т	
BranchSize	1/2	3/4	1	1 1/2	2 2	3	4	6	
Legenda									
T TEE	- AS	ME-E	316.9	)					
W WE	LDOL	FT -	MSS	S-SPO	17				

#### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



**PWHT** 

Valve Trim

Design code : ASME B 31.3 2016

:NO

:12 - SS316/HF

Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

JOB <b>032243</b>								
Piping Class:			09SA0D60					
				Rev.				
Sh.	1	of	2	Α				

Base Material : STAINLESS STEEL 304/304L DUAL GRADE

Nom. Rating :CL900 Facing/Finishing : RJ (F)

Corrosion Allow. : 0 mm

Temp. Limit : -120°C to 180 °C Service: [AIV] MR - Mixed Refrigerant

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 Thk.mm 2.77 2.87 3.38 3.68 3.91 5.49 8.56 10.97 10.31 SCH. 40S 40S 40S 40S 40S 40S 80S 80S 60

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

NPS	Press. bar	148.93	148.93	124.11	111.35	ASME B16.5
1/2 \cdot 6	Temp. °C	-28.89	37.78	93.33	148.89	Material Group 2.1
NPS	Press. bar	75	8 \cdot 10	Temp. °C	180	

Size			Itom Description	Material				
opt.			Item Description Ends Rat		Rating/Facing	Material		
PIPE								
	1/2	6	PIPE	BW	1	ASTM A312 TP304/TP304L DUAL GRADE - SMLS		
	8	10	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW		
FI AN	NGES	10	PIFE	DVV		ASTM A356 TP304/TP304L CL.T DUAL GRADE - EFW		
ı LA	1/2	10	WN FLANGE - ASME-B16.5	BW	(1/2->2 1/2)	ASTM A182 F304/304L DUAL GRADE		
	1/2	10	WINT LANGE - AGWED 10.3	Bw	CL1500 RJ (F) (3->10) CL900 RJ (F)	ASTM A 162 F304/304L DUAL GRADE		
7	3	6	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE		
	1/2	10	BLIND FLANGE - ASME-B16.5		(1/2->2 1/2) CL1500 RJ (F) (3->10) CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE		
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE		
SPE	CTACLE	BLIND						
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		CL1500 RJ (F)	ASTM A240 TP304		
	2	10	BLIND & SPACER - ASME-B16.48		(2->2 1/2) CL1500 RJ (F) (3->10) CL900 RJ (F)	ASTM A240 TP304		
FITT	NGS							
	1/2	3	DRIP-RING - TB DRI 5011		(1/2->2 1/2) CL1500 RJ (F) (3->10) CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE		
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW	','	ASTM A403 WP304S/304LS DUAL GRADE - SMLS		
	8	10	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD		
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS		
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE		
	1/2	6	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS		
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE		
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS		
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS		
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS		
	1/2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS		
	8	10	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD		
	2	3	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW		ASTM A182 F304/304L DUAL GRADE		
GAS	KETS							
	1/2	10	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304		
BOL'	TS							
	1/2	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 B8 CL.2 + ASTM A194 GR.8		
	1 5/8	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A453 GR. 660		

VALV	VALVES							
pos.	Size from to		Data Sheet	Item Description	Ends	Rating/Facing	Material	
1	1/2	1 1/2	GA-E-67067	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	BW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF	
1	2	2	GA-E-60158	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M  Trim: 316 / HF	
1	3	6	GA-E-60159	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M Trim : 316 / HF	
4	1/2	1 1/2	GA-E-60289	Globe-WB-Red.B-Thdd seat - API602	BW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim :316 / HF	
4	2	2	GA-E-60251	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim :316 / HF	
4	3	6	GA-E-60252	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M Trim :316 / HF	
6	1/2	1 1/2	GA-E-60732	Check-WB-Red.B-Piston-Int seat - API602	BW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF	
6	2	2	GA-E-60364	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF	



		ов <b>2243</b>								
Pipi	ng C	Class	s:	C	09SA0D60					
						Rev.				
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VALV	ALVES											
pos.	Size Data S from to		Data Sheet Item Description		Ends	Rating/Facing	Material					
6	3	6	GA-E-60365	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M Trim : 316 / HF					
7	6	6	GA-E-60466	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW		Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats					
8	1/2	1 1/2	GA-E-67233	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	BW		Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats					

#### **BRANCH TABLES**

										90 Degrees
RunSize										
1/2	Т									
3/4	Т :	Τ								
1	Τ .	ΤТ								
1 1/2	Τ .	ΤТ	Т							
2		Т	Т	Т						
3				SW	Т					
4				011		Т				
6				SW	SW	Т	Т			
8				SW		Т	Т	Т		
10				SW		Т		Т	T	
<b>BranchSize</b>	1/2 3	3/4 1	1 1/2	2	3	4	6	8	10	
Legenda										
SW SPE	CIAL S	WEE	POLET	- <mf< th=""><th>FR St</th><th>td&gt;</th><th></th><th></th><th></th><th></th></mf<>	FR St	td>				
T TEE	- ASM	F-B16	9							

#### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exceed 200°C).
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  4) This piping class is created for lines subjected to Acoustic Induced Vibration.



		ОВ <b>2243</b>						
Pipi	Piping Class:					A0S	01	
						Rev.		
Sh.	1	of	3	Α	0	1	2	3

Base Material : STAINLESS STEEL 304/304L DUAL GRADE Design code : ASME B 31.3 2016

 Nom. Rating
 : CL900
 PWHT
 : NO

 Facing/Finishing
 : RJ (F)
 Valve Trim
 : 12 - SS316/HF

Corrosion Allow.: 0 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -101 °C to 230 °C

Service: DMW - Demineralized Water HL - Hydrocarbon Liquid HV - Hydrocarbon Vapour NG - Natural Gas PRW - Process Water

Pipe Thickness

| NPS | 1/2 | 3/4 | 1 | 11/2 | 2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 | 30 | 36 |
| Thk.mm | 2.77 | 2.87 | 3.38 | 3.68 | 3.91 | 5.49 | 8.56 | 10.97 | 10.31 | 12.7 | 14.27 | 15.09 | 16.66 | 17.48 | 20.62 | 24.61 | 28.58 | 34 |
| SCH. | 40S | 40S | 40S | 40S | 40S | 40S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S | 80S

Nipple Thickness

NPS 1/2 3/4 1 1 1 1/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

			- ramigo
NPS	Press. bar	148.9	148.9 124.1 111.4 102.7 ASME B16.5
1/2 6	Temp. °C	-28.9	37.78 93.33 148.9 204.4 Material Group 2.1
NPS	Press. bar	105	
8 - 10	Temp. °C	70	
NPS	Press. bar	89	
12 · 12	Temp. °C	230	
NPS	Press. bar	91	
14 - 36	Temp. °C	130	

	Si		Item Description	Ends	Rating/Facing	Material
opt.	from	to				
PIPE					1	
	1/2	6		BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
EL AN	8	36	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN		4.4/0	DIM ELANOE AOME DAGE	low	OL 4500 D L (E)	AOTAL AAGO FOOA/OOAL DUAL ODADE
	1/2 2	1 1/2	SW FLANGE - ASME-B16.5	SW BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	2	24	WN FLANGE - ASME-B16.5	BW	(2->2 1/2) CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
					(3->24)	
					CL900 RJ (F)	
	26	36	WN FLANGE - ASME-B16.47 series.A	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
7	3		WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
13	3			BW	CL900 RF	ASTM A182 F304/304L DUAL GRADE
13	30	30	WN FLANGE - ASME-B16.47 series.A	BW	CL900 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		(1/2->2 1/2)	ASTM A182 F304/304L DUAL GRADE
					CL1500 RJ (F) (3->24)	
					CL900 RJ (F)	
	26	36	BLIND FLANGE - ASME-B16.47 series.A		CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
13	26	36	BLIND FLANGE - ASME-B16.47 series.A		CL900 RF	ASTM A182 F304/304L DUAL GRADE
	2	2	SW REDUCING FLANGE - ASME-B16.5	SW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
SPEC	CTACLE	BLIND		,		
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48			ASTM A240 TP304
	2	24	BLIND & SPACER - ASME-B16.48		(2->2 1/2)	ASTM A240 TP304
					CL1500 RJ (F) (3->24)	
					CL900 RJ (F)	
	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060017</mfr>		, ,	ASTM A240 TP304
13	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060017</mfr>		CL900 RF	ASTM A240 TP304
FITTI	NGS					
	1/2	3	DRIP-RING - TB DRI 5011		(1/2->2 1/2)	ASTM A182 F304/304L DUAL GRADE
					CL1500 RJ (F) (3->24)	
					(3->24) CL900 RJ (F)	
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	3/4	1 1/2	RED. COUPLING - SW/THDD - ASME-B16.11	SW\THDF	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	36	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE	2000	ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8 2	36 8	TEE - ASME-B16.9 WELDOLET - MSS-SP97	BW BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD ASTM A182 F304/304L DUAL GRADE
	1/2	o 1 1/2	SOCKOLET - MSS-SP97	SW\BW	3000	ASTM A182 F304/304L DUAL GRADE  ASTM A182 F304/304L DUAL GRADE
GASE		1 1/2	DOCKOLLI - OW LIND - MIDO-DI OF	- VV VD VV	P300	ACTIVI A 102 I 304/304E DUAL GIVADE



		ов <b>2243</b>							
Pipi	Piping Class:					A0S	01		
						Rev.			
Sh.	2	of	3	Α	0	1	2	3	

	Si		Item Description	Ends	Rating/Facing	Material
opt.	from	to				
GAS	KETS					
13	30	30	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
	1/2	36	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
BOL	TS					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VAI V	ALVES											
	Si		Data Sheet	Item Description	Ends	Rating/Facing	Material					
pos.	from	to 1 1/2	GA-E-60157	<u> </u>	SW	CL1500						
1	1/2	1 1/2	GA-E-00157	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SVV	CLISUU	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF					
1	2	2	GA-E-60158	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF					
1	3	30	GA-E-60159	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M					
4	1/2	1 1/2	GA-E-60250	Globe-WB-Red.B-Thdd seat - API602	SW	CL1500	Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE					
			GA-L-00230	Globe-WB-Ned.B-111dd Seat - AF 1002	SVV	CLISOO	Trim :316 / HF					
4	2	2	GA-E-60251	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF					
4	3	8	GA-E-60252	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M					
6	1/2	1 1/2	GA-E-60363	Check-WB-Red.B-Piston-Int seat - API602	SW	CL1500	Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE					
6	2	2	CA E 60364		DW/	CL1500	Trim: 316 / HF					
6	2		GA-E-60364	Check-PS-FB-Swing-Integral seat - ASME-B16.34	DVV	CLISOO	Body: ASTM A351 CF8M Trim : 316 / HF					
6	3	16	GA-E-60365	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M Trim : 316 / HF					
7	6	24	GA-E-60466	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL900	Body: ASTM A351 CF8M					
8	1/2	1 1/2	GA-E-60465	API6D Ball-End entry -FB-Float.ball -Frgd body+nipples -	PF	CL1500	Trim: Soft seat-316 trim - PEEK seats Body: ASTM A182 F316/F316L DUAL GRADE					
				ASME-B16.34			Trim : Soft seat-316 trim - PEEK seats					
8	6	24	GA-E-67104	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW	CL900	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats					
10	1/2	1 1/2	GA-E-60184	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF					
11	1/2	1 1/2	GA-E-67005	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL1500 RJ (F)	Body: ASTM A182 F316/F316L DUAL GRADE					
11	2	2	GA-E-60181	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 R L(F)	Trim: 316 / HF Body: ASTM A351 CF8M					
							Trim: 316 / HF					
11	3	24	GA-E-60185	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL900 RJ (F)	Body: ASTM A351 CF8M Trim : 316 / HF					
61	2	2	GA-E-67505	Check-PS-FB-Swing-Integral seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M					
61	4	4	GA-E-60749	Check-PS-FB-Swing-Integral seat - ASME-B16.34	FLGD	CL900 RJ (F)	Trim: 316 / HF Body: ASTM A351 CF8M					
62	2	2	GA-E-60744	Chock-Lug water-Dual plate-Wildd seat - ARIF94	WAEED	CL 1500 B L (E)	Trim :316 / HF Body: ASTM A351 CF8M					
			GA-L-00744	Check-Lug wafer-Dual plate-Widd seat - API594	LUG	CL1500 KJ (F)	Trim:316/HF					
62	4	4	GA-E-60745	Check-Lug wafer-Dual plate-Wldd seat - API594	WAFER LUG	CL900 RJ (F)	Body: ASTM A351 CF8M Trim : 316 / HF					
82	1/2	1 1/2	GA-E-60773	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE					
89	1/2	1 1/2	GA-E-60774	ASME-B16.34 Ball-End entry -FB-Float.ball -Frgd body+ Nipple -	PE/THD	CL1500	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH. Body: ASTM A182 F316/F316L DUAL GRADE					
101	1/2	1.1/0		ASME-B16.34	F		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.					
101	1/2	1 1/2	GA-E-67019	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	SW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF					
101	2	2	GA-E-67032	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF					
111	2	2	GA-E-67093	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M					
114	2	2	GA-E-67347	- ASME-B16.34 Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	FLGD	CL1500 RJ (F)	Trim: 316 / HF Body: ASTM A351 CF8M					
				- ASME-B16.34		\	Trim : 316 / HF					
130	1/2	1 1/2	GA-E-67087	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	DF	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF					
140	2	2	GA-E-67382	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34 - Interlock System	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF					
159	4	4	GA-E-67321	Gate-Ext. Stem (1200mm)-PS-FB-Flex wdg-Wldd	BW	CL900	Body: ASTM A351 CF8M					
744	2	2	GA-E-60776	seat - ASME-B16.34 Ball-Dead Man Quick Opening Valve-Top entry-	BW	CL1500	Trim: 316 / HF Body: ASTM A351 CF8M					
				Red.B-Trunnion ball + Pup Pieces - API6D			Trim : Soft seat-316 trim - PEEK seats					
780	2	2	GA-E-67675	DBL Block&Bleed Ball valve-SplitBdy-RB- Trunnion - <mfr std=""></mfr>	FLGD	CL1500 RJ (F)	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats					
780	3	3	GA-E-67676	DBL Block&Bleed Ball valve-SplitBdy-RB- Trunnion - <mfr std=""></mfr>	FLGD	CL900 RJ (F)	Body: ASTM A182 F316/F316L DUAL GRADE					
782	2	2	GA-E-67902	DBL Block&Bleed Ball valve-Stem Extension-	FLGD	CL1500 RJ (F)	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A182 F316/F316L DUAL GRADE					
783	2	2	GA-E-67905	SplitBdy-RB-Trunnion - <mfr std=""> DBL Block&amp;Bleed Ball valve-Stem Extension-</mfr>	FLGD	CI 1500 P I (E)	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A182 F316/F316L DUAL GRADE					
				SplitBdy-RB-Trunnion - <mfr std=""></mfr>			Trim : Soft seat-316 trim - PEEK seats					
801	1/2	1 1/2	GA-E-67144	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats					
830	1/2	1 1/2	GA-E-67244	Ball-Stem Extension-End entry -FB-Float.ball -	PE/THD	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE					
				Frgd body+ Nipple - ASME-B16.34	F		Trim : Soft seat-316 trim - PEEK seats					



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	Si		Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to		·			
840	6	6	GA-E-67639	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL900	Body: ASTM A351 CF8M
				API6D - Interlock System			Trim : Soft seat-316 trim - PEEK seats
907	2	2	GA-E-69033	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL1500	Body: ASTM A351 CF8M
				API6D			Trim : Soft seat-316 trim - PEEK seats
907	3	24	GA-E-69034	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL900	Body: ASTM A351 CF8M
				API6D			Trim : Soft seat-316 trim - PEEK seats
917	4	4	GA-E-69031	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M
							Trim : Soft seat-316 trim - PEEK seats
917	6	24	GA-E-69032	Ball-Top entry-Red.B-Trunnion ball - API6D	FLGD	CL900 RJ (F)	Body: ASTM A351 CF8M
							Trim : Soft seat-316 trim - PEEK seats
971	2	2	GA-E-69067	Ball-Stem Extension-Split body-Red.B-Trunnion	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M
				ball - API6D		''	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
974	2	2	GA-E-69072	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M
						1	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
974	3	24	GA-E-69065	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL900 RJ (F)	Body: ASTM A351 CF8M
						1	Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

STRA	TRAINERS											
pos.	from Size to Data Sheet		Data Sheet	Item Description Er		Rating/Facing	Material					
1	2	2	GA-E-60625	Y Strainer-Bolted cover - ASME-B16.34	FLGD		Body: ASTM A351 CF8M Screen: 316 - PERF.PLATE - 18 Holes/Cm2					
1	4	4	GA-E-60642	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body: ASTM A403 WP304S/304LS DUAL GRADE - SMLS Screen: 316 - CLOTH - MESH 3					
1	10	10	GA-E-60621	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen:316 - CLOTH - MESH 3					

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1 1/2	2	Α	Α	A	A	_														
2		S	S	- 1		I.	_													
3		S	S	S	S	W	<u> </u>	_												
4		S	S	S	S	W	, I	<u> </u>	_											
8		S S	S S	S	S	W	W	\/\	<u>+</u>	_										
10		S	0	S	S	W	۷۷	W	۱۸/	T T	т									
12		S	0	S	S	W	۱۸/	۱۸/	W	w	+	т								
14		S	S	S	S	W	W	W	W	w	Þ	÷	т							
16		s	S	s	s	W	W	W	W	w	P	P	÷	т						
18	3	Š	s	Š	Š	w	w	w	w	W	P	P	P	Ť	Т					
20		Š	Š	s	S	W	W	W	W	W	P	P	P	P	Ť	Т				
24	ļ	S	S	S	S	W	W	W	W	W	Ρ	Р	Р	Р	Р	Т	Т			
30	)	S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т		
2 <sup>2</sup> 30 36	6	S	S	S	S	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Т	Т	
Branch		1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12	14	16	18	20	24	30	36	6
Legend	а																			
Α	TEE	- SV	/ ENI	os -	ASM	E-B1	6.11													
Р	PIPE	ТО	PIPE	WIT	H RI	EINF	ORC	ING F	PAD-	TS-C	OR-E	NG-F	PIPMT	T-012	-E					
S	SOC																			
Т			ME-E																	
W	WEL					97														

#### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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Design code : ASME B 31.3 2016 Base Material : STAINLESS STEEL 304/304L DUAL GRADE

Nom. Rating : CL900 Facing/Finishing : RJ (F) **PWHT** Valve Trim : 12 - SS316/HF

Corrosion Allow. : 0 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 130 °C

Service: [Amine Service] AL - Amine Lean AR - Amine Rich

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 Thk.mm 2.77 2.87 3.38 3.68 3.91 5.49 8.56 10.97 10.31 SCH. 40S 40S 40S 40S 40S 40S 80S 80S

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

		ze	Item Description	Ends	Rating/Facing	Material
opt.	from	to				
PIPE		_	\	L	1	
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
- AN	8	12	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN		4.4/0	OW ELANGE AGME DAGE	low	OL 4500 D L (5)	AOTH AAGO FOR MORAL BURN OR ARE
	1/2	1 1/2	SW FLANGE - ASME-B16.5	SW BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	2	12	WN FLANGE - ASME-B16.5	BW	(2->2 1/2) CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
					(3->12)	
					CL900 RJ (F)	
	1/2	12	BLIND FLANGE - ASME-B16.5		(1/2->2 1/2)	ASTM A182 F304/304L DUAL GRADE
					CL1500 RJ (F) (3->12)	
					(3->12) CL900 RJ (F)	
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF		ASTM A182 F304/304L DUAL GRADE
SPEC	TACLE	BLIND				
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		CL1500 RJ (F)	ASTM A240 TP304
	2	12	BLIND & SPACER - ASME-B16.48		(2->2 1/2)	ASTM A240 TP304
					CL1500 RJ (F)	
					(3->12)	
FITTI	NGS				CL900 RJ (F)	
	1/2	3	DRIP-RING - TB DRI 5011		(1/2->2 1/2)	ASTM A182 F304/304L DUAL GRADE
	1/2	3	DICIF-ICING - 15 DICI 3011		CL1500 RJ (F)	A31W A102 1 304/304E DOAE GRADE
					(3->12)	
					CL900 RJ (F)	
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	12	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	3/4	1 1/2	RED. COUPLING - SW/THDD - ASME-B16.11	SW\THDF	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	12	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW BW	3000	ASTM A182 F304/304L DUAL GRADE
	2	12	CAP - ASME-B16.9	SW	0000	ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2 1 1/2	COUPLING - SWITHING ENDS - ASME-B16.11	SW\THDF	3000 3000	ASTM A182 F304/304L DUAL GRADE
	1/2 1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11 THD MALE PLUG - RND HEAD - ASME-B16.11	THDM	3000	ASTM A182 F304/304L DUAL GRADE ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A182 F304/304L DUAL GRADE ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE		ASTM A403 WP3045/304LS DUAL GRADE - SMLS ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A403 WF3043/304L3 DUAL GRADE - SML3
	2	6	TEE - ASME-B16.9	BW	0000	ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	12	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	2	8	WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	SOCKOLET - WSS-SP97	SW\BW	3000	ASTM A182 F304/304L DUAL GRADE
GASK		1 1/2	COS. (C.E.)   MOO OF OF		12.20	NOTHINGE COMPOSE DONE OF THE
	1/2	12	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
BOL1				1	1	,
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALV	ES						
		ze	Data Sheet	Item Description	Ends R		Material
pos.	from	to					
1	1/2	1 1/2	GA-E-60157	Gate-WB-Red.B-Solid wdg-Exp.seat - API602		CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim: 316 / HF
1	2	2 GA-E-60158		Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34		CL1500	Body: ASTM A351 CF8M
							Trim : 316 / HF
1	3	3 12 GA-E-60159		Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34		CL900	Body: ASTM A351 CF8M
				3			Trim : 316 / HF
4	1/2 1 1/2 GA-E-60250		GA-E-60250	Globe-WB-Red.B-Thdd seat - API602		CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim: 316 / HF



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ALV	ES						
pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
4	2	2	GA-E-60251	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF
4	3	8	GA-E-60252	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M Trim: 316 / HF
6	1/2	1 1/2	GA-E-60363	Check-WB-Red.B-Piston-Int seat - API602	sw	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim :316 / HF
6	2	2	GA-E-60364	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim: 316 / HF
6	3	12	GA-E-60365	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M Trim: 316 / HF
7	6	12	GA-E-60468	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW	CL900	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2	GA-E-60467	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-60184	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
11	1/2	1 1/2	GA-E-67005	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL1500 RJ (F)	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
11	2	2	GA-E-60181	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M Trim: 316 / HF
11	3	12	GA-E-60185	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL900 RJ (F)	Body: ASTM A351 CF8M Trim :316 / HF
44	2	2	GA-E-60295	Globe-Dead Man Quick Opening Valve-PS-Disk- Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim: 316 / HF
82	1/2	1 1/2	GA-E-60773	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60774	Ball-End entry -FB-Float.ball -Frgd body+ Nipple - ASME-B16.34	PE/THD F	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
01	1/2	1 1/2	GA-E-67019	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	sw	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
01	2	2	GA-E-67032	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF
11	2	2	GA-E-67093	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M Trim :316 / HF
114	2	2	GA-E-67347	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M Trim : 316 / HF
130	1/2	1 1/2	GA-E-67087	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
744	2	2	GA-E-60751	Ball-Dead Man Quick Opening Valve-Top entry- Red.B-Trunnion ball + Pup Pieces - API6D	BW	CL1500	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
780	2	2	GA-E-67677	DBL Block&Bleed Ball valve-SplitBdy-RB- Trunnion - <mfr std=""></mfr>	FLGD	CL1500 RJ (F)	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats
782	2	2	GA-E-67903	DBL Block&Bleed Ball valve-Stem Extension- SplitBdy-RB-Trunnion - <mfr std=""></mfr>	FLGD	CL1500 RJ (F)	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats
783	2	2	GA-E-67904	DBL Block&Bleed Ball valve-Stem Extension-	FLGD	CL1500 RJ (F)	Body: ASTM A182 F316/F316L DUAL GRADE
004	1/0	4.4/0	CA F 6744F	SplitBdy-RB-Trunnion - <mfr std=""></mfr>	DE	CI 4500	Trim : Soft seat-316 trim - PEEK seats
301	1/2	1 1/2	GA-E-67145	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats
330	1/2	1 1/2	GA-E-67245	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body+ Nipple - ASME-B16.34	PE/THD F	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats

Ends

BW

Rating/Facing

Material

CL900 RJ (F) Body :ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen: 316 - CLOTH - MESH 3

#### **BRANCH TABLES**

STRAINERS

pos.

from Size to

10

10

Data Sheet

GA-E-60621

Item Description

T Strainer-BW - <MFR Std - Metallic>



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	98	A0S	02	
						Rev.		
Sh.	3	of	3	Α	0	1	2	3

RunSize  1/2		_			- 9																			
3/4	RunSi	ze													90 Deg	grees								
1 A A A 11/2 A A A A 2 S S T T T 3 S S S S W T 4 S S S S W T T 6 S S S S W W T T 8 S S S S W W T T 10 S S S S W W W T T 12 S S S S W W W W T T 12 S S S S W W W W T T BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12  Legenda  A TEE-SW ENDS-ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E	1/2		Α																					
1 1/2	3/4		Α	Α																				
2 S S T T T T 3 S S S S W T 4 S S S S W T T 6 S S S S W W T T 8 S S S S W W T T 10 S S S S W W W T T 11 S S S S S W W W T T 12 S S S S W W W W T T 12 S S S S W W W W T T 14 BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12    Legenda	1			Α	Α																			
3					Α	Α																		
4			-		T	Ţ	Т	_																
6 S S S S W W T T 8 S S S S W W W T T 10 S S S S W W W T T 112 S S S S W W W W T T BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12  Legenda  A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E								T	_															
8 S S S S W W W T T 10 S S S S W W W W T T 12 S S S S W W W W T T BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12  Legenda  A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E								I \//	_ I	_														
10 S S S S W W W W T T 12 S S S S W W W W T T  BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12  Legenda  A TEE - SW ENDS - ASME-B16.11  P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E									١٨/	T	т													
12 S S S S W W W W W T T  BranchSize 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12  Legenda  A TEE - SW ENDS - ASME-B16.11  P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E								• • •		W	÷	т												
Legenda  A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E											w	Ť	Т											
A TEE - SW ENDS - ASME-B16.11 P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E	Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	12											
P PIPE TO PIPE WITH REINFORCING PAD-TS-COR-ENG-PIPMT-012-E	Legenda	a																						
	Α	TEE	- SW	END	os	ASM	E-B1	6.11																
S SOCKOLET - SW END - MSS-SP97	Р	PIPE	TOI	PIPE	WIT	H RE	EINF	ORC	ING I	PAD-	TS-C	OR-E	NG-PI	PMT-012-E										
	S	SOC	KOL	ET - :	SW E	END	- MS	SS-S	P97															
T TEE - ASME-B16.9	Т	TEE	- ASI	ИЕ-В	16.9	)																		
W WELDOLET - MSS-SP97	W																							

#### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



		ОВ <b>2243</b>						
Pipir	ng C	Class	s:	0	98	A0S	<b>603</b>	
						Rev.		
Sh.	1	of	3	Α	0	1		

Design code : ASME B 31.3 2016 Base Material : STAINLESS STEEL 304/304L DUAL GRADE

Nom. Rating : CL900 Facing/Finishing : RJ (F) PWHT :NO Valve Trim :12 - SS316/HF

Corrosion Allow. : 0 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013 Temp. Limit : -29 °C to 130 °C

Service: [Amine Service] AL - Amine Lean

Pipe Thickness

NPS	1/2	3/4	1	11/2	2	3	4	6	8	10
Thk.mm	2.77	2.87	3.38	3.68	3.91	5.49	8.56	10.97	12.7	14.27
SCH.	40S	40S	40S	40S	40S	40S	80S	80S	80S	

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 3.73 3.91 4.55 5.08 5.54 SCH. 80S 80S 80S 80S 80S PRESSURE - TEMPERATURE Ratings

0 1	10 rem		90   130		_	
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	6	PIPE	BW	1	ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	10	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - GWES
FLAN	- 1		· · · -	,		NOTHINGGO IT GOTH TOTAL GET BONE GIVIDE LI W
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	2	10	WN FLANGE - ASME-B16.5	BW	(2->2 1/2)	ASTM A182 F304/304L DUAL GRADE
	_				CL1500 RJ (F)	7.61.11.71.102.7.00 7,00 12 507.12 61.0.122
					(3->10)	
_	_				CL900 RJ (F)	
7	3	10	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	10	BLIND FLANGE - ASME-B16.5		(1/2->2 1/2) CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
					(3->10)	
					CL900 RJ (F)	
7	3	10	BLIND FLANGE - ASME-B16.5		CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
SPEC	CTACLE	BLIND				
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		CL1500 RJ (F)	ASTM A240 TP304
	2	10	BLIND & SPACER - ASME-B16.48		(2->2 1/2)	ASTM A240 TP304
					CL1500 RJ (F)	
					(3->10) CL900 RJ (F)	
FITTI	NGS				OLOGO I (I )	l.
	1/2	3	DRIP-RING - TB DRI 5011		(1/2->2 1/2)	ASTM A182 F304/304L DUAL GRADE
	.,_	Ü	DIGITATION TO DIGITAL TO THE DIGITAL THE DIGITAL TO THE DIGITAL TO THE DIGITAL TO THE DIGITAL TO THE DIGITAL TO THE DIGITAL TO THE DIGITAL TO THE DIGITAL TO THE DIGITAL TO THE DIGITAL TO THE DIGITAL TO THE DIGITAL TO THE DIGITAL TH		CL1500 RJ (F)	NOTWINGE FOOT OUTE DONE OF OUT DE
					(3->10)	
					CL900 RJ (F)	
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	10	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	3/4	1 1/2	RED. COUPLING - SW/THDD - ASME-B16.11	SW\THDF BW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	10	REDUCER - ASME-B16.9	THDF	3000	ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
1	1/2 1/2	1 1/2 1 1/2	FEMALE CAP - THD END - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	10	FEMALE CAP - SW END - ASME-B16.11 CAP - ASME-B16.9	BW	3000	ASTM A182 F304/304L DUAL GRADE ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A403 WF3043/304L3 DUAL GRADE - SWL3
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM	5000	ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A403 WF 304/3/304L DUAL GRADE - SMLS
	2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	10	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	2	6	WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A182 F304/304L DUAL GRADE
GASE	KETS					
	1/2	10	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
BOL1						
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED
						•

VALV	'ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	_	10					
1	1/2	1 1/2	GA-E-60157	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim : 316 / HF
1	2 2 GA-E-60158		GA-E-60158	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34		CL1500	Body: ASTM A351 CF8M
							<u>Trim</u> :316/HF



		ов <b>2243</b>						
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VALV	ES						
pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	3	10	GA-E-60159	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M Trim :316 / HF
4	1/2	1 1/2	GA-E-60250	Globe-WB-Red.B-Thdd seat - API602	sw	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
4	2	2	GA-E-60251	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim: 316 / HF
4	3	8	GA-E-60252	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M Trim: 316 / HF
6	1/2	1 1/2	GA-E-60363	Check-WB-Red.B-Piston-Int seat - API602	sw	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE  Trim : 316 / HF
6	2	2	GA-E-60364	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim: 316 / HF
6	3	10	GA-E-60365	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M Trim :316 / HF
7	6	10	GA-E-60468	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW	CL900	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2	GA-E-60467	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-60184		SW/TH DF	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim :316 / HF
11	1/2	1 1/2	GA-E-67005	l .		CL1500 RJ (F)	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
11	2	2	GA-E-60181	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M
11	3	10	GA-E-60185	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL900 RJ (F)	Body: ASTM A351 CF8M
44	2	2	GA-E-60295	Globe-Dead Man Quick Opening Valve-PS-Disk- Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M
61	8	8	GA-E-60749	Check-PS-FB-Swing-Integral seat - ASME-B16.34	FLGD	CL900 RJ (F)	Body: ASTM A351 CF8M  Trim:316/HF
62	8	8	GA-E-60745	Check-Lug wafer-Dual plate-Wldd seat - API594	WAFER LUG	CL900 RJ (F)	Body: ASTM A351 CF8M Trim: 316 / HF
82	1/2	1 1/2	GA-E-60773	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34		CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60774	Ball-End entry -FB-Float.ball -Frgd body+ Nipple - ASME-B16.34	PE/THD	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67019		sw	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
101	2	2	GA-E-67032	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M
801	1/2	1 1/2	GA-E-67145		PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	10	10	GA-E-60621	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body : ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen: 316 - CLOTH - MESH 3

#### BRANCH TABLES

RunSi	ize											90 Degrees
1/2	2	Α										
3/4	Į.	Α	Α									
1		Α	Α	Α								
1 1/2	2	Α	Α	Α	Α							
2	2	S	S	Т	Т	Т						
3	3	S	S	S	S	W	Т					
4	ŀ	S	S	S	S	W	Т	T	_			
6		S	S	S	S	W	W	T	T	_		
8		S	S	S	S	W	W	W	I.	1	-	
10		S	S	S	S	W	VV	VV	VV	- 1	1	
Branch	Size	1/2	3/4	1	1 1/2	2 2	3	4	6	8	10	
Legend	а											
Α	TEE -	SW	ENE	DS	ASM	E-B1	6.11					
Р	PIPE	TO I	PIPE	WIT	HRE	INFO	ORCI	ING F	PAD-1	S-C	DR-EN	IG-PIPMT-012-E
S	SOCI	KOLE	ET - 3	SW E	END	- MS	S-SF	97				
Т	TEE -	- ASI	ИЕ-В	16.9	)							
W	WEL	DOLI	ET -	MSS	-SP9	7						

### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment. 2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	0	98	A0S	03	
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3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



		ОВ <b>2243</b>							
Pipi	ng (	Class	s:	09SA0S60					
						Rev.			
Sh.	1	of	3	Α					

Design code : ASME B 31.3 2016 Base Material : STAINLESS STEEL 304/304L DUAL GRADE

Nom. Rating :CL900 Facing/Finishing : RJ (F) Corrosion Allow. : 0 mm

**PWHT** :NO Valve Trim :12 - SS316/HF

Welding Spec: MZ-000-CCX-MC-SPC-00009/00013 Temp. Limit :-101°C to 230 °C

Service: [AIV] DMW - Demineralized Water HL - Hydrocarbon Liquid HV - Hydrocarbon Vapour NG - Natural Gas PRW - Process Water Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 20 24 30 Thk.mm 2.77 2.87 3.38 3.68 3.91 5.49 8.56 10.97 10.31 12.7 14.27 15.09 16.66 17.48 20.62 24.61 28.58 SCH. 40S 40S 40S 40S 40S 80S 80S 80S

Nipple Thickness

 NPS
 1/2
 3/4
 1
 1 1/2

 Thk.mm
 3.73
 3.91
 4.55
 5.08

 SCH.
 80S
 80S
 80S
 80S

PRESSURE - TEMPERATURE Ratings

NPS							ASME B16.5
1/2 · 6	Temp. °C	-28.89	37.78	93.33	148.89	204.44	Material Group 2.1
NPS	Press. bar	105					
8 · 10	Temp. °C	70					
NPS	Press. bar	89					
12 · 12	Temp. °C	230					
NPS	Press. bar	91					
14 - 36	Temp °C	130					

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	6	PIPE	BW	I	ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	36	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN			- · · -			7.01.117.000 11 00 17 17 00 12 02.1 2 01.1 2 01.1 32 02.1
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	2	24	WN FLANGE - ASME-B16.5	BW	(2->2 1/2)	ASTM A182 F304/304L DUAL GRADE
					CL1500 ŔJ (F)	
					(3->24) CL900 RJ (F)	
	26	36	WN FLANGE - ASME-B16.47 series.A	BW	CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
7	3		WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
13	3	24	WN FLANGE - ASME-B16.5	BW	CL900 RF	ASTM A182 F304/304L DUAL GRADE
13	30	30	WN FLANGE - ASME-B16.47 series.A	BW	CL900 RF	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		(1/2->2 1/2)	ASTM A182 F304/304L DUAL GRADE
					CL1500 RJ (F)	
					(3->24) CL900 RJ (F)	
	26	36	BLIND FLANGE - ASME-B16.47 series.A		CL900 RJ (F)	ASTM A182 F304/304L DUAL GRADE
13	26		BLIND FLANGE - ASME-B16.47 series.A		CL900 RF	ASTM A182 F304/304L DUAL GRADE
	2	2	SW REDUCING FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
SPEC	TACLE	BLIND				
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48			ASTM A240 TP304
	2	24	BLIND & SPACER - ASME-B16.48		(2->2 1/2)	ASTM A240 TP304
					CL1500 RJ (F) (3->24)	
					CL900 RJ (F)	
	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060017</mfr>		CL900 RJ (F)	ASTM A240 TP304
13	30	30	SPECIAL BLIND & SPACER - <mfr std=""> GA-E-060017</mfr>		CL900 RF	ASTM A240 TP304
FITTII				1	1	
	1/2	3	DRIP-RING - TB DRI 5011		(1/2->2 1/2) CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
					(3->24)	
					CL900 RJ (F)	
	1/2		ELBOW - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	1 1/2	RED. COUPLING - SWITHING ASME-B16.11	SW SW\THDF	3000 3000	ASTM A182 F304/304L DUAL GRADE
	3/4	1 1/2 6	RED. COUPLING - SW/THDD - ASME-B16.11 REDUCER - ASME-B16.9	SW\IHDF BW	5000	ASTM A182 F304/304L DUAL GRADE ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	REDUCER - ASME-B16.9	BW		ASTM A403 WP3045/304LS DUAL GRADE - SMLS ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A403 WF304WA/304LDUAL GRADE - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	2	36	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	TEE - ASME-B16.9	BW	2000	ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
GASK	2   (FTS	14	SPECIAL SWEEPOLET - <mfr std=""></mfr>	BW	3000	ASTM A182 F304/304L DUAL GRADE
13	30	30	FLAT GASKET - GROOVED - <mfr std=""></mfr>			AISI 316L+GRAPHITE
[ 13 ]	30	30	ELAT ONORET - GROOVED - CIVIL IX SIUS	1		AIGI STOLTGINAFITTE



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opt.	from	Size	to	Item Description	Ends	Rating/Facing	Material
GASK	ETS						
	1/2		36	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
<b>BOL1</b>	S						
	1/2		4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALVI	ES					,	
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-60157	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
1	2	2	GA-E-60158	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	RW/	CL1500	Trim: 316 / HF Body: ASTM A351 CF8M
'			GA-L-00138				Trim: 316 / HF
1	3	30	GA-E-60159	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M Trim : 316 / HF
4	1/2	1 1/2	GA-E-60250	Globe-WB-Red.B-Thdd seat - API602	SW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
4	2	2	GA-E-60251	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Trim: 316 / HF Body: ASTM A351 CF8M
							Trim : 316 / HF
4	3	8	GA-E-60252	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL900	Body: ASTM A351 CF8M Trim : 316 / HF
6	1/2	1 1/2	GA-E-60363	Check-WB-Red.B-Piston-Int seat - API602	SW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
6	2	2	GA-E-60364	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M
6	3	16	GA-E-60365	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL900	Trim:316 / HF Body: ASTM A351 CF8M
	•						Trim: 316 / HF
7	6	24	GA-E-60466	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW	CL900	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2	GA-E-60465	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
8	6	24	GA-E-67104	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL900	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A351 CF8M
10	1/2	1 1/2	GA-E-60184	API6D Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL1500	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A182 F316/F316L DUAL GRADE
					DF		Trim:316/HF
11	1/2	1 1/2	GA-E-67005	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL1500 RJ (F)	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
11	2	2	GA-E-60181	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M
11	3	24	GA-E-60185	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL900 RJ (F)	Trim: 316 / HF Body: ASTM A351 CF8M
61	2	2	GA-E-67505	Check-PS-FB-Swing-Integral seat - ASME-B16.34	FLGD	CL 1500 R L (F)	Trim : 316 / HF Body: ASTM A351 CF8M
							Trim: 316 / HF
61	4	4	GA-E-60749	Check-PS-FB-Swing-Integral seat - ASME-B16.34	FLGD	CL900 RJ (F)	Body: ASTM A351 CF8M Trim : 316 / HF
62	2	2	GA-E-60744	Check-Lug wafer-Dual plate-Wldd seat - API594	WAFER LUG	CL1500 RJ (F)	Body: ASTM A351 CF8M
62	4	4	GA-E-60745	Check-Lug wafer-Dual plate-Wldd seat - API594	1	CL900 RJ (F)	Trim:316 / HF Body: ASTM A351 CF8M
82	1/2	1 1/2	GA-E-60773	Ball-End entry -FB-Float.ball -Frgd body+nipples -	LUG	CL1500	Trim : 316 / HF Body: ASTM A182 F316/F316L DUAL GRADE
				ASME-B16.34			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60774	Ball-End entry -FB-Float.ball -Frgd body+ Nipple - ASME-B16.34	PE/THD	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67019	Gate-Stem Extension-WB-Red.B-Solid wdg-	SW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
101	2	2	GA-E-67032	Exp.seat - API602 Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL1500	Trim: 316 / HF Body: ASTM A351 CF8M
111	2	2	GA-E-67093	- ASME-B16.34 Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	EI GD	CL 1500 P L (E)	Trim: 316 / HF Body: ASTM A351 CF8M
'''				- ASME-B16.34		, ,	Trim: 316 / HF
114	2	2	GA-E-67347	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M Trim : 316 / HF
130	1/2	1 1/2	GA-E-67087	Gate-Stem Extension-WB-Red.B-Solid wdg-	SW/TH	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
140	2	2	GA-E-67382	Exp.seat - API602 Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	DF BW	CL1500	Trim:316 / HF Body: ASTM A351 CF8M
159	4	4	GA-E-67321	- Interlock System Gate-Ext. Stem (1200mm)-PS-FB-Flex wdq-Wldd			Trim: 316 / HF
109		4		seat - ASME-B16.34		CL900	Body: ASTM A351 CF8M Trim : 316 / HF
744	2	2	GA-E-60776	Ball-Dead Man Quick Opening Valve-Top entry- Red.B-Trunnion ball + Pup Pieces - API6D	BW	CL1500	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
780	2	2	GA-E-67675	DBL Block&Bleed Ball valve-SplitBdy-RB-	FLGD	CL1500 RJ (F)	Body: ASTM A182 F316/F316L DUAL GRADE
780	3	3	GA-E-67676	Trunnion - <mfr std=""> DBL Block&amp;Bleed Ball valve-SplitBdy-RB-</mfr>	FLGD	CL900 RJ (F)	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A182 F316/F316L DUAL GRADE
				Trunnion - <mfr std=""></mfr>			Trim : Soft seat-316 trim - PEEK seats
801	1/2	1 1/2	GA-E-67144	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats
830	1/2	1 1/2	GA-E-67244	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body+ Nipple - ASME-B16.34	PE/THD	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats
840	6	6	GA-E-67639	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL900	Body: ASTM A351 CF8M
907	2	2	GA-E-69033	API6D - Interlock System Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL1500	Trim : Soft seat-316 trim - PEEK seats Body: ASTM A351 CF8M
557	_		23.2 33000	API6D			Trim : Soft seat-316 trim - PEEK seats



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907	3	24	GA-E-69034	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces	BW	CL900	Body: ASTM A351 CF8M
				API6D			Trim : Soft seat-316 trim - PEEK seats
917	2	2	GA-E-69031	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M
							Trim : Soft seat-316 trim - PEEK seats
917	3	24	GA-E-69032	Ball-Top entry-Red.B-Trunnion ball - API6D	FLGD	CL900 RJ (F)	Body: ASTM A351 CF8M
							Trim : Soft seat-316 trim - PEEK seats
971	2	2	GA-E-69067	Ball-Stem Extension-Split body-Red.B-Trunnion	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M
				ball - API6D			Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
974	2	2	GA-E-69072	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M
						''	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
974	3	24	GA-E-69065	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL900 RJ (F)	Body: ASTM A351 CF8M
						1	Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

STRA	RAINERS									
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material			
1	2	2	GA-E-60625	Y Strainer-Bolted cover - ASME-B16.34	FLGD		Body : ASTM A351 CF8M Screen: 316 - PERF.PLATE - 18 Holes/Cm2			
1	4	4	GA-E-60642	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body: ASTM A403 WP304S/304LS DUAL GRADE - SMLS Screen: 316 - CLOTH - MESH 3			
1	10	10	GA-E-60621	T Strainer-BW - <mfr -="" metallic="" std=""></mfr>	BW		Body :ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD Screen: 316 - CLOTH - MESH 3			

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#### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  2) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exceed 200°C).
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  4) This piping class is created for lines subjected to Acoustic Induced Vibration.



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 Base Material
 : LOW TEMP. CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL1500
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RJ (F) Valve Trim : 12 - SS316/HF

Corrosion Allow.: 3 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 160 °C
Service: FG - Fuel Gas

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 8 10 12 14 16 18 Thk.mm 4.78 5.56 6.35 7.14 8.74 11.13 11.13 14.27 15.88 20.62 22.23 23.83 26.19 29.36 SCH. 160 160 160 160 160 160 160 120 120 120

Nipple Thickness

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 140
1/2 · 18 Temp. °C 160

1/2 ·	18 Temp	. °C 1	60			
opt.	Siz from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	18	PIPE	BW		ASTM A333 GR.6 - SMLS
FLAN	IGES					
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A350 LF2 - CL.1
	2	18	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A350 LF2 - CL.1
	1/2	18	BLIND FLANGE - ASME-B16.5		CL1500 RJ (F)	ASTM A350 LF2 - CL.1
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A350 LF2 - CL.1
SPEC	TACLE	BLIND				
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		CL1500 RJ (F)	ASTM A516 GR.60 + S5 (-46°C)
	2	18	BLIND & SPACER - ASME-B16.48		CL1500 RJ (F)	ASTM A516 GR.60 + S5 (-46°C)
FITTI	NGS					
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	SW	6000	ASTM A350 LF2 - CL.1
	2	18	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	6000	ASTM A350 LF2 - CL.1
	2	18	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	6000	ASTM A350 LF2 - CL.1
	2	18	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	6000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	3000	ASTM A350 LF2 - CL.1
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A420 WPL6 - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	6000	ASTM A350 LF2 - CL.1
	2	18	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	2	8	WELDOLET - MSS-SP97	BW		ASTM A350 LF2 - CL.1
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	6000	ASTM A350 LF2 - CL.1
GASI	KETS					
	1/2	18	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOL'						
	1/2		ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
	2 3/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7M + ASTM A194 GR.2HM (HotDip 153)

VALV	ES						
		ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
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1	1/2	1 1/2	GA-E-60193	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW	CL1500	Body: ASTM A350 LF2 - CL.1
							Trim : 316 / HF
1	2	12	GA-E-60194	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A352 LCC
							Trim: 316 / HF
4	1 1/2	1 1/2	GA-E-60274	Globe-WB-Red.B-Thdd seat - API602	SW	CL1500	Body: ASTM A350 LF2 - CL.1
							Trim: 316 / HF
4	2	8	GA-E-60275	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A352 LCC
							Trim: 316 / HF
6	2	18	GA-E-60399	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A352 LCC
							Trim : 316 / HF
8	3/4	1 1/2	GA-E-67238	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE	CL1500	Body: ASTM A350 LF2 - CL.1
				ASME-B16.34			Trim : Soft seat-316 trim - PEEK seats
8	6	18	GA-E-67246	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL1500	Body: ASTM A352 LCC
				API6D			Trim : Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-67073	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL1500	Body: ASTM A350 LF2 - CL.1
					DF		Trim : 316 / HF
89	1/2	1 1/2	GA-E-67247		PE/THD	CL1500	Body: ASTM A350 LF2 - CL.1
				ASME-B16.34	F		Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
907	2	18	GA-E-69020	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL1500	Body: ASTM A352 LCC
				API6D			Trim : Soft seat-316 trim - PEEK seats
917	2	18	GA-E-69021	Ball-Top entry-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - PEEK seats



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#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



	-	ов <b>2243</b>						
Pipi	ng C	Class	s:	1	5C	<b>A4</b> S	01	
						Rev.		
Sh.	1	of	2	Α	0	1	2	3

 Base Material
 : LOW TEMP. CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL1500
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RJ (F) Valve Trim: 12 - SS316/HF

Corrosion Allow. : 6 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -45 °C to 220 °C

Service: FG - Fuel Gas HL - Hydrocarbon Liquid NG - Natural Gas

Pipe Thickness

Nipple Thickness

NPS 1 1 1/2 2 Thk.mm 9.09 10.15 11.07 SCH. XXS XXS XXS

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 140 1 + 30 Temp. °C 220

	Si	ze	Item Description	Ends	Rating/Facing	Material
opt.	from	to			J	,
PIPE						·
	1	24	PIPE	вw		ASTM A333 GR.6 - SMLS
	26	30	PIPE	вw		ASTM A671 GR.CC65 CL.22 - EFW + S2 (-46°C)
FLAN	NGES			<u> </u>		
	1	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A350 LF2 - CL.1
	2	24	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A350 LF2 - CL.1
	30	30	SPECIAL WN FLANGE - <mfr std=""> GA-E-060099</mfr>	BW	CL1500 RJ (F)	ASTM A350 LF2 - CL.1
13	2	2	WN FLANGE - ASME-B16.5	BW	CL1500 RF	ASTM A350 LF2 - CL.1
	1	24	BLIND FLANGE - ASME-B16.5		CL1500 RJ (F)	ASTM A350 LF2 - CL.1
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A350 LF2 - CL.1
SPE	CTACLE	BLIND				
	1	1 1/2	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		CL1500 RJ (F)	ASTM A516 GR.60 + S5 (-46°C)
	2	24	BLIND & SPACER - ASME-B16.48 GA-E-060011			ASTM A516 GR.60 + S5 (-46°C)
FITT	INGS					
	1	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	2	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	30	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	1 1/2	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	2	24	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	26	30	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	1	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	9000	ASTM A350 LF2 - CL.1
	2	30	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	1	1 1/2	COUPLING - SW/THDD ENDS - ASME-B16.11	SW\THDF	6000	ASTM A350 LF2 - CL.1
	1	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	1	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A350 LF2 - CL.1
	1	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A333 GR.6 - SMLS
	2	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A420 WPL6 - SMLS
	2	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A420 WPL6 - SMLS
	1	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	9000	ASTM A350 LF2 - CL.1
	2	24	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	30	30	TEE - ASME-B16.9	BW		ASTM A420 WPL6W - WLDD
	2	8	WELDOLET - MSS-SP97	BW		ASTM A350 LF2 - CL.1
	1	1 1/2	SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A350 LF2 - CL.1
GAS	KETS					
13	2	2	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING
	1	24	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
	30	30	OCTAGONAL RJ GASKET - <mfr std=""> GA-E-060099</mfr>			SOFT IRON
BOL	TS				•	
	1/2	2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)
	2 3/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7M + ASTM A194 GR.2HM (HotDip 153)

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1	1 1/2	GA-E-60109	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW	CL1500	Body: ASTM A350 LF2 - CL.1 Trim :316 / HF
1	2	24	GA-E-60110	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A352 LCC Trim: 316 / HF
4	1	1 1/2	GA-E-60206	Globe-WB-Red.B-Thdd seat - API602	sw	CL1500	Body: ASTM A350 LF2 - CL.1 Trim: 316 / HF
4	2	8	GA-E-60207	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A352 LCC Trim: 316 / HF
6	2	16	GA-E-60311	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A352 LCC Trim: 316 / HF
7	2	2	GA-E-67103	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW	CL1500	Body: ASTM A352 LCC Trim : Soft seat-316 trim - PEEK seats
8	1	1 1/2	GA-E-60409	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A350 LF2 - CL.1 Trim : Soft seat-316 trim - PEEK seats
8	2	2	GA-E-67188	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW	CL1500	Body: ASTM A352 LCC Trim : Soft seat-316 trim - PEEK seats
10	1	1 1/2	GA-E-60183	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL1500	Body: ASTM A350 LF2 - CL.1 Trim :316 / HF



		ОВ <b>2243</b>						
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	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to	Zulu Giloot	nom zooonphon			
14	1	1 1/2	GA-E-60578	Gate-Stem Extension-WB-Red.B-Solid wdg-	SW	CL1500	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602			Trim: 316 / HF
14	2	24	GA-E-67004	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL1500	Body: ASTM A352 LCC
				- ASME-B16.34			Trim: 316 / HF
19	1	1 1/2	GA-E-60579	Gate-Stem Extension-WB-Red.B-Solid wdg-	SW/TH	CL1500	Body: ASTM A350 LF2 - CL.1
				Exp.seat - API602	DF		Trim: 316 / HF
80	1	1 1/2	GA-E-60764	Ball-Stem Extension-End entry -FB-Float.ball -	PE	CL1500	Body: ASTM A350 LF2 - CL.1
				Frgd body+nipples - ASME-B16.34			Trim : Soft seat-316 trim - PEEK seats
101	2	10	GA-E-67004	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL1500	Body: ASTM A352 LCC
				- ASME-B16.34			Trim: 316 / HF
114	2	2	GA-E-67088	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	FLGD	CL1500 RJ (F)	Body: ASTM A352 LCC
				- ASME-B16.34			Trim: 316 / HF
401	2	2	GA-E-60202	Globe-Stem Extension-PS-Disk-Integral seat -	BW	CL1500	Body: ASTM A352 LCC
				ASME-B16.34			Trim: 316 / HF
801	2	2	GA-E-67176	Ball-Stem Extension-Top entry-FB-Trunnion ball +	BW	CL1500	Body: ASTM A352 LCC
				Pup Pieces - API6D			Trim : Soft seat-316 trim - PEEK seats
830	1	1 1/2	GA-E-67240	Ball-Stem Extension-End entry -FB-Float.ball -	PE/THD	CL1500	Body: ASTM A350 LF2 - CL.1
				Frgd body+nipple - ASME-B16.34	F		Trim : Soft seat-316 trim - PEEK seats
908	2	24	GA-E-69035		BW	CL1500	Body: ASTM A352 LCC
				API6D			Trim : Soft seat-316 trim - PEEK seats
917	12	12	GA-E-69082	Ball-Top entry-FB-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - PEEK seats
918	2	24	GA-E-69036	Ball-Top entry-FB-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Body: ASTM A352 LCC
							Trim : Soft seat-316 trim - PEEK seats

#### BRANCH TABLES

(Altoli	ואטו															
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2		Ŷ.	Ŷ	т												
3		s	s	w	Т											
4		Š	Š	W	Ť	Т										
6		S	S	W	W	Т	Т									
8		S	S	W	W	W	Т	Т								
10		S	S	W	W	W	W	Т	Т							
12		S	S	W	W	W	W	W	Т	Т						
14		S	S	W	W	W	W	W	Р	Ţ	T	_				
16		S	S	W	W	W	W	W	P	P	I	1	_			
18 20		S S	S S	W	W	W	W	W	Р	P	P	I P	Ţ	_		
20 24		S	S	W	W	W	W	W	P	P	P	P	I D	T	т	
30		S	S	W	W	W	W	W	P	P	P	P	P	P	÷	т
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D. a.i.o.ii	0.20		1/2	_	3	_	U	0	10	12		10	10	20	24	<del>-</del> 30
Legenda																
	TEE -															
	PIPE									TS-C	OR-E	NG-F	NAIL	T-012	2-E	
S	SOCI	KOLE	T - :	SW E	END	- TB	RAC	5380	)							
T	TEE -	ASI	<b>ЛЕ-В</b>	16.9												
W	WELI	DOL	ET -	MSS	-SP9	97										

### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



	-	ОВ <b>2243</b>						
Pipii	ng C	Class	s:	1	5CI	B1S	01	
						Rev.		
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 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL1500
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RJ (F) Valve Trim : 12 - SS316/HF

 Corrosion Allow. : 1.5 mm
 Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

 Temp. Limit : -29 °C to 120 °C

Service: MEG - Monoethylene Glycol

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 3 4 6 Thk.mm 4.78 5.56 6.35 7.14 8.74 11.13 13.49 12.7 SCH. 160 160 160 160 160 160 160 160

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 7.47 7.82 9.09 10.15 11.07 SCH. XXS XXS XXS XXS XXS

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 255.5 234.1 225.5 ASME B16.5 1/2 4 Temp. °C 37.78 93.33 148.9 Material Group 1.1 NPS Press. bar 165

141 0	1 1000	
6 - 6	Temp. °C	120

		ize I to	Item Description	Ends	Rating/Facing	Material
opt.	from	το				
PIPE				1		
	1/2	3 1/2		BW		ASTM A106 GR.B - SMLS
	4	6	PIPE	BW		ASTM A333 GR.6 - SMLS
FLAN	IGES			,		
	1/2	1 1/2		SW	1 ' '	ASTM A105 Normalized
	2	6	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A105 Normalized
	1/2	6	BLIND FLANGE - ASME-B16.5		CL1500 RJ (F)	ASTM A105 Normalized
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A105 Normalized
SPEC	TACLE	BLIND		1		
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		` '	ASTM A516 GR.70 + S5 (-46°C)
	2	6	BLIND & SPACER - ASME-B16.48		CL1500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
FITTI				1		
	1/2	1 1/2		SW	9000	ASTM A105 Normalized
	2	3		BW		ASTM A234 WPB - SMLS
	4	6		BW		ASTM A420 WPL6 - SMLS
	3/4	1 1/2		SW	9000	ASTM A105 Normalized
	2	3		BW		ASTM A234 WPB - SMLS
	4	6		BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	= · · · · = = · · · · · · · · · · · ·	SW	9000	ASTM A105 Normalized
	2	3	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	4	6		BW		ASTM A420 WPL6 - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	9000	ASTM A105 Normalized
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A106 GR.B - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A234 WPB - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	9000	ASTM A105 Normalized
	2	3	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS
	4	6	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS
	2	3	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized
	1/2	1 1/2	SOCKOLET - SW END - TB RAC 5380	SW\BW	9000	ASTM A105 Normalized
GASK	KETS					
	1/2	6	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
BOLT	ΓS					
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H

VALV	ES						
		ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to					
1	1/2	1 1/2	GA-E-67388	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW	CL1500	Body: ASTM A105 Normalized
							Trim: 316 / HF
1	2	6	GA-E-60138	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB
							Trim : 316 / HF
4	1/2	1 1/2	GA-E-67407	Globe-WB-Red.B-Thdd seat - API602	SW	CL1500	Body: ASTM A105 Normalized
							Trim: 316 / HF
4	2	6	GA-E-60232	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB
							Trim: 316 / HF
6	1/2	1 1/2	GA-E-67509	Check-WB-Red.B-Piston-Int seat - API602	SW	CL1500	Body: ASTM A105 Normalized
							Trim: 316 / HF
6	2	6	GA-E-60339	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A216 WCB
							Trim: 316 / HF
7	2	2	GA-E-67650	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL1500	Body: ASTM A216 WCB
				API6D			Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2	GA-E-60461	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE	CL1500	Body: ASTM A105 Normalized
				ASME-B16.34			Trim : Soft seat-316 trim - PEEK seats



		ов <b>2243</b>						
Pipi	ng C	Class	s:	1	5CI	B15	<b>601</b>	
						Rev.		
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**BRANCH TABLES** 90 Degrees RunSize 1/2 3/4 AAASSSS A A S S S S A A T S S S 1 1 1/2 2 3 4 A T S S W 6 S BranchSize 1/2 W W 3/4 1 1/2 2 Legenda TEE - SW ENDS - ASME-B16.11 SOCKOLET - SW END - TB RAC 5380 TEE - ASME-B16.9 WELDOLET - MSS-SP97

#### GENERAL NOTES

- PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
   Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment. 
   NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



		ов <b>2243</b>						
Pipi	ng C	Class	s:	1	5S/	A0D	01	
						Rev.		
Sh.	1	of	2	Α	0			

Base Material : STAINLESS STEEL 304/304L DUAL GRADE Design code : ASME B 31.3 2016

Nom. Rating : CL1500
Facing/Finishing : RJ (F)

PWHT : NO
Valve Trim : 12 - SS316/HF
Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Corrosion Allow. : 0 mm
Temp. Limit : -120 °C to 230 °C

Service: NG - Natural Gas

Pipe Thickness

NPS 1/2 3/4 1 11/2 2 21/2 3 4 6 8 10 12 14 16 18 20 24 30 36 52 Thk.mm 2.77 2.87 3.38 5.08 8.74 5.16 5.49 8.56 10.97 14.27 18.26 20.62 22.23 25.4 28.58 31.75 38.1 47 56 71 SCH. 40S 40S 40S 80S 80S STD 40S 80S 80S

Nipple Thickness

NPS 1/2 3/4 1 1 1 1/2 2 Thk.mm 3.73 3.91 4.55 5.08 8.74 SCH. 80S 80S 80S 80S

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 248.2 248.2 ASME B16.5
1/2 · 2 Temp. °C -28.9 37.78 Material Group 2.1
NPS Press. bar 140

2 1/2· 52 Temp. °C 230

	Si	70	Item Description	Ends	Rating/Facing	Material
opt.	from	ze to	nem Description	enas	rating/racing	Material
PIPE						
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	52	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN	IGES					
	1/2	24	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
SPEC	TACLE	BLIND				
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		CL1500 RJ (F)	ASTM A240 TP304
	2	12	BLIND & SPACER - ASME-B16.48		CL1500 RJ (F)	ASTM A240 TP304
FITTI	NGS					
	2	2	DRIP-RING - TB DRI 5011		CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	52	52	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	52	52	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	FEMALE CAP - THD END - ASME-B16.11	THDF	3000	ASTM A182 F304/304L DUAL GRADE
	2	36	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	52	52	CAP - TB RAC 5064	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	52	52	TEE - TB RAC 5061	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	8	WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE
GASI	KETS					
	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 304
BOL'	ΓS					

BULIS

 1/4
 1 1/2
 ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368
 ASTM A320 B8 CL.2 + ASTM A194 GR.8

 1 5/8
 4
 ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368
 ASTM A453 GR. 660

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1/2	1 1/2	GA-E-67067	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	BW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
1	2	16	GA-E-60158	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim :316 / HF
4	1/2	1 1/2	GA-E-60289	Globe-WB-Red.B-Thdd seat - API602	BW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim: 316 / HF
4	2	8	GA-E-60251	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim :316 / HF
6	1/2	1 1/2	GA-E-60732	Check-WB-Red.B-Piston-Int seat - API602	BW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
6	2	12	GA-E-60364	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim :316 / HF
7	3	16	GA-E-67121	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW	CL1500	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2	GA-E-67233	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	BW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats
8	2	24	GA-E-67180	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW	CL1500	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
11	2	2	GA-E-60181	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M Trim : 316 / HF
62	2	2	GA-E-60724	Check-BB-Red.B-Piston-Thdd seat - API602	FLGD	CL1500 RJ (F)	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF
101	2	16	GA-E-67032	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim :316 / HF



		ов <b>2243</b>						
Pipi	ng C	Class	s:	1	5S/	<b>40</b> D	01	
						Rev.		
Sh.	2	of	2	Α	0			

ALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
141	2	2	GA-E-67383	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34 - Interlock System	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF
401	2	2	GA-E-60230	Globe-Stem Extension-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF
801	2	16	GA-E-67181	Ball-Stem Extension-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW		Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
801	20	20	GA-E-67640	Ball-Stem Extension-Top entry-FB-Trunnion ball + Pup Pieces - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
801	52	52	GA-E-67640	Ball-Stem Extension-Top entry-FB-Trunnion ball + Pup Pieces - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats

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3		W	W	W	W	Т	Т	Т														
4	1	W	W	W	W	W	W	Т	Т													
6		W	W	W	W	W	W	W	Т	Т												
8		W	W	W	W	W	W	W	W	Т	T	_										
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16		W	W	W	W	W	W	W	W	W	W	Р	P	÷	т							
18		W	w	w	w	W	W	w	W	w	w	Р	Р	P	Ť	т						
20		W	W	W	W	W	W	W	W	W	W	P	P	P	P	Ť	Т					
24		W	W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Ρ	Τ	Т				
30		W	W	W	W	W	W	W	W	W	W	Ρ	Р	Ρ	Ρ	Р	Ρ	Т	Т			
36		W	W	W	W	W	W	W	W	W	W	Ρ	Ρ	Ρ	Ρ	Р	Р	Р	Т	T		
52		W	W	W	W	W	W	W	W	W	W	Р	Р	Р	Р	Р	Р	Р	Р	Р	T1	
Branch	Size	1/2	3/4	1	1 1/2	2 2	2 1/2	2 3	4	6	8	10	12	14	16	18	20	24	30	36	52	
Legend	la																					
Α	TEE																					
	PIPE								AD-T	S-CC	R-E	NG-P	IPMT	-012	E							
	SOC					- MS	S-SF	97														
T	TEE																					
T1	TEE	- TB	RAC	506	1																	
W	WEL	DOL	ET -	MSS	-SP9	97																

#### GENERAL NOTES

1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment. 2) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



**PWHT** 

:NO

		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	1	5S	<b>40</b> S	01	
						Rev.		
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Base Material : STAINLESS STEEL 304/304L DUAL GRADE :ASME B 31.3 2016 Design code

Nom. Rating : CL1500

Facing/Finishing : RJ (F) Valve Trim :12 - SS316/HF Corrosion Allow. : 0 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -101 °C to 230 °C

Service: CI - Chemical Injection NG - Natural Gas

Pipe Thickness

| NPS | 1/2 | 3/4 | 1 | 1 1/2 | 2 | 2 1/2 | 3 | | Thk.mm | 2.77 | 2.87 | 3.38 | 5.08 | 8.74 | 5.16 | 5.49 | 6 8 10 10.97 14.27 18.26 12 16 20.62 22.23 25.4 28.58 31.75 36.53 SCH. 40S 40S 40S 80S 80S 80S

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 3.73 3.91 4.55 5.08 8.74 SCH. 80S 80S 80S 80S 160

PRESSURE - TEMPERATURE Ratings

NPS	Press. b				ASME B16.5
1/2 · 2	Temp. '	°C	-28.9	37.78	Material Group 2.
NPS	Press. b	bar	140		
2 1/2 12	Temp.	°C	230		
NPS	Press. b	bar	140		
14 · 52	Temp.	°C	210		

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE				<u> </u>	•	
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	8	52	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN	IGES					
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	2	24	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	30	36	SPECIAL WN FLANGE - <mfr std=""> GA-E-060018</mfr>	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	52	52	SPECIAL WN FLANGE - <mfr std=""> GA-E-060018</mfr>	BW	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	24	BLIND FLANGE - ASME-B16.5		CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
SPEC	TACLE	BLIND			1	
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48			ASTM A240 TP304
	2	12	BLIND & SPACER - ASME-B16.48		CL1500 RJ (F)	ASTM A240 TP304
FITTI						
	2	2	DRIP-RING - TB DRI 5011		CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	52	52	LONG RADIUS ELBOW - TB RAC 5060	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	36	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	52	52	REDUCER, LARGE BORE - TB RAC 5062	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	36	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	52	52	CAP - TB RAC 5064	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE PE		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	r =		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
1	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95 TEE - SW ENDS - ASME-B16.11	PE\THDM SW	0000	ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2 6		BW	3000	ASTM A182 F304/304L DUAL GRADE
			TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
1	8 52	36 52	TEE - ASME-B16.9 TEE - TB RAC 5061	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	2	5∠ 8		F		
	1/2	8 1 1/2	WELDOLET - MSS-SP97	BW SW\BW	2000	ASTM A182 F304/304L DUAL GRADE ASTM A182 F304/304L DUAL GRADE
GASE	(ETS	1 1/2	SOCKOLET - SW END - MSS-SP97	OVV /DVV	3000	ASTIVI A 102 F304/304L DUAL GRADE
3,01	1/2	24	OCTAGONAL RJ GASKET - ASME-B16.20		1	AISI 304
	30	36	OCTAGONAL RJ GASKET - ASME-B10.20 OCTAGONAL RJ GASKET - <mfr std=""> GA-E-060018</mfr>			AISI 304
	52	52	OCTAGONAL RJ GASKET - <mfr std=""> GA-E-060018</mfr>			AISI 304
BOL <sub>1</sub>	- 1	JZ	DO LUGORUE NO GUORET - CIVIL IN SIUS GU-E-0000 10	1	1	Aloi 50 <del>1</del>
BOL		4.410	ST BOLT 2 NUTS - ANSITE - TR BUL 5269			ACTM A220 D9 CL 2 - ACTM A404 CD 9

1/4 1 1/2 ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368 ASTM A320 B8 CL.2 + ASTM A194 GR.8 4 ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368 ASTM A453 GR. 660 1 5/8

VALV	ES						
		ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to					
1	1 1/2 1 1/2 GA-E-60157		GA-E-60157	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW		Body: ASTM A182 F316/F316L DUAL GRADE
							Trim: 316 / HF
1	2	16	GA-E-60158	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M
							Trim: 316 / HF
4	1/2	1 1/2	GA-E-60250	Globe-WB-Red.B-Thdd seat - API602	SW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim: 316 / HF
4	2	8	GA-E-60251	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M
							Trim: 316 / HF
6	1/2	1 1/2	GA-E-60363	Check-WB-Red.B-Piston-Int seat - API602	sw	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim : 316 / HF



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VALVI	ES						
-7-	-	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to	Data Sneet	item Description	Elius	Rating/Facing	Waterial
6	2	12	GA-E-60364	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M
-				g ng n tim			Trim: 316 / HF
7	3	16	GA-E-67121	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL1500	Body: ASTM A351 CF8M
				API6D			Trim : Soft seat-316 trim - PEEK seats
7	52	52	GA-E-67291	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	вw	CL1500	Body: ASTM A351 CF8M
				ASME-B16.34			Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2	GA-E-60465	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
				ASME-B16.34			Trim : Soft seat-316 trim - PEEK seats
8	2	24	GA-E-67180	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL1500	Body: ASTM A351 CF8M
				API6D			Trim : Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-60184	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
					DF		Trim : 316 / HF
11	2	2	GA-E-60181	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M
							Trim: 316 / HF
62	2	2	GA-E-60724	Check-BB-Red.B-Piston-Thdd seat - API602	FLGD	CL1500 RJ (F)	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim : 316 / HF
82	1/2	1 1/2	GA-E-60773	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
				ASME-B16.34			Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
89	1/2	1 1/2	GA-E-60774	Ball-End entry -FB-Float.ball -Frgd body+ Nipple -	PE/THD	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
				ASME-B16.34	F		Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1/2	1 1/2	GA-E-67019	Gate-Stem Extension-WB-Red.B-Solid wdg-	SW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
				Exp.seat - API602			Trim:316/HF
101	2	16	GA-E-67032	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL1500	Body: ASTM A351 CF8M
				- ASME-B16.34			Trim: 316 / HF
130	1/2	1 1/2	GA-E-67087	Gate-Stem Extension-WB-Red.B-Solid wdg-	SW/TH	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
	_	_		Exp.seat - API602	DF		Trim: 316 / HF
141	2	2	GA-E-67383	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL1500	Body: ASTM A351 CF8M
	_	_		- ASME-B16.34 - Interlock System			Trim: 316 / HF
401	2	2	GA-E-60230	Globe-Stem Extension-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M
004	4/0	4.4/0	0.4 5 074.44			01.4500	Trim: 316 / HF
801	1/2	1 1/2	GA-E-67144	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
801	2	16	GA-E-67181	Ball-Stem Extension-Top entry-FB-Trunnion ball +	DIA.	01.4500	Trim : Soft seat-316 trim - PEEK seats
801	2	10	GA-E-0/101	Pup Pieces - API6D	BVV	CL1500	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats
801	20	30	GA-E-67640	Ball-Stem Extension-Top entry-FB-Trunnion ball +	DIA/	CL1500	Body: ASTM A351 CF8M
001	20	30	GA-L-07040	Pup Pieces - ASME-B16.34	DVV	CL1500	Trim : Soft seat-316 trim - PEEK seats
801	36	36	GA-E-67640	Ball-Stem Extension-Top entry-FB-Trunnion	BW	CL1500	Body: ASTM A351 CF8M
301	30	30	GA-L-07040	ball + Pup Pieces - ASME-B16.34	DVV	CLISOO	Trim : Soft seat-316 trim - PEEK seats
801	52	52	GA-E-67640	Ball-Stem Extension-Top entry-FB-Trunnion ball +	вw	CL1500	Body: ASTM A351 CF8M
001	32	32	GA-L-07040	Pup Pieces - ASME-B16.34	P**	OL1300	Trim : Soft seat-316 trim - PEEK seats
907	2	24	GA-E-69033		BW	CL1500	Body: ASTM A351 CF8M
551	-		C/ L 00000	API6D	5**	JE1300	Trim : Soft seat-316 trim - PEEK seats
917	2	24	GA-E-69031	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL1500 R.L/F)	Body: ASTM A351 CF8M
١	-				. 205	(1)	Trim : Soft seat-316 trim - PEEK seats
971	2	24	GA-E-69067	Ball-Stem Extension-Split body-Red.B-Trunnion	FLGD	CL1500 R.I.(F)	Body: ASTM A351 CF8M
	-			ball - API6D			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
972	24	24	GA-E-69066	Ball-Stem Extension-Top entry-Red.B-Trunnion	BW	CL1500	Body: ASTM A351 CF8M
				ball+Pup Pieces - API6D			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
974	2	24	GA-E-69072	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M
	-						Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
977	2	24	GA-E-69066	Ball-Stem Extension-Top entry-Red.B-Trunnion	BW	CL1500	Body: ASTM A351 CF8M
-				ball+Pup Pieces - API6D			Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

**BRANCH TABLES** 



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Pipi	ng C	Class	s:	1	5S	A0S	01	
						Rev.		
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3	5	S S	S	S	Т	Т	T	_																			
4	5	S S	S	S	W	W	Τ	T	_																		
6	5		S S	S	W	W	W	I	I	_																	
8	9		S	S	W	W	W	VV VV/	۱ ۱۸/	T	т																
10 12	3	-	S	S	W	W	W	W	W	w	Ť	Т															
14	3		S	S	W	W	W	W	W	W	P	Ť	Т														
16	5	s s	S	S	W	W	W	W	W	W	Ρ	Ρ	Т	Т													
18		s s	S	S	W	W	W	W	W	W	Ρ	Ρ	Ρ	Т	Т												
20	5		S	S	W	W	W	W	W	W	Р	Р	Р	Р	T	T	_										
24	5			S	W	W	W	W	W	W	P	P	Р	Р	Р	T	T	т									
30		S S	S S	S	W	W	W	VV	W	W	P	P	P P	P P	P P	P P	I P	+	_								
24 30 36 52		3 S	S	S	W	W/	W/	W	W	W/	Р	Р	Р	P	P	Р	P	P	P	T1							
Branch				1 1/	• • •	2 1/3	2 3	4	6	8	10	12	14	16	18	20	24	30	36	52							
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Legenda	1																										
Α	TEE -	SW E	NDS -	ASM	IE-B1	6.11																					
Р	PIPE 1	OPIP	E WI	TH RE	INFO	ORCII	NG P	AD-T	S-CC	)R-EN	NG-P	IPMT	-012	E							·						
S	SOCK	OLET	- SW	END	- MS	SS-SF	97														<u> </u>						
Т	TEE -	ASME	-B16.	9																	•						
T1	TEE -	TB RA	C 50	31																							
W	WELD	OLET	- MS	S-SP	97																						$\neg$
			_																								-

#### GENERAL NOTES

1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment. 2) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



**PWHT** 

		ОВ <b>2243</b>						
Pipi	ng (	Class	s:	1	5S	A0S	02	
						Rev.		
Sh.	1	of	2	Α	0	1		

Base Material : STAINLESS STEEL 304/304L DUAL GRADE :ASME B 31.3 2016 Design code

Nom. Rating : CL1500 Facing/Finishing: RJ (F)

Valve Trim :12 - SS316/HF Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

:NO

Corrosion Allow. : 0 mm Temp. Limit : -29 °C to 180 °C

Service: [Amine Service] AL - Amine Lean

Pipe Thickness

NPS 1/2 3/4 1 1 11/2 Thk.mm 2.77 2.87 3.38 5.08 SCH. 40S 40S 40S 80S 6.02 10.97 12.7 40S 80S

Nipple Thickness

NPS 1/2 3/4 1 11/2 2 Thk.mm 3.73 3.91 4.55 5.08 8.74 SCH. 80S 80S 80S 80S 160

PRESSURE - TEMPERATURE Ratings

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE	II OIII					
PIPE	4 (0	_	bibe	ln.u.	1	
	1/2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
FLAN	8	10	PIPE	BW		ASTM A358 TP304/TP304L CL.1 DUAL GRADE - EFW
FLAN		4.4/0	OWELANDE ADMEDIA	sw		
	1/2	1 1/2	SW FLANGE - ASME-B16.5	BW		ASTM A182 F304/304L DUAL GRADE
	2 1/2	10	WN FLANGE - ASME-B16.5	BW		ASTM A182 F304/304L DUAL GRADE
		10	BLIND FLANGE - ASME-B16.5	T	1 ' '	ASTM A182 F304/304L DUAL GRADE
14	2 CTACLE	2 DI IND	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A182 F304/304L DUAL GRADE
SPEC			ODECTACLE DUND. ACME DAG 40	1	lou 4500 D 1 (5)	AOTALAGAS TROSA
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		, ,	ASTM A240 TP304
FITTI	2	10	BLIND & SPACER - ASME-B16.48		CL1500 RJ (F)	ASTM A240 TP304
F11 11		4.4/0	FL DOWN OW ENDO AGNE DAGA	lsw	3000	AOTH AGO FOR VOCAL BURN OF ARE
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	_	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	10	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	10	REDUCER - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	10	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F304/304L DUAL GRADE
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	SW	3000	ASTM A182 F304/304L DUAL GRADE
	2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	8	10	TEE - ASME-B16.9	BW		ASTM A403 WP304WX/304LWX DUAL GRADE - WLDD
	2	6	WELDOLET - MSS-SP97	BW		ASTM A182 F304/304L DUAL GRADE
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A182 F304/304L DUAL GRADE
GAS	- 1			1		
	1/2	10	OCTAGONAL RJ GASKET - ASME-B16.20		<u> </u>	AISI 304
BOL <sup>1</sup>						
	3/4	2 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALV	VALVES									
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material			
1	1/2	1 1/2	GA-E-60157	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF			
1	2	10	GA-E-60158	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF			
4	1/2	1 1/2	GA-E-60250	Globe-WB-Red.B-Thdd seat - API602	sw	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF			
4	2	10	GA-E-60251	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF			
6	1/2	1 1/2	GA-E-60363	Check-WB-Red.B-Piston-Int seat - API602	sw	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF			
6	2	10	GA-E-60364	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF			
7	6	10	GA-E-67107	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW	CL1500	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats			
8	1/2	1 1/2	GA-E-60467	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats			
10	1/2	1 1/2	GA-E-60184	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW/TH DF	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF			
11	1/2	1 1/2	GA-E-67005	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	FLGD	CL1500 RJ (F)	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF			
11	2	2	GA-E-60181	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M Trim : 316 / HF			
62	2	2	GA-E-60724	Check-BB-Red.B-Piston-Thdd seat - API602	FLGD		Body: ASTM A182 F316/F316L DUAL GRADE <u>Trim :</u> 316 / HF			



		DB 2 <b>243</b>						
Pipi	ng C	Class	s:	1	<b>5</b> S	A0S	02	
						Rev.		
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/ALVI	ES								
pos.	Si: from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	g Material		
82	1/2 1 1/2		GA-E-60773	Ball-End entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.		
89 1/2 1 1/2		1 1/2	GA-E-60774	Ball-End entry -FB-Float.ball -Frgd body+ Nipple - ASME-B16.34	PE/THD F	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.		
101	1/2	1 1/2	GA-E-67019	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	sw	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim :316 / HF		
101	2	2	GA-E-67032	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim :316 / HF		
401	2	2	GA-E-60230	Globe-Stem Extension-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim :316 / HF		
801	1/2	1 1/2	GA-E-67145	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats		

#### **BRANCH TABLES**

	1715220				
RunSi	ze				90 Degrees
1/2	Α				
3/4					
1	A A A				
1 1/2	A A A	Α			
2	S S T	T T			
3	S S S	STT			
4	S S S	SWT	Г		
6	S S S	S W W	T _		
8	S S S	S W W V		_	
10		S W W V		1	
Branch	Size 1/2 3/4 1	1 1/2 2 3	4 6 8	10	
Legend	1				
Α	TEE - SW ENDS - A	ASME-B16.11			
Р	PIPE TOPIPE WITH	H REINFORCING	PAD-TS-C	OR-ENG-PIPMT-012-E	
S	SOCKOLET - SW E	ND - MSS-SP97			
Т	TEE - ASME-B16.9				
T1	TEE - TB RAC 506	1			
W	WELDOLET - MSS	-SP97			

#### GENERAL NOTES

1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment. 2) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



**PWHT** 

:NO

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Pipi	ng (	Class	s:	1	5SI	D0S	01	
						Rev.		
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Design code : ASME B 31.3 2016 Base Material : STAINLESS STEEL 316/316L DUAL GRADE

Nom. Rating : CL1500

Facing/Finishing: RJ (F) Valve Trim :12 - SS316/HF Corrosion Allow. : 0 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

: -29 °C to 60 °C Temp. Limit

Service: CO2 - Carbon Dioxide

Pipe Thickness

 
 NPS
 1/2
 3/4
 1
 1 1/2

 Thk.mm
 2.77
 2.87
 3.38
 5.08

 SCH.
 40S
 40S
 40S
 80S
 2 2 1/2 3 8.74 7.01 11.13 80S

Nipple Thickness

NPS 1/2 3/4 1 1 11/2 Thk.mm 3.73 3.91 4.55 5.08 SCH. 80S 80S 80S 80S 2 2 1/2 8.74 7.01 80S

PRESSURE - TEMPERATURE Ratings

1/2 ·	3 Temp	o. °C  -2	28.9 37.78 Material Group 2.2			
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE				·		
	1/2	3	PIPE	вw		ASTM A312 TP316/TP316L DUAL GRADE - SMLS
FLAN	IGES					
	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RJ (F)	ASTM A182 F316/F316L DUAL GRADE
	2	3	WN FLANGE - ASME-B16.5	BW	CL1500 RJ (F)	ASTM A182 F316/F316L DUAL GRADE
13	1/2	1 1/2	SW FLANGE - ASME-B16.5	sw	CL1500 RF	ASTM A182 F316/F316L DUAL GRADE
13	2	3	WN FLANGE - ASME-B16.5	BW	CL1500 RF	ASTM A182 F316/F316L DUAL GRADE
	1/2	3	BLIND FLANGE - ASME-B16.5		CL1500 RJ (F)	ASTM A182 F316/F316L DUAL GRADE
14	2	2	THDD RED. FLANGE - ASME-B16.5	THDF	CL1500 RJ (F)	ASTM A182 F316/F316L DUAL GRADE
SPEC	TACLE	BLIND				
	1/2	1 1/2	SPECTACLE BLIND - ASME-B16.48		CL1500 RJ (F)	ASTM A240 TP316
	2	3	BLIND & SPACER - ASME-B16.48		CL1500 RJ (F)	ASTM A240 TP316
FITTI	NGS					
	2	2	DRIP-RING - TB DRI 5011		CL1500 RJ (F)	ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	ELBOW - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F316/F316L DUAL GRADE
	2	3	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	3/4	1 1/2	RED. COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F316/F316L DUAL GRADE
	2	3	REDUCER - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	1/2	1 1/2	FEMALE CAP - SW END - ASME-B16.11	sw	3000	ASTM A182 F316/F316L DUAL GRADE
	2	3	CAP - ASME-B16.9	BW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	1/2	1 1/2	COUPLING - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F316/F316L DUAL GRADE
	1/2	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A182 F316/F316L DUAL GRADE
	1/2	2	NIPPLE - THDD/PE - ASME-B36.10	THDM\PE		ASTM A312 TP316/TP316L DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/THDD - MSS-SP95	PE\THDM		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	1/2	1 1/2	TEE - SW ENDS - ASME-B16.11	sw	3000	ASTM A182 F316/F316L DUAL GRADE
	2	3	TEE - ASME-B16.9	вW		ASTM A403 WP316S/WP316LS DUAL GRADE - SMLS
	1/2	1 1/2	SOCKOLET - SW END - MSS-SP97	SW\BW	3000	ASTM A182 F316/F316L DUAL GRADE
GASK	KETS			·	·	
13	1/2	3	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			316 SS+GRAPH 98% - C.S. OUT.RING
	1/2	3	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 316
BOL <sub>1</sub>	ΓS			· ·	·	
	3/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALV	ES						
	Siz		Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to		·			
1	1/2	1 1/2	GA-E-60157	Gate-WB-Red.B-Solid wdg-Exp.seat - API602	SW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim: 316 / HF
1	2	3	GA-E-60158	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M
							Trim : 316 / HF
4	1/2	1 1/2	GA-E-60250	Globe-WB-Red.B-Thdd seat - API602	SW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim :316 / HF
4	2	3	GA-E-60251	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M
							Trim:316/HF
6	1/2	1 1/2	GA-E-60363	Check-WB-Red.B-Piston-Int seat - API602	SW	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
							Trim:316/HF
6	2	3	GA-E-60364	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M
							Trim:316/HF
7	3	3	GA-E-67121		BW	CL1500	Body: ASTM A351 CF8M
				API6D			Trim : Soft seat-316 trim - PEEK seats
8	1/2	1 1/2	GA-E-60465	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
		•	0.4 5 07400	ASME-B16.34			Trim : Soft seat-316 trim - PEEK seats
8	2	3	GA-E-67180	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW	CL1500	Body: ASTM A351 CF8M
				[· · · · · · ·			Trim : Soft seat-316 trim - PEEK seats
10	1/2	1 1/2	GA-E-60184	Gate-WB-Red.B-Solid wdg-Exp.seat - API602		CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
		•	0.4 5 00404	0 . 00 50 51	DF	OL 4500 D.L(E)	Trim: 316 / HF
11	2	2	GA-E-60181	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL1500 RJ (F)	Body: ASTM A351 CF8M
		0	04 5 00704	Observe DD Dod D Distant Their control ABIOCO		01.4500.07.75	Trim: 316 / HF
62	2	2	GA-E-60724	Check-BB-Red.B-Piston-Thdd seat - API602	FLGD	CL1500 RJ (F)	Body: ASTM A182 F316/F316L DUAL GRADE
00	4.0	4.4/0	04 5 00770	Dall Ford and a FD Flood hall Found had a six a		01.4500	Trim: 316 / HF
82	1/2	1 1/2	GA-E-60773	Ball-End entry -FB-Float.ball -Frgd body+nipples -	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE
				ASME-B16.34			Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.



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oos.	from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	g Material	
89	9 1/2 1		GA-E-60774	Ball-End entry -FB-Float.ball -Frgd body+ Nipple - ASME-B16.34	PE/THD F	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.	
101	1/2	1 1/2	GA-E-67019	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	sw	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF	
101	2	3	GA-E-67032	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF	
130	1/2	1 1/2	GA-E-67087	Gate-Stem Extension-WB-Red.B-Solid wdg- Exp.seat - API602	SW/TH DF	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : 316 / HF	
141	2	2	GA-E-67383	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34 - Interlock System	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF	
401	2	3	GA-E-60230	Globe-Stem Extension-PS-Disk-Integral seat - ASME-B16.34	BW	CL1500	Body: ASTM A351 CF8M Trim : 316 / HF	
801	1/2	1 1/2	GA-E-67144	Ball-Stem Extension-End entry -FB-Float.ball - Frgd body+nipples - ASME-B16.34	PE	CL1500	Body: ASTM A182 F316/F316L DUAL GRADE Trim : Soft seat-316 trim - PEEK seats	
801	2	3	GA-E-67181	Ball-Stem Extension-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW	CL1500	Body: ASTM A351 CF8M Trim : Soft seat-316 trim - PEEK seats	

#### BRANCH TABLES

D10 111011									
									90 Degrees
RunSi	ze								•
1/2		Α							
3/4		Α	Α						
1		Α	Α	Α					
1 1/2		Α	Α	Α	Α				
2			S	Т	Т	Т			
2 1/2			S	S	S	Т	Т		
3		S	S	S	S	Т	Т	Т	T
Branch	Size	1/2	3/4	1	1 1/2	2 2	2 1/	/2 3	3
Legend	а								
Α	TEE	- SW	ENI	os -	ASMI	E-B1	6.11		
Р	PIPE	TOP	IPE	WIT	H RE	INFC	DRCI	ING	G PAD-TS-COR-ENG-PIPMT-012-E
S	SOC	KOLE	ET - :	SW I	END	- MS	3S-S	P97	77
Т	TEE	- ASN	ИЕ-В	16.9					
T1	TEE	- TB	RAC	506	1				
W	WEL	DOL	ET -	MSS	-SP9	7			

#### GENERAL NOTES

1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment. 2) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



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Pipi	ng C	Class	s:	2	5CI	B10	01	
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 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.3 2016

 Nom. Rating
 : CL2500
 PWHT
 : AS PER CODE (NOTE 1)

Facing/Finishing: RJ (F) Valve Trim: 12 - SS316/HF

Corrosion Allow.: 1.5 mm Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 70 °C

Service: DP - Drain - Process MEG - Monoethylene Glycol (AG) NG - Natural Gas

Pipe Thickness

NPS 1 11/2 2 3 4 6 8 10 Thk.mm 9.09 10.15 11.07 15.24 19 26 34 41 SCH. XXS XXS XXS XXS

Nipple Thickness

NPS 1 1 1/2 2 Thk.mm 9.09 10.15 11.07 SCH. XXS XXS XXS

PRESSURE - TEMPERATURE Ratings

| NPS | Press. bar | 385 | 1 · 10 | Temp. °C | 70

	10 Jenn. 6 70												
opt.	from S	ize to	Item Description	Ends	Rating/Facing	Material							
PIPE													
	1	2	PIPE	BW		ASTM A106 GR.B - SMLS							
	2 1/2	10	PIPE	BW		ASTM A333 GR.6 - SMLS							
FLAN	IGES												
	1	10	WN FLANGE - ASME-B16.5	вw	CL2500 RJ (F)	ASTM A105 Normalized							
13	3	3	WN FLANGE - ASME-B16.5	BW	CL2500 RF	ASTM A105 Normalized							
	1	10	BLIND FLANGE - ASME-B16.5		CL2500 RJ (F)	ASTM A105 Normalized							
SPEC	CTACLE	BLIND											
	1	1 1/2	SPECTACLE BLIND - ASME-B16.48			ASTM A516 GR.70 + S5 (-46°C)							
	2	10	BLIND & SPACER - ASME-B16.48		CL2500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)							
FITTI	NGS												
	1	2	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A234 WPB - SMLS							
	3	10	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS							
	1	2	REDUCER - ASME-B16.9	BW		ASTM A234 WPB - SMLS							
	3	10	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS							
	1	2	CAP - ASME-B16.9	BW		ASTM A234 WPB - SMLS							
	3	10	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS							
	1	1 1/2	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A105 Normalized							
	1 1/2	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A234 WPB - SMLS							
	1	2	TEE - ASME-B16.9	BW		ASTM A234 WPB - SMLS							
	3	10	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS							
	1	6	WELDOLET - MSS-SP97	BW		ASTM A105 Normalized							
MISC	ELLAN	EOUS											
	1	10	KIT FOR INSULATING FLANGE - ASME-B16.5		CL2500 RJ (F)	GRE LAMINATED + TFE (MAX T 180 C)							
GASI	KETS												
13	3	3	SP.WOUND GSKT-with OUT.& INN.RINGS - ASME-B16.20			304 SS+GRAPH 98% - C.S. OUT.RING							
	1	10	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON							
BOL'													
	3/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)							

VALV	ES						
pos.	Si from	ze to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	1	1 1/2	GA-E-60196	Gate-WB-FB-Solid wdg-Exp.seat - ASME-B16.34	BW	CL2500	Body: ASTM A105 Normalized Trim : 316 / HF
1	2	10	GA-E-67010	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL2500	Body: ASTM A216 WCB Trim :316 / HF
4	2	10	GA-E-60242	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL2500	Body: ASTM A216 WCB Trim : 316 / HF
6	2	10	GA-E-60304	Check-PS-FB-Swing-Integral seat - ASME-B16.34	BW	CL2500	Body: ASTM A216 WCB Trim: 316 / HF
8	1	1 1/2	GA-E-60493	Ball-Side entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	BW	CL2500	Body: ASTM A105 Normalized Trim: Soft seat-316 trim - PEEK seats
8	2	10	GA-E-67182	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW	CL2500	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats
10	1	1 1/2	GA-E-67331	Gate-WB-FB-Solid wdg-Exp.seat - ASME-B16.34	BW/TH DF	CL2500	Body: ASTM A105 Normalized Trim : 316 / HF
11	2	2	GA-E-67352	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL2500 RJ (F)	Body: ASTM A216 WCB Trim : 316 / HF
62	2	2	GA-E-60746	Check-Lug wafer-Dual plate-Wldd seat - API594	WAFER LUG	CL2500 RJ (F)	Body: ASTM A216 WCB Trim :316 / HF
82	1	1 1/2	GA-E-67691	Ball-Side entry -FB-Float.ball -Frgd body+nipples - ASME-B16.34	BW	CL2500	Body: ASTM A105 Normalized Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
101	1	1	GA-E-67710	Gate-Stem Extension-WB-FB-Solid wdg-	BW	CL2500	Body: ASTM A105 Normalized
				Exp.seat - ASME-B16.34			Trim: 316 / HF
101	2	2	GA-E-67709	Gate-Stem Extension-PS-FB-Flex wdg-Wldd	BW	CL2500	Body: ASTM A216 WCB
				seat - ASME-B16.34			Trim: 316 / HF
140	2	2	GA-E-67384	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34 - Interlock System	BW	CL2500	Body: ASTM A216 WCB Trim : 316 / HF
801	1	1	GA-E-67698	Ball-Stem Extension-Side entry -FB-Float.ball - Frgd body+nipples - ASME-B16.34	BW	CL2500	Body: ASTM A105 Normalized Trim : Soft seat-316 trim - PEEK seats
801	2	2	GA-E-67699	Ball-Stem Extension-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW	CL2500	Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats



		ОВ <b>2243</b>								
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						Rev.				
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VALV	/ALVES											
pos.	Si: from	e to	Data Sheet	Item Description	Ends	Rating/Facing	Material					
840	2	2	GA-E-67641	Ball-Top entry-FB-Trunnion ball + Pup Pieces - API6D - Interlock System	BW		Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats					
907	2	10	GA-E-69068	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces - API6D	BW		Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats					
917	2	10	GA-E-69069	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD		Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats					

STRA	INERS						
pos.	from S	ize to	Data Sheet	Item Description	Ends	Rating/Facing	Material
1	2	2	GA-E-60643	Y Strainer - Bolted cover - ASME-B16.34	FLGD		Body :ASTM A105 Normalized Screen: 316 - PERF.PLATE - 18 Holes/Cm2

#### **BRANCH TABLES**

RunSize									90 Degrees
1	т								
1 1/2	Ť	Т							
2	Ť	Ť	Т						
3	W	W	W	Т					
4	W	W	W	Т	Т				
6	W	W	W	W	Т	Т			
8	W		W	W	W	Т	Т		
10	W	W	W	W	W	W	Т	Т	
BranchSiz	<b>e</b> 1	1 1/2	2	3	4	6	8	10	
ĺ									
Legenda									
T TE	E - A	SME-E	316.9	)					
W WE	ELDC	LET -	MSS	S-SP9	97				

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	2	5C	B10	05	
						Rev.		
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			<u> </u>										
Base	Material	: C/	ARBON STEEL	·	Design cod	le	:ASME B 31.	.3 2016	)				
	Rating		_2500		PWHT		: AS PER CO	DE (N	OTE 1)				
Facing	g/Finishi	ng:RJ	I (F)		Valve Trim		:12 - SS316/	ΉF					
Corro	sion Allo	w. : 1.5	mm		Welding Sp	ec :	: MZ-000-CC	X-MC-S	SPC-00009/00013				
Temp.	. Limit	: -2	29 °C to 70 °C										
Servi	ce: MEG -	Monoet	thylene Glycol (UG)										
	hickness												
NPS Thk.mm SCH.		1/2 2 0.15 11. XS XX	.07										
	Thickness		<b>'</b>										
NPS Thk.mm SCH.	9.09 10	1/2 2 0.15 11. XS XX	07										
			TURE Ratings										
NPS 1 ·			385 70										
opt.	Size from	e to	Item Description			Ends	Rating	/Facing	Material				
PIPE									1				
	1	2	PIPE			BW			ASTM A106 GR.B - SMLS - EXT	ERNAL FBE	COATE	.D	
FLAN	GES												
	1	2	WN FLANGE - ASN			BW			ASTM A105 Normalized - EXTER				
FITTIN	1	2	BLIND FLANGE - A	ASME-B16.5			CL2500	) RJ (F)	ASTM A105 Normalized - EXTER	NAL FBE C	DATED		
FII I II	1	2	LONG BADILIS ELS	BOW - ASME-B16.9		BW			ASTM A234 WPB - SMLS - EXTE	EDNIAL EDE	COATE	<u> </u>	
	1	2	REDUCER - ASME			BW			ASTM A234 WPB - SMLS - EXTE				
	1	2	CAP - ASME-B16.9			BW			ASTM A234 WPB - SMLS - EXTE				
	1	1 1/2		RND HEAD - ASME-B16.11		THDN	и		ASTM A105 Normalized - EXTER				
	1	2	TEE - ASME-B16.9			BW			ASTM A234 WPB - SMLS - EXTE	ERNAL FBE	COATE	D	
	1	2	WELDOLET - MSS	-SP97		BW			ASTM A105 Normalized - EXTER	NAL FBE C	DATED		
MISC	ELLANEC		l				la						
GASK	1	2	KIT FOR INSULATI	ING FLANGE - ASME-B16.5			CL2500	) RJ (F)	GRE LAMINATED + TFE (MAX T	180 C)			
	1	2	OCTAGONAL RJ G	GASKET - ASME-B16.20					SOFT IRON				
BOLT	3/4	4	ST.BOLT+2 NUTS	- ANSI Thdd - TB BUL 5368					ASTM A193 B7 + ASTM A194 GI	R.2H (HotDir	153)		
VALV													
VALV	ES Siz	νο.	Data Sheet	Item Description	le.	nds	Rating/Facing	Mar	terial				
pos.	from	to	Data Sneet	item bescription		ius	Rating/Facing	j Ivia	.eriai				

BRANCH TABLES
---------------

RunS	90 Degrees ize
	1 T
1 1/2	2 T T
	2 T T T
Branch	nSize 1 11/2 2
Legend	ta
Т	TEE - ASME-B16.9
W	WELDOLET - MSS-SP97

#### GENERAL NOTES

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
  2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.
  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).
  4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.
  5) Buried Carbon Steel piping shall be FBE external coated in accordance with Specification MZ-000-CCX-MC-SPC-00004 \_External Coating for Buried Pipeline and Piping Components-FBE and FJC



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Pipi	ng C	Class	s:	2	5CI	B10	)40	
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 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.8-2018

 Nom. Rating
 : CL2500
 PWHT
 : AS PER CODE

 Facing/Finishing
 : RJ (F)
 Valve Trim
 : 12 - SS316/HF

 Corrosion Allow
 : 1.5 mm
 Welding Spec
 : MZ-010-CCX-MC-SPC-00001

Corrosion Allow.: 1.5 mm

Temp. Limit : -29 °C to 70 °C

Service: [ASME B31.8] Service line 8" NG - Natural Gas - (Aboveground)

Pipe Thickness

NPS 1 1 11/2 2 3 4 6 8 Thk.mm 6.35 7.14 8.74 11.13 11.13 14.27 18.26 SCH. 160 160 160 160 120 120 120

Nipple Thickness

NPS 1 1 1/2 2 Thk.mm 6.35 7.14 8.74 SCH. 160 160 160

PRESSURE - TEMPERATURE Ratings

 NPS
 Press. bar
 385

 1
 8
 Temp. °C
 70

1 .	8 Temp	i. C	70			
opt.	Si: from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1	6	PIPE	BW		API 5L GR.X65 PSL2 - SMLS
	8	8	PIPE	BW		API 5L GR.X65 PSL2 - SMLS
FLAN	IGES					
	1	8	WN FLANGE - ASME-B16.5	BW	CL2500 RJ (F)	ASTM A694 F65
	1	8	BLIND FLANGE - ASME-B16.5		CL2500 RJ (F)	ASTM A694 F65
SPEC	TACLE	BLIND				
	1	1 1/2	SPECTACLE BLIND - ASME-B16.48 GA-E-060011			ASTM A516 GR.70 + S5 (-46°C)
	2	8	BLIND & SPACER - ASME-B16.48 GA-E-060011		CL2500 RJ (F)	ASTM A515 GR.70
FITTI	NGS					
	1	8	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS
2	8	8	HOT INDUCTION BENDS - ASME B16.49	BW		API 5L GR.X65 PSL2 - SMLS
	1 1/2	8	REDUCER - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS
	1	8	CAP - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS
	1	1	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A694 F65
	1 1/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A860 WPHY65 - SMLS
	1	6	TEE - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS
	8	8	TEE - BW BARRED TYPE - <mfr std=""></mfr>	BW		ASTM A860 WPHY65 - SMLS
	8	8	TEE - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS
	1	4	WELDOLET - MSS-SP97	BW		ASTM A694 F65
GAS	KETS					
	1	8	OCTAGONAL RJ GASKET - ASME-B16.20		<u> </u>	SOFT IRON
BOL <sup>1</sup>						
	3/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

	Si	ze	Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from	to	Data Gricci	nem bescription	Liido	rtating/r doing	material
1	2	8	GA-E-67339	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL2500	Body: ASTM A216 WCB
							Trim: 316 / HF
4	2	4	GA-E-67402	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL2500	Body: ASTM A216 WCB
							Trim: 316 / HF
8	1	1 1/2	GA-E-67280	Ball-Side entry -FB-Float.ball -Frgd body+nipples	BW	CL2500	Body: ASTM A105 Normalized
				- ASME-B16.34			Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.
8	2	2	GA-E-67194	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL2500	Body: ASTM A216 WCB
				API6D			Trim: Metal seat-316+W CARB. trim-(XM-19 stem)-GRAPH.
8	8	8	GA-E-67193	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL2500	Body: ASTM A216 WCB
				ASME-B16.34			Trim: Metal seat-316+W CARB. trim-(XM-19 stem)-GRAPH.
10	1	1 1/2	GA-E-67331	Gate-WB-FB-Solid wdg-Exp.seat - ASME-B16.34	BW/TH	CL2500	Body: ASTM A105 Normalized
					DF		Trim: 316 / HF
11	2	2	GA-E-67329	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL2500 RJ (F)	Body: ASTM A216 WCB
							Trim: 316 / HF
101	2	4	GA-E-67071	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL2500	Body: ASTM A216 WCB
				- ASME-B16.34			Trim: 316 / HF
140	2	4	GA-E-67706	Gate-PS-FB-Flex wdg-Wldd seat - ASME-	BW	CL2500	Body: ASTM A216 WCB
				B16.34 - Interlock System			Trim: 316 / HF
801	2	2	GA-E-67234	Ball-Stem Extension-Top entry-FB-Trunnion ball +	BW	CL2500	Body: ASTM A216 WCB
				Pup Pieces - API6D			Trim: Metal seat-316+W CARB. trim-(XM-19 stem)-GRAPH.
972	2	8	GA-E-69037	Ball-Top entry-Red.B-Trunnion ball+Pup Pieces -	BW	CL2500	Body: ASTM A216 WCB
				API6D			Trim: Metal seat-316+W CARB. trim-(XM-19 stem)-GRAPH.
974	2	8	GA-E-69038	Ball-Split body-Red.B-Trunnion ball - API6D	FLGD	CL2500 RJ (F)	
							Trim : Soft seat-316 trim - PEEK seats
981	8	8	GA-E-69070	Ball-Stem Extension-Split body-FB-Trunnion ball -	FLGD	CL2500 RJ (F)	Body: ASTM A216 WCB
				API6D			Trim : Soft seat-316 trim - PEEK seats



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						Rev.		
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#### BRANCH TABLES

									90 Degrees
RunSi	ze								
1		Т							
1 1/2		Т	Т						
2		Т	Т	Т					
3		W	W	W	Т				
4		W	W	W	Т	Т			
6		W	W	W	W	Т	Т		
8		W	W	W	W	W	TP	TP	
Branch	Size	1	1 1/2	2	3	4	6	8	
Legenda	а								
T	TEE	- AS	ME-E	16.9					
TP	TEE	- AS	ME-E	16.9					
W	WEL	DOL	ET -	MSS	-SP9	97			

#### GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

  2) Pipes wall Thickness have been calculated in accordance with ASME B31.8 considering Design Factor=0.6

  3) Linepipe shall be in accordance with Specification MZ-010-CCX-PL-SPC-00005 Onshore Linepipe Specification

  4) Hot induction Bends shall be in accordance with Specification MZ-010-CCX-PL-SPC-00006 Onshore Pipelines Hot Induction Bend

  5) Barred Tee shall be in accordance with Specification MZ-010-CCX-PL-SPC-00007 Onshore Pipelines Barred Tee

  6) Pipeline Fittings and Flanges shall be in accordance with Specification MZ-010-CCX-PL-SPC-00009 Onshore Pipelines Fittings

  7) Monolithic Insulation Joints shall be in accordance with Specification MZ-010-CCX-PL-SPC-0008 Onshore Pipelines Monolithic Insulation Joint



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Pipi	ng C	Class	s:	2	5CI	B4C	01	
						Rev.		
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Design code : ASME B 31.3 2016 Base Material : CARBON STEEL Nom. Rating : CL2500 : AS PER CODE (NOTE 1) **PWHT** Facing/Finishing : RJ (F) Valve Trim :12 - SS316/HF Corrosion Allow. : 6 mm Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

Temp. Limit : -29 °C to 70 °C

Service: NG - Natural Gas

Pipe Thickness

NPS Thk.mm 16 20 32 SCH.

Nipple Thickness

NPS Thk.mm SCH.

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 385

opt.	Size t. from to		Item Description	Ends	Rating/Facing	Material				
PIPE										
	2	6	PIPE	BW		ASTM A333 GR.6 - SMLS				
LAN	IGES									
	2	6	WN FLANGE - ASME-B16.5	BW	CL2500 RJ (F)	ASTM A105 Normalized				
	2	6	BLIND FLANGE - ASME-B16.5		CL2500 RJ (F)	ASTM A105 Normalized				
SPEC	TACLE	BLIND								
	2	6	BLIND & SPACER - ASME-B16.48		CL2500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)				
ITTI	NGS									
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS				
	3	6	REDUCER - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS				
	2	6	CAP - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS				
	2	2	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS				
	3	6	TEE - ASME-B16.9	BW		ASTM A420 WPL6 - SMLS				
	2	2	WELDOLET - MSS-SP97	BW		ASTM A350 LF2 - CL.1				
	3	6	WELDOLET - MSS-SP97	BW		ASTM A350 LF2 - CL.1				
<b>VIISC</b>	ELLANE	OUS								
	2	6	KIT FOR INSULATING FLANGE - ASME-B16.5		CL2500 RJ (F)	GRE LAMINATED + TFE (MAX T 180 C)				
SASI	KETS									
	2	6	OCTAGONAL RJ GASKET - ASME-B16.20			AISI 316				
BOLT	ΓS									
	3/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)				

VALV	/ALVES									
pos.	pos. from to		Data Sheet	Item Description		Rating/Facing	Material			
11	2	2	GA-E-67330	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD		Body: ASTM A216 WCB Trim : 316 / HF			
101	2	2	GA-E-67712	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW		Body: ASTM A216 WCB Trim: 316 / HF			
801	2	2	GA-E-67900	Ball-Stem Extension-Top entry-FB-Trunnion ball + Pup Pieces - API6D	BW		Body: ASTM A216 WCB Trim : Soft seat-316 trim - PEEK seats			

#### **BRANCH TABLES**

RunSiz	e					90 Degrees	
2 3	٠	T V	т				
4	١	٧	Ť	T	_		
6 BranchS				T ⊿			
		_	Ü	-	O		
Legenda							
T	TEE -	ASI	иЕ-Е	316.9			
W۱	WELDOLET - MSS-SP97						

#### **GENERAL NOTES**

- 1) PWHT requirements shall be in accordance with specification MZ-000-CCX-MC-SPC-00013.
- 2) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

  3) The use of Soft-seated Ball Valves shall be limited up to Op. Temp. 148°C (Des. Temp. shall not exced 200°C).



		DB <b>243</b>						
Pipi	ng C	lass	s:	2	5CI	34C	01	
						Rev.		
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4) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010.



	-	ов <b>2243</b>						
Pipi	ng (	Class	s:	2	5CI	B4C	)41	
						Rev.		
Sh.	1	of	2	Α	0	1		

Design code : ASME B 31.8-2018 Base Material : CARBON STEEL Nom. Rating : CL2500 PWHT : AS PER CODE Facing/Finishing : RJ (F) Valve Trim :12 - SS316/HF Welding Spec : MZ-010-CCX-MC-SPC-00001

Corrosion Allow. : 6 mm Temp. Limit : -29 °C to 70 °C

Service: [ASME B31.8] NG - Natural Gas - (Aboveground)

Pipe Thickness

NPS 1 11/2 2 3 4 6 8 10 12 16 22 24 Thk.mm 9.09 10.15 11.07 15.24 17.12 18.26 22.23 28.58 31.75 36.53 47.63 52.37 SCH. XXS XXS XXS XXS XXS XXS 160 XXS 160 140 140 140

Nipple Thickness

NPS 1 1 1/2 2 Thk.mm 9.09 10.15 11.07 SCH. XXS XXS XXS

opt.	Size ot. from to		Item Description	Ends	Rating/Facing	Material
PIPE						
	1	16	PIPE	BW		API 5L GR.X65 PSL2 - SMLS
	18	20	PIPE	BW		API 5L GR.X65 PSL2 - SAW
	22	24	PIPE	BW		API 5L GR.X65 PSL2 - SAW
FLAN	IGES					
	1	12	WN FLANGE - ASME-B16.5	BW	CL2500 RJ (F)	ASTM A694 F65
	24	24	SPECIAL WN FLANGE - <mfr std=""></mfr>	BW	CL2500 RJ (F)	ASTM A694 F65
	1	12	BLIND FLANGE - ASME-B16.5		CL2500 RJ (F)	ASTM A694 F65
SPEC	TACLE	BLIND				
	1	1 1/2	SPECTACLE BLIND - ASME-B16.48 GA-E-060011		CL2500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
	2	12	BLIND & SPACER - ASME-B16.48 GA-E-060011		CL2500 RJ (F)	ASTM A516 GR.70 + S5 (-46°C)
FITTI	NGS					
	2	2	DRIP-RING - TB DRI 5011		CL2500 RJ (F)	ASTM A694 F65
	1	12	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS
	24	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A860 WPHY65 - WLDD
2	24	24	HOT INDUCTION BENDS - ASME B16.49	BW		API 5L GR.X65 PSL2 - SAW
	1 1/2	16	REDUCER - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS
	22	24	REDUCER - ASME-B16.9	BW		ASTM A860 WPHY65 - WLDD
	1	12	CAP - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS
	1	1	THD MALE PLUG - RND HEAD - ASME-B16.11	THDM		ASTM A694 F65
	1	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A860 WPHY65 - SMLS
	1	16	TEE - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS
	22	24	TEE - ASME-B16.9	BW		ASTM A860 WPHY65 - WLDD
	24	24	TEE - BW BARRED TYPE - <mfr std=""></mfr>	BW		ASTM A860 WPHY65 - WLDD
	1	8	WELDOLET - MSS-SP97	BW		ASTM A694 F65
GAS	KETS					
	1	12	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
	14	24	OCTAGONAL RJ GASKET - <mfr std=""></mfr>			SOFT IRON
BOL	rs					
	3/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)

ALVES										
	Si		Data Sheet	Item Description	Ends	Rating/Facing	Material			
pos.	from	to								
1	2	8	GA-E-67020	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	BW	CL2500	Body: ASTM A216 WCB			
							Trim: 316 / HF			
4	2	2	GA-E-60286	Globe-PS-Disk-Integral seat - ASME-B16.34	BW	CL2500	Body: ASTM A216 WCB			
							Trim: 316 / HF			
8	1	1 1/2	GA-E-67285	Ball-Side entry -FB-Float.ball -Frgd body+nipples	BW	CL2500	Body: ASTM A105 Normalized			
				- ASME-B16.34			Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.			
8	2	2	GA-E-67150	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL2500	Body: ASTM A216 WCB			
				API6D			Trim : Metal seat-316+W CARB. trim-(XM-19 stem)-GRAPH.			
8	24	24	GA-E-67151	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL2500	Body: ASTM A216 WCB			
				ASME-B16.34			Trim : Metal seat-316+W CARB. trim-(XM-19 stem)-GRAPH.			
10	1	1 1/2	GA-E-67332	Gate-WB-FB-Solid wdg-Exp.seat - ASME-B16.34	BW/TH	CL2500	Body: ASTM A105 Normalized			
					DF		Trim: 316 / HF			
11	2	2	GA-E-67330	Gate-PS-FB-Flex wdg-Wldd seat - ASME-B16.34	FLGD	CL2500 RJ (F)	Body: ASTM A216 WCB			
							Trim: 316 / HF			
101	2	8	GA-E-67072	Gate-Stem Extension-PS-FB-Flex wdg-Wldd seat	BW	CL2500	Body: ASTM A216 WCB			
				- ASME-B16.34			Trim: 316 / HF			
401	2	2	GA-E-60293	Globe-Stem Extension-PS-Disk-Integral seat -	BW	CL2500	Body: ASTM A216 WCB			
				ASME-B16.34			Trim : 316 / HF			
801	2	2	GA-E-67235	Ball-Stem Extension-Top entry-FB-Trunnion ball +	BW	CL2500	Body: ASTM A216 WCB			
				Pup Pieces - API6D			Trim : Metal seat-316+W CARB. trim-(XM-19 stem)-GRAPH.			
908	2	12	GA-E-69039	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL2500	Body: ASTM A216 WCB			
				API6D			Trim : Metal seat-316+W CARB. trim-(XM-19 stem)-GRAPH.			
908	14	24	GA-E-69041	Ball-Top entry-FB-Trunnion ball + Pup Pieces -	BW	CL2500	Body: ASTM A216 WCB			
				ASME-B16.34			Trim : Metal seat-316+W CARB. trim-(XM-19 stem)-GRAPH.			
918	2	12	GA-E-69040	Ball-Split body-FB-Trunnion ball - ASME-B16.34	FLGD	CL2500 RJ (F)	Body: ASTM A216 WCB			
1				, ,			Trim : Soft seat-316 trim - PEEK seats			
918	14	24	GA-E-69042	Ball-Top entry-FB-Trunnion ball - ASME-B16.34	FLGD	CL2500 RJ (F)	Body: ASTM A216 WCB			
1							Trim : Soft seat-316 trim - PEEK seats			



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	2	5C	B40	)41	
						Rev.		
Sh.	2	of	2	Α	0	1		

B	ΚAΓ	NCH	IAB	LES

												90 Degrees	
RunSize													
1	Т												
1 1/2	Т	Т											
2	Т	Т	Τ										
3	W	W	W	Т									
4	W	W	W	Т	Т								
6	W	W	W	W	Т	Т							
8	W	W	W	W	W	Т	Т						
10	W	W	W	W	W	W	Т	Т					
12	W	W	W	W	W	W	W	Т	Τ				
16	W	W	W	W	W	W	W	Т	Т	Τ			
22	W	W	W	W	W	W	W	Т	Т	Т	Т		
24	W	W	W	W	W	W	W	Т	Τ	Τ	Τ		
BranchSize	1	1 1/2	2	3	4	6	8	10	12	16	22		
Legenda													
T TEE	- AS	ME-E	16.9										
W WE	DOI	FT -	MSS	-SP9	7								

# GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

  2) Pipes wall Thickness have been calculated in accordance with ASME B31.8 considering Design Factor=0.6

  3) Linepipe shall be in accordance with Specification MZ-010-CCX-PL-SPC-00005 Onshore Linepipe Specification

  4) Hot induction Bends shall be in accordance with Specification MZ-010-CCX-PL-SPC-00006 Onshore Pipelines Hot Induction Bend

  5) Barred Tee enable be in accordance with Specification MZ-010-CCX-PL-SPC-00009 Onshore Pipelines Fittings

  7) Monolithic Insulation Joints shall be in accordance with Specification MZ-010-CCX-PL-SPC-0008 Onshore Pipelines Monolithic Insulation Joint



	-	ов <b>2243</b>						
Pipi	ng (	Class	s:	2	5CI	B4C	)49	
						Rev.		
Sh.	1	of	2	Α	0	1		

Design code : ASME B 31.8-2018 Base Material : CARBON STEEL Nom. Rating : CL2500 **PWHT** : AS PER CODE Facing/Finishing: RJ (F) Valve Trim :12 - SS316/HF Corrosion Allow. : 6 mm Welding Spec : MZ-010-CCX-MC-SPC-00001

Temp. Limit : -29 °C to 70 °C

Service: [ASME B31.8] NG - Natural Gas - (Underground)

Pipe Thickness

1 11/2 2 22 24 9.09 10.15 11.07 47.63 52.37 NPS Thk.mm SCH. XXS XXS XXS 140 140

Nipple Thickness

NPS 1 1 1/2 2 Thk.mm 9.09 10.15 11.07 SCH. XXS XXS XXS

opt.	Siz from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1	16	PIPE	BW		API 5L GR.X65 PSL2 - SMLS
	18	20	PIPE	BW		API 5L GR.X65 PSL2 - SAW
	22 24		PIPE	BW	API 5L GR.X65 PSL2 - SAW - EXTERNAL FBE	
FLAN	LANGES					
	1	2	WN FLANGE - ASME-B16.5	BW	CL2500 RJ (F)	ASTM A694 F65
	24	24	SPECIAL WN FLANGE - <mfr std=""></mfr>	BW	CL2500 RJ (F)	ASTM A694 F65
	1	2	BLIND FLANGE - ASME-B16.5		CL2500 RJ (F)	ASTM A694 F65
FITTI	NGS					
	1	2	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS
	24	24	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A860 WPHY65 - WLDD
2	24	24	HOT INDUCTION BENDS - ASME B16.49	BW		API 5L GR.X65 PSL2 - SAW - EXTERNAL FBE COATED
	1 1/2	2	REDUCER - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS
	22	24	REDUCER - ASME-B16.9	BW		ASTM A860 WPHY65 - WLDD
	1	2	CAP - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS
	1	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A860 WPHY65 - SMLS
	1	2	TEE - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS
	22	24	TEE - ASME-B16.9	BW		ASTM A860 WPHY65 - WLDD
	24	24	TEE - BW BARRED TYPE - <mfr std=""></mfr>	BW		ASTM A860 WPHY65 - WLDD
	1	2	WELDOLET - MSS-SP97	BW		ASTM A694 F65
GASE	KETS					
	1	2	OCTAGONAL RJ GASKET - ASME-B16.20			SOFT IRON
	24	24	OCTAGONAL RJ GASKET - <mfr std=""></mfr>			SOFT IRON
BOL <sub>1</sub>	ΓS					
	3/4	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

90 Degrees

VALVES

	Size		Data Sheet	Item Description	Ends	Rating/Facing	Material
pos.	from   t	to		•		J 3 3 3 3	

## **BRANCH TABLES**

RunSize W W W 22 24 1 11/2 2

Legenda

TEE - ASME-B16.9 WELDOLET - MSS-SP97

GENERAL NOTES



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	2	5C	B40	)49	
						Rev.		
Sh.	2	of	2	Α	0	1		

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

  2) Pipes wall Thickness have been calculated in accordance with ASME B31.8 considering Design Factor=0.6

  3) Linepipe shall be in accordance with Specification MZ-010-CCX-PL-SPC-00005 Onshore Linepipe Specification

  4) Hot induction Bends shall be in accordance with Specification MZ-010-CCX-PL-SPC-00006 Onshore Pipelines Hot Induction Bend

  5) Barred Tee shall be in accordance with Specification MZ-010-CCX-PL-SPC-00007 Onshore Pipelines Barred Tee

  6) Pipeline Fittings and Flanges shall be in accordance with Specification MZ-010-CCX-PL-SPC-00009 Onshore Pipelines Fittings

  7) Monolithic Insulation Joints shall be in accordance with Specification MZ-010-CCX-PL-SPC-0008 Onshore Pipelines Monolithic Insulation Joint

  8) Buried Carbon Steel piping shall be FBE external coated in accordance with Specification MZ-000-CCX-MC-SPC-00004 \_External Coating for Buried Pipeline and Piping Components-FBE and FLIC



**PWHT** 

Valve Trim

:12 - SS316/HF

Welding Spec: MZ-000-CCX-MC-SPC-00009/00013

		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	4	<b>15</b> S	A0E	01	
						Rev.		
Sh.	1	of	1	Α	0			

Base Material : STAINLESS STEEL 304/304L DUAL GRADE Design code : ASME B 31.3 2016

Nom. Rating : CL5000 Facing/Finishing : RJ (F)

Corrosion Allow. : 0 mm

Temp. Limit : -130 °C to 70 °C

Service: NG - Natural Gas

Pipe Thickness

NPS 2 3 4 6 Thk.mm 8.74 15.24 17.12 25 SCH.

Nipple Thickness

NPS 2
Thk.mm 8.74
SCH.

PRESSURE - TEMPERATURE Ratings

 PIPE NOMINALSIZE
 2
 3
 4
 6

 FLANGE SIZE
 2 1/16
 2 9/16
 3 1/8
 5 1/8

FLAN	-LANGE SIZE   2 1/16   2 9/16   3 1/8   5 1/8										
	Siz	ze	Item Description	Ends	Rating/Facing	Material					
opt.	from	to	•								
PIPE											
	2	6	PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS					
FLAN	IGES										
	2 1/16	5 1/8	WN FLANGE (API 6B/6BX) - API6A	BW	CL5000 RJ (F)	ASTM A182 F304/304L DUAL GRADE					
	2 1/16	5 1/8	BLIND FLANGE (API 6B/6BX) - API6A		CL5000 RJ (F)	ASTM A182 F304/304L DUAL GRADE					
SPEC	TACLE	BLIND									
	2 1/16	2 1/16	PADDLE BLANK & SPACER - API6A		CL5000 RJ (F)	ASTM A182 F304/304L DUAL GRADE					
FITTI	NGS										
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS					
	2	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS					
	2	6	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS					
	2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS					
	2	2	SWEEPOLET - TB RAC 5003	BW		ASTM A182 F304/304L DUAL GRADE					
GASE	KETS										
	2 1/16	5 1/8	RJ GASKET - RX TYPE - API6A			AISI 304					
BOL <sub>1</sub>											
	1/4	1 1/2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 B8 CL.2 + ASTM A194 GR.8					

VALVES Size from to Data Sheet Item Description Ends Rating/Facing Material pos. 2 1/16 GA-E-67707 Gate-Thr conduit-BB-FB-Mfr.seat - API6A CL5000 RJ (F) Body: ASTM A182 F304/304L DUAL GRADE 101 2 1/16 FLGD Trim : 316 / HF 401 2 1/16 2 1/16 GA-E-67515 Globe-Stem Extension-BB-Red.B-Int.seat FLGD CL5000 RJ (F) Body: ASTM A182 F304/304L DUAL GRADE API6A Trim : 316 / HF CL5000 RJ (F) Body: ASTM A182 F304/304L DUAL GRADE 2 1/16 2 1/16 GA-E-67642 Ball-Stem Extension-Split body-FB-Trunnion ball -FLGD 801 API6A Trim: Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

# **BRANCH TABLES**

RunSiz	Φ.				90 Degrees		
- Kulloiz						- 1	
2	7	Γ					
3	7	ΓТ	Γ				
4	7	ΓТ	Γ	Т			
6	5	3 7	Γ	Т	Г		
BranchS	Size	2	3	4	6		
Legenda							
S S	SWEE	POLI	ET -	- TB	RAC 5003		
SM S	M SPECIAL SWEEPOLET - <mfr std=""></mfr>						
Т	TFF -	ASMI	=-R1	6.9			

# GENERAL NOTES

1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

2) NDE Examination shall be performed in accordance with specification MZ-000-CCX-MC-SPC-00010



**PWHT** 

Valve Trim

: 12 - SS316/HF

Welding Spec: MZ-010-CCX-MC-SPC-00001

	-	ов <b>2243</b>						
Pipi	ng (	Class	s:	4	<b>5</b> S	A0E	40	
						Rev.		
Sh.	1	of	1	Α	0			

:ASME B 31.8-2018 Base Material : STAINLESS STEEL 304/304L DUAL GRADE Design code

Nom. Rating : CL5000 Facing/Finishing: RJ (F)

Corrosion Allow. : 0 mm

Temp. Limit : -130 °C to 70 °C

Service: [ASME B31.8] NG - Natural Gas - (Aboveground)

Pipe Thickness NPS Thk.mm 3 2 3 11.07 15.24 18 SCH. XXS XXS

Nipple Thickness NPS Thk.mm 11.07 SCH. XXS

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 385 2 · 6 Temp. °C 70

PIPE NOMINALSIZE FLANGE SIZE 2 1/16 | 2 9/16 | 3 1/8 | 5 1/8

opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	2 6		PIPE	BW		ASTM A312 TP304/TP304L DUAL GRADE - SMLS
FLAN	IGES					
	2 1/16	5 1/8	WN FLANGE (API 6B/6BX) - API6A	BW	CL5000 RJ (F)	ASTM A182 F304/304L DUAL GRADE
	2 1/16	5 1/8	BLIND FLANGE (API 6B/6BX) - API6A		CL5000 RJ (F)	ASTM A182 F304/304L DUAL GRADE
FITTI	NGS					
	2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	3	6	REDUCER - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	2	6	CAP - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	2	6	TEE - ASME-B16.9	BW		ASTM A403 WP304S/304LS DUAL GRADE - SMLS
	2	2	SWEEPOLET - TB RAC 5003	BW		ASTM A182 F304/304L DUAL GRADE
GAS	KETS					
	2 1/16	5 1/8	RJ GASKET - RX TYPE - API6A			AISI 304
BOL <sub>1</sub>	ΓS					
	1/4 1 1/2		ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A320 B8 CL.2 + ASTM A194 GR.8

VALVES Size from | to Data Sheet Item Description Ends Rating/Facing Material GA-E-67411 Globe-BB-Red.B-Int.seat - API6A CL5000 RJ (F) Body: ASTM A182 F304/304L DUAL GRADE 2 1/16 2 1/16 FLGD Trim: 316 / HF

### **BRANCH TABLES**

RunS	90 Degrees Size
	2 T
;	3 T T
	4 T T T
	6 LTTT
Branc	hSize 2 3 4 6
Legend	da
L	SWEEPOLET - TB RAC 5003
LM	SPECIAL SWEEPOLET - <mfr std=""></mfr>
Т	TEE - ASME-B16.9

## GENERAL NOTES

- 1) Threaded joints are permitted only at the outlet of vent and drain valves, hydrostatic connections, instrument connections, and to match equipment.

  2) Pipes wall Thickness have been calculated in accordance with ASME B31.8 considering Design Factor=0.6
- 3) Linepipe shall be in accordance with Specification MZ-010-CCX-PL-SPC-00005 Onshore Linepipe Specification 4) Hot induction Bends shall be in accordance with Specification MZ-010-CCX-PL-SPC-00006 Onshore Pipelines Hot Induction Bend

- 5) Barred Tee shall be in accordance with Specification MZ-010-CCX-PL-SPC-00007 Onshore Pipelines Barred Tee
  6) Pipeline Fittings and Flanges shall be in accordance with Specification MZ-010-CCX-PL-SPC-00009 Onshore Pipelines Fittings
  7) Monolithic Insulation Joints shall be in accordance with Specification MZ-010-CCX-PL-SPC-0008 Onshore Pipelines Monolithic Insulation Joint



		ов <b>2243</b>						
Pipi	ng C	Class	s:	8	OC	B1E	01	
						Rev.		
Sh.	1	of	1	Α	0			

Base Material : CARBON STEEL Design code : ASME B 31.3 sect. K 2016

 Nom. Rating
 : CL10000
 PWHT
 : AS PER CODE

 Facing/Finishing
 : RJ (F)
 Valve Trim
 : 12 - SS316/HF

 Corrosion Allow. : 1.5 mm
 Welding Spec : MZ-000-CCX-MC-SPC-00009/00013

 Temp. Limit : -29 °C to 70 °C

Service: MEG - Monoethylene Glycol

Pipe Thickness

NPS 2 3 4 6 8 Thk.mm 14 20 25 35.2 45.3 SCH.

Nipple Thickness

NPS Thk.mm SCH.

PRESSURE - TEMPERATURE Ratings

 NPS
 Press. bar
 690

 2 · 8
 Temp. °C
 70

 PIPE NOMINALSIZE
 2
 3
 4
 6
 8

 FLANGE SIZE
 1 13/16 | 1 13/16 | 2 9/16 | 4 1/16 | 5 1/8 |

FLAN	FLANGE SIZE   1 13/10   1 13/10   2 9/10   4 1/10   3 1/0											
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material						
PIPE												
	2	8	PIPE	BW		API 5L GR.X65 PSL2 - SMLS						
FLAN	IGES											
	1 13/16	5 1/8	WN FLANGE (API 6B/6BX) - API6A	BW	CL10000 RJ (F)	ASTM A694 F65						
FITTI	NGS											
	2	8	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS						
	3	8	REDUCER - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS						
	2	8	CAP - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS						
	2	8	TEE - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS						
	2	3	SWEEPOLET - TB RAC 5003	BW		ASTM A694 F65						
GASI	KETS											
	1 13/16	5 1/8	RJ GASKET - BX TYPE - API6A			SOFT IRON						
BOL.	TS											
	1/2	4	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153)						

VALV	ALVES													
	Size		Data Sheet	Item Description	Ends	Rating/Facing	Material							
pos.	from	to		·										
1	1 13/16	5 1/8	GA-E-67057	Gate-Thr conduit-BB-FB-Mfr.seat - API6A	FLGD	CL10000 RJ	Body: ASTM A694 F65							
						(F)	Trim : 316 / HF							
8	1 13/16	5 1/8	GA-E-67187	Ball-Top entry-FB-Trunnion ball - API6A	FLGD		Body: ASTM A694 F65							
						(F)	Trim: Metal seat-316+W CARB. trim-(XM-19 stem)-GRAPH.							
972	1 13/16	5 1/8	GA-E-69071	Ball-Top entry-RB-Trunnion ball - API6A	FLGD	CL10000 RJ	Body: ASTM A694 F65							
						(F)	Trim: Metal seat-316+W CARB. trim-(XM-19 stem)-GRAPH.							

# BRANCH TABLES

							90 Degrees
RunSiz	ze						•
2		Т					
3		Т	Т				
4		Т	Т	Т			
6		L	Т	Т	Т		
8		L	L	Т	Т	Т	
Branch	Size	2	3	4	6	8	
Legenda	<b>a</b>						
L	SWE	EPC	LET	- TB	RAC	C 5003	13
Т	TEE	- AS	ME-E	316.9			

## GENERAL NOTES



	-	ов <b>2243</b>						
Pipi	ng C	Class	s:	8	OCI	B1E	40	
						Rev.		
Sh.	1	of	2	Α	0			

 Base Material
 : CARBON STEEL
 Design code
 : ASME B 31.4 2012

 Nom. Rating
 : CL10000
 PWHT
 : AS PER CODE

 Facing/Finishing
 : RJ (F)
 Valve Trim
 : 12 - SS316/HF

 Corrosion Allow
 : 1.5 mm
 Welding Spec
 : MZ-010-CCX-MC-SPC-00001

Temp. Limit : -29 °C to 70 °C

Service: [ASME B31.4] NG - Natural Gas - (Aboveground) MEG - Monoethylene Glycol - (Aboveground)

Pipe Thickness

NPS 2 3 4 6 8 Thk.mm 11.07 15.24 17.12 21.95 25.4 SCH. XXS XXS XXS XXS

Nipple Thickness

NPS Thk.mm SCH.

PRESSURE - TEMPERATURE Ratings

 NPS
 Press. bar
 689.6

 2 · 8
 Temp. °C
 70

 PIPE NOMINALSIZE
 2
 3
 4
 6
 8

 FLANGE SIZE
 1 13/16
 2 9/16
 4 1/16
 5 1/8
 7 1/16

1 13/10 2 3/10 4 1/10 3 1/0 1 1/10											
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material					
PIPE											
	2	5	PIPE	BW		API 5L GR.X65 PSL2 - SMLS					
	6	8	PIPE	BW		API 5L GR.X65 PSL2 - SMLS					
FLAN	NGES										
	1 13/16	7 1/16	WN FLANGE (API 6B/6BX) - API6A	BW	CL10000 RJ (F)	ASTM A694 F65					
	1 13/16	7 1/16	BLIND FLANGE (API 6B/6BX) - API6A		CL10000 RJ (F)	ASTM A694 F65					
SPEC	CTACLE	BLIND									
	5 1/8	5 1/8	PADDLE BLANK & SPACER - API6A			ASTM A694 F65					
					(F)						
FITT	INGS										
	2	4	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS					
2	6	8	HOT INDUCTION BENDS - ASME B16.49	BW		API 5L GR.X65 PSL2 - SMLS					
	3	4	REDUCER - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS					
	6	8	REDUCER - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS					
	2	4	CAP - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS					
	2	2	TEE - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS					
	3	5	TEE - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS					
	6	8	TEE - BW BARRED TYPE - <mfr std=""></mfr>	BW		ASTM A860 WPHY65 - SMLS					
	6	8	TEE - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS					
	2	3	SWEEPOLET - TB RAC 5003	BW		ASTM A694 F65					
GAS	KETS										
	1 13/16	7 1/16	RJ GASKET - BX TYPE - API6A			SOFT IRON					
BOL'	TS										
	1/4	2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368							

<b>VALV</b>	ES						
pos.	Size from to		Data Sheet	Item Description		Rating/Facing	Material
1	1 13/16	5 1/8	GA-E-67334	Gate-Thr conduit-BB-FB-Mfr.seat - API6A	FLGD	CL10000 RJ (F)	Body: ASTM A694 F65 Trim : 316 / HF
8	1 13/16	7 1/16	GA-E-67281	Ball-Top entry-FB-Trunnion ball - API6A	FLGD	CL10000 RJ (F)	Body: ASTM A694 F65 Trim : Metal seat-316+W CARB. trim-(XM-19 stem)-GRAPH.
101	1 13/16	5 1/8	GA-E-67328	Gate-Stem Extension-Thr conduit-BB-FB-Mfr.seat - API6A	FLGD	CL10000 RJ (F)	Body: ASTM A694 F65 Trim : 316 / HF
801	1 13/16	7 1/16	GA-E-67230	Ball-Stem Extension-Top entry-FB-Trunnion ball - API6A	FLGD	CL10000 RJ (F)	Body: ASTM A694 F65 Trim : Metal seat-316+W CARB. trim-(XM19 stem)-GRAPH.

**BRANCH TABLES** 



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	8	OC	B1E	<b>40</b>	
						Rev.		
Sh.	2	of	2	Α	0			

	_									90 De	grees							
RunS	ize										_							
2	2	Τ																
3	3	Τ	Т															
4	1	Τ	Т	Т														
6	3	L	Т	Т	Т													
8	3	L	L	Т	Т	Т												
Branch	Size	2	3	4	6	8												
Legend	la																	
L	SWE	EPC	DLET	- TB	RAC	5003	 	 				 	 		 			
T	TEE	- AS	ME-E	316.9														

# GENERAL NOTES

- Pipes wall Thickness have been calculated in accordance with ASME B31.4 considering Design Factor=0.72
   Linepipe shall be in accordance with Specification MZ-010-CCX-PL-SPC-00005 Onshore Linepipe Specification
   Hot induction Bends shall be in accordance with Specification MZ-010-CCX-PL-SPC-00006 Onshore Pipelines Hot Induction Bend
   Barred Tee shall be in accordance with Specification MZ-010-CCX-PL-SPC-00007 Onshore Pipelines Barred Tee
   Pipeline Fittings and Flanges shall be in accordance with Specification MZ-010-CCX-PL-SPC-00009 Onshore Pipelines Fittings
   Monolithic Insulation Joints shall be in accordance with Specification MZ-010-CCX-PL-SPC-00008 Onshore Pipelines Monolithic Insulation Joint



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	8	OCI	B1E	49	
						Rev.		
Sh.	1	of	2	Α	0			

Base Material :ASME B 31.4 2012 : CARBON STEEL Design code Nom. Rating : CL10000 : AS PER CODE **PWHT** 

Facing/Finishing : RJ (F) Valve Trim

Corrosion Allow. : 1.5 mm Welding Spec: MZ-010-CCX-MC-SPC-00001

Temp. Limit : -29 °C to 70 °C

Service: [ASME B31.4] NG - Natural Gas (Underground) MEG - Monoethylene Glycol - (Underground)

Pipe Thickness

2 3 4 6 8 11.07 15.24 17.12 21.95 25.4 SCH. XXS XXS XXS XXS

Nipple Thickness

NPS Thk.mm SCH.

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 689.6 2 · 8 Temp. °C 70

PIPE NOMINALSIZE FLANGE SIZE

FLAN	GE SIZE		1 13/16   2 9/16   4 1/16   5 1/8   7 1/16						
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material			
PIPE									
	2	5	PIPE	BW		API 5L GR.X65 PSL2 - SMLS			
	6	8	PIPE	BW		API 5L GR.X65 PSL2 - SMLS - EXTERNAL FBE COATED			
FLAN	IGES								
	1 13/16	7 1/16	WN FLANGE (API 6B/6BX) - API6A		CL10000 RJ (F)	ASTM A694 F65			
FITTI	NGS								
2	6	8	HOT INDUCTION BENDS - ASME B16.49	BW		API 5L GR.X65 PSL2 - SMLS - EXTERNAL FBE COATED			
	3	4	REDUCER - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS			
	6	8	REDUCER - ASME-B16.9	BW		ASTM A860 WPHY65 - SMLS			
	2	4		BW		ASTM A860 WPHY65 - SMLS			
	2	2	122 10112 21010	BW		ASTM A860 WPHY65 - SMLS			
	3	5		BW		ASTM A860 WPHY65 - SMLS			
	6	8		BW		ASTM A860 WPHY65 - SMLS			
	2	3	SWEEPOLET - TB RAC 5003	BW		ASTM A694 F65			
GAS	KETS								
	1 13/16	7 1/16	RJ GASKET - BX TYPE - API6A			SOFT IRON			
BOL <sub>1</sub>									
	1/4	2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED			

VALV	ALVES											
pos.	from	Size rom   to		Data Sheet	Item Description	Ends		Material				

## **BRANCH TABLES**

RunSi	ze						90 Degrees
2		Т					
3		Т	Т				
4		Т	•	T	_		
6		L	•	Т			
8					Т		
Branch	Size	2	3	4	6	8	
Legenda	а						
L	SWE	EPC	LET	- TB	RAC	5003	3
Т	TEE	- AS	ME-E	16.9			

## **GENERAL NOTES**

- 1) Pipes wall Thickness have been calculated in accordance with ASME B31.4 considering Design Factor=0.72
  2) Linepipe shall be in accordance with Specification MZ-010-CCX-PL-SPC-00005 Onshore Linepipe Specification
  3) Hot induction Bends shall be in accordance with Specification MZ-010-CCX-PL-SPC-00006 Onshore Pipelines Hot Induction Bend
  4) Barred Tee shall be in accordance with Specification MZ-010-CCX-PL-SPC-00007 Onshore Pipelines Barred Tee

- 5) Pipeline Fittings and Flanges shall be in accordance with Specification MZ-010-CCX-PL-SPC-00009 Onshore Pipelines Fittings
  6) Monolithic Insulation Joints shall be in accordance with Specification MZ-010-CCX-PL-SPC-0008 Onshore Pipelines Monolithic Insulation Joint



		ов 2 <b>243</b>							
Pipi	ng C	Class	s:	8	0C	B1E	49		
				Rev.					
Sh.	2	of	2	Α	0				

7) Buried Carbon Steel piping shall be FBE external coated in accordance with Specification MZ-000-CCX-MC-SPC-00004 \_External Coating for Buried Pipeline and Piping Components-FBE and FJC



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	8	OCI	B4E	40	
						Rev.		
Sh.	1	of	2	Α	0			

Base Material : CARBON STEEL :ASME B 31.4 2012 Design code Nom. Rating : CL10000 : AS PER CODE **PWHT** Facing/Finishing: RJ (F) Valve Trim Welding Spec: MZ-010-CCX-MC-SPC-00001 Corrosion Allow. : 6 mm Temp. Limit : 0 °C to 70 °C Service: [ASME B31.4] MEG - Monoethylene Glycol - (Aboveground) Pipe Thickness NPS Thk.mm 13 16 25 SCH. Nipple Thickness NPS Thk.mm SCH. PRESSURE - TEMPERATURE Ratings NPS Press. bar 690 2 · 8 Temp. °C 70 PIPE NOMINALSIZE FLANGE SIZE 1 13/16 | 2 9/16 | 3 1/16 | 5 1/8 | 7 1/16 Size from Ends Rating/Facing Material Item Description to opt. PIPE 2 5 PIPF вw API 5L GR.X65 PSL2 - SMLS 6 8 PIPE RW API 5L GR.X65 PSL2 - SMLS FLANGES CL10000 RJ (F) 1 13/16 7 1/16 WN FLANGE (API 6B/6BX) - API6A вw ASTM A694 F65 1 13/16 7 1/16 BLIND FLANGE (API 6B/6BX) - API6A CL10000 RJ ASTM A694 F65 **FITTINGS** REDUCER - ASME-B16.9 ВW ASTM A860 WPHY65 - SMLS REDUCER - ASME-B16.9 вw ASTM A860 WPHY65 - SMLS 2 CAP - ASME-B16.9 вw ASTM A860 WPHY65 - SMLS TEE - ASME-B16.9 ASTM A860 WPHY65 - SMLS 2 вw 3 TEE - ASME-B16.9 вw ASTM A860 WPHY65 - SMLS 5 6 8 TEE - ASME-B16.9 BW ASTM A860 WPHY65 - SMLS SWEEPOLET - TB RAC 5003 ASTM A694 F65 вw MISCELLANEOUS CL10000 RJ (F) KIT FOR INSULATING FLANGE - ASME-B16.5 GRE LAMINATED + TFE (MAX T 180 C) 2 8 GASKETS 1 13/16 | 7 1/16 | RJ GASKET - BX TYPE - API6A SOFT IRON BOLTS ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368 ASTM A193 B7 + ASTM A194 GR.2H (HotDip 153) VALVES Size from to Data Sheet Item Description Ends Rating/Facing

# **BRANCH TABLES**

RunSiz	7e						90 Degrees
2		т					
3		T	Т				
4		Т	Т	Т			
6		L		Т	Т		
8					Т		
Branch	Size	2	3	4	6	8	
Legenda	1						
L	SWE	EPO	LET	- TB	RAC	5003	
Т	T TEE - ASME-B16.9						

### GENERAL NOTES

1) Pipes wall Thickness have been calculated in accordance with ASME B31.4 considering Design Factor=0.72



	JC <b>032</b>	DB <b>2243</b>						
Pipi	ng C	Class	s:	8	OCI	B4E	40	
						Rev.		
Sh.	2	of	2	Α	0			

- 2) Linepipe shall be in accordance with Specification MZ-010-CCX-PL-SPC-00005 Onshore Linepipe Specification
  3) Hot induction Bends shall be in accordance with Specification MZ-010-CCX-PL-SPC-00006 Onshore Pipelines Hot Induction Bend
  4) Barred Tee shall be in accordance with Specification MZ-010-CCX-PL-SPC-00007 Onshore Pipelines Barred Tee
  5) Pipeline Fittings and Flanges shall be in accordance with Specification MZ-010-CCX-PL-SPC-00009 Onshore Pipelines Fittings
  6) Monolithic Insulation Joints shall be in accordance with Specification MZ-010-CCX-PL-SPC-00008 Onshore Pipelines Monolithic Insulation Joint
  7) Buried Carbon Steel piping shall be FBE external coated in accordance with Specification MZ-000-CCX-MC-SPC-00004 \_External Coating for Buried Pipeline and Piping Components-FBE and FJC



Base Material

## PIPING MATERIAL **SPECIFICATION**

:ASME B 31.4 2012

	-	ов <b>2243</b>						
Pipi	ng C	Class	s:	8	OCI	B4E	49	
						Rev.		
Sh.	1	of	2	Α	0			

: CARBON STEEL Design code Nom. Rating : CL10000 : AS PER CODE **PWHT** Facing/Finishing: RJ (F) Valve Trim Welding Spec: MZ-010-CCX-MC-SPC-00001 Corrosion Allow. : 6 mm Temp. Limit : 0 °C to 70 °C Service: [ASME B31.4] MEG - Monoethylene Glycol - (Underground) Pipe Thickness NPS Thk.mm 13 16 25 SCH. Nipple Thickness NPS Thk.mm SCH. PRESSURE - TEMPERATURE Ratings NPS Press. bar 690 2 · 8 Temp. °C 70 PIPE NOMINALSIZE FLANGE SIZE 1 13/16 2 9/16 3 1/16 5 1/8 7 1/16 Size from Ends Rating/Facing Material Item Description to opt. PIPE 2 5 PIPF вw API 5L GR.X65 PSL2 - SMLS 6 8 PIPE RW API 5L GR.X65 PSL2 - SMLS - EXTERNAL FBE COATED FLANGES CL10000 RJ (F) 1 13/16 7 1/16 WN FLANGE (API 6B/6BX) - API6A вw ASTM A694 F65 1 13/16 7 1/16 BLIND FLANGE (API 6B/6BX) - API6A CL10000 RJ ASTM A694 F65 **FITTINGS** REDUCER - ASME-B16.9 ВW ASTM A860 WPHY65 - SMLS REDUCER - ASME-B16.9 вw ASTM A860 WPHY65 - SMLS 2 CAP - ASME-B16.9 вw ASTM A860 WPHY65 - SMLS TEE - ASME-B16.9 ASTM A860 WPHY65 - SMLS 2 ВW 3 TEE - ASME-B16.9 вw ASTM A860 WPHY65 - SMLS 5

VAL	'ES					
pos.	Size from to	Data Sheet	Item Description	Ends	Rating/Facing	Material

BW

вw

ASTM A860 WPHY65 - SMLS

GRE LAMINATED + TFE (MAX T 180 C)

ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

ASTM A694 F65

SOFT IRON

CL10000 RJ (F)

## **BRANCH TABLES**

6

MISCELLANEOUS

2

GASKETS

BOLTS

8

8

TEE - ASME-B16.9

1 13/16 | 7 1/16 | RJ GASKET - BX TYPE - API6A

SWEEPOLET - TB RAC 5003

KIT FOR INSULATING FLANGE - ASME-B16.5

ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368

						90 Degrees
RunSize						
2	Т					
3	Т	Т				
4	Т	Т	Т			
6	L	Т	Т	Т		
8	L	L	Т	Т	Т	
BranchSiz	<b>e</b> 2	3	4	6	8	
Legenda						
L SV	VEEP	OLET	- TE	B RAC	C 5003	
T TF	F - A	SME-	B16.9	7		

### GENERAL NOTES

1) Pipes wall Thickness have been calculated in accordance with ASME B31.4 considering Design Factor=0.72



		DB <b>2243</b>							
Pipi	ng C	Class	s:	80CB4E49					
				Rev.					
Sh.	2	of	2	Α	0				

- 2) Linepipe shall be in accordance with Specification MZ-010-CCX-PL-SPC-00005 Onshore Linepipe Specification
  3) Hot induction Bends shall be in accordance with Specification MZ-010-CCX-PL-SPC-00006 Onshore Pipelines Hot Induction Bend
  4) Barred Tee shall be in accordance with Specification MZ-010-CCX-PL-SPC-00007 Onshore Pipelines Barred Tee
  5) Pipeline Fittings and Flanges shall be in accordance with Specification MZ-010-CCX-PL-SPC-00009 Onshore Pipelines Fittings
  6) Monolithic Insulation Joints shall be in accordance with Specification MZ-010-CCX-PL-SPC-00008 Onshore Pipelines Monolithic Insulation Joint
  7) Buried Carbon Steel piping shall be FBE external coated in accordance with Specification MZ-000-CCX-MC-SPC-00004 \_External Coating for Buried Pipeline and Piping Components-FBE and FJC



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	8	0PI	J0C	:01	
						Rev.		
Sh.	1	of	1	Α	0	1	2	3

Base Material : CPVC :ASME B 31.3 2016 Design code

Nom. Rating : CL150 **PWHT** 

Facing/Finishing : FF Valve Trim : SPECIAL Trim CPVC

Corrosion Allow. : 0 mm Welding Spec : ---

Temp. Limit : 0 °C to 65 °C

Service: DW - Drinking Water (UG)

Pipe Thickness

NPS 1/2 3/4 Thk.mm 1 1/2 SCH.

Nipple Thickness

NPS Thk.mm SCH.

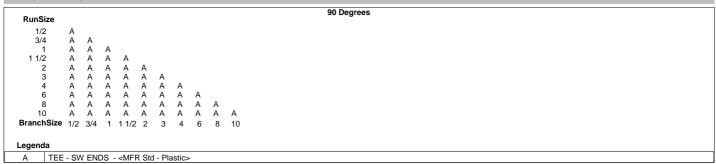
PRESSURE - TEMPERATURE Ratings

NPS Press. bar 16

1/2 ·	10 I em	p. °C (	65							
opt.	S from	ize to	Item Description	Ends	Rating/Facing	Material				
PIPE										
	1/2	10	PIPE - PE ENDS - <mfr -="" plastic="" std=""></mfr>	PE	PN16	CPVC 4120 - Potable Water Certified				
FLAN	IGES									
	1/2 10		SW FLANGE - <mfr -="" plastic="" std=""> CPVC-PN16</mfr>	sw	CL150 FF	CPVC 4120 - Potable Water Certified				
	1/2 10		BLIND FLANGE - <mfr -="" plastic="" std=""> CPVC-PN16</mfr>		CL150 FF	CPVC 4120 - Potable Water Certified				
FITTII	NGS									
	1/2	10	ELBOW - SW ENDS - <mfr -="" plastic="" std=""></mfr>	sw	PN16	CPVC 4120 - Potable Water Certified				
	3/4	10	REDUCER - SW ENDS - <mfr -="" plastic="" std=""></mfr>	sw	PN16	CPVC 4120 - Potable Water Certified				
	1/2	10	COUPLING - SW ENDS - <mfr -="" plastic="" std=""></mfr>	sw	PN16	CPVC 4120 - Potable Water Certified				
	1/2	2	UNION - SW ENDS - <mfr -="" plastic="" std=""></mfr>	sw	PN16	CPVC 4120 - Potable Water Certified				
	1/2	10	TEE - SW ENDS - <mfr -="" plastic="" std=""></mfr>	sw	PN16	CPVC 4120 - Potable Water Certified				
GASK	KETS									
	1/2	10	FLAT NON MET. GASKET - ASME-B16.21			ARAMIDIC FIBER (13%) - Potable Water Certified				
BOLT										
	1/2	1	ST.BOLT+2 NUTS+2 WASH ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED				
1										

VALV	'ALVES									
pos.	os. from to		Data Sheet	Item Description En		Rating/Facing	Material			
8	1 1/2	4		Plastic Ball-End entry-Full.B-Floating ball - <mfr -="" plastic="" std=""></mfr>	sw		Body: CPVC 4120 Trim : SPECIAL Trim CPVC			

### **BRANCH TABLES**



# GENERAL NOTES

The material compound of CPVC shall be in accordance with ASTM D1784 class 23447 for pipes and fittings
 Design, manufacture and dimensional tolerances of CPVC pipe shall be in accordance with ASTM F441, designation code 4120-06
 Design and manufacture of CPVC fittings and flanges shall be in accordance with ASTM F439. In addition, flanges and unions shall comply with ASTM F1970.



		ОВ <b>2243</b>						
Pipii	ng C	Class	s:	8	0PI	J0C	:02	
						Rev.		
Sh.	1	of	1	Α	0	1		

Base Material : CPVC :ASME B 31.3 2016 Design code

Nom. Rating : CL150 :NO **PWHT** Facing/Finishing : FF Valve Trim Corrosion Allow. : 0 mm Welding Spec : ---

Temp. Limit : 0 °C to 70 °C

Service: A - Air CH - Chemical CL - Hypochlorite SW - Service Water SWS - Sea Water Supply

Pipe Thickness

NPS 1/2 3/4 Thk.mm 1 1/2 2 3 4 6 8 SCH.

Nipple Thickness

NPS Thk.mm SCH.

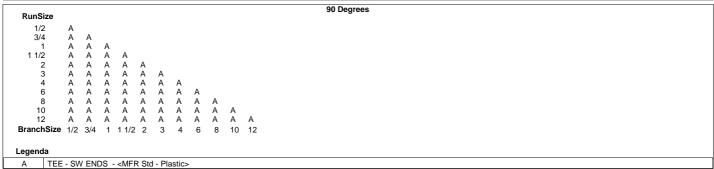
PRESSURE - TEMPERATURE Ratings

NPS Press. bar 16

1/2 ·	12 I emp	J. C	70			
opt.	Si from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	12	PIPE - PE ENDS - <mfr -="" plastic="" std=""></mfr>	PE	PN16	CPVC 4120
FLAN	GES					
	1/2	12	SW FLANGE - <mfr -="" plastic="" std=""> CPVC-PN16</mfr>	SW	CL150 FF	CPVC 4120
	1/2 12		BLIND FLANGE - <mfr -="" plastic="" std=""> CPVC-PN16</mfr>		CL150 FF	CPVC 4120
FITTIN	TTINGS					
	1/2	12	ELBOW - SW ENDS - <mfr -="" plastic="" std=""></mfr>	SW	PN16	CPVC 4120
	3/4	12	REDUCER - SW ENDS - <mfr -="" plastic="" std=""></mfr>	SW	PN16	CPVC 4120
	1/2	12	COUPLING - SW ENDS - <mfr -="" plastic="" std=""></mfr>	SW	PN16	CPVC 4120
	1/2	2	UNION - SW ENDS - <mfr -="" plastic="" std=""></mfr>	SW	PN16	CPVC 4120
	1/2	12	TEE - SW ENDS - <mfr -="" plastic="" std=""></mfr>	SW	PN16	CPVC 4120
GASK	ETS					
	1/2	12	FLAT NON MET. GASKET - ASME-B16.21			VITON
BOLT						
	1/2	1	ST.BOLT+2 NUTS+2 WASH ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VALVE											
pos. from to		Data Sheet	Item Description	Ends Rating/Facing		Material					
poor											

# **BRANCH TABLES**



# GENERAL NOTES

- 1) The material compound of CPVC shall be in accordance with ASTM D1784 class 23447 for pipes and fittings
  2) Design, manufacture and dimensional tolerances of CPVC pipe shall be in accordance with ASTM F441, designation code 4120-06
  3) Design and manufacture of CPVC fittings and flanges shall be in accordance with ASTM F439. In addition, flanges and unions shall comply with ASTM F1970.



		ОВ <b>2243</b>							
Pipi	ng (	Class	s:	8	80P	V0C	01		
						Rev.			
Sh.	1	of	1	Α	0	1	2	3	

Base Material : PVC :ASME B 31.3 2016 Design code

Nom. Rating : CL150 **PWHT** 

Facing/Finishing : FF Valve Trim : SPECIAL Trim PVC; SPECIAL Trim PVC

Corrosion Allow. : 0 mm Welding Spec : ---

Service: SS - Sanitary Sewer

Pipe Thickness

Temp. Limit

NPS 1/2 3/4 Thk.mm 1 1/2 12 SCH.

: 0 °C to 65 °C

Nipple Thickness

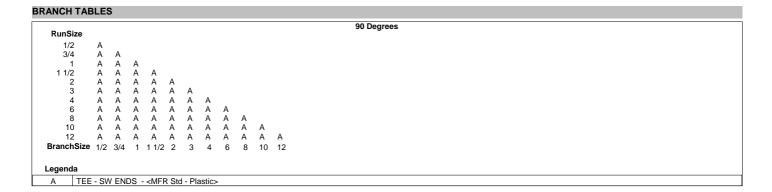
NPS Thk.mm SCH.

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 10

1/2	12 Temp	. • (	65			
opt.	Siz from	ze to	Item Description	Ends	Rating/Facing	Material
PIPE						
	1/2	12	PIPE - PE ENDS - <mfr -="" plastic="" std=""></mfr>	PE	PN10	PVC 1120
LAN	GES					
	1/2	12	SW FLANGE - <mfr -="" plastic="" std=""> PVC-PN10</mfr>	sw	CL150 FF	PVC 1120
	1/2	12	BLIND FLANGE - <mfr -="" plastic="" std=""> PVC-PN10</mfr>		CL150 FF	PVC 1120
ITTI	NGS					
	1/2	12	ELBOW - SW ENDS - <mfr -="" plastic="" std=""></mfr>	SW	PN10	PVC 1120
	3/4	12	REDUCER - SW ENDS - <mfr -="" plastic="" std=""></mfr>	SW	PN10	PVC 1120
	1/2	12	FEMALE CAP - SW END - <mfr -="" plastic="" std=""></mfr>	SW	PN10	PVC 1120
	1/2	12	COUPLING - SW ENDS - <mfr -="" plastic="" std=""></mfr>	SW	PN10	PVC 1120
	1/2	12	UNION - SW ENDS - <mfr -="" plastic="" std=""></mfr>	SW	PN10	PVC 1120
	1/2	12	TEE - SW ENDS - <mfr -="" plastic="" std=""></mfr>	SW	PN10	PVC 1120
SASK	ETS					
	1/2	12	FLAT NON MET. GASKET - ASME-B16.21			NEOPRENE
BOLT	S					
	1/2	1	ST.BOLT+2 NUTS+2 WASH ANSI Thdd - TB BUL 5368			ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED

VAL	/E3						
	S	ize	Data Sheet	et Item Description		Rating/Facing	Material
pos.	from	to		•			
6	3	8	GA-E-60374	Plastic Check-End entry-Red.B-Axial Ball -	SW	PN10	Body: PVC 1120
				<mfr -="" plastic="" std=""></mfr>			Trim: SPECIAL Trim PVC
8	2	8	GA-E-60470	Plastic Ball-End entry-Full.B-Floating ball -	SW	PN10	Body: PVC 1120
				<mfr -="" plastic="" std=""></mfr>			Trim: SPECIAL Trim PVC



# GENERAL NOTES

- The material compound of PVC shall be in accordance with ASTM D1784 class 12454 for pipes and fittings
   Design, manufacture and dimensional tolerances of PVC pipe shall be in accordance with
   ASTM D1785, designation code PVC1120
   Design and manufacture of PVC fittings and flanges shall be in accordance with ASTM D2467. In addition, flanges and unions shall comply with ASTM F1970



	-	ОВ <b>2243</b>						
Pipi	ng (	Class	s:	8	80S	A0E	01	
						Rev.		
Sh.	1	of	1	Α	0			

			•								$\perp$		
Base	Material	:ST	AINLESS STEEI	L 304/304L DUAL GRADE	Design cod	de :	ASME B 31	.3 2016					
	Rating		.10000		PWHT	:	AS PER CO	DDE					
	g/Finish				Valve Trim								
	sion All				Welding Sp	oec :	MZ-000-CC	X-MC-S	SPC-00009/00013				
•	. Limit		°C to 70 °C										
			Injection IN - Inhib	pitor									
NPS	2 14.5	3 4 21.5 27											
	Thicknes	ss											
NPS Thk.mm SCH.	n												
			URE Ratings										
	6 Temp	o. °C 7	90 70										
	IOMINALS SE SIZE	SIZE		3 4 6 3/16 2 9/16 4 1/16									
opt.	Siz from	ze to	Item Description			Ends	Rating	g/Facing	Material				
PIPE													
	2	6	PIPE			BW			ASTM A312 TP304/TP304	4L DUAL GRAD	E - SML	S	
FLAN			h			DIA.	lo. 400	00 D I	. <b></b>				
	1 13/16		WN FLANGE (API BLIND FLANGE (A	68/68X) - API6A .PI 6B/6BX) - API6A		BW	CL100 (F) CL100		ASTM A182 F304/304L D ASTM A182 F304/304L D				
FITTIN	NGS						(F)						
Ī	2	6	LONG RADIUS EL	BOW - ASME-B16.9		BW			ASTM A403 WP304S/304	LS DUAL GRAD	E - SM	LS	
	3	6	REDUCER - ASME			BW			ASTM A403 WP304S/304				
	2	6	CAP - ASME-B16.9			BW			ASTM A403 WP304S/304				
	2 2	6 3	TEE - ASME-B16.9 SWEEPOLET - TE			BW BW			ASTM A403 WP304S/304 ASTM A182 F304/304L D		E - SIM	_8	
MISCI	ELLANE		OWEE! OLE! IL	71010 0000		<b></b>			7.01M17(1021 004/0042 D	ONE CHARLE			
	2	6	KIT FOR INSULAT	ING FLANGE - ASME-B16.5			CL100 (F)	00 RJ	GRE LAMINATED + TFE (	(MAX T 180 C)			
GASK	-	4.4/4.0	DIOAGKET BY	TVDE ADIOA					AIGLOGA				
BOLT	1 13/16	4 1/16	RJ GASKET - BX	TYPE - API6A					AISI 304				
BOLI	1/4	2	ST.BOLT+2 NUTS	- ANSI Thdd - TB BUL 5368					ASTM A320 B8 CL.2 + AS	STM A194 GR.8			
VALV	ES												
	s	ize	Data Sheet	Item Description	E	nds I	Rating/Facing	g Mat	terial				
pos.	from	to											

BRANCH	TABLES
RunS	90 Degrees ize
2	2 T
3	
4	4 TTT
	6 LTTT
Branch	<b>nSize</b> 2 3 4 6
Legend	la
L	SWEEPOLET - TB RAC 5003
Т	TEE - ASME-B16.9

GENERAL NOTES		



		ОВ <b>2243</b>						
Pipi	ng C	Class	s:	8	0S\	N0E	<b>E</b> 01	
						Rev.		
Sh.	1	of	1	Α	0			

Base Material : SUPER DUPLEX STAINLESS STEEL UNS S32750 Design code : ASME B 31.3 2016 Nom. Rating : CL10000 **PWHT** : AS PER CODE Facing/Finishing: RJ (F) Valve Trim Welding Spec : MZ-000-CCX-MC-SPC-00009/00011/00013

Corrosion Allow. : 0 mm : 0 °C to 70 °C Temp. Limit

Service: CI - Chemical Injection IN - Inhibitor ME - Methanol

Pipe Thickness

NPS 3/8 3/4 2 3 4 6 Thk.mm 2.31 3.91 8.74 15.24 17.12 23 SCH. 80S

Nipple Thickness NPS 3/8 3/4 Thk.mm 3.2 5.56 SCH. 5.56

PRESSURE - TEMPERATURE Ratings

NPS Press. bar 690 3/8 · 6 Temp. °C 70

PIPE NOMINALSIZE FLANGE SIZE

FLANGE SIZE   1 13/16   1 13/16   1 13/16   4 1/16   5 1/8											
	Si		Item Description	Ends	Rating/Facing	Material					
opt.	from	to									
PIPE											
	3/8	6	PIPE	BW		ASTM A790 UNS S32750 - SMLS					
FLAN	NGES										
	1 13/16	5 1/8	WN FLANGE (API 6B/6BX) - API6A		CL10000 RJ (F)	ASTM A182 GR.F53 (UNS S32750)					
	1 13/16	5 1/8	BLIND FLANGE (API 6B/6BX) - API6A		CL10000 RJ (F)	ASTM A182 GR.F53 (UNS S32750)					
FITTI	TITTINGS										
	1/2	6	LONG RADIUS ELBOW - ASME-B16.9	BW		ASTM A815 UNS S32750 - SMLS					
	3/4	6	REDUCER - ASME-B16.9	BW		ASTM A815 UNS S32750 - SMLS					
	1/2	6	CAP - ASME-B16.9	BW		ASTM A815 UNS S32750 - SMLS					
	3/4	2	SWAGE NIPPLE - PE/PE - MSS-SP95	PE		ASTM A182 GR.F53 (UNS S32750)					
	2	6	TEE - ASME-B16.9	BW		ASTM A815 UNS S32750 - SMLS					
	2		SWEEPOLET - TB RAC 5003	BW		ASTM A182 GR.F53 (UNS S32750)					
MISCELLANEOUS											
	2	6	KIT FOR INSULATING FLANGE - ASME-B16.5		CL10000 RJ (F)	GRE LAMINATED + TFE (MAX T 180 C)					
GASKETS											
	1 13/16	5 1/8	RJ GASKET - BX TYPE - API6A			S-32750					
BOLTS											
	1/4	2	ST.BOLT+2 NUTS - ANSI Thdd - TB BUL 5368		ASTM A193 B7 + ASTM A194 GR.2H - PTFE COATED						
VALVES											

Size from to Data Sheet Item Description Ends Rating/Facing Material

## **BRANCH TABLES**

90 Degrees										
RunS	ize					· ·				
3/3	3									
3/-	4									
:	2	Т								
	3	Т	Т							
	1		Т							
	6		Т							
Branc	nSize 3/8 3/4	2	3	4	6					
Legend	Legenda									
L	SWEEPOLET - TB RAC 5003									
T TEE - ASME-B16.9										

### **GENERAL NOTES**