

ēplug™ Rotary-Shaft Valves for General and Severe Service



- Rotary valve efficiency with globe valve ruggedness for general gas, steam, or liquid service and for fibrous slurry applications
- DN 25 to DN 500 DIN sizes and 1- to 20-inch ANSI sizes
- Choice of seal types and materials—composition, flat metal, heavy-duty metal, or flow ring
- Temperatures to 427°C
- Pressures to DIN PN40 and ANSI Class 600
- ENVIRO-SEAL® packing systems to help ensure compliance with environmental emissions requirements
- FIELDVUE® digital valve controllers offer digital control and remote diagnostics. The proven line of Fisher positioners, controllers, transmitters, and switches also is available.



Product Flier PF51.3:ēplug

Rugged Rotary Valves

The Design V500 valve uses rugged valve components and a choice of erosion-resistant trim materials for highly erosive and severe operating conditions.

The Design CV500 valve combines the rangeability of the cammed-segmented V-notched ball, with the inherent ruggedness found in the Design V500 heavy duty bearings, seals and body. This combination provides a balance of high capacity, erosion resistance and pressure control for gas and liquids.

The Design V500 and CV500 are exceptional erosion-resistant valves.

The Design V500 valve uses an eccentric plug to control flow. It is

available in four types of erosion-resistant trim, including one of ceramic material.

The Design CV500 offers all the high temperature, high pressure, and sealing capabilities of the Design V500 valve, and it adds the high rangeability, high capacity, and throttling capability of the V-notch valve.

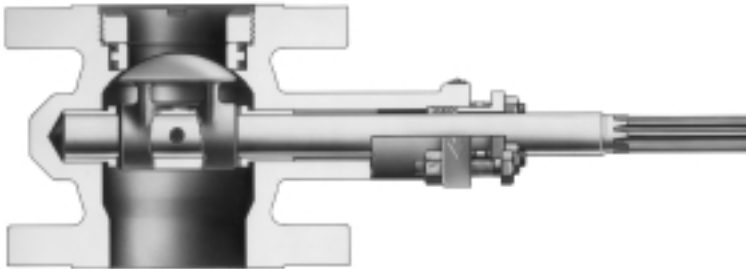
Both designs are available with integral flanges or as flangeless valves.

Rugged Construction...

Oversized shaft diameters in the Design CV500 and V500 valves give these valves high pressure capability. The one-piece body eliminates gaskets that might leak as a result of pipeline stresses.

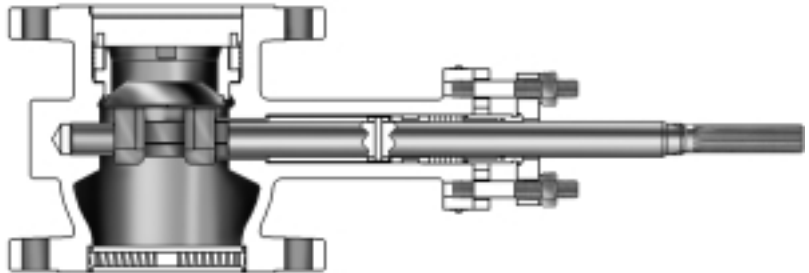
Long Seat Life...The eccentric action of the valve plug or ball moves the plug away from the seat as soon as the valve opens. This action reduces seat wear and friction. The patented seat ring dynamically aligns with the plug as the valve closes. The alignment process laps the seating surfaces for extended seal life. The seat ring has two shutoff surfaces so it can be reversed to extend the service time.

The Design BV500 valve features a specially contoured eccentric plug. The seat ring is gasketed and is retained with a screwed-in retainer. Metal-to-metal seating is standard, and soft (PTFE) seating is optional. The Design BV500 offers an exceptional solution for many less-severe general-service applications, including low-pressure steam and fluids.



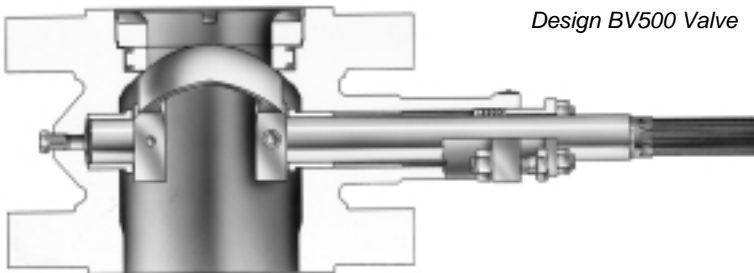
W4170-37/L

Design V500 Valve



W8080 / IL

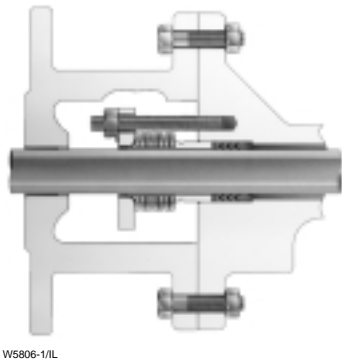
Design BV500 Valve



W5739-1/L

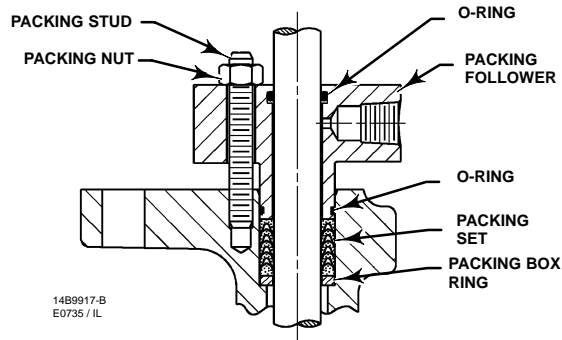
Design CV500 Valve

Rugged Rotary Valves (Continued)



W5806-1/IL

ENVIRO-SEAL® Packing System
(Single PTFE V-Ring)



14B9917-B
E0735 / IL

Leak-off Packing Assembly for
1- through 12-inch Valves

Other Rotary Valves

Designs V150, V200, and V300... These Vee-Ball® valves use the time-proven V-notch ball that provides high-capacity control of liquid, gas, steam, and fibrous slurries. The shearing action of the ball allows smooth, non-clogging operation, and the unrestricted, straight-through flow ensures high capacity.

Design V250... The Design V250 valve is a heavy-duty valve often used in gas transmission lines, gas distribution, or liquid pipelines. It is available in sizes to 24-inches and Class 600 or 900 pressure-temperature ratings.

Design V260... The Design V260 valve has special energy-dissipating trim to reduce noise effects that cause pipeline vibrations. It is available in 8-, 10-, and 12-inch ANSI valves.

Types 8532, 8560 & 8510/8510B... The edisc® family of high performance butterfly valves is designed for optimal control performance, as well as tight shutoff isolation service. These valves are available in size range 2 to 24-inch and a variety of pressure classes and body styles.

Type A11, A31A, A31D, A61D & A41... The Posi-Seal® High Performance Butterfly Valves are designed for isolation on/off service as well as low tier control. These valves feature key, double d or square shafts. These valve are available in sizes 2 through 72-inch and pressure classes up to 2500.

Basis Weight Control Valve... Design V150, V200, and V300 valves are available with an electric actuator and control circuits to meet the precision control requirements of basis weight control in the paper making industry.



W5000/IL

Typical Flangeless V500 Construction

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Rugged Rotary Valves (Continued)

Actuators



Type 1052 Actuator



Type 1061 Actuator

Type 1051 and 1052 Pneumatic Diaphragm Actuators...Rugged, heavy-duty spring-return actuators. These actuators are available with a variety of instrument accessories, handwheels, adjustable travel stops, and a maintenance lock-out device.

Type 1061 Pneumatic Piston Actuator...Heavy-duty piston actuator available with a variety of instrument accessories, handwheels and piston bypass

valves, and a maintenance lockout device.

Type 1077 Manual Handwheel Actuator...Available for manual-only operation.

Actuator Accessories

FIELDVUE® Digital Valve Controller...Available mounted on Type 1051 and 1052 actuators.

Positioners and Transducers...

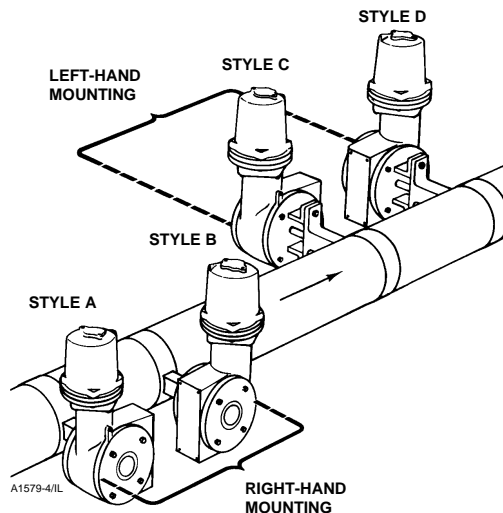
Pneumatic positioners and electro-pneumatic positioners and transducers can be provided with these actuators.

Position Transmitters, Solenoid Valves, Volume Boosters, and Limit Switches...Also available.

MOUNTING	ACTION ⁽¹⁾	BALL ROTATION TO CLOSE ⁽²⁾	CV500 V500	PLUG ROTATION TO CLOSE ⁽²⁾	BV500
Right-Hand	PDTC	CCW	A	CW	B
	PDTO	CCW	B	CW	A
Left-Hand	PDTC	CCW	D	CW	C
	PDTO	CCW	C	CW	D

1. PDTC—Push-down-to-close, and PDTO—Push-down-to-open.
2. CCW—Counterclockwise, and CW—Clockwise.

The Actuators are Available in any of Four Styles and Positions (Above the Pipeline as Shown Here, Below, or Parallel with the Pipeline)



Selecting Rotary Valve Products

Only a few of the more commonly selected product materials, sizes, options, and accessories are covered in this flier.

Contact your nearest sales office (refer to the back cover) for assistance in selecting and sizing these products. More detailed specifications are available on request.

Selecting Valve Components

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Valve Type Selection

APPLICATION			VALVE TYPE	SIZES, DIN OR INCHES	VALVE BODY MATERIAL	SHUTOFF CLASSIFICATION
Service	Temperature	End Connection and Body Rating				
Erosive service where extremely rugged construction is required (rangeability of 100 to 1)	to 538°C	Flanged: DIN PN10 - PN 100 or ANSI Class 150 - 600 Flangeless: ANSI Class 150 - 600	V500	Flanged: DN 25 - DN 200 DIN or 1 - 8 inches ANSI Flangeless: 3 - 8 inches ANSI	WCC steel or CF8M (316 stainless steel)	Class IV (0.01% of valve capacity in either flow direction)
Erosive service where a balance of rugged construction and high capacity is required (rangeability of 200 to 1)	to 427°C	Flanged: DIN PN 10 - PN 100 or ANSI Class 150 - 600 Flangeless: ANSI Class 150 - 600	CV500	Flanged: DN 80 - DN 300 DIN or 3 - 12 inches ANSI Flangeless: 3 - 8 inches ANSI	CF3M, DIN 1.0619 steel, DIN 1.4581 stainless steel, WCC steel or CF8M	
Non-erosive general service or where integral noise attenuation is required (rangeability of 100 to 1)	to 427°C	Flanged: DIN PN 10 - PN 40 or ANSI Class 150/300	BV500	Flanged: DN 25 - DN 150 DIN or 1 - 6 inches ANSI	WCC steel or CF3M	Forward flow only; Class IV for metal seal and Class VI for PTFE Seal

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Body Materials, End Connections, and Ratings

Design BV500

VALVE BODY MATERIAL	SIZES		RAISED-FACE FLANGES OR FLANGE COMPATIBILITY	RATING
	DIN	Inches		
Flanged Valves				
WCC steel or CF3M (316 SST)	DN 25, 40, 50, 80, 100, 150	1, 1-1/2, 2, 3, 4, 6	PN10, 16, 25, 40, and Class 150, 300	PN10, 16, 25, 40, and Class 150, 300

Design CV500

VALVE BODY MATERIAL	SIZES		RAISED-FACE FLANGES OR FLANGE COMPATIBILITY	RATING
	DIN	Inches		
Flanged Valves				
WCC steel or CF8M (316 stainless steel)	DN 80, 100, 150, 200	3, 4, 6, 8	PN10/16, 25/40, 63/100, and Class 150, 300, or 600	PN10/16, 25/40, 63/100 and Class 150, 300, 600
	DN 250, 300	10, 12	PN 25, 40, and Class 300	PN 25, 40 and Class 300
Flangeless Valves				
WCC steel or CF8M (316 stainless steel)	---	3, 4	Class 150, 300, 600	Class 150, 300, 600
	---	6, 8	Class 150, 300	Class 150, 300

Design V500

VALVE BODY MATERIAL	SIZES		RAISED-FACE FLANGES OR FLANGE COMPATIBILITY	RATING
	DIN	Inches		
Flanged Valves				
WCC steel or CF8M (316 stainless steel)	DN 25, 40, 50, 80, 100, 150, 200	1, 1-1/2, 2, 3, 4, 6, 8	PN10/16, 25/40, 63/100, and Class 150, 300, or 600	PN10/16, 25/40, 63/100 and Class 150, 300, 600
Flangeless Valves				
WCC steel or CF8M (316 stainless steel)	---	3, 4	PN10 - 100 and Class 150, 300, 600	Class 150, 300
	---	6, 8	Class 150, 300	Class 150, 300

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Valve Component Materials and Temperatures for Design BV500

BODY, SEAT AND BUSHINGS			TEMPERATURE
BODY	SEAT RING	GUIDE BUSHING	°C
WCC steel	■ S31600 (316 SST) or ■ S31600 with CoCr-A seating surface	■ 440C stainless steel, ■ Alloy 6	-29 to 400
		PEEK/PTFE	-29 to 260
	S31600 with PTFE insert	■ 440C stainless steel, ■ Alloy 6, or ■ PEEK/PTFE	-20 to 232
CF3M (316 SST)	■ S31600 (316 SST) or ■ S31600 with CoCr-A seating surface	PEEK/PTFE	-196 to 260
		Alloy 6	-196 to 400
	S31600 with PTFE insert	■ PEEK/PTFE or ■ Alloy 6	-196 to 232
OTHER PARTS			
Packing (Process Temperatures Assume Uninsulated Valve Neck)	PTFE V-Ring		-196 to 232
	ENVIRO-SEAL Single PTFE V-ring (500 ppm service)		-46 to 232
	ENVIRO-SEAL Graphite (500 ppm service)		-7 to 316
Valve Plug	DN 25, 1-, or 1-1/2 inch sizes: CoCr-A (alloy 6) Larger sizes: Chrome-plated CF8M (316 stainless steel) or CF8M with CoCr-A Overlay		
Seat Retainer	CF8M		
Shaft	S20910 (Nitronic 50 stainless steel)		
Gasket	Graphite		
Packing Follower	S30400 stainless steel, fiberglass/PTFE, fluoroelastomer		
Bolting	A193 B8M bolts; A194 8M nuts		
Optional Noise Attenuator Disk	CF8M		

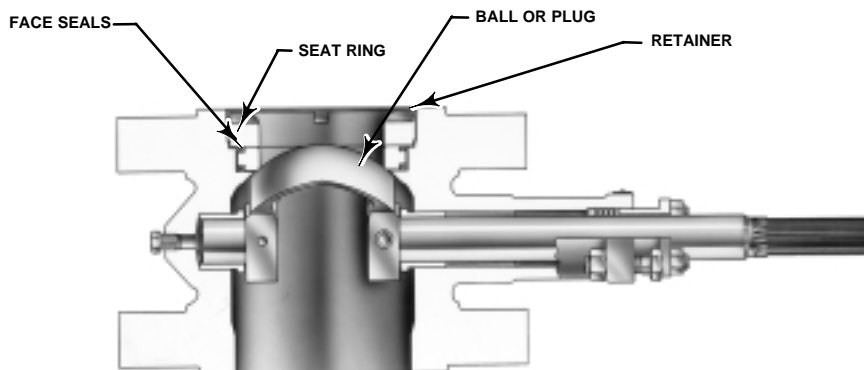
Valve Component Materials and Temperatures for Design CV500

SEAT RING, SHAFT, AND V-NOTCH BALL					NOTES
Seat Ring	■ CF3M (316L SST), ■ CF3M with CoCr-A (alloy 6) seat, ■ CF8M (316 SST), ■ CF8M with CoCr-A seat, and ■ R30006 (alloy 6)				Refer to the section below for temperatures
Valve Shaft	■ S17400 (17-4PH SST) or ■ SA479 Grade XM-19 SST				
V-Notch Ball	■ Chromium-plated CF3M (316L SST) or ■ chromium-plated CF3M with CoCr-A bore				
VALVE BODY, SEAT RETAINER, BEARINGS, AND PACKING					---
VALVE BODY	RETAINER	BEARING	MAXIMUM TEMPERATURE, °C		NOTES
			PTFE Packing	Graphite Ribbon Packing	
DIN 1.0619 steel	■ CB7Cu-1 (17-4PH SST), CF3M, or ■ R30006	PTFE/Composition/S31603 (316L SST)	232	232	<ul style="list-style-type: none"> • Minimum temperatures are -10°C for DIN valve bodies, -26°C for steel ANSI valve bodies, and -46°C for SST ANSI valve bodies • For steel bodies with CF8M retainer, limit maximum temperature to 260°C. • PTFE packing is available with or without one carbon-filled PTFE ring for grounding. • With ENVIRO-SEAL packing, temperature limits vary with pressure and fugitive emissions standards; contact your nearest sales office for information. • Use S44004 bearings with steel body and S17400 shaft only.
		■ Alloy 6 or ■ S44004 (440C SST)	260	316	
■ CF3M or ■ DIN 1.4581 SST	■ CF3M, ■ CF3M with CoCr-A bore, or ■ R30006	PTFE/composition/S31603	232	232	
		Alloy 6	260	316	
WCC steel	■ CB7Cu-1 (17-4PH SST), CF8M, (see notes) or ■ R30006	PTFE/composition/S31603	232	232	
		Alloy 6 or S44004	260	316	
CF8M	■ CF8M, ■ CF8M with CoCr-A bore, or ■ R30006	PTFE/composition/S31603	232	232	
		Alloy 6	260	316	
OTHER PARTS					---
Part	Material	Temperature, °C		Refer to the section above for temperatures	• Optional sealed bearings are available with alloy 6 and S44004 bearings only
O-Rings for optional sealed bearings	Nitrile	to 93			
	Fluoroelastomer	-18 to 204			
Face seals	PTFE/Hastelloy C & Inconel X718				
Gasket	S31603 or S31600				
Bolting	B7 and 2H or B7M and 2HM steel				
	B8M and 8M 316 SST				

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Valve Component Materials and Temperatures for Design V500

VALVE BODY AND SHAFT					NOTES	
Valve Body		■WCC steel or ■CF8M (316 stainless steel)			Refer to the parts below for temperatures	
Valve Shaft		■S17400 (17-4PH stainless steel) or ■SA479 Grade XM-19 SST				
PLUG, SEAT RING, BEARINGS, AND PACKING					- - -	
PLUG AND SEAT RING	RETAINER	BEARING	MAXIMUM TEMPERATURE, °C		NOTES	
			PTFE Packing	Graphite Ribbon Packing		
Trim Level 1						
Plug: Chrome-plated 316 stainless steel Seat Ring: 316 stainless steel seat ring	■CB7Cu-1 (17-4PH stainless steel) (WCC steel body) or ■ 316 stainless steel	PTFE/Composition/316 stainless steel	232	232	<ul style="list-style-type: none"> • Minimum temperatures are -10°C for DIN valve bodies, -26°C for steel ANSI valve bodies, and -46°C for SST ANSI valve bodies • PTFE packing is available with or without one carbon-filled PTFE ring for grounding. • With ENVIRO-SEAL packing, temperature limits vary with pressure and fugitive emissions standards; contact your nearest sales office for information. • For temperatures from 427°C to 538°C, (DN 25, 40 or 1, 1-1/2 inch only). Contact your nearest sales office • Use S44004 bearings with steel body and S17400 shaft only. 	
		■Alloy 6 or ■S44004 (440C stainless steel)	260	427		
Trim Level 2						
Solid alloy 6 (DN 25 - 10 or 1 - 4 inch) or 316 stainless steel with CoCr-A on plug face and seat ring seat surface (larger sizes)	■CB7Cu (steel body) or ■316 stainless steel	PTFE/composition/316 stainless steel	-29 to 232	-29 to 232		
		■Alloy 6 or ■S44004	-29 to 260	-29 to 427		
Trim Level 3						
Solid alloy 6	■316 stainless steel with alloy 6 sleeve bore (DN 25, 40 or 1, 1-1/2 inch) or ■solid alloy 6 (larger sizes)	PTFE/composition/316 stainless steel	-29 to 232	-29 to 232		
		■Alloy 6 or ■S44004	-29 to 260	-29 to 427		
Trim Level 4						
Plug: Solid ceramic (DN 1 - 50 or 1 - 2 inches) or ceramic plug bolted to alloy 6 hub (assembly also contains 316 stainless steel and grade 5 titanium parts) (larger sizes) Seat ring: Solid ceramic	■316 stainless steel with ceramic bore (DN 25, 40 or 1, 1-1/2 inches) or ■ solid alloy 6 retainer with ceramic bore (larger sizes)	PTFE/composition/316 stainless steel	232	232		
		■Alloy 6 or ■S44004	260	427		
OTHER PARTS					- - -	
Part	Material	Temperature, °C			<ul style="list-style-type: none"> • Optional sealed bearings are available with alloy 6 and S44004 bearings only 	
O-Rings for optional sealed bearings	Nitrile	-29 to 93				
	Fluoroelastomer	-18 to 204				
Face seals	PTFE/Hastelloy C & Inconel X718	Refer to the parts and materials above.				
Gasket	■Graphite (DN 25, 40 or 1, 1-1/2 inch) or ■S31603 & S31600 (larger sizes)					
Bolting	■B7 and 2H or ■B7M and 2HM steel					
	B8M and 8M 316 SST					



W5793-1/L

Seal Detail for Design CV500 and V500

Type 1051 and 1052 Actuators

Type 1051 and 1052 pneumatic diaphragm rotary actuators are spring-return actuators that provide reliable operation for the valves in this flier.

The Type 1051 actuator is suitable for on-off operation or for throttling operation when equipped with a valve controller or positioner. The Type 1052 actuator is suitable for on-off or throttling with or without a controller or positioner.

These actuators feature single-joint linkage with splined-and-clamped levers for minimum lost motion and high control accuracy.

The actuator-valve linkage is completely enclosed for safety, yet the packing adjustment is accessible without removing any parts.



W3813-1/IL

Typical Type 1052 Actuator

Specifications... Refer to the table below and the actuator selection tables.

Options... ■ Top-mounted handwheel, ■ Type 1078 declutchable handwheel actuator, ■ Adjustable up- and down-travel stops, ■ Actuator locking mechanism that keeps the actuator in a locked position during maintenance, and ■ Pipe-away vent for remote venting of the actuator housing.

Accessories... ■ Pneumatic and electro-pneumatic valve positioners, ■ FIELDVUE® digital valve controller, and ■ Limit and proximity switches.

ACTUATOR SIZE		NOMINAL OPERATING PRESSURE RANGES		MAXIMUM CASING PRESSURE, BAR		MAXIMUM VALVE BREAKOUT TORQUE, N•m		AMBIENT TEMPERATURES, °C	MATERIALS
Type 1051	Type 1052	Bar	Psig	Type 1051	Type 1052	Type 1051	Type 1052		
33	33	■ 0 to 1.2, ■ 0 to 2.3, ■ 0 to 2.8, and ■ 0 to 3.8	■ 0 to 18, ■ 0 to 33, ■ 0 to 40, and ■ 0 to 55	4.5		85	132	Nitrile: -40 to 82 Silicone: -50 to 149	Diaphragm: Nitrile (standard) or silicone elastomers O-rings (for optional handwheel): Nitrile or EPDM Housing: Cast iron (standard) or steel Other Major Metal Parts: Aluminum, steel, or cast iron
40	40			5.2		322	371		
60	60	■ 0 to 1.2, ■ 0 to 2.3, and ■ 0 to 2.8	■ 0 to 11, ■ 0 to 33, and ■ 0 to 40	3.4		626	730		
---	70	■ 0 to 2.3, ■ 0 to 2.8, and ■ 0 to 3.8	■ 0 to 33, ■ 0 to 40, and ■ 0 to 55	---	4.5	---	1370		



W4742-1/IL

Size 33 Actuator

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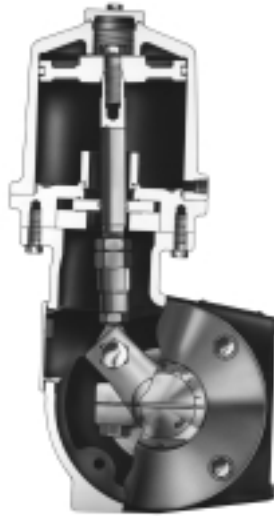
Type 1061 Actuators

Type 1061 pneumatic rotary actuators are double-acting piston actuators that provide reliable operation for the valves in this flier.

The Type 1061 can be used with a two-position control signal for on-off operation or with a valve controller or positioner for throttling operation.

These actuators feature single-joint linkage with splined-and-clamped levers for minimum lost motion and high control accuracy.

The actuator-valve linkage is completely enclosed for safety, yet the packing adjustment is accessible without removing any parts.



W3827-1/IL

Specifications... Refer to the table below and the actuator selection tables.

Options... ■ Type 1078 declutchable handwheel actuator with cylinder bypass valve, ■ Adjustable up- and down-travel stops, ■ Actuator locking mechanism that keeps the actuator in a locked position during maintenance, and ■ Pipe-away vent for remote venting of the actuator housing.

Accessories... ■ Pneumatic and electro-pneumatic valve positioners and ■ Limit and proximity switches.

ACTUATOR SIZE	CYLINDER OPERATING PRESSURE, BAR		MAXIMUM VALVE BREAKOUT TORQUE, N•m	AMBIENT TEMPERATURES, °C	MATERIALS
	Minimum Recommended	Maximum Allowable			
30	Without positioner: 1.4 With positioner: 0.35 bar above actuator requirement	6.9	232	-34 to 82 (to -50 with optional materials)	Cylinder and flange: Aluminum Piston: Aluminum or nylon-coated aluminum O-rings: Nitrile Mounting yoke bushing: PTFE and steel Sliding seal: Brass Other parts: Iron, aluminum, and stainless steel
40		10.3	847		
60		6.9	1130		
68		5.9	1540		
80		10.3	5080		
100		10.3	6290		

Type DVC5020 Digital Valve Controller

FIELDVUE digital valve controllers are communicating, microprocessor-based controllers that convert a current signal to a pressure signal to operate the actuator. Through the HART® communications protocol, the controller gives easy access to actuator-valve information that is critical to process operation.

The Type DVC5020 controller is available to mount on Type 1051 and 1052 actuators.



ValveLink Software...ValveLink software allows easy access to the information available from the FloVue™ system. The software provides diagnostic information such as dynamic error band and step response on easy-to-interpret screens .

Access to diagnostics is through a Model 275 HART communicator or a personal computer using Windows™ software.

W6161/LL

Type DVC5020 Controller on a Valve and Actuator with Model 275 HART Communicator

FIELDVUE Valve Controller Physical Specifications

SUPPLY PRESSURE, BAR		OUTPUT SIGNAL	STEADY-STATE AIR CONSUMPTION, Nm ³ /H	TEMPERATURE LIMITS	WEIGHT	HOUSING
Minimum and Recommended	Maximum					
As needed by actuator	6.5	Up to 95% of supply pressure	Less than 0.3 at 1.4 bar supply pressure	-40 to 80°C	2.7 kg	IP 65 per IEC 60529 NEMA 4X

FIELDVUE Controller Electrical Specifications

ELECTRICAL INPUT						DIGITAL COMMUNICATION INPUT SIGNAL
Analog Input Signal	Voltage	Minimum Control Current	Minimum Current without Microprocessor Restart	Maximum Current	Polarity Protection	
■ 4 to 20, ■ 4 to 12 or ■ 12 to 20 mA dc (user adjustable)	12 Vdc minimum and 30 Vdc maximum	4.0 mA	3.5 mA	100 mA	-30 Vdc minimum without damage	HART 1200 baud frequency shift keyed

FIELDVUE Digital Controller Certifications

INTRINSIC SAFETY		INTRINSIC SAFETY OR NON-INCENDIVE	FLAMEPROOF		DIVISION 2		EXPLOSION-PROOF
LCIE	CSA ⁽¹⁾ or FM ⁽¹⁾		LCIE	SAA	CSA	FM	
EEx ia IIC T5	Class I, Division 1, Groups ⁽¹⁾ A, B, C, D T5 (T _{amb} 80°C)	Ex n IIC T5, T6 Ex ia IIC T4, T5, STET	EEx d IIB + H ₂ T5 (T _{amb} 80°C)	EEx d IIB + H ₂ T6 (T _{amb} 80°C)	Class I Division 2, Groups A, B, C, D Class II, Division 2 Groups E, F, G	Class I Division 2, Groups A, B, C, D Class II, Division 2 Groups F, G	Class I Division 1 Groups B, C, D Class II, Division 1, Groups E, F, G

1. Contact your nearest sales office for the appropriate FM and CSA entity ratings and CSA parametric ratings for each group.

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3610J Series Valve Positioners

The 3610J Series pneumatic and 3620J Series electro-pneumatic valve positioners can be used with Type 1051, 1052, or 1061 actuators for accurate valve positioning in throttling applications.

The positioners provide accurate, fast response and can withstand the vibrations in most plants.



W4920-17/IL

The positioners are easily reversible for direct or reverse action without additional parts.

The 3610J positioners are single acting for Type 1051 and 1052 actuators, and the 3610JP positioners are double acting for Type 1061 actuators.

Options... ■ Supply pressure gauge, ■ Tire valves for clip-on gauges, and ■ Integrally mounted bypass valve for single-acting actuators

3610J and 3620J Positioner Specifications

Type	Input Signal		Supply Pressure	Operative Temperature	Weight	Connections
3610J and 3610JP	■ 0.2 to 1.0 or ■ 0.4 to 2.0 bar	■ 3 to 15 or ■ 6 to 30 psig	0.3 bar above the actuator requirement up to 10.3 bar maximum	-40 to 82° C	2.5 kg	Pressure and Vent Connections: 1/4-inch NPT Type 3620J and JP Conduit: 1/2 NPT
3620J and 3620JP	4 to 20 mA constant current with 30 Vdc maximum compliance voltage; equivalent circuit is 120 ohms shunted by three 5.6 V zener diodes		0.3 bar above the actuator requirement up to 10.3 bar maximum	-40 to 82° C	3.6 kg	

3610J and 3620J Series Capacities and Housing

Type	Supply Pressure, Bar	Supply Air Demand, Nm ³ /h	Air Consumption, Nm ³ /h	Housing (Types 3620J and 3620JP)
3610J and 3620J	1.4	13	Type 3610J: 0.40 to 1.4 bar supply Type 3620J: 0.49 at 1.4 bar supply	IP 54 per IEC 60529, NEMA 3; vent should be on the side or bottom for weatherproof applications
	2.4	17		
3610JP and 3620JP	5.2	37	Type 3610JP: 0.64 at 6.9 bar supply Type 3620JP: 0.93 at 6.9 bar supply	
	6.9	46		

Electro-Pneumatic Certifications

INTRINSIC SAFETY		INTRINSIC SAFETY OR NON-INCENDIVE	FLAMEPROOF		DIVISION 2		EXPLOSION-PROOF
PTB	CSA ⁽¹⁾ or FM ⁽¹⁾		LCIE	SAA	CSA	FM	
EEx ia IIC T4, T5, T6	Class I, Division 1, Groups ⁽¹⁾ A, B, C, D CSA T4, FM T4A	Ex ia IIC T4 Ex n IIC T4	EEx d IIC T4, T5, T6	Ex d IIC T6	Class I Division 2, Groups A, B, C, D Class II, Division 2 Groups E, F, G	Class I Division 2, Groups A, B, C, D Class II, Division 2 Groups F, G	Class I Division 1 Groups A, B, C, D Class II, Division 1, Groups E, F, G

1. Contact your nearest sales office for the appropriate FM entity ratings and CSA parametric ratings for each group.

Other Accessories

Type 3065 Limit Switch Box

The limit switch box can be installed on the actuator to hold proximity or microswitches, which can turn on an alarm or display device when a pre-set limit is reached. Additional microswitches are available.

The device has separate cams for open and closed positions, and adjustment of one cam does not affect the other.



Certifications...CE Mark to EMC directive ■ EN 50081 and ■ EN 50082

Self-Adjusting...Complicated adjustments are not required.

Standardized Installation...Covered by IEC 534-6 (NAMUR). The box can be supplied with a mounting kit.

Type 3065 Limit-Switch Box Specifications

Housing Material	Ambient Temperature (for Housing)	DIN 40 050 Protection Class (for Housing)	Available Switches	
Markalon plastic	-40 to 80°C	IP 65	Type EI - S inductive proximity switch Slot shaped	Type EM microswitch
			P & F Model SJ3.5 N or SN	Burgess V4NT7AR1
			-25 to 100°C (N) -25 to 100°C (SN) DIN 40 050—IP 67	-40 to 80°C DIN 40 050—IP 54
			Rating voltage is 8 V = (R _i ~1k) Operating voltage is 5 - 25 V	Rating voltage is 8 V = (R _i ~1k) Operating voltage is 5 - 25 V
			Power input is > 3 mA with active surface uncovered	Power input is > 3 mA with active surface uncovered
Aluminum	-40 to 80°C	IP 65	Type EI - Z inductive proximity switch Cylindrical shaped	Type EM-Ex microswitch
			P & F Model NJ 2-11-N-G or SN-G	Bartec 07-2501-6-30/63
			-25 to 100°C (N-G) -25 to 100°C (SN-G) DIN 40 050—IP 68	-25 to 70°C DIN 40 050—IP 54
			Alternating current switching capacity is 125 or 250 V with 5.0 A resistive load, 0.5 A light-bulb load, and 5.0 A inductive load	Alternating current switching capacity is 125 or 250 V with 7.0 A resistive load, 0.5 A light-bulb load, and 5.0 A inductive load
			Direct current switching capacity is up to 250 V with up to 0.25 A resistive load, 0.1 a (opening) and 0.2 A (closing) light-bulb load, and up to 0.03 A inductive load	

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Other Accessories (Continued)

Type 67CFR

Filter-Regulator...The Type 67CFR provides constantly controlled supply pressure to actuator accessories system. This regulator features an internal filter and limited-capacity internal relief, allowing partial reduction of downstream pressure.



W7412

Type 67CFR Filter-Regulator with Optional Gauge



W4727

Type 2625 Volume Booster

Type 67CFR Filter-Regulator Specifications

OUTLET PRESSURE SETTINGS		MAXIMUM INLET PRESSURE (BODY RATING), BAR	MAXIMUM DIAPHRAGM PRESSURE, BAR	TEMPERATURE CAPABILITIES	CONNECTIONS	MAXIMUM FLOW COEFFICIENT, C _v	WEIGHT, kg
Bar	Psig						
0 to 1.4 0 to 2.4 0 to 4.1 0 to 8.6	0 to 20 0 to 35 0 to 60 0 to 120	17.2	3.4 over outlet setting or 7.6, whichever is greater	Nitrile diaphragm and plug: -40 to 82°C Fluoroelastomer diaphragm and plug: -18 to 149°C	Inlet and Outlet: 1/4-inch NPT female Vent: ■ 6.4 mm hole or ■ 1/4-inch NPT female	0.36	0.5

Type 646 or 846 Electro-Pneumatic Transducers...These transducers convert a standard 4 to 20 mA dc signal to a proportional pneumatic signal. Certifications are ■ CE Mark to EMC directive (electromagnetic compatibility);
■ Contact your nearest sales office for intrinsic safe and flameproof ratings.

Type 2625 Volume Booster...The volume booster can be used in conjunction with a positioner to increase actuator stroking speed.

Others...■ High-pressure supply pressure regulators, ■ proximity switches, ■ microswitches, and ■ solenoid valves.

Contact your nearest sales office for more information.

Shutoff Pressure Drops Limits for Trim Parts

WARNING

Pressure drops in the following tables consider only the trim parts (plug, shafts, bearings, and seals).

The pressure drops shown might be higher than the DIN or ANSI pressure-temperature rating of the valve. Do not exceed DIN or ANSI pressure-temperature ratings, as exceeding the pressure-temperature rating may cause personal injury or equipment damage.

In the following tables, the lower temperature limits is 10°C for DIN valves, -29°C for ANSI steel valves, and -46°C for ANSI stainless steel valves.

Also refer to the actuator sizing pages to select an actuator size.

Contact your Fisher sales office for Design BV500 valve pressure drops.

Design CV500 Valves

Bearing Material	Valve Sizes	Temperature, °C	Pressure Drop, Bar
S44004	DN 80 - 150 (3 -6 inches)	to 316	41.4
	DN 200 (8 inches)	to 149	24.1
		204	23.8
		260	23.1
R30006	DN 250 (10 inches)	to 316	24.1
	DN 300 (12 inches)	to 316	27.6
	DN 80 and 100 (3 and 4 inches)	to 316	41.4
		to 316	20.7
to 316		15.2	
to 316		24.1	
to 316		27.6	
PTFE/Composition-lined S31603 (limit to 207°C for hot water and steam)	DN 80 - 150 (3 -6 inches)	to 232	41.4
	DN 200 (8 inches) with S17400 shaft	to 93	24.1
		149	24.1
		204	23.8
		232	23.4
	DN 200 (8 inches) with ASME SA-479 XM-19 shaft	to 93	24.1
149		23.1	
204		22.1	
232	21.7		
DN 250 (10 inches)	to 232	31.0	
DN 300 (12 inches)	to 232	34.5	

Design V500 Valves with S44004 Bearings

TEMPERATURE, °C	VALVE SIZE, DIN DN AND INCHES						
	DN 25	DN 40	DN 50	DN 80	DN 100	DN 150	DN 200
	1	1-1/2	2	3	4	6	8
Level 1 Trim							
-29 to 149	68.9	55.2	41.4	41.4	41.4	41.4	24.1
204	68.9	55.2	41.4	41.4	41.4	41.4	23.8
316	68.9	55.2	41.4	41.4	41.4	41.4	23.1
Level 2 and 3 Trims							
-29 to 93	103.4	103.4	103.4	103.4	82.7	51.7	24.1
149	100.3	100.3	99.0	100.3	82.7	51.7	24.1
204	97.2	97.2	93.8	97.2	82.7	51.0	23.8
260	91.7	91.7	91.4	91.7	82.7	50.0	23.1
316	83.4	83.4	83.4	83.4	82.7	49.3	23.1
343	81.0	81.0	81.0	81.0	81.0	48.3	22.4
371	78.3	78.3	78.3	78.3	78.3	48.3	22.4
399	69.6	69.6	69.6	69.6	69.6	46.9	21.7
427	56.9	56.9	56.9	56.9	56.9	46.9	21.7
Level 4 Trim							
-29 to 93	103.4	103.4	70.3	103.4	78.6	52.4	24.1
149	100.3	100.3	70.3	100.3	78.6	52.4	24.1
204	97.2	97.2	70.3	97.2	78.6	51.0	23.8
260	91.7	91.7	70.3	91.7	78.6	50.0	23.1
316	83.4	83.4	70.3	83.4	78.6	49.3	23.1
317	78.3	78.3	70.3	78.3	78.3	48.3	22.4
427	56.9	56.9	56.9	56.9	56.9	46.9	21.7

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Shutoff Pressure Drop Limits for Trim Parts (Continued)

Design V500 Valves with PTFE/Composition Bearings

Limit to 207°C with Hot Water or Steam Service

SIZES		VALVE MATERIAL	TEMPERATURE, °C	PRESSURE DROP, BAR
DIN DN	Inches			
Level 1 Trim				
25	1	WCC	-29 to 232	68.9
		CF8M	-46 to 204 232	68.9 65.8
40 50 - 150	1-1/2 2 - 6	Both	to 232	55.2
		Both	to 232	41.4
200	8	Both with 17-4PH shaft	to 149	24.1
			204	23.8
			232	23.4
		Both with SA-479 SM-19 shaft	to 93	24.1
149	23.1			
204	22.1			
232	21.7			
Level 2 and 3 Trims				
25 - 80	1 - 3	WCC	-29 to 93	103.4
			149	100.3
			204	97.2
		CF8M	-46 to 38	99.3
			93	85.5
			149	77.3
204	71.0			
232	65.8			
100	4	WCC	-29 to 232	89.6
		CF8M	-46 to 38	89.6
			93	85.5
			149	77.2
204	71.0			
232	65.8			
150	6	WCC with 14-4PH shaft	-29 to 149	55.2
			204	54.8
			232	53.8
		WCC with SA-479 SM-19 shaft	-29 to 149	55.2
			204	51.5
			232	50.0
		CF8M with 17-4PH shaft	-46 to 93	55.2
			149	53.1
204	54.8			
232	53.8			
CF8M with SA-479 SM-19 shaft	-46 to 93	55.2		
	149	53.1		
	204	51.0		
232	50.0			
200	8	Both with 17-4PH shaft	to 149	24.1
			204	23.8
			232	23.4
		Both with SA-479 SM-19 shaft	to 93	24.1
149	23.1			
204	22.1			
232	21.7			

Design V500 Valves with Alloy 6 Bearings

SIZES		VALVE MATERIAL	TEMPERATURE, °C	PRESSURE DROP, BAR
DIN DN	Inches			
Level 1 Trim				
25	1	WCC	-29 to 316	68.9
		CF8M	-46 to 204 260 316	68.9 65.8 62.4
40 50 - 100 150 200	1-1/2 2 - 4 6 8	Both	to 316	55.2
		Both	to 316	41.4
		Both	to 316	20.7
		Both	to 316	15.2
Level 2 and 3 Trims				
25	1	WCC	-29 to 204	68.9
			427	56.9
		CF8M	-46 to 204	68.9
			260	65.8
			316	62.4
			343	61.4
371	59.6			
399	58.3			
427	57.2			
40 50 - 100 150 200	1-1/2 2 - 4 6 8	Both	to 427	55.2
		Both	to 427	41.4
		Both	to 427	20.7
		Both	to 427	15.2
Level 4 Trim				
25	1	WCC	-29 to 371	68.9
			427	56.9
		CF8M	-46 to 204	68.9
			260	65.8
316	62.4			
371	59.6			
427	57.2			
40 50 - 100 150 200	1-1/2 2 - 4 6 8	Both	to 427	55.2
		Both	to 427	41.4
		Both	to 427	20.7
		Both	to 427	15.2

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Flow Coefficients

Design BV500—Forward Flow

Forward flow is in through the seat ring side of the valve.

VALVE SIZE		Port Diameter	VALVE ROTATION, DEGREES (LINE SIZE EQUALS VALVE SIZE)								
DIN	Inches		mm	10	30	60	10	30	60	10	30
		C_v			F_L			X_T			
Without Attenuator Disk -- Modified Linear Characteristic											
DN 25	1	8.12	0.5	1.4	2.8	0.95	0.94	0.93	0.570	0.740	0.700
		12.70	0.9	2.8	5.6	0.95	0.93	0.93	0.580	0.710	0.690
		14.73	1.4	4.2	8.4	0.94	0.93	0.92	0.650	0.720	0.690
		18.29	2.3	7.0	14.0	0.88	0.87	0.86	0.540	0.630	0.570
DN 40	1-1/2	12.70	1.0	3.0	6.0	0.94	0.95	0.93	0.520	0.700	0.680
		19.05	2.0	6.0	12.0	0.95	0.94	0.92	0.550	0.710	0.670
		23.11	3.0	9.0	18.0	0.94	0.93	0.92	0.600	0.690	0.660
		26.92	5.0	15.0	30.0	0.88	0.87	0.86	0.520	0.610	0.560
DN 50	2	31.75	5.5	19.0	30.0	0.94	0.93	0.92	0.47	0.67	0.56
		39.62	6.6	21.0	45.0	0.87	0.86	0.86	0.47	0.56	0.57
DN 80	3	45.97	14.0	45.0	77.0	0.94	0.89	0.90	0.59	0.74	0.60
		57.15	15.0	51.0	107	0.92	0.88	0.86	0.61	0.55	0.56
DN 100	4	58.67	19.0	69.0	118	0.94	0.88	0.88	0.67	0.69	0.61
		76.20	27.0	94.0	177	0.92	0.87	0.85	0.49	0.57	0.58
DN 150	6	85.85	38.0	142	224	0.92	0.91	0.88	0.70	0.70	0.66
		101.60	39.0	167	310	0.90	0.90	0.88	0.71	0.70	0.63
		114.30	69.0	204	410	0.89	0.88	0.85	0.71	0.67	0.60
With Attenuator Disk											
		C_v			F_L			X_T			
DN 50	2	31.75	5.5	19.0	28.0	0.94	0.93	0.92	0.47	0.67	0.56
		39.62	6.60	21.0	39.0	0.87	0.86	0.86	0.47	0.56	0.57
DN 80	3	45.97	13.0	44.0	67.0	0.94	0.89	0.90	0.59	0.74	0.60
		57.15	15.0	50.0	86.0	0.92	0.88	0.86	0.61	0.55	0.56
DN 100	4	58.67	19.0	68.0	110	0.94	0.88	0.88	0.67	0.69	0.61
		76.20	27.0	93.0	162	0.92	0.87	0.85	0.49	0.57	0.58
DN 150	6	85.85	37.0	138	210	0.92	0.91	0.88	0.70	0.70	0.66
		101.60	38.0	162	281	0.90	0.90	0.88	0.71	0.66	0.63
		114.30	64.0	199	362	0.89	0.88	0.85	0.71	0.67	0.60

Conversions for Other Sizing Equations

Following are conversions for use with other common sizing equations

$$K_v = (0.865) C_v$$

$$C_1 = 39.76 (\sqrt{X_T})$$

$$C_g = C_v C_1$$

$$K_m = F_L^2$$

$$C_s = 1/20 (C_g). C_s \text{ is only applicable for inlet pressure up to 70 bar (a).}$$

Line-to-Valve Size Ratios Greater than 1-to-1

Contact your nearest sales office for information on determining the F_p , the piping geometry factor.

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Flow Coefficients (Continued)

Design CV500

VALVE SIZE		VALVE ROTATION, DEGREES (LINE SIZE EQUALS VALVE SIZE)											
		10	30	60	90	10	30	60	90	10	30	60	90
DIN	Inches	C _v				F _L				X _T			
Forward Flow													
DN 80	3	4.74	34.6	107	166	.85	.84	.86	.69	.294	.511	.559	.372
DN 100	4	11.1	61.7	193	346	.76	.86	.83	.62	.263	.526	.501	.276
DN 150	6	15.7	83.4	330	809	.93	.81	.74	.57	.281	.311	.459	.221
DN 200	8	21.5	156	592	1440	.93	.87	.75	.58	.126	.624	.429	.221
DN 250	10	29.5	275	973	2360	.93	.91	.77	.54	.537	.566	.316	.152
DN 300	12	60.4	443	1390	3050	.81	.77	.73	.51	.714	.366	.416	.223
Reverse Flow													
		C _v				F _L				X _T			
DN 80	3	3.25	34.2	129	181	.96	.80	.64	.53	.581	.515	.345	.258
DN 100	4	7.20	64.8	223	300	.98	.84	.65	.61	.463	.526	.334	.308
DN 150	6	5.20	88.5	372	808	.69	.84	.67	.49	.668	.544	.366	.198
DN 200	8	8.68	156	656	1240	.77	.87	.66	.58	.898	.585	.354	.260
DN 250	10	37.0	288	1080	2140	.84	.90	.64	.49	.248	.483	.250	.166
DN 300	12	39.0	411	1560	3080	.71	.80	.63	.50	.975	.533	.325	.196

Design V500 (Forward Flow)

VALVE SIZE		VALVE ROTATION, DEGREES (LINE SIZE EQUALS VALVE SIZE)											
		10	30	60	90	10	30	60	90	10	30	60	90
DIN	Inches	C _v				F _L				X _T			
Level 1, 2, and 3 Trims - Full Port													
DN 25	1	1.22	5.05	11.3	12.2	.89	.88	.85	.85	.480	.508	.632	.593
DN 40	1-1/2	2.07	11.5	23.5	26.6	.95	.85	.84	.84	.770	.483	.636	.589
DN 50	2	4.11	16.7	43.4	46.2	.97	.84	.75	.74	.439	.442	.462	.442
DN 80	3	8.80	43.3	116	142	.86	.83	.82	.77	.469	.574	.526	.456
DN 100	4	16.6	79.1	203	255	.85	.81	.79	.76	.439	.501	.490	.442
DN 150	6	17.5	155	434	565	.97	.88	.73	.71	.879	.540	.432	.416
DN 200	8	51.5	298	775	1050	.97	.87	.71	.67	.456	.533	.403	.360
Level 1, 2, and 3 Trims - Reduced Port													
		C _v				F _L				X _T			
DN 25	1	.777	3.02	4.90	5.01	.89	.88	.79	.74	.487	.497	.439	.419
DN 40	1-1/2	.632	4.47	10.7	10.9	.84	.84	.75	.73	.559	.522	.508	.490
DN 50	2	1.30	5.31	17.3	17.3	.85	.84	.79	.79	.391	.452	.462	.462
DN 80	3	6.78	16.0	47.7	48.4	.90	.87	.82	.77	.487	.487	.429	.429
DN 100	4	10.0	24.4	90.6	98.2	.95	.85	.81	.77	.426	.570	.462	.426
DN 150	6	9.50	41.8	170	200	.97	.92	.76	.74	.995	.403	.462	.410
DN 200	8	39.9	155	448	623	.96	.80	.76	.70	.400	.459	.413	.391
Level 4 Trim - Full Port													
		C _v				F _L				X _T			
DN 25	1	.300	4.68	10.3	11.6	---	.87	.86	.84	.668	.529	.668	.616
DN 40	1-1/2	1.46	8.13	20.7	25.0	.86	.82	.80	.79	.566	.555	.574	.597
DN 50	2	1.76	13.8	35.2	38.4	.95	.94	.80	.78	.819	.501	.566	.585
DN 80	3	7.60	44.0	102	124	.88	.85	.82	.80	.578	.511	.515	.526
DN 100	4	9.31	73.5	171	221	.94	.85	.80	.77	.526	.449	.504	.487
DN 150	6	9.71	141	368	499	.95	.82	.78	.76	.504	.432	.436	.413
DN 200	8	34.6	290	716	958	.92	.78	.76	.73	.544	.426	.426	.429
Level 4 Trim - Reduced Port													
		C _v				F _L				X _T			
DN 80	3	4.12	13.1	39.0	48.0	.80	.88	.82	.77	.469	.605	.551	.466
DN 100	4	2.26	20.1	69.1	90.1	.96	.85	.83	.74	.779	.632	.589	.452
DN 150	6	13.6	49.8	159	196	.97	.72	.81	.77	.518	.381	.452	.442
DN 200	8	19.7	134	438	605	.93	.76	.77	.72	.597	.422	.381	.436

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Flow Coefficients (Continued)

Design V500 (Reverse Flow)

VALVE SIZE		VALVE ROTATION, DEGREES (LINE SIZE EQUALS VALVE SIZE)											
		10	30	60	90	10	30	60	90	10	30	60	90
DIN	Inches	C _v				F _L				X _T			
Level 1, 2, and 3 Trims - Full Port													
DN 25	1	1.08	5.26	14.7	16.8	.80	.73	.55	.48	.172	.406	.322	.283
DN 40	1-1/2	1.71	11.3	28.6	31.0	.75	.70	.63	.63	.357	.432	.360	.357
DN 50	2	2.98	15.6	52.9	57.4	.92	.81	.58	.58	.480	.462	.265	.265
DN 80	3	7.19	47.0	122	141	.80	.77	.65	.65	.357	.487	.378	.357
DN 100	4	12.2	79.9	202	235	.90	.81	.70	.69	.522	.487	.406	.416
DN 150	6	15.1	156	438	717	.85	.82	.66	.51	.416	.518	.388	.219
DN 200	8	33.5	302	798	986	.81	.79	.66	.66	.697	.483	.342	.363
Level 1, 2, and 3 Trims - Reduced Port													
		C _v				F _L				X _T			
DN 25	1	.634	3.34	5.64	5.76	.70	.70	.70	.70	.230	.207	.348	.342
DN 40	1-1/2	.464	4.21	12.1	12.2	.93	.75	.70	.70	.970	.501	.416	.416
DN 50	2	.965	4.82	18.7	18.9	.96	.77	.62	.62	.518	.559	.360	.354
DN 80	3	5.95	14.7	56.0	56.7	.80	.73	.58	.58	.429	.487	.286	.281
DN 100	4	7.69	22.7	98.0	102	.83	.81	.59	.59	.504	.555	.322	.319
DN 150	6	5.10	34.6	170	232	.97	.90	.65	.55	.990	.566	.397	.258
DN 200	8	27.1	140	457	646	.92	.88	.66	.58	.636	.494	.388	.311
Level 4 Trim - Full Port													
		C _v				F _L				X _T			
DN 25	1	.107	5.09	13.6	15.3	- - -	.65	.54	.61	.334	.426	.345	.334
DN 40	1-1/2	.988	7.66	23.5	26.1	.98	.75	.58	.61	.473	.563	.403	.429
DN 50	2	1.42	11.8	36.7	43.0	.97	.86	.62	.66	.403	.616	.452	.439
DN 80	3	7.64	41.3	94.8	111	.93	.89	.72	.76	.616	.537	.508	.511
DN 100	4	8.07	67.1	153	192	.86	.84	.75	.74	.456	.533	.526	.515
DN 150	6	10.5	134	356	461	.80	.72	.69	.69	.511	.459	.397	.429
DN 200	8	25.4	266	686	897	.75	.75	.69	.72	.731	.483	.397	.426
Level 4 Trim - Reduced Port													
		C _v				F _L				X _T			
DN 80	3	4.41	13.7	53.3	57.9	.96	.93	.64	.63	.469	.578	.258	.268
DN 100	4	.978	19.4	67.8	86.6	.93	.89	.72	.65	.620	.593	.522	.436
DN 150	6	10.6	43.4	168	226	.77	.77	.64	.58	.640	.476	.357	.278
DN 200	8	19.8	125	413	569	.75	.78	.68	.70	.459	.462	.381	.391

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Actuator-Valve Selection (Shutoff Pressure Drops)

Note

The intent of the actuator-valve selection tables is to present an actuator size that will control a relatively high valve pressure drop with a standard actuator operating pressure. It is not implied that the selection shown is best for your application.

For pressure drops lower than those shown, a lower actuator pressure or smaller actuator might be satisfactory.

For pressure drops higher than those shown, a higher operating pressure or larger actuator will be required.

Contact your sales office for other sizes and operating pressures.

With rotary valves, the highest pressure drop occurs when the valve is shut off. When the valve is open, pressure drop is normally much lower. However, pressure drop capabilities of a rotary valve also are lower when the valve is open. The allowable flowing pressure drop across a valve depends on the valve construction, on the type of flowing fluid (liquid or gas), and on the vapor pressure and critical pressure ratio of liquids.

Only allowable shutoff pressure drops are shown here. To determine the allowable flowing pressure drop, provide your sales office with the application information shown on page 23.

Do not exceed any other limits presented in this flier. Following is a brief reminder of some of those limits:

Maximum Shutoff Pressure Drop...Do not exceed any of the pressure drops in these tables or in the Maximum Allowable Shutoff Pressure Drops section.

Maximum Inlet Pressure and Temperature...Do not exceed the maximum rating of the valve: PN 10 through 100 or Class 150 through 600. Refer to the Body Materials, End Connections, and Ratings section.

Materials Temperature Limits...Refer to the Valve Materials and Temperatures section, the actuator specifications tables, and the accessories specifications tables. Some of the critical limits are repeated here.

Temperature Summary

PROCESS TEMPERATURE	Minimum for all types	Steel valve material	DIN: -10°C ANSI: -29°C			
		Stainless steel valve material	DIN: -10°C ANSI: -26°C			
	Maximum	Design	Packing	Bearing		---
		CV500 and V500	PTFE	PTFE		232°C
				Metal		260°C
			Graphite	PTFE		232°C
Metal				CV500	316°C (260°C with CF8M retainer)	
	V500			427°C		
O-rings for sealed bearing		Nitrile	-29 to 93°C			
		Fluoroelastomer	-18 to 204°C			
AMBIENT TEMPERATURE	Type 1051 and 1052 actuators		-40 to 82°C with nitrile elastomers and -50 to 149°C with silicone			
	Type 1061 actuator		-34 to 82°C (to -50°C with optional materials)			
	Type DVC5020 controller and 3610J Series positioners		-40 to 80°C			

PROCESS TEMPERATURE	Minimum for all types	Steel valve material	-29°C			
		Stainless steel valve material	-196°C			
	Maximum	Design	Packing	Guide Bushing		---
		BV500	PTFE	Stainless Steel		232°C
				Metal		
			PEEK/PTFE		232°C	
ENVIRO-SEAL PTFE			Stainless Steel			
	Metal					
PEEK/PTFE		316°C				
ENVIRO-SEAL Graphite	Stainless Steel					
	Metal					
PEEK/PTFE						
AMBIENT TEMPERATURE	1052 actuators		-40 to 82°C with nitrile elastomers and -50 to 149°C with silicone			

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Actuator-Valve Selection (Shutoff Pressure Drops)

Design BV500 (Forward Flow) with Type 1052 Actuator

VALVE SIZE		SPRING-CLOSES (AIR-OPENS)				SPRING-OPENS (AIR-CLOSES)			
		Actuator Size	Pressure Drop, Bar	Pressure to Actuator		Actuator Size	Pressure Drop, Bar	Pressure to Actuator	
				Bar	Psig			Bar	Psig
DN 25	1	20	51.7	2.3	33	20	51.7	2.3	33
DN 40	1-1/2	20	51.7	2.3	33	20	51.7	2.3	33
DN 50	2	33	51.7	2.3	33	33	51.7	2.3	33
DN 80	3	33	21.7	2.3	33	33	21.7	2.3	33
DN 100	4	40	26	2.3	33	40	34.1	2.3	33
DN 150	6	40	7.5	2.3	33	40	10.1	2.3	33

Design CV500 (Forward Flow) with Type 1052 Actuator

BEARING MATERIAL	VALVE SIZE		AIR TO CLOSE (PUSH-DOWN-TO-CLOSE)				AIR TO OPEN (PUSH-DOWN-TO-OPEN)			
			Actuator Size	Pressure Drop, Bar	Pressure to Actuator		Actuator Size	Pressure Drop, Bar	Pressure to Actuator	
					Bar	Psig			Bar	Psig
Type 1052 Actuator										
S44004	DN 80	3	40	41.4	0 to 2.3	0 to 33	60	41.1	0 to 2.3	0 to 33
	DN 100	4	60	41.4	0 to 1.2	0 to 18	60	37.9		
	DN 150	6	70	21.2	0 to 2.3	0 to 33	70	17.4		
	DN 200	8	70	10.2			70	8.1		
	DN 250	10	70	4.6	0 to 2.3	0 to 33	70	3.4	0 to 2.3	0 to 33
	DN 300	12	70	2.4			70	1.7		
Alloy 6	DN 80	3	40	41.4			60	41.4		
	DN 100	4	60	41.4	0 to 2.3	0 to 33	70	41.4	0 to 2.3	0 to 33
	DN 150	6	70	21.9			70	17.4		
	DN 200	8	70	8.4			70	8.1		
	DN 250	10	70	4.6	0 to 2.3	0 to 33	70	3.4	0 to 2.3	0 to 33
	DN 300	12	70	2.4			70	1.7		
PTFE/Composition Lined Bearings	DN 80	3	40	41.4			60	41.4		
	DN 100	4	60	41.4	0 to 2.3	0 to 33	70	41.4	0 to 2.3	0 to 33
	DN 150	6	60	24.5			70	19.0		
	DN 200	8	60	10.7			70	8.3		
	DN 250	10	60	5.2	0 to 2.3	0 to 33	70	3.8	0 to 2.3	0 to 33
	DN 300	12	70	3.1			70	2.3		

Design CV500 (Forward Flow) with Type 1061 Actuator

Valve Size		Actuator Size	Pressure Drop, Bar	Pressure to Actuator		Actuator Size	Pressure Drop, Bar	Pressure to Actuator		Actuator Size	Pressure Drop, Bar	Pressure to Actuator	
				Bar	Psig			Bar	Psig			Bar	Psig
		S44004 Bearings				Alloy 6 Bearings				PTFE/Composition-Lined Bearings			
DIN	Inches												
DN 80	3	30	41.4	5.5	80	30	41.4	5.5	80	40	41.4	4.1	60
DN 100	4	40	41.4	5.5	80	40	41.4	5.5	80	40	41.4	5.5	80
DN 150	6	60	41.4	5.5	80	60	33.1	5.5	80	68	41.4	5.5	80
DN 200	8	68	41.4	5.5	80	60	15.2	5.5	80	68	24.1	5.5	80
DN 250	10	80	26.9	5.5	80	80	26.9	5.5	80	100	27.6	5.5	80
DN 300	12	80	16.8	5.5	80	100	26.1	5.5	80	100	27.3	5.5	80

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Actuator-Valve Selection (Continued)

Design V500 (Reverse Flow) with Type 1052 Actuator

BEARING MATERIAL AND TRIM	VALVE SIZE		AIR TO CLOSE (PUSH-DOWN-TO-CLOSE)				AIR TO OPEN (PUSH-DOWN-TO-OPEN)			
			Actuator Size	Pressure Drop, Bar	Pressure to Actuator		Actuator Size	Pressure Drop, Bar	Pressure to Actuator	
					Bar	Psig			Bar	Psig
S44004 with Level 1 Trim	DN 25	1	33	69.0	0 - 1.2	0 - 18	33	69.0	0 - 1.2	0 - 18
	DN 40	1-1/2	33	55.2	0 - 2.3	0 - 33	33	55.2	0 - 2.3	0 - 33
	DN 50	2	40	41.4	0 - 1.2	0 - 18	40	41.4	0 - 1.2	0 - 18
	DN 80	3	60	41.4	0 - 1.2	0 - 18	60	41.4	0 - 1.2	0 - 18
	DN 100	4	60	41.4	0 - 1.2	0 - 18	60	41.4	0 - 1.2	0 - 18
	DN 150	6	70	36.2	0 - 2.3	0 - 33	70	38.7	0 - 2.3	0 - 33
S44004 with Level 2 or 3 Trims	DN 200	8	70	16.9	0 - 2.3	0 - 33	70	22.3	0 - 2.3	0 - 33
	DN 25	1	33	103.4	0 - 1.2	0 - 18	33	103.4	0 - 1.2	0 - 18
	DN 40	1-1/2	33	103.4	0 - 2.3	0 - 33	33	82.0	0 - 2.3	0 - 33
	DN 50	2	40	101.6	0 - 1.2	0 - 18	40	89.6	0 - 1.2	0 - 18
	DN 80	3	60	103.4	0 - 1.2	0 - 18	60	98.1	0 - 1.2	0 - 18
	DN 100	4	60	76.2	0 - 2.3	0 - 33	60	82.7	0 - 2.3	0 - 33
Alloy 6 with Level 1, 2, or 3 Trims	DN 150	6	70	36.2	0 - 2.3	0 - 33	70	38.7	0 - 2.3	0 - 33
	DN 200	8	70	16.9	0 - 2.3	0 - 33	70	24.1	0 - 2.3	0 - 33
	DN 25	1	33	69.0	0 - 1.2	0 - 18	33	69.0	0 - 1.2	0 - 18
	DN 40	1-1/2	33	55.2	0 - 2.3	0 - 33	33	55.2	0 - 2.3	0 - 33
	DN 50	2	40	41.4	0 - 1.2	0 - 18	40	41.4	0 - 1.2	0 - 18
	DN 80	3	60	41.4	0 - 1.2	0 - 18	60	41.4	0 - 1.2	0 - 18

Design V500 (Reverse Flow) with Type 1061 Actuator

Valve Size		Actuator Size	Pressure Drop, Bar	Pressure to Actuator		Actuator Size	Pressure Drop, Bar	Pressure to Actuator		Actuator Size	Pressure Drop, Bar	Pressure to Actuator	
DIN	Inches			Bar	Psig			Bar	Psig			Bar	Psig
		S44004 Bearing and Level 1 Trim				S44004 Bearing and Level 2 or 3 Trim				Alloy 6 Bearing and Level 1, 2, or 3 Trims			
DN 25	1	30	69.0			30	103.4			30	69.0		
DN 40	1-1/2	30	55.2	5.5	80	30	103.4	5.5	80	30	55.2	5.5	80
DN 50	2	30	41.2			30	103.4			30	41.4		
DN 80	3	30	41.2			40	103.4			30	41.4		
DN 100	4	40	41.2			60	82.7			40	20.7		
DN 150	6	68	41.2	5.5	80	68	51.7	5.5	80	60	20.7	5.5	80
DN 200	8	68	24.1			68	24.1			68	15.2		

Approximate Weight

Weights are in kilograms and are for valve (Class 300 flanged construction) and actuator combined. Not all possible valve and actuator size combinations are shown.

Design BV500

VALVE SIZE		TYPE 1052 ACTUATOR	WEIGHT (VALVE AND ACTUATOR)		
DIN	ANSI, Inches	Size	PN 10-40	Class 150	Class 300
DN 25	1	20	22.2	19.5	21.3
DN 40	1-1/2	20	22.7	21.3	22.7
DN 50	2	33	30.4	29.5	31.3
DN 80	3	33	39.9	29.5	40.8
DN 100	4	40	86.0	80.0	87.6
DN 150	6	40	110.0	97.0	112.0

Approximate Weight (Continued)

Design CV500

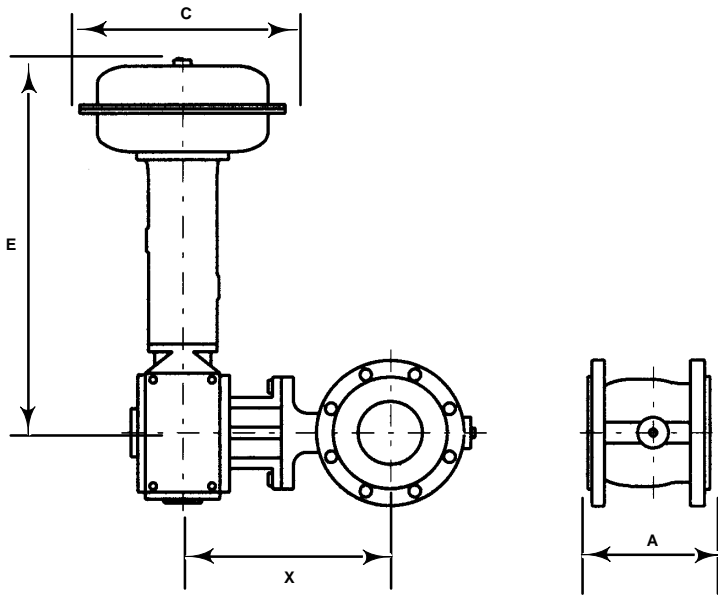
VALVE SIZE		TYPE 1051 ACTUATOR		TYPE 1052 ACTUATOR		TYPE 1061 ACTUATOR	
DIN	ANSI, Inches	Size	Weight	Size	Weight	Size	Weight
DN 80	3	40	67	40	69	30	46
		60	113	60	116	40	53
DN 100	4	60	131	60	134	40	71
				70	165		
DN 150	6	60	158	60	161	60	108
				70	192	68	125
DN 200	8	60	187	60	190	68	154
				70	221		
DN 250	10	60	297	60	200	80	330
				70	331		
DN 300	12	60	342	70	376	80	375
						100	388

Design V500

VALVE SIZE		TYPE 1051 ACTUATOR		TYPE 1052 ACTUATOR		TYPE 1061 ACTUATOR	
DIN	ANSI, Inches	Size	Weight	Size	Weight	Size	Weight
DN 25	1	33	26	33	27	30	28
DN 40	1-1/2	33	30	33	31	30	32
		40	53	40	55		
DN 50	2	40	54	40	56	30	33
DN 80	3	40	67	60	116	30	46
		60	113				
DN 100	4	60	131	60	131	40	71
DN 150	6	60	158	70	192	60	108
						68	125
DN 200	8	60	187	70	221	68	154

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Dimensions



Dimensions C and E (mm)

Actuator Type	Actuator Size	C	E
1051	33	289	338
	40	333	505
	60	473	749
1052	20	251	256
	33	289	338
	40	333	607
	60	473	876
1061	70	536	849
	30	171	378
	40	206	425
	60	267	406
	68	324	483
	80	324	714
	100	381	714

Dimensions A and X for Design CV500 and V500 (mm)

VALVE SIZE		A (RAISED FACE)		X
DIN	ANSI, Inches	Design CV500	Design V500	
DN 25	1	---	102	263
DN 40	1-1/2	---	114	272
DN 50	2	---	124	288
DN 80	3	165	165	360
DN 100	4	194	194	364
DN 150	6	229	229	418
DN 200	8	243	243	466
DN 250	10	297	---	639
DN 300	12	338	---	964

Dimensions for Design BV500 (mm)

VALVE SIZE		Actuator Size	DIMENSIONS			
			A	C	E	X
DN 25	1	20	102	251	256	258
DN 40	1-1/2	20	114	251	256	272
DN 50	2	33	124	289	338	278
DN 80	3	33	165	289	338	307
DN 100	4	40	194	333	607	406
DN 150	6	40	229	333	607	428

Ordering Information

When ordering, please specify ...

Application		
Type of Application	Throttling or on-off	
	Reducing or relief	
Controlled Fluid	Include chemical analysis of fluid if possible	
	Specific gravity	
Fluid Temperature		
Inlet Pressures	Minimum	
	Normal	
	Maximum	
Pressure Drops	Minimum flowing	
	Normal flowing	
	Maximum flowing	
	Maximum at shutoff	
Flow	Minimum controlled	
	Normal	
	Maximum	
Maximum Permissible Noise Level, if Critical		
Shutoff Classification Required		
Line Size, Schedule, and End Connection Type		
Valve, Actuator, and Accessories		
<p>From this or other product flier, select your choice where ever a choice is offered. If you cannot find the selection you need, contact your nearest Fisher sales office.</p>		

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