

(202) CLASS Supplier: Customer: ; Rating ANSI - 150# RF CLASS SPC.: 1A12.10.031
 " * 202 " BRILESTRA SpA MILANO (Italy) ; Material GALVANIZED CARBON STEEL (Sh.05)
 " Rev. 1 Plant: SULPHURIC GWT Job : 1A12 PROJECT SPECIFICATION
 " 02-04-90 Locality: Contract: x ; T = Deg.C max 120 ; P = Kg/cm² max 10 (86) Issued on: 23-10-97

USE: INSTRUMENT & SERVICE AIR - DRINKING WATER

Ref. 1E35

REV.	DESCRIZIONE - Description	Corp.	Contr.	Appr.	Date
A	ISSUED	MII	MII	23-10-97	
3	REVISED WHERE INDICATED				02/11/0

(203)	CLASS	Supplier:	Customer:	PIPING	Rating	ANSI - 1500 RF	CLASS	SPC.: 1A12-10-031(Sh.06)
* 203 *		BILLESTRA SpA MILANO (Italy)		PROJECT SPECIFICATION	Material	CARBON STEEL	* 203 *	REV.N. : A
Rev. 6	Plant:	SULPHUREX GH/T	Job : 1A12		T = Deg.C max	120		(85) Issued on: 23-10-97
25-02-93	Locality:	x	Contract: x		P = Kg/cm ² max	10		

USE: WATER (process - treated - cooling - hot - chilled - firefighting)
ANTIFREEZING SOLUTION

Ref. 1E35

	DN (NOMINAL SIZE)	Mm	8	10	15	20	25	30	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
		INCH.	1/4"	3/8"	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	
PIPES	Ibs.(mm. or schedule)																						
	Material																						
	Material																						
BUTTWELDING	Elbows 90 deg. - 45 deg.																						
	Tees																						
	Reducers																						
FITTINGS	Caps																						
	Stub-ends																						
	Material																						
FLANGES	Flanges																						
	Blind flanges																						
	Spectable blinds																						
	Drip-rings																						
	Gaskets																						
MISCELLAN.	Bolts																						
	Nuts																						
	"Y" Strainers																						
	Temp. strainers																						
	Sight glasses																						
	BLOCK	General use																					
U		Special use																					
R	HAND CONTROL	General use																					
L	CHECK	General use																					
V		Special use																					
E	VENTS																						
DRAINS	General use																						
S	PRESS.TAPS																						
	SMPL.HATCHES																						
	SOCKET FITTINGS	Material																					
	Screwed																						
	Socket-weld																						
	REU.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date																	
A	ISSUED		AM	AM		23-10-97																	
	REU.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date																	
	3	REVISED WHERE INDICATED																					

AM AM 23-10-97

REU. DESCRIPTIOM - Description Comp. Contr. Appr. Date
3 REVISED WHERE INDICATED

(205) CLASS Supplier: BRILLESTRA SpA MILANO (Italy) Customer: Rev. 7 Plant: SULPHUREX GNT Job : 1A12 Locality: Contract: x PROJECT SPECIFICATION Rating ANSI - 150# RF Material CARBON STEEL I = Deg.C max 200 P = Kg/cm² max 13 CLASS SPC.: 1A12-10-031(Sh.07) *** 205 *** REU.N. : A (86) Issued on: 23-10-97

USE: -SATURATED STEAM & CONDENSATE (Low Pressure)
-NITROGEN

Ref. 1E35

	DN (Nominal Size)	MM	8	10	15	20	25	40	50	65	80	100	125	150	200	250	300						
	INCH.		1/4"	3/8"	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"						
PIPES	Ibs.(mm. or schedule)																						
	Material																						
BUTT WELDING	Elbows 90 deg.- 45 deg.																						
FITTINGS	Tees																						
	Reducers																						
	Caps																						
	Stub-ends																						
FLANGES	Material																						
	Flanges																						
	Blind flanges																						
	Spectable blinds																						
	Drip-rings																						
MISCELLAN.	Baskets																						
	Bolts																						
	Nuts																						
	"Y" Strainers																						
	Temp. strainers																						
	Steam traps																						
U	BLOCK	General use																					
		Special use																					
R	HAND CONTROL	General use																					
L	CHECK	General use																					
V		Special use																					
E	VENTS																						
D	DRAINS	General use																					
S	PRESS.TAPS																						
	SAMPL.HATCHES																						
SOCKET FITTINGS	Material																						
	Screwed																						
	Socket-weld																						

REU.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date	REU.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date
A	ISSUED				23-10-97	3	REVISED WHERE INDICATED				02/11/09
4	REVISED WHERE INDICATED	ATI			21/12/09						

(206) CLASS : Supplier: BALLESTRA SpA MILANO (Italy) Customer: Rev. 2 Plant: SULFURIC ACID/T Job : 1A12 Locality: Contract: x

PROJECT SPECIFICATION

Rating ANSI - 150# RF
Material CARBON STEEL
T = Deg.C max 200
P = Kg/cm² max 3

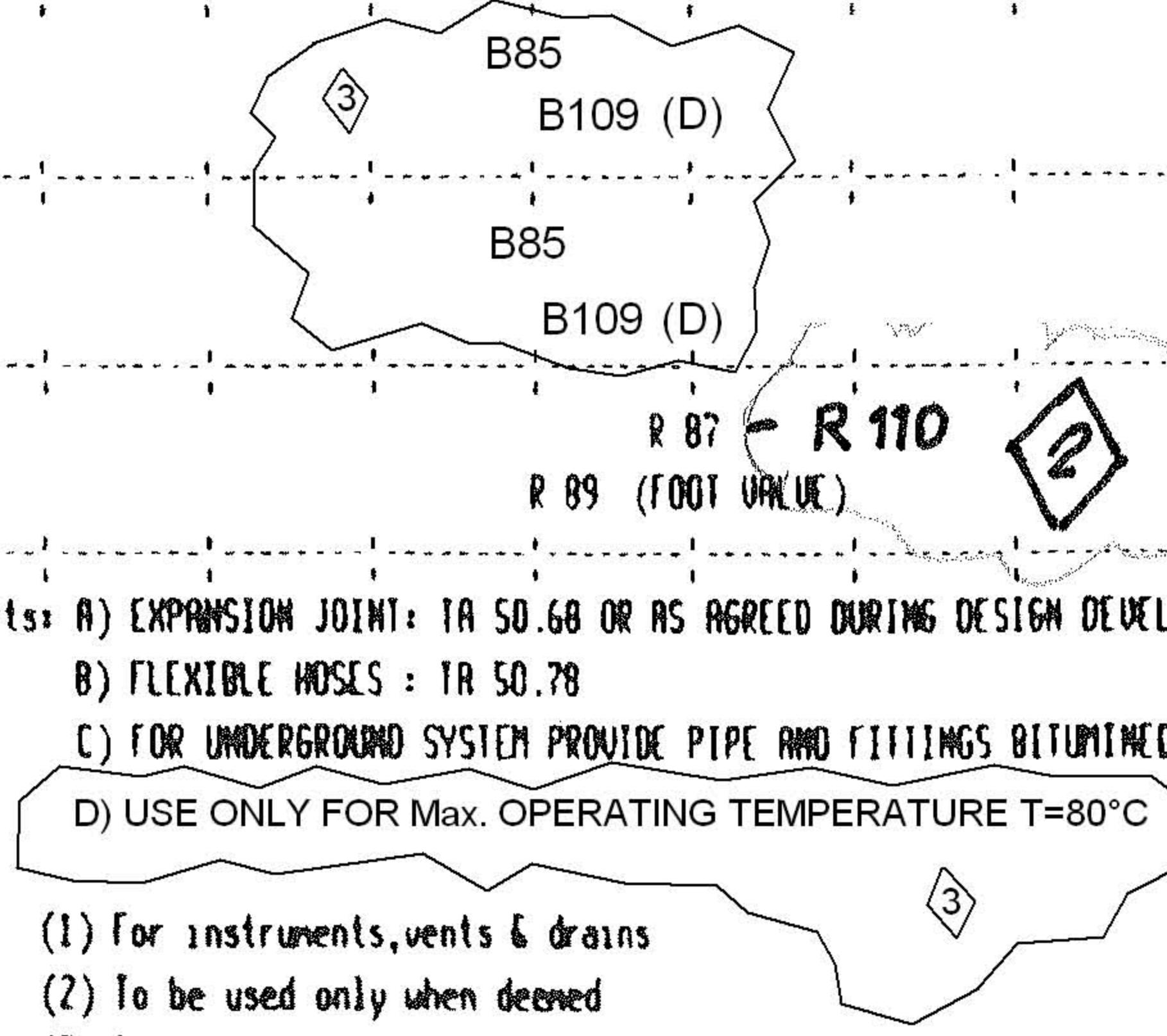
CLASS SPC.: 1A12-10-03(Sh.08)
Rev. 206 REV.N. : A
(91) Issued on: 23-10-97

USE: AIR (process - cold - cooling - dehumidified)

Ref. 1E35

	DN (NOMINAL SIZE)	MM	8	10	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
	IMCH.	1/4"	3/8"	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	
PIPS	Tks.(mm. or schedule)																					
	Material																					
BUTTWELDING	Elbows 90 deg. - 45 deg.																					
	Tees																					
FITTINGS	Reducers																					
	Caps																					
	Stub-ends																					
FLANGES	Material																					
	Flanges																					
	Blind flanges																					
	Spectable blinds																					
	Drip-rings																					
MISCELLAN.	Gaskets																					
	Bolts																					
	Nuts																					
	"Y" Strainers																					
	Temp. strainers																					
	Sight glasses																					
V	BLOCK	General use																				
		Special use																				
R	HAND CONTROL	General use																				
		Special use																				
L	CHECK	General use																				
U		Special use																				
E	VENTS																					
D	DRAINS	General use																				
S	PRESS.TAPS																					
	SAMPL.HATCHES																					
SOCKET	Material																					
FITTINGS	Screwed																					
	Socket-weld																					
REV.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date																	
A	ISSUED																					

23-10-97



Remarks:
(1) For instruments, vents & drains
(2) To be used only when deemed
(3) Thickness in according to pipe thk.

REV.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date
2	REVISED WHERE INDICATED				19.7.04
3	REVISED WHERE INDICATED				02/11/09

(207) CLASS Supplier: DALLESTRA SpA MILANO (Italy) Customer: Rev. 9 Plant: SULFUREX GH/T Locality: USE: SD3 - HIGH TEMPERATURE
 26-02-93 Job: 1A12 Contract: x
 PIPING PROJECT SPECIFICATION Rating ANSI - 150# S.T.G. CLASS 'SPC. 1A12-10-031 (Sh.09)'
 Material CARBON STEEL
 T = Deg.C max 480
 P = Kg/cm² max 1.5
 207 REV.M. = A
 (06) Issued on: 23-10-97

Ref. 1E35

	DN (NOMINAL SIZE)	MM	8	10	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
	INCH.		1/4"	3/8"	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
PIPS	Tks.(mm. or schedule)																					
	Material																					
BUTTWELDING	Elbows 90 deg.- 45 deg.																					
	Tees																					
FITTINGS	Reducers																					
	Caps																					
	Stub-ends																					
FLANGES	Material																					
	Flanges																					
	Blind flanges																					
	Spectable blinds																					
	Drip-rings																					
MISCELLAN.	Gaskets																					
	Bolts																					
	Muts																					
	"Y" Strainers																					
	Temp. strainers																					
	Sight glasses																					
	Seal rings																					
U	BLOCK	General use																				
		Special use																				
A	HAND CONTROL	General use																				
L	CHECK	General use																				
V		Special use																				
E	VENTS																					
S	DRAINS	General use																				
	PRESS.TAPS		M 53																			
	SAMPL.HATCHES		M 53																			
SOCKET FITTINGS	Material																					
	Screwed																					
	Socket-weld																					
REV.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date																	
R	ISSUED																					

23-10-97

(209) CLASS Supplier: Customer: Rating ANSI-150# RF (DN=12") - ALA CL.B FT(DN=14") CLASS SPC.:1A12-10-03 Sh.10/1
 • 209 • DALLESTRA SPA MILANO (Italy) PIPING Material CARBON STEEL
 Rev. 7 Plant: SULPHUREX GAT T = Deg.C max 400 ** 209 ** REV.N. : A
 26-02-93 Locality: Job : 1A12 PROJECT SPECIFICATION P = Kg/cm² max 0.1 (86) Issued on: 23-10-97

USE: HOT AIR
TEMPORARY LINE FOR SULPHUR FURNACE DRYING

Ref. 1E35

	DN (NOMINAL SIZE)	MM	8	10	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
	INCH.		1/4"	3/8"	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	
PIPS	Tks.(mm. or schedule)																						
	Material																						
BUTTWEADING	Elbows 90 deg. - 45 deg.																						
FITTINGS	Tees																						
	Reducers																						
	Caps																						
	Stub-ends																						
FLANGES	Material																						
	Flanges																						
	Blind flanges																						
	Spectable blinds																						
	Drip-rings																						
MISCELLAN.	Gaskets																						
	Bolts																						
	Nuts																						
	"Y" Strainers																						
	Temp. strainers																						
	Sight glasses																						
U	BLOCK	General use																					
		Special use																					
A	HAND CONTROL	General use																					
L		Special use																					
U	CHECK	General use																					
V		Special use																					
E	VENTS																						
S	DRAINS	General use																					
PRESS.TRAPS																							
SAMPL.HATCHES																							
SOCKET FITTINGS	Material																						
	Screwed																						
	Socket-weld																						
REV.	DESCRIZIONE - Description	Comp.	Contr.	Rappr.	Date																		
A	ISSUED					BM	BM	BM															

23-10-97

(209)

CLASS	Supplier:	Customer:	Rating	ANAS C 207/55 - TAB.1 CL.B	CLASS	SPC.: 1A12.10-02 (Sh.10/2)
# 209 #	BALLESTRA SpA MILANO (Italy)	Job : 1A12	Material	CARBON STEEL		
Rev. 2	Plant: SULPHUREX GH/T	Contract: x	T = Deg.C Max	480	*** 209 ***	REV.N. : A
03-12-91	Locality:		P = Kg/cm ² max	0.1	(91)	Issued on: 23-10-97

USE: HOT AIR

TEMPORARY LINE FOR SULPHUR FURNACE DRYING

	DN (NOMINAL SIZE)	MM	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1500			
		INCH.	26"	28"	30"	32"	34"	36"	38"	40"	42"	44"	46"	48"	50"	52"	54"	60"			
PIPS	Iks.(mm. or schedule)		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6			
	Material																				
	Material																				
BUTTWELDING	Elbows 90 deg. - 45 deg.																				
FITTINGS	Tees																				
	Reducers																				
	Caps																				
	Stub-ends																				
FLANGES	Material																				
	Flanges																				
	Blind flanges																				
	Spectable blinds																				
	Drip-rings																				
MISCELLAN.	Baskets																				
	Bolts																				
	Nuts																				
	Temp. strainers																				
	Sight glasses																				
	"Y" Strainers																				
V	BLOCK	General use																			
		Special use																			
A	HAND	General use																			
L	CONTROL	Special use																			
V	CHECK	General use																			
		Special use																			
E	VENTS																				
S	DRAINS	General use																			
	PRESS.TAPS																				
	SAMPL.HATCHES																				
SOCKET	Material																				
FITTINGS	Screwed																				
	Socket-weld																				

Remarks: 3) THICKNESS IN ACCORDING TO PIPE THK.

REV.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date	REV.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date
A	ISSUED	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	23-10-97						

(21) CLASS : Supplier: BALLESTRA SpA MILANO (Italy) ; Customer: ; Rating: ANSI - 1500 RF ; CLASS: SPC. 1A12 - 10-031 (Sh.11);
" 211 " ; PIPING ; Material: CARBON STEEL
Rev. 8 ; Plant: SULPHURIC 61/T ; Job : 1A12 ; PROJECT SPECIFICATION ; T = Deg.C max 200 ; " 211 " ; REU.N. : A
26-02-93 ; Locality: ; Contract: x ; P = Kg/cm² max 12 ; (B6) ; Issued on: 23-10-97

USE: MOLTEN SULPHUR

Ref. 1E35

(212) CLASS : 212 Supplier: BALLESTRA SPA MILANO (Italy)
 Rev. 9 Plant: SULPHURIC ACID
 26-02-93 Locality
 CLASS : 212 Customer: Job : 1A12
 Rating : ANSI - 1500 LF
 Material : CARBON STEEL
 T = Deg.C max : 100
 P = Kg/cm² max : 12
 PIPING
 PROJECT SPECIFICATION
 *** 212 ***
 REU.N. : A
 (86) Issued on: 23-10-97

USE : SODIUM SILICATE SOL. - FUEL OIL - OLEUM - LIQUID RAW MATERIALS AND CRUSTRIC SODA (FROM B. L. UP TO DEPT. FILTERS)
EXHAUST GAS (FROM CYCLON UP TO ELECTR. FILTER) - SO₃ LOW TEMP. (UP TO SO₃ FILTERS) - FUEL GRS

Ref. 1E35

Remarks: 1) DO NOT USE FOR OLEUM AND SODA
2) BOTTOM VALVES
3) THICKNESS IN ACCORDING TO PIPE THK.
4) FOR INSTRUMENTS, VENTS AND DRAINS



REU.	DESCRIZIONE - Description	Corp.	Contr.	Appr.	Date
R	ISSUED	AM	AM	AM	23-10-97

REV.	DESCRIZIONE - Description	Corp.	Contr.	Appr.	Date
Z	<u>REVISED WHERE INDICATED</u>				19.7.04
3	REVISED WHERE INDICATED				02/11/09

(214) CLASS Supplier: DILLESTRA SpA MILANO (Italy) Customer: Rev. 3 Plant: SULPHUREX GWT Job : 1A12 Locality: Locality: USE: DILUTED OLEUM - DILUTED H₂SO₄ EXHAUST GAS (GAS SCRUBBER VENT)

12-02-91
 PROJECT SPECIFICATION PIPING Rating ANSI - 150# FT Material POLYPROPYLENE (PP)
 T = Deg.C max 40 P = Kg/cm² max 1 (DN=(4°) 1 (DN=(5°))
 REV.N. : A (86) Issued on: 23-10-97

Ref. 1E35

	DN (NOMINAL SIZE)	MM	8	10	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
	INCH.		1/4"	3/8"	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	
PIPES	Ibs.(mm. or schedule)																						
	Material																						
FITTINGS	Material																						
	Elbows 90 deg. - 45 deg.																						
	Tees																						
	Reducers																						
	Caps																						
	Stub-ends																						
FLANGES	Material																						
	Flanges																						
	Blind flanges																						
	Spectable blinds																						
	Drip-rings																						
MISCELLAN.	Gaskets																						
	Bolts																						
	Nuts & Washers																						
	"Y" Strainers																						
	Temp. strainers																						
	Sight glasses																						
V	BLOCK	General use																					
		Special use																					
A	HAND CONTROL	General use																					
		Special use																					
L	CHECK	General use																					
		Special use																					
E	VENTS																						
S	DRAINS	General use																					
	PRESS. TAPS																						
	SAMPL. HATCHES																						

Remarks: 1) USE PIPE TR 50.49 FOR THRD. CONNECTIONS
 2) FOR EXHAUST GAS ONLY

REV.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date	REV.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date
R	ISSUED	AM	JK		23-10-97						

USE: SO₃ LOW TEMPERATURE (AFTER SO₃ FILTER) - LIQUID RAW MATERIALS, CRUSTIC SODA, PROCESS WATER (AFTER DEPT. FILTER) - SODIUM SULPHATE SOLUTION
SODIUM CHLORIDE SOLUTION - AMMONIA SOLUTION - NONIONIC - METHYLESTER - DOBS - SULPHATED FATTY ACIDS & ALCOHOLS

Ref. 1E35

REV.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date	REV.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date
A	ISSUED						BMT	BMT			123-10-97

(216) CLASS : Supplier: BALLESTRA SpA MILANO (Italy) Customer: Rev. 10 Plant: SULPHUREX GWT Locality: 02-06-93 Job : 1A12 Contract: x PROJECT SPECIFICATION PIPING Rating ANSI - 150# L.J. CLASS SPC. 1A12-1003(Sh.15) Material AISI 316 I = Deg.C max 150 220 Rev. 216 REC.N. : A P = Kg/cm² max 15 12 (86) Issued on: 23-10-97

USE: OIL & OILS NEUTRALIZED - FATTY ACIDS - SODIUM SULPHITE - L.P. PERFUME
SOAP AND NEUTRALIZED FATTY ACIDS & ALCOHOLS - SULPHONATED & NEUTRALIZED METHYLESTER

Ref. 1E35

	DN (Nominal Size)	MM	8	10	15	20	25	32	40	50	65	80	100	125	150	200	250	300
	INCH.		1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"
PIPES	Tks.(mm. or schedule)																	
	Material																	
BUTTWELDING	Elbows 90 deg. - 45 deg.																	
FITTINGS	Tees																	
	Reducers																	
	Caps																	
	Stub-ends																	
FLANGES	Material																	
	flanges																	
	Blind flanges																	
	Spectable blinds																	
	Drip-rings																	
MISCELLAN.	Gaskets																	
	Bolts																	
	Nuts																	
	"Y" Strainers																	
	Temp. strainers																	
	Sight glasses																	
	3 Way valves																	
U	BLOCK	General use																
		Special use																
A	HAND CONTROL	General use																
L	CHECK	General use																
V		Special use																
E	VENTS																	
S	DRAINS	General use																
	PRESS.TAPS																	
	SIMPL.HATCHES																	
SOCKET FITTINGS	Material																	
	Screwed																	
	Socket-weld																	

Remarks: (1) FOR INSTRUMENTS, VENTS AND DRAINS
(2) TO BE USED ONLY WHEN DEEMED
(3) FOR JACKETED PIPES USE MATERIAL "A 182 - F 316"
(4) TO BE USED ONLY FOR VACUUM LINES

REV.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date	REV.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date
A	ISSUED				23-10-97						

Ballestra		PIPING CLASS	PROJ: 1E35	REV: 1	21/12/2009
PUMA5 18/01/2010 10.11.41			DOC:	1E35.10.031 - Sh. 16	

Ballestra	SULPHUREX GH/F	Size: Inc	Thk: mm	Temp: °C	Pres: BAR	Corr: mm
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Piping class 219

Client Reference Service SO2 HIGH TEMPERATURE - LOW PRESSURE (SX. PLANT) 12E2 (SX. PLANT)	PREHEATING AIR from 12H2 to	Branch Table I219 Corrosion Allow 1.27 mm Welding Spec. SP.1406/2-SP.1408/2
Base Material 21a AISI 304H		Applicable through
Rating 0300 300 LB		Min
Finish STX ST-SG (63÷125AARH)		Max
Heat Treatment	Temperature °C	0 0
Control level	Pressure BAR	0 0
		Chgd Mod
Note 1) FOR TYPICAL INSTRUMENTS CONNECTIONS SEE TA 50.8/9		

P Standard of design	Mod	Size	Thk.	Mod
I 3103	ASME B31.3	1/4	2,24	
Temp. °C	Press. BAR	3/8	2,31	
700,0	0,90	1/2	2,77	
		3/4	2,87	
		1	3,38	
		1+1/4	3,56	
		1+1/2	3,68	
		2	3,91	
		2+1/2	3,05	
		3	3,05	
		4	3,05	
		5	3,4	
		6	3,4	
		8	3,76	
		10	4,19	
		12	4,57	
		14	4,78	
		16	4,78	

Ballestra	PIPING CLASS			PROJ:	1E35	REV:	1	21/12/2009
PUMA5	18/01/2010 10.11.41			DOC:	1E35.10.031 - Sh. 16			

Ballestra	SULPHUREX GH/F	Size: Inc	Thk: mm	Temp: °C	Pres: BAR	Corr: mm
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Piping class 219

18	4,78
20	5,54
24	6,35

Ballestra		PIPING CLASS DETAIL						PROJ:	1E35	REV:	1	21/12/2009
PUMA5	18/01/2010 10.11.51							DOC:	1E35.10.031 - Sh. 16			
Ballestra		SULPHUREX GH/F				Size: Inc	Thk: mm	Temp: °C	Pres: BAR	Corr: mm		

Piping Class 219

Object	From From	To (M) To (R)	Standard of design	End	Mat.	Rat.	Finish	Construction	Material	Constructive Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Pipe	1/4	2	ASME B36.19	PL				Seamless	ASTM A 312 TP 304H							PIPE	
Pipe	2+1/2	24	ASME B36.10	PL				E.R.W.	ASTM A 312 TP 304H	RX 20%						PIPE	
Valve Ball Full Port	1/4	1	ST.46705/0	THRD-F NPT		800#		Forged	ASTM A 182 GR. F316		S 147		SEE REMARK E			VBF	
Valve Plug	1/4	1	ST.46019/1	THRD-F NPT		PN 16		Forged	ASTM A 182 GR. F316		M.53		SEE REMARK F			VPLG	
Flange Weld Neck	1/2	1+1/2	ASME B16.5		300 LB AARH)			Forged	ASTM A 182 GR. F304H							FLW	
Flange Weld Neck	1/2	1+1/2	ASME B16.5		300 LB AARH)			Forged	ASTM A 182 GR. F304H							FLW	
Flange Slip-On	2	24	ASME B16.5		300 LB AARH)			Forged	ASTM A 182 GR. F304H							FLS	
Flange Slip-On	2	24	ASME B16.5		300 LB AARH)			Forged	ASTM A 182 GR. F304H							FLS	
Flange Slip-On x Wafer	2	24	ASME B16.5		300 LB AARH)			Forged	ASTM A 182 GR. F304H							FLS	
Flange Slip-On x Wafer	2	24	ASME B16.5		300 LB AARH)			Forged	ASTM A 182 GR. F304H							FLS	
Flange Weld Neck x Wafer	1/2	1+1/2	ASME B16.5		300 LB AARH)			Forged	ASTM A 182 GR. F304H							FLW	
Flange Weld Neck x Wafer	1/2	1+1/2	ASME B16.5		300 LB AARH)			Forged	ASTM A 182 GR. F304H							FLW	
45° Elbow	1/4	1+1/2	TA 50.7/2	THRD-F NPT		3000#		Forged	ASTM A 182 GR. F304H			SEE REMARK C				45E	
45° Elbow	1/4	1/2	TA 50.6/1	SW-F		3000#		Forged	ASTM A 182 GR. F304H							45E	
45° Elbow Long Radius	3/4	2	ASME B16.9	BE				Seamless	ASTM A 403 GR. WP304H							45ELR	
45° Elbow Long Radius	2+1/2	24	ASME B16.9	BE				Welded	ASTM A 403 GR. WP304H	RX 20%		RX 20%				45ELR	
90° Elbow	1/4	1/2	TA 50.6/1	SW-F		3000#		Forged	ASTM A 182 GR. F304H							90E	
90° Elbow	1/4	1+1/2	TA 50.7/2	THRD-F NPT		3000#		Forged	ASTM A 182 GR. F304H			SEE REMARK C				90E	
90° Elbow Long Radius	3/4	2	ASME B16.9	BE				Seamless	ASTM A 403 GR. WP304H							90ELR	
90° Elbow Long Radius	2+1/2	24	ASME B16.9	BE				Welded	ASTM A 403 GR. WP304H	RX 20%		RX 20%				90ELR	
Reducer Concentric	3/4	2	ASME B16.9	BE				Seamless	ASTM A 403 GR. WP304H							REDC	
Reducer Concentric	1/2	1+1/2															
Reducer Concentric	2+1/2	24	ASME B16.9	BE				Welded	ASTM A 403 GR. WP304H	RX 20%		RX 20%				REDC	
	2	20															

Ballestra		PIPING CLASS DETAIL						PROJ:	1E35	REV:	1	21/12/2009
PUMA5	18/01/2010 10.11.51							DOC:	1E35.10.031 - Sh. 16			
Ballestra		SULPHUREX GH/F		Size: Inc		Thk: mm	Temp: °C		Pres: BAR	Corr: mm		

Piping Class 219

Object	From From	To (M) To (R)	Standard of design	End	Mat.	Constr.	Constr. Charact.	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Reducer Eccentric	3/4 1/2	2 1+1/2	ASME B16.9	BE	Seamless	ASTM A 403 GR. WP304H					REDE			
Reducer Eccentric	2+1/2 2	24 20	ASME B16.9	BE	Welded	ASTM A 403 GR. WP304H	RX 20%			RX 20%	REDE			
Tee Straight	1/4	1/2	TA 50.6/1	SW-F	3000#	Forged	ASTM A 182 GR. F304H			SEE REMARK D	TEE			
Tee Straight	1/4	1+1/2	TA 50.7/2	THRD-F NPT	3000#	Forged	ASTM A 182 GR. F304H			SEE REMARK C	TEE			
Tee Reducing	1/2 1/4	1/2 1/4	TA 50.6/1	SW-F	3000#	Forged	ASTM A 182 GR. F304H			SEE REMARK D	TEER			
Reducing Insert M/F	1/4 1/8	1+1/2 1+1/4	TA 50.7/2	THRD-M NPT x THRD-F	3000#	Forged	ASTM A 182 GR. F304H			SEE REMARK C	BUS			
Reducing Insert M/F	1/2 1/4	1/2 1/4	TA 50.6/1	SW-F x PL	3000#	Forged	ASTM A 182 GR. F304H	TYPE 12			BUS			
Reducing Insert M/F	1/2 3/8	1/2 3/8	TA 50.6/1	SW-F x PL	3000#	Forged	ASTM A 182 GR. F304H	TYPE 11			BUS			
Reducing Insert M/F	1/2 1/8	1/2 1/8	TA 50.6/1	SW-F x PL	3000#	Forged	ASTM A 182 GR. F304H	TYPE 13			BUS			
Cap	1/4	1+1/2	TA 50.7/2	THRD-F NPT	3000#	Forged	ASTM A 182 GR. F304H			SEE REMARK C	CAP			
Cap	1/4	1/2	TA 50.6/1	SW-F	3000#	Forged	ASTM A 182 GR. F304H				CAP			
Cap	3/4	12	ASME B16.9	BE		Seamless	ASTM A 403 GR. WP304H			SEE REMARK B	CAP			
Coupling	1/4	1+1/2	TA 50.7/2	THRD-F NPT	3000#	Forged	ASTM A 182 GR. F304H			SEE REMARK C	CPL			
Coupling	1/4	1/2	TA 50.6/1	SW-F	3000#	Forged	ASTM A 182 GR. F304H				CPL			
Coupling Half	1/4	1+1/2	TA 50.7/2	THRD-F NPT	3000#	Forged	ASTM A 182 GR. F304H			SEE REMARK C	CPLH			
Coupling Half	1/4	1/2	TA 50.6/1	SW-F	3000#	Forged	ASTM A 182 GR. F304H				CPLH			
Coupling Reducing	1/4 1/8	1+1/2 1	TA 50.7/2	THRD-F NPT	3000#	Forged	ASTM A 182 GR. F304H			SEE REMARK C	CPLR			
Coupling Reducing	1/2 1/4	1/2 1/4	TA 50.6/1	SW-F	3000#	Forged	ASTM A 182 GR. F304H				CPLR			
Cross Straight	1/4	1/2	TA 50.6/1	SW-F	3000#	Forged	ASTM A 182 GR. F304H				CRO			

Ballestra		PIPING CLASS DETAIL						PROJ:	1E35	REV:	1	21/12/2009
PUMA5	18/01/2010 10.11.52							DOC:	1E35.10.031 - Sh. 16			
Ballestra		SULPHUREX GH/F		Size: Inc Thk: mm		Temp: °C		Pres: BAR		Corr: mm		

Piping Class 219

Object	From From	To (M) To (R)	Standard of design	End	Mat.	Constr. Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Cross Straight	1/4	1+1/2	TA 50.7/2	THRD-F NPT	3000#	Forged	ASTM A 182 GR. F304H		SEE REMARK C		CRO		
Plug Hex.	1/4	1+1/2	TA 50.7/2	THRD-M NPT	3000#	Forged	ASTM A 182 GR. F304H		SEE REMARK C		PLG		
Union	1/4	1+1/2	TA 50.7/2	THRD-F NPT	3000#	Forged	ASTM A 182 GR. F304H		SEE REMARK C		UN		
Union	1/4	1/2	TA 50.6/1	SW-F	3000#	Forged	ASTM A 182 GR. F304H				UN		
Gasket	1/2	24	TA 50.5/31		300 LB	ST-SG (63÷125AARH -)	F16L	SPIRAL WOUND F16L			GAS		
Gasket	1/2	24	ST.46341/0		300 LB	FF (63÷125 AARH)	Forged	ASTM A 182 GR. F304H		SEE REMARK A		GAS	
Nozzle Pump	1/2	24	MANUFACTURE STD	FLG	300 LB	ST (63÷125 AARH)					NZP		
Nozzle Pump	1/2	24	MANUFACTURE STD	FLG	300 LB	SG (63÷125 AARH)					NZP		
Nozzle Standard	1/2	24	MANUFACTURE STD	FLG	300 LB	SG (63÷125 AARH)					NZS		
Nozzle Standard	1/2	24	MANUFACTURE STD	FLG	300 LB	ST (63÷125 AARH)					NZS		
Pipe to Pipe Branch	3/4	24	ASME B31.3	BE			ASTM A 312 TP 304H				PT90		
3/4	24												

Object	Standard of design	Material	Constructive characteristic	Tag	Default	Mod
Stud Bolt + 2 Nuts	TA 50.48B/28 ASME B18.2.1 UNC/2.2 TAB. 9	ASTM A 193 GR. B8 CL.2/A194 GR. 8			x	

Ballestra		PIPING CLASS BRANCH		PROJ:	1E35	REV:	1	21/12/2009
PUMA5	18/01/2010 10.12.02			DOC:	1E35.10.031			
Ballestra	SULPHUREX CH/E	Size: In.	Thk: mm	Temp: °C	Press: BAR	Conn: mm		

Piping Class 219

Branch Table I219

Chgd

Branch	
I	Pipe to Pipe
TR	Tee Reducing
TS	Tee Straight

Run Size

Sizes translation O=1/4, T8=3/8, M=1/2, 3Q=3/4, 1=1, 1Q=1+1/4, 1M=1+1/2, 2=2, 2M=2+1/2, 3=3, 4=4, 5=5, 6=6, 8=8, 10=10, 12=12, 14=14, 16=16, 18=18, 20=20, 24=24

Ballestra		PIPING CLASS NOTE			PROJ:	1E35	REV:	1	21/12/2009
PUMA5	18/01/2010 10.12.10				DOC:	1E35.10.031 - Sh. 16			
Ballestra		SULPHUREX GH/F			Size: Inc	Thk: mm	Temp: °C	Pres: BAR	Corr: mm

Piping Class: 219

Note:	A) USE FOR FEMALE-FEMALE FLANGES ONLY. B) FOR DN=>14" USE BLIND DISK THK 8mm, (MATERIAL: STEEL PLATE - A 240 Type 304H). C) USE ONLY FOR INSTRUMENTS, VENTS, DRAINS AND SAMPLING HATCHES. D) FOR DN=>3/4" USE BRANCH CONNECTIONS PIPE-TO-PIPE. E) USE ONLY WHEN DEEMED BY PROCESS DEPARTMENT. F) USE ONLY FOR PRESSURE TAPS "P" AND SAMPLING HATCHES.
SPECIAL PARTS:	
1)	EXPANSION JOINTS: TA 50.68/10 OR AS AGREED DURING DESIGN DEVELOPMENT (FOR METALLIC BELLOW TO PERFORM LIQUID PENETRANT TEST 100%)
2)	INSULATION SPECIFICATION: NI 80.1-2/4
REVISIONS:	
REV. A - DATE 23/10/97 - ISSUED	
REV. 1 - DATE 21/12/09 - GENERAL REVISION	

(244) CLASS : Supplier: BRLESTRA SpA MILANO (Italy) Customer: Rev. 11 Plant: SULFUREX GM/F Job : 1A12 26-02-93 Locality: Contract: x USE: PREHEATING AIR (SX PLANT)

PIPING
PROJECT SPECIFICATION

Rating ANSI - 150# S.T.or S.G.
Material AISI 304
T = Deg.C max 700
P = Kg/cm² max 0.09

CLASS 'SRC.: 1A12-10-031(Sh.17)'
*** 244 *** REV.N. : A
(86) Issued on: 23-10-97

Ref. 1E35

	DN (NOMINAL SIZE)	MM	8	10	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
	INCH.		1/8"	3/8"	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
PIPES	Tks. (in. or schedule)																					
	Material																					
BUTTWELDING	Elbows 90 deg. - 45 deg.																					
	Tees																					
FITTINGS	Reducers																					
	Caps																					
	Stub-ends																					
FLANGES	Material																					
	Flanges																					
	Blind flanges																					
	Spectable blinds																					
	Drip-rings																					
MISCELLAN.	Gaskets																					
	Bolts																					
	Nuts																					
	"Y" Strainers																					
	Temp. strainers																					
	Sight glasses																					
V	BLOCK	General use																				
		Special use																				
R	HAND CONTROL	General use																				
L	CHECK	General use																				
U		Special use																				
E	VENTS																					
S	DRAINS	General use																				
	PRESS.TAPS																					
	SAMPL.HATCHES																					
SOCKET FITTINGS	Material																					
	Screwed																					
	Socket-weld																					
REV.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date																	
A	ISSUED	<i>BM</i>	<i>BM</i>	<i>BM</i>	23-10-97																	

REV.	DESCRIZIONE - Description	Comp.	Contr.	Appr.	Date

Ballestra		PIPING CLASS	PROJ: 1E35	REV: 0	21/12/2009
PUMA5 18/01/2010 10.13.56			DOC:	1E35.10.031 - Sh. 18	

Ballestra	SULPHUREX GH/F	Size: Inc	Thk: mm	Temp: °C	Pres: BAR	Corr: mm
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Piping class 226

Client Reference Service Sodium lauryl sulfato (SLS)	Branch Table I226 Corrosion Allow 0.0 mm Welding Spec. SP.1406/2-SP.1408/2
Base Material 21 AISI 304	Applicable through
Rating 0900 900 LB	Min
Finish LMF LM-LF (125÷250 AARH)	Max
Heat Treatment	Temperature °C 0 0
Control level	Pressure BAR 0 0
	Chgd Mod
Note 1) FOR TYPICAL INSTRUMENTS CONNECTIONS SEE TA 50.8/9	

P	Standard of design	Mod	Size	Thk.	Mod
I	3103 ASME B31.3		1/4	2,24	
			3/8	2,31	
			1/2	2,77	
			3/4	2,87	
			1	3,38	
			1+1/4	3,56	
			1+1/2	3,68	
			2	3,91	
			2+1/2	5,16	
			3	5,49	
			4	8,56	
			5	9,53	
			6	10,97	

Ballestra		PIPING CLASS DETAIL								PROJ:	1E35	REV:	0	21/12/2009
PUMA5	18/01/2010 10.14.07									DOC:	1E35.10.031 - Sh. 18			
Ballestra		SULPHUREX GH/F		Size: Inc		Thk: mm	Temp: °C		Pres: BAR		Corr: mm			

Piping Class 226

Object	From From	To (M) To (R)	Standard of design	End	Mat.	Constr. Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Pipe	1/4	6	ASME B36.19	PL	Seamless		ASTM A 312 TP 304		PIPE				
Valve Ball Full Port	1/2	3	SB-ATI-VS120/0	LUG	900 LB AARH)	Forged	AISI 304	S 194	SEE REMARK C		VBF		
Valve Check	1/2	1	SB-ATI-VR134/0	FLG	900 LB AARH)	Forged	AISI 304	R 174			VCH		
Flange Weld Neck	1/2	1+1/2	ASME B16.5		900 LB AARH)	Forged	ASTM A 182 GR. F304				FLW		
Flange Weld Neck	1/2	1+1/2	ASME B16.5		900 LB AARH)	Forged	ASTM A 182 GR. F304				FLW		
Flange Blind	1/2	6	ASME B16.5		900 LB AARH)	Forged	ASTM A 182 GR. F304				FLB		
Flange Blind	1/2	6	ASME B16.5		900 LB AARH)	Forged	ASTM A 182 GR. F304				FLB		
Flange Slip-On	2	6	ASME B16.5		900 LB AARH)	Forged	ASTM A 182 GR. F304				FLS		
Flange Slip-On	2	6	ASME B16.5		900 LB AARH)	Forged	ASTM A 182 GR. F304				FLS		
45° Elbow	1/4	1+1/2	TA 50.7/2	THRD-F NPT	3000#	Forged	ASTM A 182 GR. F304		SEE REMARK A		45E		
45° Elbow	1/4	1/2	TA 50.6/1	THRD-F NPT	3000#	Forged	ASTM A 182 GR. F304				45E		
45° Elbow Long Radius	3/4	6	ASME B16.9	BE		Seamless	ASTM A 403 GR. WP304				45ELR		
90° Elbow	1/4	1/2	TA 50.6/1	SW-F	3000#	Forged	ASTM A 182 GR. F304				90E		
90° Elbow	1/4	1+1/2	TA 50.7/2	THRD-F NPT	3000#	Forged	ASTM A 182 GR. F304		SEE REMARK A		90E		
90° Elbow Long Radius	3/4	6	ASME B16.9	BE		Seamless	ASTM A 403 GR. WP304				90ELR		
Reducer Concentric	3/4	6	ASME B16.9	BE		Seamless	ASTM A 403 GR. WP304				REDC		
	3/4	6											
Reducer Eccentric	3/4	6	ASME B16.9	BE		Seamless	ASTM A 403 GR. WP304				REDE		
	3/4	6											
Tee Straight	1/4	1+1/2	TA 50.7/2	THRD-F NPT	3000#	Forged	ASTM A 182 GR. F304		SEE REMARK A		TEE		
Tee Straight	1/4	1/2	TA 50.6/1	SW-F	3000#	Forged	ASTM A 182 GR. F304				TEE		
Tee Reducing	1/2	1/2	TA 50.6/1	SW-F	3000#	Forged	ASTM A 182 GR. F304		SEE REMARK B		TEER		
	1/4	1/4											
Reducing Insert M/F	1/4	1+1/2	TA 50.7/2	THRD-M NPT x THRD-F	3000#	Forged	ASTM A 182 GR. F304		SEE REMARK A		BUS		
	1/8	1+1/4											
Reducing Insert M/F	1/2	1/2	TA 50.6/1	SW-F x PL	3000#	Forged	ASTM A 182 GR. F304		TYPE 13		BUS		
	1/8	1/8											

Ballestra		PIPING CLASS DETAIL						PROJ:	1E35	REV:	0	21/12/2009
PUMA5	18/01/2010 10.14.07							DOC:	1E35.10.031 - Sh. 18			
Ballestra SULPHUREX GH/F Size: Inc Thk: mm Temp: °C Pres: BAR Corr: mm												

Piping Class 226

Object	From From	To (M) To (R)	Standard of design	End	Rate	Finish	Construction	Material	Constructive Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Reducing Insert M/F	1/2 1/4	1/2 1/4	TA 50.6/1	SW-F x PL	3000#		Forged	ASTM A 182 GR. F304	TYPE 12					BUS		
Reducing Insert M/F	1/2 3/8	1/2 3/8	TA 50.6/1	SW-F x PL	3000#		Forged	ASTM A 182 GR. F304	TYPE 11					BUS		
Cap	1/4	1/2	TA 50.6/1	SW-F	3000#		Forged	ASTM A 182 GR. F304						CAP		
Cap	1/4	1+1/2	TA 50.7/2	THRD-F NPT	3000#		Forged	ASTM A 182 GR. F304				SEE REMARK A		CAP		
Cap	3/4	6	ASME B16.9	BE			Seamless	ASTM A 403 GR. WP304						CAP		
Coupling	1/4	1/2	TA 50.6/1	SW-F	3000#		Forged	ASTM A 182 GR. F304						CPL		
Coupling	1/4	2	TA 50.7/2	THRD-F NPT	3000#		Forged	ASTM A 182 GR. F304				SEE REMARK A		CPL		
Coupling Half	1/4	2	TA 50.7/2	THRD-F NPT	3000#		Forged	ASTM A 182 GR. F304				SEE REMARK A		CPLH		
Coupling Half	1/4	1/2	TA 50.6/1	SW-F	3000#		Forged	ASTM A 182 GR. F304						CPLH		
Coupling Reducing	1/4 1/8	1+1/2 1	TA 50.7/2	THRD-F NPT	3000#		Forged	ASTM A 182 GR. F304				SEE REMARK A		CPLR		
Coupling Reducing	1/2 1/4	1/2 1/4	TA 50.6/1	SW-F	3000#		Forged	ASTM A 182 GR. F304						CPLR		
Cross Straight	1/4	1+1/2	TA 50.7/2	THRD-F NPT	3000#		Forged	ASTM A 182 GR. F304				SEE REMARK A		CRO		
Cross Straight	1/4	1/2	TA 50.6/1	SW-F	3000#		Forged	ASTM A 182 GR. F304						CRO		
Plug Hex.	1/4	1+1/2	TA 50.7/2	THRD-M NPT	3000#		Forged	ASTM A 182 GR. F304				SEE REMARK A		PLG		
Union	1/4	1+1/2	TA 50.7/2	THRD-F NPT	3000#		Forged	ASTM A 182 GR. F304				SEE REMARK A		UN		
Union	1/4	1/2	TA 50.6/1	SW-F	3000#		Forged	ASTM A 182 GR. F304						UN		
Gasket	1/2	6	TA 50.5/31		900 LB	LM-LF (125±250 AARH)	—	B4C	FLAT					GAS		
Nozzle Pump	1/2	6	MANUFACTURE STD	FLG	900 LB	LF (125±250 AARH)								NZP		
Nozzle Standard	1/2	6	MANUFACTURE STD	FLG	900 LB	LF (125±250 AARH)								NZS		
Pipe to Pipe Branch	3/4 1/4	6 6	ASME B31.3	BE				ASTM A 312 TP 304						PT90		

Object	Standard of design	Material	Constructive characteristic	Tag	Default	Mod
Screws for valves	ASME B 18.2.1 /UNC	ASTM A 193 B7 Galvanized				
Stud Bolt + 2 Nuts	TA 50.48B/28 ASME B18.2.1 UNC/2.2 TAB. 9	ASTM A 193 B7/A194 2H Galvanized		x		

Ballestra	PIPING CLASS BRANCH			PROJ:	1E35	REV:	0	21/12/2009
PUMA5	18/01/2010 10.14.15			DOC:	1E35.10.031			
Ballestra	SULPHUREX CH/E	Size: In.	Thk: mm	Temp: °C	Press: BAR	Conn: mm		

Piping Class 226

Branch Table I226

Chgd

Branch	
H	Half coupling
I	Pipe to Pipe
TR	Tee Reducing
TS	Tee Straight

Run Size

Sizes translation Q=1/4, T8=3/8, M=1/2, 3Q=3/4, 1=1, 1O=1+1/4, 1M=1+1/2, 2=2, 2M=2+1/2, 3=3, 4=4, 5=5, 6=6

Ballestra		PIPING CLASS NOTE			PROJ:	1E35	REV:	0	21/12/2009
PUMA5	18/01/2010 10.14.20						DOC:	1E35.10.031 - Sh. 18	
Ballestra		SULPHUREX GH/F			Size: Inc	Thk: mm	Temp: °C	Pres: BAR	Corr: mm

Piping Class: 226

- Note:**
- A) USE ONLY FOR INSTRUMENTS, VENTS AND DRAINS.
 - B) FOR DN=> 3/4" USE BRANCH CONNECTIONS PIPE-TO-PIPE.
 - C) USE AS BLOCK VALVE AND HAND FOR VENTS AND DRAINS
 - D) USE ONLY FOR STEAM NOZZLES CIRCUIT.

SPECIAL PARTS:

- 1) INSULATION SPECIFICATION: NI 80.1-2/4.

REVISIONS:

REV. 0 - DATE 21/12/09 - ISSUED

DESMET - Ballestra		PIPING CLASS		PROJ:	1E35	REV:	0	21/12/2009
PUMA5 18/01/2010 10.19.37				DOC:	1E35-10-031 - Sh. 19			

DESMET - Ballestra	SLS - SECT. 77	Size: mm	Thk: mm	Temp: °C	Pres: BAR	Corr: mm
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Piping class 164

Client Reference Service SEE PIPING CLASS NOTE	Branch Table I164 Corrosion Allow 0.0 mm Welding Spec. SB-ATI-SP006/0 SB-ATI-SP007/0
Base Material 21 AISI 304 Rating P002 PN 2.5 Finish SD4 EN1092-1 B1-Ra	Applicable through Min Max Temperature °C 0 0 Pressure BAR 0 0
Heat Treatment Control level	Chgd Mod
Note FOR SERVICE, SPECIAL PARTS, GENERAL NOTES, REMARKS AND REVISIONS SEE ON THE LAST SHEET	

P	Standard of design	Mod	Size	Thk.	Mod
I	3103 ASME B31.3/1992		8	2,24	
			10	2,31	
			15	2,77	
			20	2,87	
			25	3,38	
			32	3,56	
			40	3,68	
			50	3,91	
			65	3,05	
			80	3,05	
			100	3,05	
			125	3,4	
			150	3,0	
			200	3,0	
			250	3,0	
			300	3,0	
			350	3,0	
			400	3,0	

DESMET - Ballestra		PIPING CLASS		PROJ:	1E35	REV:	0	21/12/2009
PUMA5	18/01/2010 10.19.37			DOC:	1E35-10-031 - Sh. 19			

DESMET - Ballestra	SLS - SECT. 77	Size: mm	Thk: mm	Temp: °C	Pres: BAR	Corr: mm
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Piping class 164

450	3,0
500	3,0
550	3,0
600	3,0
700	4,0
750	4,0
800	4,0
850	4,0
900	4,0
950	4,0
1000	4,0
1050	4,0
1100	4,0
1200	4,0
1300	4,0
1400	4,0
1500	4,0

DESMET - Ballestra		PIPING CLASS DETAIL						PROJ:	1E35	REV:	0	21/12/2009
PUMA5	18/01/2010 10.19.46						DOC:	1E35-10-031 - Sh. 19				
DESMET - Ballestra		SLS - SECT. 77				Size: mm	Thk: mm	Temp: °C	Pres: BAR	Corr: mm		

Piping Class 164

Object	From From	To (M) To (R)	Standard of design	End	Mat.	Constr.	Constr. Charact.	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Pipe	8	50	ASME B36.19	PL	sch.40 S	Seamless	ASTM A 312 TP304			SEE REMARK H	PIPE			
Pipe	65	125	ASME B36.19	PL		E.R.W.	ASTM A 312 TP304			SEE REMARK H	PIPE			
Pipe	150	1500	SB-ATI-PT005/0	PL		Welded	ASTM A 240 Gr. TP304			SEE REMARK H	PIPE			
Valve Ball Full Port	8	50	SB-ATI-VS020/0	THRD-F NPT	800#	Forged	ASTM A 182 Gr. F316		S 99		VBF			
Valve Plug	8	20	SB-ATI-VM001/0	THRD-F NPT	PN 16	Forged	ASTM A 182 Gr. F316		M 53	SEE REMARK E	VPLG			
Flange Blind + Disk	150	1500	SB-ATI-PF006/0		*	SB-ATI-PF006(125±25 0AARH)	From Plate	Fe 360 B - UNI 7070 - Galv. + DISK A240 TP304			FLB			
Flange Lap-Joint	15	125	EN 1092-1 Type 02		PN 2.5	EN1092-1 B1- Ra	Forged	ASTM A 105 Galvanized			FLJ			
Flange Lap-Joint	150	1500	SB-ATI-PF012/0		*	SB-ATI-PF012 FF Smooth	From Plate	Fe 360 B - UNI 7070			FLJ			
45° Elbow	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 182 Gr. F304			SEE REMARK B	45E			
45° Elbow	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 182 Gr. F304				45E			
45° Elbow Long Radius	20	50	ASME B16.9	BE	sch.40	Wrought S	ASTM A 403 Gr. WP304			SEE REMARK A	45ELR			
45° Elbow Long Radius	65	150	ASME B16.9	BE		Wrought W	ASTM A 403 Gr. WP304			SEE REMARK A	45ELR			
45° Miter	200	1500	SB-ATI-PC003/0	BE		Welded	ASTM A 240 Gr. TP304	R=1.5 D		SEE REMARK A	45M			
90° Elbow	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 182 Gr. F304			SEE REMARK B	90E			
90° Elbow	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 182 Gr. F304				90E			
90° Elbow Long Radius	20	50	ASME B16.9	BE	sch.40	Wrought S	ASTM A 403 Gr. WP304			SEE REMARK A	90ELR			
90° Elbow Long Radius	65	150	ASME B16.9	BE		Wrought W	ASTM A 403 Gr. WP304			SEE REMARK A	90ELR			
90° Miter	200	1500	SB-ATI-PC003/0	BE		Welded	ASTM A 240 Gr. TP304	R=1.5 D		SEE REMARK A	90M			
Reducer Concentric	20	50	ASME B16.9	BE	sch.40	Wrought S	ASTM A 403 Gr. WP304				REDC			
Reducer Concentric	65	150	ASME B16.9	BE		Wrought W	ASTM A 403 Gr. WP304				REDC			
Reducer Concentric	200	1500	SB-ATI-PR005/0	BE		Welded	ASTM A 240 Gr. TP304				REDC			
Reducer Eccentric	20	50	ASME B16.9	BE	sch.40	Wrought S	ASTM A 403 Gr. WP304				REDE			
Reducer Eccentric	65	150	ASME B16.9	BE		Wrought W	ASTM A 403 Gr. WP304				REDE			

DESMET - Ballestra		PIPING CLASS DETAIL						PROJ:	1E35	REV:	0	21/12/2009
PUMA5	18/01/2010 10.19.46							DOC:	1E35-10-031 - Sh. 19			
DESMET - Ballestra		SLS - SECT. 77		Size: mm		Thk: mm	Temp: °C		Pres: BAR	Corr: mm		

Piping Class 164

Object	From From	To (M) To (R)	Standard of design	End	Mat.	Constr.	Material	Constructive Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Reducer Eccentric	200	1500	SB-ATI-PR005/0	BE	Welded		ASTM A 240 Gr. TP304					REDE			
Tee Straight	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 182 Gr. F304				SEE REMARK F	TEE			
Tee Straight	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 182 Gr. F304				SEE REMARK B	TEE			
Tee Reducing	15	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 182 Gr. F304				SEE REMARK B	TEER			
Tee Reducing	15	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 182 Gr. F304				SEE REMARK F	TEER			
Reducing Insert M/F	8	40	SB-ATI-PR008/0	THRD-M NPT x THRD-F	3000#	Forged	ASTM A 182 Gr. F304				SEE REMARK B	BUS			
Reducing Insert M/F	15	15	SB-ATI-PR007/0	SW-F x PL	3000#	Forged	ASTM A 182 Gr. F304	TYPE 12				BUS			
Reducing Insert M/F	15	15	SB-ATI-PR007/0	SW-F x PL	3000#	Forged	ASTM A 182 Gr. F304	TYPE 13				BUS			
Reducing Insert M/F	15	15	SB-ATI-PR007/0	SW-F x PL	3000#	Forged	ASTM A 182 Gr. F304	TYPE 11				BUS			
Cap	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 182 Gr. F304					CAP			
Cap	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 182 Gr. F304				SEE REMARK B	CAP			
Coupling	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 182 Gr. F304				SEE REMARK B	CPL			
Coupling	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 182 Gr. F304					CPL			
Coupling Half	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 182 Gr. F304				SEE REMARK B	CPLH			
Coupling Half	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 182 Gr. F304					CPLH			
Coupling Reducing	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 182 Gr. F304				SEE REMARK B	CPLR			
Coupling Reducing	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 182 Gr. F304					CPLR			
Cross Straight	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 182 Gr. F304					CRO			
Cross Straight	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 182 Gr. F304				SEE REMARK B	CRO			
Stub-End	15	125	EN 1092-1 Type 37	BE	PN 2.5	Wrought W	ASTM A 403 Gr. WP304					FLSE			
Stub-End	150	1500	SB-ATI-PF009/0	BE	*	From Plate	ASTM A 240 Gr. TP304					FLSE			
Plug Hex.	8	40	SB-ATI-PR008/0	THRD-M NPT	3000#	Forged	ASTM A 182 Gr. F304				SEE REMARK B	PLG			
Union	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 182 Gr. F304				SEE REMARK B	UN			
Union	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 182 Gr. F304					UN			
Gasket	15	125	SB-ATI-PV009/1		PN 2.5 EN1092-1 B1- Ra	B2C	FLAT				SEE REMARK C	GAS			
Gasket	150	1500	SB-ATI-PV009/1		*	SB-ATI- PF012 FF Smooth	-	A9C				GAS			

DESMET - Ballestra		PIPING CLASS DETAIL				PROJ:	1E35	REV:	0	21/12/2009
PUMA5	18/01/2010 10.19.47					DOC:	1E35-10-031 - Sh. 19			
DESMET - Ballestra		SLS - SECT. 77		Size: mm		Thk: mm	Temp: °C		Pres: BAR	Corr: mm

Piping Class 164

Object	From From	To To	(M) (R)	Standard of design	End	Rat.	Finish	Construction	Material	Constructive Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Object	Standard of design				Material				Constructive characteristic			Tag		Default	Mod		
Machine Bolt + 1 Nut	SB-ATI-PV008A/0 - UNI 5727 + UNI 5592				4.6 UNI 3740 + 4A UNI 3740									x			

DESMET - Ballestra		PIPING CLASS BRANCH	PROJ:	1E35	REV:	0	21/12/2009
PUMA5	18/01/2010 10.19.55		DOC:	1E35-10-031			

DESMET - Ballestra

SLS - SECT. 77

Size: mm **Thk:** mm

Pres: B

Corr: mm

Piping Class 164

Branch Table I164

Chgd

Branch	
I	Pipe to Pipe
TR	Tee Reducing
TS	Tee Straight

DESMET - Ballestra		PIPING CLASS BRANCH										PROJ:	1E35	REV:	0	21/12/2009		
PUMA5	18/01/2010 10.19.55											DOC:	1E35-10-031					
DESMET - Ballestra		SLS - SECT. 77										Size:	mm	Thk:	mm	Temp: °C	Pres: BAR	Corr: mm

60 56 52 48 44 42 40 38 36 34 32 30 28 24 22 20 18 16 14 12 10 8 6 5 4 3 2M 2 1M 1Q 1 3Q M T8 Q

Run Size

Sizes translation Q=8, T8=10, M=15, 3Q=20, 1=25, 1Q=32, 1M=40, 2=50, 2M=65, 3=80, 4=100, 5=125, 6=150, 8=200, 10=250, 12=300, 14=350, 16=400, 18=450, 20=500, 22=550, 24=600, 28=700
30=750, 32=800, 34=850, 36=900, 38=950, 40=1000, 42=1050, 44=1100, 48=1200, 52=1300, 56=1400, 60=1500

DESMET - Ballestra		PIPING CLASS NOTE		PROJ:	1E35	REV:	0	21/12/2009
PUMA5	18/01/2010 10.20.01			DOC:	1E35-10-031 - Sh. 19			
DESMET - Ballestra		SLS - SECT. 77		Size:	mm	Thk:	mm	Temp: °C
				Pres:	BAR	Corr:	mm	

Piping Class: 164

Note:	SERVICE: DEDUSTING AIR - DUSTY AIR (from SPRAY-DRY TOWER) - SUCTION AND DISCHARGE OF FANS (SABIZ PLANT) POWDERS DOWNFALL (DETERGENT, SODIUM PERBORATE/CARBONATE, TPP, SODIUM SULPHATE/TOLUENSULPHATE)
	SPECIAL PARTS: 1) INSULATION SPECIFICATION: SB-ATI-SP030/0 2) FOR DIVERTING AND/OR SLEEVE VALVES (UNDER SILOS) SEE BALLESTRA'S STANDARD
	GENERAL NOTES: 1) FOR TYPICAL INSTRUMENTS CONNECTIONS SEE SB-ATI-PV001/0 2) FOR TEST TYPE SEE SB-ATI-SP009/0 SB-ATI-SP010/0 3) FOR DEDUSTING SYSTEM USE "Y" CONNECTIONS (45 DEG OR LESS)
	REMARKS: A) FOR POWDER DOWNFALL DON'T USE ELBOWS BUT SLOPE PIPES (38 DEG OR LESS) B) USE ONLY FOR INSTRUMENTS, VENTS AND DRAINS C) - D) - E) USE FOR PRESSURE TAPS "P" ONLY F) FOR DN \geq 20 USE BRANCH CONNECTIONS PIPE-TO-PIPE G) - H) FOR DEDUSTING AIR AND DUSTY AIR PROVIDE ASSEMBLY/DISASSEMBLY FLANGING ON HORIZONTAL LINES (MAX LENGTH 5,8m) I) -
	REVISIONS: Rev. 0 - Date 21/12/09 - ISSUED

DESMET - Ballestra		PIPING CLASS		PROJ:	1E35	REV:	0	13/01/2010
PUMA5	18/01/2010 10.21.12			DOC:	1E35-10-031 - Sh. 20			

DESMET - Ballestra	SLS - SECT. 77	Size: mm	Thk: mm	Temp: °C	Pres: BAR	Corr: mm
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Piping class 109

Client Reference Service HOT AIR - TEMPORARY LINE FOR SULPHUR FURNACE DRYING	Branch Table I109 Corrosion Allow 1.27 mm Welding Spec. SB-ATI-SP006/0 SB-ATI-SP007/0
Base Material 11 CARBON STEEL Rating P006 PN 6 Finish SD4 EN1092-1 B1-Ra	Applicable through Min Max Temperature °C 0 0 Pressure BAR 0 0
Heat Treatment	
Control level	
Note FOR SPECIAL PARTS, GENERAL NOTES, REMARKS AND REVISIONS SEE ON THE LAST SHEET	

P	Standard of design	Mod	Size	Thk.	Mod
I	3103 ASME B31.3/1992		8	2,24	
			10	2,31	
			15	2,77	
			20	2,87	
			25	3,38	
			32	3,56	
			40	3,68	
			50	3,91	
			65	3,18	
			80	3,18	
			100	3,18	
			125	3,96	
			150	3,96	
			200	3,96	
			250	3,96	
			300	4,78	
			350	5,0	
			400	5,0	

DESMET - Ballestra		PIPING CLASS		PROJ:	1E35	REV:	0	13/01/2010
PUMA5	18/01/2010 10.21.12			DOC:	1E35-10-031 - Sh. 20			

DESMET - Ballestra	SLS - SECT. 77	Size: mm	Thk: mm	Temp: °C	Pres: BAR	Corr: mm
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Piping class 109

450	5,0
500	5,0
550	6,0
600	6,0
650	6,0
700	6,0
750	6,0
800	6,0
850	6,0
900	6,0
950	6,0
1000	6,0
1050	6,0
1100	6,0
1200	6,0
1300	6,0
1400	6,0
1500	6,0

DESMET - Ballestra		PIPING CLASS DETAIL						PROJ:	1E35	REV:	0	13/01/2010
PUMA5	18/01/2010 10.21.18							DOC:	1E35-10-031 - Sh. 20			
DESMET - Ballestra		SLS - SECT. 77		Size: mm		Thk: mm	Temp: °C		Pres: BAR	Corr: mm		

Piping Class 109

Object	From From	To (M) To (R)	Standard of design	End	Mat.	Constr. Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Pipe	8	50	ASME B36.10	PL	sch.40	Seamless	API 5L Gr.B				PIPE		
Pipe	65	300	ASME B36.10	PL		E.R.W.	API 5L Gr.B				PIPE		
Pipe	350	1500	SB-ATI-PT003/0	PL		Welded	Fe 410-1 KW - UNI 5869				PIPE		
Valve Butterfly	80	350	SB-ATI-VB001/0	WAFER	PN 6	EN1092-1 B1- Forged Ra	ASTM A 105	B 52			VBY		
Valve Butterfly	400	1500	SB-ATI-VB005/0	FLG	*	SB-ATI-PF001(125±25 0AARH)	Cast	ASTM A 216 Gr. WCB	B 61		VBY		
Valve Plug	8	25	SB-ATI-VM001/0	THRD-F NPT	PN 16	Forged	ASTM A 182 Gr. F316	M 53	SEE REMARK D		VPLG		
Blind & Spacer	400	1500	SB-ATI-PA001/0	WAFER	*	FF (125±250 AARH)	From Plate	Fe 410-1 KW - UNI 5869			BSPA		
Spectacle Blind	20	350	SB-ATI-PD010/0	WAFER	PN 6	FF (125±250 AARH)	From Plate	Fe 410-1 KW - UNI 5869			BSPE		
Flange Blind	10	350	EN 1092-1 Type 05		PN 6	EN1092-1 B1- Forged Ra	ASTM A 105				FLB		
Flange Slip-On	10	350	EN 1092-1 Type 01		PN 6	EN1092-1 B1- Forged Ra	ASTM A 105				FLS		
Flange Slip-On	400	1500	SB-ATI-PF001/0		*	SB-ATI-PF001(125±25 0AARH)	From Plate	Fe 510-C UNI 7070			FLS		
45° Elbow	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105		SEE REMARK B		45E		
45° Elbow	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105				45E		
45° Elbow Long Radius	20	50	ASME B16.9	BE	sch.40	Wrought S	ASTM A 234 Gr. WPB				45ELR		
45° Elbow Long Radius	65	300	ASME B16.9	BE		E.R.W.	ASTM A 234 Gr. WPB				45ELR		
45° Miter	350	1500	SB-ATI-PC003/0	BE		Welded	Fe 410-1 KW - UNI 5869 R=1.5 D				45M		
90° Elbow	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105				90E		
90° Elbow	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105		SEE REMARK B		90E		
90° Elbow Long Radius	20	50	ASME B16.9	BE	sch.40	Wrought S	ASTM A 234 Gr. WPB				90ELR		
90° Elbow Long Radius	65	300	ASME B16.9	BE		E.R.W.	ASTM A 234 Gr. WPB				90ELR		
90° Miter	350	1500	SB-ATI-PC003/0	BE		Welded	Fe 410-1 KW - UNI 5869 R=1.5 D				90M		
Reducer Concentric	20	50	ASME B16.9	BE	sch.40	Wrought S	ASTM A 234 Gr. WPB				REDC		
Reducer Concentric	65	300	ASME B16.9	BE		E.R.W.	ASTM A 234 Gr. WPB				REDC		
Reducer Concentric	350	1500	SB-ATI-PR001/0	BE		Welded	Fe 410-1 KW - UNI 5869				REDC		
Reducer Eccentric	20	50	ASME B16.9	BE	sch.40	Wrought S	ASTM A 234 Gr. WPB				REDE		

DESMET - Ballestra		PIPING CLASS DETAIL						PROJ:	1E35	REV:	0	13/01/2010
PUMA5	18/01/2010 10.21.19							DOC:	1E35-10-031 - Sh. 20			
DESMET - Ballestra		SLS - SECT. 77		Size: mm		Thk: mm	Temp: °C		Pres: BAR	Corr: mm		

Piping Class 109

Object	From From	To (M) To (R)	Standard of design	End	Mat.	Constr. Constructive Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
				Rat.	Finish	Construction							
Reducer Eccentric	65	300	ASME B16.9	BE	E.R.W.	ASTM A 234 Gr. WPB					REDE		
Reducer Eccentric	350	1500	SB-ATI-PR001/0	BE	Welded	Fe 410-1 KW - UNI 5869					REDE		
Tee Straight	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105		SEE REMARK C		TEE		
Tee Straight	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105		SEE REMARK B		TEE		
Tee Reducing	15	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105		SEE REMARK C		TEER		
Tee Reducing	15	50	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105		SEE REMARK B		TEER		
Reducing Insert M/F	8	50	SB-ATI-PR008/0	THRD-M NPT x THRD-F	3000#	Forged	ASTM A 105		SEE REMARK B		BUS		
Reducing Insert M/F	8	15	SB-ATI-PR007/0	SW-F x PL	3000#	Forged	ASTM A 105	TYPE 13			BUS		
Reducing Insert M/F	8	15	SB-ATI-PR007/0	SW-F x PL	3000#	Forged	ASTM A 105	TYPE 11			BUS		
Reducing Insert M/F	8	15	SB-ATI-PR007/0	SW-F x PL	3000#	Forged	ASTM A 105	TYPE 12			BUS		
Cap	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105				CAP		
Cap	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105		SEE REMARK B		CAP		
Cap	20	300	ASME B16.9	BE		Seamless	ASTM A 234 Gr. WPB		SEE REMARK A		CAP		
Coupling	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105		SEE REMARK B		CPL		
Coupling	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105				CPL		
Coupling Half	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105				CPLH		
Coupling Half	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105		SEE REMARK B		CPLH		
Coupling Reducing	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105				CPLR		
Coupling Reducing	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105		SEE REMARK B		CPLR		
Cross Straight	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105				CRO		
Cross Straight	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105		SEE REMARK B		CRO		
Plug Hex.	8	50	SB-ATI-PR008/0	THRD-M NPT	3000#	Forged	ASTM A 105		SEE REMARK B		PLG		
Union	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105				UN		
Union	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105		SEE REMARK B		UN		
Gasket	10	350	SB-ATI-PV009/1		PN 6 EN1092-1 B1- Ra	B2D	FLAT				GAS		
Gasket	400	1500	SB-ATI-PV009/1	*	SB-ATI-PF001(125±25 0AARH)	A9D	FLAT-RING				GAS		

DESMET - Ballestra		PIPING CLASS DETAIL				PROJ:	1E35	REV:	0	13/01/2010
PUMA5	18/01/2010 10.21.19					DOC:	1E35-10-031 - Sh. 20			
DESMET - Ballestra		SLS - SECT. 77		Size: mm		Thk: mm	Temp: °C		Pres: BAR	Corr: mm

Piping Class 109

Object	From From	To To	(M) (R)	Standard of design	End	Rat.	Finish	Construction	Material	Constructive Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Object	Standard of design				Material				Constructive characteristic			Tag		Default	Mod		
Stud Bolt + 2 Nuts	SB-ATI-PV008B/0 ASME B18.2.1 UNC/2.2 Tab.9				ASTM A 193 B7 / A 194 Gr.2H									x			

DESMET - Ballestra		PIPING CLASS BRANCH	PROJ:	1E35	REV:	0	13/01/2010
PUMA5	18/01/2010 10.21.26		DOC:	1E35-10-031			

DESMET - Ballestra

SLS - SECT. 77

Size: mm **Thk:** mm

Pres: B

Corr: mm

Piping Class 109

Branch Table I109

Chgd

Branch	
I	Pipe to Pipe
TR	Tee Reducing
TS	Tee Straight

DESMET - Ballestra		PIPING CLASS BRANCH	PROJ:	1E35	REV:	0	13/01/2010
PUMA5	18/01/2010 10.21.27		DOC:	1E35-10-031			

DESMET - Ballestra

SLS - SECT. 77

Size: mm

Pres

1

rr: mm

Run Size

Sizes translation Q=8, T8=10, M=15, 3Q=20, 1=25, 1Q=32, 1M=40, 2=50, 2M=65, 3=80, 4=100, 5=125, 6=150, 8=200, 10=250, 12=300, 14=350, 16=400, 18=450, 20=500, 22=550, 24=600, 26=650
28=700, 30=750, 32=800, 34=850, 36=900, 38=950, 40=1000, 42=1050, 44=1100, 48=1200, 52=1300, 56=1400, 60=1500

DESMET - Ballestra		PIPING CLASS NOTE			PROJ:	1E35	REV:	0	13/01/2010
PUMA5	18/01/2010 10.21.36				DOC:	1E35-10-031 - Sh. 20			
DESMET - Ballestra		SLS - SECT. 77			Size: mm	Thk: mm	Temp: °C	Pres: BAR	Corr: mm

Piping Class: 109

Note:	SPECIAL PARTS: 1) INSULATION SPECIFICATION: SB-ATI-SP030/0 2) EXPANSION JOINTS: SB-ATI-PV004/0 OR AS AGREED DURING DESIGN DEVELOPMENT
	GENERAL NOTES: 1) FOR TYPICAL INSTRUMENTS CONNECTIONS SEE SB-ATI-PV001/0 2) FOR TEST TYPE SEE SB-ATI-SP009/0 SB-ATI-SP010/0
	REMARKS: A) FOR DN \geq 350 USE BLIND DISK WITH THICKNESS: 6mm FOR DN=350-700, 8mm FOR DN=800-900, 10 mm FOR DN=1000-1200, 12 mm FOR DN=1300-1400, 14 mm FOR DN=1500 (MATERIAL: STEEL PLATE Fe 410-1 KW - UNI 5869) B) USE ONLY FOR INSTRUMENTS, VENTS, DRAINS AND SAMPLING HATCHES C) FOR DN \geq 20 USE BRANCH CONNECTIONS PIPE-TO-PIPE D) USE FOR PRESSURE TAPS "P" AND SAMPLING HATCHES ONLY
	REVISIONS: Rev. 0 - Date 13/01/10 - ISSUED

DESMET - Ballestra		PIPING CLASS		PROJ:	1E35	REV:	0	13/01/2010
PUMA5	18/01/2010 10.21.45			DOC:	1E35-10-031 - Sh. 21			

DESMET - Ballestra	SLS - SECT. 77	Size: mm	Thk: mm	Temp: °C	Pres: BAR	Corr: mm
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Piping class 124

Client Reference Service SEE PIPING CLASS NOTE	Branch Table I124 Corrosion Allow 0.0 mm Welding Spec. SB-ATI-SP006/0 SB-ATI-SP007/0
Base Material 11 CARBON STEEL Rating P006 PN 6 Finish RF3 UNI 2229 (125÷250 AARH)	Applicable through Temperature °C 0 0 Pressure BAR 0 0
Heat Treatment Control level	Chgd Mod
Note FOR SERVICE, SPECIAL PARTS, GENERAL NOTES, REMARKS AND REVISIONS SEE ON THE LAST SHEET	

P Standard of design	Mod	Size	Thk.	Mod
I 3103	ASME B31.3/1992	8	2,24	
Temp. °C	Press. BAR	10	2,31	
120,0	0,10	15	2,77	
		20	2,87	
		25	3,38	
		32	3,56	
		40	3,68	
		50	3,91	
		65	3,18	
		80	3,18	
		100	3,18	
		125	3,96	
		150	3,96	
		200	3,0	
		250	3,0	
		300	3,0	
		350	3,0	
		400	3,0	

DESMET - Ballestra		PIPING CLASS		PROJ:	1E35	REV:	0	13/01/2010
PUMA5	18/01/2010 10.21.45			DOC:	1E35-10-031 - Sh. 21			

DESMET - Ballestra	SLS - SECT. 77	Size: mm	Thk: mm	Temp: °C	Pres: BAR	Corr: mm
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Piping class 124

450	3,0
500	3,0
550	3,0
600	3,0
700	3,0
750	3,0
800	4,0
850	4,0
900	4,0
950	4,0
1000	4,0
1050	4,0
1100	4,0
1200	4,0
1300	5,0
1400	5,0
1500	5,0

DESMET - Ballestra		PIPING CLASS DETAIL						PROJ:	1E35	REV:	0	13/01/2010	
PUMA5	18/01/2010 10.21.53							DOC:	1E35-10-031 - Sh. 21				
DESMET - Ballestra		SLS - SECT. 77		Size:	mm	Thk:	mm	Temp:	°C	Pres:	BAR	Corr:	mm

Piping Class 124

Object	From From	To (M) To (R)	Standard of design	End	Mat.	Constr.	Constr. Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Pipe	8	50	ASME B36.10	PL	sch.40	Seamless	API 5L Gr.B			SEE REMARK H	PIPE			
Pipe	65	150	ASME B36.10	PL		E.R.W.	API 5L Gr.B			SEE REMARK H	PIPE			
Pipe	200	1500	SB-ATI-PT002/0	PL		Welded	Fe 360 B - UNI 7070			SEE REMARK H	PIPE			
Valve Ball Full Port	8	50	SB-ATI-VS014/0	THRD-F NPT	200 LB	Forged	BRASS NICKEL PLATED		S 87		VBF			
Valve Butterfly	40	400	SB-ATI-VB008/0	WAFER	*	SB-ATI- PF001(125±25 0AARH)	Cast	ALUMINIUM	B 68	SEE REMARK G	VBY			
Valve Butterfly	80	350	SB-ATI-VB004/0	FLG	*	SB-ATI- PF001(125±25 0AARH)	Forged or cast	ASTM A 105 or ASTM A 216 WCB	B 60		VBY			
Valve Butterfly	400	1500	SB-ATI-VB005/0	FLG	*	SB-ATI- PF001(125±25 0AARH)	Cast	ASTM A 216 Gr. WCB	B 61		VBY			
Valve Butterfly With Gasket	65	400	SB-ATI-VB013/0	WAFER	PN 6	UNI 2223 (125±250 AARH)	Cast	DUCTILE IRON	B 72	SEE REMARK D	VBY			
Valve Plug	8	20	SB-ATI-VM001/0	THRD-F NPT	PN 16	Forged	ASTM A 182 Gr. F316		M 53	SEE REMARK E	VPLG			
Valve Slide	150	1200	SB-ATI-VV001/0				CARBON STEEL		SV 10	SEE REMARK I	VSLI			
Blind & Spacer	350	1500	SB-ATI-PD002/0	WAFER	*	FF (125±250 AARH)	From Plate	Fe 360 B - UNI 7070			BSPA			
Spectacle Blind	40	300	SB-ATI-PD002/0	WAFER	*	FF (125±250 AARH)	From Plate	Fe 360 B - UNI 7070			BSPE			
Flange Blind	40	1500	SB-ATI-PF008/0		*	SB-ATI- PF008(125±25 0AARH)	From Plate	Fe 360 B - UNI 7070			FLB			
Flange Slip-On	40	150	UNI 2276		PN 6	UNI 2229 (125±250 AARH)	Forged	ASTM A 105		SEE REMARK C	FLS			
Flange Slip-On	40	1500	SB-ATI-PF001/0		*	SB-ATI- PF001(125±25 0AARH)	From Plate	Fe 360 B - UNI 7070			FLS			
Flange Slip-On	200	400	UNI 6082		PN 2.5	UNI 2229 (125±250 AARH)	Forged	ASTM A 105		SEE REMARK C	FLS			
45° Elbow	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105			SEE REMARK B	45E			
45° Elbow	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105				45E			
45° Elbow Long Radius	20	50	ASME B16.9	BE	sch.40	Wrought S	ASTM A 234 Gr. WPB			SEE REMARK A	4SELR			
45° Elbow Long Radius	65	150	ASME B16.9	BE		E.R.W.	ASTM A 234 Gr. WPB			SEE REMARK A	4SELR			
45° Miter	200	1500	SB-ATI-PC003/0	BE		Welded	Fe 360 B - UNI 7070	R=1.5 D		SEE REMARK A	45M			
90° Elbow	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105			SEE REMARK B	90E			

DESMET - Ballestra		PIPING CLASS DETAIL						PROJ:	1E35	REV:	0	13/01/2010
PUMA5	18/01/2010 10.21.53							DOC:	1E35-10-031 - Sh. 21			
DESMET - Ballestra		SLS - SECT. 77		Size: mm		Thk: mm	Temp: °C		Pres: BAR	Corr: mm		

Piping Class 124

Object	From From	To (M) To (R)	Standard of design	End	Mat.	Constr.	Material	Constructive Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
90° Elbow	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105						90E		
90° Elbow Long Radius	20	50	ASME B16.9	BE	sch.40	Wrought S	ASTM A 234 Gr. WPB				SEE REMARK A		90ELR		
90° Elbow Long Radius	65	150	ASME B16.9	BE		E.R.W.	ASTM A 234 Gr. WPB				SEE REMARK A		90ELR		
90° Miter	200	1500	SB-ATI-PC003/0	BE		Welded	Fe 360 B - UNI 7070	R=1.5 D			SEE REMARK A		90M		
Reducer Concentric	20	50	ASME B16.9	BE	sch.40	Wrought S	ASTM A 234 Gr. WPB						REDC		
Reducer Concentric	65	150	ASME B16.9	BE		E.R.W.	ASTM A 234 Gr. WPB						REDC		
Reducer Concentric	200	1500	SB-ATI-PR005/0	BE		Welded	Fe 360 B - UNI 7070						REDC		
Reducer Eccentric	20	50	ASME B16.9	BE	sch.40	Wrought S	ASTM A 234 Gr. WPB						REDE		
Reducer Eccentric	65	150	ASME B16.9	BE		E.R.W.	ASTM A 234 Gr. WPB						REDE		
Reducer Eccentric	200	1500	SB-ATI-PR005/0	BE		Welded	Fe 360 B - UNI 7070						REDE		
Tee Straight	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105				SEE REMARK F		TEE		
Tee Straight	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105				SEE REMARK B		TEE		
Tee Reducing	15	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105				SEE REMARK F		TEER		
Tee Reducing	15	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105				SEE REMARK B		TEER		
Reducing Insert M/F	8	40	SB-ATI-PR008/0	THRD-M NPT x THRD-F	3000#	Forged	ASTM A 105				SEE REMARK B		BUS		
Reducing Insert M/F	15	15	SB-ATI-PR007/0	SW-F x PL	3000#	Forged	ASTM A 105		TYPE 12					BUS	
Reducing Insert M/F	15	15	SB-ATI-PR007/0	SW-F x PL	3000#	Forged	ASTM A 105		TYPE 13					BUS	
Reducing Insert M/F	15	15	SB-ATI-PR007/0	SW-F x PL	3000#	Forged	ASTM A 105		TYPE 11					BUS	
Cap	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105						CAP		
Cap	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105				SEE REMARK B		CAP		
Coupling	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105						CPL		
Coupling	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105				SEE REMARK B		CPL		
Coupling Half	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105				SEE REMARK B		CPLH		
Coupling Half	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105						CPLH		
Coupling Reducing	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105				SEE REMARK B		CPLR		
Coupling Reducing	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105						CPLR		
Cross Straight	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105				SEE REMARK B		CRO		
Cross Straight	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105						CRO		
Plug Hex.	8	40	SB-ATI-PR008/0	THRD-M NPT	3000#	Forged	ASTM A 105				SEE REMARK B		PLG		
Union	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105						UN		

DESMET - Ballestra		PIPING CLASS DETAIL				PROJ:	1E35	REV:	0	13/01/2010
PUMA5	18/01/2010 10.21.54					DOC:	1E35-10-031 - Sh. 21			
DESMET - Ballestra		SLS - SECT. 77		Size: mm		Thk: mm	Temp: °C		Pres: BAR	Corr: mm

Piping Class 124

Object	From From	To (M) To (R)	Standard of design	End	Mat.	Rat.	Finish	Construction	Material	Constructive Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Union	8	40	SB-ATI-PR008/0	THRD-F NPT		3000#		Forged	ASTM A 105				SEE REMARK B		UN		
Gasket	40	400	SB-ATI-PV009/1			PN 6	UNI 2223/2229 _	B2C	FLAT				SEE REMARK C		GAS		
Gasket	40	1500	SB-ATI-PV009/1			*	SB-ATI- PF001(125÷25 0AARH)	A9C	FLAT-RING						GAS		
Gasket	200	400	SB-ATI-PV009/1			PN 2.5	UNI 2223/2229 _	B2C	FLAT				SEE REMARK C		GAS		
Object	Standard of design			Material			Constructive characteristic			Tag		Default		Mod			
Machine Bolt + 1 Nut	SB-ATI-PV008A/0 - UNI 5727 + UNI 5592			4.6 UNI 3740 + 4A UNI 3740								X					

DESMET - Ballestra		PIPING CLASS BRANCH	PROJ:	1E35	REV:	0	13/01/2010
PUMA5	18/01/2010 10.22.01		DOC:	1E35-10-031			

DESMET - Ballestra

SLS - SECT. 77

Size: mm **Thk:** mm

Pres: B

Corr: mm

Piping Class 124

Branch Table I124

Chgd

Branch	
I	Pipe to Pipe
TR	Tee Reducing
TS	Tee Straight

DESMET - Ballestra		PIPING CLASS BRANCH										PROJ:	1E35	REV:	0	13/01/2010		
PUMA5	18/01/2010 10.22.02											DOC:	1E35-10-031					
DESMET - Ballestra		SLS - SECT. 77										Size:	mm	Thk:	mm	Temp: °C	Pres: BAR	Corr: mm

60 56 52 48 44 42 40 38 36 34 32 30 28 24 22 20 18 16 14 12 10 8 6 5 4 3 2M 2 1M 1Q 1 3Q M T8 Q

Run Size

Sizes translation Q=8, T8=10, M=15, 3Q=20, 1=25, 1Q=32, 1M=40, 2=50, 2M=65, 3=80, 4=100, 5=125, 6=150, 8=200, 10=250, 12=300, 14=350, 16=400, 18=450, 20=500, 22=550, 24=600, 28=700
30=750, 32=800, 34=850, 36=900, 38=950, 40=1000, 42=1050, 44=1100, 48=1200, 52=1300, 56=1400, 60=1500

DESMET - Ballestra		PIPING CLASS NOTE		PROJ:	1E35	REV:	0	13/01/2010
PUMA5	18/01/2010 10.22.07			DOC:	1E35-10-031 - Sh. 21			
DESMET - Ballestra		SLS - SECT. 77		Size:	mm	Thk:	mm	Temp: °C
				Pres:	BAR	Corr:	mm	

Piping Class: 124

Note:	SERVICE: DEDUSTING AIR - DUSTY AIR (from SPRAY-DRY TOWER) - SUCTION AND DISCHARGE OF FANS (SABIZ PLANT) POWDERS DOWNFALL (DETERGENT, SODIUM PERBORATE/CARBONATE, TPP, SODIUM SULPHATE/TOLUENSULPHATE)
	SPECIAL PARTS: 1) INSULATION SPECIFICATION: SB-ATI-SP030/0 2) FOR DIVERTING AND/OR SLEEVE VALVES (UNDER SILOS) SEE BALLESTRA'S STANDARD
	GENERAL NOTES: 1) FOR TYPICAL INSTRUMENTS CONNECTIONS SEE SB-ATI-PV001/0 2) FOR TEST TYPE SEE SB-ATI-SP009/0 SB-ATI-SP010/0 3) FOR DEDUSTING SYSTEM USE "Y" CONNECTIONS (45 DEG OR LESS)
	REMARKS: A) FOR POWDER DOWNFALL DON'T USE ELBOWS BUT SLOPE PIPES (38 DEG OR LESS) B) USE ONLY FOR INSTRUMENTS, VENTS AND DRAINS C) USE FOR VALVES "B 72" AND/OR "DOUBLE FLAP DISCHARGERS" D) USE FOR "AIR FILTERS" BOTTOM DISCHARGE E) USE FOR PRESSURE TAPS "P" ONLY F) FOR DN \geq 20 USE BRANCH CONNECTIONS PIPE-TO-PIPE G) USE FOR DEDUSTING SYSTEM H) FOR DEDUSTING AIR AND DUSTY AIR PROVIDE ASSEMBLY/DISASSEMBLY FLANGING ON HORIZONTAL LINES (MAX LENGTH 5,8m) I) USE FOR BOTTOM DISCHARGE CUT OFF ON THE POWDER SILOS AND ON THE POWDER DOWNFALL PIPELINES
REVISIONS:	Rev. 0 - Date 13/01/10 - ISSUED

DESMET - Ballestra		PIPING CLASS		PROJ:	1E35	REV:	0	16/07/2010
PUMA5 16/07/2010 8.53.20				DOC:	1E35-10-031 - Sh. 22			

DESMET - Ballestra	SABIZ	Size: mm	Thk: mm	Temp: °C	Pres: Bar(g)	Corr: mm
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Piping class 126

Client Reference Service H.P. SLURRY - H.P. PROCESS AIR	Branch Table I126 Corrosion Allow 1.27 mm Welding Spec. SB-ATI-SP006/0 SB-ATI-SP007/0
Base Material 11 CARBON STEEL	Applicable through
Rating 0600 600 LB	Min
Finish LM1 LM (125÷250 AARH)	Max
Heat Treatment	Temperature °C
Control level	Pressure Bar(g)
Note FOR SPECIAL PARTS, GENERAL NOTES, REMARKS AND REVISIONS SEE ON THE LAST SHEET	Chgd Mod

P	Standard of design	Mod	Size	Thk.	Mod
I	3103 ASME B31.3/1992		8	2,24	
Temp. °C	Press. Bar(g)	Mod	10	2,31	
80,0	98,00		15	2,77	
			20	2,87	
			25	3,38	
			32	3,56	
			40	3,68	
			50	3,91	
			65	5,16	
			80	5,49	
			100	6,02	
			125	9,53	
			150	10,97	

DESMET - Ballestra		PIPING CLASS DETAIL						PROJ:	1E35	REV:	0	16/07/2010
PUMA5	16/07/2010 8.53.23							DOC:	1E35-10-031 - Sh. 22			

DESMET - Ballestra	SABIZ	Size: mm	Thk: mm	Temp: °C	Pres: Bar(g)	Corr: mm
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Piping Class 126

Object	From From	To (M) To (R)	Standard of design	End	Mat.	Constr. Finish	Construction	Material	Constructive Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Pipe	8	150	ASME B36.10	PL		Seamless		ASTM A 106 Gr. B								PIPE
Valve Ball Full Port	15	100	SB-ATI-VS070/0	LUG	600 LB	LF (125±250 AARH)	Forged	CARBON STEEL		S 148						VBF
Valve Check	15	25	SB-ATI-VR007/0	FLG	600 LB	LF (125±250 AARH)	Forged	ASTM A 105		R 59		SEE REMARK D				VCH
Valve Gate	8	50	SB-ATI-VG001/0	SW-F	800#		Forged	ASTM A 105		G 61		SEE REMARK C				VGAT
Flange Slip-On	15	150	ASME B16.5		600 LB	LM (125±250 AARH)	Forged	ASTM A 105								FLS
Flange Slip-On	15	150	ASME B16.5		600 LB	LF (125±250 AARH)	Forged	ASTM A 105								FLS
45° Elbow	8	15	SB-ATI-PR007/0	SW-F	3000#		Forged	ASTM A 105								45E
45° Elbow	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#		Forged	ASTM A 105				SEE REMARK A				45E
45° Elbow Long Radius	20	150	ASME B16.9	BE			Wrought S	ASTM A 234 Gr. WPB								45ELR
90° Elbow	8	15	SB-ATI-PR007/0	SW-F	3000#		Forged	ASTM A 105								90E
90° Elbow	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#		Forged	ASTM A 105				SEE REMARK A				90E
90° Elbow Long Radius	20	150	ASME B16.9	BE			Wrought S	ASTM A 234 Gr. WPB								90ELR
Reducer Concentric	20	150	ASME B16.9	BE			Wrought S	ASTM A 234 Gr. WPB								REDC
Reducer Eccentric	20	100	ASME B16.9	BE			Wrought S	ASTM A 234 Gr. WPB								REDE
Tee Straight	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#		Forged	ASTM A 105				SEE REMARK A				TEE
Tee Straight	8	15	SB-ATI-PR007/0	SW-F	3000#		Forged	ASTM A 105				SEE REMARK B				TEE
Tee Reducing	15	15	SB-ATI-PR007/0	SW-F	3000#		Forged	ASTM A 105				SEE REMARK B				TEER
Tee Reducing	15	50	SB-ATI-PR008/0	THRD-F NPT	3000#		Forged	ASTM A 105				SEE REMARK A				TEER
Reducing Insert M/F	8	15	SB-ATI-PR007/0	SW-F x PL	3000#		Forged	ASTM A 105	TYPE 13							BUS
Reducing Insert M/F	8	50	SB-ATI-PR008/0	THRD-M NPT x THRD-F	3000#		Forged	ASTM A 105								BUS
Reducing Insert M/F	8	15	SB-ATI-PR007/0	SW-F x PL	3000#		Forged	ASTM A 105	TYPE 12							BUS
Reducing Insert M/F	8	15	SB-ATI-PR007/0	SW-F x PL	3000#		Forged	ASTM A 105	TYPE 11							BUS
Cap	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#		Forged	ASTM A 105				SEE REMARK A				CAP
Cap	8	15	SB-ATI-PR007/0	SW-F	3000#		Forged	ASTM A 105								CAP
Cap	20	150	ASME B16.9	BE			Seamless	ASTM A 234 Gr. WPB								CAP
Coupling	8	15	SB-ATI-PR007/0	SW-F	3000#		Forged	ASTM A 105								CPL
Coupling	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#		Forged	ASTM A 105				SEE REMARK A				CPL
Coupling Half	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#		Forged	ASTM A 105				SEE REMARK A				CPLH
Coupling Half	8	15	SB-ATI-PR007/0	SW-F	3000#		Forged	ASTM A 105								CPLH

DESMET - Ballestra		PIPING CLASS DETAIL				PROJ:	1E35	REV:	0	16/07/2010
PUMA5	16/07/2010 8.53.24					DOC:	1E35-10-031 - Sh. 22			
DESMET - Ballestra		SABIZ		Size: mm		Thk: mm	Temp: °C		Pres: Bar(g)	Corr: mm

Piping Class 126

Object	From From	To (M) To (R)	Standard of design	End	Mat.	Rate. Finish	Construction	Material	Constructive Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Coupling Reducing	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105					SEE REMARK A	CPLR			
Coupling Reducing	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105						CPLR			
Cross Straight	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105					SEE REMARK A	CRO			
Cross Straight	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105						CRO			
Plug Hex.	8	50	SB-ATI-PR008/0	THRD-M NPT	3000#	Forged	ASTM A 105					SEE REMARK A	PLG			
Union	8	15	SB-ATI-PR007/0	SW-F	3000#	Forged	ASTM A 105						UN			
Union	8	50	SB-ATI-PR008/0	THRD-F NPT	3000#	Forged	ASTM A 105					SEE REMARK A	UN			
Gasket	15	150	SB-ATI-PV009/1		600 LB	—	B4C						GAS			

Object	Standard of design	Material	Constructive characteristic	Tag	Default	Mod
Screws for valves	ASME B 18.2.1/UNC	ASTM A 193 B7				
Stud Bolt + 2 Nuts	SB-ATI-PV008B/0 ASME B18.2.1 UNC/2.2 Tab.9	ASTM A 193 B7 / A 194 Gr.2H			x	

DESMET - Ballestra	PIPING CLASS BRANCH		PROJ: 1E35	REV: 0	16/07/2010
PUMA5	16/07/2010 8.53.27		DOC:		

DESMET - Ballestra **SABIZ** **Size:** mm **Thk:** mm **Temp:** °C **Pres:** Bar(g) **Corr:** mm

Piping Class 126

Branch Table I126

Chgd

Branch	
H	Half coupling
I	Pipe to Pipe
TR	Tee Reducing
TS	Tee Straight

Run Size

Sizes translation Q=8, T8=10, M=15, 3Q=20, 1=25, 1Q=32, 1M=40, 2=50, 2M=65, 3=80, 4=100, 5=125, 6=150

DESMET - Ballestra		PIPING CLASS NOTE			PROJ:	1E35	REV:	0	16/07/2010
PUMA5	16/07/2010 8.53.28						DOC:	1E35-10-031 - Sh. 22	
DESMET - Ballestra		SABIZ		Size: mm	Thk: mm	Temp: °C	Pres: Bar(g)	Corr: mm	

Piping Class: 126

Note:	SPECAL PARTS: 1) INSULATION SPECIFICATION: SB-ATI-SP030/0
	GENERAL NOTES: 1) FOR TYPICAL INSTRUMENTS CONNECTIONS SEE SB-ATI-PV001/0 2) FOR TEST TYPE SEE SB-ATI-SP009/0 SB-ATI-SP010/0
	REMARKS: A) USE ONLY FOR INSTRUMENTS, VENTS AND DRAINS B) FOR DN \geq 20 USE BRANCH CONNECTIONS PIPE-TO-PIPE C) USE FOR STEAM NOZZLES CIRCUIT ONLY D) USE ONLY WHEN DEEMED BY PROCESS DEPARTMENT
	REVISIONS: Rev. 0 - Date 16/07/10 - ISSUED

DESMET - Ballestra		PIPING CLASS		PROJ:	1E35	REV:	0	16/07/2010
PUMA5	16/07/2010 8.53.31			DOC:	1E35-10-031 - Sh. 23			

DESMET - Ballestra	SABIZ	Size: mm	Thk: mm	Temp: °C	Pres: Bar(g)	Corr: mm
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Piping class 129

Client Reference Service POWDERS PNEUMATIC TRANSP. AFTER ROTATING VALVE (SABIZ PLANT) FINE POWDERS RECOVERY AFTER EJECTOR (SABIZ PLANT)	Branch Table Corrosion Allow 0.5 mm Welding Spec. SB-ATI-SP006/0 SB-ATI-SP007/0
Base Material 11 CARBON STEEL Rating * * Finish PF6 SB-ATI-PF002(125÷250AARH)	Applicable through Temperature °C Min Max Pressure Bar(g) 0 0 0 0
Heat Treatment	
Control level	
Note FOR SPECIAL PARTS, GENERAL NOTES, REMARKS AND REVISIONS SEE ON THE LAST SHEET	

Temp. °C	Press. Bar(g)	Mod	Size	Thk.	Mod
100,0	1,00		50	3,18	
			65	3,18	
			80	3,18	
			100	3,18	
			125	3,96	
			150	3,96	
			200	3,96	
			250	3,96	
			300	4,78	

DESMET - Ballestra		PIPING CLASS DETAIL						PROJ:	1E35	REV:	0	16/07/2010
PUMA5	16/07/2010 8.53.34							DOC:	1E35-10-031 - Sh. 23			
DESMET - Ballestra		SABIZ		Size: mm	Thk: mm	Temp: °C	Pres: Bar(g)	Corr: mm				

Piping Class 129

Object	From From	To (M) To (R)	Standard of design	End	Mat.	Constr.	Material	Constructive Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Pipe	50	300	ASME B36.10	BE	E.R.W.		API 5L Gr.B				SEE REMARK A		PIPE		
Flange Blind	50	300	SB-ATI-PF004/0	*	SB-ATI- PF004(125±25 0AARH)	Forged	Fe 360 B - UNI 7070						FLB		
Flange Slip-On	50	300	SB-ATI-PF002/0	*	SB-ATI- PF002(125±25 0AARH)	Forged	Fe 360 B - UNI 7070						FLS		
Elbow a=5°	50	300	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=2000mm					EL05		
Elbow a=5°	50	150	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=1500mm					EL05		
Elbow a=5°	200	300	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=2500mm					EL05		
Elbow a=10°	50	300	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=2000mm					EL10		
Elbow a=10°	50	150	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=1500mm					EL10		
Elbow a=10°	200	300	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=2500mm					EL10		
Elbow a=15°	50	300	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=2000mm					EL15		
Elbow a=15°	50	150	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=1500mm					EL15		
Elbow a=15°	200	300	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=2500mm					EL15		
Elbow a=30°	50	300	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=2000mm					EL30		
Elbow a=30°	50	150	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=1500mm					EL30		
Elbow a=30°	200	300	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=2500mm					EL30		
Elbow a=45°	50	150	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=1500mm					EL45		
Elbow a=45°	50	300	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=2000mm					EL45		
Elbow a=45°	200	300	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=2500mm					EL45		
Elbow a=60°	50	150	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=2000mm					EL60		
Elbow a=60°	50	150	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=1500mm					EL60		
Elbow a=90°	50	150	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=2000mm					EL90		
Elbow a=90°	50	150	SB-ATI-PC005/0	BW		Seamless	API 5L Gr.B	R=1500mm					EL90		
Reducer Concentric	50	300	ASME B16.9	BE	E.R.W.		ASTM A 234 Gr. WPB						REDC		
Reducer Eccentric	50	300	ASME B16.9	BE	E.R.W.		ASTM A 234 Gr. WPB						REDE		
Gasket	50	300	SB-ATI-PV009/1	*	SB-ATI- PF002(125±25 0AARH)	-	B18C						GAS		
Nozzle Standard	50	300	MANUFACTURE STD	FLG	*	SB-ATI- PF002(125±25 0AARH)							NZS		

DESMET - Ballestra		PIPING CLASS DETAIL				PROJ:	1E35	REV:	0	16/07/2010
PUMA5	16/07/2010 8.53.35					DOC:	1E35-10-031 - Sh. 23			
DESMET - Ballestra		SABIZ		Size: mm		Thk: mm	Temp: °C		Pres: Bar(g)	Corr: mm

Piping Class 129

Object	From From	To To (R)	(M) Standard of design	End	Rat.	Finish	Construction	Material	Constructive Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Nozzle Standard	50	300	MANUFACTURE STD	FLG	*	SB-ATI-PF004(125±25 0AARH)								NZS		
Object																
Machine Bolt + 1 Nut																
Standard of design				Material				Constructive characteristic		Tag			Default	Mod		
SB-ATI-PV008A/0 - UNI 5727 + UNI 5592				4.6 UNI 3740 + 4A UNI 3740						x						

DESMET - Ballestra		PIPING CLASS NOTE			PROJ:	1E35	REV:	0	16/07/2010
PUMA5	16/07/2010 8.53.37						DOC:	1E35-10-031 - Sh. 23	
DESMET - Ballestra		SABIZ		Size: mm	Thk: mm	Temp: °C	Pres: Bar(g)	Corr: mm	

Piping Class: 129

Note:	SPECAL PARTS: 1) FLEXIBLE HOSES: SB-ATI-PV002/0
	GENERAL NOTES: 1) INTERSECTIONS: USE PIPE -TO-PIPE ("Y" CONNECTIONS 45° OR LESS) 2) FOR TEST TYPE SEE SB-ATI-SP009/0 SB-ATI-SP010/0
	REMARKS: A) PROVIDE ASSEMBLY/DISASSEMBLY FLANGING OR HORIZONTAL LINES (MAX LENGTH 5,8m) MOREOVER ALL INTERNAL WELDS BETWEEN PIPE AND FLANGES MUST BE BEVELLED AVOID SHARP CORNERS
	REVISIONS: Rev. 0 - Date 16/07/10 - ISSUED

DESMET - Ballestra		PIPING CLASS		PROJ:	1E35	REV:	0	21/09/2010
PUMA5 21/09/2010 16.21.22				DOC:	1E35-10-031 - Sh. 24			

DESMET - Ballestra	SABIZ	Size: mm	Thk: mm	Temp: °C	Pres: Bar(g)	Corr: mm
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Piping class 125

Client Reference Service ENZYME DOWNFALL	Branch Table Corrosion Allow 0.0 mm Welding Spec. SB-ATI-SP006/0 SB-ATI-SP008/0
Base Material 21 AISI 304 Rating * * Finish FF9 FF Smooth	Applicable through Min Max Temperature °C 0 0 Pressure Bar(g) 0 0
Heat Treatment	
Control level	
Note FOR SPECIAL PARTS, GENERAL NOTES, REMARKS AND REVISIONS SEE ON THE LAST SHEET	Chgd Mod

P	Standard of design	Mod	Size	Thk.	Mod
I	3103 ASME B31.3/1992		8	2,24	
			10	2,31	
			15	2,77	
			20	2,87	
			25	3,38	
			50	3,0	
			65	3,0	
			80	3,0	
			100	3,0	
			125	3,0	
			150	3,0	
			200	3,0	
			250	3,0	
			300	3,0	
			350	3,0	
			400	3,0	
			450	3,0	
			500	3,0	

DESMET - Ballestra		PIPING CLASS		PROJ:	1E35	REV:	0	21/09/2010
PUMA5	21/09/2010 16.21.23			DOC:	1E35-10-031 - Sh. 24			

DESMET - Ballestra	SABIZ	Size: mm	Thk: mm	Temp: °C	Pres: Bar(g)	Corr: mm
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Piping class 125

600	3,0
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DESMET - Ballestra		PIPING CLASS DETAIL						PROJ:	1E35	REV:	0	21/09/2010
PUMA5	21/09/2010 16.21.25							DOC:	1E35-10-031 - Sh. 24			
DESMET - Ballestra		SABIZ		Size: mm		Thk: mm	Temp: °C		Pres: Bar(g)		Corr: mm	

Piping Class 125

Object	From From	To (M) To (R)	Standard of design	End	Mat.	Rate.	Finish	Construction	Material	Constructive Characteristic	Tag	Thk.	Note	Eqp. Coll.	Alias.	Pos.	Mod
Pipe	8	25	ASME B36.19	PL	sch.40			Seamless	ASTM A 312 TP304				SEE REMARK A		PIPE		
Pipe	50	600	SB-ATI-PT007/0	PL				From Plate	ASTM A 240 Gr. TP304						PIPE		
Flange Lap-Joint	50	600	SB-ATI-PF012/0		*	SB-ATI- PF012 FF Smooth		From Plate	Fe 360 B - UNI 7070 - Galvanized						FLJ		
45° Elbow	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#			Forged	ASTM A 182 Gr. F304				SEE REMARK A		45E		
90° Elbow	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#			Forged	ASTM A 182 Gr. F304				SEE REMARK A		90E		
Reducer Concentric	50	600	SB-ATI-PR003/0	BE				From Plate	ASTM A 240 Gr. TP304						REDC		
Reducer Eccentric	50	600	SB-ATI-PR003/0	BE				From Plate	ASTM A 240 Gr. TP304						REDE		
Tee Straight	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#			Forged	ASTM A 182 Gr. F304				SEE REMARK A		TEE		
Tee Reducing	15	40	SB-ATI-PR008/0	THRD-F NPT	3000#			Forged	ASTM A 182 Gr. F304				SEE REMARK A		TEER		
Reducing Insert M/F	8	40	SB-ATI-PR008/0	THRD-M NPT x THRD-F	3000#			Forged	ASTM A 182 Gr. F304				SEE REMARK A		BUS		
Cap	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#			Forged	ASTM A 182 Gr. F304				SEE REMARK A		CAP		
Coupling	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#			Forged	ASTM A 182 Gr. F304				SEE REMARK A		CPL		
Coupling Half	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#			Forged	ASTM A 182 Gr. F304				SEE REMARK A		CPLH		
Coupling Reducing	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#			Forged	ASTM A 182 Gr. F304				SEE REMARK A		CPLR		
Cross Straight	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#			Forged	ASTM A 182 Gr. F304				SEE REMARK A		CRO		
Stub-End	50	600	SB-ATI-PF009/0	BE				From Plate	ASTM A 240 Gr. TP304						FLSE		
Plug Hex.	8	40	SB-ATI-PR008/0	THRD-M NPT	3000#			Forged	ASTM A 182 Gr. F304				SEE REMARK A		PLG		
Union	8	40	SB-ATI-PR008/0	THRD-F NPT	3000#			Forged	ASTM A 182 Gr. F304				SEE REMARK A		UN		
Gasket	50	600	SB-ATI-PV009/1		*	SB-ATI- PF012 FF Smooth		-	A9C	FLAT-RING						GAS	

Object	Standard of design	Material	Constructive characteristic	Tag	Default	Mod
Machine Bolt + 1 Nut	SB-ATI-PV008A/0 - UNI 5727 + UNI 5592	4.6 UNI 3740 Galvanized + 4A UNI 3740 Galvanized			x	

DESMET - Ballestra		PIPING CLASS NOTE			PROJ:	1E35	REV:	0	21/09/2010
PUMA5	21/09/2010 16.21.27						DOC:	1E35-10-031 - Sh. 24	
DESMET - Ballestra		SABIZ		Size: mm	Thk: mm	Temp: °C	Pres: Bar(g)	Corr: mm	

Piping Class: 125

Note: SPECAL PARTS:

- 1) FOR DIVERTING AND/OR SLEEVE VALVES SEE BALLESTRA'S STANDARD

GENERAL NOTES:

- 1) FOR TYPICAL INSTRUMENTS CONNECTIONS SEE SB-ATI-PV001/0
- 2) FOR TEST TYPE SEE SB-ATI-SP009/0 SB-ATI-SP010/0
- 3) FOR ELBOWS USE CUT PIPES WITH SLOPE 38 DG. OR LESS

REMARKS:

- A) USE FOR INSTRUMENTS ONLY

REVISIONS:

Rev. 0 - Date 21/09/10 - ISSUED