easy-e® Globe-Style Control Valves

W6374

- **Valves for general, erosive, cavitating, or noisy applications**
- **DN 25 to 300 x 200 and 1/2 to 24 x 20-inch sizes**
- **Choice of balanced or unbalanced trim and metal or soft seats**
- **Temperatures to 538°C**
- **Pressures to DIN PN 160 and ANSI Class 900**
- **ENVIRO-SEAL® and HIGH-SEAL™ packing systems to help ensure compliance with environmental emissions requirements**
- **FloVue™ final control system, spring-return pneumatic diaphragm, double-acting piston, or electrohydraulic actuators; traditional or integrated accessories**
- **FIELDVUE® digital valve controllers offer digital control and remote diagnostics. The proven line of Fisher Controls positioners, controllers, transmitters and switches also is available.**

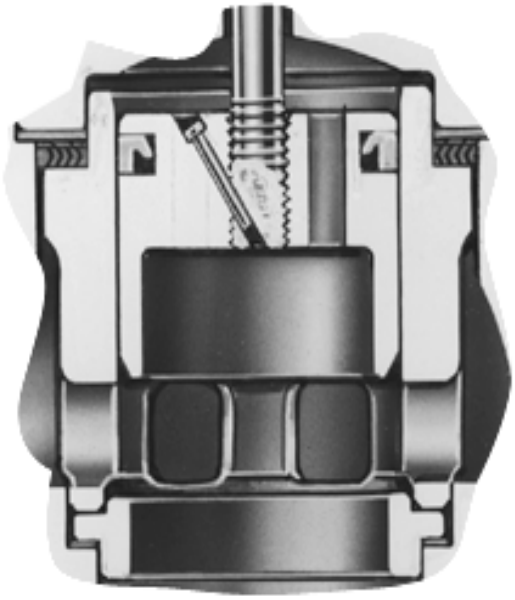
FISHER

FISHER-ROSEMOUNT™ Managing The Process Better.™

The easy-e® and Design E Valve Family

The easy-e and Design E valves are rugged, single-port globe, angle, and reverse-acting (push-down-to-open) valves designed for many varied applications. Although there are many variations available, internal trim parts are interchangeable for many different trims, and maintenance procedures are similar. These features reduce spare parts inventory and simplify maintenance training.

Interchangeable Trim Sizes... Many e-bodies feature interchangeable, restricted-capacity and full-size trims to meet variable flow demands



W0451-3

Typical easy-e® Globe Valve

W0958

Quick Opening Cage

W0957

Equal Percentage Cage

Select from Several Flow Characteristics... In most types, ■ quick-opening, ■ linear, and ■ equal percentage flow characteristics are available.

Noise-Attenuating Trim... To help reduce aerodynamic noise in

W0959

Linear Cage

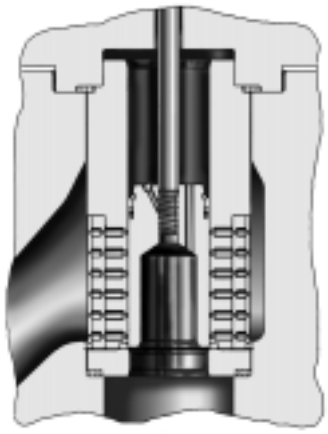
W0961

Whisper Trim® Cage for Noise Attenuation

The easy-e® and Design E Valve Family

gaseous service, Whisper Trim® cages are available. To eliminate liquid cavitation damage, Cavitrol® III cages are available.

Materials for Sour Service... Fisher Controls offers materials and manufacturing procedures for compliance with NACE (National Association of Corrosion Engineers) standard MR0175.



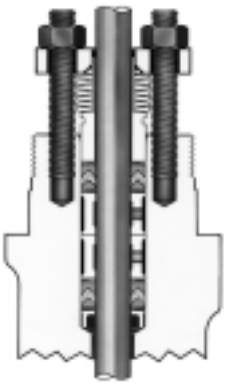
W6962

Cavitrol® III Trim for Control of Liquid Cavitation (Typical F_L Coefficient for Two- or Three-Stage Trim is .98)

W2629/IL

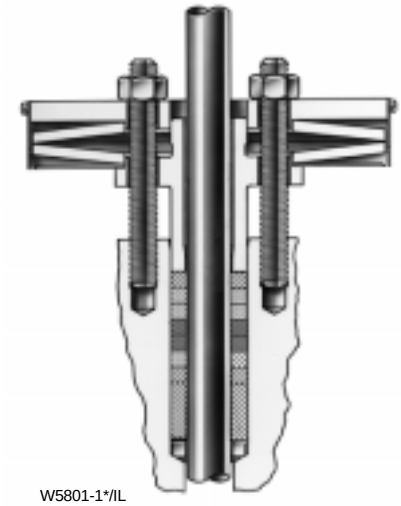
Whisper Trim® III Cage for Reduction of Noise in Gas and Vapor Applications

Protection Against Process Fluid Emissions... Optional ENVIRO-SEAL® and HIGH-SEAL™ packing systems provide a superior stem seal to prevent the loss of valuable or hazardous process fluids. These live-loaded systems provide longer packing life and reliability.



W5803-1*

PTFE ENVIRO-SEAL® Packing System



W5801-1*/IL

Graphite HIGH-SEAL™ Packing System

Product Flier PF51.1:E

Actuators

FloVue™ Final Control System... The system includes the valve, the compact, single-acting, high-pressure System 9000 actuator with spring-return action, and integrated instrumentation. The system also includes a FIELDVUE® digital valve controller for microprocessor control of the valve and data communications with the valve. It is available with remote diagnostics.

Type 657 and 667 Pneumatic Diaphragm Actuators... Rugged, heavy-duty spring-return actuators. These actuators are available with a variety of instrument accessories, handwheels, and adjustable travel stops. They can be used for on-off or throttling operation with or without a valve positioner.

Special Service Actuators...
■ Type 585C and 585CR size 25 and 50 actuators for high thrust requirements, ■ Type 585 and 585R size 100 and ■ Type 470 piston actuators are available for very high thrust requirements. ■ Series 490 piston actuators feature high thrust and long travels for very large valves. ■ Type 350 and ■ Type 323 electrohydraulic actuators permit valve operation in locations where compressed air is difficult to supply.

Type 657 or 667 Actuator

Accessories

FIELDVUE® Digital Valve Controller... The controller is available as part of the FloVue final control system and mounted on the other actuators.

Positioners and Transducers... Pneumatic positioners and electro-pneumatic positioners and transducers can be provided with these valves.

Position Transducers, Solenoid Valves, and Limit Switches... Also available.

FloVue™ Final Control System

Type 585C or 585CR Actuator

Selecting easy-e® 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 or sales representative (refer to the back cover) for assistance in selecting and sizing these products. More detailed specifications are available on request.

Selecting Valve Components

Selecting an Actuator

Selecting Accessories

Reference Information

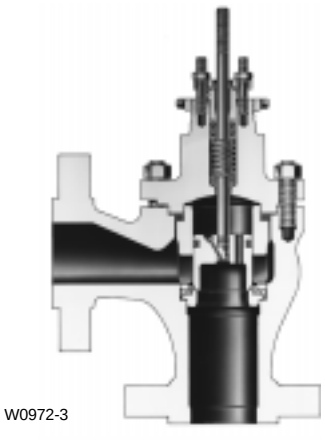
Valve Trim and Body Style

Letter Designations Used in this Table ➔		E: Valve design series T, D, S, and Z: Trim type		U: Large size W: Expanded ends N: Long travel		A: Angle valve style R: Reverse acting (push down to open)	
Application	**Trim Type**	**Fisher Controls Trim Designation**	**Body Style**	**Fisher Controls Valve Body**	**Size**	**Ratings**	**Standard Shutoff Class**
Stringent shutoff with process temperatures to 204°C	Balanced, cage-guided with elastomer cage-plug seal and soft or metal seats	T	Globe	ET	DN 25 - 200 1 - 8 inches	PN 10 -100 Class 125 - 600	Soft seat: Air test(2) or V Metal seat: IV
			Reverse acting (push-down-to-open)	ETR	DN 25 - 100 1 - 4 inches		
			Angle	EAT	DN 25 - 150 1 - 6 inches	PN 10 -100 Class 150 - 600	
			Globe with expanded end connections	EWT	DN 100 x 50(1) (4 x 2) through 24 x 20 inches	PN 25 - 160 Class 300 - 900	
			Globe with expanded end connections and long travel for noise-attenuating trim	EWNT (metal seats only)	DN 200 x 150 and DN 300 x 200 8 x 6 and 12 x 8 inches	PN 25 - 160 Class 300 - 900	IV
			Large globe with long travel	EUT	12, 16, 20 inches	Class 150 - 600	Soft seat: V Metal seat: IV
General applications for process temperatures to 427°C	Balanced, cage-guided with graphite cage-plug seal and metal seats	D	Globe	ED	DN 25 - 200 1 - 8 inches	PN10 - 100 Class 125 - 600	II
			Reverse-acting (push-down-to-open)	EDR	DN 25 - 100 1 - 4 inches		
			Angle	EAD	DN 25 - 150 1 - 6 inches	PN10 - 100 Class 150 - 600	
			Globe with expanded end connections	EWD	DN 100 x 50 (4 x 2 inches) through 24 x 20 inches	PN 25 - 160 Class 300 - 900	Through 12 x 8: II Larger sizes: III
			Globe with expanded end connections and long travel for noise-attenuating trim	EWND	DN 200 x 150 through DN 300 x 200 8 x 6 through 12 x 8 inches	PN 25 - 160 Class 300 - 900	III
			Large globe with long travel	EUD	12, 16, 20 inches	Class 150 - 600	III
General applications for process temperatures to 538°C	Unbalanced, cage-guided without cage-plug seal and with metal or soft seats	S	Globe	ES	DN 25 - 200 1/2 - 8 inches	PN 10 -100 Class 125 - 600	Metal Seat: IV Soft Seat: VI
			Reverse-acting (push-down-to-open)	ESR	DN 25 - 100 1 - 4 inches		
			Angle	EAS	DN 25 - 150 1 - 6 inches	PN 10 -100 Class 150 - 600	
			Globe with expanded end connections	EWS	DN 100 x 50 through DN 300 x 200 4 x 2 through 12 x 8 inches	PN 25 - 160 Class 300 - 900	
Viscous, non-lubricating, or other hard-to-handle fluids with process temperatures to 427°C	Unbalanced, cageless, post-guided with metal or soft seats	Z	Globe	EZ	DN 25 - 100 1/2 - 4 inches	PN 10 -100 Class 125 - 600	Metal Seat: IV Soft Seat: VI

1. End connection size x nominal trim size.
2. Standard Fisher Controls air test (maximum leakage is 0.05 mL/min/psid/inch of port diameter).

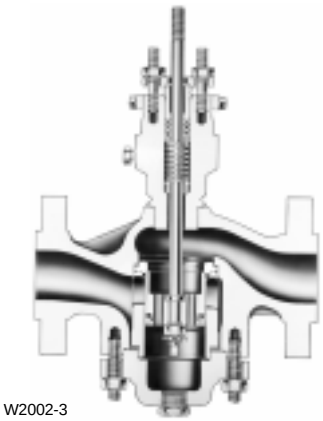
H417T01

Valve Trim and Body Style (Continued)



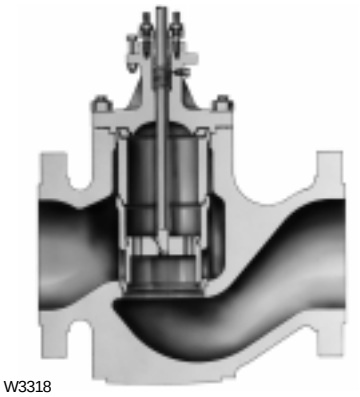
W0972-3

Typical Angle Valve



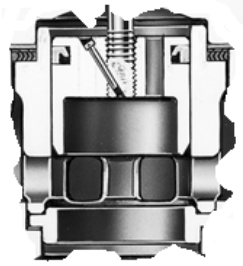
W2002-3

Typical Reverse-Acting Valve



W3318

Valve with Long Travel and Expanded End Connections



W0451-1

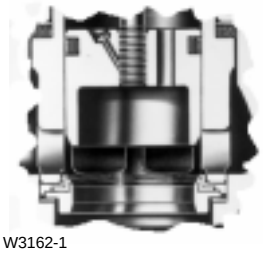
Design ED Trim

W3421-1

Design ES Trim

W2966B-1

Design EZ Trim



W3162-1

Design ET Trim

End Connections and Valve Body Materials

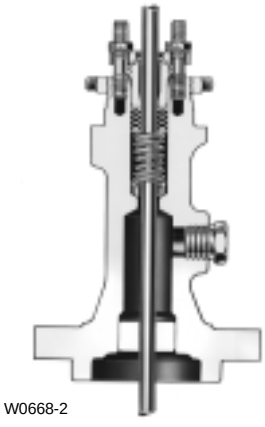
END CONNECTIONS		SIZES		MATERIALS	NOTES
DIN	ANSI	DIN	Inches		
- - -	NPT female (Class 250 (cast iron) or 600 (steel) body rating	- - -	1/2 - 2	Cast iron, WCB steel, CF8M (316 stainless steel), and other steel alloys	Not available in angle valves
PN 10, 16, and 25 raised-face flanged	Class 125 flat-face and 250 raised-face flanged	DN 25 - 200	1 - 8	Cast iron	Not available in 1-1/4 inch
PN 16, 25, 40, 63, and 100 raised-face flanged	Class 150, 300, and 600 raised-face or ring-type joint flanged	DN 25 - 200	1 - 8	WCB steel, CF8M (316 stainless steel), and other steel alloys	Not available in 1-1/4 inch
PN 16, 25, 40, 63, 100, and 160 raised-face flanged	Class 300, 600, or 900 raised-face or ring-type joint flanged	DN 100 × 50 through 300 × 200	4 × 2(1) through 12 × 8	WCB steel, CF8M (316 stainless steel), and other steel alloys	- - -
- - -	Class 150, 300, and 600 raised-face or ring-type joint flanged	- - -	12 - 24 and 16 × 12 through 24 × 20	WCC steel, CF8M (316 stainless steel), and other steel alloys	- - -
- - -	Socket weld ends (Class 600 body rating)	- - -	1/2 - 2	WCB steel, CF8M (316 stainless steel), and other steel alloys	Not available in angle valves
- - -	Buttwelding ends	- - -	1 - 8	(316 stainless steel), and other steel alloys	Not available in 1-1/4 inchAvailable in Class 600
		- - -	12 × 8	WCB steel, CF8M (316 stainless steel), and other steel alloys	Class 300, 600, or 900
		- - -	24 × 20	WCC steel, CF8M (316 stainless steel), and other steel alloys	Class 600

1. End connection size× nominal trim size.

H417T03

W6733

Plain Bonnet with Single PTFE V-Ring Packing

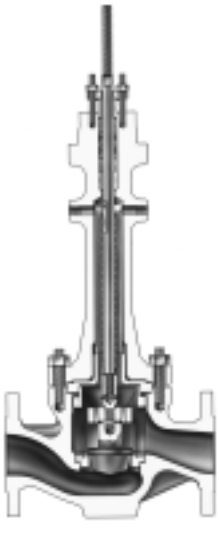


W0668-2

Style 1 Extension Bonnet

W0667-2

Style 2 Extension Bonnet



W5800-2

ENVIRO-SEAL® Bellows Seal Bonnet

Valve Plug, Seat Ring, and Cage (Trim) Materials

VALVE TYPE	BODY MATERIAL	SEAT TYPE	MATERIALS			FISHER CONTROLS TRIM NUMBER(2)	NOTES
			Valve Plug	Seat Ring	Cage		
ED, ES, EWD, EWS through DN 300 × 200(1) 12 × 8 inch sizes	Standard for all body materials except CF8M (316 stainless steel)	Metal	S41600 (416 stainless steel) hardened to 38 HRC	Depending on size, S41600 or CA15 (410 stainless steel) both hardened to 38 HRC	S17400 (17-4PH stainless steel) hardened to 40 HRC	1	Trims with alloy 6 hardfacing also are available.For optional ES, EWS soft seat, use trim 29 or 57
	CF8M	Metal	S31600 (316 stainless steel)	S31600	S31600 with electroless nickel coating (ENC)	29	
ET, EWT throughDN 300 × 200 12 × 8 inch sizes	Standard for all body materials except CF8M (316 stainless steel)	Soft	S41600 (416 stainless steel) hardened to 38 HRC	S31600	S17400 (17-4PH stainless steel) hardened to 40 HRC	57	Trims with alloy 6 hardfacing also are available.For optional metal seats, use trim 1 or 29
	CF8M	Soft	S31600	S31600	S31600 or CF8M with electroless nickel coating (ENC)	29	
EZ	Cast iron and steel	Metal	S41600 hardened	S41600 hardened seat ring with CB7Cu-1 (17-4PH stainless steel) seat ring retainer	- - -	101	Trims with alloy 6 hardfacing also are available.
	CF8M	Metal	S31600	S31600 with CF8M seat ring retainer	- - -	129	- - -

1. End connection size x nominal trim size.
2. Refer to the following pages for pressure and temperature limits of the trim.

H417T04

Bonnets

Bonnet Style	Valve Type or Size	Packing Material	In-Body Process Temperature Range, °C	Notes
Plain	All types and sizes	PTFE V-Ring	-18 to 232	These in-body pocess temperatures assume an ambient temperature of 21°C. When using any packing at low process temperatures, an extension bonnet might be needed to prevent valve stem frost. Frost can damage the packing.
		PTFE/composition	-18 to 232	
		Graphite ribbon/filament	-18 to maximum limit shown in other tables	
Style 1 extension	Globe and angle only; not available for Design EUD, EUT or 16 × 12 or larger Design EW	PTFE V-ring	-46 to -18 and above 232	
		PTFE/Composition		
		Graphite ribbon/filament		
Style 2 extension	Globe and angle only; not available for Design EUD, EUT, EWN, or 16 × 12 or larger Design EW	PTFE V-ring	-101 to -18 and above 232	
		PTFE/Composition		
		Graphite ribbon/filament		
ENVIRO-SEAL bellows seal bonnet	Available only on globe and angle valves through DN 100 and DN 200 × 100 (4-inch and 8 × 4 inch sizes)	For exceptional stem sealing capabilities with PTFE or graphite standard packing or with ENVIRO-SEAL packing system	Contact your nearest sales office or sales representative	

H417T07

Other Valve Parts

PART	VALVE TYPE OR SIZE	MATERIALS		TEMPERATURE RANGE, °C	NOTES
Body-to-bonnet bolting	All sizes and types except as listed below	**Use for Body Material:**	**Cap Screw, Stud, or Nut Material**	- - -	- - -
		Cast iron	Steel SAE GR 5 cap screws	-29 to 232	
		WCB, C5, and WC9 steel	SA-193-B7steel studs SA-194-2H steel nuts	-29 to 427	Specify lubricated nuts for temperatures greater than 232°C
		CF8M	SA-193-B7steel studs SA-194-2H steel nuts	-46 to 427	
			SA-193-B8M stainless steel studs (strain hardened) SA-194-2H steel nuts	-198 to 427	
			SA-193-B8M stainless steel studs (annealed) SA-194-2H steel nuts	The lower limit is -198; other valve parts determine the upper limit	- - -
Packing (Also refer to the bonnet selection table)	All types (see notes for exceptions)		PTFE V-ring	-40 to 232	- - -
			PTFE/composition	-73 to 232	
			Graphite ribbon/filament in oxidizing service	-198 to 371	
			Graphite ribbon/filament in non-oxidizing service	-198 to 538	
			ENVIRO-SEAL and HIGH-SEAL packing systems with PTFE, duplex, Kalrez, or graphite packing	Temperature limits vary with pressure and fugitive emissions standards; contact your nearest sales office or sales representative for information	
Flat gaskets	Design EZ		FGM in oxidizing service	-198 to 427	- - -
			FGM in non-oxidizing service	-198 to 593	- - -
			PTFE-coated monel	-73 to 149	- - -
	All sizes and types except Design EZ		S31600/graphite in oxidizing service	-198 to 427	- - -
			S31600/graphite in non-oxidizing service	-198 to 593	- - -
Spiral-wound gasket	All		S31603 (316L stainless steel)/composition	-73 to 232	- - -
			N06600 (Inconel)/graphite	-198 to 593	
Soft seat disc	Design ES, ET, EUT, EWS, EWT, EZ		PTFE	-73 to 204	- - -
Piston ring for ED type trim	Design ED and EWD		Carbon-Filled PTFE	-73 to 232	- - -
			Graphite in oxydizing service	-46 to 427	- - -
			Graphite in non-oxydizing service	-46 to 538	- - -
Seal ring for ET type trim	Design ET, EWT (up to DN 300 x 200 or 12 x 8 inch sizes)		Carbon-filled PTFE seal ring with fluoroelastomer backup ring	-18 to 204	Do not use fluoroelastomer with ammonia, steam, or hot water
			Carbon-filled PTFE seal ring with ethlylene-propylene backup ring	-40 to 232	Do not use ethlylene-propylene with petroleum-based fluids or other hydrocarbons
			Spring-loaded PTFE seal ring with Hastelloy C spring and stainless steel backup ring and retaining ring	-73 to 232	- - -

H417T05

FloVue™ Final Control System with System 9000 Pneumatic Actuator

The System 9000 actuator is part of the FloVue™ final control system. The system includes the actuator, FIELDVUE® digital valve controller and the valve. The actuator is a single-acting, high-pressure pneumatic actuator with spring-return action and integrated instrumentation.

The assembly consists of a power module, yoke, cover, and digital valve controller. There are no exposed linkages, no mounting brackets, and no external tubing to complicate installation or maintenance.

The actuator has few parts, which minimizes spare parts inventory. It can be easily reversed in the field to provide fail-open or fail-closed operation. To reverse, simply re-position the power module on the actuator yoke.

The spring is encapsulated by seal welding for improved safety during maintenance and to eliminate bench set adjustments. No bench set calculations or spring selection is required.

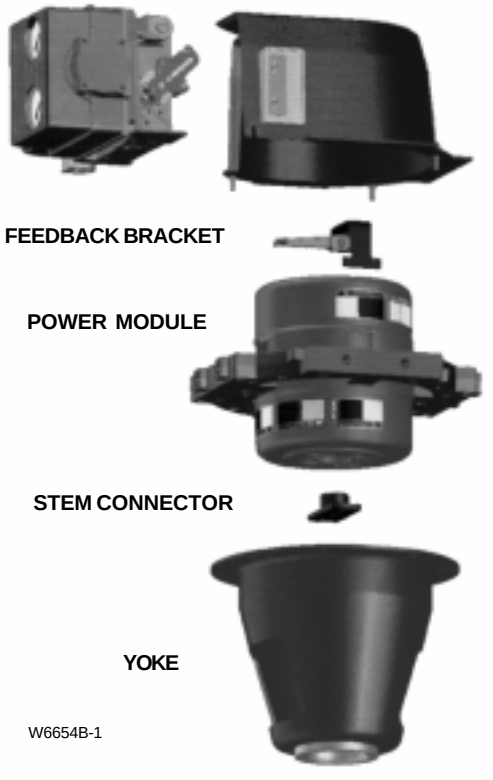
Specifications... Refer to the following table and the actuator-selection tables.

Controller and Accessories... Refer to FIELDVUE® digital valve controllers and to the positioner, position switch, and Type 67AFR filter-regulator sections.

System 9000 Actuator Specifications

ACTUATOR SIZE	TRAVEL, mm (FULLY ADJUSTABLE)		SUPPLY PRESSURE, BAR(G)		SPRING RANGES	AMBIENT TEMPERA-TURE	MATERIAL	ACCESSORY MOUNTING PADS
	Minimum	Maximum	Nominal	Maximum				
20	12.7	19.1	3, 4, or 6	6.9	Refer to valve-actua-tor selection	-40 to 82°C with standard materials	**Yoke:** Steel **Module Body and Cover:** Anodized aluminum **Canisters:** Stainless steel	Three mounting pads, each with two M8 tapped holes spaced 57.2 mm apart or One pneumatic ported boss for pneumatic access
25	14.3	19.1	2, 3, 4, or 6					
50	19.1	38.1	3, 4, or 6					
80	21.4	50.8	2, 3, 4, or 6					

H410T05



Product Flier PF51.1:E

Type 657 and 667 Pneumatic Diaphragm Actuators

These heavy-duty actuators feature spring-return action and a variety of operation options and actuator-mounted accessories.

The actuator can be used for on-off or throttling service, with or without a positioner.

With a push-down-to-close valve, the Type 657 is air to close, and the Type 667 is air to open.

Options...■ Adjustable travel stop, ■ top-mounted handwheel, and ■ side-mounted manual actuator.

W0363-1

Specifications... Refer to the following table and the actuator-valve selection tables.

Accessories... Refer to the following pages for ■ pneumatic and electro-pneumatic valve positioners, ■ FIELDVUE digital valve controllers, and other accessories

Type 657 and 667 Actuator Specifications

ACTUATOR SIZE	NOMINAL OPERATING PRESSURE RANGES		MAXIMUM CASING PRESSURE, BAR		MAXIMUM THRUST, N	AMBIENT TEMPERATURES, °C	MATERIALS	APPROXIMATE WEIGHT, kg	
	Bar	Psig	Type 657	Type 667				Type 567	Type 667
30	0.2 to 1.0 or 0.4 to 2.0	3 to 15 or 6 to 30	9.6	7.6	10 321	**Nitrile**: -40 to 82 **Silicone:** -50 to 149	**Diaphragm:** Nitrile (standard) or **Yoke:** Cast iron **Diaphgram Plate:** Aluminum is **Other Major Metal Parts:** steel or cast iron with bronze seal bushing	16	15
34			5.2	6.2				22	22
40			5.2	6.2	12 010			23	23
45			4.1	5.2	25 132			37	41
46			3.4	4.5	33 584			49	55
50			4.1	5.2	25 131			42	43
60			3.4	4.5	30 246			53	55
70			4.5	4.1	39 142			107	115
80			4.1	4.1	63 392			234	284
100			7.9	7.9	200 160			346	544

H417T16

FIELDVUE® 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 DVC5010 controller is available to mount on most actuators in this flier; the Type DVC5040 controller is integrally mounted in the System 9000 actuator housing.

W6666-1A

Type DVC5040 Controller as part of a FloVue™ Final Control System with Model 275 HART Communicator

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.

FIELDVUE Valve Controller Physical Specifications

TYPE	SUPPLY PRESSURE, BAR		OUTPUT SIGNAL	STEADY-STATE AIR CONSUMPTION, Nm^3/h	TEMPERATURE LIMITS	WEIGHT	HOUSING
	Minimum and Recommended	Maximum					
DVC5010	As needed by actuator	6.9	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 529 classification
DVC5040			Up to maximum supply pressure	Less than 0.6 at 4.1 bar supply pressure	-40 to 80°C	(Included as part of actuator weight)	or NEMA 4X

H417T22

FIELDVUE® Digital Valve Controller (Continued)

Options... ■ Process PID, ■ advanced diagnostics, and ■ pressure gauges.

CE Mark... The Type DVC5010 has the CE Mark to EMC Directive (electromagnetic compatibility: ■ EN 50081 ■ EN 50082 (refer to the table for other certifications).

W6701

FIELDVUE® Digital Valve Controller on a Type 657 or 667 Actuator

Digital Controller Electrical Specifications

ELECTRICAL INPUT							REVERSE POLARITY PRORTECTION
Point-to-Point Connection						Multi-Drop Connection	
Analog Input Signal	**Minimum Voltage Available at Instrument Terminals**	**Minimum Control Current**	**Minimum Current without Microprocessor Restart**	**Maximum Voltage**	**Overcurrent Protection**	**Instrument Power**	
4 to 20 mA dc nominal	**Analog Control:** 11.5 Vdc **HART Communication:** 12 Vdc	4.0 mA	3.5 mA	30 Vdc	Input circuit limits current to prevent internal damage (hardware revisions 4 and 5 only)	12 to 30 Vdc at approximately 8 mA	No damage occurs from reversal of loop current

H415T02

Digital Controller Certifications

INTRINSIC SAFETY		INTRINSIC SAFETY OR NON-INCENDI-VE	FLAMEPROOF		DIVISION 2		EXPLOSION-PROOF
LCIE	CSA(1) or FM(1)	SAA	CENELEC	SAA	CSA	FM	CSA or 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, T6	EEx d IIB + H_2 T5 (T_{amb} 80°C)	Ex d IIB + H_2 T6 (T_{amb} 80°C)	Class 1 Division 2, Groups A, B, C, D Class 2, Division 2, Groups E, F, G	Class 1 Division 2, Groups A, B, C, D Class 2, 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 or sales representative for the appropriate FM entity ratings and CSA parametric ratings for each group.							

H410T07

Valve Positioners

Type 3582 and 3582i Valve Positioners (for Type 657 and 667 Actuators)

The Type 3582 pneumatic and 3582i electro-pneumatic valve positioners are accurate, efficient positioners for use with Type 657 and 667 actuators.

The field-proven design is fast to respond to input signal changes and is able to withstand the vibrations of most plants.

W5500

Options...■ Gauges and ■ bypass valve for direct-acting positioners using full input signal range.

CE Mark... This product has the CE Mark to EMC Directive (electromagnetic compatibility): ■ EN 50081 ■ EN 50082 Namur recommendations--increased levels (refer to the table for other certifications)

Type 3582 and 3582i Positioner Specifications

Type	Input Signal		Supply Pressure	Input Bellows Rating	Operative Temperature	WEIGHT	Connections
3582	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 3.4 bar maximum	2.4 bar	-40 to 71°C	2.5 kg	**Pressure and Vent Connections:** 1/4-inch NPT Type 3582i **Conduit:** 1/2 NPT
3582i	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 3.4 bar maximum	- - -	-40 to 71°C	3.6 kg	

H411T10

Type 3582 and 3528i Capacities and Housing

SUPPLY PRESSURE, BAR	SUPPLY AIR DEMAND, Nm³/h	AIR CONSUMPTION, Nm³/h		HOUSING
		Type 3582	Type 3582i	
1.4	4.7	0.38	0.42	IP 54 per IEC 529 classification (weatherproof); vent should be on the side or bottom for weatherproof applications
2.0	7.0	0.48	0.53	
2.4	8.1	0.54	0.59	

H411T11

Type 582i Certifications

INTRINSIC SAFETY OR NON-INCENDIVE		INTRINSIC SAFETY OR NON-INCENDIVE	FLAMEPROOF		DIVISION 2		EXPLOSION-PROOF
PTB	CSA[1] or FM[1]	SAA	LCIE	SAA	CSA	FM	CSA or FM
EEx ia IIC T6	Class I, Division 1, Groups[1] A, B, C, D T5	Ex ia IIC T4 Ex n IIC T4	EEx d IICT6	Ex d IIB T6	Class I Division 2, Groups A, B, C, D Class III, 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 or sales representative for the appropriate FM entity ratings and CSA parametric ratings for each group.							

H411T12

Other Accessories

Type 3065 Limit Switch Box (for Type 657 and 667 Actuators)

The limit switch box can be installed on the Type 657 and 667 actuators 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.

W6682B

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 or aluminium	-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 45
			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
			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	

H411T08

Other Accessories (Continued)

Accessories for FloVue™ Final Control System

Type 4000 Pneumatic Valve Positioner... This force-balance positioner is fully integrated into the actuator. Span and zero adjustments are easily accessible and the unit can be changed from a drained to a sealed construction. It operates on a 0.2 to 1.0 bar (3 to 15 psig) input signal and is capable of a maximum supply pressure of 6.9 bar.

Type 4000 Pnuematic Valve Positioner

Position Switch... Two solid-state proximity sensors that monitor travel throughout the travel range. Each switch is adjustable and can be set to be energized at low, high, or any intermediate travel.

Position Transmitter... Provides a two-wire continuous 4-to-20 mA output that is representative of valve travel. You can use a standard, unregulated power supply.

Type 67AFR Filter-Regulator... The Type 67AFR 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.

Type 67AFR 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						
0.2 to 1.2 0.3 to 2.1 2.1 to 3.4 2.4 to 5.5	3 to 20 5 to 35 30 to 60 35 to 100	17.2	3.4 over outlet setting or 7.6, whichever is greater	**Nitrile diaphragm and plug:** -29 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	0.28	0.7

H410T13

Type 3583 Pneumatic Position Transmitter... Provides a standard pneumatic signal that is proportional to valve plug position. The output signal can operate remote indicating, alarm, or recording instruments.

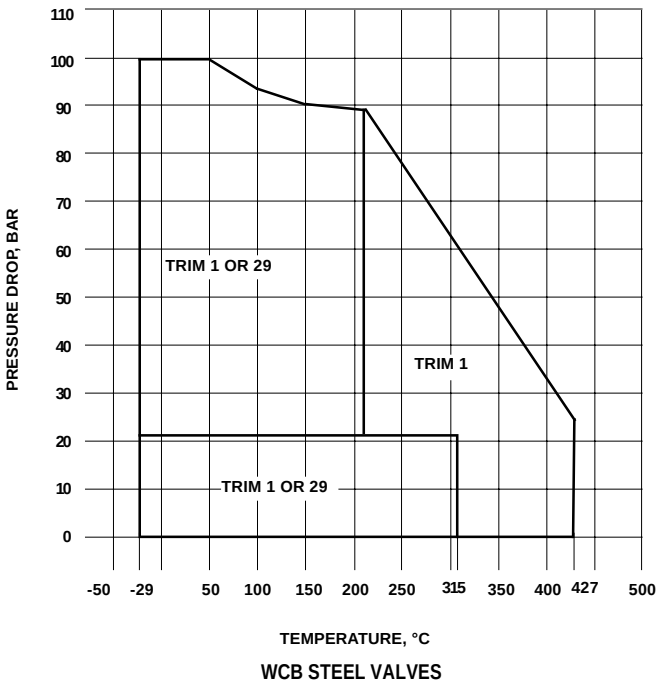
Type 646 or 846 Electro-Pneumatic Transducers... These transducers convert a standard 4 to 20 mA dc signal to a proportional pneumatic signal. Certifications are ■ CE Mark to EMC directive (electromagnetic compatibility); ■ Contact your nearest sales office or sales representative for intrinsic safe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

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

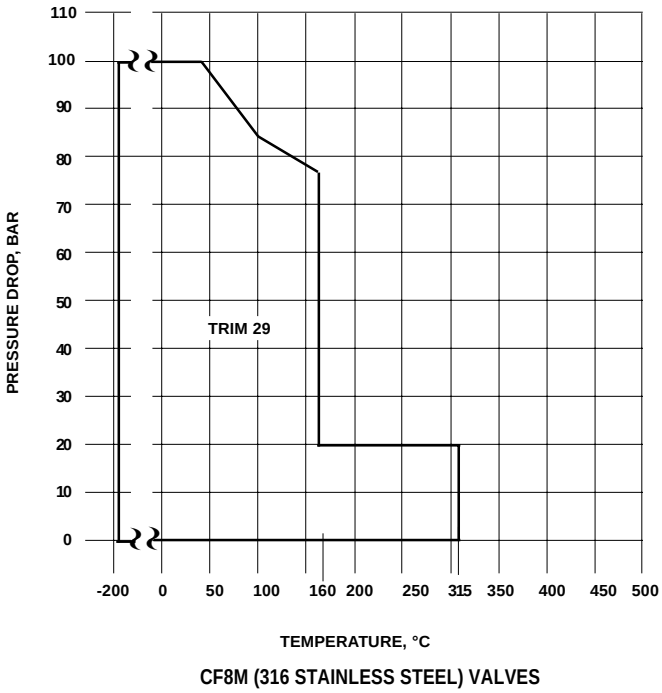
Others...■ High-pressure supply pressure regulators, ■ proximity switches, ■ microswitches, ■ solenoid valves, and ■ signal volume boosters.

Contact your nearest sales office or sales representative for more information.

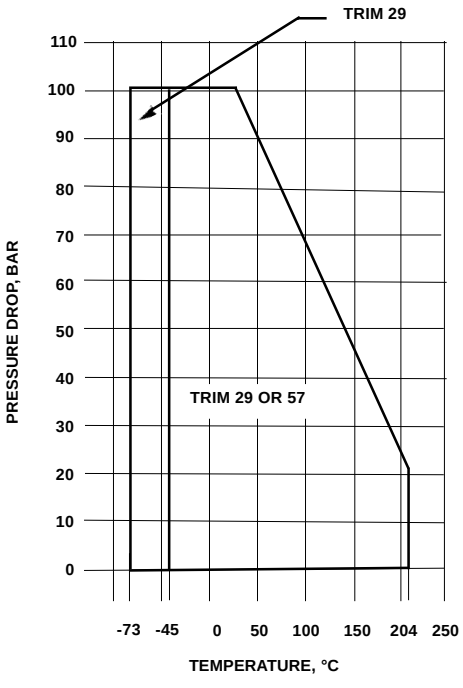
Trim Material Pressure/Temperature Capabilities for Sizes through DN 300 x 200 (12 x 8 Inches) for ED, ES , and ET Trim



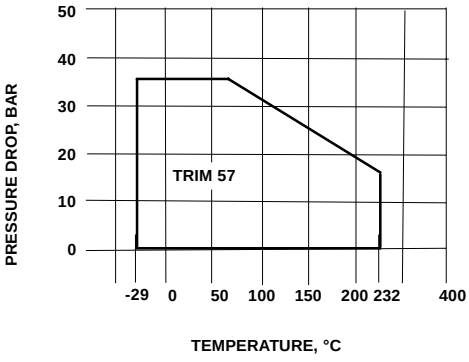
WCB STEEL VALVES



CF8M (316 STAINLESS STEEL) VALVES



SOFT SEATS



CAST IRON VALVES

Trim Material Pressure/Temperature Capabilities for Design EZ Trim

Design EZ Trim Temperature Capabilities (Also Refer to the Following Table)

BODY MATERIAL	FISHER CONTROLS TRIM NUMBER	VALVE SIZE		TEMPERATURE, °C	NOTES
		DIN	ANSI		
Cast Iron	101	All	All	-29 to 232	- - -
	129	All	All	-73 to 232	With non-lubricating fluids, limit to 149°C
WCB Steel	101	All	All	-29 to 427	- - -
	129	to DN 50 DN 80 DN 100	to 2 inches 3 inches 4 inches	-29 to 260 -29 to 371 -29 to 338	With non-lubricating fluids, limit to 149°C
CF8M (316 Stainless Steel)	101	to DN 40 DN 50 DN 80 DN 100	to 1-1/2 inches 2 inches 3 inches 4 inches	-29 to 354 -29 to 288 -29 to 216 -12 to 177	- - -
	129	to DN 40 DN 80 DN 100	to 2 inches 3 inches 4 inches	-198 to 260 -198 to 377 -198 to 371	With non-lubricating fluids, limit to 149°C

H417T14

Design EZ--Maximum Pressure Drops for Gasket Materials with Quick Opening, Linear, Equal Percentage, and Micro-Form Trim

TEMPERATURE, °C	VALVE SIZE																			
	DN 25 1/2 - 1 Inches					DN 40 1-1/2 Inches						DN 50 2 Inches						DN 80 3 Inches		DN 100 4 Inches	
	Port Diameter, mm																			
	4.8 & 6.4	9.5	12.7	19.1	25.4	4.8 & 6.4	9.5	12.7	19.1	25.4	38.1	4.8 & 6.4	9.5	12.7	19.1	25.4	50.8	50.8	76.2	50.8	101.6
Maximum Pressure Drop, Bar																					
S31603 (316L Stainless Steel)/Composition Spiral Wound Gasket																					
-253 to 38	67.6	68.3	69.0	72.4	76.5	58.6	59.0	59.3	61.3	63.4	72.4	52.4	52.8	53.1	54.5	55.8	70.3	55.2	70.3	49.0	73.8
93	56.5	57.2	57.9	60.0	64.1	49.0	49.3	49.6	51.0	53.1	60.0	43.4	43.8	44.1	45.5	46.9	58.6	46.2	58.6	40.7	61.4
149	47.6	48.3	49.0	51.0	53.8	41.4	41.8	42.1	43.4	44.8	51.0	37.2	37.2	37.2	37.9	39.3	49.6	38.6	49.6	34.5	51.7
204	43.4-	43.8	44.1	46.2	49.0	37.9	37.9	37.9	39.3	40.7	46.2	33.8	33.8	33.8	34.5	35.9	44.8	35.2	45.5	31.0	46.9
232	2.1	42.6	43.1	44.8	47.6	36.5	36.7	36.9	38.3	39.6	44.8	32.8	32.8	32.8	33.4	34.8	43.4	34.1	44.1	30.3	45.5
P06600 (Inconell)/Graphite Spiral Wound Gasket																					
-253 to 30	94.5	96.2	97.9	104.1	114	77.9	79.0	80.0	82.7	87.6	105	67.6	68.2	68.7	70.3	73.1	101	69.6	97.2	65.5	114
93	89.6	91.4	93.1	98.6	108	73.8	74.5	75.2	78.6	82.7	99.3	63.4	64.1	64.8	66.9	69.6	95.8	66.2	92.4	62.1	108
149	85.5	87.2	88.9	94.5	103	70.3	71.4	72.4	75.2	79.3	94.5	60.7	61.4	62.1	63.4	66.2	91.7	62.7	88.3	58.6	103
204	81.4	83.1	84.8	89.6	98.6	66.9	68.0	69.0	71.0	75.2	90.3	57.9	58.3	58.6	60.7	62.7	86.9	60.0	83.4	55.8	97.9
260	78.6	80.4	82.1	86.9	95.2	64.8	65.5	66.2	69.0	73.1	87.6	55.8	56.5	57.2	58.6	61.4	84.1	57.9	81.4	54.5	94.5
316	76.5	77.9	79.3	84.1	92.4	62.7	63.4	64.1	66.9	71.0	84.8	54.5	54.9	55.2	56.5	59.3	81.4	56.5	78.6	52.4	91.7
371	73.8	75.2	76.5	81.4	88.9	60.7	61.4	62.1	64.8	68.3	81.4	52.4	52.8	53.1	55.2	57.2	78.6	54.5	75.8	51.0	88.3
427	71.0	72.4	73.8	78.6	86.2	58.6	59.3	60.0	62.1	66.2	78.6	50.3	51.0	51.7	53.1	55.2	75.8	52.4	73.1	49.0	85.5

H417T15

Design ED, ES, and ET Flow Coefficients

FLOW CHARAC-TERISTIC	VALVE SIZE		MAXI-MUM TRAVEL	PORT DIA.	DESIGNS ED AND ET (FLOW DOWN)					DESIGN ES (FLOW UP)				
					Valve Opening, Percent of Total Travel									
					10	30	70	100	100	10	30	70	100	100
	DIN	Inches	mm	mm	C_V				F_L	C_V				F_L
Quick Opening	- - -	1/2	19	33.3	- - -	- - -	- - -	- - -	- - -	4.00	6.22	6.52	6.53	.88
	- - -	3/4	19	33.3	- - -	- - -	- - -	- - -	- - -	4.94	11.8	14.2	14.2	.83
	DN 25	1, 1-1/4	19	33.3	4.86	13.4	21.1	22.1	.81	5.24	15.0	21.1	21.4	.89
	DN 40	1-1/2 2	19	47.6	7.79	20.5	39.4	44.0	.79	7.60	22.3	38.0	38.0	.94
	DN 50		29	58.7	13.4	39.9	73.7	77.6	.77	14.3	48.6	67.2	67.2	.93
	DN 65	2-1/2	38	73.0	20.9	58.8	103	109	.81	21.8	66.6	93.1	93.1	.91
	DN 80	3	38	87.3	27.2	77.9	149	161	.77	23.3	78.3	136	150	.87
	DN 100	4	51	111.1	37.7	125	238	251	.79	39.0	132	225	235	.89
	DN 150	6	51	177.8	73.6	232	416	460	.82	89.9	255	418	469	.82
	DN 200	8	76	203.2	135	434	759	863	.85	156	490	796	875	.85
					X_T				- - -	X_T				- - -
	- - -	1/2	19	33.3	- - -	- - -	- - -	- - -	- - -	.681	.653	.624	.622	- - -
	- - -	3/4	19	33.3	- - -	- - -	- - -	- - -	- - -	.576	.605	.534	.534	- - -
	DN 25	1, 1-1/4	19	33.3	.556	.724	.566	.556	- - -	.540	.656	.663	.650	- - -
	DN 40	1-1/2	19	47.6	.494	.682	.649	.597	- - -	.577	.639	.743	.789	- - -
	DN 50	2	29	58.7	.605	.737	.641	.623	- - -	.633	.619	.797	.810	- - -
	DN 65	2-1/2	38	73.0	.601	.738	.669	.652	- - -	.659	.720	.848	.868	- - -
	DN 80	3	38	87.3	.626	.745	.619	.577	- - -	.585	.602	.737	.720	- - -
	DN 100	4	51	111.1	.623	.733	.689	.694	- - -	.642	.714	.769	.780	- - -
	DN 150	6	51	177.8	.664	.667	.728	.710	- - -	.572	.601	.681	.700	- - -
	DN 200	8	76	203.2	.643	.757	.857	.827	- - -	.520	.654	.818	.774	- - -
					C_V				F_L	C_V				F_L
Linear	DN 25	1, 1-1/4	19	33.3	3.21	8.18	16.9	20.6	.71	2.27	6.23	15.8	20.1	.89
	DN 40	1-1/2	19	47.6	4.23	11.8	30.3	39.2	.68	3.56	11.1	26.7	34.9	.92
	DN 50	2	29	58.7	7.87	24.9	62.0	72.9	.59	8.49	25.9	59.2	65.3	.91
	DN 65	2-1/2	38	70.3	9.34	35.5	83.6	108	.66	10.4	34.9	73.7	86.5	.93
	DN 80	3	38	87.3	14.5	52.1	118	148	.68	15.3	52.8	112	135	.89
	DN 100	4	51	111.1	23.3	78.1	181	236	.67	23.7	72.9	165	212	.89
	DN 150	6	51	177.8	46.3	171	367	433	.71	55.0	180	341	417	.81
	DN 200	8	76	203.2	91.4	325	711	846	.75	100	330	719	836	.85
					X_T				- - -	X_T				- - -
	DN 25	1, 1-1/4	19	33.3	.340	.494	.610	.636	- - -	.691	.690	.709	.690	- - -
	DN 40	1-1/2	19	47.6	.656	.758	.708	.656	- - -	.628	.604	.715	.764	- - -
	DN 50	2	29	58.7	.641	.728	.683	.638	- - -	.618	.689	.742	.762	- - -
	DN 65	2-1/2	38	73.0	.680	.644	.716	.641	- - -	.672	.739	.858	.866	- - -
	DN 80	3	38	87.3	.671	.697	.707	.620	- - -	.607	.663	.762	.751	- - -
	DN 100	4	51	111.1	.691	.720	.748	.688	- - -	.553	.644	.743	.791	- - -
	DN 150	6		177.8	.656	.744	.784	.740	- - -	.597	.701	.787	.745	- - -
	DN 200	8	76	203.2	.651	.677	.823	.807	- - -	.616	.669	.762	.799	- - -
Equal Percentage					C_V				F_L	C_V				F_L
	DN 25	1, 1-1/4	19	33.3	.783	2.20	7.83	17.2	.88	.783	1.86	9.54	17.4	.95
	DN 40	1-1/2	19	47.6	1.52	3.87	17.4	35.8	.84	1.54	3.57	17.2	33.4	.94
	DN 50	2	29	58.7	1.66	4.66	25.4	59.7	.85	1.74	4.72	25.0	56.2	.92
	DN 65	2-1/2	38	73.0	3.43	10.8	49.2	99.4	.84	4.05	10.6	45.5	82.7	.93
	DN 80	3	38	87.3	4.32	10.9	66.0	136	.82	4.05	10.0	59.0	121	.89
	DN 100	4	51	111.1	5.85	18.3	125	224	.82	6.56	17.3	103	203	.91
	DN 150	6	51	177.8	12.9	43.3	239	394	.85	13.2	41.1	223	357	.86
	DN 200	8	76	203.2	27.0	105	605	818	.96	25.9	97.8	618	808	.85
					X_T				- - -	X_T				- - -
	DN 25	1, 1-1/4	19	33.3	.766	.587	.743	.667	- - -	.754	.763	.630	.721	- - -
	DN 40	1-1/2	19	47.6	.780	.716	.690	.679	- - -	.674	.694	.698	.793	- - -
	DN 50	2	29	58.7	.827	.774	.702	.687	- - -	.863	.849	.792	.848	- - -
	DN 65	2-1/2	38	73.0	.778	.678	.661	.660	- - -	.747	.745	.783	.878	- - -
	DN 80	3	38	87.3	.774	.682	.663	.675	- - -	.768	.761	.754	.757	- - -
	DN 100	4	51	111.1	.731	.643	.672	.716	- - -	.722	.739	.718	.822	- - -
	DN 150	6	51	177.8	.688	.682	.736	.778	- - -	.723	.767	.808	.816	- - -
	DN 200	8	76	203.2	.644	.636	.725	.807	- - -	.825	.681	.735	.827	

H417T08

Design EZ Flow Coefficients (Flow Up)

VALVE SIZE		MAXIMUM TRAVEL	PORT DIA.	QUICK OPENING				- - -	- - -	LINEAR				
				Valve Opening, Percent of Total Travel										
				10	30	70	100	100	- - -	10	30	70	100	100
DIN	Inches	mm	mm	C_v				F_L	- - -	C_v				F_L
- - -	1/2	19	33.3	1.76	4.29	4.44	4.44	.83	- - -	- - -	- - -	- - -	- - -	- - -
- - -	3/4	19	33.3	3.85	9.40	9.72	9.72	.88	- - -	- - -	- - -	- - -	- - -	- - -
DN 25	1	19	33.3	4.39	14.0	16.8	16.9	.94	- - -	2.21	5.29	11.1	13.6	.96
DN 40	1-1/2	19	47.6	5.64	20.6	33.4	34.2	.96	- - -	3.99	11.1	25.8	31.9	.96
DN 50	2	29	58.7	13.0	44.3	58.4	58.6	.94	- - -	6.08	18.0	42.8	52.4	.95
DN 80	3	38	87.3	30.8	92.4	126	129	.91	- - -	15.4	43.4	93.8	110	.92
DN 100	4	51	111.1	50.8	159	219	223	.88	- - -	21.3	57.5	157	209	.89
				X_T				- - -	- - -	X_T				- - -
- - -	1/2	19	33.3	.364	.764	.894	.894	- - -	- - -	- - -	- - -	- - -	- - -	- - -
- - -	3/4	19	33.3	.314	.654	.769	.769	- - -	- - -	- - -	- - -	- - -	- - -	- - -
DN 25	1	19	33.3	.400	.523	.500	.494	- - -	- - -	.638	.638	.636	.834	- - -
DN 40	1-1/2	19	47.6	.623	.726	.861	.848	- - -	- - -	.633	.657	.696	.818	- - -
DN 50	2	29	58.7	.548	.765	.831	.834	- - -	- - -	.560	.655	.779	.924	- - -
DN 80	3	38	87.3	.672	.713	.783	.774	- - -	- - -	.622	.692	.758	.888	- - -
DN 100	4	51	111.1	.733	.724	.809	.835	- - -	- - -	.554	.684	.677	.866	- - -
				EQUAL PERCENTAGE					DN 25 (1-INCH) VALVE WITH MICRO-FORM AND MICRO-FLUTE VALVE PLUG 19 mm TRAVEL EQUAL PERCENTAGE CHARACTERISTIC					
				C_v				F_L	PORT DIA.	C_v				F_L
DN 25	1	19	33.3	.79	1.80	7.59	13.2	.96	6.4(1)	.075	.175	.641	1.52	.88
DN 40	1-1/2	19	47.6	.80	1.91	9.84	28.1	.97	9.5(1)	.099	.308	1.29	3.07	.89
DN 50	2	29	58.7	1.65	4.30	32.8	53.8	.95	12.7(1)	.133	.492	2.12	4.91	.93
DN 80	3	38	87.3	3.11	9.12	60.4	114	.92	19.1(1)	.276	.965	4.57	8.84	.97
DN 100	4	51	111.1	4.90	13.5	96.7	190	.90	6.4(2)	.0385	.0560	.162	.354	.87
									6.4(3)	.0562	.101	.433	1.07	.90
				X_T				- - -		X_T				- - -
DN 25	1	19	33.3	.641	.598	.646	.886	- - -	6.4(1)	.804	.658	.596	.647	
DN 40	1-1/2	19	47.6	.726	.733	.597	.840	- - -	9.5(1)	.795	.641	.560	.662	- - - - -
DN 50	2	29	58.7	.655	.520	.653	.899	- - -	12.7(1)	.787	.628	.600	.803	- - - - -
DN 80	3	38	84.3	.619	.598	.586	.781	- - -	19.1(1)	.723	.588	.603	.919	- - - - -
	4	51	111.1	.594	.560	.532	.834	- - -	6.4(2)	.778	.690	.637	.656	- - -
									6.4(3)	.692	.639	.597	.624	

1. Micro-Form valve plug.
2. Micro-Flute valve plug--1 flute.
3. Micro-Flute valve plug--3 flutes.

H417T09

Conversion of Sizing Coefficients

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 is only applicable for inlet pressures up to 70 bar(a).

Design EWD, EWS, and EWT Flow Coefficients

FLOW CHARACT-ERISTIC	VALVE SIZE		MAX. TRAVEL	PORT DIA.	DESIGNS EWD AND EWT (FLOW DOWN)					DESIGN EWS (FLOW UP)				
					Valve Opening, Percent of Total Travel									
					10	30	70	100	100	10	30	70	100	100
	DIN (DN)	Inches	mm	mm	C_V				F_L	C_V				F_L
Quick Opening	100 × 50	4 × 2	29	58.7	13.8	42.7	105	124	.82	13.7	42.1	101	123	.89
	150 × 100	6 × 4	51	111.1	40.8	140	306	340	.88	39.4	147	355	382	.88
	200 × 100	8 × 4	51	111.1	43.2	147	328	379	.89	42.1	149	365	450	.85
	200 × 150	8 × 6	51	177.8	79.0	247	531	637	.89	79.3	249	606	714	.86
	300 × 150	12 × 6	51	177.8	80.1	250	621	817	.82	86.1	261	641	874	.79
	250 × 200	10 × 8	76	203.2	138	468	903	1040	.88	151	471	918	1000	.93
	300 × 200	12 × 8	76	203.2	149	481	1000	1260	.79	157	480	957	1110	.89
	400 × 250	16 × 10	152	257.2	234	1220	2080	2230	.79	221	1190	2100	2210	.87
					X_T				- - -	X_T				- - -
	100 × 50	4 × 2	29	58.7	.571	.662	.714	.693	- - -	.639	.652	.843	.793	- - -
	150 × 100	6 × 4	51	111.1	.577	.612	.793	.818	- - -	.619	.591	.726	.781	- - -
	200 × 100	8 × 4	51	111.1	.629	.631	.809	.817	- - -	.578	.560	.733	.704	- - -
	200 × 150	8 × 6	51	177.8	.544	.578	.759	.705	- - -	.682	.634	.688	.671	- - -
	300 × 150	12 × 6	51	177.8	.515	.613	.715	.782	- - -	.614	.571	.677	.736	- - -
	250 × 200	10 × 8	76	203.2	.665	.651	.741	.787	- - -	.632	.625	.798	.842	- - -
	300 × 200	12 × 8	76	203.2	.687	.727	.744	.636	- - -	.718	.712	.855	.836	- - -
	400 × 250	16 × 10	152	257.2	.872	.682	.652	.614	- - -	.689	.682	.644	.638	- - -
					C_V				F_L	C_V				F_L
Linear	100 × 50	4 × 2	29	58.7	6.80	23.0	70.8	107	.79	6.88	21.5	60.0	96.2	.89
	150 × 100	6 × 4	51	111.1	21.4	78.7	201	320	.86	26.2	78.4	197	320	.89
	200 × 100	8 × 4	51	111.1	23.2	80.6	211	340	.82	25.1	78.1	192	328	.89
	200 × 150	8 × 6	51	177.8	44.0	170	405	617	.88	52.5	182	435	607	.88
	300 × 150	12 × 6	51	177.8	51.7	176	458	729	.81	57.4	186	441	675	.84
	250 × 200	10 × 8	76	203.2	95.9	336	798	975	.91	106	315	766	958	.92
	300 × 200	12 × 8	76	203.2	104	348	907	1160	.80	119	336	795	1050	.89
	400 × 250	16 × 10	152	257.2	307	834	1680	2020	.82	343	865	1680	2080	.87
					X_T				- - -	X_T				- - -
	100 × 50	4 × 2	29	58.7	.625	.691	.582	.654	- - -	.599	.728	.744	.794	- - -
	150 × 100	6 × 4	51	111.1	.686	.651	.672	.725	- - -	.713	.661	.666	.725	- - -
	200 × 100	8 × 4	51	111.1	.694	.691	.676	.753	- - -	.610	.682	.716	.729	- - -
	200 × 150	8 × 6	51	177.8	.796	.758	.801	.656	- - -	.655	.688	.723	.679	- - -
	300 × 150	12 × 6	51	177.8	.716	.691	.661	.633	- - -	.523	.612	.704	.719	- - -
	250 × 200	10 × 8	76	203.2	.683	.610	.715	.843	- - -	.666	.708	.731	.820	- - -
	300 × 200	12 × 8	76	203.2	.700	.647	.711	.696	- - -	.678	.811	.809	.836	- - -
	400 × 250	16 × 10	152	257.2	.676	.670	.702	.671	- - -	.786	.627	.670	.660	
Equal Percentage					C_V				F_L	C_V				F_L
	100 × 50	4 × 2	29	58.7	2.53	6.66	29.4	82.2	.82	2.40	5.97	26.3	67.5	.90
	150 × 100	6 × 4	51	11.1	7.34	19.8	108	271	.87	7.18	18.2	100	271	.88
	200 × 100	8 × 4	51	111.1	8.01	21.1	118	286	.85	8.37	20.0	102	269	.90
	200 × 150	8 × 6	51	177.8	13.2	45.4	256	508	.91	12.0	36.9	226	478	.92
	300 × 150	12× 6	51	177.8	23.6	52.8	248	565	.79	18.6	43.8	231	476	.88
	250 × 200	10× 8	76	203.2	32.3	111	635	924	.89	33.9	97.7	568	932	.90
	300 × 200	12× 8	76	203.2	28.4	112	687	1090	.81	28.8	102	654	1020	.88
	400 × 250	16 × 10	152	257.2	126	238	959	2090	.77	63.2	189	837	1780	.83
					X_T				- - -	X_T				- - -
	100 × 50	4 × 2	29	58.7	.626	.664	.646	.587	- - -	.751	.781	.732	.777	- - -
	150 × 100	6 × 4	51	111.1	.996	.711	.630	.712	- - -	.794	.775	.718	.694	- - -
	200 × 100	8 × 4	51	111.1	.684	.643	.566	.675	- - -	.761	.716	.701	.704	- - -
	200 × 150	8 × 6	51	177.8	.837	.719	.626	.684	- - -	.733	.874	.773	.727	- - -
	100 × 50	4 × 2	51	177.8	.628	.694	.695	.627	- - -	.661	.824	.764	.788	- - -
	150 × 100	6 × 4	76	203.2	.725	.687	.595	.802	- - -	.836	.894	.699	.760	- - -
	200 × 100	8 × 4	76	203.2	.666	.667	.664	.663	- - -	.769	.928	.651	.766	- - -
	200 × 150	8 × 6	152	257.2	.655	.640	.503	.546	- - -	.565	.501	.497	.652	- - -

H417T10

Actuator Selection to 232°C, Plain Bonnets, and Standard Spring-Loaded PTFE Packing

The following tables allow you to select an actuator that will operate the valve at standard actuator pressures.

It is not implied that the selections shown are best for your application. In many cases, a smaller actuator might be satisfactory for lower pressure drops, and higher pressure drops might be possible by using higher actuator pressures. Your sales office or sales representative can help you with more detailed actuator selection.

- The actuator selections have been made at maximum valve travel using plain bonnets and standard valve stem diameter.
- The selections are valid to 232°C only (204°C for soft-seat constructions). For higher temperatures, your sales office or sales representative can provide actuator selections for graphite ribbon/filament packing or extension bonnets.
- Actuator force does not exceed maximum allowable stem load of standard 316 stainless steel stem material at 232°C.
- Do not exceed the maximum inlet pressure of the valve (valve body rating) nor the pressure drop limits on pages 18 and 19.

FloVue™ Final Control System (for Larger FloVue Actuator Sizes, Contact Your Sales Office or Sales Representative)

Design ED, ET, and EZ Valves: Flow Down For Design ED and ET; Flow Up for Design EZ

Maximum Inlet Pressure: Through DIN PN 100 and ANSI Class 600 **Maximum Shutoff Pressure Drop:** As shown below unless limited by body pressure-temperature rating or trim capabilities at high temperatures **Process Fluid Temperature:** With plain bonnet, -18 to 204°C for soft seats and to 232°C for metal seats **Ambient Temperature:** -40 to 80°C with standard actuator materials; also refer to temperature limits of accessories.	**Valve and Bonnet:** Cast iron, steel, or stainless steel **Trim:** Any listed in this flier **Gaskets:** Any listed in this flier **Packing:** Single PTFE V-ring **Other Valve Parts:** Steel or stainless steel

Valve Size		Port Diameter, mm	Actuator Size	Pressure Drop, Bar			Actuator Size	Pressure Drop, Bar		
DIN	Inches			2.8 Bar Supply	4.1 Bar Supply	5.5 Bar Supply		2.8 Bar Supply	4.1 Bar Supply	5.5 Bar Supply
			Design ED Valve Class II Shutoff				- - -			
DN 25 and 40	1, 1-1/4, and 1-1/2	33.3 47.6	20 20	70.9 40.5	99.3 85.9	99.3 99.3	- - -	- - -	- - -	- - -
			Design ET Valve Metal Seat Class IV Shutoff				Design ET Valve Soft Seat Class V Shutoff			
DN 25 and 40	1, 1-1/4, and 1-1/2	33.3 47.6	20 20	35.4 3.6	97.8 49.0	99.3 94.5	20 20	39.6 16.2	86.8 502.	99.3 84.2
			Design EZ Valve Metal Seat Class IV Shutoff				Design EZ Valve Soft Seat Class VI Shutoff			
DN 25 and 40	1/2, 3/4, 1, and 1-1/2	6.4 9.5 12.7 19.1 25.4	20 20 20 20 20	99.3 95.4 86.7 38.5 21.7	99.3 99.3 99.3 46.5 23.4	99.3 99.3 99.3 69.1 36.1	20 20 20 20 20	99.3 99.3 86.7 38.5 21.7	99.3 99.3 99.3 46.5 23.4	99.3 99.3 99.3 69.1 36.1
DN 40	1-1/2	38.1	20	2.3	7.9	13.6	20	4.0	9.5	15.0

H417T24

Actuator Selection to 232°C, Plain Bonnets, and Standard Spring-Loaded PTFE Packing (Continued)

Type 657 and 667 Actuators

Design ED and EWD Valve: Metal Seat with Class II Shutoff and Flow Down

Maximum Inlet Pressure: Through DIN PN 100 and ANSI Class 600 **Maximum Shutoff Pressure Drop:** As shown below unless limited by body pressure-temperature rating or trim capabilities at high temperatures **Process Fluid Temperature:** With plain bonnet , -18 to 232°C for metal seats **Ambient Temperature:** -40 to 82°C with standard actuator materials; also refer to temperature limits of accessories.	**Valve and Bonnet:** Cast iron, steel, or stainless steel **Trim:** Any listed in this flier **Gaskets:** Any listed in this flier **Packing:** Single PTFE V-ring **Other Valve Parts:** Steel or stainless steel

VALVE SIZE OR NOMINAL TRIM SIZE		PORT DIAMETER, mm	Air to Close (Type 657 Actuator) 0 to 1.2 Bar (0 to 18 psig) Air to Diaphragm Except where Indicated		Air to Open (Type 667 Actuator) 0 to 1.2 Bar (0 to 18 psig) Air to Diaphragm Execpt where Indicated	
DIN	Inches		Actuator Size	Pressure Drop, Bar	Actuator Size	Pressure Drop, Bar
DN 25	1 or 1-1/4	33.3	30	99.3	30	99.3
DN 40	1-1/2	33.3 47.6	30 34	99.3 99.3	30 34	99.3 99.3
DN 50	2	33.3 58.7	40 40	99.3 91.0	40 40	99.3 91.1
DN 65	2-1/2	47.6 73.0	40 45	99.3 99.3	40 45	99.3 99.3
DN 80	3	58.7 87.3	45 45	99.3 98.9	45 45	99.3 98.9
DN 100	4	73.0 111.1	45 45	99.3 83.8	45 45	99.3 41.2
DN 150	6	111.1 177.8	50 70	80.5 9.3	70 70	99.3 99.3
DN 200	8	203.2	- - -(1)	99.3(1)	- - -(1)	99.3(1)

1. Use a size 70 actuator with 0 to 2.4 bar air to diaphragm.

H417T13

Design ET and EWT Valve: Flow Down

Maximum Inlet Pressure: Through DIN PN 100 and ANSI Class 600 **Maximum Shutoff Pressure Drop:** As shown below unless limited by body pressure-temperature rating or trim capabilities at high temperatures **Process Fluid Temperature:** With plain bonnet, -18 to 204°C for soft seats and to 232°C for metal seats **Ambient Temperature:** -40 to 82°C with standard actuator materials; also refer to temperature limits of accessories.	**Valve and Bonnet:** Cast iron, steel, or stainless steel **Trim:** Any listed in this flier Gaskets: Any listed in this flier **Packing:** Single PTFE V-ring **Other Valve Parts:** Steel or stainless steel

VALVE SIZE OR NOMINAL TRIM SIZE		PORT DIAMETER, mm	Air to Close (Type 657 Actuator) 0 to 1.2 Bar (0 to 18 psig) Air to Diaphragm Except where Indicated				Air to Open (Type 667 Actuator) 0 to 1.2 Bar (0 to 18 psig) Air to Diaphragm Except where Indicated			
			Class IV Shutoff		Class V Shutoff		Class IV Shutoff		Soft Seat Class V Shutoff	
DIN	Inches		Actuator Size	Pressure Drop, Bar	Actuator Size	Pressure Drop, Bar	Actuator Size	Pressure Drop, Bar	Actuator Size	Pressure Drop, Bar
DN 25	1 or 1-1/4	33.3	34	99.3	34	99.3	34	99.3	34	99.3
DN 40	1-1/2	33.3 47.6	34 34	99.3 99.3	34 34	99.3 95.0	34 34	99.3 99.3	34 34	99.3 94.9
DN 50	2	33.3 58.7	40 45	99.3 99.3	40 45	99.3 99.3	40 45	99.3 99.3	40 45	99.3 99.3
DN 65	2-1/2	47.6 73.0	40 45	99.3 86.9	40 45	92.2 78.7	40 45	99.3 86.9	40 45	92.2 99.3
DN 80	3	58.7 87.3	45 45	99.3 61.7	45 45	99.3 59.8	45 45	99.3 61.7	45 45	99.3 59.8
DN 100	4	73.0 111.1	45 45	86.9 46.7	45 45	78.7 48.6	45 - - -(2)	99.3 60.9(2)	45 - - -(2)	99.3 59.2(2)
DN 150	6	177.8	60 - - -(1)	99.3 49.8(1)	60 70	92.5 65.0	70 - - -(1)	99.3 99.3(1)	70 70	99.3 65.0
DN 200	8	203.2	- - -(1)	9.2(1)	- - -(1)	81.8(1)	- - -(1)	79.8(1)	- - - -(1)	99.3(1)

1. Use a size 70 actuator with 0 to 2.4 bar (0 to 33 psig) air to diaphragm.
2. Use a size 45 actuator with 0 to 2.4 bar (0 to 33 psig) air to diaphragm.

H417T21

Actuator Selection to 232°C, Plain Bonnets, and Standard Spring-Loaded PTFE Packing (Continued)

Type 657 and 667 Actuators (Continued)

Design EZ Valve: Metal Seat (Class IV Shutoff) or PTFE Seat (Class VI Shutoff) and Flow Up

Maximum Inlet Pressure: Through DIN PN 100 and ANSI Class 600 **Maximum Shutoff Pressure Drop:** As shown below unless limited by body pressure-temperature rating or trim capabilities at high temperatures **Process Fluid Temperature:** With plain bonnet, -18 to 232°C for soft seats and to 232°C for metal seats) **Ambient Temperature:** -40 to 82°C with standard actuator materials; also refer to temperature limits of accessories.	**Valve and Bonnet:** Cast iron, steel, or stainless steel **Trim:** Any listed in this flier **Gaskets:** Any listed in this flier **Packing:** Single PTFE V-ring **Other Valve Parts:** Steel or stainless steel

VALVE SIZE		PORT DIAMETER, mm	Air to Close (Type 657 Actuator) 0 to 1.2 Bar (0 to 18 psig) Air to Diaphragm Except where Indicated		Air to Open (Type 667 Actuator) 0 to 1.2 Bar (0 to 18 psig) Air to Diaphragm Except where Indicated	
DIN	Inches		Actuator Size	Pressure Drop, Bar	Actuator Size	Pressure Drop, Bar
DN 25 and 40	1/2, 3/4, 1 and 1-1/2	6.4 9.5 12.7 19.1 25.4	30 30 30 34 34	99.3 99.3 99.3 76.5 34.1	30 30 30 34 34	99.3 99.3 99.3 76.5 40.2
DN 40	1-1/2	38.1	34	15.4	34	15.4
DN 50	2	6.4 9.5 12.7 19.1 25.4 38.1 50.8	40 40 40 45 45 45 45	99.3 99.3 99.3 99.3 58.3 23.4 11.8	40 40 40 45 45 45 45	99.3 99.3 99.3 99.3 58.3 23.4 11.8
DN 80	3	50.8 76.2	45 - - -(1)	3.2 7.1(1)	45 - - -(1)	11.8 10.1(1)
DN 100	4	50.8 101.6	45 - - -(1)	11.8 3.2(1)	45 - - -(1)	11.8 2.7(1)

1. Use a size 45 actuator with 0 to 2.4 bar (0 to 33 psig) air to diaphragm.

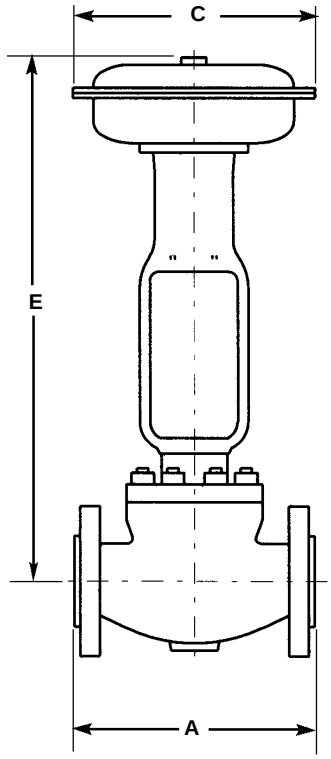
H417T23

Typical Valve and Actuator Weight

VALVE SIZE		TYPICAL ACTUATOR SIZE	APPROXIMATE WEIGHT OF VALVE AND ACTUATOR, kg
DIN	Inches		
- - - DN 25 DN 40 DN 50	1/2 and 3/4 1 1-1/2 2	30 30 30 40	25 27 34 59
DN 65 DN 80 DN 100 DN 150	2-1/2 3 4 6	40 45 45 50	68 95 116 202
DN 200 DN 100 × 50 DN 150 × 100 DN 200 × 100	8 4 ´ 2 6 ´ 4 8 ´ 4	70 40 45 45	523 123 236 316
200 × 150 300 × 150 250 × 200 300 × 200	8 ´ 6 12 ´ 6 10 ´ 8 12 ´ 8	50 50 70 70	351 764 859 971

H417T29

Typical Dimensions (Plain Bonnet and Standard Stem Diameter)



Face-to-Face Dimensions, A (mm)

VALVE SIZE		DIN		ANSI		
DIN	ANSI, Inches	PN 16-40	PN 63-100	Class 150 Raised Face	Class 300 Raised Face	Class 600 Raised Face
DN 25	1	160	230	184	197	210
DN 40	1-1/2	200	260	222	235	251
DN 50	2	230	300	254	267	286
DN 65	2-1/2	290	340	276	292	311
DN 80	3	310	380	298	317	337
DN 100	4	350	430	353	368	394
DN 150	6	480	550	451	473	508
DN 200	8	600	650	543	568	610

H417T28

Dimensions (mm) for FloVue Final Control System

VALVE SIZE		ACTUATOR SIZE	C	E
DIN	ANSI, Inches			
DN 25	1 and 1-1/4	20	330	457
DN 40	1-1/2	20	330	454

H417T27

Dimensions (mm) with Type 585C and 585CR Actuators

VALVESIZE		ACTUATOR SIZE	C	E
DIN	ANSI, Inches			
DN 25	1 and 1-1/4	25	192	480
DN 40	1-1/2	25	192	477
DN 50	2	25 50	192 251	518 668
DN 65	2-1/2	25 50	192 251	540 690
DN 80	3	25 50	192 251	544 694
DN 100	4	25 50	192 251	574 724
DN 150	6	50	251	754

H417T26

Dimensions (mm) with Type 657 and 667 Actuator

VALVE SIZE		ACTUAT-OR SIZE	C	E	
DIN	ANSI, Inches			Type 657	Type 667
DN 25	1 and 1-1/4	30 34	289 333	567 625	605 700
DN 40	1-1/2	30 34	289 333	564 622	602 697
DN 50	2	40 45	 406	713 824	759 933
DN 65	2-1/2	40 45	333 406	735 846	781 955
DN 80	3	45	406	850	959
DN 100	4	45	406	880	989
DN 150	6	50 60 70	406 473 536	973 973 1091	1035 1035 1184
DN 200	8	70	536	1215	1308

H417T25

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		
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 sales office or sales representative.		

H410T11

Product Flier PF51.1:E

For More Information, Contact...

AUSTRIA
Fisher-Rosemount
Industrie - Zentrum No Sud
Straße 2a, obj M29
A- 2351 Wr. Neudorf
✆ +43.2236.607
🖷 +43.2236.60744

BELGIUM
Fisher-Rosemount
De Kleetlaan 4
B-1831 Diegem
✆ +32.2.716.77.11
🖷 +32.2.725.83.00

BULGARY
Process Control
Tzarichina Str.1
BG- 1505 Sofia
✆ +359.2.70.35.49
🖷 +359.2.75.91.43

CIS
Fisher-Rosemount
Malaya Trubetskaya
Street 8 - 11th floor
CIS-119881 Moscow
✆ +7.095.232.69.68
🖷 +7.095.232.69.70

CROATIA
Fisher-Rosemount
Berny Commerce
Zagorska 27
10000 Zagreb
✆ +385.1.305.071.
🖷 +385.1.33.59.25

CZECH Rep
Fisher-Rosemount
V olsinách 75
Cz- 100 97 Praha 10
✆ +420.2.810.026 66
🖷 +420.2.810.026.70

DENMARK
Fisher-Rosemount
Hejrevang 11
DK-3450 Allerød
✆ +45.48.17.03.33
🖷 +45.48.17.02.44

FINLAND
Oy Valmet-Rosemount
Sinimaentie 10B
FIN - 02630 Espoo
✆ +358.9.523.500
🖷 +358.9.523.997

FRANCE and FRENCH SPEAKING AFRICA
Fisher-Rosemount
1 rue Traversière
Silic 125
F- 94523 Rungis
✆ +33.01.49.79.73.00
🖷 +33.01.49.79.73.99

GERMANY
Fisher-Gulde
Mannheimerstr. 63
D-67071 Ludwigshafen
✆ +49.0621.6811.0
🖷 +49.0621.6811.359

GREECE
T.C.B.
44, Pentelis str.
GR-17564 Faliro-Athens
✆ +30.1.80.33.652
🖷 +30.1.80.33.819

HUNGARY
Fisher-Rosemount
Ersébet Királyné útja 1/c
Hu- 1146 Budapest
✆ +36.1.343.02.03
🖷 +36.1.343.01.73

ITALY
Fisher-Rosemount
Via dell' Artigianato 8/12
I-20053 Muggió (Mi)
✆ +39.2.278.0590
🖷 +39.2.270.2302

NORWAY
Solberg & Andersen
Postboks 34 Bryn
N - 0611 Oslo
✆ +47.22.63.57.00
🖷 +47.22.65.73.03

NETHERLANDS
Fisher-Rosemount
Patrijsweg 140
NL-2289 EZ Rijswijk
✆ +31.70.413.66.66
🖷 +31.70.390.68.15

POLAND
Fisher-Rosemount
Al. Wilanowska 272
PL- 02665 Warszawa
✆ +48.22.85.73.766
🖷 +48.22.85.73.856

PORTUGAL
Fisher-Rosemount
Rua Alfredo da Silva 8
P-2720 Alfragide
✆ +351.01.471.28.850
🖷 +351.01.472.88.55

ROMANIA
Fisher-Rosemount Romania
Calea Floreasca No. 91-11
BL. F1, Tronson 5. AP.44
Sector 1
RO-71401 Bucharest
✆ +40.1.230.41.49
🖷 +40.1.230.05.01

SLOVAK Rep
Fisher-Rosemount
Hanulova 5/b
SR- 84101 Bratislava
✆ +421.07.787.811
🖷 +421.07.787.245

SLOVENIA
MIR
Strmeckijeva 16
SI-8270 Krsko
✆ +386.608.231.470
🖷 +386.608.231.471.

SPAIN
Fisher-Rosemount
Ctra Fuencarral-Alcobendas
Km 12.2; Edificio Auge 1
E-28049 Madrid
✆ +34.1.358.91.41
🖷 +34.1.358.91.45
💻 fr.spain@frco.com

SWEDEN
peab
Ilanda Gård
S - 65350 Karlstad
✆ +46.54.53.07.50
🖷 +46.54.53.18.51.

SWITZERLAND
Fisher-Rosemount
Blegistr. 21
CH-6341 Baar
✆ +41.41.768.61.11
🖷 +41.41.761.87.40

TURKEY
Fisher-Rosemount
Sti Tophanelioglu
Cad 28/5F
Altunizade 81130
TR- Üsküdar - Istanbul
✆ +90.216.492.40.42
🖷 +90.216.492.40.47

UKRAINE
Fisher-Rosemount
Tereschenkovskaya St. 13,
Rm. 58
252004 Kiev
✆ +38.44.246.46.56
🖷 +38.44.246.46.58

UNITED-KINGDOM and MIDDLE EAST
Fisher-Rosemount
Knight Road, Strood
Rochester, Kent ME2 2EZ
GB
✆ +44.1634.73.60.00
🖷 +44.1634.736.655

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