



Engineering Master

GX3

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Revised: April 16, 2018

Revision AH

Design GX Valve Body and Actuator Assembly, NPS 6 / DN150

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GX3 - A B C D E F G H J K L M N P Q 9A 9B 9C 9D 9E 9F 9G

Temperatures per ASME B31.3 and JIS B2220

CWP (1) ASME B16.34

(2) pr EN 12516-1

(3) pr EN 12516-1 converted to PN ratings pr EN 12561-1 Table F3

(4) JIS B2220

* NACE MR0175-2002, MR0103, MR0175-2003, MR0175/ISO15156 Service Acceptable

Item	Parts contained in Item	Find Number
A	Valve Body	1
B	Plug/Stem	3
C	Seat Ring or Seat Ring Assembly	2
D	Guide Sleeve or Cage	84
E	Seal Ring	37
	Backup Ring	38
	Lubricant	80
	Piston Ring	100
F	Bonnet	4
G	Packing Nut	29
	Anti-Extrusion Washer	32
	Packing Set	33, 42 & 43
	Belleville Spring	34
	Packing Washer	44
H	Packing Spacer	30
	Packing Box Ring	31
J	Gasket	5
K	Stud Bolt, Continuous Thread	6
	Hex Nut	7
L	Yoke/Casing Assembly	8
M	Upper Casing	9
	Diaphragm	10
	Diaphragm Plate	11
	Screw Cap, Hex Head	14, 16 & 17
	Diaphragm Washer	15
	Hex Nut	18
	Actuator Rod	22

Item	Parts contained in Item	Find Number
N	Stem Connector, Nut Half	23
	Stem Connector, Bolt Half	24
	Screw Cap, Hex Head	25
	Travel Indicator	26
	Stem Connector, Lower	27
	Stem Jam Nut	28
P	Actuator Rod Bushing	19
	Actuator Rod O-Ring	20
	Vent	21
	Warning Tag	36
	Lubricant, Grease	70
	Lubricant, Anti-Seize/Lub-3	71
	Non-Threaded Cap	72
	Pipe Plug	78
	Spring, Inner	82
	Spring, Outer	12
Q	Nameplate	35



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Item A – Valve Body

Body Material	End Connection	Rating	Temperature		CWP		A	NACE
			°F	°C	PSI/100 °F (1)	BAR/38 °C (2)		
WCC & 1.0619	RF(ASME B16.5)	Class 150	-20+800	-29+427	290	20	1	*
		Class 300	-20+800	-29+427	750	51.7	2	*
	JPI (ASME B16.5)	Class 150	-20+800	-29+427	290	20	13	*
		Class 300	-20+800	-29+427	750	51.7	14	*
	RF(EN1092-1/21 B)	PN 10/16	-20+752	-29+400	N/A	16	3	*
		PN 25/40	-20+752	-29+400	N/A	40	4	*
	Groove RF(EN1092-1/21 D)	PN 10/16	-20+752	-29+400	N/A	16	21	*
		PN 25/40	-20+752	-29+400	N/A	40	22	*
	Spigot RF(EN1092-1/21 E)	PN 10/16	-20+752	-29+400	N/A	16	23	*
		PN 25/40	-20+752	-29+400	N/A	40	24	*
	Recess RF(EN1092-1/21 F)	PN 10/16	-20+752	-29+400	N/A	16	25	*
		PN 25/40	-20+752	-29+400	N/A	40	26	*
	JIS (JIS B2220)	JIS 10K	-20+572	-29+300	203	14	15	*
		JIS 20K	-20+797	-29+425	493	34	16	*
CF3M & 1.4409	RF(ASME B16.5)	Class 150	-425+850	-254+454	275	18.9	5	*
		Class 300	-425+850	-254+454	720	49.6	6	*
	JPI (ASME B16.5)	Class 150	-425+850	-254+454	275	18.9	17	*
		Class 300	-425+850	-254+454	720	49.6	18	*
	RF(EN1092-1/21 B)	PN 10/16	-321+932	-196+500	N/A	16	7	*
		PN 25/40	-321+932	-196+500	N/A	40	8	*
	Groove RF(EN1092-1/21 D)	PN 10/16	-321+932	-196+500	N/A	16	27	*
		PN 25/40	-321+932	-196+500	N/A	40	28	*
	Spigot RF(EN1092-1/21 E)	PN 10/16	-321+932	-196+500	N/A	16	29	*
		PN 25/40	-321+932	-196+500	N/A	40	30	*
	Recess RF(EN1092-1/21 F)	PN 10/16	-321+932	-196+500	N/A	16	31	*
		PN 25/40	-321+932	-196+500	N/A	40	32	*
	JIS (JIS B2220)	JIS 10K	-50.8+572	-46+300	203	14	19	*
		JIS 20K	-50.8+797	-46+425	493	34	20	*
LCC	RF(ASME B16.5)	Class 150	-50+650	-46+343	290	20	9	*
		Class 300	-50+650	-46+343	750	51.7	10	*
	RF(EN1092-1/21 B)	PN 10/16	-50+650	-46+343	N/A	16	11	*
		PN 25/40	-50+650	-46+343	N/A	40	12	*
	Groove RF(EN1092-1/21 D)	PN 10/16	-50+650	-46+343	N/A	16	33	*
		PN 25/40	-50+650	-46+343	N/A	40	34	*
	Spigot RF(EN1092-1/21 E)	PN 10/16	-50+650	-46+343	N/A	16	35	*
		PN 25/40	-50+650	-46+343	N/A	40	36	*
	Recess RF(EN1092-1/21 F)	PN 10/16	-50+650	-46+343	N/A	16	37	*
		PN 25/40	-50+650	-46+343	N/A	40	38	*



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Item E – Valve Plug Seal and Backup Rings or Piston Ring

Port Diameter	Valve Plug Style	Seal or Piston Ring	Leak Class	Backup Ring	Temperature		E
					°F	°C	
90mm	Unbalanced	N/A	IV, V or VI	N/A	N/A	N/A	N
136mm	Unbalanced	N/A	IV, V or VI	N/A	N/A	N/A	N
	Balanced	Carbon Filled PTFE	IV, V or VI	Nitrile	-50+180	-45+82	1
				Ethylene Propylene	-50+450	-45+232	2
				Viton	0+400	-17+204	3
		Graphite	II	N/A	0+1100	-17+593	5

Item F – Bonnet

Bonnet Style	Body Material	F	NACE
Plain	WCC/1.0619	1	*
	CF3M/1.4409	2	*
	LCC	3	*

Item G – Packing and Packing Parts

Bonnet Style	Seat Type	Live Load Packing	Temperature		G
			°F	°C	
Plain	Metal & Composition	PTFE	-50+450	-45+232	1
		Graphite ULF	-50+700	-46+371	2
		ISO-Seal PTFE	-50+450	-46+232	3

Item H – Packing Box Ring and Spacer

Bonnet Style	Stem Material	Live Load Packing	H	NACE
Plain	S31603 & S20910	PTFE	1	*
		Graphite ULF	2	*
		ISO-Seal PTFE	3	*

Item J – Body/Bonnet Gasket

Bonnet Style	Gasket	Plug style	J
Plain	Graphite FMS 17F28	Unbalanced	1
		Balanced	2

Item K – Body/Bonnet Bolting

Plain Bonnet Style

Body Material	Bolt Temperature		Trim Style	Port (mm)	Studs	Nuts	K
	°F	°C					
WCC/1.0619 & CF3M/1.4409 LCC	-55+800	-48+426	Eq Percent & Linear	90 & 136	B7 NCF2 (NACE not exposed)	2H NCF2	*3
					B7M NCF2 (NACE exposed)	2HM NCF2	*1
			Whisper III Level A1	90	B7 NCF2 (NACE not exposed)	2H NCF2	*3
				136	B7M NCF2 (NACE exposed)	2HM NCF2	*1

Item L – Actuator Yoke/Lower Casing

Actuator Size	Bonnet Style	Valve Plug Style	Port Diameter (mm)	Travel (mm)	L
1200	Plain	Unbalanced & Balanced	90 & 136	40 & 60	1



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Item M – Actuator Diaphragm & Parts

Actuator Size	Travel	M
1200	40 & 60	1

Item N – Stem Connector Parts

N
1

Item P – Actuator Common Parts & Actuator Spring

Service	P
Standard	1
PSA	2

Item Q – Nameplate

Flow	Action	Q
Up	PDTC	1

Item 9A – Maximum/Minimum Actuator Diaphragm Operating Pressure

Bonnet	Stem Material	Actuator Size	Air Supply Opens or Closes Valve	Travel	Operating Pressure (Bar)		9A
					Minimum	Maximum	
Plain	316L SST or S20910	1200	Opens	All	3	6	1
			Closes	60	3	5.4	2
				40	3	4.9	3

Item 9B – Air Supply Opens or Closes Valve

Air Supply Opens or Closes Valve	9B
Opens	1
Closes	2

Item 9C – Hydro Test per FGS 4L1

BAR test pressure converted from PSI units for Class 150 & 300

Body Material	Rating	Hydro/Min		9C
		PSI	BAR	
WCC/1.0619, LCC & CF3M/1.4409	Class 150	450/2	31/2	1
	Class 300	1125/3	77.6/3	2
	PN10/16	350/2	24/2	3
	PN25/40	875/2	60/2	4



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Item 9D – Seat Leak Test per FGS 4L5

Seat Type	Seat Leak Test Class	Plug Style	Port	Travel	Trim	Seat leakage	9D
Metal	II	Balanced	136 mm	60 mm	Equal Percent	3897.41 SCFH (1839186 mL/minute)	14
					Linear	4004.76 SCFH (1889845 mL/minute)	12
					Whisper III	3384.73 SCFH (1597255 mL/minute)	13
	IV	Unbalanced	90 mm	40 mm	Equal Percent	44.2 SCFH (20858 mL/minute)	1
					Linear	54.3 SCFH (25626 mL/minute)	2
					Whisper III	23.76 SCFH (11214 mL/minute)	15
		Balanced	136 mm	60 mm	Equal Percent	92.31 SCFH (43562 mL/minute)	3
					Linear	96.26 SCFH (45423 mL/minute)	4
					Whisper III	67.69 SCFH (31945 mL/minute)	10
	V	Unbalanced	90 mm	40 mm	Equal Percent & Linear	16.7 mL/minute	7
					Equal Percent & Linear	25.2 mL/minute	8
Composition	VI	Unbalanced	90 mm	40 mm	Equal Percent & Linear	1.7 mL/minute	11
			136 mm	60 mm	Equal Percent & Linear	4 mL/minute	9

Item 9F – Flow Cv/Kv

Plug Style	Port	Travel	Trim Style	Flow		9F
				Cv	Kv	
Unbalanced	90mm	40mm	Equal Percent	192	166	1
			Linear	233	202	2
			Whisper III Level A1	119	103	8
	136mm	60mm	Equal Percent	401	347	3
Balanced	136mm	60mm	Linear	413	357	4
			Equal Percent	374	324	5
			Linear	391	338	6
			Whisper III Level A1	324	280	7

Item 9G – Service

Service	9G
NACE MR0103	1
NACE MR0175/ISO 15156	2
Other	N

Description	Assembly Drawing
Valve Assembly	Air to Open (Fail Closed) GE17517
	Air to Closed (Fail Open) GE23239
Balanced Trim	GE17575
Whisper III	GE23496
Packing Assembly	PTFE Packing GE28943
	ULF Packing GE28945
	ISO-Seal Packing GF11007



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Revision Change Record Section for the present Revision

ECRN: 20180648

Matrix:

Item	Module	Changes
9A	All	Add new column for travel.
9A	2	Update the maximum operating pressure from 5.6 to 5.4.
9A	3	New-create for 4.9 bar max 3 bar min actuator operating pressure.