

# Fisher™ V500 Rotary Globe Control Valve

The Fisher V500 eccentric plug rotary control valve controls erosive, coking, and other hard-to-handle fluids, providing either throttling or on/off operation. The flanged valve features streamlined flow passages, rugged metal trim components, and a self-centering seat ring (figures 1 and 2). With these components, the V500 rotary control valve combines globe valve ruggedness with the efficiency of a rotary valve. Matched with a Fisher power or manual actuator, the V500 rotary control valve dependably controls fluids in many process industries.

Unless otherwise noted, all NACE references are to NACE MR0175-2002. Contact your [Emerson Process Management sales office](#) for additional information on NACE MR0175-2003, NACE MR0175/ISO 15156, and NACE MR0103.



X0189  
Fisher V500 Flanged Rotary Control Valve with 2052 Actuator and FIELDVUE™ DVC6200 Digital Valve Controller

## Features

- **Easy Installation** -- Integral valve body flanges mate with many different classes of pipeline flanges, satisfying a variety of piping requirements. Flanges help to eliminate exposed line flange bolting, shorten alignment and installation time, and promote secure valve installations and piping integrity.
- **Operational Versatility** -- Self-centering seat ring and rugged plug allow forward or reverse flow with tight shutoff in either flow direction. Reverse flow direction helps move downstream turbulence away from shutoff surfaces. Full 90-degree rotation removes valve plug from flowstream, helping to reduce plug wear. Seat ring and retainer are available in full and restricted port constructions, and can easily be changed if capacity requirements change.
- **Resists Damage from Erosive Flow** -- Valve assembly is specifically designed to combat the process of erosion. Streamlined flow passages, rugged components, and a wide choice of erosion-resistant trim materials all promote long, dependable service life in erosive applications.
- **Long Seat Life** -- Path of eccentric plug (figure 4) minimizes contact with seat ring when opening, reducing seat wear and friction. When the valve plug rotates into the seat ring, a self-lapping action occurs, improving the fit between shutoff surfaces. Full-port, S31600, R30006, or VTC seat ring has two shutoff surfaces and can be easily reversed, reducing downtime.
- **Furnace Feed Design** -- Specially selected trim materials and body coatings help to withstand oil sands, furnace feed, and other highly erosive applications.

(continued on page 3)

**Specifications**

**Available Configuration**

Flanged valve assembly (NPS 3 through 8 only) with reversible<sup>(1)</sup> metal or VTC (ceramic) seat ring and splined valve shaft

**Valve Sizes**

■ NPS 1, ■ 1-1/2, ■ 2, ■ 3, ■ 4, ■ 6, and ■ 8  
DN sizes are also available (see tables 1 and 2).

**End Connection Style and Rating**

■ Raised-face flanges or ■ ring-type joint flanges (ASME B16.5). Valves with EN PN10 through PN100 flanges also available. (See tables 1 and 2 for ASME and EN availability by valve size.)

**Maximum Inlet Pressure<sup>(2)</sup>**

Consistent with applicable ASME or EN flange ratings

**Maximum Pressure Drops<sup>(2)</sup>**

See tables 5, 6, 7, 8 and 9

**Shutoff Classification**

Class IV per ANSI/FCI 70-2 and IEC 60534-4, (0.01% of valve capacity at full travel) for either flow direction. Leak rates for full and restricted port valves are based on full port valve capacities. Reduced port valves seat at the full port diameter.

**Construction Materials**

See table 4 for individual parts and table 3 for trim combinations

**Material Temperature Capability<sup>(2)</sup>**

See table 4

**Flow Characteristic**

Modified linear

**Flow Direction**

**Reverse flow (standard):** Past valve plug and through seat ring; tends to close the valve; recommended for erosive service  
**Forward flow:** Through seat ring and past valve plug; tends to open the valve

**Flow Coefficients**

See Fisher Catalog 12

**Flow Coefficient Ratio<sup>(3)</sup>**

See Fisher Catalog 12

**Noise Levels**

See Fisher Catalog 12

**Actuator Mounting**

■ Right-hand or ■ left-hand as viewed from the upstream side of the valve.

Mounting position depends on the desired open valve plug position and flow direction required by operating conditions. For more information, see the Installation section.

**Valve Plug Rotation**

Counterclockwise to close (when viewed from actuator side of valve) through 90 degrees of plug rotation

**Valve/Actuator Action**

With diaphragm or piston rotary actuator, field-reversible between

- push-down-to-close (extending actuator rod closes valve) and
- push-down-to-open (extending actuator rod opens valve)

**Packing Constructions**

- **PTFE V-Ring:** With one carbon-filled PTFE conductive packing ring in single, double, or leak-off arrangements, -46 to 232°C (-50 to 450°F)
- **PTFE/Bound-Composition:** With one graphited composition conductive packing ring in single, double, or leak-off arrangements, -46 to 232°C (-50 to 450°F)
- **Graphite Ribbon Packing Rings:** In single, double, or leak-off arrangements, -198 to 538°C (-325 to 1000°F)
- **ENVIRO-SEAL™ PTFE:** -46 to 232°C (-50 to 450°F) (for 100 ppm service requirements)
- **ENVIRO-SEAL Graphite:** -7 to 316°C (20 to 600°F) (for 100 ppm service requirements). This packing arrangement can be used to 371°C (700°F) for non-environmental service.

(continued)

Specifications (continued)

**Shaft Diameters**

See figure 5

**Dimensions and Approximate Weights**

See figure 5; face-to-face dimensions conform to ISA S75.04 and IEC 60534-3-2

**Options**

- Restricted trim (retainer and seat ring) for low-flow applications, ■ sealed bearing constructions, ■ purged bearings, ■ tungsten carbide trim option, ■ flushing connections, ■ chrome carbide valve body coating, ■ ENVIRO-SEAL packing system; see figure 3 and [bulletin 59.3:041, ENVIRO-SEAL Packing Systems for Rotary Valves \(D101638X012\)](#) for more information

1. The reversible seat is not available in every trim material. Consult your [Emerson Process Management sales office](#).  
2. The pressure or temperature limits in the referenced tables or figures, and in any applicable code limitation, should not be exceeded.  
3. Ratio of maximum flow coefficient to minimum usable flow coefficient. May also be called rangeability.

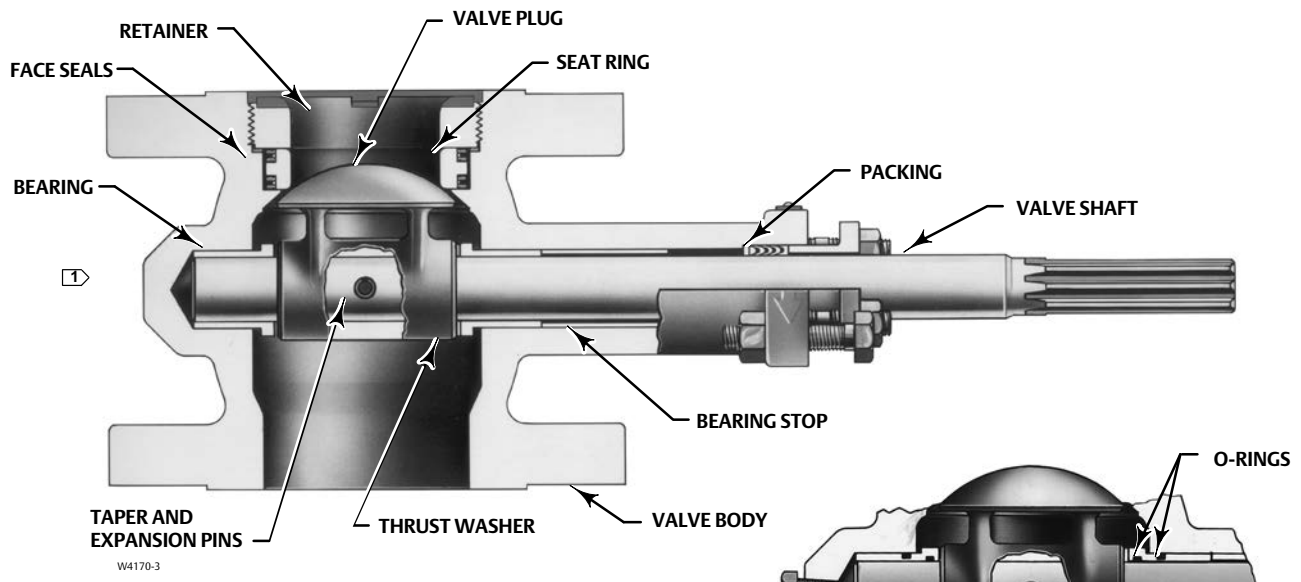
**Features (continued)**

- **Simple Assembly and Maintenance** -- No special orientation, precision clamping or repetitive centering of valve plug and seat ring is required when tightening the retainer, promoting accurate alignment and easy assembly.
- **Improved Environmental Capabilities** -- The optional ENVIRO-SEAL packing systems are designed with very smooth shaft surfaces and live loading to provide improved sealing. The seal of the ENVIRO-SEAL system can restrict emissions to less than the EPA (Environmental Protection Agency) limit of 100 ppm (parts per million).
- **Sour Service Capability** -- Trim and bolting materials are available for applications handling sour service. These materials comply with the requirements of NACE MR0175-2002. Contact your [Emerson Process Management sales office](#) for additional information.
- **Rugged Construction** -- Durable, solid metal or VTC seat ring and valve plug shutoff tightly without deforming plug arms or employing thin ball seals. Oversized shaft diameters and rugged trim parts allow high pressure drops. Tungsten carbide is also available for erosive service.
- **Reliable Performance** -- Seat ring design (figure 2) self-centers, self-laps, and dynamically aligns with plug, giving excellent cycle life. Sealed metal bearings (see figure 1) help prevent particle buildup and valve shaft seizure in erosive applications.
- **Choice of Construction Materials** -- Plug, seat ring, and retainer are available in four levels of hardness for selection of erosion resistance.
- **Optional Alloy 6 Seat Ledge Insert Available** -- Protects seat and valve body from high-velocity erosive flows and eases repair. Available for NPS 2-8.

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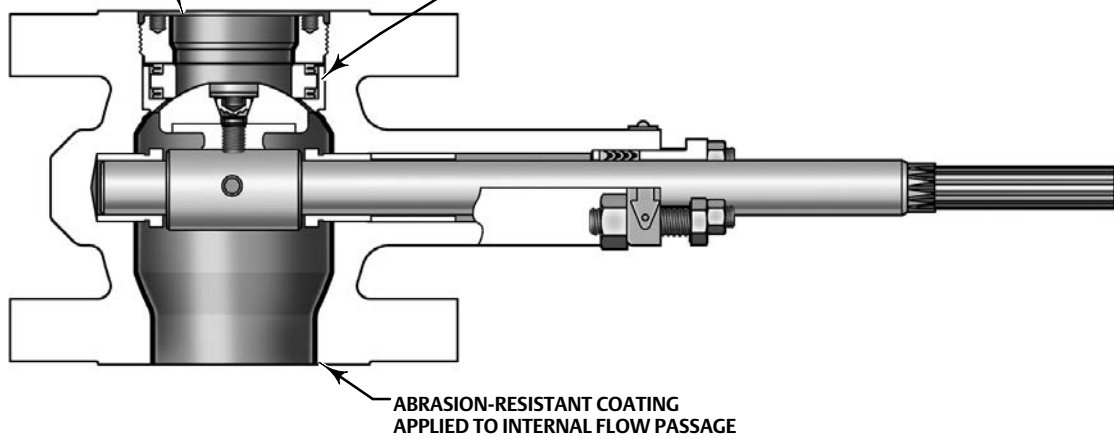
Figure 1. Sectional of Fisher V500 Control Valve



DETAIL OF SEALED BEARINGS

HARDFACED SLOTLESS  
RETAINER RESISTS  
EFFECTS OF EROSION

BODY INSERT PROTECTS THE SEAT AND BODY FROM  
HIGH VELOCITY ERODIVE FLOWS AND EASES REPAIR



W9275

**FURNACE FEED (FFD) TRIM**

1 End-tapped valve body and pipe plug optional (limited to less than 232°C [450°F])

Figure 2. Detail of Seat Ring Design

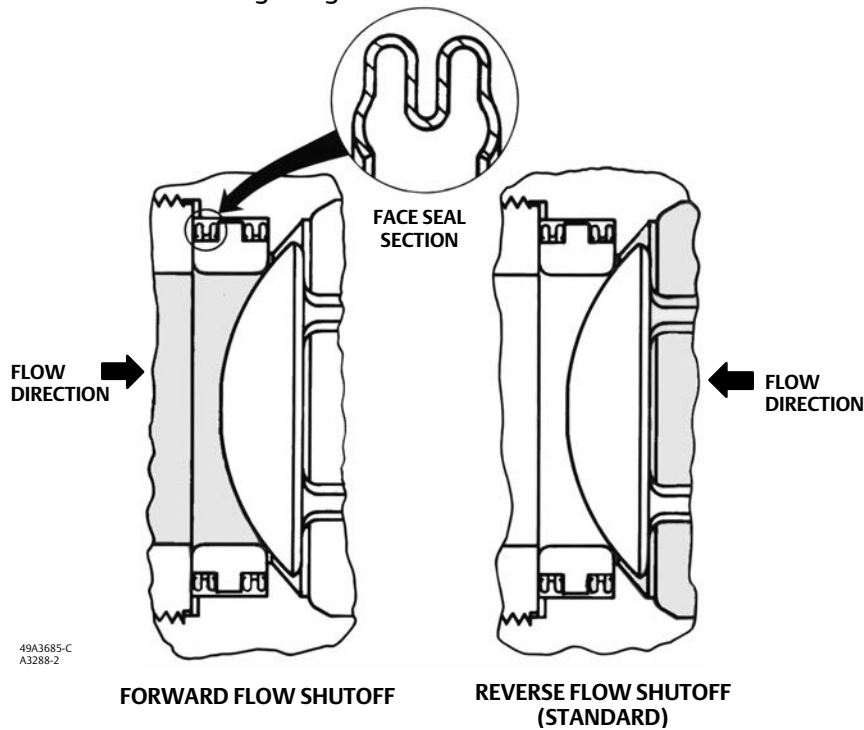
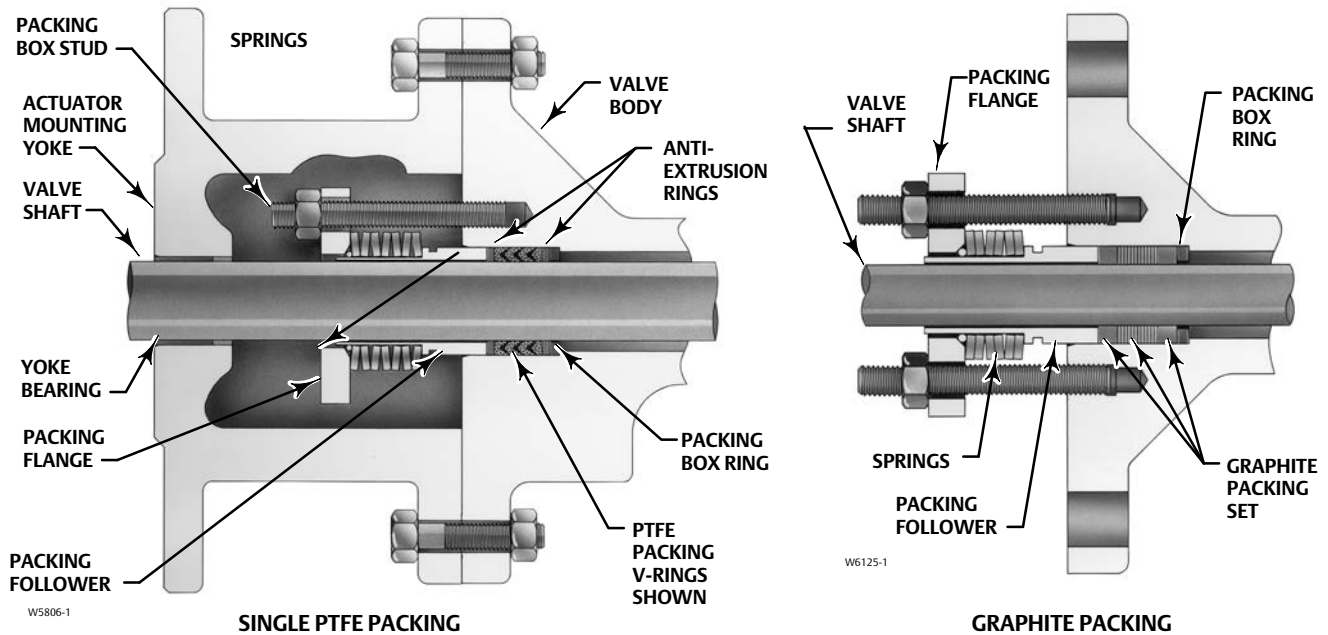


Figure 3. Typical ENVIRO-SEAL Packing Arrangements for Rotary Valves



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V500 Valve  
D100054X012

Table 1. Valve Size, ASME Pressure Ratings, and Flange Compatibility (X indicates availability)

VALVE SIZE, NPS	FLANGED		
	CL150	CL300	CL600
1	X	X	X
1-1/2	X	X	X
2	X	X	X
3	X	X	X
4	X	X	X
6	X	X	X
8	X	X	X

Table 2. Valve Size, EN Pressure Ratings, and Flange Capability (X indicates availability)

VALVE SIZE, DN	Flanged					
	PN 10	PN 16	PN 25	PN 40	PN 63	PN 100
25	X	X	X	X	X	X
40	X	X	X	X	X	X
50	X	X	X	X	X	X
80	X	X	X	X	X	X
100	X	X	X	X	X	X
150	X	X	X	X	X	X
200	X	X	X	X	X	X

Table 3. Material Combinations

Trim Level	Body Material	Valve Size, NPS	Valve Plug	Seat Ring	Retainer
1	WCC	1 & 1-1/2	CF8M/Chrome Plate	CF8M	CF8M
		2 through 8	CF8M/Chrome Plate	CF8M	CB7Cu-1
	CF8M	1 through 8	CF8M/Chrome Plate	CF8M	CF8M
	CF3M <sup>(2)</sup>	1 through 8	CF3M/Chrome Plate	CF3M	CF3M
2	WCC	1 & 1-1/2	R30006	R30006	CF8M
		2 through 8	R30006	R30006	CB7Cu-1
	CF8M	1 through 8	R30006	R30006	CF8M
	CF3M <sup>(2)</sup>	1 through 8	R30006	R30006	CF3M
3	WCC/CF8M/CF3M <sup>(1,3)</sup>	1 & 1-1/2	R30006	R30006	CF8M/R30006 bore or CF3M/R30006 bore <sup>(3)</sup>
		2 through 8	R30006	R30006	R30006
3H (over 600°F)	CF8M/CF3M <sup>(3)</sup>	2 through 8	R30006	R30006	CF8M/R30006 bore or CF3M/R30006 bore <sup>(3)</sup>
4 <sup>(5,6)</sup>	WCC/CF8M/CF3M <sup>(3)</sup>	1 & 1-1/2 <sup>(4)</sup>	Solid VTC	Solid VTC	CF8M/VTC bore or CF3M/VTC bore <sup>(3)</sup>
		2 <sup>(4)</sup>	Solid VTC	Solid VTC	R30006/VTC bore
		3 through 8	R30006 hub, Titanium Gr 5 cap screw, and VTC surface cap	Solid VTC	R30006/VTC bore
4S <sup>(5,6)</sup>	WCC/CF8M/CF3M <sup>(3)</sup>	3 through 8	R30006 hub, S17400SST treated insert, N07718 cap screw, and VTC surface cap	Solid VTC	R30006/VTC bore
FFD <sup>(6)</sup>	CF8M with Tungsten Carbide Coating and R30006 Drop-in Seat Ledge	2 through 8	R30006/Tungsten Carbide Seating Surface	Solid VTC	CF8M/R30006 Bore

1. Trim 3 for NPS 2 through 8 stainless steel bodies is limited to 600°F.
2. European Sourcing Only.
3. European sources supply CF3M in lieu of CF8M.
4. Includes an S20910 SST shaft for NPS 1, 1-1/2, and 2.
5. Use trim 4S when sour service construction is required for compliance to NACE MR0175-2002.
6. VTC trim is not compatible with water and steam above 180°C (360°F).

Table 4. Material Temperature Capabilities<sup>(1, 4)</sup>

PART NAME	MATERIAL		MINIMUM TO MAXIMUM TEMPERATURE	
			°C	°F
Valve body and retainer NPS 1 and 1-1/2	Steel body	CF8M retainer CF8M retainer with R30006 bore CF8M retainer with VTC bore	-29 to 427	-20 to 800
	CF8M body	CF8M retainer CF8M retainer with R30006 bore S31600 retainer with VTC bore	-198 to 538	-325 to 1000
Valve body and retainer NPS 2 through 8	WCC steel body	CB7Cu-1 retainer	-29 to 427	-20 to 800
		Solid R30006 retainer	-29 to 427	-20 to 800
		CF8M retainer	-29 to 260	-20 to 500
		R30006 retainer with VTC bore	-29 to 427	-20 to 800
	CF8M body	CF8M retainer	-198 to 427	-325 to 800
		Solid R30006 retainer	-46 to 324	-50 to 600
		CF8M with R30006 bore	-198 to 427	-325 to 800
		R30006 retainer with VTC bore	-46 to 427	-50 to 800
Seat Ledge Insert		R30006	-46 to 538	-50 to 1000
Seat ring		CF8M	-198 to 538	-325 to 1000
		Solid R30006	-46 to 538	-50 to 1000
		CF8M with R30006 seat	-198 to 538	-325 to 1000
		Solid VTC	-46 to 427	-50 to 800
Valve plug		Chrome-plated CF8M	-198 to 316	-325 to 600
		Solid R30006	-46 to 427	-50 to 800
		Solid VTC (NPS 1 through 2 valves only)	-46 to 427	-50 to 800
		VTC surface bolted to an R30006 hub (NPS 3 through 8 valves only)	-46 to 427	-50 to 800
		R30006 Hub, Tungsten Carbide Seat	-40 to 538	-40 to 1000
Valve shaft		S17400	-62 to 427	-80 to 800
		S20910	-198 to 538	-325 to 1000
Taper and expansion pins	1 through 2-inch solid VTC valve plug	N10276	-46 to 427	-50 to 800
	Other valve plugs	S20910	-198 to 538	-325 to 1000
Bearings		PTFE/composition-lined S31600	-46 to 260	-50 to 500
		R30006 <sup>(2)</sup>	-198 to 538	-325 to 1000
		S44004 <sup>(2)</sup>	-29 to 427	-20 to 800
O-rings <sup>(3)</sup> (for Alloy 6 or 440C SST sealed bearings)		FKM	-18 to 204	0 to 400
		NBR	-29 to 93	-20 to 200
Bearing stop		S31600	-198 to 538	-325 to 1000
Thrust washer		S17700 for S17400 shaft	-198 to 427	-325 to 800
		R30016 for S20910 SST shaft	-198 to 538	-325 to 1000
Face seals		N07718 (NACE MR0175-2002 or PTFE/N10276	-198 to 538	-325 to 1000
Retainer gasket		Graphite laminate for NPS 1 and 1-1/2 valves or S31600 for NPS 2 through 8 valves	-198 to 538	-325 to 1000
Packing rings		PTFE	-46 to 260	-50 to 500
		PTFE/bound composition	-73 to 260	-100 to 500
		Graphite ribbon	-198 to 538	-325 to 1000
Packing follower		S31600	-198 to 538	-325 to 1000
Studs and nuts		SA-193-B7 studs and SA-194-2H nuts	-46 to 427	-50 to 800
		SA-193-B7M studs and SA-194-2HM nuts	-29 to 427	-20 to 800
		B8M studs and 8M nuts	-198 to 538	-325 to 1000
Packing box ring		S31600	-198 to 538	-325 to 1000

1. VTC trim is incompatible with water and steam above 180°C (360°F).  
2. Recommended for erosive applications.  
3. For sealed bearing constructions  
4. Component ratings (not indicative of assembly rating)

Table 5. Maximum Allowable Shutoff Pressure Drops for Level 1 Trim, Bar

VALVE BODY MATERIAL	BEARING MATERIAL	TEMPERATURE, °C	VALVE BODY SIZE, NPS						
			1	1-1/2	2	3	4	6	8
WCC steel	S44004	-29 to 149	68.9	55.2	41.4	41.4	41.4	41.4	24.1
		149 to 204	68.9	55.2	41.4	41.4	41.4	41.4	23.8
		204 to 316	68.9	55.2	41.4	41.4	41.4	41.4	23.1
	R30006	-29 to 204	68.9	55.2	41.4	41.4	41.4	20.7	15.2
		204 to 260	68.9	55.2	41.4	41.4	41.4	20.7	15.2
		260 to 316	68.9	55.2	41.4	41.4	41.4	20.7	15.2
	PTFE/ composition- lined S31600	-29 to 93	68.9	55.2	41.4	41.4	41.4	41.4	24.1
		93 to 149	68.9	55.2	41.4	41.4	41.4	41.4	24.1 <sup>(1)</sup>
									23.1 <sup>(2)</sup>
		149 to 204	68.9	55.2	41.4	41.4	41.4	41.4	23.8 <sup>(1)</sup>
									22.1 <sup>(2)</sup>
		204 to 260	68.9	55.2	41.4	41.4	41.4	41.4	23.4 <sup>(1)</sup>
21.7 <sup>(2)</sup>									
CF8M SST	R30006	-46 to 20	68.9	55.2	41.4	41.4	41.4	20.7	15.2
		204 to 260	65.8	55.2	41.4	41.4	41.4	20.7	15.2
		260 to 316	62.4	55.2	41.4	41.4	41.4	20.7	15.2
	PTFE/ composition- lined S31600	-46 to 93	68.9	55.2	41.4	41.4	41.4	41.4	24.1
		93 to 149	68.9	55.2	41.4	41.4	41.4	41.4	24.1 <sup>(1)</sup>
									23.1 <sup>(2)</sup>
		149 to 204	68.9	55.2	41.4	41.4	41.4	41.4	23.8 <sup>(1)</sup>
									22.1 <sup>(2)</sup>
		204 to 260	65.8	55.2	41.4	41.4	41.4	41.4	23.4 <sup>(1)</sup>
									21.7 <sup>(2)</sup>
1. S17400 shaft only 2. ASME SA-479 Grade S20910 SST shaft only. Pressure drops appropriate for both shaft materials.									



Table 6. Maximum Allowable Shutoff Pressure Drops for Level 1 Trim, Psi

VALVE BODY MATERIAL	BEARING MATERIAL	°F	VALVE BODY SIZE, NPS							
			1	1-1/2	2	3	4	6	8	
WCC steel	S44004	-20 to 300	1000	800	600	600	600	600	600	350
		300 to 400	1000	800	600	600	600	600	600	345
		400 to 600	1000	800	600	600	600	600	600	335
	R30006	-20 to 400	1000	800	600	600	600	600	300	220
		400 to 500	1000	800	600	600	600	600	300	220
		500 to 600	1000	800	600	600	600	600	300	220
	PTFE/ composition- lined S31600	-20 to 200	1000	800	600	600	600	600	600	350
		200 to 300	1000	800	600	600	600	600	600	350 <sup>(1)</sup>
										335 <sup>(2)</sup>
		300 to 400	1000	800	600	600	600	600	600	345 <sup>(1)</sup>
										320 <sup>(2)</sup>
		400 to 500	1000	800	600	600	600	600	600	340 <sup>(1)</sup>
								315 <sup>(2)</sup>		
CF8M SST	R30006	-50 to 400	1000	800	600	600	600	300	220	
		400 to 500	955	800	600	600	600	300	220	
		500 to 600	905	800	600	600	600	300	220	
	PTFE/ composition- lined S31600	-50 to 200	1000	800	600	600	600	600	350	
		200 to 300	1000	800	600	600	600	600	600	350 <sup>(1)</sup>
										335 <sup>(2)</sup>
		300 to 400	1000	800	600	600	600	600	600	345 <sup>(1)</sup>
										320 <sup>(2)</sup>
		400 to 500	955	800	600	600	600	600	600	340 <sup>(1)</sup>
										315 <sup>(2)</sup>

1. S17400 shaft only  
2. ASME SA-479 Grade S20910 SST shaft only. Pressure drops appropriate for both shaft materials.

**Table 7. Maximum Allowable Shutoff Pressure Drops for Level 2 and 3 Trims, Bar**

VALVE BODY MATERIAL	BEARING MATERIAL	TEMPERATURE, °C	VALVE BODY SIZE, NPS						
			1	1-1/2	2	3	4	6	8
WCC steel	S44004	-29 to 93	103.4	103.4	103.4	103.4	82.7	51.7	24.1
		93 to 149	100.3	100.3	99.0	100.3	82.7	51.7	24.1
		149 to 204	97.2	97.2	93.8	97.2	82.7	51.0	23.8
		204 to 260	91.7	91.7	91.4	91.7	82.7	50.0	23.1
		260 to 316	83.4	83.4	83.4	83.4	82.7	49.3	23.1
		316 to 343	81.0	81.0	81.0	81.0	81.0	48.3	22.4
		343 to 371	78.3	78.3	78.3	78.3	78.3	48.3	22.4
		371 to 399	69.6	69.6	69.6	69.6	69.6	46.9	21.7
	399 to 427	56.9	56.9	56.9	56.9	56.9	46.9	21.7	
	R30006	-29 to 204	68.9	55.2	41.4	41.4	41.4	20.7	15.2
		204 to 260	68.9	55.2	41.4	41.4	41.4	20.7	15.2
		260 to 316	68.9	55.2	41.4	41.4	41.4	20.7	15.2
		316 to 343	68.9	55.2	41.4	41.4	41.4	20.7	15.2
		343 to 371	68.9	55.2	41.4	41.4	41.4	20.7	15.2
		371 to 399	68.9	55.2	41.4	41.4	41.4	20.7	15.2
		399 to 427	56.9	55.2	41.4	41.4	41.4	20.7	15.2
	PTFE/ composition- lined S31600	-29 to 38	103.4	103.4	103.4	103.4	89.6	55.2	24.1
		38 to 93	103.4	103.4	103.4	103.4	89.6	55.2	24.1
		93 to 149	100.3	100.3	100.3	100.3	89.6	55.2	24.1 <sup>(1)</sup> 23.1 <sup>(2)</sup>
		149 to 204	97.2	97.2	97.2	97.2	89.6	54.8 <sup>(1)</sup> 51.0 <sup>(2)</sup>	23.8 <sup>(1)</sup> 22.1 <sup>(2)</sup>
		204 to 232	91.7	91.7	91.7	91.7	89.6	53.8 <sup>(1)</sup> 50.0 <sup>(2)</sup>	23.4 <sup>(1)</sup> 21.7 <sup>(2)</sup>
CF8M SST <sup>(3)</sup>	R30006	-46 to 204	68.9	55.2	41.4	41.4	41.4	20.7	15.2
		204 to 260	65.8	55.2	41.4	41.4	41.4	20.7	15.2
		260 to 316	62.4	55.2	41.4	41.4	41.4	20.7	15.2
		316 to 343	61.4	55.2	41.4	41.4	41.4	20.7	15.2
		343 to 371	59.6	55.2	41.4	41.4	41.4	20.7	15.2
		371 to 399	58.3	55.2	41.4	41.4	41.4	20.7	15.2
		399 to 427	57.2	55.2	41.4	41.4	41.4	20.7	15.2
	PTFE/ composition- lined S31600	-46 to 38	99.3	99.3	99.3	99.3	89.6	55.2	24.1
		38 to 93	85.5	85.5	85.5	85.5	85.5	55.2	24.1
		93 to 149	77.3	77.3	77.3	77.3	77.2	53.1	24.1 <sup>(1)</sup> 23.1 <sup>(2)</sup>
		149 to 204	71.0	71.0	71.0	71.0	71.0	54.8 <sup>(1)</sup> 51.0 <sup>(2)</sup>	23.8 <sup>(1)</sup> 22.1 <sup>(2)</sup>
		204 to 232	65.8	65.8	65.8	65.8	65.8	53.8 <sup>(1)</sup> 50.0 <sup>(2)</sup>	23.4 <sup>(1)</sup> 21.7 <sup>(2)</sup>

1. S17400 shaft only  
2. ASME SA-479 Grade S20910 SST shaft only. Pressure drops appropriate for both shaft materials.  
3. Level 3 trim is limited to a maximum temperature of 316°C. For temperatures above 316°C, use trim 3H.

Table 8. Maximum Allowable Shutoff Pressure Drops for Level 2 and 3 Trims, Psi

VALVE BODY MATERIAL	BEARING MATERIAL	TEMPERATURE, °F	VALVE BODY SIZE, NPS						
			1	1-1/2	2	3	4	6	8
WCC steel	S44004	-20 to 200	1500	1500	1500	1500	1200	750	350
		200 to 300	1455	1455	1435	1455	1200	750	350
		300 to 400	1410	1410	1360	1410	1200	740	345
		400 to 500	1330	1330	1325	1330	1200	725	335
		500 to 600	1210	1210	1210	1210	1200	715	335
		600 to 650	1175	1175	1175	1175	1175	700	325
		650 to 700	1135	1135	1135	1135	1135	700	325
		700 to 750	1010	1010	1010	1010	1010	680	315
	750 to 800	825	825	825	825	825	680	315	
	R30006	-20 to 400	1000	800	600	600	600	300	220
		400 to 500	1000	800	600	600	600	300	220
		500 to 600	1000	800	600	600	600	300	220
		600 to 650	1000	800	600	600	600	300	220
		650 to 700	1000	800	600	600	600	300	220
		700 to 750	1000	800	600	600	600	300	220
		750 to 800	825	800	600	600	600	300	220
	PTFE/ composition- lined S31600	-20 to 100	1500	1500	1500	1500	1300	800	350
		100 to 200	1500	1500	1500	1500	1300	800	350
		200 to 300	1455	1455	1455	1455	1300	800	350 <sup>(1)</sup> 335 <sup>(2)</sup>
		300 to 400	1410	1410	1410	1410	1300	795 <sup>(1)</sup> 740 <sup>(2)</sup>	345 <sup>(1)</sup> 320 <sup>(2)</sup>
		400 to 450	1330	1330	1330	1330	1300	780 <sup>(1)</sup> 725 <sup>(2)</sup>	340 <sup>(1)</sup> 315 <sup>(2)</sup>
CF8M SST <sup>(3)</sup>	R30006	-50 to 400	1000	800	600	600	600	300	220
		400 to 500	955	800	600	600	600	300	220
		500 to 600	905	800	600	600	600	300	220
		600 to 650	890	800	600	600	600	300	220
		650 to 700	865	800	600	600	600	300	220
		700 to 750	845	800	600	600	600	300	220
		750 to 800	830	800	600	600	600	300	220
	PTFE/ composition- lined S31600	-50 to 100	1440	1440	1440	1440	1300	800	350
		100 to 200	1240	1240	1240	1240	1240	800	350
		200 to 300	1120	1120	1120	1120	1120	770	350 <sup>(1)</sup> 335 <sup>(2)</sup>
		300 to 400	1030	1030	1030	1030	1030	795 <sup>(1)</sup> 740 <sup>(2)</sup>	345 <sup>(1)</sup> 320 <sup>(2)</sup>
		400 to 450	955	955	955	955	955	780 <sup>(1)</sup> 725 <sup>(2)</sup>	340 <sup>(1)</sup> 315 <sup>(2)</sup>

1. S17400 shaft only  
2. ASME SA-479 Grade S20910 SST shaft only. Pressure drops appropriate for both shaft materials.  
3. Level 3 trim is limited to a maximum temperature of 600°F. For temperatures above 600°F, use trim 3H.

**Table 9. Maximum Allowable Shutoff Pressure Drops for Level 4 Trim<sup>(1)</sup>**

VALVE BODY MATERIAL	BEARING MATERIAL	TEMPERATURE, °C	BAR						
			VALVE SIZE, NPS						
			1	1-1/2	2	3	4	6	8
WCC steel	S44004	-29 to 93	103.4	103.4	70.3	103.4	78.6	52.4	24.1
		93 to 149	100.3	100.3	70.3	100.3	78.6	52.4	24.1
		149 to 204	97.2	97.2	70.3	97.2	78.6	51.0	23.8
		204 to 260	91.7	91.7	70.3	91.7	78.6	50.0	23.1
		260 to 316	83.4	83.4	70.3	83.4	78.6	49.3	23.1
		316 to 371	78.3	78.3	70.3	78.3	78.3	48.3	22.4
	371 to 427	56.9	56.9	56.9	56.9	56.9	46.9	21.7	
	R30006	-29 to 204	68.9	55.2	41.4	41.4	41.4	20.7	15.2
		204 to 260	68.9	55.2	41.4	41.4	41.4	20.7	15.2
		260 to 316	68.9	55.2	41.4	41.4	41.4	20.7	15.2
316 to 371		68.9	55.2	41.4	41.4	41.4	20.7	15.2	
371 to 427	56.9	55.2	41.4	41.4	41.4	20.7	15.2		
CF8M SST	R30006	-46 to 204	68.9	55.2	41.4	41.4	41.4	20.7	15.2
		204 to 260	65.8	55.2	41.4	41.4	41.4	20.7	15.2
		260 to 316	62.4	55.2	41.4	41.4	41.4	20.7	15.2
		316 to 371	59.6	55.2	41.4	41.4	41.4	20.7	15.2
		371 to 427	57.2	55.2	41.4	41.4	41.4	20.7	15.2
VALVE BODY MATERIAL	BEARING MATERIAL	TEMPERATURE, °F	PSI						
			1	1-1/2	2	3	4	6	8
WCC steel	S44004	-20 to 200	1500	1500	1020	1500	1140	750	350
		200 to 300	1455	1455	1020	1455	1140	760	350
		300 to 400	1410	1410	1020	1410	1140	740	345
		400 to 500	1330	1330	1020	1330	1140	725	335
		500 to 600	1210	1210	1020	1210	1140	715	335
		600 to 700	1135	1135	1020	1135	1135	700	325
	700 to 800	825	825	825	825	825	680	315	
	R30006	-20 to 400	1000	800	600	600	600	300	220
		400 to 500	1000	800	600	600	600	300	220
		500 to 600	1000	800	600	600	600	300	220
600 to 700		1000	800	600	600	600	300	220	
700 to 800	825	800	600	600	600	300	220		
CF8M SST	R30006	-50 to 400	1000	800	600	600	600	300	220
		400 to 500	955	800	600	600	600	300	220
		500 to 600	905	800	600	600	600	300	220
		600 to 700	855	800	600	600	600	300	220
		700 to 800	830	800	600	600	600	300	220

1. VTC trim is incompatible with water and steam above 180°C (360°F).

Table 10. Maximum Allowable Shutoff Pressure Drops for FFD Trim<sup>(1)</sup>

VALVE BODY MATERIAL	BEARING MATERIAL	TEMPERATURE, °C	BAR		
			VALVE SIZE, NPS		
			3	4	6
CF8M SST	R30006	-46 to 204	41.4	41.4	20.7
		204 to 260	41.4	41.4	20.7
		260 to 316	41.4	41.4	20.7
		316 to 371	41.4	41.4	20.7
		371 to 427	41.4	41.4	20.7
VALVE BODY MATERIAL	BEARING MATERIAL	TEMPERATURE, °F	PSI		
CF8M SST	R30006	-50 to 400	600	600	300
		400 to 500	600	600	300
		500 to 600	600	600	300
		600 to 700	600	600	300
		700 to 800	600	600	300

1. VTC trim is incompatible with water and steam above 180°C (360°F).

**Table 11. Actuator Mounting Selections, with Action and Open Plug Position Options**

MOUNTING	ACTION <sup>(1)</sup>	OPEN PLUG POSITION	
		Forward Flow	Reverse Flow
Left-hand	PDTC	Below shaft <sup>(2)</sup>	Above shaft
	PDTO	Below shaft <sup>(2)</sup>	Above shaft
Right-hand	PDTC	Above shaft	Below shaft <sup>(2)</sup>
	PDTO	Above shaft	Below shaft <sup>(2)</sup>

1. PDTC—Push-down-to-close (extending actuator rod closes valve)  
PDTO—Push-down-to-open (extending actuator rod opens valve).  
2. Consult your Emerson Process Management sales office for compatibility with process fluid. Particulate can cause the valve to stick if the plug is rotated below the shaft.

information under each specification and in the referenced tables.

## Actuator and Accessory Information

Refer to the specific actuator and accessory bulletins for required ordering information.

## Installation

The V500 control valve may be installed in any position. However, for best shutoff performance, a position with the shaft horizontal is recommended.

The control valve may be installed in forward or reverse flow direction. Forward flow (through the seat ring and past the plug) tends to open the valve; reverse flow (past the plug and through the seat ring) tends to close the valve. The reverse flow direction is recommended for erosive applications.

Specific operating conditions may require a specific combination of push-down-to-close or -open actuator motion and open valve plug position above or below the shaft. To satisfy specific operating requirements, the complete control valve package (valve and actuator) can be assembled and installed in different ways, providing eight options for actuator motion and open plug position.

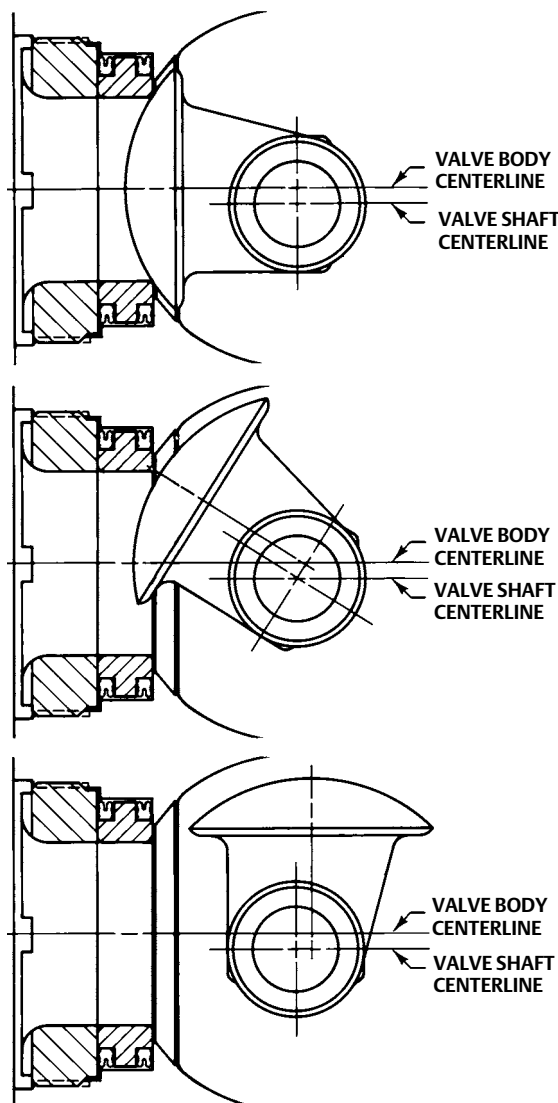
Table 11 and the appropriate actuator bulletin describe possible assembly and installation options. For assistance in selecting the appropriate combination of actuator action and open valve position, consult your [Emerson Process Management sales office](#).

Dimensions are shown in figure 5.

## Valve Information

To determine the required valve ordering information, refer to the Specifications table. Review the

**Figure 4. Eccentric Rotation**



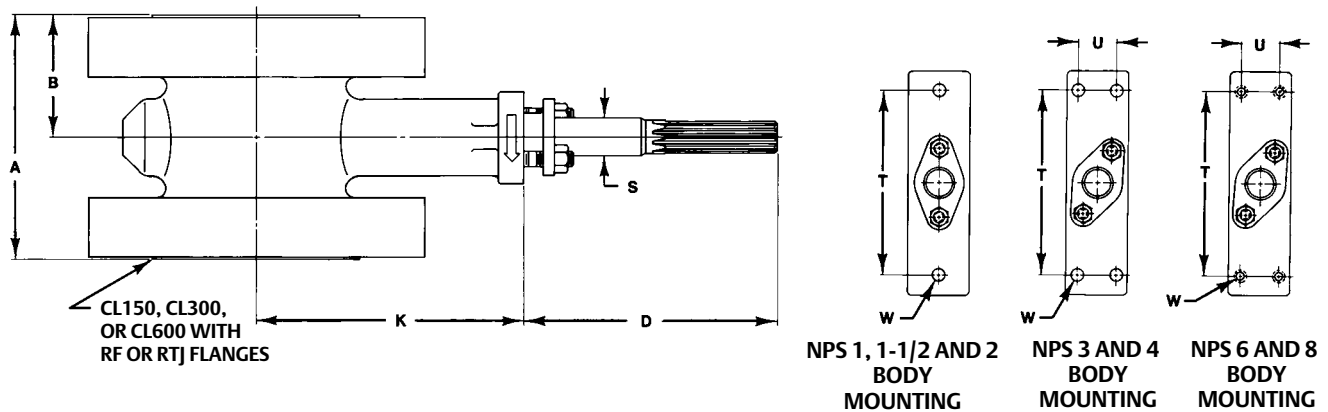
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Table 12. Fisher V500 Rotary Control Flanged Valve Dimensions

VALVE SIZE, NPS	DIMENSIONS										APPROXIMATE WEIGHT		
	A		B		D	K	S (SHAFT DIA) <sup>(1)</sup>	T	U	W	Flanged		
	RF	RTJ	RF	RTJ							Pressure Class		
											CL150	CL300	CL600
mm										kg			
1	102	108	51	57	187	126	12.7	118	---	11	5.4	5.9	5.9
1-1/2	114	122	57	63	187	135	15.9	118	---	14	8.6	9.5	10
2	124	124	62	62	187	151	15.9	118	---	14	9.5	11	13
3	165	165	83	83	213	200	25.4 25.4 x 19.1	152	32	14	19	24	26
4	194	194	97	97	208	216	31.8	235	46	18	36	42	50
6	229	229	114	114	208	270	38.1 38.1 x 31.8	235	46	5/8-Inch 11 UNC	54	69	93
8	243	243	121	121	208	318	38.1	235	46	5/8-Inch 11 UNC	79	98	135
VALVE SIZE, NPS	Inches										Pounds		
1	4.00	4.25	2.00	2.25	7.38	4.97	1/2	4.62	---	0.45	12	13	13
1-1/2	4.50	4.75	2.25	2.50	7.38	5.31	5/8	4.62	---	0.56	19	21	23
2	4.88	4.88	2.44	2.44	7.38	5.94	5/8	4.62	---	0.56	21	25	28
3	6.50	6.50	3.25	3.25	8.44	7.88	1 1 x 3/4	6.00	1.25	0.56	42	52	57
4	7.62	7.62	3.81	3.81	8.19	8.50	1-1/4	9.25	1.81	0.69	79	93	111
6	9.00	9.00	4.50	4.50	8.19	10.6	1-1/2 1-1/2 x 1-1/4	9.25	1.81	5/8-Inch 11 UNC	120	152	204
8	9.56	9.56	4.78	4.78	8.19	12.5	1-1/2	9.25	1.81	5/8-Inch 11 UNC	175	217	298

1. Shaft diameter versus spline diameter.

Figure 5. Fisher V500 Rotary Control Flanged Valve Dimensions (refer to table 12)



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Note:  
For dimensions of valves with DN (or other) end connections, consult your [Emerson Process Management sales office](#).

## Product Bulletin

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**V500 Valve**  
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