

Fisher® GX Control Valve and Actuator System

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Figure 1. Fisher GX Control Valve, Actuator, and FIELDVUE DVC2000 Digital Valve Controller



Introduction

Scope of Manual

This instruction manual includes installation, maintenance, and parts information for the Fisher GX control valve and actuator system.

Do not install, operate, or maintain a GX valve without being fully trained and qualified in valve, actuator, and accessory installation, operation, and maintenance. To avoid personal injury or property damage, it is important to carefully read, understand, and follow all the contents of this manual, including all safety cautions and warnings. If you have any questions about these instructions, contact your Emerson Process Management sales office before proceeding.

Description

The GX is a compact, state-of-the-art control valve and actuator system, designed to control a wide range of process gases, vapors, and fluids.

The GX is rugged, reliable, and easy to select. It requires no actuator sizing -- the actuator selection is automatic once the valve body construction is selected.

The GX meets the requirements of both EN and ASME standards. It is available with a complete accessory package, including the FIELDVUE DVC2000 integrated digital valve controller.



Table 1. Fisher GX Valve Specifications

Specifications	EN	ASME
Valve Body Size	DN 15, 20, 25, 40, 50, 80, 100, 150	NPS 1/2, 3/4, 1, 1-1/2, 2, 3, 4, 6
Pressure Rating	PN 10 / 16 / 25 / 40 per EN 1092-1	CL150 / 300 per ASME B16.34
End Connections	Flanged raised face per EN 1092-1	Flanged raised face per ASME B16.5
Valve Body/Bonnet Materials	1.0619 steel	ASME SA216 WCC steel
	1.4409 stainless steel	ASME SA351 CF3M stainless steel
	CW2M (sizes DN 25 through DN 100 only)	CW2M (NPS 1 through 4 only)
	ASME SA352 LCC	ASME SA352 LCC
	CN7M Alloy 20 (sizes DN 25 through DN 100 only)	CN7M Alloy 20 (NPS 1 through 4 only)
	CDMN Duplex SST (sizes DN 25 through DN 100 only)	CDMN Duplex SST (NPS 1 through 4 only)
	CF3 304L SST (sizes DN 25 through DN 100 only)	CF3 304L SST (NPS 1 through 4 only)
		M35-2 (NPS 1 through 4 only)
		N7M Alloy B2 (NPS 1 through 4 only)
Face-to-Face Dimensions	Consistent with EN 558-1 Series 1	Consistent with ANSI/ISA 75.08.01
Shutoff per IEC 60534-4 and ANSI/FCI 70-2	Metal seat - Class IV (standard)	
	Metal seat - Class V (optional)	
	PTFE seat - Class VI (optional) ⁽¹⁾	
Flow Direction	Flow-up (Cavitrol™ III trim, Flow down)	
Flow Control Characteristics	Equal Percentage and Linear	
Trim Style	Port Diameters	Trim Style Description
	4.8 mm	Micro-Flow trim (unbalanced)
	9.5, 14, 22 mm	Stem-Guided with Contoured Plug (unbalanced) or Port-Guided with Cavitrol III trim (unbalanced)
	36, 46 mm	Port-Guided Plug (unbalanced)
	70, 90, 136 mm	Balanced Trim with Contoured plug or Unbalanced Port-Guided Plug
Handwheel	Available as an option	
Travel Stop	Available as an option	

1. For 4.8 to 14 mm ports, Class VI shutoff is achieved without PTFE seat.

Valve Installation

⚠ WARNING

Always wear protective gloves, clothing, and eyewear when performing any installation operations to avoid personal injury.

Personal injury or equipment damage caused by sudden release of pressure or bursting of pressure retaining parts might result if service conditions exceed those for which the product was intended. To avoid injury or damage, provide a relief valve for over pressure protection as required by government or accepted industry codes and good engineering practices.

Check with your process or safety engineer for any additional measures that must be taken to protect against process media.

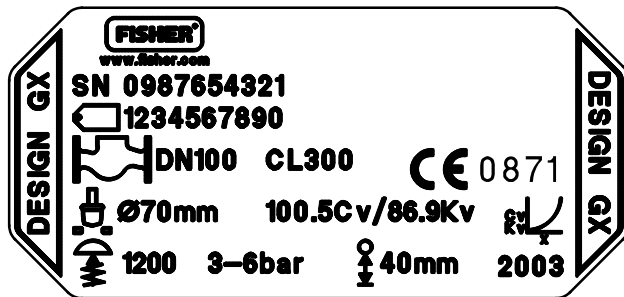
If installing into an existing application, also refer to the WARNING at the beginning of the Maintenance section in this instruction manual.

CAUTION

This valve is intended for a specific range of pressures, temperatures and other application specifications. Applying different pressure and temperatures to the valve could result in parts damage, malfunction of the control valve or loss of

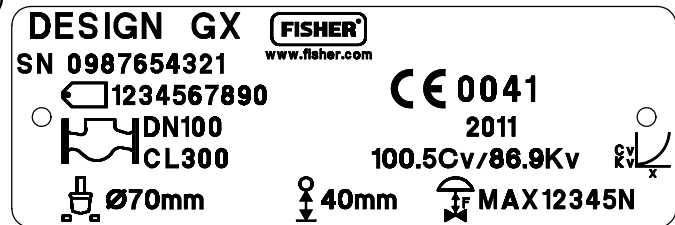
control of the process. Do not expose this product to service conditions or variables other than those for which the product was intended. If you are not sure what these conditions are you should contact your Emerson Process Management sales office for more complete specifications. Provide the product serial number (shown on the nameplate, figure 2) and all other pertinent information.

Figure 2. Fisher GX Nameplate Examples (Key 35)



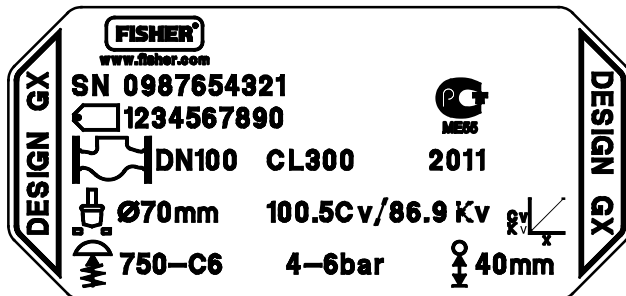
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WITHOUT SPRING INFORMATION



GG12198-A

ELECTRIC ACTUATOR



GE41229-D

WITH SPRING INFORMATION

⚠ WARNING

If you move or work on an actuator installed on a valve with loading pressure applied, keep your hands and tools away from the stem travel path to avoid personal injury. Be especially careful when removing the stem connector to release all loading on the actuator stem whether it be from air pressure on the diaphragm or compression in the actuator springs. Likewise take similar care when adjusting or removing any optional travel stop. Refer to the relevant actuator Maintenance Instructions.

If hoisting the valve take care to prevent people from being injured in case the hoist or rigging slips. Be sure to use adequately sized hoists and chains or slings to handle the valve.

1. Before installing the valve, inspect it to be certain that the valve body cavity is free of all foreign material. Clean out all pipelines to remove scale, welding slag and other foreign material.
2. The control valve assembly may be installed in any orientation unless limited by seismic criteria. However, the normal method is with the actuator vertical above the valve. Flow through the valve must be in the direction indicated by the arrow cast on the valve.
3. Use accepted piping practices when installing the valve in the pipeline. Use a suitable gasket between the valve and the pipeline flanges.

4. If continuous operation is required during inspection or maintenance, install isolating valves on either side of the control valve with a bypass valve to control the flow while the control valve is receiving maintenance.

⚠ WARNING

Personal injury could result from packing leakage. Valve packing is tightened before shipment; however the packing might require some readjustment to meet specific service conditions.

Maintenance

⚠ WARNING

Avoid personal injury or property damage from sudden release of process pressure or bursting of parts. Before performing any maintenance operations:

- Do not remove the actuator from the valve while the valve is still pressurized.
- Always wear protective gloves, clothing, and eyewear when performing any maintenance operations to avoid personal injury.
- Disconnect any operating lines providing air pressure, electric power or a control signal to the actuator. Be sure the actuator cannot suddenly open or close the valve.
- Use bypass valves or completely shut off the process to isolate the valve from the process pressure. Relieve the process pressure from both sides of the valve.
- Depending on the actuator construction, it will be necessary to manage the pneumatic actuator loading pressure and any actuator spring pre-compression. It is essential to refer to the relevant actuator instructions in this manual to ensure safe removal of the actuator from the valve.
- Use lock-out procedures to be sure that the above measures stay in effect while you work on the equipment.
- The valve packing box may contain process fluids that are pressurized, *even when the valve has been removed from the pipeline*. Process fluids may spray out under pressure when removing the packing hardware or packing rings, or when loosening the packing box pipe plug.
- Check with your process or safety engineer for any additional measures that must be taken to protect against process media.

Note

Whenever a gasket seal is disturbed by removing or shifting gasketed parts, install a new gasket during reassembly. This ensures a good gasket seal because the used gasket may not seal properly.

Actuator Maintenance

For electric actuators, see the supplier's instruction manual.

The following sections provide procedures for actuator maintenance. Refer to figures 18, 19, 20, and 21.

The actuator soft parts may require periodic replacement. This includes the diaphragm (key 10), diaphragm O-ring (key 109), actuator rod bushing (key 19), and the actuator rod seal (key 20).

If the actuator stroking direction (air-to-open or air-to-close) is unknown, refer to the nameplate on top of the actuator casing and figure 2.

There are several optional actuator constructions, depending on supply pressure. Refer to the nameplate on the top of the actuator to determine the construction installed. Refer to figure 3 and table 2 for proper spring configuration.

Note

Older GX actuator nameplates do not contain spring configuration information. If you require replacement springs or wish to switch to an optional actuator construction, consult your Emerson Process Management sales office.

Note

When the GX actuator is equipped with the integrated FIELDVUE DVC2000 digital valve controller (figure 1), additional considerations may be required. Refer to the FIELDVUE DVC2000 Digital Valve Controller Mounting section of this manual for additional instruction.

Actuator Disassembly (For Air-to-Open Constructions - see figures 18 or 19)

1. Connect a separate air supply to the lower diaphragm casing via the air supply connection on the yoke (as shown in figure 18 or 19) and apply sufficient air pressure to raise the valve plug/stem off the seat to mid-travel.
2. Remove the stem connector nut half (key 23), stem connector bolt half (key 24), and travel indicator (key 26).
3. Push the valve plug/stem (key 3) down until it contacts the seat.
4. Loosen the locknut (key 28) and thread the stem adjustor nut (key 27) down until it clears the top of the valve plug/stem (key 3).
5. Shut off the air pressure and disconnect the separate air supply to the lower diaphragm casing (as shown in figure 18 or 19).

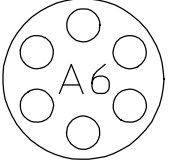
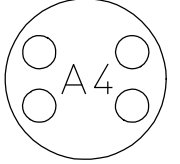
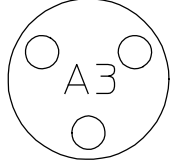
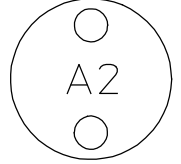
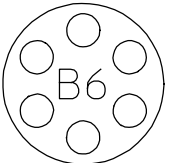
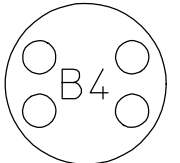
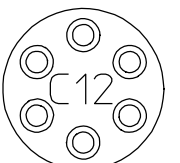
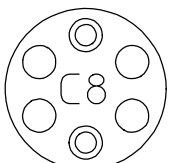
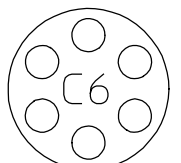
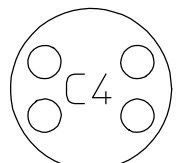
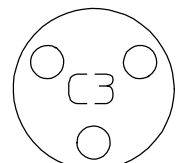
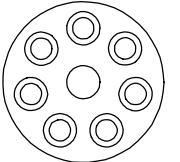
⚠ WARNING

To avoid personal injury or property damage due to actuator springs (keys 12 and 82) being under compression, remove the long cap screws (key 16) last.

The upper actuator casing may remain fixed to the diaphragm and lower casing during disassembly, even if the casing cap screws have been loosened. If this happens, the actuator springs are still under compression. The upper casing could suddenly come loose and jump, due to the compressed energy of the springs. If the upper casing is stuck to the diaphragm and lower casing when you begin loosening the casing cap screws, pry the casings apart with a prying tool. Always ensure that the springs are dispersing energy and the upper casing is moving against the long bolts during disassembly.

6. Remove the **short** actuator casing cap screws and hex nuts (keys 17 and 18) first. Once these have been removed from the actuator assembly, carefully remove the **long** actuator cap screws and hex nuts (keys 16 and 18), alternating between them to gradually release the spring energy (compression).
7. Remove the upper diaphragm casing (key 9) and the actuator springs (key 12 and/or 82).
8. Lift off the actuator stem/diaphragm assembly (includes keys 22, 11, 10, 14, 13, 109, and 15) and remove the cap screw (key 14), actuator spacer (key 13), actuator rod (key 22), and washer (key 15).
9. Replace the diaphragm (key 10), diaphragm O-ring (key 109), actuator rod bushing (key 19), and actuator rod seal (key 20), as needed.

Figure 3. Spring Configuration

ACTUATOR	TRAVEL	GX Actuator - Spring Quantity and Arrangement				
225	20					
		6 - GE37264X012	4 - GE37264X012	3 - GE37264X012	2 - GE37264X012	
750	20					
		6 - GE00366X012	4 - GE00366X012			
750	40					
		6 - GE37344X012 & 6 - GE40917X012	6 - GE37344X012 & 2 - GE40917X012	6 - GE37344X012	4 - GE37344X012	3 - GE37344X012
1200	40 & 60					
		8 - GE13551X012 & 7 - GE13552X012				
<p>Note: Concentric circles indicate nested springs. Spring arrangements are shown looking down at lower casing from above.</p>						

GC00398-B

Actuator Disassembly (For Air-to-Close Constructions - see figure 20 or 21)

1. Remove the stem connector nut half (key 23), stem connector bolt half (key 24), and travel indicator (key 26).

⚠ WARNING

To avoid personal injury or property damage due to actuator springs (key 12) being under compression, remove the long cap screws (key 16) last.

The upper actuator casing may remain fixed to the diaphragm and lower casing during disassembly, even if the casing cap screws have been loosened. If this happens, the actuator springs are still under compression. The upper casing could

suddenly come loose and jump, due to the compressed energy of the springs. If the upper casing is stuck to the diaphragm and lower casing when you begin loosening the casing cap screws, pry the casings apart with a prying tool. Always ensure that the springs are dispersing energy and the upper casing is moving against the long bolts during disassembly.

2. Remove the **short** actuator casing cap screws and hex nuts (keys 17 and 18) first. Once these have been removed from the actuator assembly, carefully remove the **long** actuator cap screws and hex nuts (keys 16 and 18), alternating between them to gradually release the spring energy (compression).
3. Remove the upper diaphragm casing (key 9).
4. Lift off the actuator stem/diaphragm assembly (includes keys 22, 11, 10, 14, 13, 109, and 15) and remove the cap screw (key 14), actuator spacer (key 13), actuator rod (key 22), and washer (key 15).
5. Remove the actuator springs (key 12 and/or 82).
6. Replace the diaphragm (key 10), diaphragm O-ring (key 109), actuator rod bushing (key 19), and actuator rod seal (key 20), as needed.

Table 2. Actuator Spring Configuration Based on Minimum Supply Pressure⁽¹⁾

ACTUATOR SIZE	TRAVEL mm	STEM MATERIAL	MINIMUM SUPPLY PRESSURE	SPRING CONFIGURATION	
				Air-to-Open	Air-to-Close
225	20	S20910, N05500 S31603	4 bar (58 psi)	A6	A3
				A4 ⁽²⁾	A4 ⁽²⁾
			3 bar (44 psi)	A4	A3
225	20	S31803, N10665, N06022	2 bar (29 psi)	A3	A2
			4 bar (58 psi)	A6	A3
			3 bar (44 psi)	A4	A3
750	20	S20910, N05500 S31603	2 bar (29 psi)	A3	A2
			4 bar (58 psi)	B6	B4
			3 bar (44 psi)	B6 ⁽²⁾	B6 ⁽²⁾
750	20	S31803, N10665, N06022	2 bar (29 psi)	B6	B4
			4 bar (58 psi)	B4	B4
			3 bar (44 psi)	B4	B4
750	40	S20910, N05500 S31603	2 bar (29 psi)	B4	B4
			4 bar (58 psi)	C12	C6
			3 bar (44 psi)	C8	C3
750	40	S31803, N10665, N06022	2 bar (29 psi)	C4	C3
			4 bar (58 psi)	C8	C6
			3 bar (44 psi)	C8	C3
1200	40 or 60	S20910, N05500 S31603	2 bar (29 psi)	C4	C3
			4 bar (58 psi)	D15	D15
			3 bar (44 psi)	D15	D15
			2 bar (29 psi)	N/A	N/A

1. Only applicable to actuators with spring information on the nameplate (see figure 2).
 2. Only applicable to Cavtrol III constructions.

Table 3. Fisher GX Maximum Rated Travel

ACTUATOR SIZE	NUMBER OF CASING BOLTS	TRAVEL
		mm
225	6	20
750	10	20 or 40
1200	16	40 or 60

Table 4. Body Nut (Key 7) Torque Requirements

VALVE SIZE	TORQUE	
	N•m	lbf•ft
DN 15, 20, 25 (NPS 1/2, 3/4, 1)	45.5	33.5
DN 40 (NPS 1-1/2)	79.8	58.9
DN 50 (NPS 2)	79.8	58.9
DN 80 (NPS 3)	163	120
DN 100 and DN 150 (NPS 4 and 6)	282	208

Table 5. Yoke/Extension Bonnet Nut (Key 46) Torque Requirements (used on Extension Bonnet and Bellows Bonnet constructions)

VALVE SIZE	TORQUE	
	N•m	lbf•ft
DN 15, 20, 25, 40, and 50 (NPS 1/2, 3/4, 1, 1-1/2, and 2)	79.8	58.9
DN 80 and 100 (NPS 3 and 4)	163	120

Actuator Assembly For Air-to-Open Constructions (or to Change Action to Air-to-Open - see figure 18 or 19)

1. Install the diaphragm (key 10) on the diaphragm plate (key 11). Insert the cap screw (key 14) through the actuator spacer (key 13) and place this assembly through the diaphragm/diaphragm plate assembly.
2. Place the diaphragm O-ring (key 109) and the washer (key 15) over the center hole of the diaphragm, so that the convex part of the washer is facing down toward the diaphragm and contains the O-ring. Ensure the convex part of the washer is guided in the diaphragm center hole as shown in figure 18 or 19.
3. Screw the actuator rod (key 22) onto the cap screw (key 14) and torque to 80 N•m (59.1 lbf•ft). Install the actuator stem/diaphragm assembly back into the actuator yoke (key 8).
4. Place the actuator springs (key 12 and/or 82) onto the spring locators in the diaphragm plate (key 11). See figure 3 and table 2 for proper spring quantity and arrangement.
 - If the nameplate does not contain spring information, use the same quantity and arrangement as originally installed.
5. Install the upper diaphragm casing (key 9) so that the ribs on the top of the upper diaphragm casing are perpendicular with the yoke legs.
 - For size 225 and 750 actuators, install the 2 long cap screws (key 16) and hex nuts (key 18) 180 degrees apart from each other and in line with the actuator yoke legs.
 - For size 1200 actuators, install the 4 long cap screws (key 16) and hex nuts (key 18) 90 degrees from each other, with two of them in line with the actuator yoke legs.
6. Tighten the long cap screws (key 16) and hex nuts (key 18), alternating between them to gradually compress the springs, until the two casing halves and diaphragm touch.
7. Install the remaining short cap screws (key 17) and hex nuts (key 18) to the casing.
8. Tighten the actuator casing cap screws evenly using a cross-tightening procedure. Torque to 55 N•m (40 lbf•ft).
9. If you had previously removed the actuator assembly from the valve, place the actuator assembly back onto the valve body (key 1). Install the four body nuts (key 7), but tighten them only finger-tight.

- Connect a separate air supply to the actuator air supply connection (as shown on the yoke in figure 18 or 19) and apply sufficient air pressure to raise the actuator rod (key 22) to the travel stop.

Note

If converting from air-to-close to air-to-open action, first move the vent cap (key 21) from the air supply connection on the yoke leg (see figure 20 or 21) to the top of the casing (see figure 18 or 19).

- For standard bonnet constructions (figures 18, 19, 20, and 21), tighten the body nuts (key 7) evenly using a cross-tightening procedure. See table 4 for torque requirements.
For extension and bellows bonnet constructions (figures 22 and 23), tighten the bonnet nuts (key 46) evenly using a cross-tightening procedure. See table 5 for torque requirements.
- With the valve plug/stem (key 3) on the seat, thread the stem adjuster nut (key 27) up until it is the rated travel distance specified in table 3 from the actuator rod (key 22). Thread the locknut (key 28) up against the stem locknut and tighten per table 6.

Table 6. Stem Connector Torque Values

PART	STEM MATERIAL	TORQUE	
		N•m	Lbf•ft
M8 Stem Connector Cap Screws	All	35	26
M10 Stem Connector Jam Nut (Rie 4606 Coated)	S31603, S20910, N05500	48	35
	N06022, S31803, N10665	35	26
M14 Stem Connector Jam Nut	S31603, S20910, N05500	175	129
	N06022, S31803, N10665	138	102

- Stroke the actuator rod until it contacts the stem adjuster nut (key 27) and install the stem connector halves and travel indicator (keys 23, 24, and 26) with the cap screws (key 25). Install the stem connector halves in the proper orientation so that when looking at the inside of the stem connector halves, the flats are down and the beveled surfaces are up.
- Align the pointer of the travel indicator (key 26) with the appropriate mark on the travel scale.
- Tighten the stem connector cap screws (key 25) to 35 N•m (26 lbf•ft).
- Release the actuator pressure.

Note

For air-to-open action, the air supply tubing must be connected to the actuator yoke at the air supply connection, see figure 18 or 19. (If converting from air-to-close to air-to-open, the tubing will need to be re-routed to this location).

Actuator Assembly For Air-to-Close Constructions (or to Change Action to Air-to-Close - see figure 20 or 21)

- Position the upper diaphragm casing (key 9) upside down on the bench so that it lays flat and not off balance.

Note

If converting from air-to-open to air-to-close action, first move the vent cap (key 21) from the top of the casing (see figure 18 or 19) and thread into the air supply connection on the yoke leg (see figure 20 or 21).

2. Install the diaphragm (key 10) on the diaphragm plate (key 11). Place the diaphragm O-ring (key 109) and the washer (key 15) over the center hole of the diaphragm, so that the convex part of the washer is facing down toward the diaphragm and contains the O-ring. Ensure the convex part of the washer is guided in the diaphragm center hole as shown in figure 20 or 21.
3. Insert the cap screw (key 14) through the washer and diaphragm, install the actuator spacer (key 13), and screw the actuator rod (key 22) onto the cap screw (key 14) finger-tight.
4. Radially align the spring locators in the diaphragm plate assembly (key 11) with the casing cap screw holes in the diaphragm (key 10). This will ensure that the springs do not cover the air path in the yoke.
5. Torque the cap screw (key 14) to the actuator rod (key 22) to 80 N•m (59.1 lbf•ft) and lay this assembly into the upper diaphragm casing (key 9).
6. Place the actuator springs (key 12 and/or 82) onto the spring locators in the diaphragm plate (key 11). See figure 3 and table 2 for proper spring quantity and arrangement.
 - If the nameplate does not contain spring information, use the same quantity and arrangement as originally installed.
7. Remove and replace the actuator rod bushing (key 19) and actuator rod seal (key 20) in the actuator yoke (key 8), if necessary.
8. Set the actuator yoke (key 8) down onto the assembly that is resting in the upper diaphragm casing (key 9) so that the yoke legs are perpendicular with the ribs on the top of the upper diaphragm casing (key 9).
 - **For size 225 and 750 actuators**, install the **2 long** cap screws (key 16) and hex nuts (key 18) 180 degrees apart from each other and in line with the actuator yoke legs.
 - **For size 1200 actuators**, install the **4 long** cap screws (key 16) and hex nuts (key 18) 90 degrees from each other, with two of them in line with the actuator yoke legs.
9. Tighten the **long** cap screws (key 16) and hex nuts (key 18), alternating between them to gradually compress the springs, until the two casing halves and diaphragm touch.
10. Install the remaining **short** cap screws (key 17) and hex nuts (key 18) to the casing.
11. Tighten the actuator casing cap screws evenly using a cross-tightening procedure. Torque to 55 N•m (40 lbf•ft).
12. If you had previously removed the actuator assembly from the valve, place the actuator assembly back onto the valve body (key 1). **For standard bonnet constructions (figures 18, 19, 20, and 21)**, install the body nuts (key 7) and tighten evenly using a cross-tightening procedure. See table 4 for torque requirements.
For extension and bellows bonnet constructions (figures 22 and 23), install the bonnet nuts (key 46) and tighten evenly using a cross-tightening procedure. See table 5 for torque requirements.
13. With the valve plug/stem (key 3) in the closed position (on the seat), thread the stem adjuster nut (key 27) up until it is at the rated travel (see table 3) from the actuator rod (key 22). Thread the locknut (key 28) up against the stem locknut and tighten per table 6.
14. Stroke the actuator rod until it contacts the stem adjuster nut (key 27) and install the stem connector halves and travel indicator (keys 23, 24, and 26) with the cap screws (key 25). Install the stem connector halves in the proper orientation so that when looking at the inside of the stem connector halves, the flats are down and the beveled surfaces are up.
15. Align the pointer of the travel indicator (key 26) with the appropriate mark on the travel scale.
16. Tighten the stem connector cap screws (key 25) to 35 N•m (26 lbf•ft).

Note

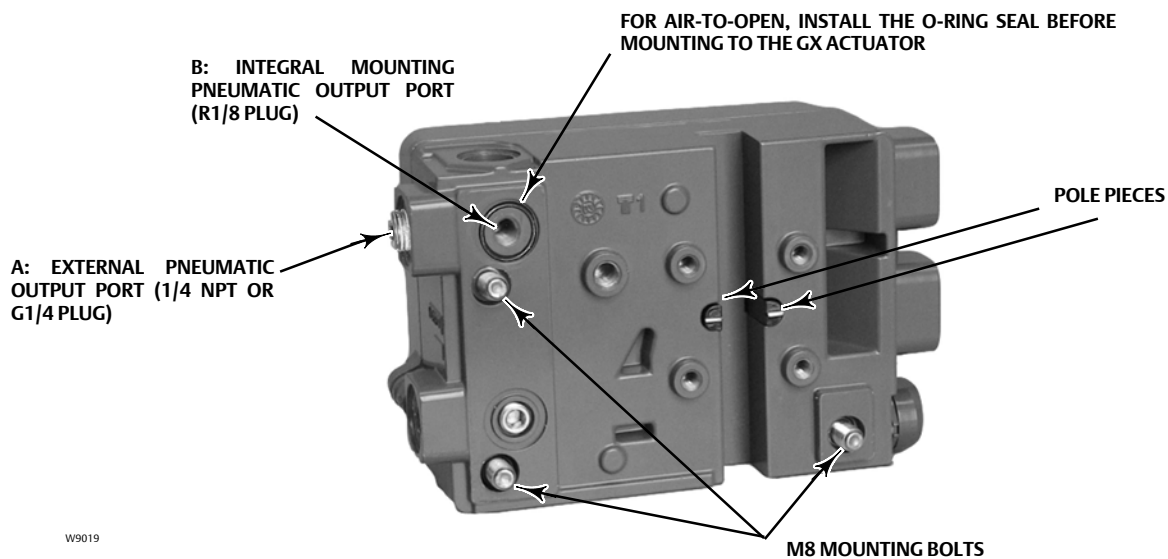
For air-to-close action, the air supply tubing must be connected to the actuator upper casing at the air supply connection, see figure 20 or 21. (If converting from air-to-open to air-to-close, the tubing will need to be re-routed to this location).

FIELDVUE DVC2000 Digital Valve Controller Mounting

This section provides instruction on mounting the FIELDVUE DVC2000 digital valve controller to the GX control valve. For further detail on the operation and maintenance of the DVC2000, refer to the DVC2000 instruction manual.

The FIELDVUE DVC2000 digital valve controller mounts directly to an interface pad on the GX actuator yoke leg, eliminating the need for mounting brackets (see figure 1). Internal passageways in the actuator route the pneumatic output to the actuator casing, which eliminates the need for external air supply tubing in the air-to-open (spring-to-close) constructions. (The GX will also accommodate other valve positioners, using the NAMUR mounting pads on the side of the yoke legs.)

Figure 4. DVC2000 Digital Valve Controller Mounting Details



The DVC2000 features linkage-less position feedback when mounted to the GX control valve. There are no touching parts between the controller and the valve stem, which simplifies controller installation. If maintenance is required, the DVC2000 can be easily removed from the valve.

In the air-to-open (spring-to-close) configuration, the air signal to the actuator casing is supplied through the air supply connection on the GX actuator yoke leg (see figure 18 or 19). In the air-to-close (spring-to-open) configuration, the air signal is supplied to the actuator through the air supply connection on the top of the actuator casing (see figure 20 or 21).

For an air-to-open construction, a DVC2000 will mount to the actuator (figure 18 or 19). The air signal is transmitted to the lower casing through the pneumatic passageway marked “air supply connection” in figure 18 or 19.

For an air-to-close construction, DN 15 through DN 100 (NPS 1/2 through 4) only: in the actuator design (figure 20 or 21), the pneumatic signal is connected directly to the air supply connection in the upper actuator casing. The yoke is symmetrical and the air passageways serve as a vent, whereby the DVC2000 can be easily moved from one side of the valve to the other without rotating the actuator.

DVC2000 Mounting Procedures

Steps A and B of the following instructions apply to the actuator construction shown in figures 18, 19, 20, and 21.

- A. Mounting the DVC2000 to an air-to-open GX actuator (spring-to-close) (see figure 4 and figure 18 or 19):
1. Attach the magnetic feedback array (supplied with the DVC2000) to the valve stem connector using the alignment template (supplied with the mounting kit) for accurate alignment.
 2. Remove the plug (R1/8) from the back of the DVC2000 housing (Port B in figure 4). This pneumatic output port on the DVC2000 lines up with the integral GX actuator air supply connection (see figure 18 or 19).
 3. Install the plug (either G1/4 or 1/4 NPT, included in the mounting kit) to the external output pneumatic port (Port A in figure 4).
 4. Remove the digital valve controller's cover.
 5. Using a 6mm hex wrench, attach the digital valve controller to the GX actuator mounting pad on the side that has the open pneumatic port. Be sure to place the O-ring seal between the digital valve controller's pneumatic output and the actuator mounting pad (Port B, as shown in figure 4). Pneumatic tubing is not required because the air passages are internal to the actuator. Also, install the insulating gaskets around the mounting bolts.
 6. Check for clearance between the magnet assembly and the DVC2000 feedback slot. The magnet assembly should be positioned such that the index mark in the feedback slot of the DVC2000 housing is between the valid range on the magnet assembly throughout the range of travel. (See figure 4).
- B. For air-to-close GX actuator (spring-to-open) (see figure 4 and figure 20 or 21):
1. Attach the magnetic feedback array (supplied with the DVC2000) to the valve stem connector using the alignment template (supplied with the mounting kit) for accurate alignment.
 2. In the air-to-close configuration it is required that an R1/8 plug be installed into the integral mount pneumatic port on the back of the DVC2000 housing (Port B of figure 4).
 3. Remove the digital valve controller's cover.
 4. Using a 6mm hex wrench, attach the digital valve controller to the GX actuator mounting pad.

Note

The O-ring seal and G1/4 or 1/4 NPT plugs (supplied in the mounting kit) are not used with this actuator construction.

5. Check for clearance between the magnet assembly and the DVC2000 feedback slot. The magnet assembly should be positioned such that the index mark on the pole pieces (back of the controller housing) is between the marks on the magnet assembly throughout the range of travel. (See figure 4.)
6. Install tubing between the external pneumatic output connection of the DVC2000 (Port A of figure 4) to the air supply connection (see figure 20 or 21) on top of the actuator casing.

When changing actuator action:

When field converting a GX actuator from air-to-open to air-to-close closed (or vice-versa), you will need to change the plugs for the pneumatic passages in the DVC2000 housing.

- To convert from air-to-close to air-to-open (spring-to-close), remove the R1/8 pneumatic plug on the back of the DVC2000 housing and install an O-ring (Port B of figure 4). Plug the external pneumatic output with a 1/4 NPT or G1/4 plug (depending on the housing version). (Port A of figure 4.)
- To convert from air-to-open to air-to-close (spring-to-open), remove the external pneumatic plug (1/4 NPT or G1/4 plug, depending on the housing version from Port A of figure 4). Install an R1/8 plug on the back of the DVC2000 housing (Port B of figure 4). Install tubing between the pneumatic output connection of the DVC2000 (Port A) to the air supply connection on top of the actuator casing (see figure 20 or 21).

Packing Maintenance

Key numbers refer to figures 15, 18, 19, 20, 21, 22, and 23.

Packing Adjustment

For spring-loaded single PTFE V-ring packing (figure 15) or for Graphite ULF packing (figure 16), the Belleville spring pack (key 34) maintains a sealing force on the packing. If leakage is detected around the packing follower (key 29) check to be sure that the packing follower (key 29) is tight. Using a wrench, tighten the packing follower (key 29) in 1/4 turn intervals until the leakage is stopped. If leakage cannot be stopped in this manner, proceed to the Replacing Packing section in this manual.

Replacing Packing (Pneumatic Actuators)

This section provides instruction on replacing packing in standard bonnets, extension bonnets, and bellows extension bonnets.

Isolate the control valve from the line pressure, release pressure from both sides of the valve body and drain the process media from both sides of the valve. Shut off all pressure lines to the actuator and release all pressure from the actuator. Use lock-out procedures to ensure that the above measures stay in effect while you work on the equipment.

1. For air-to-open constructions:

- a. Connect a separate air supply to the lower diaphragm casing via the air supply connection on the yoke (as shown in figure 18 or 19) and apply sufficient air pressure to raise the valve plug/stem off the seat to mid travel.
- b. Remove the stem connector nut half (key 23), stem connector bolt half (key 24), and travel indicator (key 26).
- c. Push the valve plug stem (key 3) down until it contacts the seat.
- d. Loosen the locknut (key 28) and thread the stem adjustor nut (key 27) down until it clears the top of the valve plug stem (key 3).
- e. Shut off the air pressure and disconnect the separate air supply to the lower diaphragm casing (as shown in figure 18 or 19).

2. For air-to-close constructions, as shown in figure 20 or 21, remove the stem connector nut half (key 23), stem connector bolt half (key 24), and travel indicator (key 26).

⚠ WARNING

To avoid personal injury or property damage by uncontrolled movement of the actuator yoke (key 8), loosen the body/yoke nuts (figures 18, 19, 20, and 21, key 7) or bonnet/yoke nuts (figures 22 and 23, key 46) by following the instructions in the next step. Do not remove a stuck actuator yoke by pulling on it with equipment that can stretch or store energy in any other manner. The sudden release of stored energy can cause uncontrolled movement of the actuator yoke.

Note

The following step also provides additional assurance that the valve body fluid pressure has been relieved.

3. For standard bonnet constructions (figures 18, 19, 20, and 21), body nuts (key 7) attach the actuator yoke (key 8) to the valve body (key 1). Loosen these nuts approximately 3mm (1/8 inch).

For extension and bellows bonnet constructions, bonnet nuts (key 46) attach the actuator yoke (key 8) to the extension bonnet (key 39). Loosen these nuts approximately 3mm (1/8 inch).

4. Then loosen the valve-to-yoke gasketed joint by either rocking the actuator yoke or prying between the valve and actuator yoke. Work the prying tool around the actuator yoke until it loosens.

⚠ WARNING

If there is evidence of process fluid under pressure leaking from the joint, retighten the valve body/joint nuts and return to the Warning at the beginning of the Maintenance section to ensure proper steps have been taken to isolate the valve and relieve process pressure, thus avoiding property damage or personal injury.

5. If no fluid leaks from the joint, loosen the packing follower (key 29) two turns to relieve the packing compression load.
6. For standard bonnet constructions (figures 18, 19, 20, and 21), remove the body nuts (key 7) completely.
For extension and bellows bonnet constructions (figures 22 and 23), remove the bonnet nuts (key 46) completely.

CAUTION

To avoid property damage, place the actuator yoke on a protective surface, as described in the following procedure.

7. Carefully lift off the actuator yoke and set it on a protective surface to prevent damage.
For standard bonnet constructions, if the bonnet (key 4) together with the valve stem plug assembly has a tendency to lift with the actuator yoke, ensure it does not drop from the actuator.
For extension and bellows constructions, ensure the bonnet (key 4) does not lift with the actuator yoke.
For DN150 balanced constructions, if the bonnet, guide sleeve, or valve stem assembly have a tendency to lift with the actuator yoke, ensure they do not drop from the actuator.

CAUTION

For extension and bellows bonnet constructions, lifting the bonnet with the actuator yoke may cause possible damage to the valve plug and to the bellows.

8. Remove the stem adjuster nut (key 27) and locknut (key 28).
9. For standard bonnet constructions, remove the bonnet and the valve plug/stem assembly and set on a protective surface.
For extension and bellows bonnet constructions, remove only the bonnet (key 4).
For DN150 balanced constructions, remove the guide sleeve, bonnet, and valve plug stem assembly.

Table 7. Packing Follower Torque

Valve Size	Packing Style	Torque N•m (lbf•ft)	Packing Style	Torque N•m (lbf•ft)
DN15, 20, 25, 40, and 50	PTFE	10 (7.4)	ULF	35 (26)
DN80 and 100	PTFE	23 (17)	ULF	50 (37)
DN150	PTFE	36 (26)	ULF	68 (50)

10. Remove the valve/yoke gasket (figures 18, 19, 20, and 21 key 5, figures 22 and 23 key 47) and cover the opening of the valve to protect the gasket surface and prevent foreign matter from getting into the valve cavity.
11. Remove the packing follower (key 29) from the bonnet (key 4).
12. Remove the Belleville spring pack (key 34) and packing spacer (key 30) from the bonnet (key 4). Carefully push out the remaining packing box parts from the bonnet (key 4) using a rounded rod or other tool which will not scratch the packing box wall. Clean the packing box and the metal packing box parts.

CAUTION

Inspect the valve stem, threads and packing box surfaces for any sharp edges that might cut the packing. Scratches or burrs could cause packing box leakage or damage the new packing.

13. Inspect the valve stem, threads and packing box surfaces for any sharp edges that might cut the packing. Scratches or burrs could cause packing box leakage or damage the new packing. If the surface condition cannot be improved by light sanding, replace the damaged parts.
14. Remove the covering protecting the valve cavity and install a new valve/yoke gasket (figures 18, 19, 20, and 21 key 5, figures 22 and 23 key 47) making sure that the gasket seating surfaces are clean and smooth.
For DN150 balanced constructions, two gaskets are required; one between the valve body and guide sleeve, and the other between the guide sleeve and bonnet. Ensure the gasket seating surfaces are clean and smooth for both gaskets.
15. Carefully install the bonnet (key 4) onto the valve stem.
16. Install the new packing and the metal packing box parts according to figure 15 for PTFE packing and according to figure 16 for Graphite ULF packing. Place a smooth-edged pipe over the valve stem and gently tap each soft packing part into the packing box. Apply anti-seize lubricant to the threads and install the packing follower (key 29).
17. Install the locknut (key 28) and stem adjustor nut (key 27).
For standard bonnet constructions, install the valve plug/bonnet sub assembly into the valve body (key 1).
18. Mount the actuator onto the valve and install the body nuts (figures 18, 19, 20, 21 key 7, figures 22 and 23 key 46), but tighten them only finger-tight.
19. **For air-to-open**, connect a separate air supply to the lower diaphragm casing air supply connection (as shown in figure 18 or 19) and apply sufficient air pressure to raise the actuator rod (key 22) to the travel stop. Proceed to the next step.
For air-to-close, proceed to the next step.
20. **For standard bonnet constructions**, tighten the body nuts (key 7) evenly using a cross-tightening procedure. See table 4 for torque requirements.
For extension and bellows bonnet constructions, tighten the bonnet nuts (key 46) evenly using a cross-tightening procedure. See table 5 for torque requirements.
21. Thread the stem lock adjustor (key 27) up until it is the rated travel distance specified in table 3 from the actuator rod (key 22). Thread the locknut (key 28) up against the stem locknut and tighten to the torque specified in table 6.
22. Stroke the actuator rod until it contacts the stem adjustor nut (key 27) and install the stem connector halves and travel indicator (keys 23, 24, and 26) with the cap screws (key 25). Install the stem connector halves in the proper orientation so that when looking at the inside of the stem connector halves, the flats are down and the beveled surfaces are up.
23. Align the pointer of the travel indicator (key 26) with the appropriate mark on the travel scale.
24. Tighten the stem connector cap screws (key 25) to 35 N•m (26 lbf•ft).

Table 8. Seat Ring / Cage Torque Requirements

VALVE SIZE		TORQUE	
DN	NPS	N•m	lbf•ft
15, 20, 25	1/2, 3/4, 1	170	124
40	1-1/2	320	234
50	2	460	337
80	3	1020	747
100	4	1520	1113
150	6	3400	2500

Table 9. Stem Extension Torque Requirements

VALVE SIZE		TORQUE	
DN	NPS	N•m	Lbf•ft
15, 20, 25, 40, 50	1/2, 3/4, 1, 1-1/2, 2	40	30
80, 100	3, 4	120	89

Table 10. Bellows Nut Torque Requirements

VALVE SIZE		TORQUE	
DN	NPS	N•m	Lbf•ft
15, 20, 25, 40, 50	1/2, 3/4, 1, 1-1/2, 2	350	260
80, 100	3, 4	650	480

25. Tighten the packing follower (key 29) to the torque specified in table 7.

Alternately, the packing follower can be tightened by the following method:

- a. Tighten the packing follower until the Belleville springs are compressed 100% (or completely flat), as detected by a rapid increase in nut torque.
- b. For DN 15 through DN 100 (NPS 1/2 through 4), loosen the packing follower 60° of rotation.
For DN 150 (NPS 6), loosen the packing follower 90° of rotation.

26. For air-to-open, release the actuator pressure.

27. For air-to-open, ensure the vent (key 21) is installed into the upper diaphragm casing (see figure 18 or 19).

For air-to-close, ensure the vent (key 21) is installed into the actuator yoke air supply connection (see figure 20 or 21).

Replacing Packing (Electric Actuators)

This section provides instruction on replacing packing in standard bonnets, extension bonnets, and bellows extension bonnets.

Isolate the control valve from the line pressure, release pressure from both sides of the valve body and drain the process media from both sides of the valve. Use lock-out procedures to ensure that the above measures stay in effect while you work on the equipment.

1. Stroke the actuator so the valve plug/stem (key 3) is at mid travel.
2. Remove the stem connector nut half (key 23), stem connector bolt half (key 24), and travel indicator (key 26).
3. Use precaution to ensure the actuator is locked in position and cannot stroke.
4. Mark the position of the locknut (key 28) on the stem for reassembly.
5. Push the valve plug/stem (key 3) down until it contacts the seat.
6. Loosen the locknut (key 28) and thread the stem adjustor nut (key 27) down until it clears the top of the valve plug stem (key 3).

⚠ WARNING

To avoid personal injury or property damage by uncontrolled movement of the actuator yoke (key 8), loosen the body/yoke nuts (figures 18, 19, 20, and 21, key 7) or bonnet/yoke nuts (figures 22 and 23, key 46) by following the instructions in the following step 7. below. Do not remove a stuck actuator yoke by pulling on it with equipment that can stretch or store energy in any other manner. The sudden release of stored energy can cause uncontrolled movement of the actuator yoke.

Note

The following step also provides additional assurance that the valve body fluid pressure has been relieved.

7. For **standard bonnet constructions (figures 18, 19, 20, and 21)**, body nuts (key 7) attach the actuator yoke (key 8) to the valve body (key 1). Loosen these nuts approximately 3mm (1/8 inch).

For **extension and bellows bonnet constructions**, bonnet nuts (key 46) attach the actuator yoke (key 8) to the extension bonnet (key 39). Loosen these nuts approximately 3mm (1/8 inch).

8. Then loosen the valve-to-yoke gasketed joint by either rocking the actuator yoke or prying between the valve and actuator yoke. Work the prying tool around the actuator yoke until it loosens.

⚠ WARNING

If there is evidence of process fluid under pressure leaking from the joint, retighten the valve body/joint nuts and return to the Warning at the beginning of the Maintenance section to ensure proper steps have been taken to isolate the valve and relieve process pressure, thus avoiding property damage or personal injury.

9. If no fluid leaks from the joint, loosen the packing follower (key 29) two turns to relieve the packing compression load.
10. For **standard bonnet constructions (figures 18, 19, 20, and 21)**, remove the body nuts (key 7) completely.
For **extension and bellows bonnet constructions (figures 22 and 23)**, remove the bonnet nuts (key 46) completely.

CAUTION

To avoid property damage, place the actuator yoke on a protective surface, as described in the following procedure.

11. Carefully lift off the actuator yoke and set it on a protective surface to prevent damage.
For **standard bonnet constructions**, if the bonnet (key 4) together with the valve stem plug assembly has a tendency to lift with the actuator yoke, ensure it does not drop from the actuator.
For **extension and bellows constructions**, ensure the bonnet (key 4) does not lift with the actuator yoke.

CAUTION

For extension and bellows bonnet constructions, lifting the bonnet with the actuator yoke may cause possible damage to the valve plug and to the bellows.

12. Remove the stem adjuster nut (key 27) and locknut (key 28).
13. For **standard bonnet constructions**, remove the bonnet and the valve plug/stem assembly and set on a protective surface.
For **extension and bellows bonnet constructions**, remove only the bonnet (key 4).
14. Remove the valve/yoke gasket (figures 18, 19, 20, and 21 key 5, figures 22 and 23 key 47) and cover the opening of the valve to protect the gasket surface and prevent foreign matter from getting into the valve cavity.
15. Remove the packing follower (key 29) from the bonnet (key 4).

16. Remove the Belleville spring pack (key 34) and packing spacer (key 30) from the bonnet (key 4). Carefully push out the remaining packing box parts from the bonnet (key 4) using a rounded rod or other tool which will not scratch the packing box wall. Clean the packing box and the metal packing box parts.

Table 11. GX Electric Actuator Maximum Allowable Thrust

VALVE SIZE	STEM DIAMETER	TRAVEL	BONNET STYLE	STEM MATERIAL STRENGTH	MAXIMUM THRUST	
	mm	mm			N	lbf
DN25-DN50 (NPS 1 to 2)	10	20	Plain	High ⁽¹⁾	17000	3820
				Low ⁽²⁾	7600	1710
			Bellows/Extension	High	11400	2560
				Low	6700	1500
DN80-DN100 (NPS 3 to 4)	14	20, 40	Plain	High	20000	4500
				Low	20000	4500
			Bellows/Extension	High	20000	4500
				Low	14500	3260

1. High strength stem materials consist of S200910, N05500, S31603.
2. Low strength materials consist of S31803, N10665, N06022.

CAUTION

Inspect the valve stem, threads and packing box surfaces for any sharp edges that might cut the packing. Scratches or burrs could cause packing box leakage or damage the new packing.

17. Inspect the valve stem, threads and packing box surfaces for any sharp edges that might cut the packing. Scratches or burrs could cause packing box leakage or damage the new packing. If the surface condition cannot be improved by light sanding, replace the damaged parts.
18. Remove the covering protecting the valve cavity and install a new valve/yoke gasket (figures 18, 19, 20, and 21 key 5, figures 22 and 23 key 47) making sure that the gasket seating surfaces are clean and smooth.
19. Carefully install the bonnet (key 4) onto the valve stem.
20. Install the new packing and the metal packing box parts according to figure 15 for PTFE packing and according to figure 16 for Graphite ULF packing. Place a smooth-edged pipe over the valve stem and gently tap each soft packing part into the packing box. Apply anti-seize lubricant to the threads and install the packing follower (key 29).
21. Install the locknut (key 28) and stem adjustor nut (key 27). Ensure they are aligned with the mark made on the stem disassembly and tighten
For standard bonnet constructions, install the valve plug/bonnet sub assembly into the valve body (key 1).
22. Mount the actuator onto the valve and install the body nuts (figures 18, 19, 20, 21 key 7, figures 22 and 23 key 46), but tighten them only finger-tight.
23. **For standard bonnet constructions**, tighten the body nuts (key 7) evenly using a cross-tightening procedure. See table 4 for torque requirements.
For extension and bellows bonnet constructions, tighten the bonnet nuts (key 46) evenly using a cross-tightening procedure. See table 5 for torque requirements.
24. Push the valve plug/stem to the valve seat. Thread the stem adjustor nut (key 27) and locknut (key 28) to the previously marked position. Thread the locknut (key 28) up against the stem locknut and tighten to the torque specified in table 6.
25. Stroke the actuator rod until it contacts the stem adjustor nut (key 27) and install the stem connector halves and travel indicator (keys 23, 24, and 26) with the cap screws (key 25). Install the stem connector halves in the proper orientation so that when looking at the inside of the stem connector halves, the flats are down and the beveled surfaces are up.
26. Align the pointer of the travel indicator (key 26) with the appropriate mark on the travel scale.

27. Tighten the stem connector cap screws (key 25) to 35 N•m (26 lbf•ft).
 28. Tighten the packing follower (key 29) to the torque specified in table 7.
- Alternately, the packing follower can be tightened by the following method:

- a. Tighten the packing follower until the Belleville springs are compressed 100% (or completely flat), as detected by a rapid increase in nut torque.
 - b. For DN 15 through DN 100 (NPS 1/2 through 4), loosen the packing follower 60° of rotation.
29. Ensure that the electric actuator maximum thrust output does not exceed the values in table 11.

Valve Trim Maintenance

Key numbers in this section refer to figures 18, 19, 20, 21, 22, and 23.

Valve Trim Disassembly

1. Remove the actuator and bonnet assembly as described in the Replacing Packing section (steps 1 through 10).
 - For standard bonnet constructions (figures 18, 19, 20, 21, and 25), proceed to the Seat Ring / Cage Removal section.
 - For extension bonnet constructions (figure 22), proceed to step 3.
 - For bellows bonnet constructions (figure 23), proceed to step 2.
2. For bellows bonnet constructions (figure 23), use a bellows nut tool made according to the dimensions in figure 26 and table 13 to remove the bellows nut (key 51) as follows:
 - a. Insert the bellows nut tool into the extension bonnet (key 39). Be certain the tool lugs are engaged in the corresponding recesses in the bellows nut.
 - b. Use a torque gun or driver having sufficient torque capabilities according to table 10. Connect the gun to a socket that snugly fits the hex head on the bellows nut tool.
 - c. Insert the socket onto the hex head of the bellows nut tool.

⚠ WARNING

Be careful to hold the torque gun, attached socket, and tool at right angles to the bellows nut when applying torque. Tilting the gun and socket while applying torque may cause the lugs on the bellows nut tool to suddenly disengage from the lugs on the bellows nut thus causing possible damage to the bellows nut and possible personal injury.

- d. Remove the bellows nut (key 51).
3. For both extension and bellows bonnet constructions: Body nuts (key 7) attach the extension bonnet (key 39) to the valve body (key 1). Loosen these nuts approximately 3mm (1/8 inch). Then loosen the extension bonnet-to-body gasketed joint by either rocking the extension bonnet or prying between the body and extension bonnet. Work the prying tool around the extension bonnet until it loosens.
4. Remove the body nuts (key 7) completely and carefully lift the extension bonnet (key 39), and valve plug/stem extension assembly (key 3, 40 and 48) or plug/bellows/stem extension assembly (key 3, 49 and 48) from the top of the valve body.

5. Use a wrench to unscrew the plug/stem assembly (key 3) from the stem extension (key 40) or from bellows/stem assembly (key 49) as follows:
 - a. Insert the wrench onto the stem extension hex flats (see figures 22 and 23).

CAUTION

In the following procedure, take precautions to ensure the valve plug and stem finish are not damaged.

- b. Clamp the plug/stem assembly (key 3) and holding it stable, unscrew the stem extension (key 40) or bellows/stem assembly (key 49). Take precautions to ensure the valve plug and stem finish are not damaged.

Note

There is a stem assembly locking insert (figures 22 and 23, key 48) in the valve plug/stem extension assembly. It is possible this insert may drop out during stem disassembly. If this is the case, ensure it is retained for reassembly of the valve stem to the stem extension.

6. Remove the plug/stem assembly (key 3) and bellows/stem assembly (key 49) from the extension bonnet. Remove the bellows gasket (key 50).
7. Proceed to the Seat Ring Removal section.

Seat Ring / Cage Removal

CAUTION

Use care to avoid damaging the gasket sealing surfaces.

The surface finish of the valve stem (key 3) is critical for making a good packing seal. The seating surfaces of the seat ring (key 2), cage (key 99), and the valve plug (key 3) are critical for tight shutoff and should therefore also be treated with care and properly protected.

1. Packing parts can be removed from the bonnet if desired. Replace these parts as described in the section on Packing Maintenance.
2. Use a seat ring tool made according to the dimensions in figure 5 and table 12 to remove the seat ring (key 2) as follows:
 - a. Insert the tool into the valve body. Be certain the tool lugs are engaged in the corresponding recesses in the seat ring.
 - b. Use a torque gun or driver having sufficient torque capabilities according to table 8. Connect the gun to a socket that snugly fits the hex head on the seat ring tool.
 - c. Insert the socket onto the hex head of the seat ring tool.

⚠ WARNING

Be careful to hold the torque gun, attached socket, and tool at right angles to the seat ring when applying torque. Tilting the gun and socket while applying torque may cause the lugs on the seat ring tool to suddenly disengage from the lugs on the seat ring thus causing possible damage to the seat ring and possible personal injury.

Figure 5. Seat Ring Removal and Installation Tool

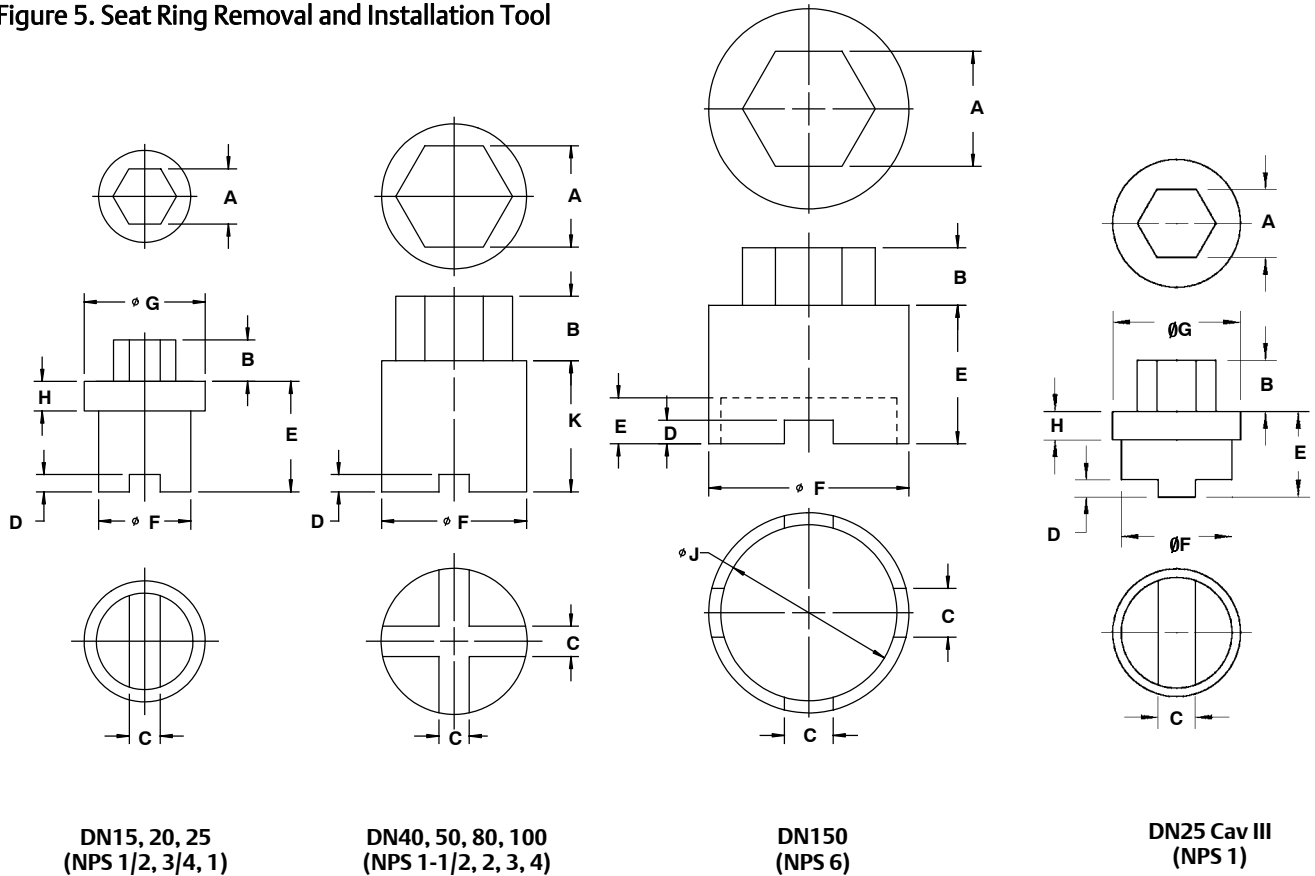


Table 12. Seat Ring Removal and Installation Tool Dimensions

Valve Size		Part Number	A	B	C	D	E	F \emptyset	G \emptyset	H	J \emptyset	K
DN	NPS											
15, 20, 25	1/2, 3/4, 1	GE02918X012	24	15	15.2	9	54	40	45	10	---	---
25 (Cavitrol III)	1 (Cavitrol III)	Not Available	24	18	13	6	30	39	45	10	---	---
40 ⁽¹⁾	1-1/2 ⁽¹⁾	GE02918X022	36	20	2X 13.2	7.5	58	53	---	---	---	---
50 ⁽¹⁾	2 ⁽¹⁾	GE02918X032	46	28	2X 13.2	7.5	63	63	---	---	---	---
80	3	GE02918X042	60	36	2X 15.2	8.5	100	93	---	---	---	---
100	4	GE02918X052	70	44	2X 17.2	9.5	114	113	---	---	---	---
150	6	GE02918X062	100	50	2X 43	10.5	170.5	174	---	---	153	20

1. Also used for Cavitrol III cage removal.

- Remove the seat ring (key 2) from the valve body.
- Inspect parts for wear or damage that would prevent proper operation of the valve body.
- Replace trim parts as necessary.

Valve Trim Assembly

Assembly of Unbalanced Trim

Refer to figures 12, 18, 19, 20, 21, 22, 23, and 25.

1. Before installing the new seat ring / cage, thoroughly clean the threads in the valve body port. Apply suitable lubricant to the threads and to the 60° surface of the new seat ring (key 4). Screw the seat ring into the valve body. Using the seat ring tool, tighten the seat ring and torque according to the values in table 8. Remove all excess lubricant after tightening.
2. For standard bonnet constructions, perform the following. (Proceed to step 3 for extension and bellows bonnets.)
 - a. Clean the body/yoke gasket seating surfaces and install a new body/yoke gasket (key 5).
 - b. Remove any protective tape or covering from the valve plug/stem assembly.
 - c. Insert the valve plug/stem assembly into the seat ring.

CAUTION

If the packing is to be reused and was not removed from the bonnet, perform the following step carefully to avoid damaging the packing with the stem threads.

- d. Install bonnet and actuator yoke onto the valve body by completing the assembly according to steps 15 to 27 of the section Replacing Packing, omitting step 16 if new packing is not being installed.
3. For extension and bellows bonnet constructions, perform the following.
 - a. For bellows bonnet constructions, clean the extension bonnet/bellows gasket seating surfaces and install a new bellows gasket (key 50).
 - b. Remove any protective tape or covering from the valve plug/stem assembly (key 3). Then insert the plug/stem assembly (key 3) through the extension bonnet bushing (key 41).
 - c. Remove any protective tape or covering from the stem extension (key 40) or the bellows stem assembly (key 49). Screw the plug/stem assembly (key 3) into the stem extension or bellows/stem assembly. **Note: Do not apply lubricant to the threads of the plug/stem assembly (key 3) or the bellows/stem assembly (key 49).**

Note

Ensure the stem assembly locking insert (figures 22 and 23, key 48) has been first inserted in the bottom of the threaded hole in the stem extension.

CAUTION

In the following procedure, take precautions to ensure the valve plug and stem finish are not damaged.

- d. Clamp the plug/stem assembly (key 3) and hold it stable. Using a box spanner tool tighten the plug/stem assembly (key 3) into the stem extension (key 40) or into the bellows/stem assembly (key 49) according to the stem extension torque requirements listed in table 9. Take precautions to ensure the valve plug and stem finish are not damaged.
- e. For bellows bonnet constructions, apply suitable lubricant to the threads and to the bottom surface of the bellows nut (key 51). Screw the bellows nut into the extension bonnet. Using the bellows nut tool, a lathe or boring mill, tighten the bellows nut or torque according to the values in table 10. Remove all excess lubricant.

- f. Clean the body/extension bonnet seating gasket surface and install the gasket (key 5).
- g. Install the extension bonnet and plug/stem assembly onto the valve body. Install the body/yoke nuts (key 7) and tighten evenly using a cross-tightening procedure. See table 4 for torque requirements.

CAUTION

If the packing is to be reused and was not removed from the bonnet, perform the following step carefully to avoid damaging the packing with the stem threads.

- h. Install the bonnet and actuator yoke onto the extension bonnet by completing the assembly according to steps 15 to 27 of the section Replacing Packing, omitting step 16 if new packing is not being installed.

Assembly of Balanced Trim

(Available in DN 80, 100, and 150 [NPS 3, 4, and 6] only)

Refer to figure 10.

CAUTION

To protect the valve plug seal ring (key 37) and to ensure it seals properly, be careful not to scratch the surfaces of the ring groove in the valve plug or any of the surfaces of the replacement ring.

1. With the valve plug (key 3) removed according to the Disassembly portion of the Valve Trim Maintenance procedure, proceed as appropriate:

The seal ring (key 37) cannot be reused because it is a closed ring which must be pried and/or cut from the groove. Once the seal ring is removed, the elastomeric backup ring (key 38), which is also a closed ring, can be pried from the groove.

To install a new backup ring and seal ring onto the valve plug, apply a general purpose silicone-base lubricant to both rings (keys 38 and 37). Place the backup ring over the valve plug (key 3) and into the groove. Place the seal ring over the top edge of the valve plug (key 3) so that it enters the groove on one side of the valve plug. Slowly and gently stretch the seal ring and work it over the top edge of the valve plug. The PTFE material in the seal ring must be permitted time to cold-flow during the stretching procedure, so avoid jerking sharply on this ring. Stretching the seal ring over the valve plug may make it seem unduly loose when in the groove, but it will contract to its original size after insertion into the bonnet.

2. Install the seat ring, valve plug/stem, bonnet and actuator yoke into the valve body by completing the assembly according to steps 1 to 3 of the section Assembly of Unbalanced Trim.

Repair Nameplate

If required by the end-user, an optional repair nameplate is available for recording changes made to the valve trim during maintenance (see figure 29). This nameplate can be ordered as a spare part, and is easily mounted to the actuator casing using a casing bolt. (Reference the Parts Ordering section of this manual.)

As shown in figure 29, the repair nameplate provides locations for maintenance personnel to record trim data, such as:

- Date of maintenance
- Trim material
- Port diameter
- Flow capacity (C_v / K_v)
- Flow characteristic
- Actuator Action ATO/ATC

Bellows Maintenance

This section provides instruction on the replacement of the bellows / stem assembly (see key 49 in figure 23).

1. Remove the actuator, bonnet assembly as described in the Replacing Packing section (steps 1 through 10).
2. Remove the plug/stem assemblies as described in the Valve Trim Disassembly section (steps 2 through 6).
3. To install the new bellows / stem assembly (key 49), perform the Valve Trim Assembly (step 3).

Figure 6. Fisher GX Handwheel Assembly

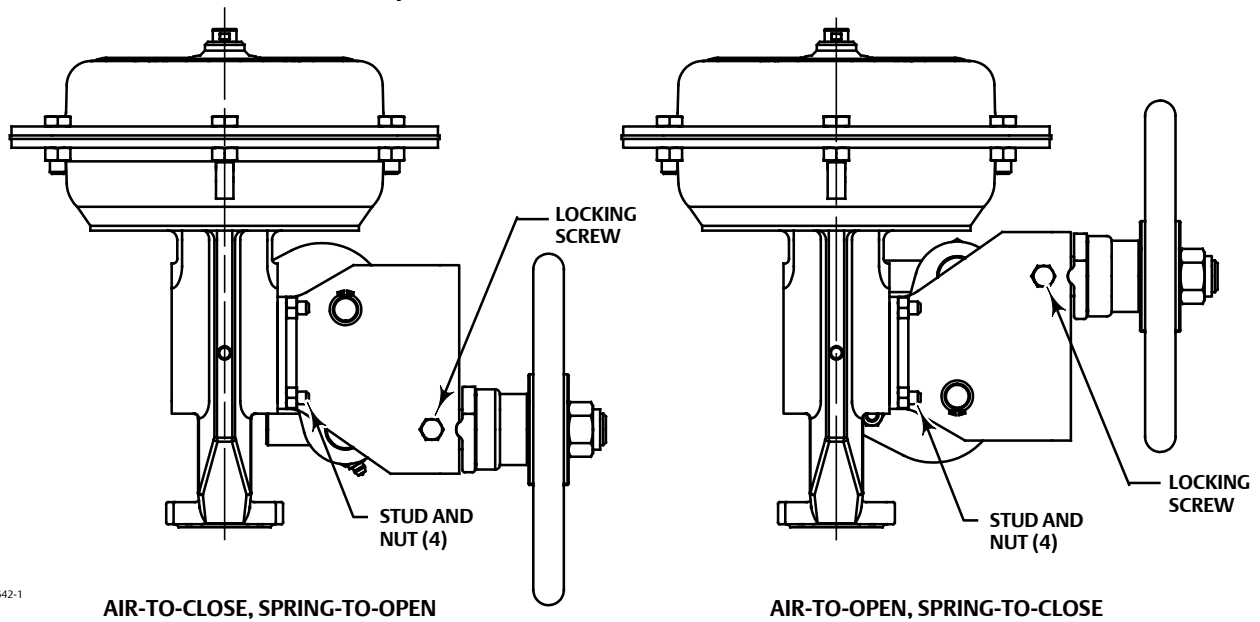
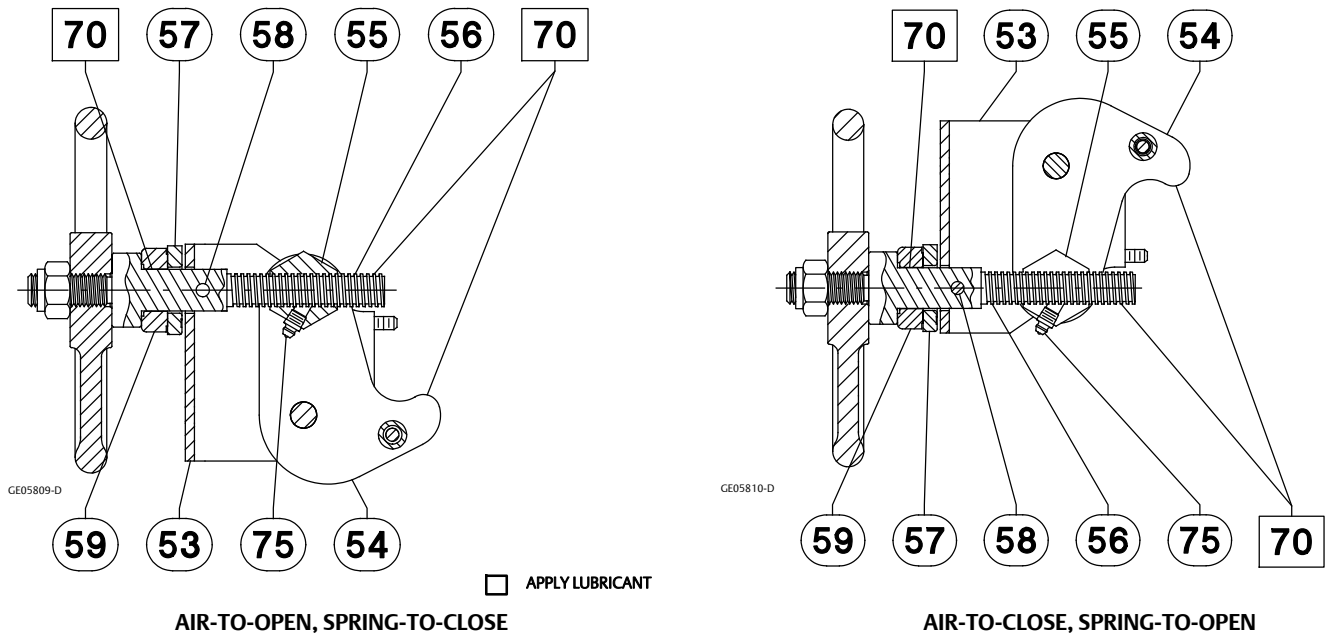


Figure 7. Fisher GX Handwheel Orientation and Grease Zerk Location



Handwheel Operation

CAUTION

This handwheel is designed only for use with size 225 and 750 actuators with 20 mm travel. To avoid equipment damage, do not assemble this handwheel on size 750 actuators with 40 mm travel or size 1200 actuators.

Principle of Operation

The GX handwheel is designed to compress the actuator springs and override the actuator fail action. Turning the handwheel drives the screw, nut, and levers. The levers push against the stem connector to transfer this motion. Reversing the direction of the handwheel will move the nut and levers in the opposite direction. Once the levers are no longer in contact with the stem connector, the locking screw should be used to secure the handwheel against undesired movement. To prevent damage due to overtravel, the handwheel should not be turned more than 2 full turns past the point at which the levers no longer contact the stem connector.

WARNING

To avoid personal injury or loss of process control due to equipment damage, ensure the levers are completely disengaged and the locking screw is tight while the valve is in normal pneumatic operation.

During normal pneumatic operation when the handwheel is not needed, a locking screw (see figure 6) is provided on the side of the handwheel housing to lock the handwheel levers out of the way.

⚠ WARNING

To avoid personal injury or equipment damage due to possible sudden shifting or falling of the valve assembly, do not lift the valve assembly by the handwheel.

GX Handwheel Installation (for use with 20mm travel only)

1. Note the orientation of the levers to the stem connector for either the air-to-close, spring-to-open configuration or for the air-to-open, spring-to-close configuration, as shown in figure 7.
2. Adjust the handwheel to allow positioning the levers above the stem connector before installation.
3. Install the handwheel to the GX mounting pad with four studs and nuts, as shown in figure 6. Torque to 24 N•m (18 lbf•ft).
4. Apply lithium grease to the grease zerk and to the tip of the levers (where they contact the stem connector), as shown in figure 7.

Travel Stop Operation

Principle of Operation

CAUTION

This travel stop is designed only for use with size 225 and 750 actuators with 20 mm travel. To avoid equipment damage, do not assemble this travel stop on size 750 actuators with 40 mm travel or size 1200 actuators.

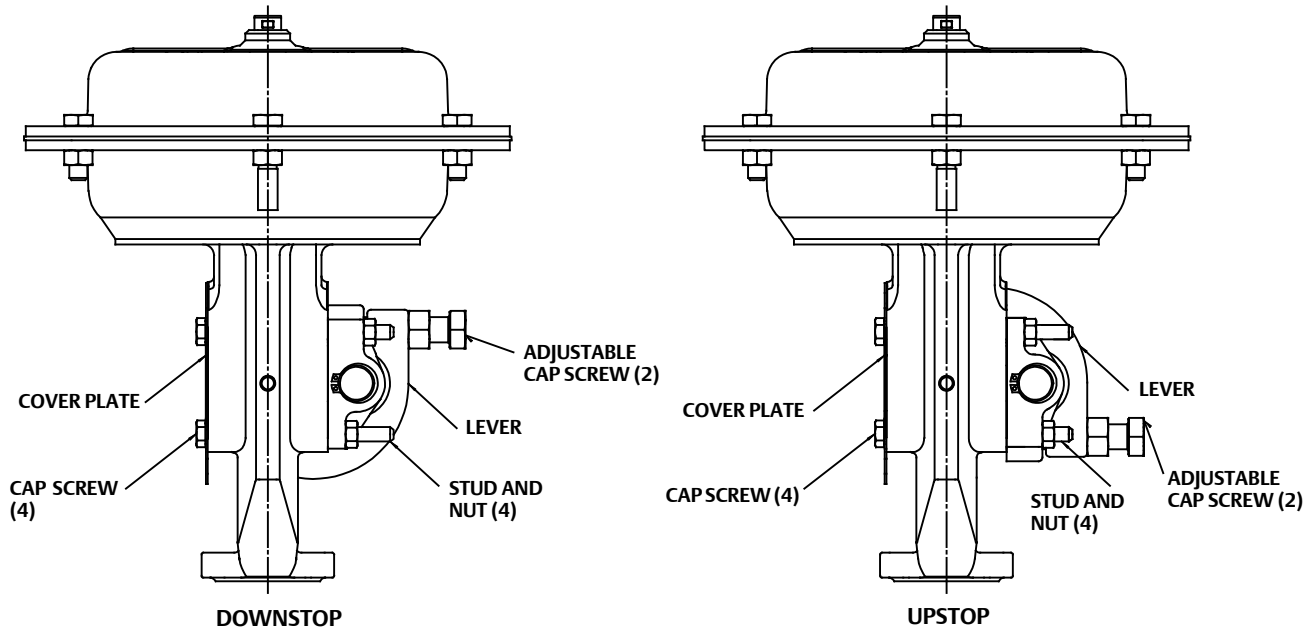
The GX travel stop is designed to mechanically limit and stop the valve at a preset position in an emergency or upon loss of instrument air. This assembly is mounted on the yoke with four studs. The lever pushes against the stem connector to stop the travel. Travel position can be adjusted by two adjustable cap screws on the lever, as shown in figure 8. A cover plate assembly is available to prevent pinch point damage caused by the lever, as shown in figure 8.

⚠ WARNING

To avoid personal injury or equipment damage due to possible sudden shifting or falling of the valve assembly, do not lift the valve assembly by the travel stop.

To avoid personal injury or loss of process control due to equipment damage, screw the adjustable cap screws to ensure the lever is completely disengaged while the valve is in normal pneumatic operation.

Figure 8. Fisher GX Travel Stop Assembly



GX Travel Stop Installation

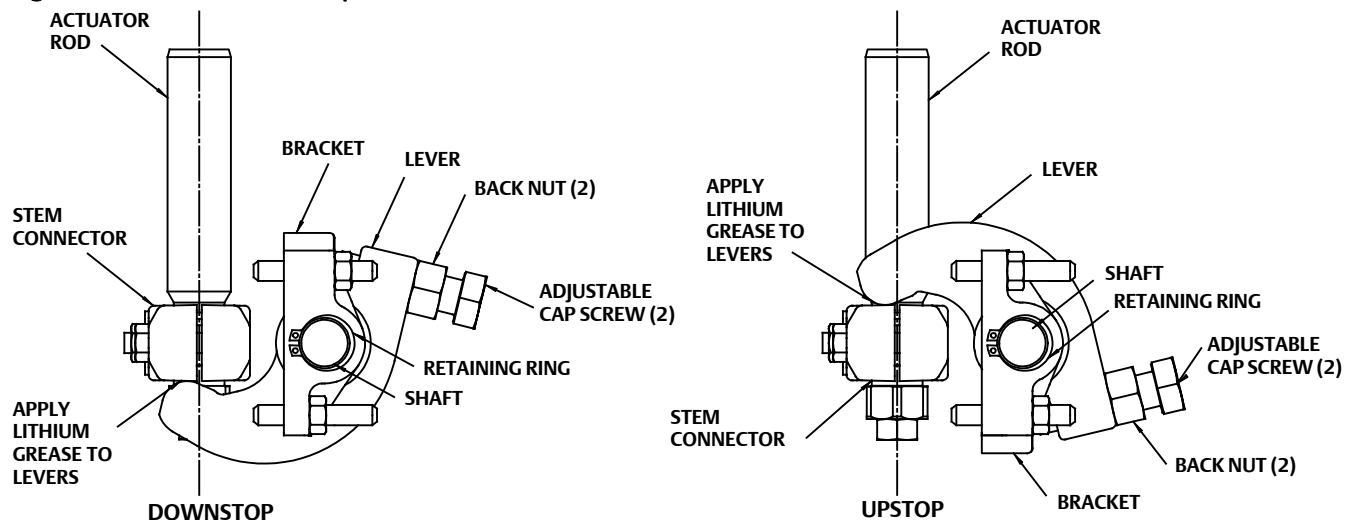
Downstop

1. Note the orientation of the lever to the stem connector for downstop positioning, as shown in figure 9. Adjust the travel stop to allow positioning the lever below the stem connector before installation.
2. Install the travel stop to the GX mounting pad with four studs and nuts, as shown in figure 8. Torque to 24.5 N•m (18 lbf•ft).
3. Apply lithium grease to the tip of the lever (where it contacts the stem connector) and to the two adjustable cap screws, as shown in figure 9.

Upstop

1. Note the orientation of the lever to the stem connector for upstop positioning, as shown in figure 9. Adjust the travel stop to allow positioning the lever above the stem connector before installation.
2. Install the travel stop to the GX mounting pad with four studs and nuts, as shown in figure 8. Torque to 24.5 N•m (18 lbf•ft).
3. Apply lithium grease to the tip of the lever (where it contacts the stem connector) and to the two adjustable cap screws, as shown in figure 9.

Figure 9. Fisher GX Travel Stop Orientation



Setting the Travel Stop Position

After sending the required position air signal to the actuator, screw the adjustable cap screws to assure the lever contacts with the stem connector tightly, then tighten the back nut. Check the actual stem position when giving the 100% air signal.

Standard Accuracy for the travel stop position is $\pm 10\%$ for 20 mm travel. For added precision, use the following procedure.

1. Send the desired position air signal to the actuator.
2. Set the travel stop, screw the adjustable cap screws to assure the lever contacts with the stem connector tightly, then tighten the back nut.
3. Send a 100% air signal.
4. Measure the difference between the actual stem position and the desired position.
5. Send the air signal for the desired position minus the differential position measured in step 4.
6. Reset the travel stop by adjusting the two cap screws and then tighten the back nut.

Figure 10. Fisher GX Balanced Trim
(Standard for DN 80 and 100 [NPS 3 and 4])

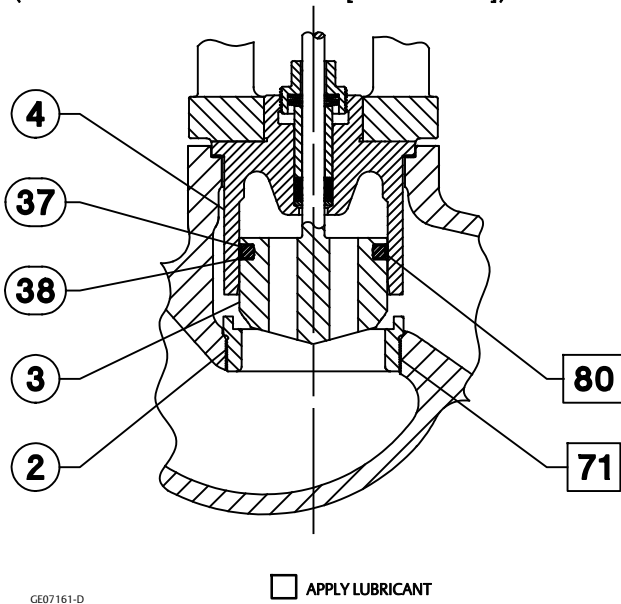


Figure 12. Fisher GX Unbalanced Port-Guided Trim
(DN 40 to 150 [NPS 1-1/2 to 6])

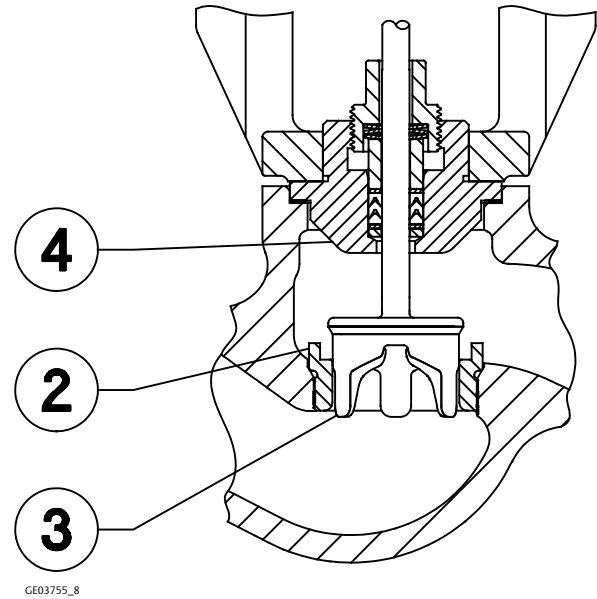


Figure 11. Fisher GX Balanced Trim
(DN 150 [NPS 6])

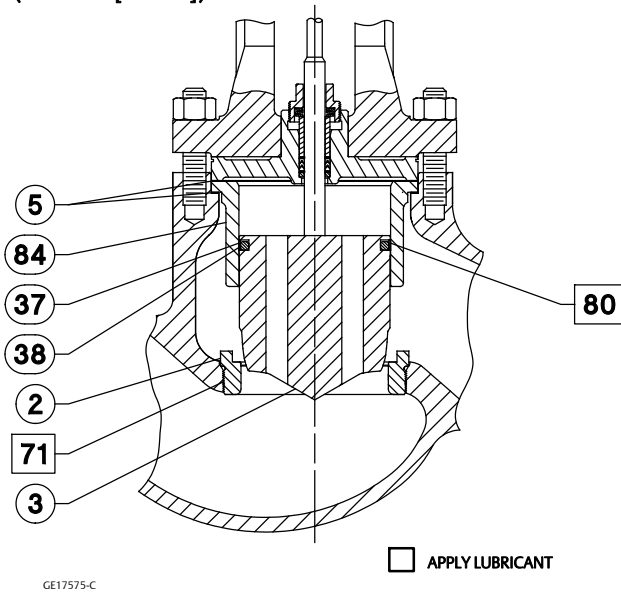


Figure 13. Fisher GX Whisper Trim™ III
(DN 150 [NPS 6])

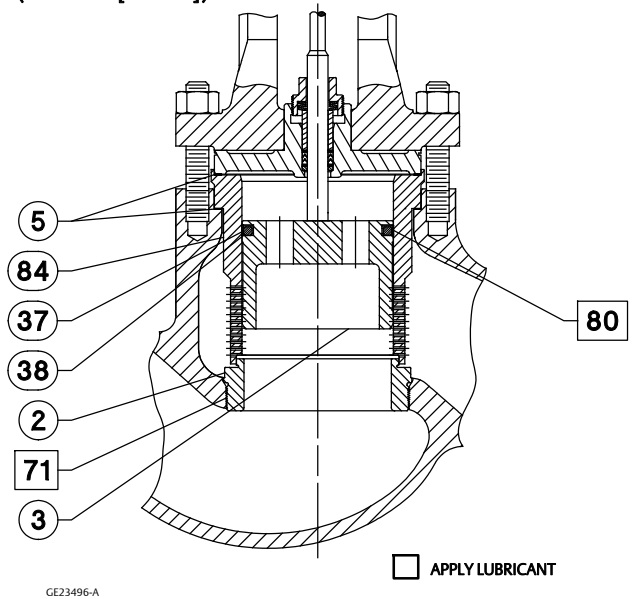


Figure 14. Fisher GX Control Valve with Typical Soft Seat Trim Construction (Port Sizes of 36mm - 136mm)

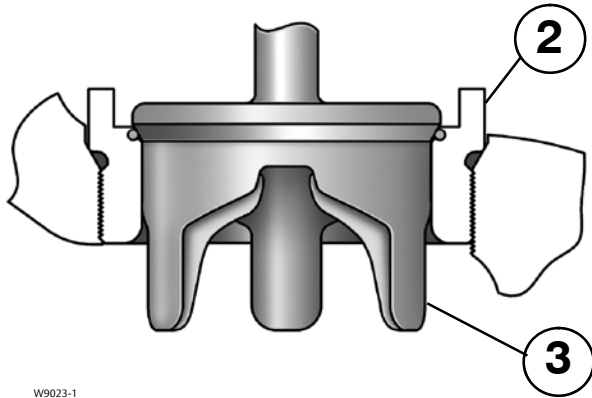


Figure 16. Fisher GX Graphite ULF Packing DN15 through DN100 (NPS 1/2 through 4)

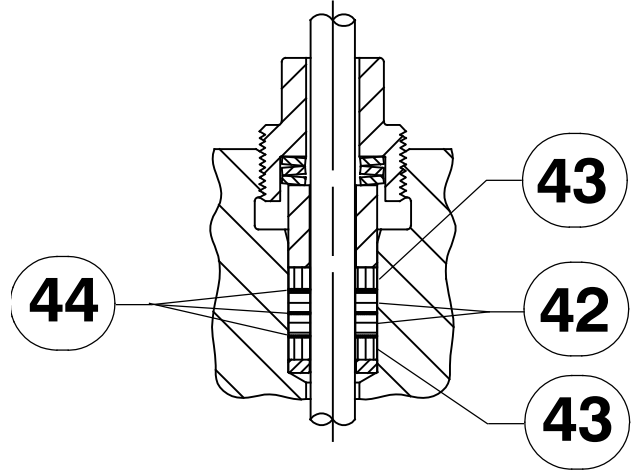


Figure 15. Fisher GX PTFE Packing DN15 through DN150 (NPS 1/2 through 6)

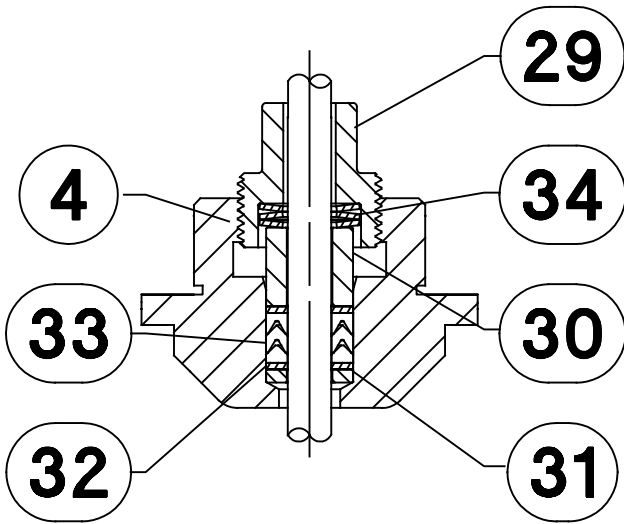


Figure 17. Fisher GX Graphite ULF Packing DN150 Only (NPS 6 Only)

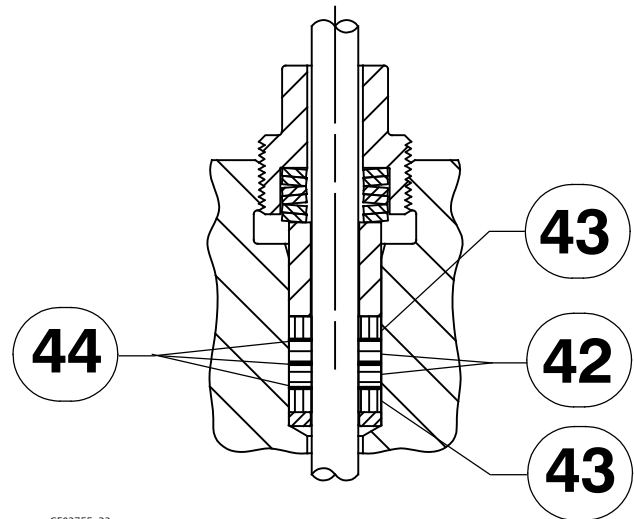
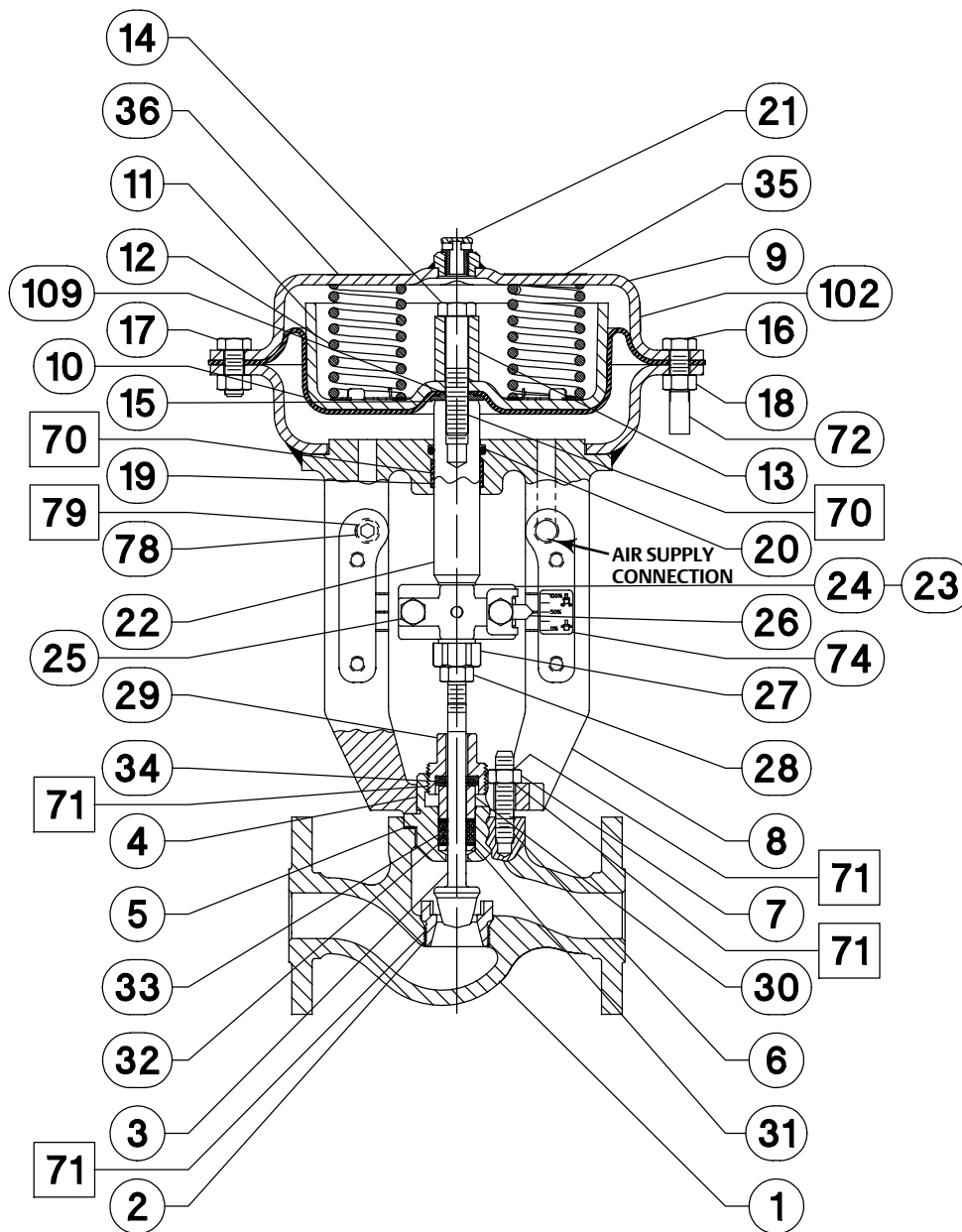


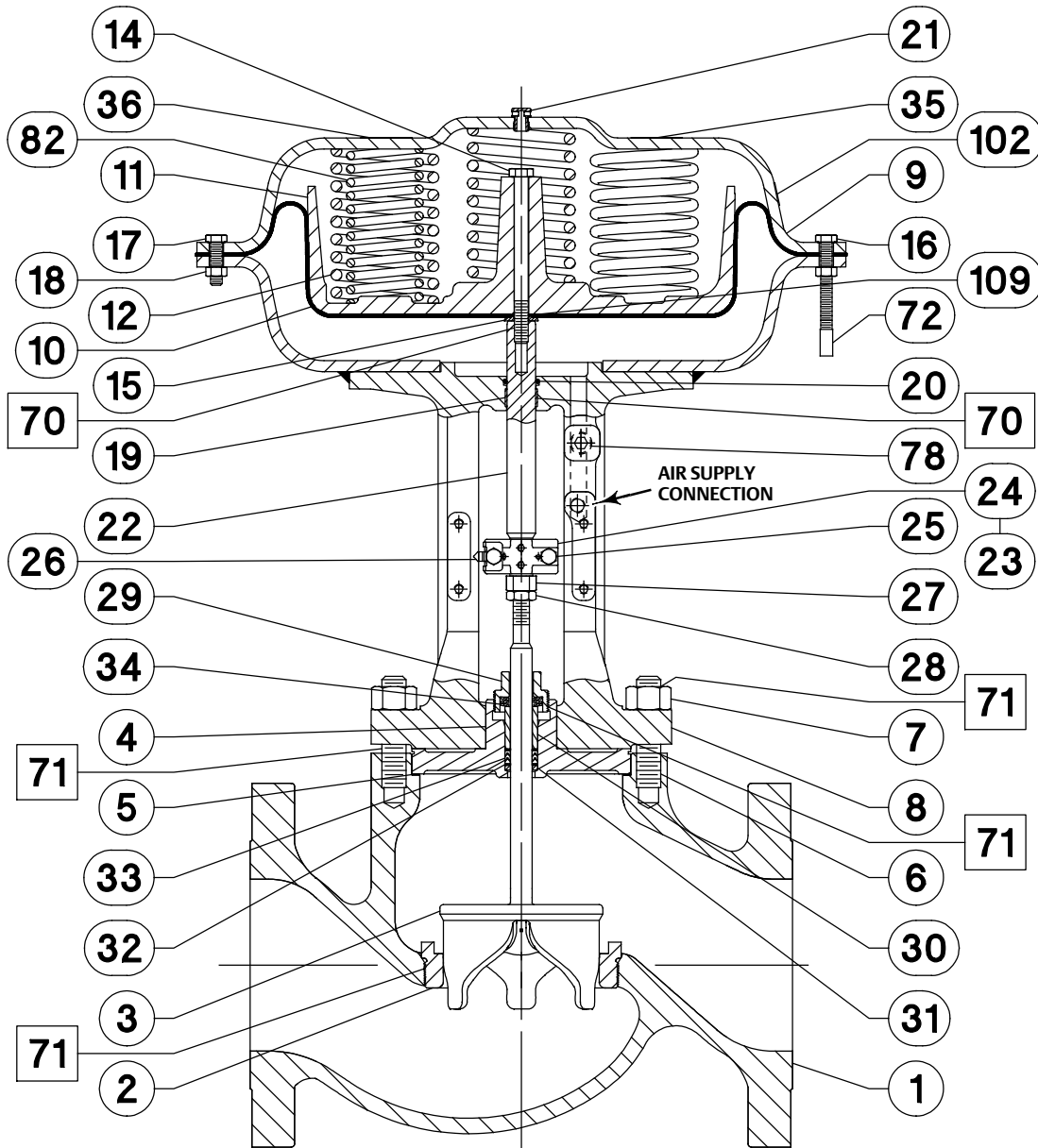
Figure 18. Fisher GX Control Valve and Actuator System Assembly, Air-to-Open (Spring-to-Close) (DN25 (NPS 1) with Unbalanced Contoured Plug)



APPLY LUBRICANT

GE02171-H

Figure 19. Fisher GX Control Valve and Actuator System Assembly, Air-to-Open (Spring-to-Close) (DN150 (NPS 6) with Unbalanced Contoured Plug)



APPLY LUBRICANT

GE17517-F

Figure 20. Fisher GX Control Valve and Actuator System Assembly, Air-to-Close (Spring-to-Open) (DN25 (NPS 1) with Unbalanced Contoured Plug)

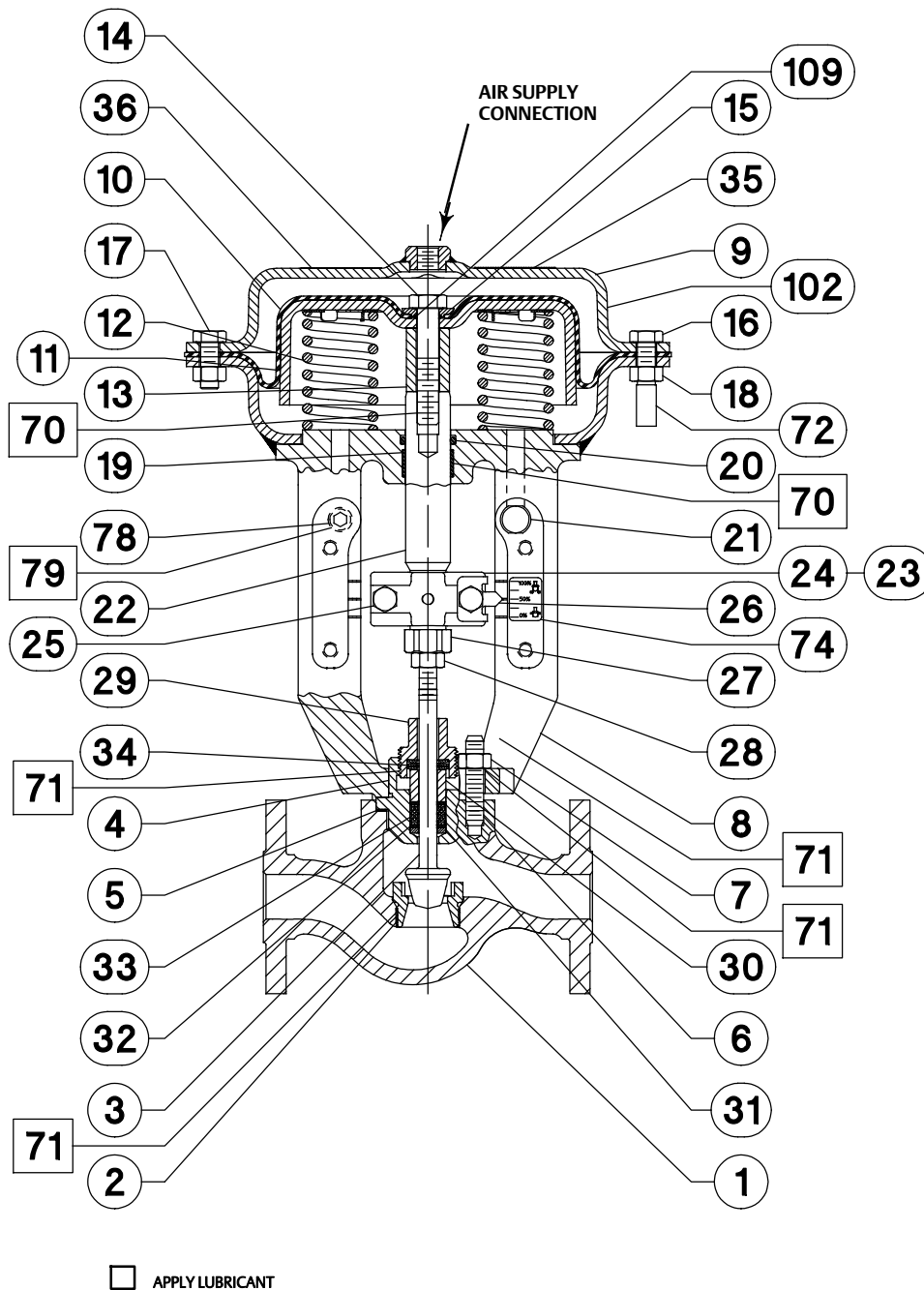
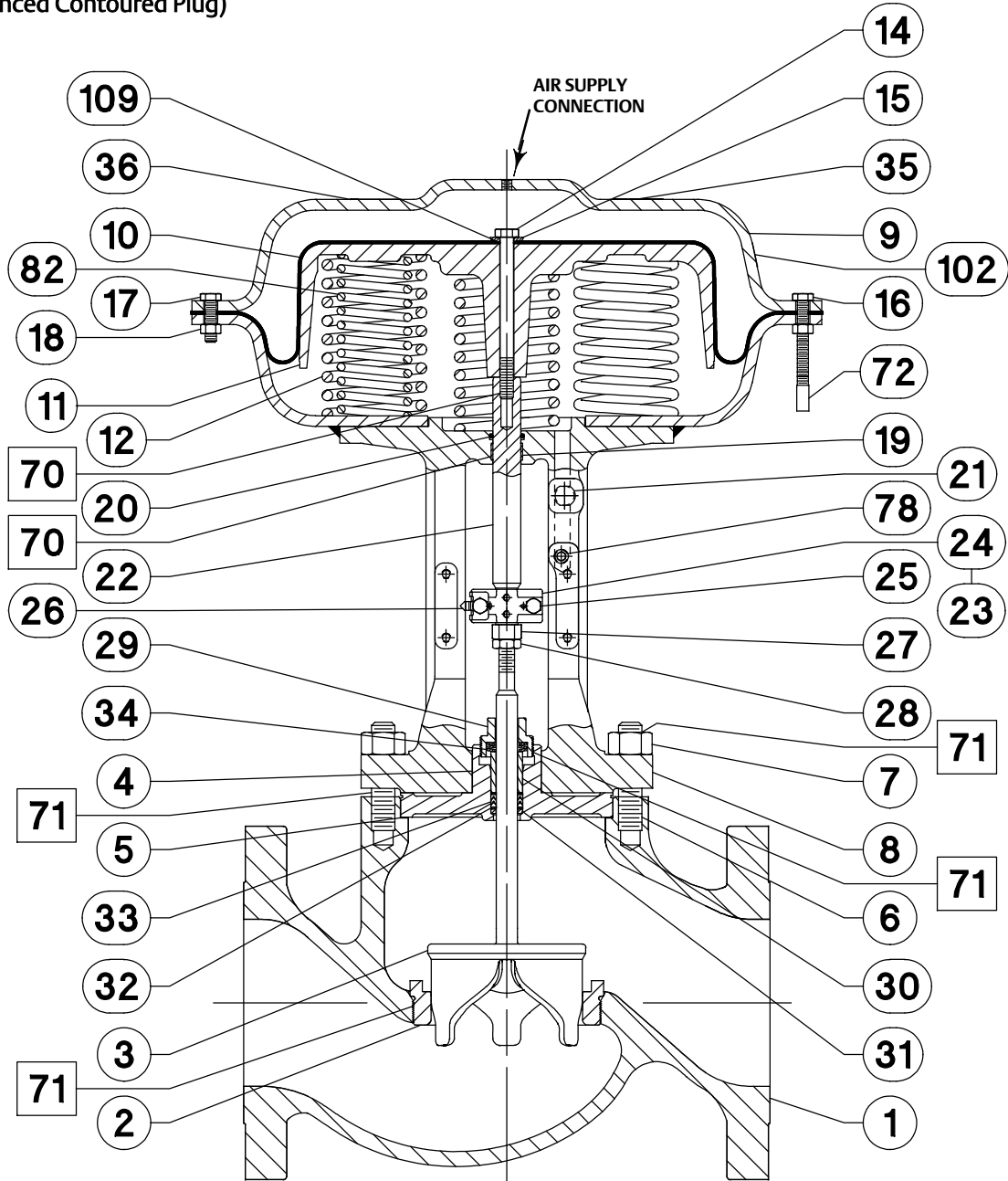
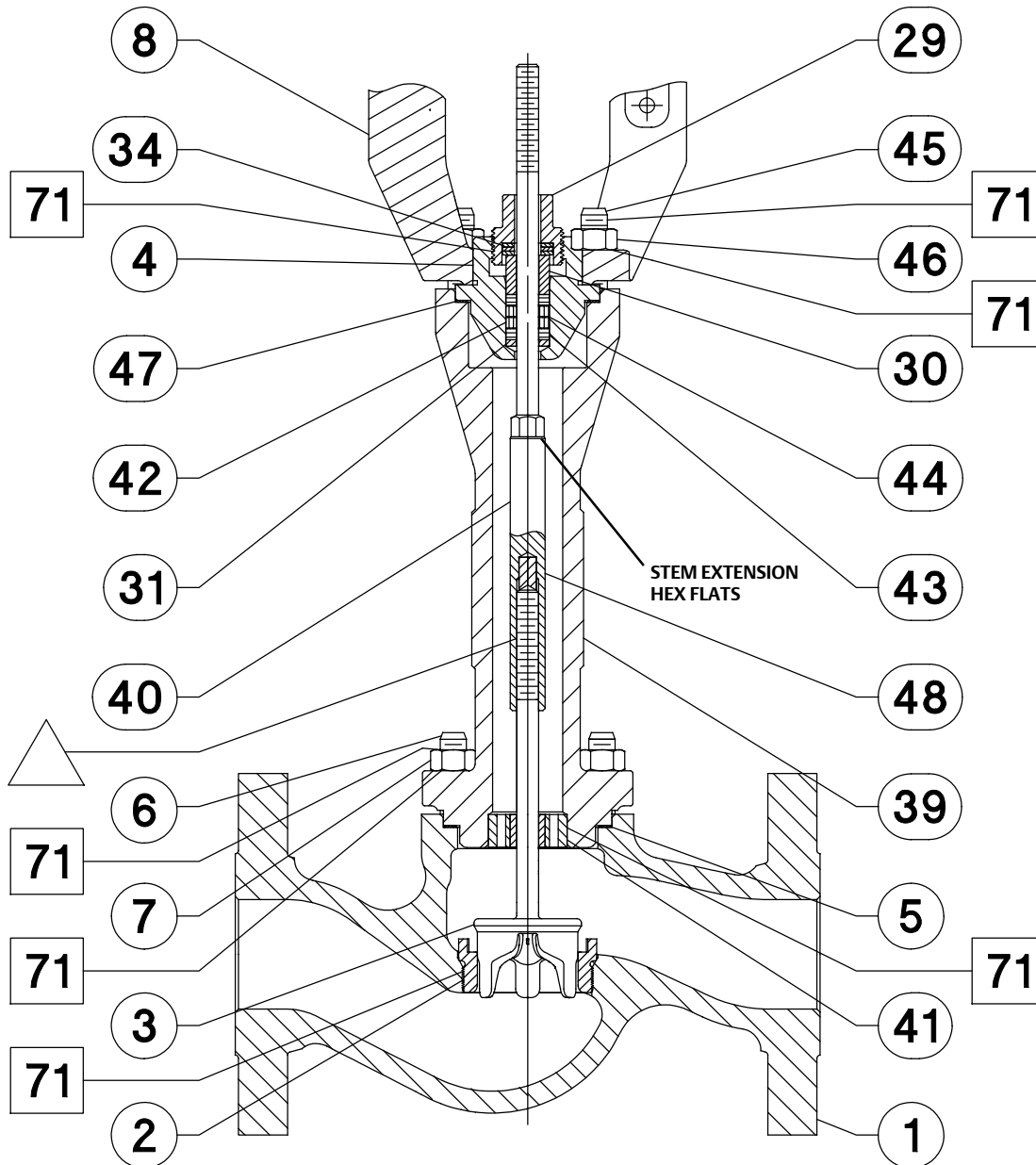


Figure 21. Fisher GX Control Valve and Actuator System Assembly, Air-to-Close (Spring-to-Open) (DN150 (NPS 6) with Unbalanced Contoured Plug)



GE23239-D

Figure 22. Extension Bonnet with Graphite ULF Packing

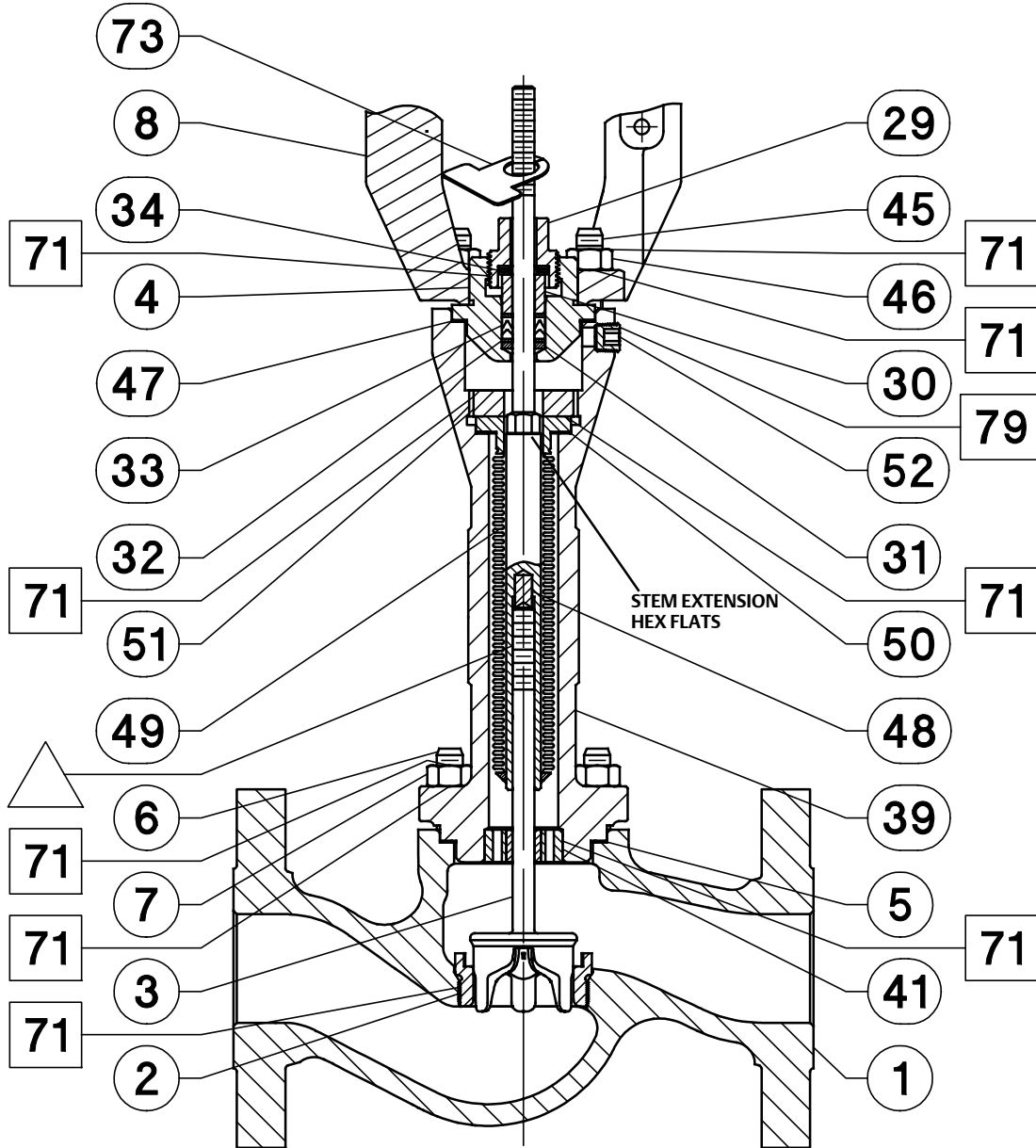


GF00337-D

□ APPLY LUBRICANT

△ DO NOT APPLY LUBRICANT

Figure 23. Bellows Extension Bonnet with PTFE Packing



□ APPLY LUBRICANT

△ DO NOT APPLY LUBRICANT

GF00338-D

Figure 24. Cryogenic Extension Bonnet

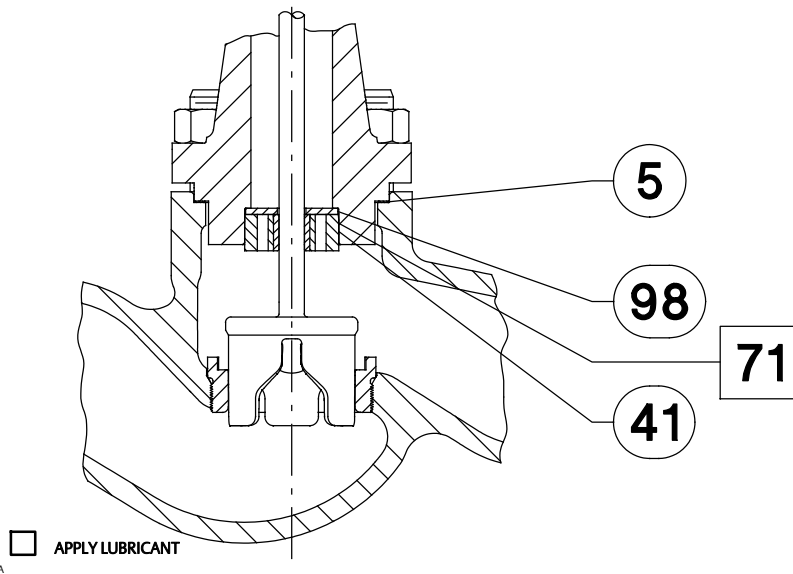


Figure 25. Fisher Cavtrol III Trim, DN25 and DN50 (NPS 1 and NPS 2)

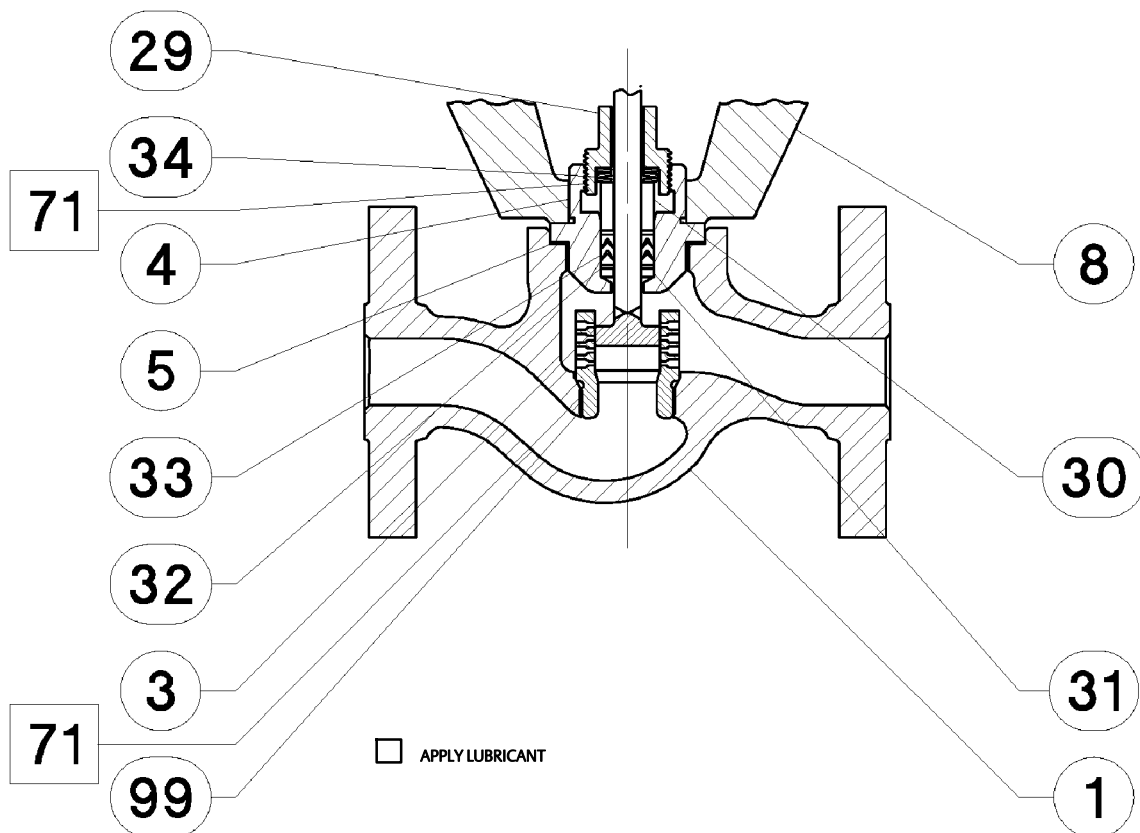
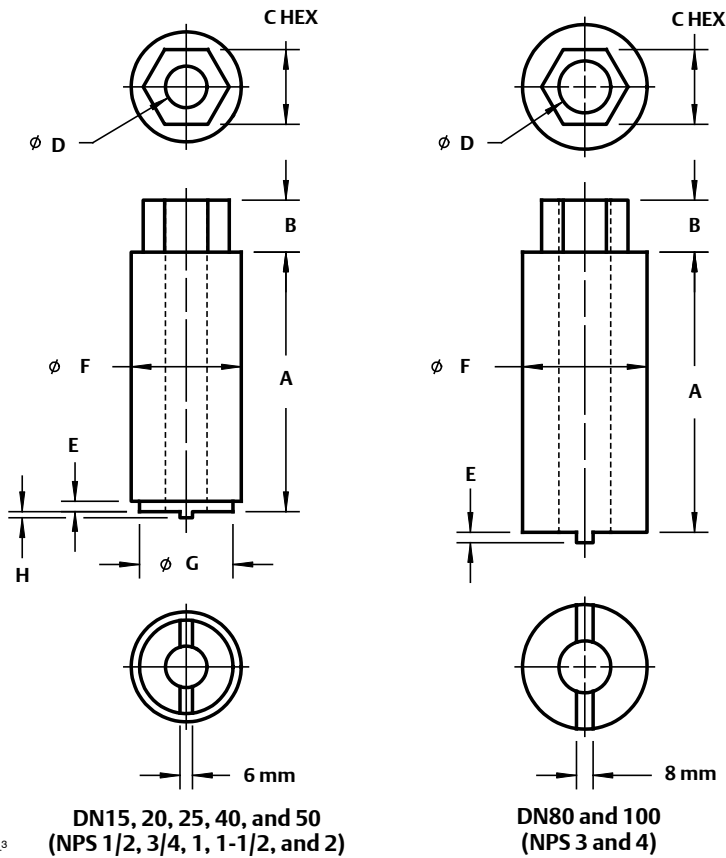


Figure 26. Bellows Nut Removal and Installation Tool

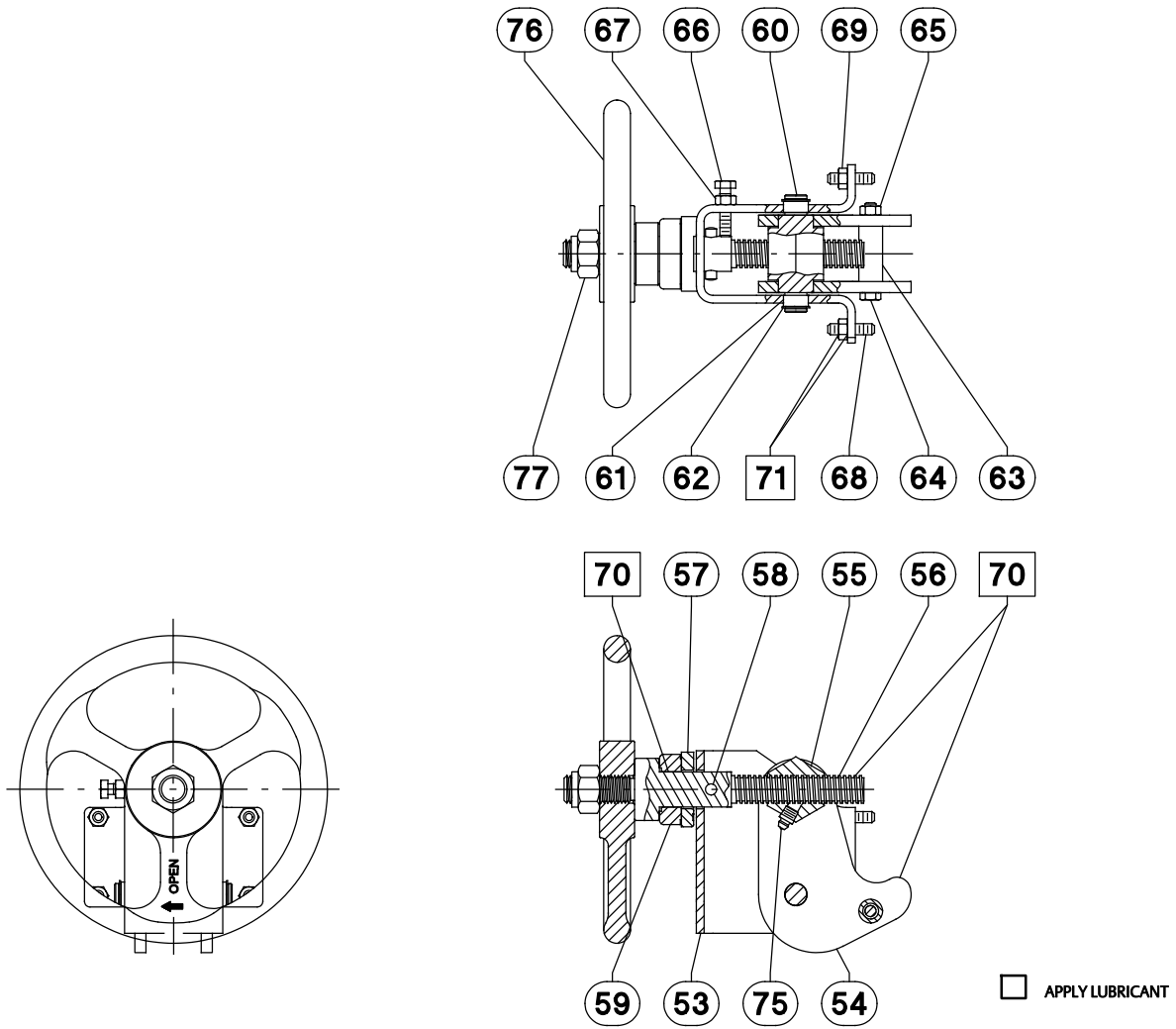


GF00536_3

Table 13. Bellows Nut Removal and Installation Tool Dimensions

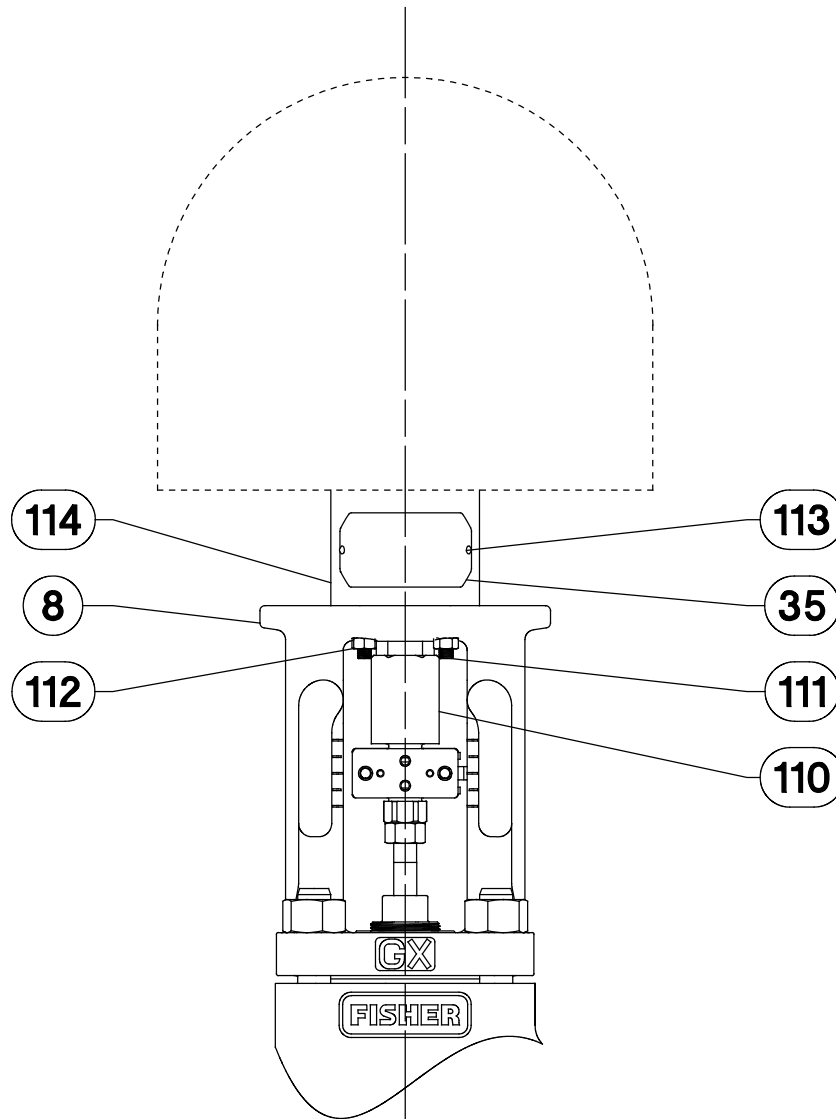
Valve Size		A	B	C	D	E	F ϕ	G ϕ	H
DN	NPS	mm							
15, 20, 25, 40, 50	1/2, 3/4, 1, 1-1/2, 2	125	25	36	20	5	53	45	3
80, 100	3, 4	135	25	1.42	25	5	60	---	---

Figure 27. Handwheel Assembly



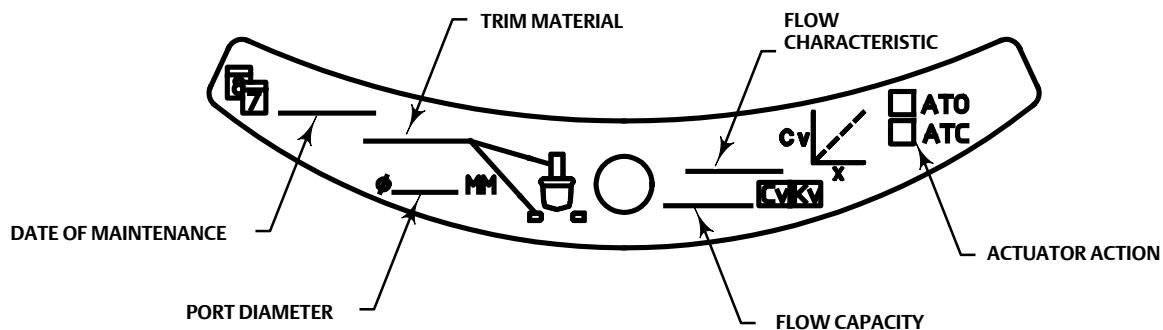
GE05809_D

Figure 28. Fisher GX Electric Actuator Mounting



GG12175_A

Figure 29. Repair Nameplate (Spaces Provided for Recording Trim Maintenance Data)



GE11233-B

Parts Ordering

Each valve is assigned a serial number which can be found on the valve or on the nameplate (figure 2 and key 35, not shown). The nameplate will normally be fitted to the actuator. Refer to this serial number when contacting your Emerson Process Management sales office for technical assistance. When ordering replacement parts refer to this serial number and give the part description from the following parts list.

⚠ WARNING

Use only genuine Fisher replacement parts. Components that are not supplied by Emerson Process Management should not, under any circumstances, be used in any Fisher valve, because they may void your warranty, might adversely affect the performance of the valve, and could cause personal injury and property damage.

Parts Kits

PACKING KITS	Valve Size	DN 25, 40, and 50 (NPS 1, 1-1/2, and 2)	DN 80 and 100 (NPS 3 and 4)	DN 150 (NPS 6)
	Stem Diameter	10 mm	14 mm	19 mm
	PTFE packing (Contains keys 32 and 33)	RGXPACKX012	RGXPACKX022	RGXPACKX072
Graphite ULF packing (Contains keys 42, 43, and 44)	RGXPACKX052	RGXPACKX042	RGXPACKX082	

ACTUATOR KITS	Actuator Size	225	750	1200
	Actuator (Contains keys 10, 19, 109, and 20)	RGX225X0022	RGX750X0032	RGX1200X042

BALANCED SEAL KITS ⁽¹⁾	Valve Size	DN 80 (NPS 3)	DN 100 (NPS 4)	DN 150 (NPS 6)
	Nitrile (Contains keys 37 and 38)	RGXSEALX012	RGXSEALX022	RGXSEALX072
	Ethylene Propylene (EPDM) (Contains keys 37 and 38)	RGXSEALX032	RGXSEALX042	RGXSEALX082
	FKM Fluorocarbon (Contains keys 37 and 38)	RGXSEALX052	RGXSEALX062	RGXSEALX092
	Graphite Piston Ring (Contains key 100)	GE26910X012	GE26911X012	GE26912X012

1. A Gasket Kit is required when replacing the seals.

GASKET KITS	Valve Size	DN 25 (NPS 1)	DN 40 (NPS 1-1/2)	DN 50 (NPS 2)	DN 80 (NPS 3)	DN 100 (NPS 4)	DN 150 (NPS 6)
	Body / Bonnet Gasket Kit (Graphite Laminate) (Contains key 5)	GE00077X012	GE00078X012	GE00079X012	GE00080X012	GE00052X012	RGASKETXA62
	Body / Bonnet Gasket and Extension Bonnet Gasket Kit (Graphite Laminate) (Contains keys 5 and 47)	RGASKETXA12	RGASKETXA22	RGASKETXA32	RGASKETXA42	RGASKETXA52	---

REPAIR NAMEPLATE	Description	DN15 to 150 (NPS 1/2 to 6)
	18-8 stainless steel nameplate. Will mount to all GX actuator sizes using casing bolt. See figure 29.	GE11233X012

	Description	Valve Size				
		DN15, 20, 25 (NPS 1/2, 3/4, 1)	DN40 (NPS 1-1/2)	DN50 (NPS 2)	DN80 (NPS 3)	DN100 (NPS 4)
BELLOWS KITS	1.4571 (316Ti) bellows with S31603 extension stem (key 49), graphite laminate body/bonnet gasket (key 5), graphite laminate extension bonnet gasket (key 47), graphite laminate bellows gasket (key 50), S31603 extension stem insert (key 48), anti-extrusion washer (key 32 - quantity of 2); PTFE packing set (key 33)	RGXBELLX012	RGXBELLX042	RGXBELLX072	RGXBELLX102	RGXBELLX132
	N10276 bellows with S31603 extension stem (key 49), graphite laminate body/bonnet gasket (key 5), graphite laminate extension bonnet gasket (key 47), graphite laminate bellows gasket (key 50), S31603 extension stem insert (key 48), anti-extrusion washer (key 32 - quantity of 2); PTFE packing set (key 33)	RGXBELLX022	RGXBELLX052	RGXBELLX082	RGXBELLX112	RGXBELLX142
	N10276 bellows with N06022 extension stem (key 49), PTFE / N10276 body/bonnet gasket (key 5), PTFE / N10276 extension bonnet gasket (key 47), PTFE / N10276 bellows gasket (key 50), N10276 extension stem insert (key 48), anti-extrusion washer (key 32 - quantity of 2); PTFE packing set (key 33)	RGXBELLX032	RGXBELLX062	RGXBELLX092	RGXBELLX122	RGXBELLX152

Parts List

Note

For part numbers not shown, contact your Emerson Process Management sales office.

Key	Description	Part Number	Key	Description
1	Valve Body		35	Nameplate
2*	Seat Ring	see following table	36	Warning Tag
3*	Valve Plug/Stem	see following table	37*	Seal Ring
4	Bonnet		38*	Backup Ring
5*	Body/Bonnet Gasket, graphite laminate	see gasket kits table	39	Extension Bonnet
6	Body/Bonnet Bolting (4 req'd)		40	Stem Extension
7	Body/Bonnet Nut (4 req'd)		41	Extension Bonnet Lower Bushing
8	Actuator Yoke		42*	Graphite ULF Packing Ring (2 req'd)
9	Upper Diaphragm Casing		43*	Packing Ring (2 req'd)
10*	Diaphragm		44*	Packing Washer (3 req'd)
11	Diaphragm Plate		45	Yoke/Extension Bonnet Bolting (4 req'd)
12	Actuator Springs		46	Yoke/Extension Bonnet Nut (4 req'd)
13	Actuator Spacer		47*	Extension Bonnet Gasket
14	Cap Screw		48*	Insert (req'd for assembly of valve stem to extension stem)
15	Washer		49*	Bellows/Stem Assembly
16	Cap Screw, long		50*	Bellows Gasket
	Size 225 Actuator (2 req'd)		51	Bellows Nut
	Size 750 Actuator (2 req'd)		52	Pipe Plug
	Size 1200 Actuator (4 req'd)		53	Handjack Body
17	Cap Screw, short		54	Lever
	Size 225 Actuator (4 req'd)		55	Operating Nut
	Size 750 Actuator (8 req'd)		56	Drive Screw
	Size 1200 Actuator (12 req'd)		57	Pivot Washer
18	Hex Nut		58	Grooved Pin
	Size 225 Actuator (6 req'd)		59	Bearing
	Size 750 Actuator (10 req'd)		60	Pivot Pin
	Size 1200 Actuator (16 req'd)		61	Bushing
19*	Actuator Rod Bushing		62	Retainer Ring
20*	Actuator Rod Seal		63	Spacer
21	Vent Cap		64	Cap Screw
22	Actuator Rod		65	Hex Nut
23	Stem Connector Nut Half		66	Lock Screw
24	Stem Connector Bolt Half		67	Hex Nut
25	Cap Screw (2 req'd)		68	Stud
26	Travel Indicator		69	Hex Nut
27	Stem Adjustor Nut		70	Lubricant, Lithium Grease
28	Locknut		71	Lubricant, Anti-Seize
29	Packing Follower		72	Cap Plug
30	Packing Spacer		73	Warning Tag
31	Packing Box Ring		74	Travel Indicator Scale
32*	Anti-Extrusion Washer (2 req'd)		75	Zerk Fitting
33*	PTFE Packing Set		76	Handwheel
34	Belleville Spring (3 req'd)		77	Locknut
			78	Pipe Plug
			79	Anti-seize sealant
			80	Lubricant, silicone sealant
			81	Pipe Plug
			82	Inner Actuator Spring
			84	Guide Sleeve or Cage
			98	Low Temp Bushing
			99	Cavitrol III cage
			100	Piston Ring
			109*	O-ring
			110	Rod Adaptor
			111	Stud
			112	Nut
			113	Drive Screw
			114	Electric Actuator Spacer
			115	Lead Seal and Wire (not shown)

* Recommended spare parts
See Parts Kits

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Plain Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE		VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER				
	mm	mm												
DN15 (NPS 1/2)	4.8	20	Unbalanced	R31233	S31603	CF3M	Micro-Flow Flat	1° 8'	GE04253X032	(1)				
								2° 15'	GE04255X032	GE04252X012				
								4° 39'	GE04256X032					
						9° 30'	GE13780X012	(1)						
						S31603/ CoCr-A Seat	Micro-Flow Flat		1° 8'	GE04253X112				
									2° 15'	GE04255X032				
					4° 39'			GE04256X032						
					N06022	CW2M	Micro-Flow Flat	9° 30'	GE13780X012	GE04252X052				
								1° 8'	GE04253X072					
	2° 15'	GE04255X072												
	N06022	CW2M	Micro-Flow Flat	4° 39'	GE04256X072	GE04252X042								
				9° 30'	GE13780X032									
				9° 30'	GE13780X032									
	9.5	20	Unbalanced (Standard)	S31603	S31603	S31603	CF3M	Equal Percentage		GE03891X012	GE00051X012			
								Linear		GE03893X012				
								S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage		GE03891X022	GE00051X062
											Linear		GE03893X022	
								N06022	N06022	CW2M	Equal Percentage		GE03891X052	GE00051X052
Linear											GE03893X052			
Unbalanced (Reduced Capacity)	S31603	S31603	CF3M	Equal Percentage		GE08919X012	GE00051X012							
				S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage		GE08919X022	GE00051X062				
							Equal Percentage		GE08919X052	GE00051X052				
DN20 (NPS 3/4)	4.8	20	Unbalanced	R31233	S31603	CF3M	Micro-Flow Flat	1° 8'	GE04253X032	(1)				
								2° 15'	GE04255X032	GE04252X012				
								4° 39'	GE04256X032					
						9° 30'	GE13780X012	(1)						
						S31603/ CoCr-A Seat	Micro-Flow Flat		1° 8'	GE04253X112				
									2° 15'	GE04255X032				
					4° 39'			GE04256X032						
					N06022	CW2M	Micro-Flow Flat	9° 30'	GE13780X012	GE04252X052				
								1° 8'	GE04253X072					
								2° 15'	GE04255X072					
					N06022	CW2M	Micro-Flow Flat	4° 39'	GE04256X072	GE04252X042				
								9° 30'	GE13780X032					
	9° 30'	GE13780X032												
	9.5	20	Unbalanced (Standard)	S31603	S31603	S31603	CF3M	Equal Percentage		GE03891X012	GE00051X012			
								Linear		GE03893X012				
								S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage		GE03891X022	GE00051X062
											Linear		GE03893X022	
								N06022	N06022	CW2M	Equal Percentage		GE03891X052	GE00051X052
											Linear		GE03893X052	
	Unbalanced (Reduced Capacity)	S31603	S31603	CF3M	Equal Percentage		GE08919X012	GE00051X012						
					S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage		GE08919X022	GE00051X062			
								Equal Percentage		GE08919X052	GE00051X052			
	14	20	Unbalanced	S31603	S31603	S31603	CF3M	Equal Percentage		GE03890X012	GE00049X012			
								Linear		GE03892X012				
S31603/ CoCr-A Seat								S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage		GE03890X022	GE00049X062	
										Linear		GE03892X022		
N06022								N06022	CW2M	Equal Percentage		GE03890X052	GE00049X052	
										Linear		GE03892X052		

1. The seat ring is included in the Valve Plug / Stem Part Number.

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Plain Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER			
	mm	mm										
DN25 (NPS 1)	4.8	20	Unbalanced	R31233	S31603	CF3M	Micro-Flow Flat	1°8'	GE04253X032	(1)		
								2°15'	GE04255X032	GE04252X012		
								4°39'	GE04256X032			
								9°30'	GE13780X012			
						S31603/ CoCr-A Seat	Micro-Flow Flat	1°8'	GE04253X112	(1)		
								2°15'	GE04255X032	GE04252X052		
					4°39'	GE04256X032						
					9°30'	GE13780X012						
					N06022	CW2M	Micro-Flow Flat	1°8'	GE04253X072	(1)		
								2°15'	GE04255X072	GE04252X042		
								4°39'	GE04256X072			
								9°30'	GE13780X032			
	9.5	20	Unbalanced (Standard)	S31603	S31603	CF3M	Equal Percentage	GE03891X012	GE00051X012			
								Linear		GE03893X012		
				S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE03891X022	GE00051X062			
								Linear		GE03893X022		
				N06022	N06022	CW2M	Equal Percentage	GE03891X052	GE00051X052			
								Linear		GE03893X052		
			Unbalanced (Reduced Capacity)	S31603	S31603	CF3M	Equal Percentage	GE08919X012	GE00051X012			
								Linear		GE08919X022		
							S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE08919X022	GE00051X062
											Linear	
			N06022	N06022	CW2M	Equal Percentage	GE08919X052	GE00051X052				
							Linear		GE08919X022			
	14	20	Unbalanced	S31603	S31603	CF3M	Equal Percentage	GE03890X012	GE00049X012			
								Linear		GE03892X012		
						S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE03890X022	GE00049X062	
										Linear		GE03892X022
						N06022	N06022	CW2M	Equal Percentage	GE03890X052	GE00049X052	
										Linear		GE03892X052
				S31603	S31603	CF3M	Equal Percentage	GE00081X012	GE00047X012			
								Linear		GE00082X012		
							CF3M/ PTFE Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE00081X012	GE05240X012
											Linear	
							S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE00081X022	GE00047X062
											Linear	
N06022	N06022	CW2M	Cavitrol III Trim	GC00409X012	GE35685X012							
				Equal Percentage		GE00081X052						
			CW2M/ PTFE Seat		N06022	Equal Percentage	GE00082X052	GE00047X052				
				Linear			GE00081X052					
N06022	N06022	CW2M/ PTFE Seat	Equal Percentage	GE00081X052	GE05240X042							
				Linear		GE00082X052						

1. The seat ring is included in the Valve Plug / Stem Part Number.

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Plain Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE		VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER		
	mm	mm										
DN40 (NPS 1-1/2)	14	20	Unbalanced	S31603	S31603	CF3M	Equal Percentage	GE03890X012	GE00057X012			
							Linear	GE03892X012				
				S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE03890X022	GE00057X062			
							Linear	GE03892X022				
				N06022	N06022	CW2M	Equal Percentage	GE03890X052	GE00057X052			
							Linear	GE03892X052				
	22	20	Unbalanced	S31603	S31603	CF3M	Equal Percentage	GE00081X012	GE00055X012			
							Linear	GE00082X012				
						CF3M/ PTFE Seat	Equal Percentage	GE00081X012	GE05240X052			
							Linear	GE00082X012				
				S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE00081X022	GE00055X062			
							Linear	GE00082X022				
				N06022	N06022	CW2M	Equal Percentage	GE00081X052	GE00055X052			
							Linear	GE00082X052				
						CW2M/ PTFE Seat	Equal Percentage	GE00081X052	GE05240X082			
							Linear	GE00082X052				
				36	20	Unbalanced	CF3M	S31603	CF3M	Equal Percentage	GE00083X012	GE12607X012
										Linear	GE00084X012	
	CF3M/ PTFE Seat	Equal Percentage	GE00083X012						GE12745X012			
		Linear	GE00084X012									
	CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat and Guide						Equal Percentage	GE00083X022	GE00053X062	
									Linear	GE00084X022		
	S17400 Cage	Cavitrol III Trim	GG00410X012				GE35686X012					
		CF3M Nitride	S31603				CF3M	Equal Percentage	GE00083X092	GE12607X012		
Linear	GE00084X082											
CF3M/PTFE Seat	Equal Percentage						GE00083X092	GE12745X012				
	Linear						GE00084X082					
CF3M/CoCr- A Seat and Guide	Equal Percentage						GE00083X092	GE00053X062				
	Linear			GE00084X082								
CW2M	N06022	CW2M	Equal Percentage	GE00083X072	GE12607X032							
			Linear	GE00084X072								
		CW2M/ PTFE Seat	Equal Percentage	GE00083X072	GE12745X102							
			Linear	GE00084X072								

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Plain Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER					
	mm	mm												
DN50 (NPS 2)	22	20	Unbalanced	S31603	S31603	CF3M	Equal Percentage	GE00081X012	GE00063X012					
							Linear	GE00082X012						
						CF3M/ PTFE Seat	Equal Percentage	GE00081X012	GE05240X092					
							Linear	GE00082X012						
						S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE00081X022	GE00063X062			
									Linear	GE00082X022				
				N06022	N06022	CW2M	Equal Percentage	GE00081X052	GE00063X052					
							Linear	GE00082X052						
				CW2M/ PTFE Seat	N06022	CW2M/ PTFE Seat	Equal Percentage	GE00081X052	GE05240X122					
							Linear	GE00082X052						
				36	20	Unbalanced	CF3M	S31603	CF3M	Equal Percentage	GE00083X012	GE12609X012		
										Linear	GE00084X012			
	CF3M/ PTFE Seat	S20910 SST	CF3M/ CoCr-A Seat and Guide						Equal Percentage	GE00083X012	GE12745X022			
									Linear	GE00084X012				
	CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat and Guide						Equal Percentage	GE00083X022	GE00061X062			
									Linear	GE00084X022				
	CF3M Nitride	S31603	CF3M				Equal Percentage	GE00083X092	GE12609X012					
							Linear	GE00084X082						
	CF3M/PTFE Seat	S31603	CF3M/PTFE Seat				Equal Percentage	GE00083X092	GE12745X022					
							Linear	GE00084X082						
	CF3M/CoCr-A Seat and Guide	S31603	CF3M/CoCr-A Seat and Guide				Equal Percentage	GE00083X092	GE00061X062					
							Linear	GE00084X082						
	CW2M	N06022	CW2M				Equal Percentage	GE00083X072	GE12609X032					
							Linear	GE00084X072						
	CW2M/ PTFE Seat	N06022	CW2M/ PTFE Seat				Equal Percentage	GE00083X072	GE12745X112					
							Linear	GE00084X072						
	46	20	Unbalanced				CF3M	S31603	CF3M	Equal Percentage	GE00085X012	GE12608X012		
										Linear	GE00086X012			
									CF3M/ PTFE Seat	S20910 SST	CF3M/ CoCr-A Seat and Guide	Equal Percentage	GE00085X012	GE12745X032
												Linear	GE00086X012	
									CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat and Guide	Equal Percentage	GE00085X022	GE00059X062
												Linear	GE00086X022	
							S17400 Cage	S20910 SST	S17400 Cage	Cavitrol III Trim	GG00414X012	GE35687X012		
										CF3M	S31603	CF3M	Equal Percentage	GE00085X092
				Linear	GE00086X082									
				CF3M/PTFE Seat	S31603	CF3M/PTFE Seat	Equal Percentage	GE00085X092	GE12745X032					
							Linear	GE00086X082						
				CF3M/CoCr-A Seat and Guide	S31603	CF3M/CoCr-A Seat and Guide	Equal Percentage	GE00085X092	GE00059X062					
							Linear	GE00086X082						
				CW2M	N06022	CW2M	Equal Percentage	GE00085X072	GE12608X032					
							Linear	GE00086X072						
				CW2M/ PTFE Seat	N06022	CW2M/ PTFE Seat	Equal Percentage	GE00085X072	GE12745X122					
							Linear	GE00086X072						

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Plain Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER			
	mm	mm										
DN80 (NPS 3)	36	20	Unbalanced	CF3M	S31603	CF3M	Equal Percentage	GE00097X012	GE12612X012			
							Linear	GE00098X012				
						CF3M/ PTFE Seat	Equal Percentage	GE00097X012		GE12745X042		
							Linear	GE00098X012				
						CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat and Guide		Equal Percentage	GE00097X022	GE00069X062
										Linear	GE00098X022	
				CF3M Nitride	S31603	CF3M	Equal Percentage	GE00097X092	GE12612X012			
							Linear	GE00098X082				
						CF3M/PTFE Seat	Equal Percentage	GE00097X092	GE12745X042			
							Linear	GE00098X082				
						CF3M/CoCr- A Seat and Guide		Equal Percentage	GE00097X092	GE00069X062		
								Linear	GE00098X082			
	CW2M	N06022	CW2M	Equal Percentage	GE00097X072	GE12612X032						
				Linear	GE00098X072							
			CW2M/ PTFE Seat	Equal Percentage	GE00097X072	GE12745X132						
				Linear	GE00098X072							
	46	20	Unbalanced	CF3M	S31603	CF3M	Equal Percentage	GE00095X012	GE12611X012			
							Linear	GE00096X012				
						CF3M/ PTFE Seat	Equal Percentage	GE00095X012		GE12745X052		
							Linear	GE00096X012				
						CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat and Guide		Equal Percentage	GE00095X022	GE00067X062
										Linear	GE00096X022	
				CF3M Nitride	S31603	CF3M	Equal Percentage	GE00095X092	GE12611X012			
							Linear	GE00096X082				
						CF3M/PTFE Seat	Equal Percentage	GE00095X092	GE12745X052			
							Linear	GE00096X082				
				CF3M/CoCr- A Seat and Guide		Equal Percentage	GE00095X092	GE00067X062				
						Linear	GE00096X082					
	CW2M	N06022	CW2M	Equal Percentage	GE00095X072	GE12611X032						
				Linear	GE00096X072							
			CW2M/ PTFE Seat	Equal Percentage	GE00095X072	GE12745X142						
				Linear	GE00096X072							
	70	40	Unbalanced	CF3M	S31603	CF3M	Equal Percentage	GE00093X012	GE12610X012			
							Linear	GE00094X012				
						CF3M/ PTFE Seat	Equal Percentage	GE00093X012		GE12745X062		
							Linear	GE00094X012				
CF3M/ CoCr-A Seat						S20910 SST	CF3M/ CoCr-A Seat and Guide	Equal Percentage		GE00093X022	GE00065X062	
								Linear		GE00094X022		
Whisper Trim III						Whisper Trim III	GE20152X012	GE00065X062				
				CF3M Nitride	S31603	CF3M	Equal Percentage	GE00093X092	GE12610X012			
Linear							GE00094X092					
CF3M/PTFE Seat					Equal Percentage	GE00093X092	GE12745X062					
					Linear	GE00094X092						
CF3M/CoCr- A Seat and Guide					Equal Percentage	GE00093X092	GE00065X062					
	Linear	GE00094X092										
CW2M	N06022	CW2M	Equal Percentage	GE00093X072	GE12610X032							
			Linear	GE00094X072								
		CW2M/ PTFE Seat	Equal Percentage	GE00093X072	GE12745X152							
			Linear	GE00094X072								

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Plain Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER
	mm	mm							
DN80 (NPS 3)	70	20	Balanced	S31603	S31603	CF3M	Equal Percentage	GE00087X012	GE12610X012
							Linear	GE00088X012	
				S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat and Guide	Equal Percentage	GE00087X022	GE00065X062
							Linear	GE00088X022	
				N06022	N06022	CW2M	Equal Percentage	GE00087X062	GE12610X032
							Linear	GE00088X062	
DN100 (NPS 4)	46	20	Unbalanced	CF3M	S31603	CF3M	Equal Percentage	GE01114X012	GE12615X012
							Linear	GE01115X012	
				CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat and Guide	Equal Percentage	GE01114X012	GE12745X072
							Linear	GE01115X012	
				CF3M Nitride	S31603	CF3M	Equal Percentage	GE01114X022	GE00075X062
							Linear	GE01115X022	
				CF3M Nitride	S31603	CF3M/PTFE Seat	Equal Percentage	GE01114X092	GE12615X012
							Linear	GE01115X082	
				CF3M Nitride	S31603	CF3M/CoCr- A Seat and Guide	Equal Percentage	GE01114X092	GE12745X072
							Linear	GE01115X082	
				CF3M Nitride	S31603	CF3M/CoCr- A Seat and Guide	Equal Percentage	GE01114X092	GE00075X062
							Linear	GE01115X082	
	CW2M	N06022	CW2M	Equal Percentage	GE01114X052	GE12615X032			
				Linear	GE01115X052				
	CW2M	N06022	CW2M/PTFE Seat	Equal Percentage	GE01114X052	GE12745X162			
				Linear	GE01115X052				
	70	40	Unbalanced	CF3M	S31603	CF3M	Equal Percentage	GE01112X012	GE12614X012
							Linear	GE01113X012	
				CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat and Guide	Equal Percentage	GE01112X012	GE12745X082
							Linear	GE01113X012	
				CF3M Nitride	S31603	CF3M	Equal Percentage	GE01112X022	GE00073X062
							Linear	GE01113X022	
				CF3M Nitride	S31603	CF3M	Equal Percentage	GE01112X092	GE12614X012
							Linear	GE01113X082	
CF3M Nitride				S31603	CF3M/PTFE Seat	Equal Percentage	GE01112X092	GE12745X082	
						Linear	GE01113X082		
CF3M Nitride				S31603	CF3M/CoCr- A Seat and Guide	Equal Percentage	GE01112X092	GE00073X062	
						Linear	GE01113X082		
CW2M	N06022	CW2M	Equal Percentage	GE01112X072	GE12614X032				
			Linear	GE01113X072					
CW2M	N06022	CW2M/PTFE Seat	Equal Percentage	GE01112X072	GE12745X172				
			Linear	GE01113X072					

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Plain Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER		
	mm	mm									
DN100 (NPS 4)	90	40	Unbalanced	CF3M	S31603	CF3M	Equal Percentage	GE00091X012	GE12613X012		
							Linear	GE00092X012			
						CF3M/PTFE Seat	Equal Percentage	GE00091X012	GE12745X092		
							Linear	GE00092X012			
						CF3M/CoCr-A Seat	S20910 SST	CF3M/CoCr-A Seat and Guide	Equal Percentage	GE00091X022	GE00071X062
									Linear	GE00092X022	
				Whisper Trim III	GE20049X012				GE00071X062		
				Equal Percentage	GE00091X092				GE12613X012		
				CF3M Nitride	S31603	CF3M	Linear	GE00092X082	GE12745X092		
							CF3M/PTFE Seat	Equal Percentage		GE00091X092	
						CF3M/CoCr-A Seat and Guide	S31603	CF3M/CoCr-A Seat and Guide	Linear	GE00092X082	GE00071X062
									Equal Percentage	GE00091X092	
	CW2M	N06022	CW2M					Equal Percentage	GE00091X072	GE12613X032	
								Linear	GE00092X072		
	CW2M/PTFE Seat	N06022	CW2M/PTFE Seat	Equal Percentage	GE00091X072	GE12745X182					
				Linear	GE00092X072						
	20	Balanced (Standard)	S31603	S31603	CF3M	S31603	CF3M	Equal Percentage	GE00099X012	GE12613X012	
								Linear	GE00100X012		
					S31603/CoCr-A Seat		S20910 SST	CF3M/CoCr-A Seat and Guide	Equal Percentage	GE00099X022	GE00071X062
									Linear	GE00100X022	
					N06022		N06022	CW2M	Equal Percentage	GE00099X062	GE12613X032
									Linear	GE00100X062	
		Balanced (Reduced Capacity)	S31603	S31603	S31603	CF3M	S31603	CF3M	Equal Percentage	GE00089X012	GE12613X012
									Linear	GE00090X012	
S31603/CoCr-A Seat						S20910 SST		CF3M/CoCr-A Seat and Guide	Equal Percentage	GE00089X022	GE00071X062
									Linear	GE00090X022	
N06022						N06022		CW2M	Equal Percentage	GE00089X062	GE12613X032
									Linear	GE00090X062	
DN150 (NPS 6)	90	40	Unbalanced	CF3M	S31603	CF3M / CoCr-A Seat and Guide	Equal Percentage	GE22427X012	GE16389X032		
							Linear	GE22429X012			
						CF3M / PTFE Seat / CoCr-A Guide	Equal Percentage	GE22427X012	GE27317X022		
							Linear	GE22429X012			
				CF3M / CoCr-A Seat		S20910 SST	CF3M / CoCr-A Seat and Guide	Equal Percentage	GE22427X022	GE16389X032	
								Linear	GE22429X022		
	136	60	Unbalanced	CF3M	S31603	CF3M / CoCr-A Seat and Guide	Equal Percentage	GE16192X012	GE15221X032		
							Linear	GE22423X012			
						CF3M / PTFE Seat / CoCr-A Guide	Equal Percentage	GE16192X012	GE27317X012		
							Linear	GE22423X012			
				CF3M / CoCr-A Seat		S20910 SST	CF3M / CoCr-A Seat and Guide	Equal Percentage	GE16192X022	GE15221X032	
								Linear	GE22423X022		
Balanced	S31603	S31603	S31603	S31603	CF3M	Equal Percentage	GE16210X012	GE15221X012			
						Linear	GE16211X012				
					S31603 / CoCr-A Seat	S20910 SST	CF3M / CoCr-A Seat and Guide	Equal Percentage	GE16210X022	GE15221X032	
								Linear	GE16211X022		
S31603 / CoCr-A Seat and Guide	S20910 SST	CF3M / CoCr-A Seat	Whisper Trim III Level A1	GE22226X012	GE15223X012						

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Plain Bonnet, CD3MN Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER	
	mm	mm								
DN25 (NPS 1)	4.8	20	Unbalanced	R31233	S31803	CD3MN	Micro-Flow Flat	1° 8'	GE04253X052	(1)
								2° 15'	GE04255X052	GE04252X022
								4° 39'	GE04256X052	
								9° 30'	GE13780X022	
	9.5	20	Unbalanced (Standard)	S31803	S31803	CD3MN	Equal Percentage	GE03891X032	GE00051X022	
								Linear		GE03893X032
	14	20	Unbalanced	S31803	S31803	CD3MN	Equal Percentage	GE03890X032	GE00049X022	
								Linear		GE03892X032
	22	20	Unbalanced	S31803	S31803	CD3MN	Equal Percentage	GE00081X032	GE00047X022	
								Linear		GE00082X032
				S31803	S31803	CD3MN/PTFE Seat	Equal Percentage	GE00081X032	GE05240X022	
								Linear		GE00082X032
DN40 (NPS 1-1/2)	14	20	Unbalanced	S31803	S31803	CD3MN	Equal Percentage	GE03890X032	GE00057X022	
								Linear		GE03892X032
	22	20	Unbalanced	S31803	S31803	CD3MN	Equal Percentage	GE00081X032	GE00055X022	
								Linear		GE00082X032
	S31803	S31803	CD3MN/PTFE Seat	Equal Percentage	GE00081X032	GE05240X062				
					Linear		GE00082X032			
36	20	Unbalanced	CD3MN	S31803	CD3MN	Equal Percentage	GE00083X032	GE12607X052		
							Linear		GE00084X032	
CD3MN	S31803	CD3MN/PTFE Seat	Equal Percentage	GE00083X032	GE12745X282					
Linear	GE00084X032									
DN50 (NPS 2)	22	20	Unbalanced	S31803	S31803	CD3MN	Equal Percentage	GE00081X032	GE00063X022	
								Linear		GE00082X032
	S31803	S31803	CD3MN/PTFE Seat	Equal Percentage	GE00081X032	GE05240X102				
					Linear		GE00082X032			
	CD3MN	S31803	CD3MN	Equal Percentage	GE00083X032	GE12609X052				
					Linear		GE00084X032			
	CD3MN	S31803	CD3MN/PTFE Seat	Equal Percentage	GE00083X032	GE12745X292				
					Linear		GE00084X032			
	CD3MN	S31803	CD3MN	Equal Percentage	GE00085X032	GE12608X052				
					Linear		GE00086X032			
CD3MN	S31803	CD3MN/PTFE Seat	Equal Percentage	GE00085X032	GE12745X302					
				Linear		GE00086X032				

1. The seat ring is included in the Valve Plug / Stem Part Number.

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Plain Bonnet, CD3MN Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER	
	mm	mm								
DN80 (NPS 3)	36	20	Unbalanced	CD3MN	S31803	CD3MN	Equal Percentage	GE00097X032	GE12612X052	
				CD3MN	S31803	CD3MN/PTFE Seat	Linear	GE00098X032		
			Unbalanced	CD3MN	S31803	CD3MN/PTFE Seat	Equal Percentage	GE00097X032	GE12745X312	
				CD3MN	S31803	CD3MN	Linear	GE00098X032		
	46	20	Unbalanced	CD3MN	S31803	CD3MN	Equal Percentage	GE00095X032	GE12611X052	
				CD3MN	S31803	CD3MN/PTFE Seat	Linear	GE00096X032		
			Unbalanced	CD3MN	S31803	CD3MN/PTFE Seat	Equal Percentage	GE00095X032	GE12745X322	
				CD3MN	S31803	CD3MN	Linear	GE00096X032		
	70	40	Unbalanced	CD3MN	S31803	CD3MN	Equal Percentage	GE00093X032	GE12610X052	
				CD3MN	S31803	CD3MN/PTFE Seat	Linear	GE00094X032		
			Unbalanced	CD3MN	S31803	CD3MN/PTFE Seat	Equal Percentage	GE00093X032	GE12745X332	
				CD3MN	S31803	CD3MN	Linear	GE00094X032		
Balanced	S31803	S31803	CD3MN	Equal Percentage	GE00087X032	GE12610X052				
DN100 (NPS 4)	46	20	Unbalanced	CD3MN	S31803	CD3MN	Equal Percentage	GE01114X032	GE12615X052	
				CD3MN	S31803	CD3MN/PTFE Seat	Linear	GE01115X032		
			Unbalanced	CD3MN	S31803	CD3MN/PTFE Seat	Equal Percentage	GE01114X032	GE12745X342	
				CD3MN	S31803	CD3MN	Linear	GE01115X032		
	70	40	Unbalanced	CD3MN	S31803	CD3MN	Equal Percentage	GE01112X032	GE12614X052	
				CD3MN	S31803	CD3MN/PTFE Seat	Linear	GE01113X032		
			Unbalanced	CD3MN	S31803	CD3MN/PTFE Seat	Equal Percentage	GE01112X032	GE12745X352	
				CD3MN	S31803	CD3MN	Linear	GE01113X032		
	90	40	Unbalanced	CD3MN	S31803	CD3MN	Equal Percentage	GE00091X032	GE12613X052	
				CD3MN	S31803	CD3MN/PTFE Seat	Linear	GE00092X032		
			Unbalanced	CD3MN	S31803	CD3MN/PTFE Seat	Equal Percentage	GE00091X032	GE12745X362	
				CD3MN	S31803	CD3MN	Linear	GE00092X032		
		20	Balanced (Standard)	CD3MN	S31803	S31803	CD3MN	Equal Percentage	GE00099X032	GE12613X052
				CD3MN	S31803	CD3MN	Linear	GE00100X032		
			Balanced (Reduced Capacity)	CD3MN	S31803	S31803	CD3MN	Equal Percentage	GE00089X032	
				CD3MN	S31803	CD3MN	Linear	GE00090X032		

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Plain Bonnet, CF3 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE		VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER
	mm	mm								
DN25 (NPS 1)	4.8	20	Unbalanced	R31233	S31803	CF3	Micro-Flow Flat	1° 8'	GE04253X092	(1)
								2° 15'	GE04255X052	GE04252X032
								4° 39'	GE04256X052	
								9° 30'	GE13780X022	
	9.5	20	Unbalanced (Standard)	S30403	S31803	CF3	Equal Percentage	GE03891X042	GE00051X042	
								Linear		GE03893X042
	9.5	20	Unbalanced (Reduced Capacity)	S30403	S31803	CF3	Equal Percentage	GE08919X042	GE00051X042	
								Linear		GE03892X042
	14	20	Unbalanced	S30403	S31803	CF3	Equal Percentage	GE03890X042	GE00049X042	
								Linear		GE03892X042
	22	20	Unbalanced	S30403	S31803	CF3	Equal Percentage	GE00081X042	GE00047X042	
								Linear		GE00082X042
S30403				S31803	CF3/ PTFE Seat	Equal Percentage	GE00081X042	GE05240X032		
							Linear		GE00082X042	
DN40 (NPS 1-1/2)	14	20	Unbalanced	S30403	S31803	CF3	Equal Percentage	GE03890X042	GE00057X042	
								Linear		GE03892X042
	22	20	Unbalanced	S30403	S31803	CF3	Equal Percentage	GE00081X042	GE00055X042	
								Linear		GE00082X042
	S30403	S31803	CF3/ PTFE Seat	Equal Percentage	GE00081X042	GE05240X072				
					Linear		GE00082X042			
36	20	Unbalanced	CF3	S31803	CF3	Equal Percentage	GE00083X042	GE12607X062		
							Linear		GE00084X042	
CF3	S31803	CF3/ PTFE Seat	Equal Percentage	GE00083X042	GE12745X192					
				Linear		GE00084X042				
DN50 (NPS 2)	22	20	Unbalanced	S30403	S31803	CF3	Equal Percentage	GE00081X042	GE00063X042	
								Linear		GE00082X042
				S30403	S31803	CF3/ PTFE Seat	Equal Percentage	GE00081X042	GE05240X112	
								Linear		GE00082X042
	36	20	Unbalanced	CF3	S31803	CF3	Equal Percentage	GE00083X042	GE12609X062	
								Linear		GE00084X042
	CF3	S31803	CF3/ PTFE Seat	Equal Percentage	GE00083X042	GE12745X202				
					Linear		GE00084X042			
46	20	Unbalanced	CF3	S31803	CF3	Equal Percentage	GE00085X042	GE12608X062		
							Linear		GE00086X042	
			CF3	S31803	CF3/ PTFE Seat	Equal Percentage	GE00085X042	GE12745X212		
							Linear		GE00086X042	

1. The seat ring is included in the Valve Plug / Stem Part Number.

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Plain Bonnet, CF3 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER
	mm	mm							
DN80 (NPS 3)	36	20	Unbalanced	CF3	S31803	CF3	Equal Percentage	GE00097X042	GE12612X062
				CF3	S31803	CF3/PTFE Seat	Linear	GE00098X042	
			Unbalanced	CF3	S31803	CF3/PTFE Seat	Equal Percentage	GE00097X042	GE12745X222
				CF3	S31803	CF3	Linear	GE00098X042	
	46	20	Unbalanced	CF3	S31803	CF3	Equal Percentage	GE00095X042	GE12611X062
				CF3	S31803	CF3/PTFE Seat	Linear	GE00096X042	
			Unbalanced	CF3	S31803	CF3/PTFE Seat	Equal Percentage	GE00095X042	GE12745X232
				CF3	S31803	CF3	Linear	GE00096X042	
	70	40	Unbalanced	CF3	S31803	CF3	Equal Percentage	GE00093X042	GE12610X062
				CF3	S31803	CF3/PTFE Seat	Linear	GE00094X042	
		Unbalanced	CF3	S31803	CF3/PTFE Seat	Equal Percentage	GE00093X042	GE12745X242	
			CF3	S31803	CF3	Linear	GE00094X042		
Balanced	20	Balanced	S30403	S31803	CF3	Equal Percentage	GE00087X042	GE12610X062	
			S30403	S31803	CF3	Linear	GE00088X042		
DN100 (NPS 4)	46	20	Unbalanced	CF3	S31803	CF3	Equal Percentage	GE01114X042	GE12615X062
				CF3	S31803	CF3/PTFE Seat	Linear	GE01115X042	
			Unbalanced	CF3	S31803	CF3/PTFE Seat	Equal Percentage	GE01114X042	GE12745X252
				CF3	S31803	CF3	Linear	GE01115X042	
	70	40	Unbalanced	CF3	S31803	CF3	Equal Percentage	GE01112X042	GE12614X062
				CF3	S31803	CF3/PTFE Seat	Linear	GE01113X042	
			Unbalanced	CF3	S31803	CF3/PTFE Seat	Equal Percentage	GE01112X042	GE12745X262
				CF3	S31803	CF3	Linear	GE01113X042	
	90	40	Unbalanced	CF3	S31803	CF3	Equal Percentage	GE00091X042	GE12613X062
				CF3	S31803	CF3/PTFE Seat	Linear	GE00092X042	
		Unbalanced	CF3	S31803	CF3/PTFE Seat	Equal Percentage	GE00091X042	GE12745X272	
			CF3	S31803	CF3	Linear	GE00092X042		
Balanced (Standard)	20	Balanced (Standard)	S30403	S31803	CF3	Equal Percentage	GE00099X042	GE12613X062	
			S30403	S31803	CF3	Linear	GE00100X042		
Balanced (Reduced Capacity)	20	Balanced (Reduced Capacity)	S30403	S31803	CF3	Equal Percentage	GE00089X042		
			S30403	S31803	CF3	Linear	GE00090X042		

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Plain Bonnet, CN7M and CW2M Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE		VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER			
	mm	mm											
DN25 (NPS 1)	4.8	20	Unbalanced	R31233	N06022	CW2M	Micro-Flow Flat	1° 8'	GE04253X072	(1)			
								2° 15'	GE04255X072	GE04252X042			
								4° 39'	GE04256X072				
								9° 30'	GE13780X032				
	9.5	20	Unbalanced (Standard)	N06022	N06022	CW2M	Equal Percentage		GE03891X052	GE00051X052			
							Linear		GE03893X052				
	9.5	20	Unbalanced (Reduced Capacity)	N06022	N06022	CW2M	Equal Percentage		GE08919X052				
							Linear						
	14	20	Unbalanced	N06022	N06022	CW2M	Equal Percentage		GE03890X052	GE00049X052			
							Linear		GE03892X052				
	22	20	Unbalanced	N06022	N06022	CW2M	Equal Percentage		GE00081X052	GE00047X052			
							Linear		GE00082X052				
N06022				N06022	CW2M/ PTFE Seat	Equal Percentage		GE00081X052	GE05240X042				
						Linear		GE00082X052					
DN40 (NPS 1-1/2)	14	20	Unbalanced	N06022	N06022	CW2M	Equal Percentage		GE03890X052	GE00057X052			
							Linear		GE03892X052				
	22	20	Unbalanced	N06022	N06022	CW2M	Equal Percentage		GE00081X052	GE00055X052			
							Linear		GE00082X052				
	N06022	N06022	CW2M/ PTFE Seat	Equal Percentage		GE00081X052	GE05240X082						
				Linear		GE00082X052							
36	20	Unbalanced	CW2M	N06022	CW2M	Equal Percentage		GE00083X072	GE12607X032				
						Linear		GE00084X072					
CW2M	N06022	CW2M/ CoCr-A Bore PTFE Seat	Equal Percentage		GE00083X072	GE12745X102							
			Linear		GE00084X072								
DN50 (NPS 2)	22	20	Unbalanced	N06022	N06022	CW2M	Equal Percentage		GE00081X052	GE00063X052			
							Linear		GE00082X052				
							N06022	N06022	CW2M/ PTFE Seat	Equal Percentage		GE00081X052	GE05240X122
										Linear		GE00082X052	
	36	20	Unbalanced	CW2M	N06022	CW2M	Equal Percentage		GE00083X072	GE12609X032			
							Linear		GE00084X072				
	CW2M	N06022	CW2M/ PTFE Seat	Equal Percentage		GE00083X072	GE12745X112						
				Linear		GE00084X072							
	46	20	Unbalanced	CW2M	N06022	CW2M	Equal Percentage		GE00085X072	GE12608X032			
							Linear		GE00086X072				
							CW2M	N06022	CW2M/ PTFE Seat	Equal Percentage		GE00085X072	GE12745X122
										Linear		GE00086X072	

1. The seat ring is included in the Valve Plug / Stem Part Number.

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Plain Bonnet, CN7M and CW2M Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER	
	mm	mm								
DN80 (NPS 3)	36	20	Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE00097X072	GE12612X032	
				CW2M	N06022	CW2M/PTFE Seat	Linear	GE00098X072		
			Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE00097X072	GE12745X132	
				CW2M	N06022	CW2M/PTFE Seat	Linear	GE00098X072		
	46	20	Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE00095X072	GE12611X032	
				CW2M	N06022	CW2M/PTFE Seat	Linear	GE00096X072		
			Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE00095X072	GE12745X142	
				CW2M	N06022	CW2M/PTFE Seat	Linear	GE00096X072		
	70	40	Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE00093X072	GE12610X032	
				CW2M	N06022	CW2M/PTFE Seat	Linear	GE00094X072		
		Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE00093X072	GE12745X152		
			CW2M	N06022	CW2M/PTFE Seat	Linear	GE00094X072			
Balanced	20	Balanced	N06022	N06022	CW2M	Equal Percentage	GE00087X062	GE12610X032		
			N06022	N06022	CW2M	Linear	GE00088X062			
DN100 (NPS 4)	46	20	Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE01114X052	GE12615X032	
				CW2M	N06022	CW2M/PTFE Seat	Linear	GE01115X052		
			Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE01114X052	GE12745X162	
				CW2M	N06022	CW2M/PTFE Seat	Linear	GE01115X052		
	70	40	Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE01112X072	GE12614X032	
				CW2M	N06022	CW2M/PTFE Seat	Linear	GE01113X072		
			Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE01112X072	GE12745X172	
				CW2M	N06022	CW2M/PTFE Seat	Linear	GE01113X072		
	90	40	Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE00091X072	GE12613X032	
				CW2M	N06022	CW2M/PTFE Seat	Linear	GE00092X072		
			Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE00091X072	GE12745X182	
				CW2M	N06022	CW2M/PTFE Seat	Linear	GE00092X072		
		20	Balanced (Standard)	Balanced (Standard)	N06022	N06022	CW2M	Equal Percentage	GE00099X062	GE12613X032
					N06022	N06022	CW2M	Linear	GE00100X062	
			Balanced (Reduced Capacity)	Balanced (Reduced Capacity)	N06022	N06022	CW2M	Equal Percentage	GE00089X062	
					N06022	N06022	CW2M	Linear	GE00090X062	

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Extension Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER	
	mm	mm								
DN15 (NPS 1/2)	4.8	20	Unbalanced	R31233	S31603	CF3M	Micro-Flow Flat	1°8'	GE04253X032	(1)
								2°15'	GE04255X032	GE04252X012
								4°39'	GE04256X032	
								9°30'	GE04253X112	
						S31603/ CoCr-A Seat	Micro-Flow Flat	1°8'	GE04253X112	(1)
								2°15'	GE04255X032	GE04252X052
	9.5	20	Unbalanced (Standard)	S31603	S31603	CF3M	Equal Percentage	GE03891X012	GE00051X012	
				S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Linear	GE03893X012		
			Unbalanced (Reduced Capacity)	S31603	S31603	CF3M	Equal Percentage	GE03891X022	GE00051X062	
				S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Linear	GE03893X022		
			S31603	S31603	CF3M	Equal Percentage	GE08919X012	GE00051X012		
						Equal Percentage	GE08919X022			
DN20 (NPS 3/4)	4.8	20	Unbalanced	R31233	S31603	CF3M	Micro-Flow Flat	1°8'	GE04253X032	(1)
								2°15'	GE04255X032	GE04252X012
								4°39'	GE04256X032	
								9°30'	GE04253X112	
						S31603/ CoCr-A Seat	Micro-Flow Flat	1°8'	GE04253X112	(1)
								2°15'	GE04255X032	GE04252X052
	9.5	20	Unbalanced (Standard)	S31603	S31603	CF3M	Equal Percentage	GE03891X012	GE00051X012	
				S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Linear	GE03893X012		
			Unbalanced (Reduced Capacity)	S31603	S31603	CF3M	Equal Percentage	GE03891X022	GE00051X062	
				S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Linear	GE03893X022		
			S31603	S31603	CF3M	Equal Percentage	GE08919X012	GE00051X012		
						Equal Percentage	GE08919X022			
14	20	Unbalanced	S31603	S31603	CF3M	Equal Percentage	GE03890X012	GE00049X012		
			S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Linear	GE03892X012			
			S31603	S31603	CF3M	Equal Percentage	GE03890X022	GE00049X062		
						Equal Percentage	GE03892X022			

1. The seat ring is included in the Valve Plug / Stem Part Number.

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Extension Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER											
	mm	mm																		
DN25 (NPS 1)	4.8	20	Unbalanced	R31233	S31603	CF3M	Micro-Flow Flat	1°8'	GE04253X032	(1)										
								2°15'	GE04255X032	GE04252X012										
								4°39'	GE04256X032											
								9°30'	GE13780X012											
						S31603/ CoCr-A Seat	Micro-Flow Flat	1°8'	GE04253X112		(1)									
								2°15'	GE04255X032	GE04252X052										
								4°39'	GE04256X032											
								9°30'	GE13780X012											
	9.5	20	Unbalanced (Standard)	S31603	S31603	CF3M	Equal Percentage	GE03891X012	GE00051X012											
										S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE03891X022						
				Unbalanced (Reduced Capacity)	S31603	S31603	CF3M	Equal Percentage							GE03893X012	GE00051X062				
										S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE03893X022						
			S31603	S31603	CF3M	Equal Percentage	GE08919X012	GE00051X012												
									S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE08919X022	GE00051X062						
															S31603	S31603	CF3M	Equal Percentage	GE03890X012	GE00049X012
	S31603	S31603	CF3M	Equal Percentage	GE03892X012	GE00049X062														
							S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE03892X022									
	S31603	S31603	CF3M	Equal Percentage	GE00081X012							GE00047X012								
							S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE00082X012									
						S31603							S31603	CF3M	Equal Percentage	GE00081X022	GE00047X062			
																		S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat
	S31603	S31603	CF3M	Equal Percentage	GE03890X012	GE00057X012														
							S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Linear	GE03892X012									
S31603												S31603	CF3M	Equal Percentage	GE03890X022					
																S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Linear	GE03892X022
S31603	S31603	CF3M	Equal Percentage	GE00081X012	GE00055X012															
						S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Linear	GE00082X012										
											S31603	S31603	CF3M	Equal Percentage	GE00081X022					
																S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Linear	GE00082X022
CF3M	S31603	CF3M/ CoCr-A Seat	Equal Percentage	GE00083X012	GE00053X062															
						S20910 SST	CF3M/ CoCr-A Seat	Linear	GE00084X012											
										CF3M	S31603	CF3M/ CoCr-A Seat	Equal Percentage	GE00083X022						
															S20910 SST	CF3M/ CoCr-A Seat	Linear	GE00084X022		

1. The seat ring is included in the Valve Plug / Stem Part Number.

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Extension Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER	
	mm	mm								
DN50 (NPS 2)	22	20	Unbalanced	S31603	S31603	CF3M	Equal Percentage	GE00081X012	GE00063X012	
							Linear	GE00082X012		
				S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE00081X022		GE00063X062
							Linear	GE00082X022		
	36	20	Unbalanced	CF3M	S31603	CF3M/ CoCr-A Seat	Equal Percentage	GE00083X012	GE00061X062	
							Linear	GE00084X012		
				CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE00083X022		GE00061X062
							Linear	GE00084X022		
	46	20	Unbalanced	CF3M	S31603	CF3M/ CoCr-A Seat	Equal Percentage	GE00085X012	GE00059X062	
							Linear	GE00086X012		
				CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE00085X022		GE00059X062
							Linear	GE00086X022		
DN80 (NPS 3)	36	20	Unbalanced	CF3M	S31603	CF3M/ CoCr-A Seat	Equal Percentage	GE00097X012	GE00069X062	
							Linear	GE00098X012		
				CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE00097X022		GE00069X062
							Linear	GE00098X022		
	46	20	Unbalanced	CF3M	S31603	CF3M/ CoCr-A Seat	Equal Percentage	GE00095X012	GE00067X062	
							Linear	GE00096X012		
				CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE00095X022		GE00067X062
							Linear	GE00096X022		
	70	40	Unbalanced	CF3M	S31603	CF3M/ CoCr-A Seat	Equal Percentage	GE00093X012	GE00065X062	
							Linear	GE00094X012		
				CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE00093X022		GE00065X062
							Linear	GE00094X022		
DN100 (NPS 4)	46	20	Unbalanced	CF3M	S31603	CF3M/ CoCr-A Seat	Equal Percentage	GE01114X012	GE00075X062	
							Linear	GE01115X012		
				CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE01114X022		GE00075X062
							Linear	GE01115X022		
	70	40	Unbalanced	CF3M	S31603	CF3M/ CoCr-A Seat	Equal Percentage	GE01112X012	GE00073X062	
							Linear	GE01113X012		
				CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE01112X022		GE00073X062
							Linear	GE01113X022		
	90	40	Unbalanced	CF3M	S31603	CF3M/ CoCr-A Seat	Equal Percentage	GE00091X012	GE00071X062	
							Linear	GE00092X012		
				CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE00091X022		GE00071X062
							Linear	GE00092X022		

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Bellows Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER		
	mm	mm									
DN15 (NPS 1/2)	4.8	20	Unbalanced	R31233	S31603	CF3M	Micro-Flow Flat	1°8'	GE04253X032	(1)	
								2°15'	GE04255X032	GE04252X012	
								4°39'	GE04256X032		
						9°30'	GE13780X012	(1)			
						1°8'	GE04253X112				
						2°15'	GE04255X032				
					4°39'	GE04256X032	GE04252X052				
					9°30'	GE13780X012					
					N06022	CW2M	Micro-Flow Flat	1°8'	GE04253X072	(1)	
	2°15'	GE04255X072	GE04252X042								
	4°39'	GE04256X072									
	9°30'	GE13780X032									
	9.5	20	Unbalanced (Standard)	S31603	S31603	CF3M	Equal Percentage	GE03891X012	GE00051X012		
								Linear		GE03893X012	
							S31603/CoCr-A Seat	S20910 SST	CF3M/CoCr-A Seat	Equal Percentage	GE03891X022
			Linear	GE03893X022							
			N06022	N06022	CW2M	Equal Percentage	GE03891X052	GE00051X052			
						Linear	GE03893X052				
Equal Percentage	GE08919X012	GE00051X012									
Unbalanced (Reduced Capacity)	S31603/CoCr-A Seat	S20910 SST	CF3M/CoCr-A Seat	Equal Percentage	GE08919X022	GE00051X062					
				Equal Percentage	GE08919X052	GE00051X052					
				Equal Percentage	GE08919X052						
DN20 (NPS 3/4)	4.8	20	Unbalanced	R31233	S31603	CF3M	Micro-Flow Flat	1°8'	GE04253X032	(1)	
								2°15'	GE04255X032	GE04252X012	
								4°39'	GE04256X032		
						9°30'	GE13780X012	(1)			
						1°8'	GE04253X112				
						2°15'	GE04255X032				
					4°39'	GE04256X032	GE04252X052				
					9°30'	GE13780X012					
					N06022	CW2M	Micro-Flow Flat	1°8'	GE04253X072	(1)	
	2°15'	GE04255X072	GE04252X042								
	4°39'	GE04256X072									
	9°30'	GE13780X032									
	9.5	20	Unbalanced (Standard)	S31603	S31603	CF3M	Equal Percentage	GE03891X012	GE00051X012		
								Linear		GE03893X012	
							S31603/CoCr-A Seat	S20910 SST	CF3M/CoCr-A Seat	Equal Percentage	GE03891X022
			Linear	GE03893X022							
			N06022	N06022	CW2M	Equal Percentage	GE03891X052	GE00051X052			
						Linear	GE03893X052				
Equal Percentage	GE08919X012	GE00051X012									
Unbalanced (Reduced Capacity)	S31603/CoCr-A Seat	S20910 SST	CF3M/CoCr-A Seat	Equal Percentage	GE08919X022	GE00051X062					
				Equal Percentage	GE08919X052	GE00051X052					
				Equal Percentage	GE08919X052						
14	20	Unbalanced	S31603/CoCr-A Seat	S20910 SST	CF3M/CoCr-A Seat	Equal Percentage	GE03890X012	GE00049X012			
							Linear		GE03892X012		
						S31603	S31603	CF3M	Equal Percentage	GE03890X022	GE00049X062
									Linear	GE03892X022	
						N06022	N06022	CW2M	Equal Percentage	GE03890X052	GE00049X052
									Linear	GE03892X052	

1. The seat ring is included in the Valve Plug / Stem Part Number.

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Bellows Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER		
	mm	mm									
DN25 (NPS 1)	4.8	20	Unbalanced	R31233	S31603	CF3M	Micro-Flow Flat	1°8'	GE04253X032	(1)	
								2°15'	GE04255X032	GE04252X012	
								4°39'	GE04256X032		
								9°30'	GE13780X012		
						S31603/ CoCr-A Seat	Micro-Flow Flat	1°8'	GE04253X112	(1)	
								2°15'	GE04255X032	GE04252X052	
					4°39'	GE04256X032					
					9°30'	GE13780X012					
					N06022	CW2M	Micro-Flow Flat	1°8'	GE04253X072	(1)	
								2°15'	GE04255X072	GE04252X042	
								4°39'	GE04256X072		
								9°30'	GE13780X032		
	9.5	20	Unbalanced (Standard)	S31603	S31603	CF3M	Equal Percentage	GE03891X012	GE00051X012		
							Linear	GE03893X012			
						S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE03891X022	GE00051X062
				Linear	GE03893X022						
				N06022	N06022	CW2M	Equal Percentage	GE03891X052	GE00051X052		
							Linear	GE03893X052			
			Unbalanced (Reduced Capacity)	S31603	S31603	CF3M	Equal Percentage	GE08919X012	GE00051X012		
							Equal Percentage	GE08919X022			
						S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE08919X022	GE00051X062
				Equal Percentage	GE08919X052						
				N06022	N06022	CW2M	Equal Percentage	GE08919X052	GE00051X052		
							Equal Percentage	GE08919X052			
	14	20	Unbalanced	S31603	S31603	CF3M	Equal Percentage	GE03890X012	GE00049X012		
							Linear	GE03892X012			
						S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE03890X022	GE00049X062
									Linear	GE03892X022	
						N06022	N06022	CW2M	Equal Percentage	GE03890X052	GE00049X052
									Linear	GE03892X052	
				S31603	S31603	CF3M	Equal Percentage	GE00081X012	GE00047X012		
							Linear	GE00082X012			
						CF3M/ PTFE Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE00081X012	GE05240X012
									Linear	GE00082X012	
						S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE00081X022	GE00047X062
									Linear	GE00082X022	
N06022	N06022	CW2M	Equal Percentage	GE00081X052	GE00047X052						
			Linear	GE00082X052							
CW2M/ PTFE Seat	N06022	CW2M/ PTFE Seat	Equal Percentage	GE00081X052	GE05240X042						
			Linear	GE00082X052							

1. The seat ring is included in the Valve Plug / Stem Part Number.

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Bellows Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER			
	mm	mm										
DN40 (NPS 1-1/2)	14	20	Unbalanced	S31603	S31603	CF3M	Equal Percentage	GE03890X012	GE00057X012			
							Linear	GE03892X012				
				S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE03890X022	GE00057X062			
							Linear	GE03892X022				
				N06022	N06022	CW2M	Equal Percentage	GE03890X052	GE00057X052			
							Linear	GE03892X052				
	22	20	Unbalanced	S31603	S31603	CF3M	Equal Percentage	GE00081X012	GE00055X012			
							Linear	GE00082X012				
						CF3M/ PTFE Seat	Equal Percentage	GE00081X012	GE05240X052			
							Linear	GE00082X012				
				S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat	Equal Percentage	GE00081X022	GE00055X062			
							Linear	GE00082X022				
				N06022	N06022	CW2M	Equal Percentage	GE00081X052	GE00055X052			
							Linear	GE00082X052				
						CW2M/ PTFE Seat	Equal Percentage	GE00081X052	GE05240X082			
							Linear	GE00082X052				
				36	20	Unbalanced	CF3M	S31603	CF3M	Equal Percentage	GE00083X012	GE12607X012
										Linear	GE00084X012	
	CF3M/ PTFE Seat	Equal Percentage	GE00083X012						GE12745X012			
		Linear	GE00084X012									
	CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat and Guide				Equal Percentage	GE00083X022	GE00053X062			
							Linear	GE00084X022				
	CW2M	N06022	CW2M				Equal Percentage	GE00083X072	GE12607X032			
							Linear	GE00084X072				
CW2M/ PTFE Seat			Equal Percentage				GE00083X072	GE12745X102				
			Linear				GE00084X072					

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Bellows Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE		VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER		
	mm	mm										
DN50 (NPS 2)	22	20	Unbalanced	S31603	S31603	CF3M	Equal Percentage	GE00081X012	GE00063X012			
							Linear	GE00082X012				
						CF3M/PTFE Seat	Equal Percentage	GE00081X012		GE05240X092		
							Linear	GE00082X012				
						S31603/CoCr-A Seat	S20910 SST	CF3M/CoCr-A Seat		Equal Percentage	GE00081X022	GE00063X062
										Linear	GE00082X022	
				N06022	N06022	CW2M	Equal Percentage	GE00081X052	GE00063X052			
							Linear	GE00082X052				
				CW2M/PTFE Seat	N06022	CW2M/PTFE Seat	Equal Percentage	GE00081X052	GE05240X122			
							Linear	GE00082X052				
				36	20	Unbalanced	CF3M	S31603	CF3M	Equal Percentage	GE00083X012	GE12609X012
										Linear	GE00084X012	
	CF3M/PTFE Seat	Equal Percentage	GE00083X012						GE12745X022			
		Linear	GE00084X012									
	CF3M/CoCr-A Seat	S20910 SST	CF3M/CoCr-A Seat and Guide						Equal Percentage	GE00083X022	GE00061X062	
									Linear	GE00084X022		
	CW2M	N06022	CW2M				Equal Percentage	GE00083X072	GE12609X032			
							Linear	GE00084X072				
	CW2M/PTFE Seat	N06022	CW2M/PTFE Seat				Equal Percentage	GE00083X072	GE12745X112			
							Linear	GE00084X072				
	46	20	Unbalanced				CF3M	S31603	CF3M	Equal Percentage	GE00085X012	GE12608X012
										Linear	GE00086X012	
				CF3M/PTFE Seat	Equal Percentage	GE00085X012			GE12745X032			
					Linear	GE00086X012						
CF3M/CoCr-A Seat				S20910 SST	CF3M/CoCr-A Seat and Guide	Equal Percentage			GE00085X022	GE00059X062		
						Linear			GE00086X022			
CW2M				N06022	CW2M	Equal Percentage	GE00085X072	GE12608X032				
						Linear	GE00086X072					
CW2M/PTFE Seat				N06022	CW2M/PTFE Seat	Equal Percentage	GE00085X072	GE12745X122				
						Linear	GE00086X072					

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Bellows Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER			
	mm	mm										
DN80 (NPS 3)	36	20	Unbalanced	CF3M	S31603	CF3M	Equal Percentage	GE00097X012	GE12612X012			
							Linear	GE00098X012				
						CF3M/ PTFE Seat	Equal Percentage	GE00097X012	GE12745X042			
							Linear	GE00098X012				
						CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat and Guide	Equal Percentage	GE00097X022	GE00069X062	
									Linear	GE00098X022		
				CW2M	N06022	CW2M	Equal Percentage	GE00097X072	GE12612X032			
							Linear	GE00098X072				
				CW2M/ PTFE Seat	N06022	CW2M/ PTFE Seat	Equal Percentage	GE00097X072	GE12745X132			
							Linear	GE00098X072				
				46	20	Unbalanced	CF3M	S31603	CF3M	Equal Percentage	GE00095X012	GE12611X012
										Linear	GE00096X012	
	CF3M/ PTFE Seat	S20910 SST	CF3M/ CoCr-A Seat and Guide						Equal Percentage	GE00095X012	GE12745X052	
									Linear	GE00096X012		
	CF3M/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat and Guide						Equal Percentage	GE00095X022	GE00067X062	
									Linear	GE00096X022		
	CW2M	N06022	CW2M				Equal Percentage	GE00095X072	GE12611X032			
							Linear	GE00096X072				
	CW2M/ PTFE Seat	N06022	CW2M/ PTFE Seat				Equal Percentage	GE00095X072	GE12745X142			
							Linear	GE00096X072				
	70	20	Balanced				S31603	S31603	CF3M	Equal Percentage	GE00087X012	GE12610X012
										Linear	GE00088X012	
				S31603/ CoCr-A Seat	S20910 SST	CF3M/ CoCr-A Seat and Guide	Equal Percentage	GE00087X022	GE00065X062			
							Linear	GE00088X022				
N06022				N06022	CW2M	Equal Percentage	GE00087X062	GE12610X032				
						Linear	GE00088X062					

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Bellows Bonnet, LCC, WCC/1.0619 and CF3M/1.4409 Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER		
	mm	mm									
DN100 (NPS 4)	46	20	Unbalanced	CF3M	S31603	CF3M	Equal Percentage	GE01114X012	GE12615X012		
							Linear	GE01115X012			
						CF3M/PTFE Seat	Equal Percentage	GE01114X012	GE12745X072		
				Linear	GE01115X012						
				CF3M/CoCr-A Seat	S20910 SST	CF3M/CoCr-A Seat and Guide	Equal Percentage	GE01114X022	GE00075X062		
				Linear			GE01115X022				
			CW2M	N06022	CW2M	Equal Percentage	GE01114X052	GE12615X032			
						Linear	GE01115X052				
			CW2M/PTFE Seat	N06022	CW2M/PTFE Seat	Equal Percentage	GE01114X052	GE12745X162			
						Linear	GE01115X052				
			90	20	Balanced (Standard)	S31603	S31603	CF3M	Equal Percentage	GE00099X012	GE12613X012
									Linear	GE00100X012	
	S31603/CoCr-A Seat	S20910 SST						CF3M/CoCr-A Seat and Guide	Equal Percentage	GE00099X022	GE00071X062
	Linear					GE00100X022					
	N06022	N06022				CW2M	Equal Percentage	GE00099X062	GE12613X032		
							Linear	GE00100X062			
	Balanced (Reduced Capacity)	S31603			S31603	CF3M	Equal Percentage	GE00089X012	GE12613X012		
							Linear	GE00090X012			
						S31603/CoCr-A Seat	S20910 SST	CF3M/CoCr-A Seat and Guide	Equal Percentage	GE00089X022	GE00071X062
		Linear			GE00090X022						
		N06022			N06022	CW2M	Equal Percentage	GE00089X062	GE12613X032		
							Linear	GE00090X062			

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Bellows Bonnet, CW2M Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE		VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER			
	mm	mm											
DN25 (NPS 1)	4.8	20	Unbalanced	R31233	N06022	CW2M	Micro-Flow Flat	1° 8'	GE04253X072	(1)			
								2° 15'	GE04255X072	GE04252X042			
								4° 39'	GE04256X072				
								9° 30'	GE13780X032				
	9.5	20	Unbalanced (Standard)	N06022	N06022	CW2M	Equal Percentage	GE03891X052	GE00051X052				
								Linear		GE03893X052			
	14	20	Unbalanced	N06022	N06022	CW2M	Equal Percentage	GE03890X052	GE00049X052				
								Linear		GE03892X052			
	22	20	Unbalanced	N06022	N06022	CW2M	Equal Percentage	GE00081X052	GE00047X052				
								Linear		GE00082X052			
				N06022	N06022	CW2M/ PTFE Seat	Equal Percentage	GE00081X052	GE05240X042				
								Linear		GE00082X052			
DN40 (NPS 1-1/2)	14	20	Unbalanced	N06022	N06022	CW2M	Equal Percentage	GE03890X052	GE00057X052				
								Linear		GE03892X052			
	22	20	Unbalanced	N06022	N06022	CW2M	Equal Percentage	GE00081X052	GE00055X052				
								Linear		GE00082X052			
	N06022	N06022	CW2M/ PTFE Seat	Equal Percentage	GE00081X052	GE05240X082							
					Linear		GE00082X052						
36	20	Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE00083X072	GE12607X032					
							Linear		GE00084X072				
CW2M	N06022	CW2M/ CoCr-A Bore PTFE Seat	Equal Percentage	GE00083X072	GE12745X102								
				Linear		GE00084X072							
DN50 (NPS 2)	22	20	Unbalanced	N06022	N06022	CW2M	Equal Percentage	GE00081X052	GE00063X052				
								Linear		GE00082X052			
								N06022	N06022	CW2M/ PTFE Seat	Equal Percentage	GE00081X052	GE05240X122
												Linear	
	36	20	Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE00083X072	GE12609X032				
								Linear		GE00084X072			
	CW2M	N06022	CW2M/ PTFE Seat	Equal Percentage	GE00083X072	GE12745X112							
					Linear		GE00084X072						
	46	20	Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE00085X072	GE12608X032				
								Linear		GE00086X072			
								CW2M	N06022	CW2M/ PTFE Seat	Equal Percentage	GE00085X072	GE12745X122
												Linear	

1. The seat ring is included in the Valve Plug / Stem Part Number.

Key 3 Valve Plug/Stem and Key 2 Seat Ring (Bellows Bonnet, CW2M Valve Body Material)

VALVE SIZE	PORT SIZE	TRAVEL	PLUG STYLE	VALVE PLUG MATERIAL	STEM MATERIAL	SEAT RING MATERIAL	TRIM STYLE	VALVE PLUG/STEM PART NUMBER	SEAT RING PART NUMBER	
	mm	mm								
DN80 (NPS 3)	36	20	Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE00097X072	GE12612X032	
							Linear	GE00098X072		
				CW2M	N06022	CW2M/ PTFE Seat	Equal Percentage	GE00097X072		GE12745X132
							Linear	GE00098X072		
	46	20	Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE00095X072	GE12611X032	
							Linear	GE00096X072		
				CW2M	N06022	CW2M/ PTFE Seat	Equal Percentage	GE00095X072		GE12745X142
							Linear	GE00096X072		
	70	20	Balanced	N06022	N06022	CW2M	Equal Percentage	GE00087X062	GE12610X032	
							Linear	GE00088X062		
	DN100 (NPS 4)	46	20	Unbalanced	CW2M	N06022	CW2M	Equal Percentage	GE01114X052	GE12615X032
								Linear	GE01115X052	
CW2M					N06022	CW2M/ PTFE Seat	Equal Percentage	GE01114X052	GE12745X162	
							Linear	GE01115X052		
90		20	Balanced (Standard)	N06022	N06022	CW2M	Equal Percentage	GE00099X062	GE12613X032	
							Linear	GE00100X062		
							Balanced (Reduced Capacity)	N06022		N06022
			Linear	GE00090X062						

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