 Revised: 22 November 2017 Revision AG

Design GX Valve Body and Actuator Assembly, Size NPS 2 (DN50)

Pneumatic Spring & Diaphragm Actuator GX32 - A B C E G H J K L M N P Q R S 9A 9C 9D 9E 9F 9G 9K 9N 9P

Electric Actuator GX32 - A B C E F G H J K L M N Q R 9C 9D 9E 9F 9G 9J 9K 9N 9P

Temperatures per ASME B31.3, EN1092-1, EN13445-2, PS59.1:021(C), ES161, EN1515-1, PE0
CWP per ASME B16.34, EN1092-1, PS59.1:021(C), ES161, EN12516-1, JIS B2220

Design GX Valve Body and Actuator Assembly, Size NPS 2 (DN50)

Item	Parts contained in Item	Find Number
A	Valve Body	1
B	Plug/Stem, Equal Percent	3
C	Seat Ring or Seat Ring Assembly	2
E	Bonnet	4
F	Packing Nut	29
	Packing Set	33, 42 & 43
	Belleville Spring	34
	Anti-extrusion Washer	32
	Packing Washer	44
G	Packing Spacer	30
	Packing Box Ring	31
H	Gasket	5, 47 & 50
	Packing Washer	120
J	Stud Bolt, Continuous Thread	6
	Hex Nut	7
K	Yoke/Casing Assembly	8
L	Upper Casing Assembly	9
	Diaphragm	10
	Diaphragm Plate Assembly	11
	Actuator Spacer	13
	Screw Cap, Hex Head	14, 16 & 17
	Diaphragm Washer	15
	Hex Nut	18
	Actuator Rod	22
	Non-Threaded Cap	72
	Travel Indicator Scale	74
	O-Ring	109
	Rod Adaptor	110
	Stud	111
	Nut	112
	Electric Actuator Spacer	114
M	Hex Nut	28
	Stem Connector, Lower	27
N	Yoke Bushing	19
	O-Ring	20
	Vent	21
	Stem Connector Nut	23
	Stem Connector Bolt	24
	Screw Cap, Hex Head	25
	Travel Indicator	26
	Warning Label	36
	Lubricant, Grease	70
	Lubricant, Anti-Seize/Lub-3	71
	Pipe Plug	78
P	Spring	12
Q	Nameplate	35
	Drive Screw	113
	Wire	115

Item	Parts contained in Item	Find Number
R	Bushing Assembly	41
	Insert	48
	Stem/Bellows Assembly	49
	Nut	51
	Pipe Plug	52
	Warning Tag	73
	Sealant	79
	Bushing	93
	Thrust Ring	94
	Liner	95
	Washer	98
	Washer	98
S	Drive Screw	56
	Handwheel	76
T	Handjack Body	53
	Handjack Lever	54
	Operating Nut	55
	Washer, Drive Screw	57
	Retaining Ring, Extension	58 & 62
	Thrust Bearing	59
	Pin Pivot	60
	Bushing	61
	Lever Spacer	63
	Screw Cap, Hex Head	64 & 66
	Stud Bolt, Continuous Thread	68
	Lubricant, Grease	70
	Lubricant Fitting, Straight	75
	Hex Nut, Lock	77
U	Travel Stop Assembly	99
	Hex Nut	28
	Hex Nut	69
	Lubricant, Grease	70
	Bracket	85
	Lever	86
	Shaft	87
	Retainer Ring	88
	Cap Screw	89
	Stud	92
	Travel Stop Warning Tag	101
V	Protection Plate	91
	Cap Screw	96
	Warning Label	97

Design GX Valve Body and Actuator Assembly, Size NPS 2 (DN50)

Item	Parts contained in Item
9A	Actuator Diaphragm Operating Pressure Air Supply Opens & Closes Valve
9C	Hydro Test per FGS 4L1
9D	Seat Leak Test per FGS 4L5
9E	Plug & Trim Style (Characteristic)
9F	Flow Cv/Kv
9G	Remove Lower Portion of Warning Tag GF00483
9H	Travel Stop Style
9J	Maximum Allowable Thrust
9K	Side Mounted Handwheel Orientation Positon per Drawing GE52353
9N	NACE Indicator
9P	Reverse Flow Arrow on Body per GG03639

Item 9N – NACE Service Indicator

NACE Service Metallurgical Requirements Indicator	NACE Indicator	**9N**
Non-NACE	N/A	N
NACE MR0175-2002	1	1
NACE MR0103	2	2
NACE MR0175-2003	3	3
NACE MR0175/ISO 15156	4	4

Item A – Valve Body

Standard Face to Face Dimension

		Process Temperature			CWP		NACE	
Body Material	End Connection Face to Face	°F	°C	Rating	PSI	BAR	Indicator	**A**
WCC & 1.0619	RF (ASME B16.5) ANSI/ISA-75.08.01	-20+800	-29+427	Class 150	290	20	1,2,3,4	1
				Class 300	750	51.7	1,2,3,4	2
	RTJ (ASME B16.5)	-20+800	-29+427	Class 150	290	20	1,2,3,4	38
				Class 300	750	51.7	1,2,3,4	39
	JPI (ASME B16.5) ANSI/ISA-75.08.01	-20+800	-29+427	Class 150	290	20	1,2,3,4	40
				Class 300	750	51.7	1,2,3,4	41
	RF (EN1092-1/21 B) EN558	-20+752	-29+400	PN 10-40	N/A	40	1,2,3,4	3
	Groove (EN1092-1/21 D) EN558			PN 10-40	N/A	40	1,2,3,4	4
	Spigot (EN1092-1/21 E) EN558			PN 10-40	N/A	40	1,2,3,4	5
	Recess (EN1092-1/21 F) EN558			PN 10-40	N/A	40	1,2,3,4	50
	JIS (JIS B2220) JIS B2002	-20+572	-29+300	JIS 10K	203	14	1,2,3,4	42
		-20+797	-29+425	JIS 20K	493	34	1,2,3,4	43
LCC	RF (ASME B16.5) ANSI/ISA-75.08.01	-50+650	-46+343	Class 150	290	20	1,2,3,4	6
				Class 300	750	51.7	1,2,3,4	7
	RF(EN1092-1/21 B) EN558	-50+650	-46+343	PN 10-40	N/A	40	1,2,3,4	8
	Groove (EN1092-1/21 D) EN558			PN 10-40	N/A	40	1,2,3,4	9
	Spigot (EN1092-1/21 E) EN558			PN 10-40	N/A	40	1,2,3,4	10
	Recess (EN1092-1/21 F) EN558			PN 10-40	N/A	40	1,2,3,4	51
CF3M & 1.4409	RF (ASME B16.5) ANSI/ISA-75.08.01	-425+850	-254+454	Class 150	275	18.9	1,2,3,4	11
				Class 300	720	49.6	1,2,3,4	12
	RTJ (ASME B16.5)	-425+850	-254+454	Class 150	275	18.9	1,2,3,4	44
				Class 300	720	49.6	1,2,3,4	45
	JPI (ASME B16.5) ANSI/ISA-75.08.01	-425+850	-254+454	Class 150	275	18.9	1,2,3,4	46
				Class 300	720	49.6	1,2,3,4	47
	RF(EN1092-1/21 B) EN558	-321+932	-196+500	PN 10-40	N/A	40	1,2,3,4	13
	Groove (EN1092-1/21 D) EN558			PN 10-40	N/A	40	1,2,3,4	14
	Spigot (EN1092-1/21 E) EN558			PN 10-40	N/A	40	1,2,3,4	15
	Recess (EN1092-1/21 F) EN558			PN 10-40	N/A	40	1,2,3,4	52
	JIS (JIS B2220) JIS B2002	-50.8+572	-46+300	JIS 10K	203	14	1,2,3,4	48
		-50.8+797	-46+425	JIS 20K	493	34	1,2,3,4	49
CD3MN (Duplex SST)	RF (ASME B16.5) ANSI/ISA-75.08.01	-60+600	-51+316	Class 150	290	20	N/A	16
				Class 300	750	51.7	N/A	17
	RF(EN1092-1/21 B) EN558	-60+600	-51+316	PN 10-40	N/A	40	N/A	18
CF3 (304L SST)	RF (ASME B16.5) ANSI/ISA-75.08.01	-425+800	-254+427	Class 150	275	18.6	1,2,3	19
				Class 300	720	49.6	1,2,3	20
	RF(EN1092-1/21 B) EN558	+14+800	-10+427	PN 10-40	N/A	36.8	1,2,3	21
CN7M & CN3MCU (Alloy 20)	RF (ASME B16.5) ANSI/ISA-75.08.01	-325+600	-198+316	Class 150	230	15.8	1,2	22
				Class 300	600	41.4	1,2	23
	RF(EN1092-1/21 B) EN558	+14+600	-10+316	PN 10-40	N/A	32.7	1.2	24

Item A – Valve Body (Continued)

Standard Face to Face Dimension

Body Material	End Connection Face to Face	Process Temperature °F	Process Temperature °C	Rating	CWP PSI	CWP BAR	NACE Indicator	**A**
CW2M (Hast C)	RF (ASME B16.5) ANSI/ISA-75.08.01	-325+1000	-198+538	Class 150	290	20	1,2,3,4	25
				Class 300	750	51.7	1,2,3,4	26
	RF(EN1092-1/21 B) EN558	+14+1000	-10+538	PN 10-40	N/A	40	1,2,3,4	27
M35-2 (Monel)	RF (ASME B16.5) ANSI/ISA-75.08.01	-325+800	-198+427	Class 150	270	18.6	1,2	28
				Class 300	700	48.2	1,2	29
N7M (Hast B2)	RF (ASME B16.5) ANSI/ISA-75.08.01	-325+1000	-198+538	Class 150	290	20	N/A	30
				Class 300	750	51.7	N/A	31

Long Face to Face Dimension

Body Material	End Connection Face to Face	Process Temperature °F	Process Temperature °C	Rating	CWP PSI	CWP BAR	NACE Indicator	**A**
WCC	RF (ASME B16.5) ANSI/ISA-75.08.07	-20+800	-29+427	Class 150	290	20	N/A	32
				Class 300	750	51.7	N/A	33
CF3M	RF (ASME B16.5) ANSI/ISA-75.08.07	-425+850	-254+454	Class 150	275	18.9	1,2,3	34
				Class 300	720	49.6	1,2,3	35
CW2M	RF (ASME B16.5) ANSI/ISA-75.08.07	-325+1000	-198+538	Class 150	290	20	1,2,3,4	36
				Class 300	750	51.7	1,2,3,4	37

Item B – Valve Plug/Stem
Item C – Seat Ring
Item 9E – Plug and Trim Style
Item 9J – Maximum Allowable Thrust (Use only with Electric Actuator)

Plain Bonnet
LCC, WCC/1.0619 & CF3M/1.4409 Body Material
Process temperature limits for PTFE Seat rings: -73+204 °C (-100+400 °F), other construction: N/A

Port	Plug Style	Travel	Valve Plug	Stem	Max Allow Thrust	Seat Ring	Characteristic	NACE Ind	**B**	**C**	**9E**	**9J**
22mm	Unbal	20mm	S31603	316L SST	17000 N	CF3M	Equal Percent	N/A	1	1	1	1
							Linear	N/A	2	1	2	1
						CF3M/ PTFE Seat	Equal Percent	N/A	1	2	1	1
							Linear	N/A	2	2	2	1
			S31603/ HF Seat	S20910	17000 N	CF3M/HF Seat	Equal Percent	1,2,3,4	3	3	1	1
							Linear	1,2,3,4	4	3	2	1
			N06022	N06022	7600 N	CW2M	Equal Percent	1,2,3,4	5	4	1	2
							Linear	1,2,3,4	6	4	2	2
						CW2M/ PTFE Seat	Equal Percent	N/A	5	5	1	2
							Linear	N/A	6	5	2	2
36mm	Unbal	20mm	CF3M	316L SST	17000 N	CF3M	Equal Percent	N/A	7	6	1	1
							Linear	N/A	8	6	2	1
						CF3M/ PTFE Seat	Equal Percent	N/A	7	7	1	1
							Linear	N/A	8	7	2	1
			CF3M/ HF Seat	S20910	17000 N	CF3M/HF Seat/Guide	Equal Percent	1,2,3,4	9	8	1	1
							Linear	1,2,3,4	10	8	2	1
			CF3M Ion-Nitride	316L SST	17000 N	CF3M	Equal Percent	N/A	11	6	1	1
							Linear	N/A	12	6	2	1
						CF3M/ PTFE Seat	Equal Percent	N/A	11	7	1	1
							Linear	N/A	12	7	2	1
						CF3M/HF Seat/Guide	Equal Percent	N/A	11	8	1	1
							Linear	N/A	12	8	2	1
			CW2M	N06022	7600 N	CW2M	Equal Percent	1,2,3,4	13	9	1	2
							Linear	1,2,3,4	14	9	2	2
						CW2M/ PTFE Seat	Equal Percent	N/A	13	10	1	2
							Linear	N/A	14	10	2	2
46mm	Unbal	20mm	CF3M	316L SST	17000 N	CF3M	Equal Percent	N/A	15	11	1	1
							Linear	N/A	16	11	2	1
						CF3M/ PTFE Seat	Equal Percent	N/A	15	12	1	1
							Linear	N/A	16	12	2	1
			CF3M/ HF Seat	S20910	17000 N	CF3M/HF Seat/Guide	Equal Percent	1,2,3,4	17	13	1	1
							Linear	1,2,3,4	18	13	2	1
						S17400	Cavitrol III	1,2,3,4	41	34	3	1
			CF3M Ion-Nitride	316L SST	17000 N	CF3M	Equal Percent	N/A	19	11	1	1
							Linear	N/A	20	11	2	1
						CF3M/ PTFE Seat	Equal Percent	N/A	19	12	1	1
							Linear	N/A	20	12	2	1
						CF3M/HF Seat/Guide	Equal Percent	N/A	19	13	1	1
							Linear	N/A	20	13	2	1
			CW2M	N06022	7600 N	CW2M	Equal Percent	1,2,3,4	21	14	1	2
							Linear	1,2,3,4	22	14	2	2
						CW2M/ PTFE Seat	Equal Percent	N/A	21	15	1	2
							Linear	N/A	22	15	2	2

Item B – Valve Plug/Stem (Continued)
Item C – Seat Ring (Continued)
Item 9E – Plug and Trim Style (Continued)
Item 9J – **Maximum Allowable Thrust** (Use only with Electric Actuator) (Continued)

Plain Bonnet
Process temperature limits for PTFE Seat rings: -73+204 °C (-100+400 °F), other construction: N/A

Body Material	Port	Plug Style	Travel	Valve Plug	Stem	Max Allow Thrust	Seat Ring	Characteristic	NACE Ind	**B**	**C**	**9E**	**9J**
CD3MN	22mm	Unbal	20mm	S31803	S31803	7600 N	CD3MN	Equal Percent	N/A	23	16	1	2
								Linear	N/A	24	16	2	2
							CD3MN/ PTFE Seat	Equal Percent	N/A	23	17	1	2
								Linear	N/A	24	17	2	2
	36mm	Unbal	20mm	CD3MN	S31803	7600 N	CD3MN	Equal Percent	N/A	25	18	1	2
								Linear	N/A	26	18	2	2
							CD3MN/ PTFE Seat	Equal Percent	N/A	25	19	1	2
								Linear	N/A	26	19	2	2
	46mm	Unbal	20mm	CD3MN	S31803	7600 N	CD3MN	Equal Percent	N/A	27	20	1	2
								Linear	N/A	28	20	2	2
							CD3MN/ PTFE Seat	Equal Percent	N/A	27	21	1	2
								Linear	N/A	28	21	2	2
CF3	22mm	Unbal	20mm	S30403	S31803	7600 N	304L	Equal Percent	1	29	22	1	2
								Linear	1	30	22	2	2
							304L/PTFE	Equal Percent	N/A	29	23	1	2
								Linear	N/A	30	23	2	2
	36mm	Unbal	20mm	CF3	S31803	7600 N	304L	Equal Percent	1	31	24	1	2
								Linear	1	32	24	2	2
							304L/PTFE	Equal Percent	N/A	31	25	1	2
								Linear	N/A	32	25	2	2
	46mm	Unbal	20mm	CF3	S31803	7600 N	304L	Equal Percent	1	33	26	1	2
								Linear	1	34	26	2	2
							304L/PTFE	Equal Percent	N/A	33	27	1	2
								Linear	N/A	34	27	2	2
CN7M & CN3MCU, CW2M	22mm	Unbal	20mm	N06022	N06022	7600 N	CW2M	Equal Percent	1,2,3,4	5	4	1	2
								Linear	1,2,3,4	6	4	2	2
							CW2M/ PTFE Seat	Equal Percent	N/A	5	5	1	2
								Linear	N/A	6	5	2	2
	36mm	Unbal	20mm	CW2M	N06022	7600 N	CW2M	Equal Percent	1,2,3,4	13	9	1	2
								Linear	1,2,3,4	14	9	2	2
							CW2M/ PTFE Seat	Equal Percent	N/A	13	10	1	2
								Linear	N/A	14	10	2	2
	46mm	Unbal	20mm	CW2M	N06022	7600 N	CW2M	Equal Percent	1,2,3,4	21	14	1	2
								Linear	1,2,3,4	22	14	2	2
							CW2M/ PTFE Seat	Equal Percent	N/A	21	15	1	2
								Linear	N/A	22	15	2	2
M35-2	22mm	Unbal	20mm	N05500	N05500	17000 N	N05500	Equal Percent	1	35	28	1	1
	36mm	Unbal	20mm	N05500	N05500		N05500	Equal Percent	1	36	29	1	1
	46mm	Unbal	20mm	N05500	N05500		N05500	Equal Percent	1	37	30	1	1
N7M	22mm	Unbal	20mm	N10675	N10675	7600 N	N7M	Equal Percent	N/A	38	31	1	2
	36mm	Unbal	20mm	N7M	N10675		N7M	Equal Percent	N/A	39	32	1	2
	46mm	Unbal	20mm	N7M	N10675		N7M	Equal Percent	N/A	40	33	1	2

Item B – Valve Plug/Stem (Continued)
Item C – Seat Ring (Continued)
Item 9E – Plug and Trim Style (Continued)
Item 9J – Maximum Allowable Thrust (Use only with Electric Actuator) (Continued)

Extension Bonnet
LCC, WCC/1.0619 & CF3M/1.4409 Body Material

Port	Plug Style	Travel	Valve Plug	Stem	Max Allow Thrust	Seat Ring	Characteristic	NACE Ind	**B**	**C**	**9E**	**9J**
22mm	Unbal	20mm	S31603	316L SST	11400 N	CF3M	Equal Percent Linear	N/A N/A	1 2	1 1	1 2	3 3
			S31603/ HF Seat	S20910 SST	11400 N	CF3M/ HF Seat	Equal Percent Linear	1,2,3,4 1,2,3,4	3 4	3 3	1 2	3 3
36mm	Unbal	20mm	CF3M	316L SST	11400 N	CF3M/ HF Seat/Guide	Equal Percent Linear	N/A N/A	7 8	8 8	1 2	3 3
			CF3M/ HF Seat	S20910	11400 N	CF3M/ HF Seat/Guide	Equal Percent Linear	1,2,3,4 1,2,3,4	9 10	8 8	1 2	3 3
46mm	Unbal	20mm	CF3M	316L SST	11400 N	CF3M/ HF Seat/Guide	Equal Percent Linear	N/A N/A	15 16	13 13	1 2	3 3
			CF3M/ HF Seat	S20910	11400 N	CF3M/ HF Seat/Guide	Equal Percent Linear	1,2,3,4 1,2,3,4	17 18	13 13	1 2	3 3

Item B – Valve Plug/Stem (Continued)
Item C – Seat Ring (Continued)
Item 9E – Plug and Trim Style (Continued)
Item 9J – Maximum Allowable Thrust (Use only with Electric Actuator) (Continued)

Bellows Bonnet
Process temperature limits for PTFE Seat rings: -73+204 °C (-100+400 °F), other construction: N/A
LCC, WCC/1.0619 & CF3M/1.4409 Body Material

Port	Plug Style	Travel	Valve Plug	Stem	Max Allow Thrust	Seat Ring	Characteristic	NACE Ind	**B**	**C**	**9E**	**9J**
22mm	Unbal	20mm	S31603	316L SST	11400 N	CF3M	Equal Percent	N/A	1	1	1	3
							Linear	N/A	2	1	2	3
						CF3M/ PTFE Seat	Equal Percent	N/A	1	2	1	3
							Linear	N/A	2	2	2	3
			S31603/ HF Seat	S20910	11400 N	CF3M/ HF Seat	Equal Percent	1,2,3,4	3	3	1	3
							Linear	1,2,3,4	4	3	2	3
			N06022	N06022	6700 N	CW2M	Equal Percent	1,2,3,4	5	4	1	4
							Linear	1,2,3,4	6	4	2	4
						CW2M/ PTFE Seat	Equal Percent	N/A	5	5	1	4
							Linear	N/A	6	5	2	4
36mm	Unbal	20mm	CF3M	316L SST	11400 N	CF3M/HF Seat/Guide	Equal Percent	N/A	7	8	1	3
							Linear	N/A	8	8	2	3
						CF3M/ PTFE Seat	Equal Percent	N/A	7	7	1	3
							Linear	N/A	8	7	2	3
			CF3M/ HF Seat	S20910	11400 N	CF3M/HF Seat/Guide	Equal Percent	1,2,3,4	9	8	1	3
							Linear	1,2,3,4	10	8	2	3
			CW2M	N06022	6700 N	CW2M	Equal Percent	1,2,3,4	13	9	1	4
							Linear	1,2,3,4	14	9	2	4
						CW2M/ PTFE Seat	Equal Percent	N/A	13	10	1	4
							Linear	N/A	14	10	2	4
46mm	Unbal	20mm	CF3M	316L SST	11400 N	CF3M/HF Seat/Guide	Equal Percent	N/A	15	13	1	3
							Linear	N/A	16	13	2	3
						CF3M/ PTFE Seat	Equal Percent	N/A	15	12	1	3
							Linear	N/A	16	12	2	3
			CF3M/ HF Seat	S20910	11400 N	CF3M/HF Seat/Guide	Equal Percent	1,2,3,4	17	13	1	3
							Linear	1,2,3,4	18	13	2	3
			CW2M	N06022	6700 N	CW2M	Equal Percent	1,2,3,4	21	14	1	4
							Linear	1,2,3,4	22	14	2	4
						CW2M/ PTFE Seat	Equal Percent	N/A	21	15	1	4
							Linear	N/A	22	15	2	4

Item B – Valve Plug/Stem (Continued)
Item C – Seat Ring (Continued)
Item 9E – Plug and Trim Style (Continued)
Item 9J – Maximum Allowable Thrust (Use only with Electric Actuator) (Continued)

Bellows Bonnet
Process temperature limits for PTFE Seat rings: -73+204 °C (-100+400 °F), other construction: N/A
CW2M Body Material

Port	Plug Style	Travel	Valve Plug	Stem	Max Allow Thrust	Seat Ring	Characteristic	NACE Ind	**B**	**C**	**9E**	**9J**
22mm	Unbal	20mm	N06022	N06022	6700 N	CW2M	Equal Percent	1,2,3,4	5	4	1	4
							Linear	1,2,3,4	6	4	2	4
						CW2M/ PTFE Seat	Equal Percent	N/A	5	5	1	4
							Linear	N/A	6	5	2	4
36mm	Unbal	20mm	CW2M	N06022	6700 N	CW2M	Equal Percent	1,2,3,4	13	9	1	4
							Linear	1,2,3,4	14	9	2	4
						CW2M/ PTFE Seat	Equal Percent	N/A	13	10	1	4
							Linear	N/A	14	10	2	4
46mm	Unbal	20mm	CW2M	N06022	6700 N	CW2M	Equal Percent	1,2,3,4	21	14	1	4
							Linear	1,2,3,4	22	14	2	4
						CW2M/ PTFE Seat	Equal Percent	N/A	21	15	1	4
							Linear	N/A	22	15	2	4

Item E – Bonnet

Bonnet Style	Valve Plug Style	Body Material	NACE Indicator	**E**
Plain	Unbalanced	WCC/1.0619	1,2,3,4	1
		LCC	1,2,3,4	2
		CF3M/1.4409	1,2,3,4	3
		CD3MN	N/A	4
		CN7M & CN3MCU	1,2	5
		CF3	1,2,3	6
		CW2M	1,2,3,4	7
		N04400	1,2,3,4	8
		N7M	N/A	9
Bellows	Unbalanced	WCC/1.0619	1,2,3,4	10
		LCC	1,2,3,4	11
		CF3M/1.4409	1,2,3,4	12
		CW2M	1,2,3,4	13
Extension	Unbalanced	WCC/1.0619	1,2,3,4	14
		LCC	1,2,3,4	15
		CF3M/1.4409	1,2,3,4	16

Item F – Packing and Packing Parts

* Consult PS Sheet 51.1.GX(K) Low Temperature GX Application Guidelines

Live Load Packing	Bonnet Style	Process Temperature Limits for Packing °F	°C	NACE Indicator	**F**
PTFE (NACE not Exposed)	Plain	-50+450	-46+232	1,2,3,4	1
	Bellows &Extension	-50+800	-46+427	1,2,3,4	1
	Cryogenic Extension	*	*	1,2,3,4	1
PTFE/Glass Oxygen (NACE not Exposed)	Plain	-50+450	-46+232	1,2,3,4	2
Graphite ULF (NACE not Exposed)	Plain	-325+700	-198+371	1,2,3,4	3
	Bellows & Extension	-325+1050	-198+566	1,2,3,4	3
	Cryogenic Extension	-325+1050	-198+566	1,2,3,4	3
ISO-Seal PTFE (NACE not exposed)	Plain	-325+450	-198+232	1,2,3,4	4
	Bellows &Extension	-325+800	-198+427	1,2,3,4	4
	Cryogenic Extension	-325+800	-198+427	1,2,3,4	4

Item G – Packing Box Ring and Spacer

Bonnet Style	Live Load Packing	Stem Material	NACE Indicator	**G**
Plain	PTFE	316L SST & S20910	1,2,3,4	1
		S31803	1	2
		N06022	1,2,3,4	3
		N05500	1,2,3,4	4
		N10675	N/A	5
	Graphite ULF	316L SST & S20910	1,2,3,4	6
		N06022	1,2,3,4	7
	ISO-Seal PTFE	316L SST & S20910	1,2,3,4	6
		N06022	1,2,3,4	7
Bellows	PTFE	316L SST & S20910	1,2,3,4	1
		N06022	1,2,3,4	3
	Graphite ULF	316L SST & S20910	1,2,3,4	6
		N06022	1,2,3,4	7
	ISO-Seal PTFE	316L SST & S20910	1,2,3,4	6
		N06022	1,2,3,4	7
Extension	PTFE	316L SST & S20910	1,2,3,4	1
	Graphite ULF	316L SST & S20910	1,2,3,4	6
	ISO-Seal PTFE	316L SST & S20910	1,2,3,4	6

Item H – Body/Bonnet Gasket

Process temperature limits:
Graphite: Upper limit: +454 °C (850 °F) No Lower limit
PTFE coated: -40+232 °C (-40+450 °F)

Bonnet Style		Gasket	NACE Indicator	**H**
Plain	Standard Service	Graphite FMS 17F28	1,2,3,4	1
		PTFE Coated N10276	1,2,3,4	2
		PTFE Coated S30403	1,2,3	3
	Oxygen Service	PTFE Coated N04400	1,2,3,4	4
Bellows		Graphite FMS 17F28	1,2,3,4	5
		PTFE Coated N10276	1,2,3,4	9
Extension		Graphite FMS 17F28	1,2,3,4	7

Item J – Body/Bonnet Bolting

				Process Temperature		NACE Indicator		
Studs	Nuts	Bonnet Style	Body Material	°F	°C	Non Exposed	Exposed	**J**
B7 NCF2	2H NCF2	Plain	WCC/1.0619, CF3M/1.4409 & LCC	-54+800	-48+427	1,2,3,4	N/A	1
		Extension & Bellows	WCC/1.0618 & LCC	-54+800	-48+427	1,2,3,4	N/A	2
S20910 Hot Rolled	S20910 Hot Rolled	Plain	CW2M, CD3MN, CF3, CN7M & CN3MCU, LCC N7M & M35-2 WCC/1.0619 & CF3M/1.4409	-325+1100	-198+593	1,2,3,4	1,2,3,4	7
		Extension, Bellows & Cryogenic Extension	CW2M	-325+500	-198+260	1,2,3,4	1,2,3,4	8
			CF3M/1.4409	-325+1100	-198+593	1,2,3,4	1,2,3,4	8

Item K – Yoke (NACE Standards not applicable)

Process temperature limits for Actuator:

		Process Temperature	
Bonnet Style	Yoke material	°F	°C
Plain	LCC	-50+450	-46+232
	CF3M	-76+450	-60+232
Extension or Bellows	LCC	-50+800	-46+427
	CF3M	-76+800	-60+427
Cryogenic Extension	LCC & CF3M	*	*

* Consult PS sheet 51.1.GX(K) Low Temperature GX Application Guidelines

Pneumatic Spring & Diaphragm Actuator

						SST	Steel
Valve Plug Style	Bonnet Style	Valve Plug Style	Port Diameter	Actuator Size	Travel	**K**	**K**
Linear & Equal Percent	Plain	Unbalanced	22mm	225	20mm	1	5
			36 & 46mm	225	20mm	1	5
				750	20mm	2	6
	Bellows & Extension	Unbalanced	22, 36 & 46mm	225	20mm	3	7
			36 & 46mm	750	20mm	4	8
Cavitrol III	Plain	Unbalanced	46mm	750	20mm	2	6

Electric Actuator

ISO 5210 Mtg	Yoke Material	Travel	Bonnet Style	**K**
F7	LCC	20 mm	Plain	9
			Bellows & Extension	10

Item L – Actuator Parts (NACE Standards not applicable)

Pneumatic Spring & Diaphragm Actuator

Actuator Size	**L**
225	1
750	2

Electric Actuator

Electric Actuator	ISO 5210 Mtg	Travel	**L**
Rotork	F7	20 mm	3

Item M – Stem Connector Parts (NACE Standards not applicable)

M
1

Item N – Actuator Common Parts (NACE Standards not applicable)

		Ambient temperature		
Actuator	Type	°F	°C	**N**
Pneumatic Spring & Diaphragm	N/A	-50 +180	-46 +82	1
Electric	Rotork	N/A	N/A	2
Pneumatic S & D – PSA service	N/A	-50 +180	-46 +82	3
Pneumatic Spring & Diaphragm	N/A	-76 +180	-60 +82	4

Item P – Actuator Spring (Use only with Pneumatic Spring & Diaphragm Actuator) (NACE Standards not applicable)

Valve Plug Style	Actuator Size	Stem Material	Air Action	Actuator Construction	Spring Assembly per GG00398	**P**
Linear & Equal Percent	225	All	Air to Open	4 Bar	View A6	1
				3 Bar	View A4	2
				2 Bar	View A3	3
			Air to Close	4 Bar	View A3	3
				3 Bar	View A3	3
				2 Bar	View A2	4
	750	316L SST, S20910, or N05500	Air to Open	4 Bar	View B6	5
				3 Bar	View B6	5
				2 Bar	View B4	6
			Air to Close	4 Bar	View B4	6
				3 Bar	View B4	6
				2 Bar	View B4	6
		N06022, S31803, or N10675	Air to Open	4 Bar	View B4	6
				3 Bar	View B4	6
				2 Bar	View B4	6
			Air to Close	4 Bar	View B4	6
				3 Bar	View B4	6
				2 Bar	View B4	6
Cavitrol III	750	S29010	Air to Open or Close	4 Bar	View B6	5

Item Q – Nameplate (NACE Standards not applicable)

Actuator	Characteristic	Flow	Valve Action	**Q**
Pneumatic Spring & Diaphragm	Linear & Equal Percent	Up	PDTC	1
	Cavitrol III	Down	PDTC	2
Electric	Linear & Equal Percent	Up	PDTC	3
	Cavitrol III	Down	PDTC	4
Electric w/o Actuator (Bare Stem)	Linear & Equal Percent	Up	PDTC	5
	Cavitrol III	Down	PDTC	6

Item R – Bellows and Extension Stem
Item 9G- Remove Lower Portion of Warning Tag GF00483

Bonnet Style	Body	Bellows	Extension Stem	Bushing	NACE Indicator	**R**	**9G**
Plain	All	N/A	N/A	N/A	N/A	N	N
Extension	LCC, WCC/1.0619 & CF3M/1.4409	N/A	S20910	S31600/Ultimet	N/A	1	N
Cryogenic Extension	CF3M/1.4409	N/A	S20910	S31600/Ultimet	N/A	2	N
Bellows	LCC, WCC/1.0619 & CF3M/1.4409	1.4571 (316TI)	S31603	S31600/Ultimet	N/A	3	N
				S31600/PTFE Carbon	N/A	4	N
		N10276	S31603	S31600/Ultimet	N/A	5	1
				S31600/PTFE Carbon	N/A	6	1
			N06022	N10276/Ultimet	N/A	7	1
				N10276/PTFE Carbon	N/A	8	1
	CW2M	N10276	N06022	N10276/Ultimet	N/A	7	1
				N10276/PTFE Carbon	N/A	8	1

Item S – Handwheel (When Specified) (Use only with Pneumatic Spring & Diaphragm Actuator) (NACE Standards not applicable)
Item T – Handwheel Common Parts (When Specified) (Use only with Pneumatic Spring & Diaphragm Actuator) (NACE Standards not applicable)

Note: Handwheel cannot be combined with Travel Stop Assembly if positioner or other yoke mounted accessory is used.

Actuator Size	**S**	**T**
225	1	1
750	2	1

Item U – Travel Stop Assembly (When Specified) (Use only with Pneumatic Spring & Diaphragm Actuator) (NACE Standards not applicable)
Item 9H – Travel Stop Style (Up Stop or Down Stop) (Use only with Pneumatic Spring & Diaphragm Actuator)

Note: Cannot be combined with Handwheel if positioner or other yoke mounted accessory is used.

Actuator Size	Handwheel	Air Action	Travel Stop	**U**	**9H**
225 & 750	Yes	ATO	Up Stop	1	1
			Down Stop	N	N
		ATC	Up Stop	N	N
			Down Stop	1	2
	No	ATC/ATO	Up Stop	1	1
			Down Stop	1	2

Item V – Travel Stop Protection Plate (When Specified) (Use only with Pneumatic Spring & Diaphragm Actuator) (NACE Standards not applicable)

Note: Only specify when Travel Stop Assembly is used alone with no positioner, Handwheel, or other yoke mounted accessory.

V
1

Item 9A – Maximum/Minimum Actuator Diaphragm Operating Pressure and Spring Action (Use only with Pneumatic Spring & Diaphragm Actuator)

Linear & Equal Percent Valve Plug Style

Actuator Size	Bonnet Style	Stem Material	Air Action	Actuator Construction	Operating Pressure (Bar) Minimum	Maximum	**9A**
225	Plain	316L SST or S20910	Air to Close	4 Bar	4	6	19
				3 Bar	3	6	20
				2 Bar	2	6	21
			Air to Open	4 Bar	4	6	22
				3 Bar	3	6	23
				2 Bar	2	6	24
		N06022, S31803 or N10675	Air to Close	4 Bar	4	4.6	25
				3 Bar	3	4.6	26
				2 Bar	2	4.1	27
			Air to Open	4 Bar	4	6	22
				3 Bar	3	6	23
				2 Bar	2	6	24
	Extension	316L SST or S20910	Air to Close	4 Bar	4	6	19
				3 Bar	3	6	20
				2 Bar	2	5.6	28
			Air to Open	4 Bar	4	6	22
				3 Bar	3	6	23
				2 Bar	2	6	24
	Bellows	316L SST or S20910	Air to Close	4 Bar	4	6	19
				3 Bar	3	6	20
				2 Bar	2	5.6	28
			Air to Open	4 Bar	4	6	22
				3 Bar	3	6	23
				2 Bar	2	6	24
		N06022, S31803 or N10675	Air to Close	4 Bar	4	4.1	29
				3 Bar	3	4.1	30
				2 Bar	2	3.7	31
			Air to Open	4 Bar	4	6	22
				3 Bar	3	6	23
				2 Bar	2	6	24

Item 9A – Maximum/Minimum Actuator Diaphragm Operating Pressure and Spring Action (Use only with Pneumatic Spring & Diaphragm Actuator) (Continued)

Linear & Equal Percent Valve Plug Style

Actuator Size	Bonnet Style	Stem Material	Air Action	Actuator Construction	Operating Pressure (Bar) Minimum	Maximum	**9A**
750	Plain	316L SST or S20910	Air to Close	4 Bar	3	3.5	32
				3 Bar	3	3.5	32
				2 Bar	2	3.5	33
			Air to Open	4 Bar	4	6	22
				3 Bar	3	6	23
				2 Bar	2	6	24
		N06022, S31803 or N10675	Air to Close	4 Bar	2	2.3	34
				3 Bar	2	2.3	34
				2 Bar	2	2.3	34
			Air to Open	4 Bar	4	6	22
				3 Bar	3	6	23
				2 Bar	2	6	24
	Extension	316L SST or S20910	Air to Close	4 Bar	2	2.8	35
				3 Bar	2	2.8	35
				2 Bar	2	2.8	35
			Air to Open	4 Bar	4	6	22
				3 Bar	3	6	23
				2 Bar	2	6	24
	Bellows	316L SST or S20910	Air to Close	4 Bar	2	2.8	35
				3 Bar	2	2.8	35
				2 Bar	2	2.8	35
			Air to Open	4 Bar	4	6	22
				3 Bar	3	6	23
				2 Bar	2	6	24
		N06022, S31803 or N10675	Air to Close	4 Bar	2	2.2	36
				3 Bar	2	2.2	36
				2 Bar	2	2.2	36
			Air to Open	4 Bar	4	6	22
				3 Bar	3	6	23
				2 Bar	2	6	24

Cavitrol III Valve Plug Style

Actuator Size	Bonnet Style	Stem Material	Air Action	Actuator Construction	Operating Pressure (Bar) Minimum	Maximum	**9A**
750	Plain	S20910	Air to Close	4 Bar	4	6	19
			Air to Open	4 Bar	4	6	22

Item 9C – Hydro Test per FGS 4L1

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

Body Material	Rating	Hydro/Min PSI	BAR	**9C**
WCC/1.0619, LCC, CF3M/1.4409, CF3, CD3MN, N7M & CW2M	Class 150	450/1	31/1	1
	Class 300	1125/1	77.6/1	2
	PN10-40	875/1	60/1	3
CN7M & CN3MCU	Class 150	350/1	24/1	4
	Class 300	900/1	62/1	5
	PN10-40	875/1	60/1	6
M35-2	Class 150	425/1	29/1	7
	Class 300	1050/1	72/1	8

Item 9D – Seat Leak Test per FGS 4L5

Valve Plug Style	Seat Type	Seat Leak Seat Class	Port	Plug Style	Travel	Characteristic	Seat leakage	**9D**
Linear & Equal Percent	Metal	IV	22mm	Unbalanced	20mm	Equal Percent	3.10 SCFH/1464 mL/min	1
						Linear	3.66 SCFH/1725 mL/min	2
			36mm	Unbalanced	20mm	Equal Percent	6.39 SCFH/3014 mL/min	3
						Linear	7.89 SCFH/3724 mL/min	4
			46mm	Unbalanced	20mm	Equal Percent	10.36 SCFH/4890 mL/min	5
						Linear	11.46 SCFH/5410 mL/min	6
		V	22mm	Unbalanced	20mm	N/A	4.1 mL/min	7
			36mm	Unbalanced	20mm	N/A	6.7 mL/min	8
			46mm	Unbalanced	20mm	N/A	8.5 mL/min	9
	Composition	VI	22mm	Unbalanced	20mm	N/A	0.15 mL/min	10
			36mm	Unbalanced	20mm	N/A	0.30 mL/min	11
			46mm	Unbalanced	20mm	N/A	0.45 mL/min	12
Cavitrol III	Metal	V	46mm	Unbalanced	20mm	Cavitrol III	8.5 mL/min	9

Item 9F – Flow Cv/Kv

				Flow		
Plug Style	Travel	Port	Characteristic	Cv	Kv	**9F**
Unbalanced	20mm	22mm	Equal Percent	14.3	12.4	1
			Linear	17.2	14.9	2
		36mm	Equal Percent	28.6	24.7	3
			Linear	33.9	29.3	4
		46mm	Equal Percent	43.7	37.8	5
			Linear	48.6	42.0	6
			Cavitrol III	25.2	21.8	7

Item 9K - Side Mounted Handwheel Orientation Positon per Drawing GE52353 (When Specified) (Factory Mounted Unit Only)

Side Mounted Handwheel	Side Mounted Handwheel Orientation Position	**9K**
With	Position 3 (Standard)	1
	Position 1	2
W/O	None	N

Item 9P – Flow Direction Arrow on Valve Body

Characteristic	**9P**
Cavitrol III	1
Equal Percent & Linear	N

Description		Assembly Drawing
Valve & Pneumatic Actuator Assembly	Air to Open (Fail Closed)	GE02171
	Air to Closed (Fail Open)	GE03515
Port Guided Balanced Trim		GE07153 GE07161
Cryogenic Extension Bonnet Assembly	DN50	GE23746
Extension Bonnet Assembly	DN50	GF00337
Bellows Bonnet Assembly	DN50	GF00338
Handwheel Assembly	Air to Close, Spring to Open	GE05810
	Air to Open, Spring to Close	GE05809
Packing Assembly	PTFE Packing	GE28943
	ULF Packing	GE28944
	ISO-Seal Packing	GF11007
Travel Stop Assembly	225 or 750	GE24017
	225 or 750 kit	GE26229
Valve & Electric Actuator Assembly	Actuator Mounting	GG12175

Revision Change Record

The date recorded on this document reflects the effective date of this revision.

ECRN: 20171974

Matrix Section:
On page 2, in the find number table added 120 Packing Washer for the Item H.

Item	**Module**	**Change**
H	9	New – PTFE Coated N10276 Gasket for Bellows Bonnet with 1,2,3,4 NACE Indicator.