

Fisher® GX 3-Way Control Valve and Actuator System

The Fisher GX 3-Way is a compact, state-of-the-art control valve and actuator system, designed to accurately control water, oils, steam, and other industrial fluids. The robust GX 3-way valve package is perfectly suited to address the space limitations of the OEM industry.

The GX 3-Way is rugged, reliable, and easy to select. The internal valve trim is designed to ensure long service life and avoiding unnecessary maintenance. The same construction may be used for both converging and diverging applications.

The GX 3-Way 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.

The GX 3-Way trim characteristics are designed for accurate temperature control in heat exchanger applications.

- **Side-Port Common (SPC)**--The side flange is the common pipe connection for general converging (flow-mixing) and diverging (flow-splitting) service (see figure 5). Utilizes an unbalanced plug design.

- **Bottom-Port Common (BPC)**--A balanced design used for high ΔP applications. The bottom flange is the common pipe connection for both converging and diverging service (see figure 9).

- **High-Temperature Side-Port Common (SPC)**-- The side flange is the common pipe connection for general converging (flow-mixing) and diverging (flow-splitting) service (see figure 3). Utilizes an unbalanced plug design, a stem extension, a yoke extension, and includes live-loaded ULF graphite packing and a hard-faced seat ring.



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GX 3-WAY



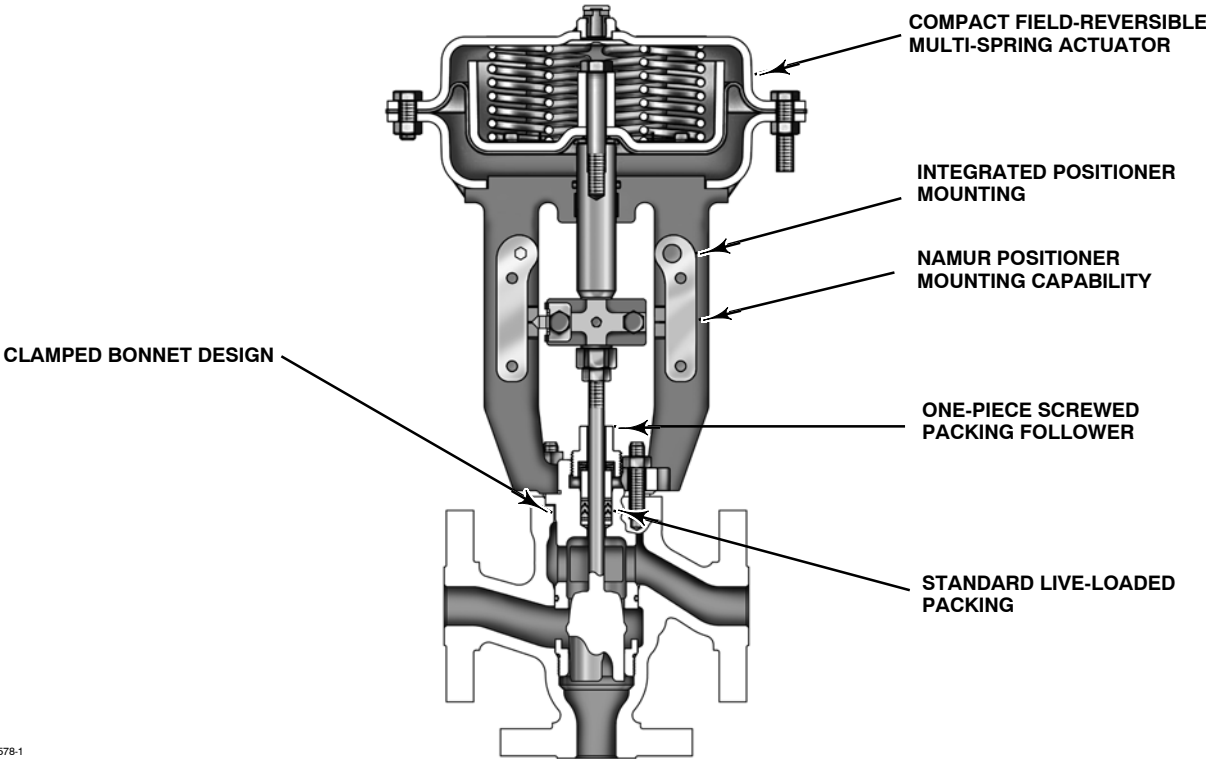
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GX 3-WAY HIGH-TEMPERATURE

Figure 1. Fisher GX 3-Way Control Valve, Actuator, and FIELDVUE DVC2000 Digital Valve Controller

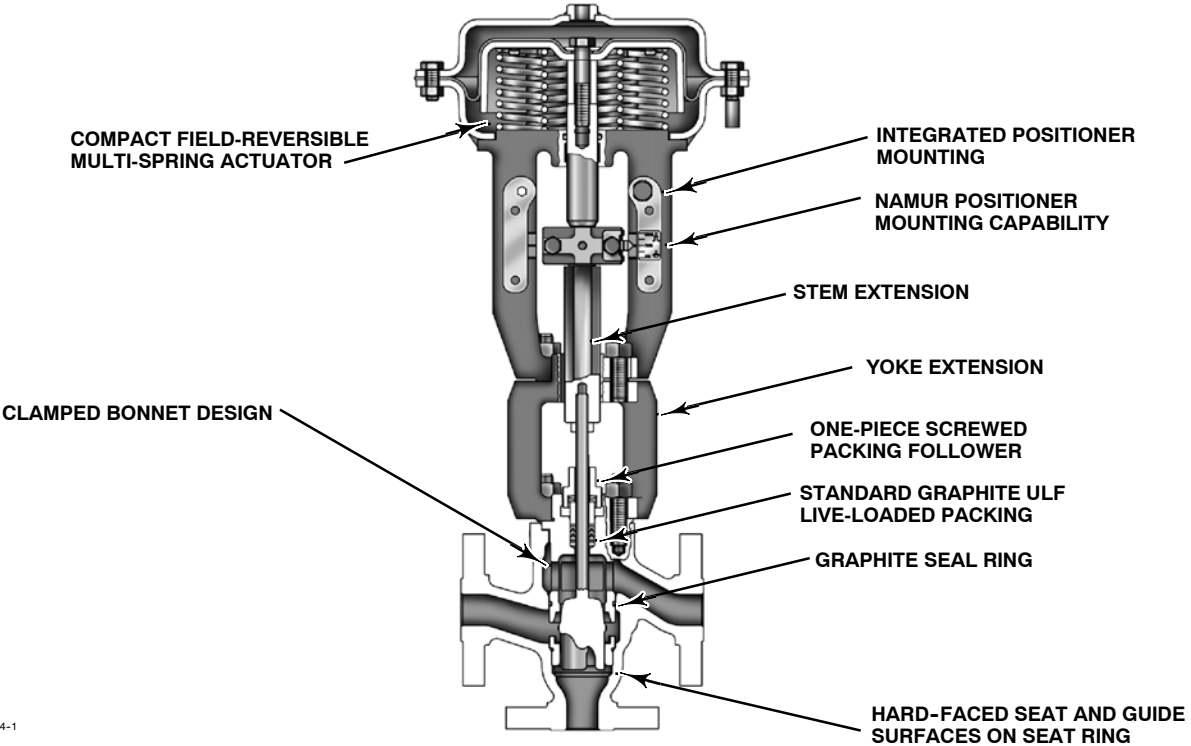


GX 3-Way Valve and Actuator



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Figure 2. Fisher GX 3-Way Control Valve Assembly with Port-Guided Contoured Plug (Side Port Common)



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Figure 3. Fisher GX 3-Way High-Temperature Control Valve Assembly with Port-Guided Contoured Plug (Side Port Common)

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Features

- **Easy to size and select**
- **No actuator sizing required--selection is automatic**
- **Engineered for easy maintenance**
- **Maximum part commonality across sizes**
- **Replaceable trim**
- **Low lifetime costs**
- **Robust, low-profile design**
- **Available with integrated, easy-to-calibrate DVC2000 digital valve controller**
- **Valve body sizes DN 25 to DN 100 (NPS 1 through 4)**
- **Pressure Classes PN 10-40, CL150 and 300**
- **High capacity design**
- **Valve body flow passage optimized for flow stability**
- **Shutoff capabilities: Class IV metal to metal**
- **ISO 5210 F7 mounting available for use with electric actuators**

GX 3-Way Valve and Actuator

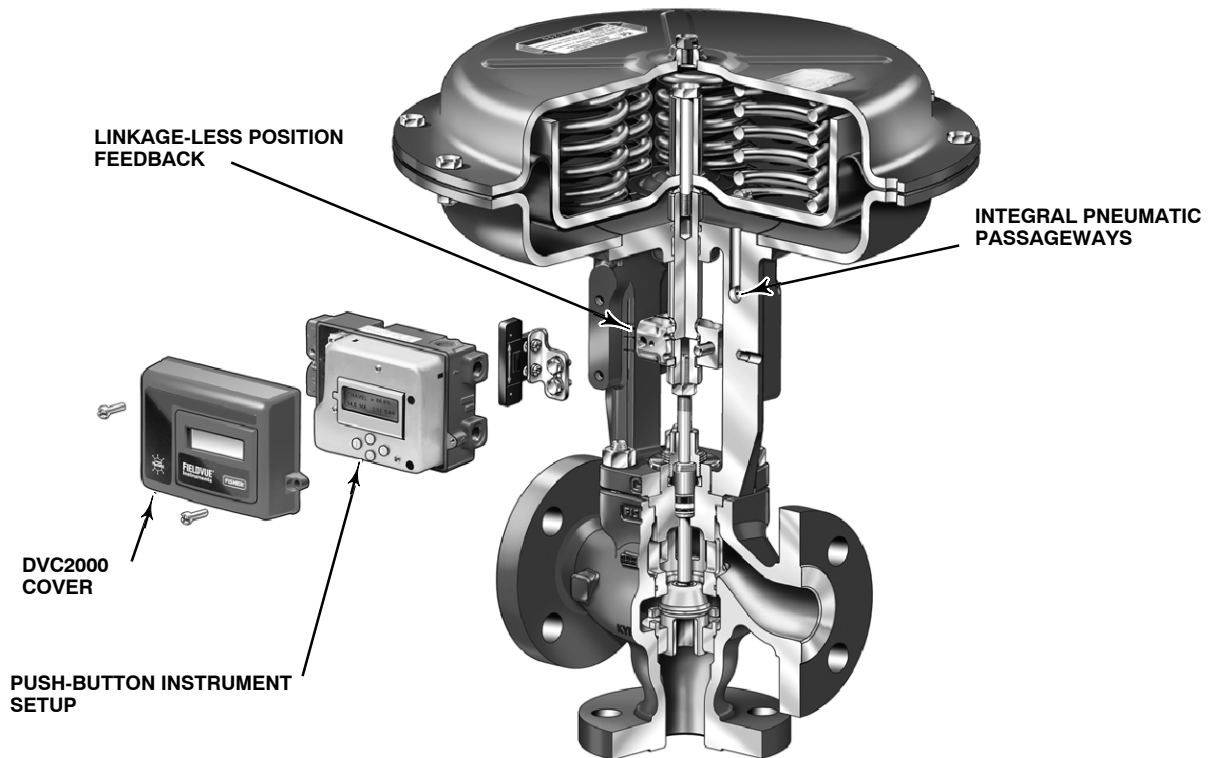


Figure 4. Fisher GX 3-Way and FIELDVUE DVC2000 Digital Valve Controller

Optimized valve and actuator system. Product simplicity and ease of selection form the foundation of the GX 3-Way. Mounted with a digital or analog positioner, the GX 3-Way provides high performance control across a wide range of process applications.

Compact actuator design. The multi-spring GX 3-Way actuator is a compact robust design. The GX 3-Way design has been optimized to eliminate complicated 3-way actuator sizing procedures - once the valve body and port size are selected, the actuator size is fixed.

Reliable Actuator Performance. Special actuator diaphragm material helps reduce common problems such as air oxidation, thermal aging, low temperature embrittlement, and loss of retention. The double-sided diaphragm within the actuator helps eliminate mechanical wear-induced failure.

Modular design. The design architecture has been optimized to maximize the use of common parts

across sizes. The actuator stem and stem connector are used across all GX 3-Way sizes.

Low lifetime costs. Reduced product complexity, low parts count, and part commonality all contribute to reduced inventory and maintenance costs.

Stable flow control. The flow cavity of the GX 3-Way valve body has been engineered to provide stable flow and reduce process variability. This linear stability for both converging and diverging flow is perfectly suited for temperature and pH control applications.

Live-loaded packing. The GX 3-Way comes with live-loaded PTFE V-ring packing as standard. The live-loaded design helps to seal your process to conserve valuable process fluid, while reducing emissions to the environment. The long-life and high reliability of the live-loaded system also reduces maintenance costs and process downtime. ULF (ultra low friction) graphite packing is also available for all sizes and is standard on HT (high temperature) construction.

Easy maintenance. The simple screwed seat-ring and one-piece plug and stem design provide easy maintenance. Design simplicity and parts commonality contribute to reduced spares inventory. The integrated DVC2000 digital valve controller allows easy instrument removal, without a requirement for tubing disconnection or replacement (fail-down construction).

Digital valve controller. The GX 3-Way is available with the DVC2000 digital valve controller. The DVC2000 is easy to use, compact, and designed for easy mounting. It converts a 4-20 mA input signal into a pneumatic output signal, which feeds the control valve actuator. Instrument setup is performed with a push button and liquid crystal display (LCD) interface. This interface is protected from the environment within a sealed enclosure. The interface supports multiple languages, including German, French, Italian, Spanish, Chinese, Japanese, Portuguese, Russian, Polish, Czech, Arabic, and English.

Intrinsic safety and non-incendive construction is available to CSA, FM, ATEX, and IEC standards. An optional module provides integrated limit switches and a position transmitter.

Integrated mounting. The DVC2000 digital valve controller integrally mounts to the GX 3-Way actuator, eliminating the need for mounting brackets. The DVC2000 transmits a pneumatic signal to the actuator casing via an air passage in the yoke leg, causing the valve to stroke (see figure 13). This eliminates the need for positioner-to-actuator tubing in the fail-down configuration.

The DVC2000 mounting interface is identical on both sides of the actuator yoke for valve body sizes DN 25 through DN 100 (NPS 1 through 4). This symmetrical design allows the DVC2000 to be easily moved from one side of the valve to the other without the need to rotate the actuator.

Linkage-less feedback. The DVC2000 digital valve controller offers as standard a non-contacting valve position feedback system. This is a true linkage-less design, which uses no levers and no touching parts between the valve stem and the positioner.

Additional Accessory selection. The GX 3-Way is available with a variety of digital or analog positioners besides the DVC2000, as well as solenoid and limit switches. The actuator is also compatible with the IEC 60534-6-1 (NAMUR) positioner mounting standard.

GX 3-Way Valve and Actuator

Flow Directions -- Side Port Common Constructions

See figures 5, 6, 7, and 8.

DIVERGING

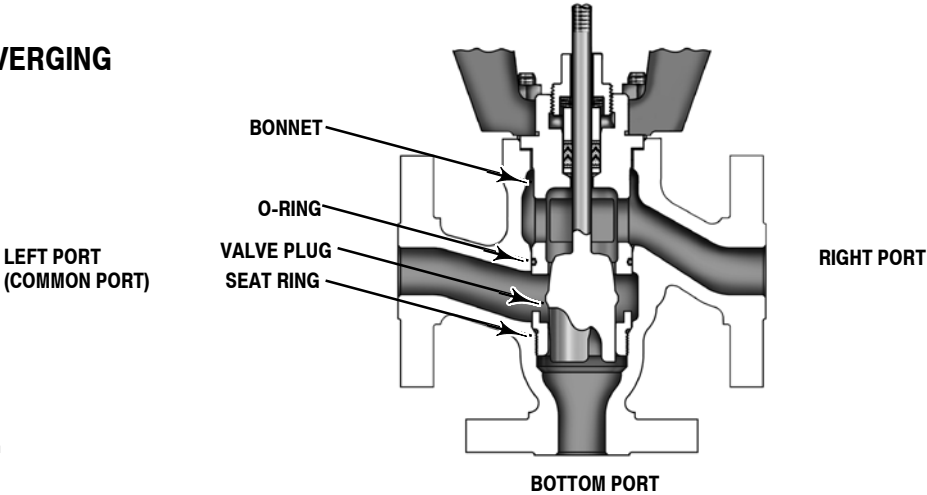


Figure 5. Side Port Common Construction Details for Diverging Constructions

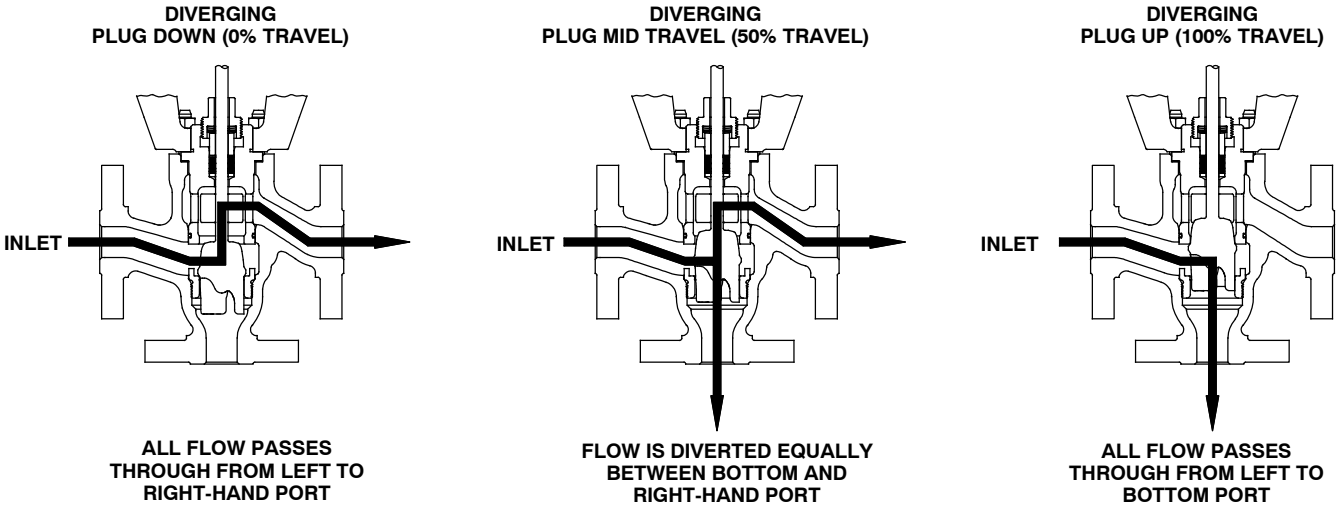
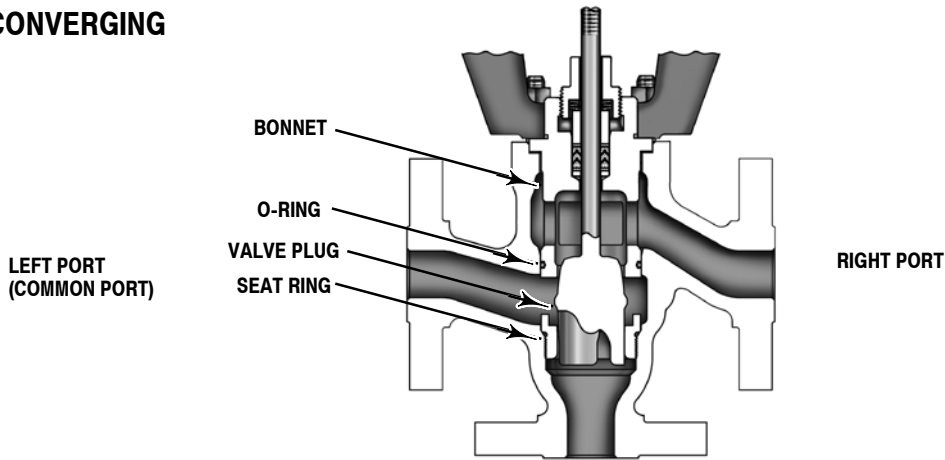


Figure 6. Fisher GX 3-Way Flow Directions for Side Port Common Diverging Constructions

CONVERGING



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Figure 7. Side Port Common Construction Details for Converging Constructions

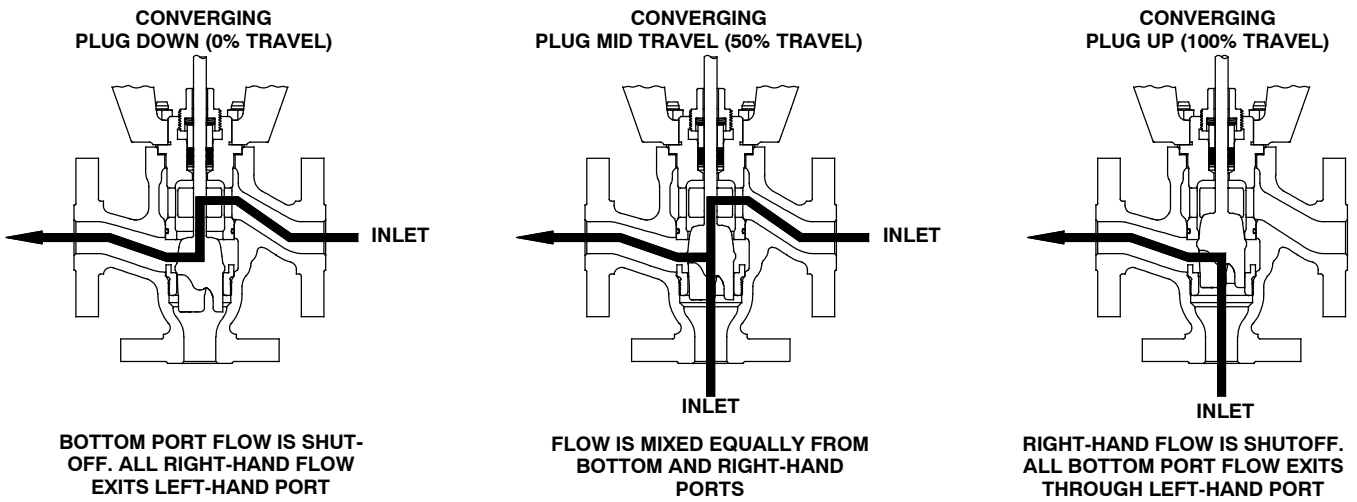


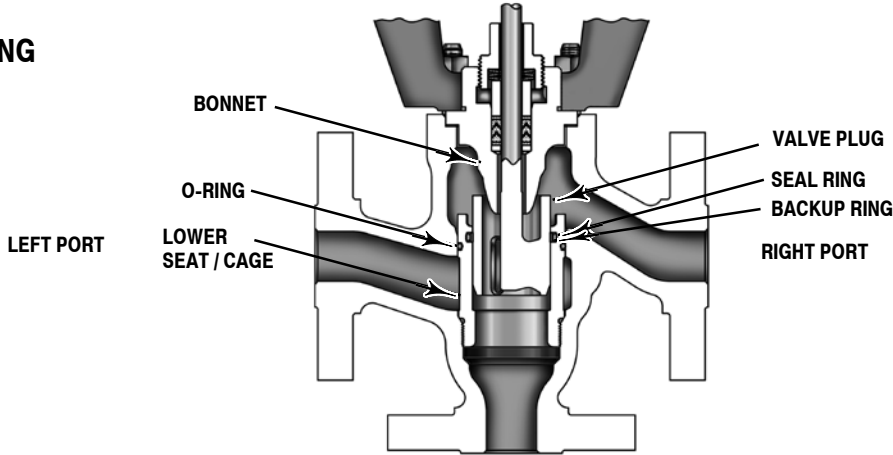
Figure 8. Fisher GX 3-Way Flow Directions for Side Port Common Converging Constructions

GX 3-Way Valve and Actuator

Flow Directions -- Bottom Port Common Constructions

See figures 9, 10, 11, and 12.

DIVERGING



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Figure 9. Bottom Port Common Construction Details for Diverging Constructions

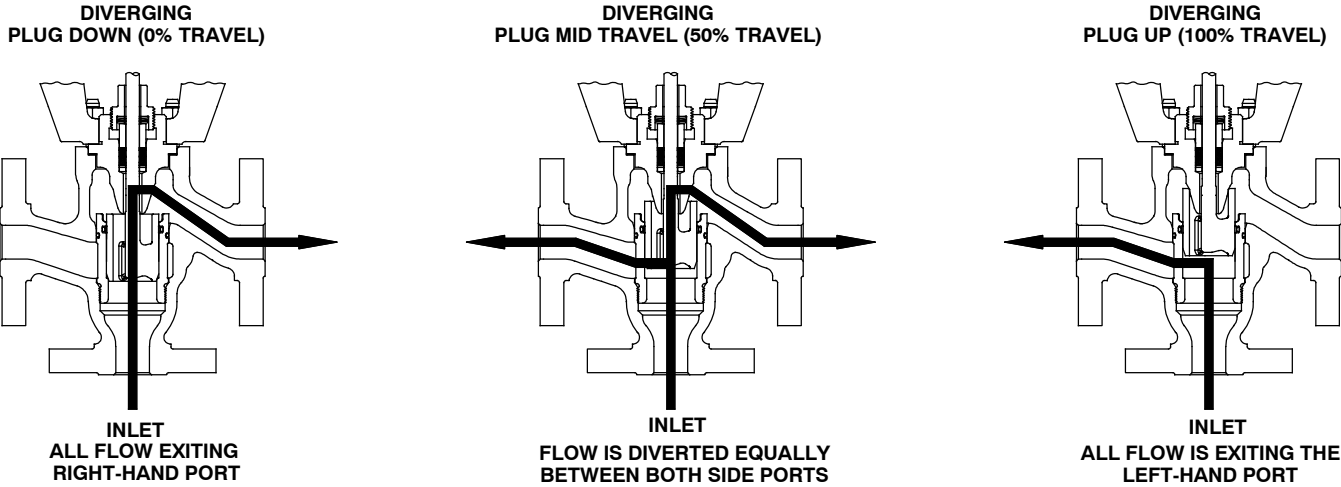
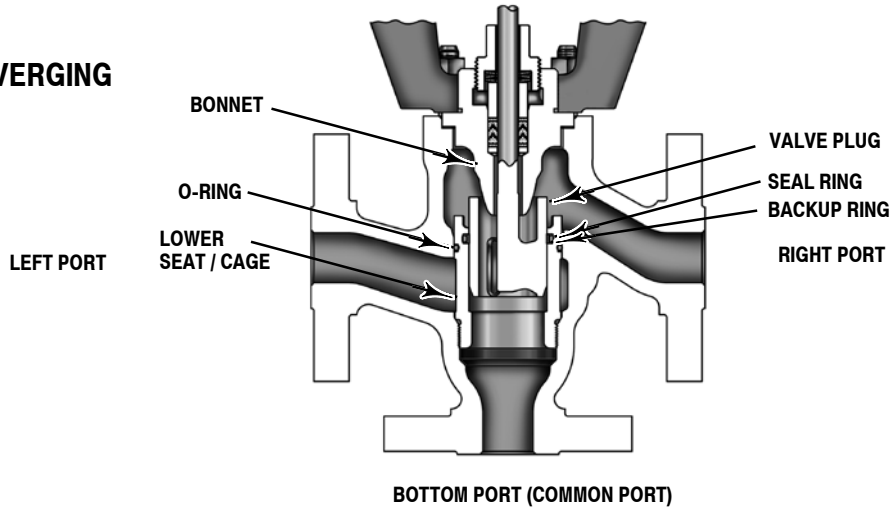


Figure 10. Fisher GX 3-Way Flow Directions for Bottom Port Common Diverging Constructions

CONVERGING



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Figure 11. Bottom Port Common Construction Details for Converging Constructions

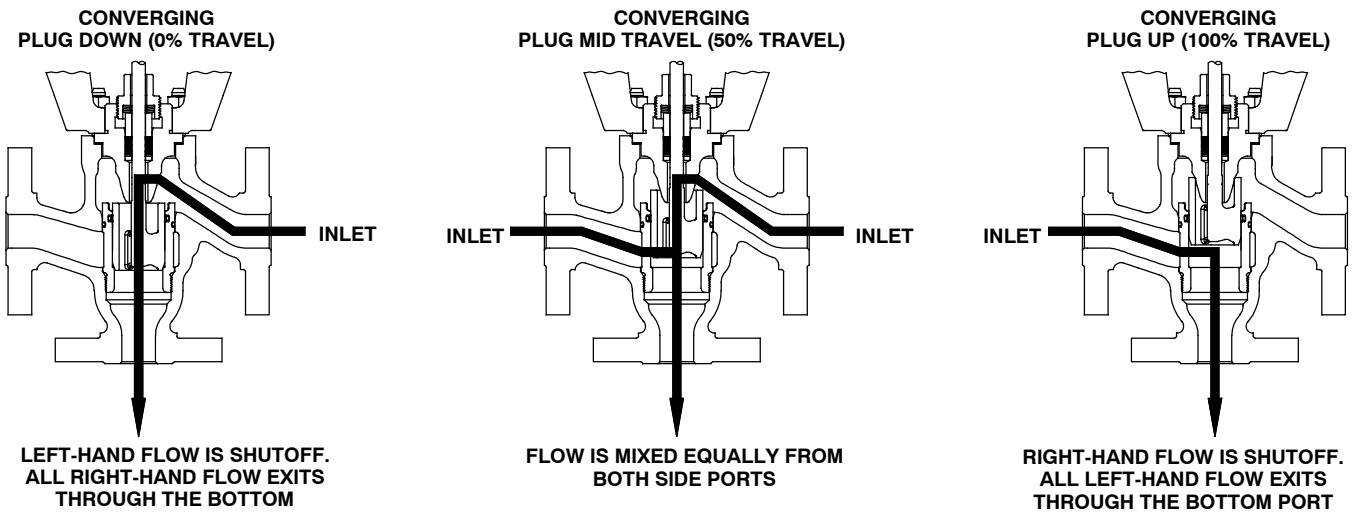
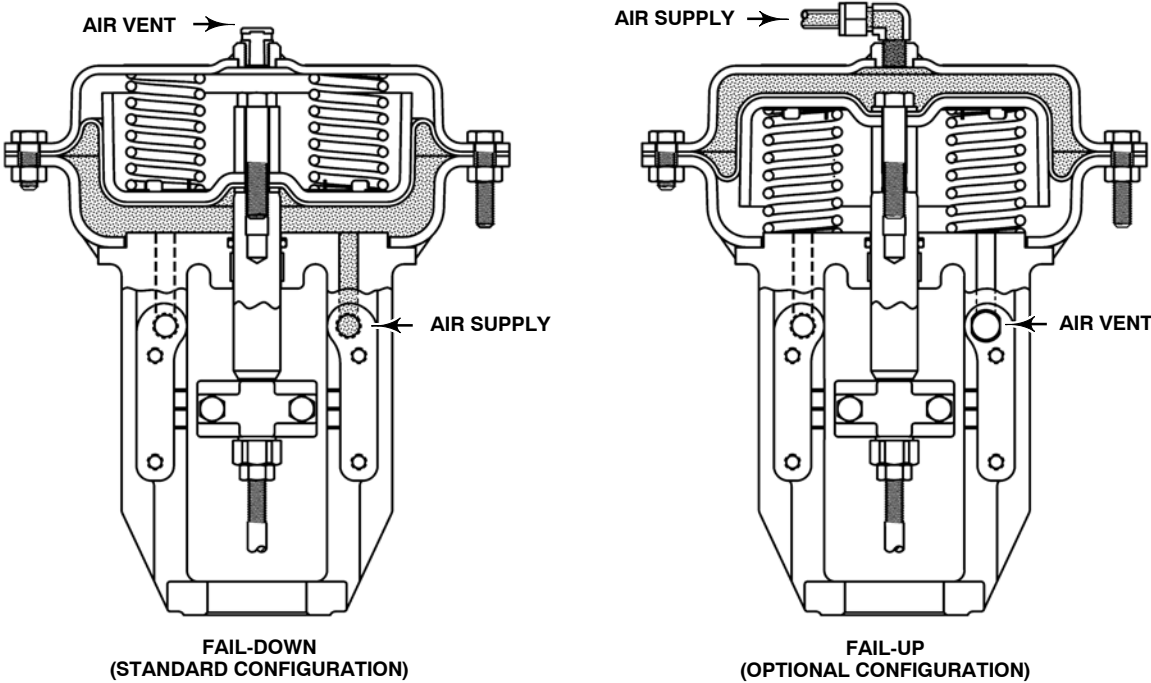


Figure 12. Fisher GX 3-Way Flow Directions for Bottom Port Common Converging Constructions

GX 3-Way Valve and Actuator

Principle of Operation - GX 3-Way Actuator



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Figure 13. Fisher GX 3-Way Principle of Operation -- Actuator Fail Position

Integrated Air Supply. When mounted with the DVC2000 digital valve controller, the GX 3-Way uses an integrated actuator air supply system. In the fail-down configuration, air is supplied to the lower

actuator casing via a port on the actuator yoke face -- no tubing is required. In the fail-up configuration, air is supplied to the upper casing via tubing.

GX 3-Way Control Valve Specifications and Materials of Construction

See tables 1 and 2.

Table 1. Fisher GX 3-Way Valve Specifications⁽¹⁾

Specifications	EN	ASME	
Valve Body Size	DN 25, 40, 50, 80, 100	NPS 1, 1-1/2, 2, 3, 4	
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 Screwed (NPS 1, 1-1/2, and 2)	
Valve Body Materials	1.0619 steel	ASME SA216 WCC steel	
	1.4409 stainless steel	ASME SA351 CF3M stainless steel	
Bonnet Materials	1.4409 stainless steel / CoCr-A	SA351 CF3M SST / CoCr-A	
Face-to-Face Dimensions	See table 10		
Shutoff per IEC 60534-4 and ANSI/FCI 70-2	Metal seat - Class IV (standard) SPC HT construction: Metal seat - Class IV for bottom seat, Class II for upper seat		
Flow Direction	Converging and Diverging		
Trim Style	Type	Plug Sizes	Description
	Side Port Common	All sizes	Unbalanced Port-guided
	Bottom Port Common	All sizes	Balanced Cage-guided
1. Stainless steel valve body is recommended for steam service when the high temperature (HT) construction is selected.			

Table 2. Materials (Other Valve Components)

Component	Material	
Packing Follower	S21800 SST screwed follower	
Body/Bonnet Bolting and Nuts	SA193-B7 studs / SA194-2H nuts with NCF2 coating for carbon steel and stainless steel constructions	
Packing	Live-loaded PTFE V-ring (standard) with N07718 Belleville springs	
	Live-loaded Graphite ULF (optional) with N07718 Belleville springs, (standard) on HT construction.	
Bonnet Gasket	Graphite laminate	
Bottom Port Common Trim (all sizes)	Carbon-Filled PTFE Seal Ring	
	Back-up Rings	NBR (Standard) -46 to 82°C (-50 to 180°F)
		Ethylene Propylene [EPDM] (Optional): -46 to 232°C (-50 to 450°F) in steam and hot water; -46 to 121°C (-50 to 250°F) in air (EPDM is not recommended for use in hydrocarbons)
FKM Fluorocarbon (Optional): -18 to 204°C (0 to 400°F) (Applicable in a wide variety of solvents, chemicals, and hydrocarbons. Avoid use with steam, ammonia, or hot water over 82°C [180°F])		
O-ring (not used with GX 3-Way HT)	NBR (Standard) -46 to 82°C (-50 to 180°F)	
	Ethylene Propylene [EPDM] (Optional): -46 to 232°C (-50 to 450°F) in steam and hot water; -46 to 121°C (-50 to 250°F) in air (EPDM is not recommended for use in hydrocarbons)	
	FKM Fluorocarbon (Optional): -18 to 204°C (0 to 400°F) (Applicable in a wide variety of solvents, chemicals, and hydrocarbons. Avoid use with steam, ammonia, or hot water over 82°C [180°F])	
Seal Ring (GX 3-Way HT)	Graphite (FMS 17F27) -46 to 371°C (-50 to 700°F)	
Stem Extension (GX 3-Way HT)	Stainless steel	

GX 3-Way Valve and Actuator

Table 3. Trim Materials (all sizes)

Valve Body Construction	Trim Type	Stem	Plug	Upper Seat	Lower Seat/Cage ⁽¹⁾
Carbon steel (1.0619 / WCC)	Bottom Port Common	S31603 strain hardened	CF3M Chrome-plated	CF3M/CoCr-A	CF3M
	Side Port Common	S31603 strain hardened	CF3M	CF3M/CoCr-A	CF3M
Stainless steel (1.4409 / CF3M)	Bottom Port Common	S31603 strain hardened	CF3M Chrome-plated	CF3M/CoCr-A	CF3M
	Side Port Common	S31603 strain hardened	CF3M	CF3M/CoCr-A	CF3M

1. HT construction includes CF3M/CoCr-A lower seating. Seat and guide surfaces are hard-faced.

Table 4. Allowable Temperature Ranges for Valve Body, Bonnet and Trim⁽¹⁾

VALVE BODY / BONNET MATERIAL	BONNET STYLE	PACKING	GASKET	TRIM STYLE	TEMPERATURE			
					°C		°F	
					Min	Max	Min	Max
1.0619/SA216 WCC Steel	Standard	PTFE or Graphite ULF	Graphite laminate	Bottom Port Common, Side Port Common	-29	232	-20	450
1.4409/SA351 CF3M SST	Standard	PTFE or Graphite ULF	Graphite laminate	Bottom Port Common, Side Port Common	-46	232	-50	450
1.0619/SA216 WCC Steel	HT Construction	Graphite ULF	Graphite laminate	Side Port Common	-29	371	-20	700
1.4409/SA351 CF3M SST	HT Construction	Graphite ULF	Graphite laminate	Side Port Common	-46	371	-50	700

1. Bonnet O-ring and back-up ring materials used on BPC trim may be limited by temperature and application.

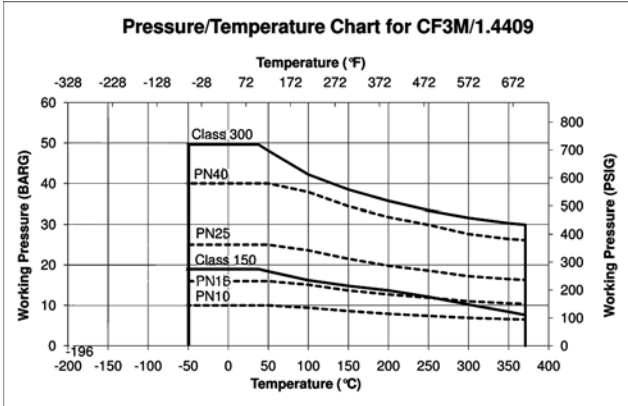
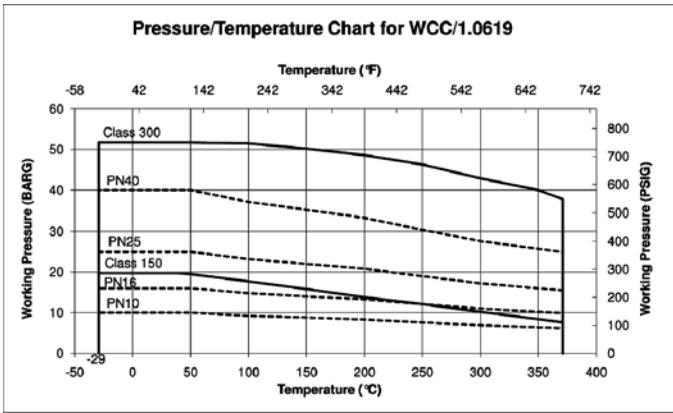


Figure 14. Material Pressure/Temperature Curves

GX 3-Way Valve and Actuator

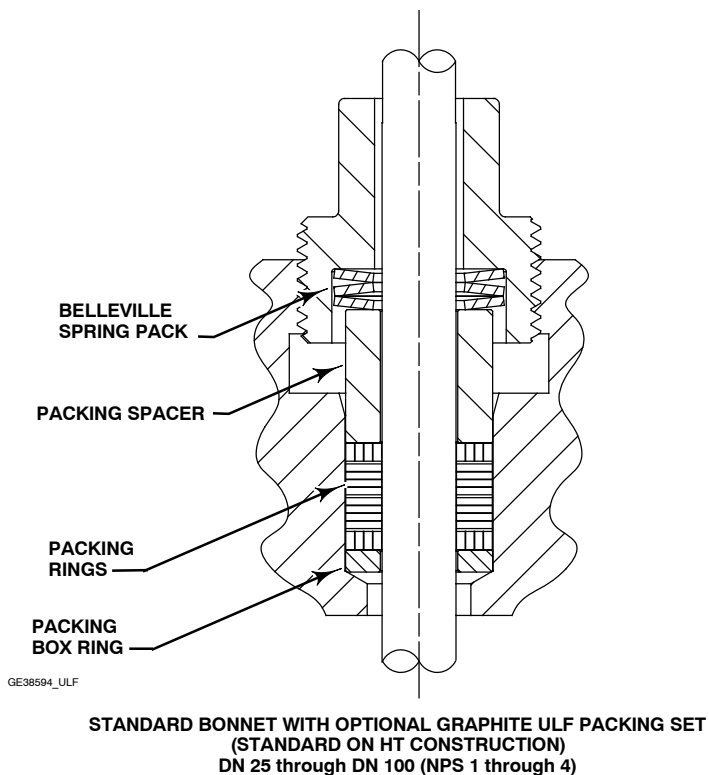
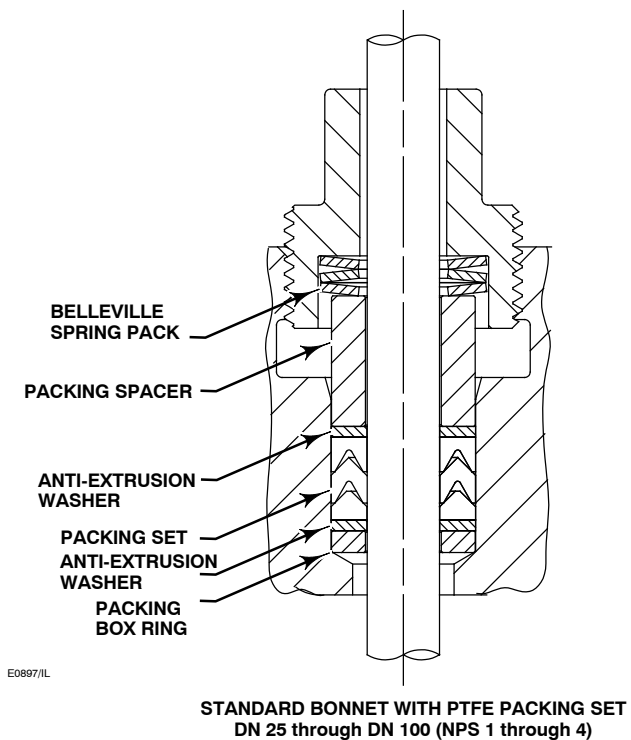


Figure 15. Fisher GX 3-Way Packing

GX 3-Way Valve and Actuator

The GX 3-Way Diaphragm Actuator

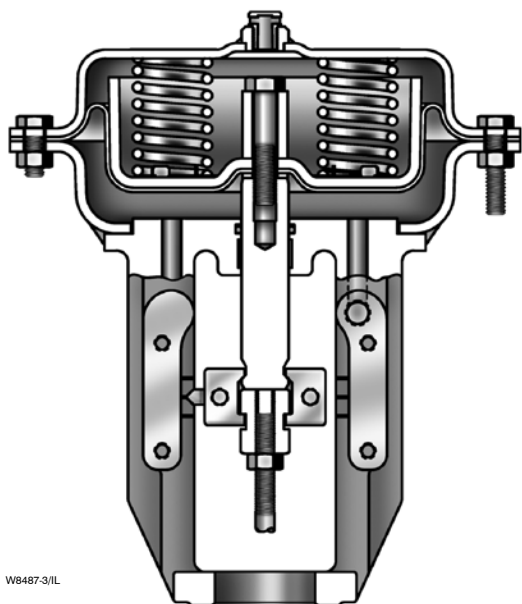


Figure 16. Fisher GX 3-Way Actuator

The GX 3-Way uses a multi-spring, pneumatic diaphragm actuator (see figure 16). It is capable of air supply pressures up to 5.0 barg (72 psig), allowing valve shutoff at high pressure drops (see table 8).

The GX 3-Way product selection system automatically matches the actuator to the valve, eliminating the need for complex actuator sizing procedures.

The multiple spring design provides the preload, eliminating the need for bench set adjustment. The actuator is available in fail-down and fail-up configurations.

The GX 3-Way actuator can be used for throttling or on-off service.

The GX 3-Way is available with the integrated DVC2000 digital valve controller. Other digital and analog positioners are available, as well as optional solenoids and limit switches.

Table 5. Actuator Specifications

Description	Pneumatic spring-return diaphragm actuator
Operating Principle	Fail-down (standard configuration) Fail-up (optional configuration)
Operating Pressure Ranges	See tables 8 and 9
Ambient Temperature	-46 to 82°C (-50 to 180°F)
Pressure Connection (Fail-Up Construction)	G 1/4 internal casing connection
Finish	Powder coat polyester

Table 6. Materials of Construction

Part	Material
Upper and Lower Casings	AISI 1010 stamped carbon steel
Springs	Steel
Diaphragm	NBR and nylon
Diaphragm Plate	AISI 1010 stamped carbon steel
Yoke and Yoke Extension on HT Construction	Carbon steel
Casing Fasteners	A2-70 stainless steel bolts and nuts
Actuator Rod	Stainless steel
Stem Connector	CF3M
Stem Connector Fasteners	SA193-B7 bolts with NCF2 coating
Stem Bushing	High-density polyethylene (HDPE)
Stem Seal	NBR

Actuator Selection

With the GX 3-Way, actuator selection has never been easier. Once the valve size has been determined, the actuator is automatically selected.

The following tables provide the maximum allowable pressure drops for the GX 3-Way. See table 8 for Side Port Common construction and table 9 for Bottom Port Common construction. For optimal performance, the GX 3-Way should be operated with a FIELDVUE digital valve controller.

GX ISO 5210 Electric Actuator Mounting

Electric actuator mounting is available for any manufacturing models that comply with ISO 5210, Flange type F7. The mounting offering includes a GX yoke, actuator rod adaptor, spacer, and bolting.

Thrust limitations apply when sizing electric actuators (see table 7).

Mounting offering can be engineered if not already available for a selected actuator. For additional information, contact your Emerson Process Management sales office.

Table 7. Fisher GX 3-Way Maximum Allowable Thrust for use with ISO 5210 Electric Actuators
(THRUST LIMITATIONS APPLY IN BOTH TRAVEL DIRECTIONS)

VALVE SIZE	STEM DIAMETER	TRAVEL	STEM MATERIAL	MAXIMUM THRUST	
	mm	mm		N	lbf
DN25-DN40 (NPS 1 to 1-1/2)	10	19	S31603	6900	1550
DN50 (NPS 2)	14	19	S31603	14000	3150
DN80-DN100 (NPS 3 to 4)	14	38	S31603	14000	3150

GX 3-Way Valve and Actuator

Table 8. Maximum Allowable Pressure Drop (Side Port Common)

VALVE SIZE	ACTUATOR SIZE	FLOW DIRECTION	PACKING	FAIL-DOWN					FAIL-UP				
				Operating Pressure				MAX DP @ Maximum Supply Pressure	Operating Pressure				MAX DP @ Maximum Supply Pressure
				3 bar	3.44 bar	4 bar	5 bar		3 bar	3.44 bar	4 bar	5 bar	
DN25	225	Converging	PTFE	18.1	21.7	21.7	21.7	21.7 bar @ 5.0 bar	19.7	20.2	20.2	20.2	20.2 bar @ 5.0 bar
			ULF	12.2	16.2	16.2	16.2	16.2 bar @ 5.0 bar	14.2	14.3	14.3	14.3	14.3 bar @ 5.0 bar
		Diverging	PTFE	14.0	14.0	14.0	14.0	14.0 bar @ 5.0 bar	14.0	14.0	14.0	14.0	14.0 bar @ 5.0 bar
			ULF	14.0	14.0	14.0	14.0	14.0 bar @ 5.0 bar	14.0	14.0	14.0	14.0	14.0 bar @ 5.0 bar
DN40	225	Converging	PTFE	18.1	21.7	21.7	21.7	21.7 bar @ 5.0 bar	19.7	20.2	20.2	20.2	20.2 bar @ 5.0 bar
			ULF	12.2	16.2	16.2	16.2	16.2 bar @ 5.0 bar	14.2	14.3	14.3	14.3	14.3 bar @ 5.0 bar
		Diverging	PTFE	14.0	14.0	14.0	14.0	14.0 bar @ 5.0 bar	14.0	14.0	14.0	14.0	14.0 bar @ 5.0 bar
			ULF	14.0	14.0	14.0	14.0	14.0 bar @ 5.0 bar	14.0	14.0	14.0	14.0	14.0 bar @ 5.0 bar
DN50	750	Converging	PTFE	29.0	48.4	48.4	---	48.4 bar @ 4.0 bar	35.4	44.9	44.9	---	44.9 bar @ 4.0 bar
			ULF	25.8	45.5	45.5	---	45.5 bar @ 4.0 bar	32.6	41.7	41.7	---	41.7 bar @ 4.0 bar
		Diverging	PTFE	30.0	30.0	30.0	---	30.0 bar @ 4.0 bar	30.0	30.0	30.0	---	30.0 bar @ 4.0 bar
			ULF	30.0	30.0	30.0	---	30.0 bar @ 4.0 bar	30.0	30.0	30.0	---	30.0 bar @ 4.0 bar
DN80	750	Converging	PTFE	10.5	19.0	24.2	---	24.2 bar @ 4.0 bar	12.0	20.2	24.2	---	24.2 bar @ 4.0 bar
			ULF	9.2	17.7	23.0	---	23.0 bar @ 4.0 bar	10.7	19.0	22.9	---	22.9 bar @ 4.0 bar
		Diverging	PTFE	16.0	16.0	16.0	---	16.0 bar @ 4.0 bar	16.0	16.0	16.0	---	16.0 bar @ 4.0 bar
			ULF	16.0	16.0	16.0	---	16.0 bar @ 4.0 bar	16.0	16.0	16.0	---	16.0 bar @ 4.0 bar
DN100	750	Converging	PTFE	6.3	11.3	14.7	---	14.7 bar @ 4.0 bar	7.2	12.2	14.4	---	14.4 bar @ 4.0 bar
			ULF	5.5	10.5	13.9	---	13.9 bar @ 4.0 bar	6.5	11.5	13.6	---	13.6 bar @ 4.0 bar
		Diverging	PTFE	10.0	10.0	10.0	---	10.0 bar @ 4.0 bar	10.0	10.0	10.0	---	10.0 bar @ 4.0 bar
			ULF	10.0	10.0	10.0	---	10.0 bar @ 4.0 bar	10.0	10.0	10.0	---	10.0 bar @ 4.0 bar

Table 9. Maximum Allowable Pressure Drop (Bottom Port Common)

VALVE SIZE	ACTUATOR SIZE	FLOW DIRECTION	PACKING	FAIL-DOWN					FAIL-UP				
				Operating Pressure				MAX DP @ Maximum Supply Pressure	Operating Pressure				MAX DP @ Maximum Supply Pressure
				3 bar	3.44 bar	4 bar	5 bar		3 bar	3.44 bar	4 bar	5 bar	
DN25	225	Converging	PTFE	32.4	50.1	51.7	51.7	51.7 bar @ 5.0 bar	36.2	36.2	36.2	36.2	36.2 bar @ 5.0 bar
			ULF	21.7	39.4	51.7	51.7	51.7 bar @ 5.0 bar	25.6	25.6	25.6	25.6	25.6 bar @ 5.0 bar
		Diverging	PTFE	28.0	28.0	28.0	28.0	28.0 bar @ 5.0 bar	28.0	28.0	28.0	28.0	28.0 bar @ 5.0 bar
			ULF	28.0	28.0	28.0	28.0	28.0 bar @ 5.0 bar	28.0	28.0	28.0	28.0	28.0 bar @ 5.0 bar
DN40	225	Converging	PTFE	25.0	38.7	51.7	51.7	51.7 bar @ 5.0 bar	27.9	27.9	27.9	27.9	27.9 bar @ 5.0 bar
			ULF	16.8	30.5	47.9	51.7	51.7 bar @ 5.0 bar	19.7	19.7	19.7	19.7	19.7 bar @ 5.0 bar
		Diverging	PTFE	22.0	22.0	22.0	22.0	22.0 bar @ 5.0 bar	22.0	22.0	22.0	22.0	22.0 bar @ 5.0 bar
			ULF	22.0	22.0	22.0	22.0	22.0 bar @ 5.0 bar	22.0	22.0	22.0	22.0	22.0 bar @ 5.0 bar
DN50	750	Converging	PTFE	35.2	51.7	51.7	---	51.7 bar @ 4.0 bar	51.7	51.7	51.7	---	51.7 bar @ 4.0 bar
			ULF	31.4	51.7	51.7	---	51.7 bar @ 4.0 bar	50.7	50.7	50.7	---	50.7 bar @ 4.0 bar
		Diverging	PTFE	30.0	30.0	30.0	---	30.0 bar @ 4.0 bar	30.0	30.0	30.0	---	30.0 bar @ 4.0 bar
			ULF	30.0	30.0	30.0	---	30.0 bar @ 4.0 bar	30.0	30.0	30.0	---	30.0 bar @ 4.0 bar
DN80	750	Converging	PTFE	19.5	35.2	51.7	---	51.7 bar @ 4.0 bar	45.0	45.0	45.0	---	45.0 bar @ 4.0 bar
			ULF	17.1	32.8	51.7	---	51.7 bar @ 4.0 bar	42.6	42.6	42.6	---	42.6 bar @ 4.0 bar
		Diverging	PTFE	25.0	25.0	25.0	---	25.0 bar @ 4.0 bar	25.0	25.0	25.0	---	25.0 bar @ 4.0 bar
			ULF	25.0	25.0	25.0	---	25.0 bar @ 4.0 bar	25.0	25.0	25.0	---	25.0 bar @ 4.0 bar
DN100	750	Converging	PTFE	19.5	35.2	51.7	---	51.7 bar @ 4.0 bar	45.0	45.0	45.0	---	45.0 bar @ 4.0 bar
			ULF	17.1	32.8	51.7	---	51.7 bar @ 4.0 bar	42.6	42.6	42.6	---	42.6 bar @ 4.0 bar
		Diverging	PTFE	25.0	25.0	25.0	---	25.0 bar @ 4.0 bar	25.0	25.0	25.0	---	25.0 bar @ 4.0 bar
			ULF	25.0	25.0	25.0	---	25.0 bar @ 4.0 bar	25.0	25.0	25.0	---	25.0 bar @ 4.0 bar

Valve-Actuator Dimensions and Weights

See figure 17, table 10, and table 11.

Table 10. Fisher GX 3-Way Dimensions and Weights (Standard and HT Constructions)

VALVE SIZE	TYPE	PORT DIA		ACTUATOR SIZE	TRAVEL	A			B			C
		Upper	Lower			PN10 - PN40	CL150	CL300	PN10 - PN40	CL150	CL300	
		mm	mm			mm	mm	mm	mm	mm	mm	
DN 25/ NPS 1	BPC	29	36	225	19	197	184	197	98.5	92	98.5	73
	SPC	36	36									
DN 40/ NPS 1-1/2	BPC	39	46	225	19	235	222	235	117.5	111	117.5	76
	SPC	36	36									
DN 50/ NPS 2	BPC	61	70	750	19	267	254	267	133.5	127	133.5	95
	SPC	46	46									
DN 80/ NPS 3	BPC	78	90	750	38	318	298	318	159	149	159	119
	SPC	70	70									
DN 100/ NPS 4	BPC	78	90	750	38	368	352	368	184	176	184	119
	SPC	90	90									

Table 11. Fisher GX 3-Way Dimensions and Weights

VALVE SIZE	D (Actuator Height)		E	F (AR)	TOTAL WEIGHT	
	Std Construction	HT Construction			Std Construction	HT Construction
	mm	mm	mm	mm	kg	kg
DN 25/ NPS 1	313	418	270	115	26	30
DN 40/ NPS 1-1/2	313	422	270	115	28	32
DN 50/ NPS 2	342	485	430	120	66	74
DN 80/ NPS 3	395	585	430	145	97	112
DN 100/ NPS 4	395	585	430	145	123	138

1. Clearance required for removing actuator from installed valve body.

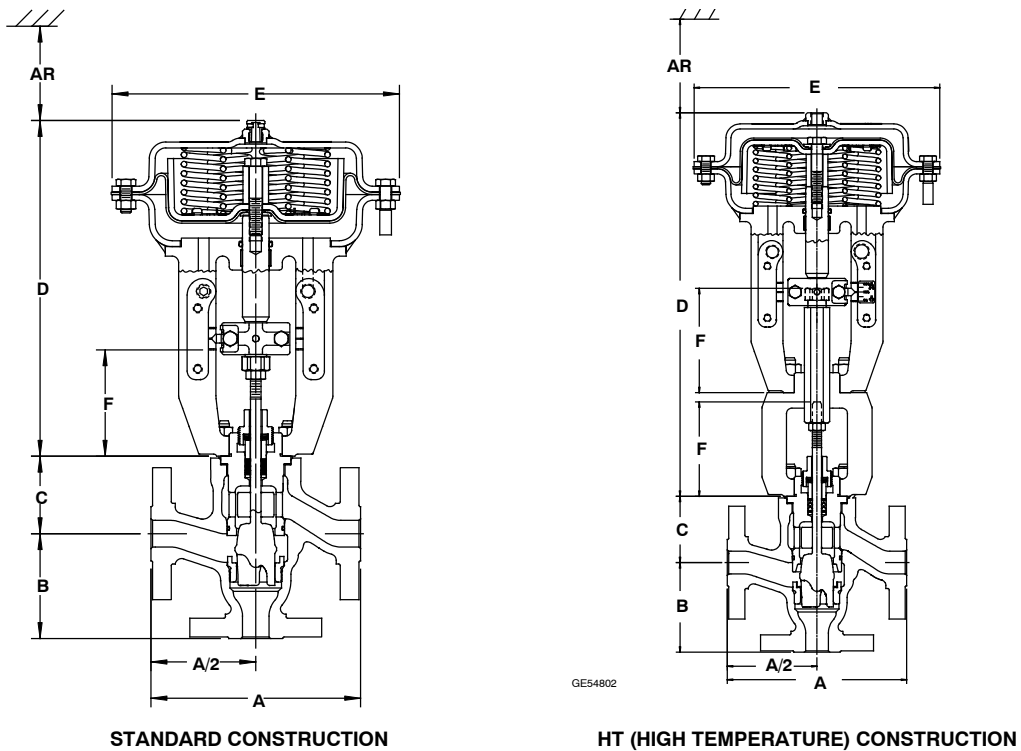
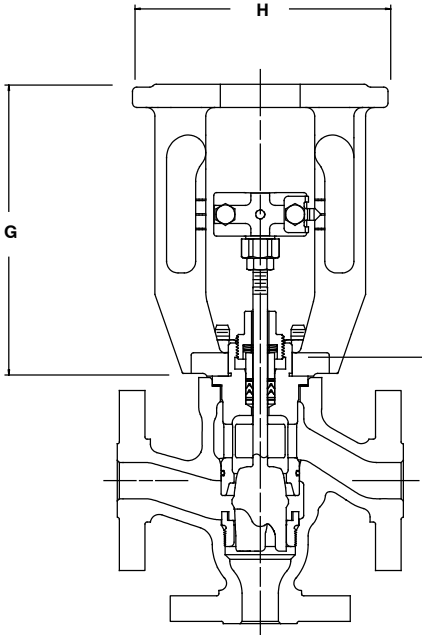


Figure 17. Fisher GX 3-Way Dimensions (also see tables 10 and 11)

GX 3-Way Valve and Actuator

Table 12. Fisher GX 3-Way Electric Actuator Mounting Dimensions and Weights

VALVE SIZE	G	H	TOTAL WEIGHT, GX ELECTRIC ACTUATOR MOUNTING ASSEMBLY	
	ISO 5210 Electric Actuator Yoke Height	Yoke Diameter	Std Construction	HT Construction
	mm	mm	kg	kg
DN 25/ NPS 1	202	176	17	21
DN 40/ NPS 1-1/2	202	176	19	23
DN 50/ NPS 2	202	176	29	37
DN 80/ NPS 3	222	176	57	72
DN 100/ NPS 4	226	176	83	98



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Figure 18. Fisher GX 3-Way Electric Actuator Mounting Dimensions (also see table 12)

Table 13. Positioner Selection Guidelines

Type	Digital I/P ⁽¹⁾	I/P ⁽²⁾	P/P ⁽³⁾	Intrinsic Safety ⁽⁴⁾	Flameproof / Explosion Proof ⁽⁴⁾	Non-Incendive ⁽⁴⁾
DVC2000	X			X		X
DVC6200	X			X	X	X
3661		X		X		X
3660			X			

1. Digital I/P - microprocessor based electro-pneumatic with HART communication.
 2. I/P - electro-pneumatic
 3. P/P - pneumatic
 4. Refer to Fisher bulletin 9.2:001 for instrument hazardous area classification details.

GX 3-Way Actuator Accessories

The GX 3-Way is available with a variety of pneumatic (P/P), electro-pneumatic (I/P), and digital valve positioners, as well as limit switches and solenoids. Table 13 provides the basic features of the positioners offered with the GX 3-Way actuator.

The FIELDVUE DVC2000 Digital Valve Controller

The DVC2000 digital valve controller (figure 19) is simple to use, compact, and designed for the GX 3-Way control valve. It converts a 4-20mA input signal into a pneumatic output signal, which feeds the control valve actuator. Instrument setup is performed with a pushbutton and liquid crystal display (LCD) interface. This interface is protected from the environment within an IP66 enclosure. Multiple languages are supported with the local interface including German, French, Italian, Spanish, Chinese, Japanese, Portuguese, Russian, Polish, Czech, Arabic, and English. Additionally, HART® communication is supported over the 4-20mA loop wiring.

The DVC2000 is designed to be integrally mounted to the GX 3-Way actuator, avoiding the need for mounting brackets. The DVC2000 mounts directly to an interface pad on the actuator leg with a secure 3-point mounting. An internal passage inside the yoke leg transmits the pneumatic signal to the actuator casing, eliminating the need for external tubing (in the fail-down configuration).



Figure 19. FIELDVUE DVC2000 Digital Valve Controller

The high-performance linkage-less position feedback system eliminates physical contact between the valve stem and the digital valve controller or instrument. There are no wearing parts so cycle life is maximized. Additionally, the elimination of levers and linkages reduces the number of mounting parts and the mounting complexity. Digital valve controller or instrument replacement and maintenance is simplified because the feedback parts stay connected to the actuator.

The DVC2000 is available with an optional module which includes two (2) integral limit switches and a stem position transmitter. The limit switches are configurable for open and closed valve indication. The position transmitter provides a 4-20mA signal for valve position feedback verification. As an integral component to the instrument, this option module avoids the need for difficult-to-mount external switches and transmitters.

Designed to meet intrinsic safety and non-incendive requirements, this instrument delivers scalable functionality and high performance in a small package.

GX 3-Way Valve and Actuator

Optional Positioners and Instruments

3660 and 3661 Valve Positioners

The 3660 pneumatic and 3661 electro-pneumatic positioners are rugged, accurate, and feature low steady-state air consumption. Designed to meet intrinsic safety requirements, these positioners offer simple functionality in a small package. (See table 13.)

DVC6200 Digital Valve Controller

The DVC6200 digital valve controller is a communicating, microprocessor-based current-to-pneumatic instrument. Using HART or FOUNDATION™ fieldbus communication protocol, access to critical instrument, valve, and process conditions is provided. When used with ValveLink™ software, valve diagnostic tests can be run while the valve is in service to advise you of the performance of the entire control valve assembly. Designed to meet a broad range of hazardous area classifications, this instrument offers maximum functionality to improve your process performance. (See figure 20 and table 13.)



W9713

Figure 20. FIELDVUE DVC6200 Digital Valve Controller

Note

Neither Emerson, Emerson Process Management, nor any of their affiliated entities assumes responsibility for the selection, use, or maintenance of any product. Responsibility for the selection, use, and maintenance of any product remains with the purchaser and end user.

Coefficients

Table 14. Fisher GX 3-Way, Side Port Common (SPC) Diverging, Linear

Side Port Common (SPC) Diverging														Linear Characteristic	
Valve Size	Maximum Travel mm	Exit Port (see figure 5)	Flow Coefficient	Valve Opening—Percent of Total Travel (see figure 6)											F _L ⁽¹⁾
				0 (Plug Down)	10	20	30	40	50	60	70	80	90	100 (Plug Up)	
DN25/ NPS 1	19	Right	Cv	16.1	15.0	14.2	13.5	12.6	11.1	9.35	7.21	5.27	2.89	0	0.919
			Kv	14.0	13.0	12.3	11.7	10.9	9.56	8.09	6.23	4.56	2.50	0	---
			Xt	0.615	0.543	0.427	0.308	0.250	0.226	0.203	0.148	0.119	0.097	0	---
		Bottom	Cv	0	0.897	2.43	4.29	6.06	7.81	9.78	11.6	13.3	15.0	15.6	0.951
			Kv	0	0.776	2.10	3.71	5.25	6.75	8.46	10.0	11.5	13.0	13.5	---
			Xt	0	0.899	0.687	0.654	0.698	0.673	0.622	0.700	0.706	0.702	0.758	---
DN40/ NPS 1-1/2	19	Right	Cv	25.4	22.4	20.5	17.7	15.8	14.2	11.9	9.27	6.93	4.09	0	0.991
			Kv	22.0	19.4	17.7	15.3	13.7	12.3	10.3	8.01	6.00	3.54	0	---
			Xt	0.831	0.882	0.741	0.697	0.565	0.501	0.450	0.389	0.341	0.285	0	---
		Bottom	Cv	0	2.33	4.45	7.45	10.6	13.6	16.9	19.2	21.7	23.4	26.6	0.877
			Kv	0	2.01	3.84	6.45	9.18	11.8	14.6	16.6	18.8	20.2	23.0	---
			Xt	0	0.245	0.636	0.722	0.723	0.720	0.655	0.685	0.705	0.843	0.803	---
DN50/ NPS 2	19	Right	Cv	43.9	40.2	35.8	31.1	26.5	23.1	18.7	15.1	11.1	6.78	0	0.973
			Kv	38.0	34.7	30.9	26.9	22.9	20.0	16.2	13.1	9.63	5.87	0	---
			Xt	0.864	0.817	0.767	0.656	0.598	0.533	0.536	0.429	0.333	0.215	0	---
		Bottom	Cv	0	2.66	7.61	13.2	18.1	23.5	29.3	34.9	41.6	48.1	52.2	0.831
			Kv	0	2.30	6.58	11.4	15.6	20.3	25.4	30.2	36.0	41.6	45.1	---
			Xt	0	0.614	0.651	0.649	0.651	0.627	0.609	0.599	0.588	0.600	0.640	---
DN80/ NPS 3	38	Right	Cv	92.8	85.2	70.3	57.6	47.5	39.2	31.6	25.1	19.7	13.8	0	1.000
			Kv	80.3	73.7	60.8	49.8	41.1	33.9	27.3	21.8	17.0	11.9	0	---
			Xt	0.858	0.989	0.976	0.934	0.896	0.864	0.789	0.682	0.540	0.306	0	---
		Bottom	Cv	0	9.03	20.4	30.3	41.0	52.1	60.1	69.1	79.4	90.6	101.9	0.839
			Kv	0	7.81	17.7	26.2	35.4	45.1	52.0	59.8	68.7	78.3	88.1	---
			Xt	0	0.557	0.695	0.814	0.795	0.790	0.876	0.929	0.937	0.932	0.855	---
DN100/ NPS 4	38	Right	Cv	145.4	137.4	119.9	100.6	81.6	68.3	57.6	45.5	33.9	21.1	0	0.942
			Kv	125.8	118.9	103.7	87.0	70.6	59.1	49.9	39.4	29.3	18.2	0	---
			Xt	0.984	0.956	0.975	0.828	0.817	0.810	0.705	0.601	0.475	0.322	0	---
		Bottom	Cv	0	15.0	37.7	58.7	79.9	99.3	122.3	143.7	166.0	189.3	216.4	0.818
			Kv	0	13.0	32.6	50.8	69.1	85.9	105.8	124.3	143.6	163.8	187.2	---
			Xt	0	0.587	0.659	0.764	0.798	0.840	0.887	0.880	0.869	0.810	0.640	---

1. At maximum flow.

GX 3-Way Valve and Actuator

Table 15. Fisher GX 3-Way, Side Port Common (SPC) Converging, Linear

Side Port Common (SPC) Converging														Linear Characteristic	
Valve Size	Maximum Travel mm	Inlet Port (see figure 7)	Flow Coefficient	Valve Opening—Percent of Total Travel (see figure 8)											F _L ⁽¹⁾
				0 (Plug Down)	10	20	30	40	50	60	70	80	90	100 (Plug Up)	
DN25/ NPS 1	19	Right	Cv	15.9	13.2	10.7	9.30	7.54	6.31	4.65	3.64	2.04	1.04	0	0.978
			Kv	13.7	11.4	9.28	8.04	6.52	5.46	4.02	3.15	1.77	0.898	0	---
			Xt	0.658	0.866	0.758	0.657	0.723	0.669	0.739	0.728	0.909	0.898	0	---
		Bottom	Cv	0	0.562	1.72	3.28	4.90	6.51	8.74	10.3	12.9	14.3	16.3	0.949
			Kv	0	0.486	1.49	2.84	4.24	5.63	7.56	8.89	11.1	12.4	14.1	---
			Xt	0	0.397	1.005	0.966	0.847	0.767	0.675	0.659	0.605	0.662	0.663	---
DN40/ NPS 1-1/2	19	Right	Cv	29.3	26.7	23.0	17.1	14.6	11.9	9.47	7.07	4.78	2.34	0	0.999
			Kv	25.3	23.1	19.9	14.8	12.6	10.3	8.19	6.12	4.13	2.03	0	---
			Xt	0.821	0.714	0.711	0.857	0.806	0.900	0.907	0.803	0.842	0.660	0	---
		Bottom	Cv	0	0.881	3.02	6.46	8.83	11.7	15.9	18.3	20.9	24.3	28.4	0.978
			Kv	0	0.762	2.61	5.58	7.64	10.1	13.7	15.8	18.1	21.1	24.5	---
			Xt	0	---	0.994	0.779	0.865	0.832	0.679	0.745	0.752	0.785	0.749	---
DN50/ NPS 2	19	Right	Cv	54.6	48.5	42.2	35.2	28.5	22.9	18.0	12.4	7.44	3.02	0	0.932
			Kv	47.2	42.0	36.5	30.4	24.6	19.8	15.6	10.7	6.43	2.61	0	---
			Xt	0.626	0.636	0.596	0.559	0.574	0.605	0.617	0.685	0.798	0.949	0	---
		Bottom	Cv	0	2.05	6.44	11.0	15.8	20.9	25.6	32.2	41.6	47.6	52.0	0.958
			Kv	0	1.78	5.57	9.50	13.7	18.1	22.2	27.9	36.0	41.2	45.0	---
			Xt	0	0.888	0.919	0.958	0.895	0.844	0.859	0.804	0.735	0.745	0.785	---
DN80/ NPS 3	38	Right	Cv	111.9	101.0	87.8	72.7	59.2	48.3	38.5	28.5	18.9	9.87	0	1.000
			Kv	96.8	87.4	75.9	62.9	51.2	41.8	33.3	24.7	16.4	8.53	0	---
			Xt	0.811	0.757	0.669	0.704	0.755	0.765	0.745	0.723	0.725	0.716	0	---
		Bottom	Cv	0	6.84	16.1	26.4	40.0	55.0	70.4	85.7	100.8	113.1	127.8	0.965
			Kv	0	5.91	13.9	22.8	34.6	47.6	60.9	74.1	87.2	97.8	110.6	---
			Xt	0	0.989	0.967	0.994	0.876	0.800	0.773	0.759	0.752	0.767	0.752	---
DN100/ NPS 4	38	Right	Cv	163.4	153.0	137.0	115.0	92.0	74.0	57.8	43.5	28.3	12.8	0	0.869
			Kv	141.4	132.3	118.5	99.4	79.6	64.0	50.0	37.7	24.5	11.1	0	---
			Xt	0.688	0.634	0.558	0.558	0.603	0.610	0.595	0.578	0.573	0.525	0	---
		Bottom	Cv	0	12.9	30.1	46.6	66.3	88.4	112.4	135.9	161.4	185.2	212.2	0.816
			Kv	0	11.2	26.0	40.3	57.3	76.4	97.2	117.5	139.7	160.2	183.6	---
			Xt	0	0.920	0.949	0.826	0.789	0.737	0.683	0.660	0.625	0.629	0.589	---

1. At maximum flow.

GX 3-Way Valve and Actuator

Table 16. Fisher GX 3-Way, Bottom Port Common (BPC) Diverging, Linear

Bottom Port Common (BPC) Diverging														Linear Characteristic	
Valve Size	Maximum Travel mm	Exit Port (see figure 9)	Flow Coefficient	Valve Opening—Percent of Total Travel (see figure 10)											F _L ⁽¹⁾
				0 (Plug Down)	10	20	30	40	50	60	70	80	90	100 (Plug Up)	
DN25/ NPS 1	19	Right	Cv	16.3	15.5	14.4	13.3	12.0	10.1	7.72	5.32	3.18	1.49	0	0.965
			Kv	14.1	13.4	12.5	11.5	10.4	8.70	6.68	4.61	2.75	1.29	0	---
			Xt	0.661	0.670	0.691	0.655	0.608	0.577	0.523	0.556	0.533	0.474	0	---
		Left	Cv	0	1.67	3.03	4.58	6.32	8.41	10.6	12.0	13.7	14.7	15.5	0.886
			Kv	0	1.45	2.62	3.96	5.46	7.27	9.18	10.4	11.9	12.8	13.4	---
			Xt	0	0.810	0.623	0.667	0.639	0.620	0.637	0.631	0.637	0.664	0.666	---
DN40/ NPS 1-1/2	19	Right	Cv	32.5	30.5	28.7	25.2	21.9	18.5	14.8	10.6	6.46	2.89	0	0.820
			Kv	28.1	26.4	24.8	21.8	18.9	16.0	12.8	9.16	5.58	2.50	0	---
			Xt	0.786	0.738	0.661	0.626	0.523	0.486	0.470	0.467	0.479	0.426	0	---
		Left	Cv	0	3.30	6.21	10.34	14.5	18.2	22.7	26.4	29.1	31.2	33.5	0.923
			Kv	0	2.85	5.37	8.94	12.56	15.7	19.7	22.9	25.1	27.0	29.0	---
			Xt	0	0.812	0.661	0.502	0.553	0.660	0.721	0.764	0.799	0.815	0.784	---
DN50/ NPS 2	19	Right	Cv	58.9	53.1	47.1	40.7	34.1	27.0	20.7	14.6	9.54	4.61	0	0.950
			Kv	50.9	45.9	40.7	35.2	29.5	23.4	17.9	12.6	8.26	3.99	0	---
			Xt	0.600	0.639	0.561	0.574	0.536	0.473	0.475	0.508	0.501	0.536	0	---
		Left	Cv	0	4.89	8.60	13.4	20.5	28.2	36.6	44.9	50.9	56.0	60.0	0.893
			Kv	0	4.23	7.43	11.6	17.8	24.4	31.7	38.8	44.0	48.4	51.9	---
			Xt	0	0.553	0.674	0.610	0.575	0.599	0.598	0.607	0.632	0.647	0.619	---
DN80/ NPS 3	38	Right	Cv	155.9	151.9	139.6	126.6	108.8	90.8	69.0	49.0	30.8	15.1	0	0.935
			Kv	134.9	131.4	120.7	109.5	94.1	78.5	59.7	42.4	26.6	13.1	0	---
			Xt	0.640	0.595	0.578	0.532	0.500	0.451	0.453	0.462	0.471	0.465	0	---
		Left	Cv	0	12.0	27.7	47.9	68.3	87.7	104.5	120.0	136.5	154.7	170.3	0.862
			Kv	0	10.4	24.0	41.4	59.1	75.8	90.4	103.8	118.1	133.8	147.3	---
			Xt	0	0.605	0.556	0.596	0.650	0.680	0.706	0.719	0.713	0.664	0.642	---
DN100/ NPS 4	38	Right	Cv	166.3	152.9	139.7	121.1	98.0	77.1	60.3	42.9	27.0	13.0	0	0.901
			Kv	143.9	132.3	120.8	104.8	84.8	66.7	52.2	37.1	23.3	11.2	0	---
			Xt	0.675	0.631	0.533	0.510	0.530	0.526	0.503	0.520	0.520	0.542	0	---
		Left	Cv	0	11.3	26.9	46.1	63.8	82.2	102.0	121.1	137.6	153.2	169.1	0.866
			Kv	0	9.8	23.2	39.9	55.2	71.1	88.2	104.8	119.0	132.5	146.3	---
			Xt	0	0.657	0.583	0.615	0.704	0.727	0.716	0.696	0.723	0.703	0.669	---

1. At maximum flow.

GX 3-Way Valve and Actuator

Table 17. Fisher GX 3-Way, Bottom Port Common (BPC) Converging, Linear

Bottom Port Common (BPC) Converging														Linear Characteristic	
Valve Size	Maximum Travel mm	Inlet Port (see figure 11)	Flow Coefficient	Valve Opening—Percent of Total Travel (see figure 12)											F _L ⁽¹⁾
				0 (Plug Down)	10	20	30	40	50	60	70	80	90	100 (Plug Up)	
DN25/ NPS 1	19	Right	Cv	16.4	14.4	12.8	11.7	10.7	9.64	8.58	6.27	3.80	1.08	0	0.973
			Kv	14.2	12.4	11.1	10.1	9.23	8.34	7.42	5.42	3.29	0.93	0	---
			Xt	0.668	0.650	0.691	0.571	0.495	0.397	0.324	0.312	0.291	0.652	0	---
		Left	Cv	0	1.45	2.56	3.93	5.46	7.08	8.83	10.9	13.3	15.3	16.5	0.935
			Kv	0	1.25	2.22	3.40	4.73	6.12	7.64	9.39	11.5	13.2	14.3	---
			Xt	0	0.702	0.784	0.725	0.720	0.710	0.722	0.717	0.678	0.609	0.597	---
DN40/ NPS 1-1/2	19	Right	Cv	36.8	32.3	25.6	21.3	17.5	12.5	10.3	8.22	4.63	2.34	0	0.804
			Kv	31.9	28.0	22.1	18.4	15.1	10.8	8.94	7.11	4.00	2.02	0	---
			Xt	0.540	0.538	0.675	0.661	0.613	0.723	0.690	0.575	0.595	0.634	0	---
		Left	Cv	0	3.36	5.99	9.42	13.3	17.4	22.4	27.4	33.8	37.5	41.5	0.878
			Kv	0	2.91	5.18	8.15	11.5	15.0	19.4	23.7	29.2	32.5	35.9	---
			Xt	0	0.625	0.659	0.593	0.598	0.645	0.637	0.695	0.643	0.641	0.603	---
DN50/ NPS 2	19	Right	Cv	59.9	50.9	42.8	35.6	29.6	23.1	17.5	13.8	9.75	6.01	0	0.882
			Kv	51.8	44.0	37.0	30.8	25.6	20.0	15.2	11.9	8.43	5.20	0	---
			Xt	0.560	0.569	0.609	0.634	0.611	0.613	0.571	0.490	0.387	0.256	0	---
		Left	Cv	0	4.84	8.90	14.2	19.2	25.4	32.8	40.0	47.1	53.4	57.8	0.935
			Kv	0	4.19	7.70	12.3	16.6	21.9	28.4	34.6	40.7	46.2	50.0	---
			Xt	0	0.504	0.575	0.549	0.641	0.692	0.696	0.693	0.707	0.722	0.723	---
DN80/ NPS 3	38	Right	Cv	158.7	142.5	125.3	102.8	80.3	61.0	45.8	33.1	20.8	10.6	0	0.813
			Kv	137.2	123.3	108.4	88.9	69.5	52.8	39.6	28.7	18.0	9.18	0	---
			Xt	0.558	0.578	0.553	0.549	0.600	0.663	0.665	0.653	0.714	0.705	0	---
		Left	Cv	0	12.1	25.7	43.8	63.1	83.1	102.7	120.4	135.7	151.1	164.9	0.931
			Kv	0	10.5	22.2	37.9	54.6	71.9	88.9	104.1	117.4	130.7	142.6	---
			Xt	0	0.525	0.579	0.619	0.660	0.658	0.676	0.685	0.701	0.691	0.670	---
DN100/ NPS 4	38	Right	Cv	155.9	145.0	127.4	107.6	85.9	66.4	49.4	35.6	23.6	12.2	0	0.810
			Kv	134.9	125.4	110.2	93.0	74.3	57.5	42.7	30.8	20.4	10.5	0	---
			Xt	0.564	0.550	0.518	0.504	0.545	0.593	0.628	0.621	0.601	0.553	0	---
		Left	Cv	0	13.5	28.9	48.9	69.5	90.6	111.1	129.2	145.4	159.9	174.4	0.830
			Kv	0	11.7	25.0	42.3	60.1	78.4	96.1	111.8	125.8	138.3	150.8	---
			Xt	0	0.427	0.477	0.525	0.553	0.564	0.590	0.637	0.667	0.686	0.676	---

1. At maximum flow.

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