

Fisher™ Sliding-Stem Valve Selection Guide



X1175

easy-e™



W8861-2

GX



X0165

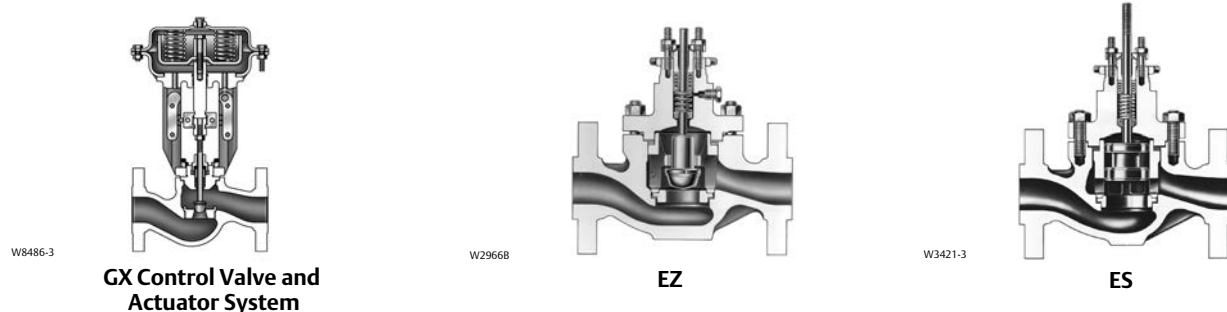
TBX Steam Conditioning Valve

Typical Fisher Sliding-Stem Control Valves

- A broad range of Fisher valves, sizes, and materials are offered—from NPS 1/2 for general service to NPS 36 and larger for demanding high-pressure steam, hydrocarbon, and noise services.
- FIELDVUE™ digital valve controllers offer digital control and remote diagnostics. The traditional proven line of Fisher transducers, positioners, controllers, transmitters, and switches are also available.
- Whisper Trim™ and Cavitrol™ anti-noise and anti-cavitation trims are available for most designs.
- ENVIRO-SEAL™ packing systems provide an improved stem seal to help prevent the loss of process and are available to assist in compliance with environmental emissions requirements.
- Fisher products deliver excellent dynamic performance to minimize process variability, providing opportunities to improve your plant's financial performance.
- Contact your [Emerson sales office](#) or Local Business Partner for details.

Fisher General-Service and Heavy-Duty Valves

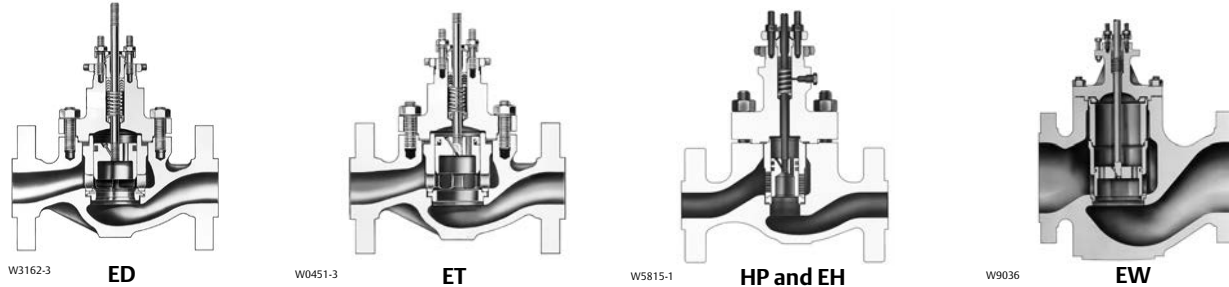
Figure 1. General-Service and Heavy-Duty Valves



GX	EZ	ES
Applications		
Compact, state-of-the-art control valve and actuator system designed to control a wide range of process liquids, gases, and vapors. Capable of air supply pressures to 6.0 barg (87 psig), allowing valve shutoff at high pressure drops	Heavy-duty general service for controlling liquids and gases, including viscous and other hard-to-handle fluids. UOP applications	Heavy-duty, general-service valve for clean liquids and gases. Positive shutoff at seat
Style		
Single port, flow up globe style valve Stem-guided or port-guided Balanced or unbalanced Screwed-in seat ring	Single-seated, post-guided globe or angle valve Unbalanced Seat ring retained by spacer Metal or soft seats	Cage-guided globe or angle valve Unbalanced Cage-retained seat
Sizes		
DN15 through 100 NPS 1/2 through 6	DN15 through 100 NPS 1/2 through 4	ES: DN15 through 200 (NPS 1/2 through 8) EWS: DN100 x 50 through 600 x 500 (NPS 4 x 2 through 24 x 20)
Ratings		
PN 10, 16, 25, 40, CL150, 300	PN 16, 25, 40, 63, 100, CL125, 150, 300, 600	PN 10, 16, 25, 40, 63, 100, CL150, 300, 600
End Connections		
Raised-face flanged	Screwed NPT internal, flat- or raised-face flanged, ring-type joint, socketweld, butt welded ends	Screwed NPT internal, flat- or raised-face flanged, ring-type joint, socketweld, and butt welded ends
Valve Body Materials		
Steel, alloy steel, stainless steel	Steel, alloy steel, stainless steel	Steel, alloy steel, stainless steel
Valve Plug and Seat Ring (Trim) Materials		
Stainless steel with optional CoCr-A hardfacing or PTFE soft seat	Stainless steel with or without CoCr-A on seat or seat and guide PTFE soft seat	Stainless steel with or without CoCr-A on seat or seat and guide PTFE soft seat
Flow Characteristics and Maximum Flow Coefficients		
Equal percentage or linear Maximum C_v from 0.0389 to 183.5	Quick opening, linear, or equal percentage Maximum C_v from 4.47 to 190	Quick opening, linear, or equal percentage Maximum C_v from 6.53 to 1110
Shutoff Class (IEC 60534-4 and ANSI/FCI 70-2)		
Class IV (standard) Class V, VI (optional)	Class IV (standard) Class V, VI (optional)	Class IV (standard) Class V, VI (optional)
Available Actuators (see section on Sliding-Stem Valve Actuators)		
GX multi-spring and diaphragm	657 or 667 spring and diaphragm, 585C piston	657 or 667 spring and diaphragm, 585C piston

Fisher Heavy-Duty and Severe-Service Valves

Figure 2. Heavy-Duty and Severe-Service Valves



ED	ET	HP and EH	EW
Applications			
easy-e heavy-duty, general and severe-service valve for clean liquids and gases with higher pressure drops but where tight shutoff is not required	easy-e heavy-duty, general and severe-service valve for tight shutoff with clean liquids and gases with higher pressure drops and temperatures	For high-pressure and severe-service applications. Available with special trim to combat noise and cavitation. Often used in power generation applications	easy-e heavy-duty, general- and severe-service valve features large internal cavities with expanded end connections for wide range of applications
Style			
Cage-guided globe or angle valve Balanced trim Cage-retained seat	Cage-guided globe or angle valve Balanced trim Cage-retained seat	Cage-guided globe or angle valve Balanced or unbalanced trim	Single-port cage-guided globe valve Balanced or unbalanced trim Cage-retained seat
Sizes			
ED: DN25 through 200 and NPS 1 through 30 EWD: DN100 x 50 through 600 x 500 and NPS 4 x 2 through 24 x 20	ET: DN25 through 200 and NPS 1 through 30 EWT: DN100 x 50 through 600 x 500 and NPS 4 x 2 through 24 x 20	DN25 through 500 NPS 1 through 20	DN 100x50 through 300x200 NPS 4x2 through 24x20
Ratings			
PN 10, 16, 25, 40, 63, 100, CL150, 300, 600	PN 10, 16, 25, 40, 63, 100, CL150, 300, 600	PN 160, 250, 420, CL900, 1500, 2500, 3200, or intermediate ASME ratings	PN 10, 16, 25, 40, 63, 100, or 160 CL150, 300, 600, or 900
End Connections			
Screwed NPT internal, flat- or raised-face flanged, ring-type joint, socketweld, butt welded ends	Screwed NPT internal, flat- or raised-face flanged, ring-type joint, socketweld, butt welded ends	Raised-face flanged, ring-type joint, socketweld, butt welded ends, expanded ends	Flanged raised-face, ring-type joint, and butt welded ends
Valve Body Materials			
Steel, alloy steel, stainless steel	Steel, alloy steel, stainless steel	Steel, alloy steel, stainless steel	Steel, alloy steel, stainless steel
Valve Plug and Seat Ring (Trim) Materials			
Stainless steel with or without CoCr-A on seat or seat and guide	Stainless steel with or without CoCr-A on seat or seat and guide. PTFE soft seat	Stainless steel with or without CoCr-A on seat or seat and guide	Stainless steel with or without CoCr-A on plug and stainless steel or alloy 6 seat
Flow Characteristics and Maximum Flow Coefficients			
Quick opening, linear, or equal percentage Maximum C_v from 17.2 to 6500	Quick opening, linear, or equal percentage Maximum C_v from 17.2 to 6500	Linear, equal percentage, or characterized Maximum C_v from 0.354 to 2600	Quick opening, linear, or equal percentage Maximum C_v from 82 to 1260
Shutoff Class (IEC 60534-4 and ANSI/FCI 70-2)			
Class II (standard) Class III, IV (optional)	Class IV (standard) Class V, VI (optional)	Class II, III, IV, V	Class II, III, IV, V, or VI (depending on construction and seating)
Available Actuators (see section on Sliding-Stem Valve Actuators)			
657 or 667 spring and diaphragm, 585C piston	657 or 667 spring and diaphragm, 585C piston	657 or 667 spring and diaphragm, 585C piston	657 or 667 spring and diaphragm, 585C piston

Fisher Heavy-Duty and Severe-Service Valves

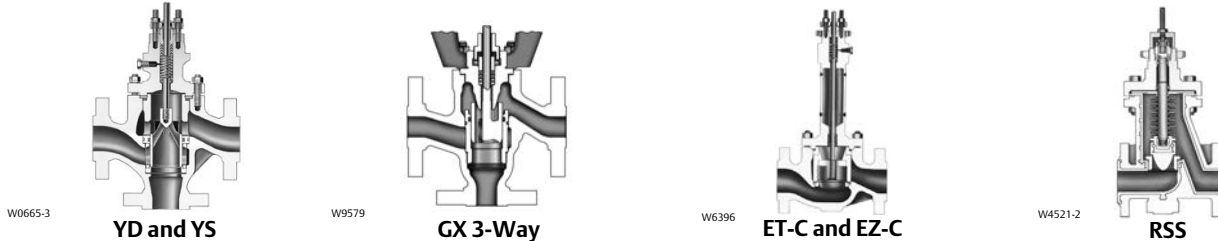
Figure 3. Heavy-Duty and Severe-Service Valves



NotchFlo DST	CAV4	461
Applications		
Control of liquid services with high pressure drops and entrained particulate, dirty service anti-cavitation trim	Liquid applications, such as boiler feedwater recirculation, where pressure drops are above 207 bar (3000 psi)	Typically used in the chemical or hydrocarbon industries where control of residual oils or other liquids with coking properties is necessary. Features a venturi-type throat, which is useful in power plants or slurry services where high pressure drops and flashing might exist
Style		
Cage-guided globe, angle valve balanced, unbalanced	Angle, globe, or offset globe seal ring construction, stem-balanced construction, piston ring construction	Cylinder guided
Sizes		
NPS 1 through 8	NPS 2 through 6	NPS 2x3, 3x4, 4x6, 6x8
Ratings		
CL300, 600, 900, 1500, 2500	CL2500	CL150, 300, 600, 1500, 2500
End Connections		
Screwed, raised-face flanged, ring-type joint flanged, buttwelded ends, socketweld ends	Buttwelded ends, raised-face, ring-type joint flanged ends	Buttwelded ends, raised-face flanged, ring-type joint flanged ends
Valve Body Materials		
Steel, alloy steel, stainless steel	Steel, alloy steel, stainless steel	Steel, alloy steel, stainless steel
Valve Plug and Seat Ring (Trim) Materials		
Stainless steel with or without CoCr-A on seat or guide	Stainless steel or nickel alloy with CoCr-A on seat or guide	Stainless steel with or without CoCr-A on seat or guide or tungsten carbide trim
Flow Characteristics		
Linear	Linear	Equal percentage micro-form, modified parabolic flow characteristic
Shutoff Class (IEC 60534-4 and ANSI/FCI 70-2)		
Class V: 0.0005mL/min/psid/in of water at service pressure drop	Tight Shutoff Trim (TSO): Valves with TSO trim are factory tested to a more stringent Emerson Automation Solutions test requirement of no leakage at time of shipment using ANSI/FCI 70-2 and IEC 60534-4 Class V procedures. Piston Ring Construction: Class IV All Others: Class VI	Class IV (standard) Class V (optional)
Available Actuators (see section on Sliding-Stem Valve Actuators)		
657 or 667 spring and diaphragm, 585C piston	657 or 667 spring and diaphragm, 585C piston	657 or 667 spring and diaphragm, 585C piston

Fisher Three-Way Valves, Cryogenic, and Lined Valve

Figure 4. Three-Way, Cryogenic, and Lined Valves



YD and YS	GX 3-Way	ET-C and EZ-C	RSS
Applications			
Three-way valves for flow-mixing or flow-splitting service. The YS unbalanced and the YD is balanced	Three-way valves for flow-mixing or flow-splitting service	easy-e stainless steel cryogenic valves for liquefied natural gas and other special chemical and hydrocarbon applications with temperatures to -198°C (-325°F)	Lined valve for severely corrosive or toxic process fluids. An economic alternative to alloy bodies. Limited in pressure and temperature
Style			
Cage-guided three-way globe valves Balanced or unbalanced trim	Cage-guided or port-guided Balanced or unbalanced trim Screwed-in seat ring	Single-seated post-guided (EZ-C) or cage-guided (ET-C) globe valve Unbalanced (EZ-C) or balanced (ET-C) metal seats	Fully lined, single-seated, unbalanced globe valve Integral bellows stem seal
Sizes			
NPS 1/2 through 8	DN 25 through DN100 NPS 1 through 4	ET-C: DN80 through 250 x 200, and NPS 3 through 30 EZ-C: DN15 through 100, NPS 1 through 4	NPS 1 through 4 (face-to-face dimensions to DIN or ANSI/ISA specifications)
Ratings			
CL125, 150, 250, 300, 600	PN 10, 16, 25, 40 CL150 and 300	PN 10, 16, 25, 40, 63, 100 CL150, 300, 600	CL150 or 300
End Connections			
Screwed NPT internal, flat- or raised-face flanged, ring-type joint, socketweld, buttwelded ends	Flanged raised-face per EN 1092-1 and ASME B16.5, screwed (NPS 1 through 2), socket weld (NPS 1 through 2)	Raised-face flanged	Raised-face flanged
Valve Body Materials			
Cast iron, steel, alloy steel, stainless steel	Steel, stainless steel	Stainless steel	Ductile iron with PFA liner
Valve Plug and Seat Ring (Trim) Materials			
Stainless steel	Stainless steel plug with CoCr-A hard facing on seat	Stainless steel with or without CoCr-A hardfacing on seat	Valve Plug and Seat Ring: Pure modified (reinforced) PTFE Bellows: Heavy-duty PTFE (TFM1705) with 304L SST support rings [Bellows is PTFE for NPS 1/2 and 3/4 valves]
Flow Characteristics and Maximum Flow Coefficients			
Linear Maximum C_v 8.42 to 567	Linear Maximum C_v from 15.6 to 216.4	Quick opening, linear, or equal percentage Maximum C_v from 13.2 to 924	Equal percentage Maximum C_v from 0.212 to 145
Shutoff Class (IEC 60534-4 and ANSI/FCI 70-2)			
YD: Class II or IV YS: Class IV or V	Class IV (metal seat standard)	Class IV (standard) ET-C: Class V Air/Nitrogen (optional) EZ-C: Class VI (optional)	Class VI
Available Actuators (see section on Sliding-Stem Valve Actuators)			
657 or 667 spring and diaphragm, 585C piston	GX multi-spring, pneumatic diaphragm	657 or 667 spring and diaphragm, 585C piston	657 or 667 spring and diaphragm, 585C piston

Baumann™ General-Service Valves

Figure 5. 24000 Series



24000 Little Scotty	24000C Carbon Steel	24000CVF/SVF Flanged	24000S Stainless Steel	24003 Little Scotty 3-Way
Applications				
General utility service controlling pressure, flow, and temperature. Great for steam applications along with water, air, and glycol	General utility service controlling pressure, flow, and temperature. Industrial heating and ventilation (HVAC). Humidity control in hot and chilled water, steam, glycol, and heating/cooling coils	Aerospace, Chemical, General Service, Industrial Gases, Industrial HVAC, Life Sciences, Pulp & Paper, Utilities, Waste Water Management	Light duty chemicals, solvents, dye additions, general purpose, high purity water, pH control, N2 blanketing, paint mixing, O2 injection, steam tracing, cryogenics	Ideal for control where mixing or diverting service is required. Heat exchanger bypass, cleanroom HVAC, paper machine head box pressure, glycol systems, blending systems
Style				
Globe style body	Globe style body	Globe style body	Globe style body	Globe style body, 3-way featuring bottom port
Sizes				
NPS 1/2 through 2	NPS 1/2 through 2	NPS 1/2 through 2	NPT (NPS 1/2 through 2) wafer style (NPS 3 only)	NPS 1/2 through 2
Ratings				
CL250	PN 40 CL150	PN 10, 16, 25, 40 CL150, 300	CL300 (NPS 1/2 through 2), CL150 (NPS 3)	400 psi @ 66° C (150° F) / 250 psi @ 204° C (400° F) (Bronze) 720 psi @ 66° C (150° F) / 515 psi @ 204° C (400° F) (SST)
End Connections				
NPT	ASME CL150 or EN PN 10 through 40	integral flanges, ISA/IEC face-to-face	NPT, buttwelded, wafer (NPS 3 Wafer only)	NPT
Valve Body Materials				
Bronze	Carbon steel	Carbon steel, stainless steel	Stainless steel	Stainless steel, bronze
Valve Plug and Seat Ring (Trim) Materials				
Post-guided parabolic plug, screwed-in replaceable seat ring 316 Plug and seat ring (standard), 416 plug and seat ring (optional) Metal to metal, PTFE soft seat	Post-guided parabolic plug, screwed-in replaceable seat ring 316 Plug and seat ring (standard), 416 plug and seat ring (optional) Metal to metal, PTFE soft seat	Stainless steel	Dual stem and plug guiding available in 316 stainless steel (standard) 416 stainless steel (optional)	Stainless steel trim material, metal-to-metal seating
Flow Characteristics and Maximum Flow Coefficients				
Equal percentage, linear	Equal percentage, linear	Equal percentage, linear	Equal percentage, linear	Linear
Shutoff Class (IEC 60534-4 and ANSI/FCI 70-2)				
Class IV, VI (standard)	Class IV, VI (standard)	Class IV, VI (standard)	Class IV, VI (standard)	Class III
Available Actuators (see section on Sliding-Stem Valve Actuators)				
Baumann 32, 54, 70, Belimo™ electric, Rotork™ electric	Baumann 32, 54, 70, Belimo electric, Rotork electric	Baumann 32, 54, 70, Belimo electric, Rotork electric	Baumann 32, 54, 70, Belimo electric, Rotork electric	Baumann 32, 54, 70, Belimo electric, Rotork electric

Fisher General-Service Valves

Figure 6. D Series



D3	D4	D2T	D and DA
Applications			
Upstream production - dump valve for separators and scrubbers and high pressure production applications	Upstream production - high pressure throttling applications, ideal for separators, scrubbers, injection	Upstream production - dump valve, scrubbers and separators	Upstream production - dump valve, scrubbers and separators, injection
Style			
Globe style body	Globe style body	Configurable globe style body, angle style body	Globe style body, angle style body
Sizes			
NPS 1 and 2	NPS 1 and 2	NPS 1	NPS 1 and 2
Ratings			
CL600, 900	CL150 through 1500	CL900	CL150 through 1500
End Connections			
Raised-face flanged, NPT	Raised-face flanged, ring-type joint flanged, NPT	NPT	Raised-face flanged, ring-type joint flanged, NPT
Valve Body Materials			
Carbon steel	Carbon steel	Carbon steel	Carbon steel
Valve Plug and Seat Ring (Trim) Materials			
S17400 plug and seat ring or S17400 with tungsten carbide tip plug and S17400 with tungsten carbide insert seat ring	410/416 HT plug, 17-4 PH double H1150 pin and seat ring Optional: 17-4 PH double H1150 plug, pin and seat ring, 17-4 PH double H1150 / Tungsten carbide tip plug, 17-4 PH double H1150 pin and 17-4 PH double H1150 / Tungsten carbide insert seat ring	S17400 Double H1150, R30006	316 stainless steel trim with CoCr-A on seating surface of valve plug and seat ring
Flow Characteristics and Maximum Flow Coefficients			
Quick opening	Equal percentage	FloPro characterized	Equal percentage
Shutoff Class (IEC 60534-4 and ANSI/FCI 70-2)			
Class IV (standard)	Class IV (standard)	Class IV (standard)	Class IV, V (standard)
Available Actuators (see section on Sliding-Stem Valve Actuators)			
easy-Drive™ Electric Actuator, D3 Pneumatic Actuator	easy-Drive Electric Actuator, D4 Pneumatic Actuator	D2T Pneumatic Actuator	657 or 667 spring and diaphragm, 585C piston

Baumann Low Flow and Specialty Valves

Figure 7. Baumann Low Flow and Specialty Valves



X0603

24000F Wafer



X0527

24000SB Barstock

24000F Wafer	24000SB Barstock
Applications	
Unique wafer-style control valve designed for modulating purposes in process pressures up to 1440 psi (99 bar) and operating temperatures to 537° C (1000° F)	Low-flow high-pressure applications like desuperheater spray water, hydraulic oil, high pressure H2 injection, hydrocarbons, high pressure air separation, HCl (alloy construction)
Style	
Wafer	Barstock globe style body
Sizes	
NPS 1/2 through 1	NPS 1/2 through 1
Ratings	
CL150, 300, 600	3000 psi max working pressure
End Connections	
Mating line flanges	NPT, flanged, buttwelded
Valve Body Materials	
Stainless steel, alloys	Stainless steel, alloys
Valve Plug and Seat Ring (Trim) Materials	
Stainless steel and alloy trims based on body materials selected	Stainless steel and alloy trims based on body materials selected
Flow Characteristics and Maximum Flow Coefficients	
Equal percentage, linear	Equal percentage, linear
Shutoff Class (IEC 60534-4 and ANSI/FCI 70-2)	
Class IV, VI (standard)	Class IV, VI (standard)
Available Actuators (see section on Sliding-Stem Valve Actuators)	
Baumann 32, 54, 70, Belimo electric, Rotork electric	Baumann 32, 54, 70, Belimo electric, Rotork electric

Fisher Steam Conditioning Valves

Figure 8. Steam Conditioning Valves



TBX (Flow Up)



TBX (Flow Down)



CVX

TBX (Flow Up)		TBX (Flow Down)		CVX	
Applications					
HP, HRH, IP, LP Turbine Bypass, process steam, steam let down					
Style					
Flow up design, hung trim configuration to thermally compensate rapid changes in temperature, incorporates a spraywater manifold of variable geometry AF nozzles that produce an optimized spray pattern over a wide operating range		Flow down design, hung trim configuration to thermally compensate rapid changes in temperature, incorporates a spraywater manifold of variable geometry AF nozzles that produce an optimized spray pattern over a wide operating range		Flow down design with downstream acoustical diffuser, hung trim configuration to thermally compensate rapid changes in temperature, incorporates a spraywater manifold of variable geometry AF nozzles that produce an optimized spray pattern over a wide operating range	
Sizes					
Inlet Sizes: NPS 4 through 24 Outlet Sizes: NPS 8 through 36					
Orifice Type					
Welded, bolted		Bolted		Welded, bolted	
End Connections					
Buttwelded, raised-face flanged					
Flow Characteristics					
Whisper Trim III: Linear or WhisperFlo™: Linear		Whisper Trim III: Linear		Standard Drill Hole: Linear	
Shutoff Class (IEC 60534-4 and ANSI/FCI 70-2)					
Class V (standard) Class IV (optional)					
Valve Body and Bonnet Material and Construction					
Carbon steel, alloy steel					
Available Actuators					
See Sliding-Stem Valve Actuators Section					

Fisher Sliding-Stem Valve Actuators

Figure 9. Sliding-Stem Valve Actuators



657 and 667	585C	Baumann Pneumatic	easy-Drive
Features			
Heavy-duty actuators	Heavy-duty actuators	General service design w/corrosion resistant epoxy powder paint	General service
Style			
Spring-return pneumatic diaphragm	Double-acting piston or spring-bias piston	Spring-return pneumatic, multi-spring design, field-reversible	Electric
Typical Maximum Thrust, lbf (Varies with Operating Pressure, Spring, and Construction)			
45,000	24,300	500	750
Accessories			
Pneumatic or electro-pneumatic valve positioners, FIELDVUE digital valve controller, limit switches, position transmitters, handwheels, travel stops, supply pressure filter-regulator	I/P transducers, pneumatic or electro-pneumatic valve positioners, FIELDVUE digital valve controller, limit switches, position transmitters, handwheels, travel stops, supply pressure filter-regulator	Pneumatic or electro-pneumatic valve positioners, FIELDVUE digital valve controller	easy-Drive configuration software, travel stops

Fisher Sliding-Stem Valve Actuators

Figure 10. Sliding-Stem Valve Actuators



655	1008	1010
Features		
Actuators for pressure regulation applications	Manual handwheel for applications that require a throttling type of control valve that can be manually operated and set	Yoke, stem, adapter, travel scale, and spacers required to accommodate ISO 5210 mounted electric actuators
Style		
Pressure-actuated, spring-and-diaphragm	Manual handwheel actuator	Mounting system for electric actuation
Typical Maximum Thrust, lbf (Varies with Operating Pressure, Spring, and Construction)		
---	17,000	---
Accessories		
Travel indicator, top-mounted handwheel/adjustable travel stop, stem seal, drain tapping for leakoff	Handwheel lock, Tejax valve stem position indicator	---

Other actuators available are a full range of self-operated control valves: 1B, 643, 644, and 645

Alloy Valve Guidelines

- Emerson Automation Solutions expertise has combined its knowledge of metals and foundry techniques with valve user experience in creating high alloy valves that fight corrosion successfully.
- Guidelines have been developed to help the valve user specify alloy valves correctly. Techniques have also been implemented that verify a foundry's ability to cast alloy valves properly and has established stringent specifications that guide the foundry in providing quality results
- Valve user guidelines include—Avoid the use of alloy tradenames, don't specify wrought for cast, forego non-destructive testing
- Steps used to qualify a foundry include—Weldability tests to gauge the foundry's ability to pour alloy materials, Dedicating casting patterns solely to high-alloy service
- Stringent specifications developed by Emerson Automation Solutions include—Raw Material Composition and Quality, Heat Qualification, Visual Inspection, Weld Repair, Heat Treatment, and Nondestructive Testing

Figure 11. Typical Fisher Products



- A complete line of actuators and accessories for Fisher sliding-stem valves are offered that meet your price/performance expectations
- FIELDVUE digital valve controllers are communicating, microprocessor-based controllers that utilize HART™ and FOUNDATION™ fieldbus protocols. Through digital communications, the controllers give easy access to actuator, valve, and instrument information that is critical to process operation
- ValveLink™ Software and AMS Suite: Intelligent Device Manager allow you to care for and maintain equipment assets—such as valves, transmitters, analyzers, motors, pumps, etc. and plant unit equipment such as pipes, vessels, tanks, columns, reactors, digesters, etc.—to improve yields and minimize downtime of industrial manufacturing processes
- Contact your [Emerson sales office](#) or Local Business Partner for details

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