Bray COMMERCIAL

Product Catalog & Canadian Pricing



02/17/26

Bray COMMERCIAL

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Bray® COMMERCIAL

PRODUCT PROFILE



BRAYCOMMERCIALDIVISION.COM



INTRODUCTION

At Bray International, Inc., our business is helping our customers with their flow control requirements. Our product line of butterfly valves, actuators and accessories offers the best compatibility, economy and quality performance in the flow control industry.

Through years of field application experience, research and development Bray has designed products that meet the stringent requirements of today's flow control industry. We have earned a reputation for excellence by creating products of superior value and quality, providing personalized customer service and emphasizing on-time deliveries. Our success has always been the direct result of our fully integrated range of valve, actuator and control products. Rugged and reliable, our products are engineered to provide years of trouble free service.

Bray manufacturing facilities are certified to ISO 9001 quality standards, assuring product quality, precision manufacturing and internal process integrity.

Bray is committed to customer support. Our extensively trained staff is knowledgeable of all Bray products and their applications and can provide personal attention to every customer. To serve you locally Bray maintains a factory certified sales and service network, for all Bray products, throughout the world.

COMMITMENT TO QUALITY

Bray International recognizes that our customers make us successful and they have a choice of many manufacturers when selecting valves, actuators and accessories for their applications. Since many manufacturers have access to the same materials of construction for these products, Bray believes that a customer's purchase decision is heavily influenced by the following key factors:

- Trust in the manufacturer
- Confidence in the quality assurance and integrity of the manufacturer
- Proven industry experience
- Features and benefits of the product
- Cost of ownership
- Customer service
- Delivery

"Bray is focused on and committed to meeting the expectations and needs of our customers while continually improving the effectiveness of our quality management.

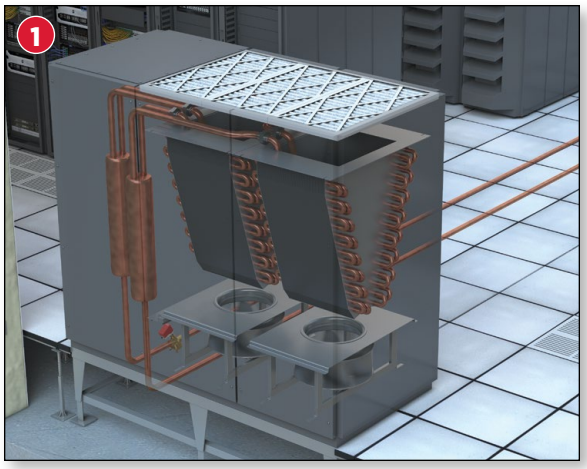
Bray COMMERCIAL

Bray Commercial provides automated butterfly valves, ball valves and pressure independent valves to the commercial building HVAC market throughout the world. Wherever valve performance is required to maintain climate controlled environments, Bray can provide the required automated valves to meet the demanding flow applications of chiller/boiler isolation, air handlers and terminal units for new construction, retrofit and/or LEED certification applications in buildings such as:

- Hospitals
- Schools and Universities
- Data Centers
- Government and Municipal Buildings
- Commercial Offices
- Airports
- Hotels
- Sports/Entertainment and Convention Centers

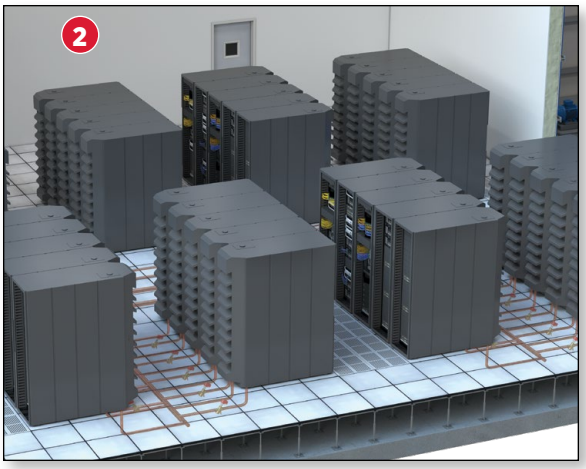
In addition to producing valves of unsurpassed quality, our core competency is servicing our BAS partners, OEM's and contractors to ensure you receive the most effective and economical valve solution package. Bray's extensively trained staff is knowledgeable in all aspects of Bray's products and their applications. To provide personal attention to every customer, each region maintains a factory certified sales and service network for all Bray products.

Computer Room Air Handling Units



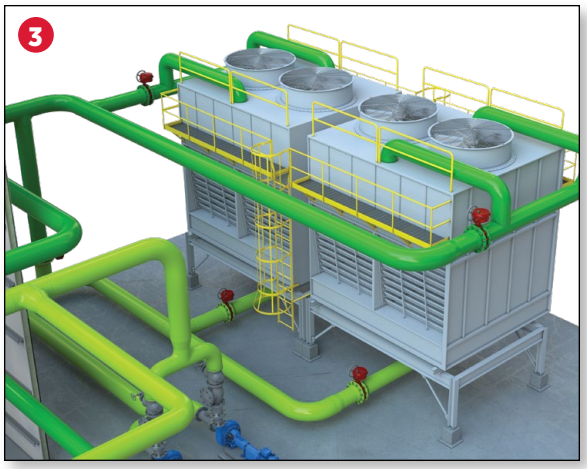
> Simple Set Pressure Independent Control Valves
> EBV Ball Valves

On-Rack Server Cooling



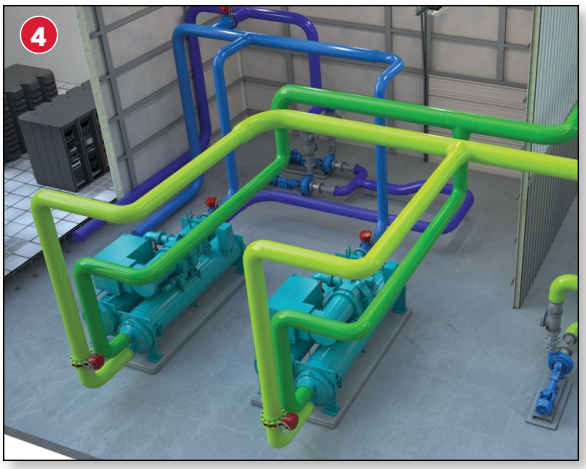
> Simple Set Pressure Independent Control Valves
> EBV Ball Valves

Cooling Towers



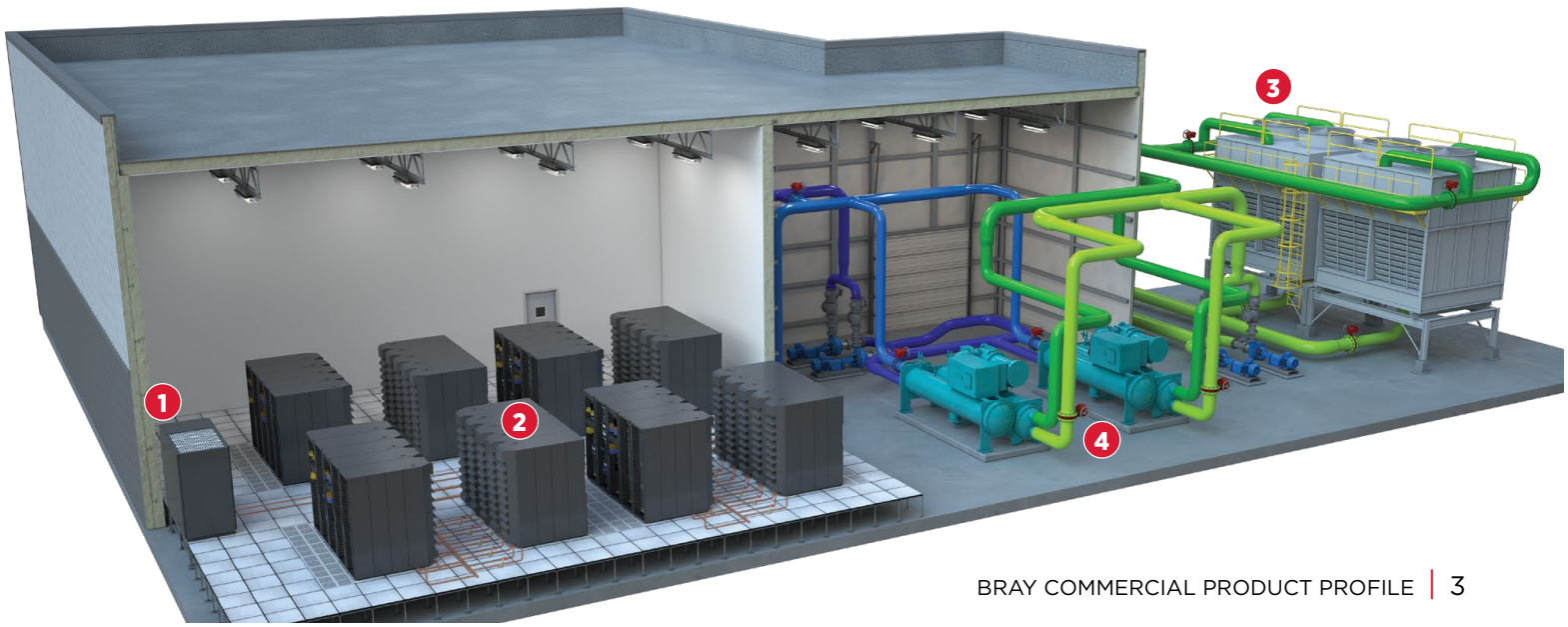
> 3L Series Butterfly Valves
> MKL Series Butterfly Valves

Chillers



Isolation, Thermostatic Expansion Valves, Hot Gas Bypass, Free Cooling Control

> 3L Series Butterfly Valves
> MK Series Butterfly Valves

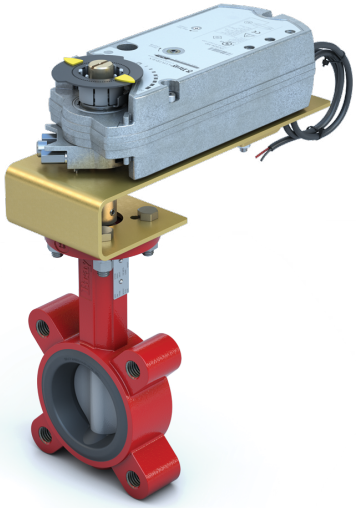


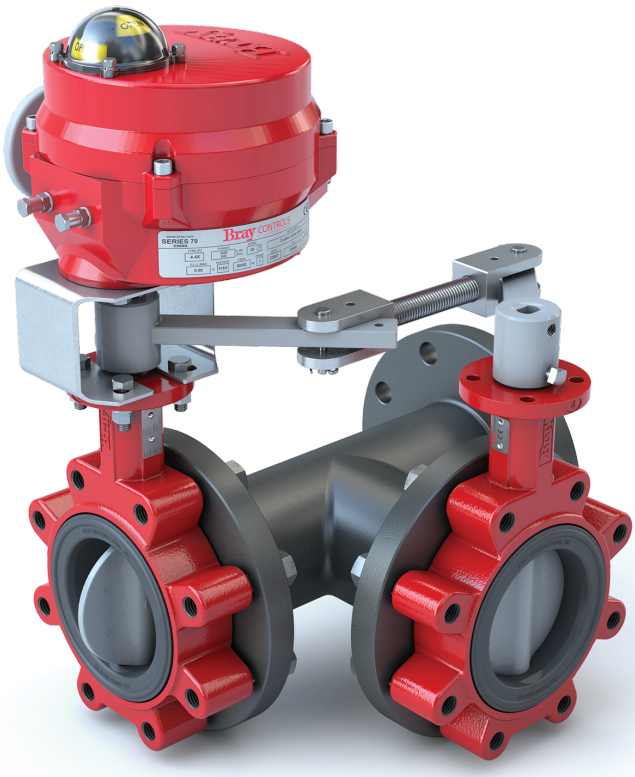
RESILIENT SEATED

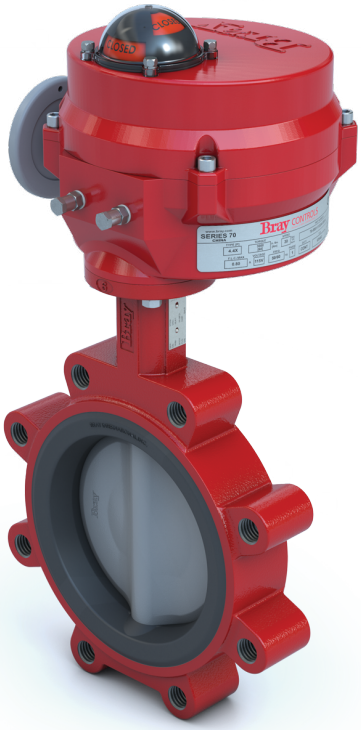
3L SERIES BUTTERFLY VALVES

Bray's 3L Series resilient seated butterfly valves have emerged as the design standard in the commercial building market worldwide. Our new 3L series is optimized for low torque and added reliability. Both are available with a wide range of electric and pneumatic actuators and accessories to satisfy any application.

- Low Torque
- High Cycle Life
- ANSI and DIN
- High and Low Close-off Ratings







3L SERIES BUTTERFLY VALVES	
Size Range	2" – 24" (50mm – 600mm)
Configurations	2-Way and 3-Way
End Connections	Lug for ANSI 125 and ANSI 150 Flanges
Fluid Temperature Range	-20 to 250°F (-28 to 121°C)
Maximum Close-off Pressure	175 psi (12 bar)
Flow Characteristic	Modified Equal Percentage
Body Material	A536 Gr. 65-45-12 Ductile Iron
Disc Materials	3LNE Series – Ductile Iron, Nylon 11 Coated 3LSE Series – 316 Stainless Steel
Available Actuators	On/Off, Floating, Modulating, Spring & Non-Spring Return Commercial and Industrial Electric and Pneumatic
Applications	HVAC- Chillers, Cooling Towers, Boilers, Heat Exchangers



HIGH PERFORMANCE

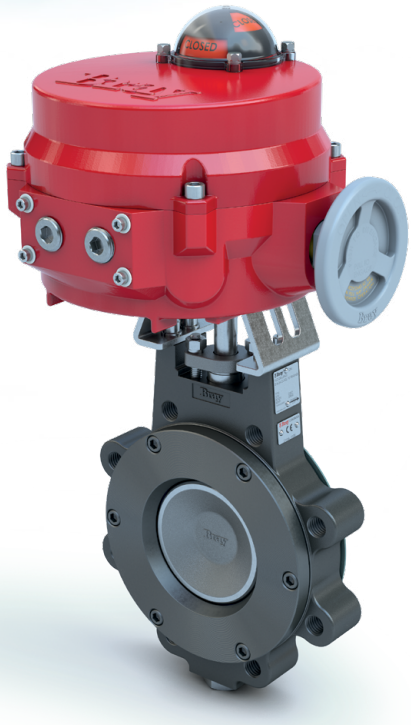
MK SERIES BUTTERFLY VALVES

Ideal for high pressure, high temperature and high cycle mission critical HVAC applications. The Bray MK Series innovative double offset design results in higher close-off and lower torque. Bidirectional, Class VI shut off, in both low pressure and maximum ANSI Class ratings.

- Superior Cycle Life
- Ideal for high pressure steam and hot water
- ANSI and DIN



MK SERIES BUTTERFLY VALVES	
Size Range	2 ½″ – 20″ (65mm – 500mm)
Configurations	2-Way and 3-Way
End Connections	Lug, 2-Way for ANSI 150 and ANSI 300 Flanges; 3-Way for ANSI 150 flanges only
Fluid Temperature Range	-40 to 500°F (-40 to 250°C)
Maximum Close-off Pressure	ANSI 150: 285 psi (20 bar) ANSI 300: 740 psi (50 bar)
Flow Characteristic	Modified Equal Percentage
Body Material	Carbon Steel
Disc Material	316 Stainless Steel
Available Actuators	On/Off, Floating, Modulating, Spring and Non-Spring Return Commercial and Industrial Electric and Pneumatic
Applications	HVAC - Chillers, Boilers, Heat Exchangers, High cycle requirement closed loop systems



PRESSURE INDEPENDENT CONTROL VALVES

SIMPLE SET® AND SIMPLE SET MAX® SERIES

The purpose of a Pressure Independent Control (PIC) valve is to maintain a set flow to the coil regardless of pressure changes in the system. Bray's complete line of PIC valves combine a control valve and dynamic balancing valve in a single cost effective housing. These valves eliminate overflow at less than design conditions to provide accurate control at all levels of demand. The use of PIC valves eliminates the need for balancing valves and significantly reduces installation costs. Pumping, heating and cooling costs are also reduced minimizing overall operating costs. The valve will always use full stroke of the control element offering maximum controllability. Pressure/Temperature measurement ports are standard.

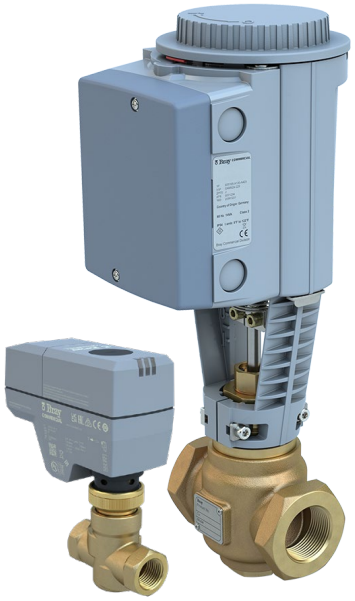
SIMPLE SET®	
Size Range	1/2" – 2" (15mm – 50mm)
End Connections	NPT Threaded
Fluid Temperature Range	32 to 248°F (0 to 120°C)
Maximum Close-off Pressure	58 psi (400 kPa)
Recommended Operating Pressure Drop	2.3 to 58 psid (36 to 400 kPa)
Flow Rates	0.33 to 65 GPM (329 to 14,740 L/H)
Body Materials	DZR Forged Brass
Available Actuators	Floating and Modulating with and without Failsafe
Applications	HVAC - Fan Coils VAV - Reheat Coils Chilled Beams and Air Handling Units



SIMPLE SET MAX®	
Size Range	2½" – 12" (65mm – 300mm)
End Connections	ANSI 125/150 or DIN
Fluid Temperature Range	32 to 248°F (0 to 120°C)
Maximum Close-off Pressure	116 psi (800 kPa)
Recommended Operating Pressure Drop	2.18 to 116 psid (15 to 800 kPa)
Flow Rates	19.3 to 2,641 GPM (4.4 to 600 M3/h)
Body Material	Cast/Ductile Iron
Available Actuators	Floating and Modulating with and without Failsafe
Applications	HVAC - Air handling units, heat exchangers



THREADED GLOBE VALVES



CG/DG SERIES

Bray Commercial's CG/DG Series threaded globe valves provide stable and accurate control of both water and steam heat exchangers on a wide range of HVAC applications. These brass bodied valves are available in both brass and Stainless-Steel trim in 2-Way and 3-Way configurations for cost effective solutions to your applications.

CG/DG SERIES GLOBE VALVES	
Size Range	1/2″ – 2″ (15mm – 50mm)
Configurations	2-Way and 3-Way
End Connections	Female NPT
Fluid Temperature Range	Up to 250°F Water; 337°F Steam
Flow Characteristics	2-Way Valves - Modified Equal Percentage for DG Series 3-Way Valves - Linear
Body Materials	Brass - 1/2″ & 3/4″ Bronze - 1″ to 2″
Trim Materials	Water - Brass Steam - Stainless Steel
Available Actuators	On/Off, Floating, Modulating, Spring and Non-Spring Return
Applications	HVAC- Water/Steam Air Handling Units Heat Exchanger Control Terminal Units

FLANGED GLOBE VALVES



DG SERIES

The DG Series globe valves provide stable and accurate control of both water and steam in HVAC applications. These valves feature a cartridge style packing, which is easily replaceable while the valve is in line. Constant plug guiding and precision-machined metal to metal seating assures ANSI Class IV shut off (.01%) which provides low leakage and energy conservation.

DG SERIES GLOBE VALVES	
Size Range	2-½″ – 6″ (65mm – 150mm)
Configurations	2-Way and 3-Way
End Connections	ANSI 125 Flanged
Fluid Temperature Range	-20 to 250°F (-29 to 121°C) @175 psi (1,206 kPa)
Flow Characteristics	2-Way with standard trim - Equal Percentage 3-Way and 2-Way with SS Trim - Linear
Body Materials	Cast Iron
Trim Materials	Bronze, Stainless Steel Optional
Available Actuators	On/Off, Floating, Modulating, Spring and Non-Spring Return
Applications	HVAC- Water/Steam Air Handling Units Heat Exchanger Control Terminal Units

CHARACTERIZED BALL VALVES

EBV SERIES

The Bray Commercial EBV Series characterized control ball valves are industry leading solutions for energy efficient, economical and effective control of a wide range of equipment in HVAC applications. The Amodel® flow characterizing disk maintains equal percentage flow characteristics for optimum temperature control. A less expensive, longer lasting and better performing alternative to globe valves.

- Low Torque
- Direct Mount Actuators
- Multiple Cv ratings in each size
- High Rangeability



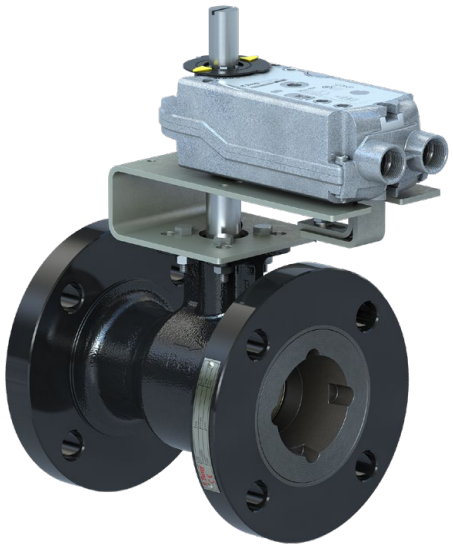
EBV SERIES BALL VALVES		
Size Range		1/2" – 2" (65mm – 150mm)
Configurations		2-Way and 3-Way
End Connections		NPT, BSP, Sweat, and Press
Fluid Temperature Range	**Water**	-20° to 203°F (-29° to 95°C)
	Water	-20° to 284°F (-29° to 140°C) with High Temperature Mounting
	Steam	15 psig (103 kPa) at 250°F (121°C) with High Temperature Mounting
Maximum Close-off Pressure		Class VI @ 200 psi (13.8 bar)
Maximum Recommended Operating Pressure Drop		50 psi Maximum Differential 30 psi for Quiet Service
Body Material		Forged Brass
Trim Material		300 Series Stainless Steel
Available Actuators		On/Off, Floating, Modulating, Spring and Non-Spring Return, etc.
Applications		HVAC- Air Handling Units Heat Exchanger Control Terminal Units

Application

EBVF Series Flanged Ball Valves are designed to regulate the flow of hot water, chilled water, and 50% glycol solutions to the demand of a controller in Heating, Ventilating, and Air Conditioning (HVAC) systems. The valves come in sizes of 2-1/2" — 6", The ANSI 150 and PN 16 flanged valves come in both 2-way and 3-way configurations and are available in multiple Cv ratings.

Bray offers the valve, linkage, and actuator assemblies for factory or field mounting with either spring return or non-spring return actuators.

The EBVF is designed for electronic actuator operation to a maximum close-off pressure of 100 psi and for temperature ranges 0˚ to 284˚F



EBVF SERIES FLANGED BALL VALVES		
Size Range		2-1/2" – 6" (65mm – 50mm)
Configurations		2-Way and 3-Way
End Connections		ANSI 150 Flanged
Fluid Temperature Range	**Water**	250 psi at -20° to 100°F (29° to 38°C) 235 psi at: 200°F (93°C) 218 psi at: 284°F (140°C)
	Steam	25 psig (172 kPa) Saturated Steam for HVAC Systems
Maximum Close-off Pressure	**2-Way**	100 psi (689 kPa)
	3-Way	50 psi Maximum Differential 50 psi (345 kPa)
Body Material		Ductile Iron
Available Actuators		On/Off, Floating, Modulating, Spring and Non-Spring Return, etc.
Applications		HVAC- Air Handling Units Heat Exchanger Control Terminal Units

INDUSTRIAL THREADED BALL VALVES

BV SERIES

The BV Series Threaded Industrial Ball Valve product line is ideally suited to high temperature and high pressure water or steam as well as a wide range of heavy commercial HVAC control applications. These valves provide exceptional characterized control, high rangeability, flow capacity and pressure drop; all with bidirectional bubble tight shut off.

These valves are available with characterized V-Balls and full port versions that provide multiple Cv values in each size.



BV SERIES THREADED BALL VALVES		
Size Range		1/2″ – 4″ (15mm – 100mm)
Configurations		2-Way
End Connections		Threaded NPT
Fluid Temperature Limits	**Water**	-20 to 500°F at 300 psi (-28 to 260°C at 2,068 kPa)
	Steam	100 psi (689 kPa)
Close-off Pressure	**Water**	300 psi (2,068 kPa)
	Steam	100 psi (689 kPa)
Flow Characteristic	**V15 Port**	Linear
	V30 Port	Modified Equal Percentage
	V60 & 90 Port	Equal Percentage
Body Materials		Carbon or Stainless Steel
Ball and Stem Material		316 Stainless Steel
Available Actuators		On/Off, Floating, Modulating, Spring & Non-Spring Return Commercial and Industrial Electric and Pneumatic
Applications		HVAC- High Rise Towers, Boilers and Heat Exchangers

INDUSTRIAL FLANGED SEGMENTED BALL VALVES

BVMS SERIES

The BVMS Series Industrial Ball valves are flanged, segmented valves designed for control and on/off applications where high temperature and high pressure water or steam are used. The valves feature a characterized ball segment for high rangeability with a splined stem connection for precise control, as well as a low friction shaft and thrust bearings for longer life and smaller actuators.

These valves provide ample flow capacity, equal percentage flow characteristics and Class VI leakage. Valve bodies are one-piece carbon steel with cast stainless steel balls and ANSI 150 flanges.



BVMS SERIES FLANGED BALL VALVES		
Size Range		2″ – 12″ (50mm – 300mm)
Configurations		2-Way
End Connections		ANSI Class 150
Fluid Temperature Limits	**Water**	-20 to 380°F at 200 psi (-28 to 193°C at 1,378 kPa)
	Steam	100 psi (689 kPa)
Close-off Pressure	**Water**	285 psi (1,965 kPa)
	Steam	100 psi (689 kPa)
Flow Characteristic		Equal Percentage
Body Materials		Carbon or Stainless Steel
Ball and Stem Material		316 Stainless Steel
Available Actuators		On/Off and Modulating NEMA 4 Industrial Electric
Applications		HVAC- Computer Room Air Handling Units, Boilers and Heat Exchangers

ELECTRIC ACTUATORS

SERIES 70

Bray's Series 70 electric actuator's compact design offers by far the easiest access to terminal block wiring, end switch adjustments and servo calibrations in the industry. Bray's Series 70 electric actuator has many advantages over other actuators including:

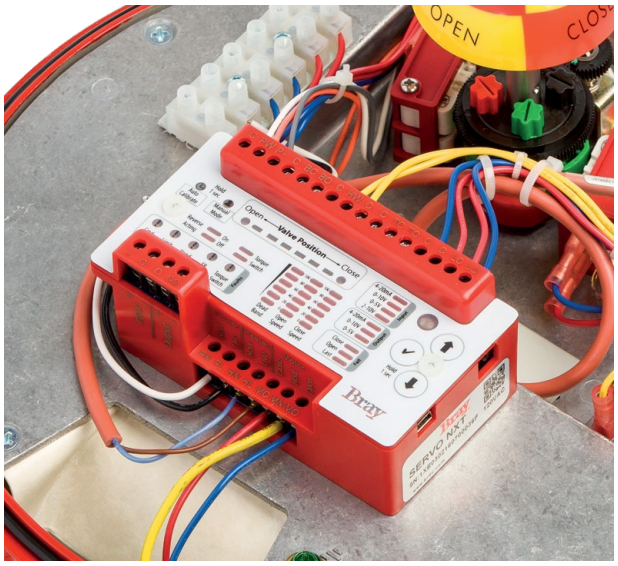
- Voltages: 120, 220, 24VAC 50/60 Hz, 1-phase, 24VDC
- Output torque 800 lb-in (90 N-m) to 18,000 lb-in (2,034 N-m)
- UL, CSA and CE certification on most units
- Low profile, light weight
- High visibility position indicator
- Manual declutchable override handwheel
- On-off or modulating control
- Terminal strip for cable terminations
- Hand or screw driver adjustment of travel limit cams
- ISO 5211 for direct mounting
- Optional hazardous location model available
- Optional Battery Back-up module available



SERIES 70 ELECTRIC ACTUATORS	
Torque	800 to 18,000 lb-ins (90 to 2,034 N-m)
Voltage	VAC: 24, 120, 240, 24VDC
Operating Mode	On/Off, Modulating
Enclosure	NEMA 4

SERVO NXT	
Actuator Voltage	120, 220, 24 VAC 50/60 Hz, 1 phase 24 VDC
Input Signal	Configurable 4-20 mA, 0-10, 2-10, 0-5 VDC
Feedback Signal	Configurable 4-20 mA, 0-10, 0-5 VDC
Independent Isolation	Control signal input and output Control signals and power
Display	Menu driven auto dimming LED
Menu Navigation	Up/Down arrows with select (✓) buttons
Configuration	Menu selectable to non-volatile memory
Calibration	Auto calibration sequence for travel limits
Deadband	Configurable 1% - 6%
Reverse Acting	Configurable for inverted input signal
Speed Control	Independently adjustable for open and closed
Fail Position (loss of input signal)	Configurable close, open, last
Manual Mode	Built-in signal generator
Fault Indications	Loss of command signal Limit switch Handwheel engaged Feedback pot Torque switch Jammed valve / motor stalled
Health Monitor	Heartbeat - Backlit blinking Bray logo

"Configurable" means the customer, or the factory, can modify the Servo NXT.



The Servo NXT offers precise modulating service for accurate position control.

- One touch automatic calibration
- User-friendly interface
- Advanced control of proportional band and deadband
- Automatic pulsing mode for precise positioning
- Self diagnostics
- Action on loss of command signal
- Go to position commands

Servo is available for modulating service, continuous duty S70 actuators only.

COMMERCIAL ACTUATORS

Bray's wide variety of commercial electric actuator choices increases flexibility when choosing peripheral products for Building Automation Systems. We offer many different torque outputs and optional features to ensure you have the best actuator for the application. Jumper or DIP switch selectable features allow versatility in the field. In addition, our actuators are manufactured to ISO 9001 and Six Sigma Standards making them the highest quality on the market today.



GA(S) SERIES

PIC AND GLOBE VALVE ACTUATORS



The GA(S) Series is a direct mount line of linear motor actuators to be used primarily on PIC & globe valves. The patented drive-valve coupling allows the drive to be connected to the valve automatically as soon as the power is applied to the actuator. An external crank handle enables the desired position to be set manually as well. Microprocessor technology enables the actuator to identify the functions required and to adapt itself automatically to the control valve properties.

These actuators operate on 24V AC or DC, and all input signals- 0-10V or 4-20mA modulating output, or on/off (2-point) or floating (3-point) control, direct or reverse acting. The actuator automatically detects the control signal applied via a 2 LED display.

COMMERCIAL ELECTRIC ACTUATORS	
Torque	27 to 310 lb-ins (3 to 35 N-m)
Voltage	VAC: 24, 120, 240, 24VDC
Operating Mode	On/Off, Floating & Modulating

LINEAR ELECTRIC ACTUATORS	
Torque	450 & 562 lb-ins (2,000 & 2,500 N-m)
Voltage	24 VAC/DC
Operating Mode	On/Off, Floating & Modulating

PA(M) SERIES

PRESSURE INDEPENDENT CONTROL VALVE ACTUATORS



The PA(M) series is a line of linear motor actuators to be used primarily on Bray PIC valves utilized in building automation systems. These actuators are available with a multitude of options for on/off/floating or modulating with or without electronic fail safe. These actuators automatically calibrate to the stroke of the valve as soon as power is applied and are field selectable direct or reverse acting. These actuators operate on 24V AC or DC, and all input signals- 0-10V or 4-20mA modulating output, or on/off (2-point) or floating (3-point) control.

PNEUMATIC ACTUATORS

SERIES 92/93

Bray Series 92/93 actuators are rack and pinion, opposed-piston actuators available in two versions: double acting and spring return. The Series 92/93 is completely enclosed and self-contained. The many features minimize maintenance and provide safe, simple disassembly and assembly.



PA(M) SERIES ELECTRIC ACTUATORS	
Torque	27 to 310 lb-ins (3 to 35 N-m)
Voltage	VAC: 24, 120, 240, 24VDC
Operating Mode	On/Off, Floating & Modulating

SERIES 92/93 PNEUMATIC ACTUATORS	
Torque	Up to 44,130 lb-in (4,986 N-m)
Pressure Rating	Max Pressure: 140 psig (10 bar)
Temperature Range	-20°F to 200°F (-29°C to 95°C)

Bray COMMERCIAL

Bray Commercial provides automated Butterfly, Ball, Globe and Pressure Independent Control Valves to the commercial building HVAC market throughout the world. Wherever valve performance is required to maintain climate controlled environments, Bray can provide the required automated valves to meet the demanding flow applications of chiller/boiler isolation, air handlers and terminal units for new construction, retrofit and/or LEED certification applications in buildings.

Building Types

- Healthcare
- Data Centers
- Government and Municipal
- Sports/Entertainment/Convention Centers
- K-12 and University Education
- Transportation
- Hotels
- Office Buildings
- Retail

SINCE 1986, BRAY HAS PROVIDED FLOW CONTROL SOLUTIONS FOR A VARIETY OF INDUSTRIES AROUND THE WORLD.

VISIT **BRAYCOMMERCIALDIVISION.COM** TO LEARN MORE ABOUT BRAY PRODUCTS AND LOCATIONS NEAR YOU

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Bray COMMERCIAL

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Pricing 2026 for Canada





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04/02/26

2026 Bray COMMERCIAL

Price Schedule - Suggested List Prices

Bray COMMERCIAL

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2-Way, On/Off & Floating - Non-Spring Return Actuators - (200 psi - Close Off)								
Actuator Model Details								
Floating with Time Out/Overload Protection						■		
Auxiliary Switches							■	
Cable - Standard(S)/Plenum(P)					P	P	P	
Manual Override					Push Button	Push Button	Push Button	
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC/DC On/ Off & Floating	24 VAC Floating	HT Adder
	In.	mm	Cv	Kv	DC24-44-TP	DC24-44-TPTO	DC24-44-TAP	
EBV-05-2-003	0.5	15	0.3	0.3	306	375	533	125
EBV-05-2-005			0.5	0.4				
EBV-05-2-009			0.9	0.8				
EBV-05-2-01			1.4	1.2				
EBV-05-2-02			2	1.7				
EBV-05-2-03			3	2.6				
EBV-05-2-05			4.9	4.2				
EBV-05-2-08			8	6.9				
EBV-05-2-13			12.5	10.8				
EBV-05-2-17*			17.2	14.9				
EBV-75-2-05	.75	20	4.9	4.2	367	436	594	125
EBV-75-2-08			7.8	6.7				
EBV-75-2-12			12.3	10.6				
EBV-75-2-15*			15.3	13.2				
EBV-1-2-08	1	25	7.8	6.7	512	581	739	125
EBV-1-2-12			12.1	10.5				
EBV-1-2-20			19.5	16.9				
EBV-1-2-30*			29.9	25.9				
EBV-125-2-12	1.25	32	11.7	10.1	572	641	799	125
EBV-125-2-20			19.8	17.1				
EBV-125-2-30			30.4	26.3				
EBV-125-2-45*			44.8	38.8				
EBV-150-2-20	1.5	40	19.6	17.0	679	748	906	125
EBV-150-2-30			30.4	26.3				
EBV-150-2-48*			48.3	41.8				
EBV-2-2-29	2	50	29.2	25.3	914	983	1141	125
EBV-2-2-49			48.8	42.2				
EBV-2-2-75			75.2	65.0				
EBV-2-2-96*			95.5	82.6				

Options/Adders
* Reduced port valve - No characterizing disc
Add HT after the valve CV if a HT (High Temperature Kit) is needed.
For Weathershield -WS please inquire with Inside Sales.



2-Way, Modulating - Non-Spring Return Actuators - (200 psi - Close Off)							
Actuator Model Details							
Modulating with Time Out/Overload Protection					■	■	
Auxiliary Switches						■	
Cable - Standard(S)/Plenum(P)					P	P	
Manual Override					Push Button	Push Button	
Model Number	Valve Size		Flow Coefficient		24 VAC/DC Modulating 0/2-10V in 0/2-10V out	24 VAC/DC Modulating 0/2-10V in 0/2-10V out	HT Adder
	In.	mm	Cv	Kv	DCM24-44-P	DCM24-44-AP	
EBV-05-2-003	0.5	15	0.3	0.3	435	646	125
EBV-05-2-005			0.5	0.4			
EBV-05-2-009			0.9	0.8			
EBV-05-2-01			1.4	1.2			
EBV-05-2-02			2	1.7			
EBV-05-2-03			3	2.6			
EBV-05-2-05			4.9	4.2			
EBV-05-2-08			8	6.9			
EBV-05-2-13			12.5	10.8			
EBV-05-2-17*			17.2	14.9			
EBV-75-2-05	.75	20	4.9	4.2	496	707	125
EBV-75-2-08			7.8	6.7			
EBV-75-2-12			12.3	10.6			
EBV-75-2-15*			15.3	13.2			
EBV-1-2-08	1	25	7.8	6.7	641	852	125
EBV-1-2-12			12.1	10.5			
EBV-1-2-20			19.5	16.9			
EBV-1-2-30*			29.9	25.9			
EBV-125-2-12	1.25	32	11.7	10.1	701	912	125
EBV-125-2-20			19.8	17.1			
EBV-125-2-30			30.4	26.3			
EBV-125-2-45*			44.8	38.8			
EBV-150-2-20	1.5	40	19.6	17.0	808	1019	125
EBV-150-2-30			30.4	26.3			
EBV-150-2-48*			48.3	41.8			
EBV-2-2-29	2	50	29.2	25.3	1043	1254	125
EBV-2-2-49			48.8	42.2			
EBV-2-2-75			75.2	65.0			
EBV-2-2-96*			95.5	82.6			

Options/Adders
* Reduced port valve - No characterizing disc
Add HT after the valve CV if a HT (High Temperature Kit) is needed.
For Weathershield -WS please inquire with Inside Sales.



2-Way, On/Off - Spring Return Actuators - (200 psi - Close Off)

Actuator Model Details											
Auxiliary Switches					■		■		■		
Conduit Size - Flex(F)/NPT(N)					1/2 N		1/2 N	1/2 N	1/2 N	1/2 N	
Cable - Standard(S)/Plenum(P)					P	P	P	P	S	S	
Manual Override					N/A	N/A	Hex Wrench Included	Hex Wrench Included	Hex Wrench Included	Hex Wrench Included	
Model Number	Valve Size		Flow Coefficient		24 VAC/DC On/Off	24 VAC/DC On/Off	24 VAC/DC On/Off	24 VAC/DC On/Off	120 VAC On/Off	120 VAC On/Off	HT Adder
	In.	mm	Cv	Kv	DCS24-20-P	DCS24-20-AP	DCS24-62-P	DCS24-62-AP	DCS120-62	DCS120-62-A	
EBV-05-2-003	0.5	15	0.3	0.3	479	704	-	-	592	752	125
EBV-05-2-005			0.5	0.4							
EBV-05-2-009			0.9	0.8							
EBV-05-2-01			1.4	1.2							
EBV-05-2-02			2	1.7							
EBV-05-2-03			3	2.6							
EBV-05-2-05			4.9	4.2							
EBV-05-2-08			8	6.9							
EBV-05-2-13			12.5	10.8							
EBV-05-2-17*			17.2	14.9							
EBV-75-2-05	.75	20	4.9	4.2	540	765	-	-	653	813	125
EBV-75-2-08			7.8	6.7							
EBV-75-2-12			12.3	10.6							
EBV-75-2-15*			15.3	13.2							
EBV-1-2-08	1	25	7.8	6.7	685	910	-	-	798	958	125
EBV-1-2-12			12.1	10.5							
EBV-1-2-20			19.5	16.9							
EBV-1-2-30*			29.9	25.9							
EBV-125-2-12	1.25	32	11.7	10.1	-	-	802	1042	858	1018	125
EBV-125-2-20			19.8	17.1							
EBV-125-2-30			30.4	26.3							
EBV-125-2-45*			44.8	38.8							
EBV-150-2-20	1.5	40	19.6	17.0	-	-	909	1149	965	1125	125
EBV-150-2-30			30.4	26.3							
EBV-150-2-48*			48.3	41.8							
EBV-2-2-29	2	50	29.2	25.3	-	-	1144	1384	1200	1360	125
EBV-2-2-49			48.8	42.2							
EBV-2-2-75			75.2	65.0							
EBV-2-2-96*			95.5	82.6							

Options/Adders
* Reduced port valve - No characterizing disc
Add HT after the valve CV if a HT (High Temperature Kit) is needed. For Weathershield -WS please inquire with Inside Sales.
For normally Closed, add a "C" to the end of the valve part number, i e EBV-05-2-003C, otherwise normally open. Spring return models only



EBV - 2-Way Standard Trim with Spring Return Commercial Electric Actuators

2-Way, Modulating - Spring Return Actuators - (200 psi - Close Off)								
Actuator Model Details								
Auxiliary Switches							■	
Conduit Size - Flex(F)/NPT(N)					1/2 N	1/2 N	1/2 N	
Cable - Standard(S)/Plenum(P)					P	P	S	
Manual Override					N/A	Hex Wrench Included	Hex Wrench Included	
Model Number	Valve Size		Flow Coefficient		24 VAC/DC Modulating 2-10 in/out	24 VAC/DC Modulating 0-10 in/out	24 VAC/DC Modulating 0-10 in/out	HT Adder
	In.	mm	Cv	Kv	DCMS24-20-P	DCMS24-62-P	DCMS24-62-A	
EBV-05-2-003	0.5	15	0.3	0.3	698	-	887	125
EBV-05-2-005			0.5	0.4				
EBV-05-2-009			0.9	0.8				
EBV-05-2-01			1.4	1.2				
EBV-05-2-02			2	1.7				
EBV-05-2-03			3	2.6				
EBV-05-2-05			4.9	4.2				
EBV-05-2-08			8	6.9				
EBV-05-2-13			12.5	10.8				
EBV-05-2-17*			17.2	14.9				
EBV-75-2-05	.75	20	4.9	4.2	759	-	948	125
EBV-75-2-08			7.8	6.7				
EBV-75-2-12			12.3	10.6				
EBV-75-2-15*			15.3	13.2				
EBV-1-2-08	1	25	7.8	6.7	904	-	1093	125
EBV-1-2-12			12.1	10.5				
EBV-1-2-20			19.5	16.9				
EBV-1-2-30*			29.9	25.9				
EBV-125-2-12	1.25	32	11.7	10.1	-	994	1153	125
EBV-125-2-20			19.8	17.1				
EBV-125-2-30			30.4	26.3				
EBV-125-2-45*			44.8	38.8				
EBV-150-2-20	1.5	40	19.6	17.0	-	1101	1260	125
EBV-150-2-30			30.4	26.3				
EBV-150-2-48*			48.3	41.8				
EBV-2-2-29	2	50	29.2	25.3	-	1336	1495	125
EBV-2-2-49			48.8	42.2				
EBV-2-2-75			75.2	65.0				
EBV-2-2-96*			95.5	82.6				

Options/Adders
* Reduced port valve - No characterizing disc
Add HT after the valve CV if a HT (High Temperature Kit) is needed.
For Weathershield -WS please inquire with Inside Sales.
For normally Closed, add a "C" to the end of the valve part number, i e EBV-05-2-003C, otherwise normally open. Spring return models only



EBV - 3-Way Standard Trim with Non-Spring Return Commercial Electric Actuators

3-Way, On/Off & Floating - Non-Spring Return Actuators - (200 psi - Close Off)								
Actuator Model Details								
Floating with Time Out/Overload Protection						■		
Auxiliary Switches							■	
Cable - Standard(S)/Plenum(P)					P	P	P	
Manual Override					Push Button	Push Button	Push Button	
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC/DC On/ Off & Floating	24 VAC Floating	HT Adder
	In.	mm	Cv	Kv	DC24-44-TP	DC24-44-TPTO	DC24-44-TAP	
EBV-05-3-003	0.5	15	0.3	0.3	447	516	674	125
EBV-05-3-005			0.5	0.4				
EBV-05-3-009			0.9	0.8				
EBV-05-3-01			1.4	1.2				
EBV-05-3-02			2	1.7				
EBV-05-3-03			3	2.6				
EBV-05-3-05			4.9	4.2				
EBV-05-3-08			8	6.9				
EBV-05-3-13			12.5	10.8				
EBV-05-3-17*			17.2	14.9				
EBV-75-3-05	.75	20	4.9	4.2	485	554	712	125
EBV-75-3-08			7.8	6.7				
EBV-75-3-12			12.3	10.6				
EBV-75-3-15*			15.3	13.2				
EBV-1-3-08	1	25	7.8	6.7	684	753	911	125
EBV-1-3-12			12.1	10.5				
EBV-1-3-20			19.5	16.9				
EBV-1-3-30*			29.9	25.9				
EBV-125-3-12	1.25	32	11.7	10.1	716	785	943	125
EBV-125-3-20			19.8	17.1				
EBV-125-3-30			30.4	26.3				
EBV-125-3-45*			44.8	38.8				
EBV-150-3-20	1.5	40	19.6	17.0	848	917	1075	125
EBV-150-3-30			30.4	26.3				
EBV-150-3-48*			48.3	41.8				
EBV-2-3-29	2	50	29.2	25.3	1181	1250	1408	125
EBV-2-3-49			48.8	42.2				
EBV-2-3-75			75.2	65.0				
EBV-2-3-96*			95.5	82.6				

Options/Adders
Reduced port valve - No characterizing disc
Add HT after the valve CV if a HT (High Temperature Kit) is needed.
For Weathershield -WS please inquire with Inside Sales.
Bypass port CV equal approximately 50% of control port CV



EBV - 3-Way Standard Trim with Non-Spring Return Commercial Electric Actuators

3-Way, Modulating - Non-Spring Return Actuators - (200 psi - Close Off)							
Actuator Model Details							
Modulating with Time Out/Overload Protection					■	■	
Auxiliary Switches						■	
Cable - Standard(S)/Plenum(P)					P	P	
Manual Override					Push Button	Push Button	
Model Number	Valve Size		Flow Coefficient		24 VAC/DC Modulating 0/2-10V in 0/2-10V out	24 VAC/DC Modulating 0/2-10V in 0/2-10V out	HT Adder
	In.	mm	Cv	Kv	DCM24-44-P	DCM24-44-AP	
EBV-05-3-003	0.5	15	0.3	0.3	576	787	125
EBV-05-3-005			0.5	0.4			
EBV-05-3-009			0.9	0.8			
EBV-05-3-01			1.4	1.2			
EBV-05-3-02			2	1.7			
EBV-05-3-03			3	2.6			
EBV-05-3-05			4.9	4.2			
EBV-05-3-08			8	6.9			
EBV-05-3-13			12.5	10.8			
EBV-05-3-17*			17.2	14.9			
EBV-75-3-05	.75	20	4.9	4.2	614	825	125
EBV-75-3-08			7.8	6.7			
EBV-75-3-12			12.3	10.6			
EBV-75-3-15*			15.3	13.2			
EBV-1-3-08	1	25	7.8	6.7	813	1024	125
EBV-1-3-12			12.1	10.5			
EBV-1-3-20			19.5	16.9			
EBV-1-3-30*			29.9	25.9			
EBV-125-3-12	1.25	32	11.7	10.1	845	1056	125
EBV-125-3-20			19.8	17.1			
EBV-125-3-30			30.4	26.3			
EBV-125-3-45*			44.8	38.8			
EBV-150-3-20	1.5	40	19.6	17.0	977	1188	125
EBV-150-3-30			30.4	26.3			
EBV-150-3-48*			48.3	41.8			
EBV-2-3-29	2	50	29.2	25.3	1310	1521	125
EBV-2-3-49			48.8	42.2			
EBV-2-3-75			75.2	65.0			
EBV-2-3-96*			95.5	82.6			

Options/Adders
* Reduced port valve - No characterizing disc
Add HT after the valve CV if a HT (High Temperature Kit) is needed.
For Weathershield -WS please inquire with Inside Sales.
Bypass port CV equal approximately 50% of control port CV



EBV - 3-Way Standard Trim with Spring Return Commercial Electric Actuators

3-Way, On/Off - Spring Return Actuators - (200 psi - Close Off)

Actuator Model Details												
Auxiliary Switches				■		■		■			
Conduit Size - Flex(F)/NPT(N)			1/2 N		1/2 N	1/2 N	1/2 N	1/2 N		
Cable - Standard(S)/Plenum(P)			P	P	P	P	S	S		
Manual Override			N/A	N/A	Hex Wrench Included	Hex Wrench Included	Hex Wrench Included	Hex Wrench Included		
Model Number	Valve Size		Flow Coefficient		24 VAC/DC On/Off	24 VAC/DC On/Off	24 VAC/DC On/Off	24 VAC/DC On/Off	120 VAC On/Off	120 VAC On/Off	HT Adder
	In.	mm	Cv	Kv	DCS24-20-P	DCS24-20-AP	DCS24-62-P	DCS24-62-AP	DCS120-62	DCS120-62-A	
EBV-05-3-003	0.5	15	0.3	0.3	620	845	-	-	733	893	125
EBV-05-3-005			0.5	0.4							
EBV-05-3-009			0.9	0.8							
EBV-05-3-01			1.4	1.2							
EBV-05-3-02			2	1.7							
EBV-05-3-03			3	2.6							
EBV-05-3-05			4.9	4.2							
EBV-05-3-08			8	6.9							
EBV-05-3-13			12.5	10.8							
EBV-05-3-17*			17.2	14.9							
EBV-75-3-05	.75	20	4.9	4.2	658	883	-	-	771	931	125
EBV-75-3-08			7.8	6.7							
EBV-75-3-12			12.3	10.6							
EBV-75-3-15*			15.3	13.2							
EBV-1-3-08	1	25	7.8	6.7	857	1082	-	-	970	1130	125
EBV-1-3-12			12.1	10.5							
EBV-1-3-20			19.5	16.9							
EBV-1-3-30*			29.9	25.9							
EBV-125-3-12	1.25	32	11.7	10.1	-	-	946	1186	1002	1162	125
EBV-125-3-20			19.8	17.1							
EBV-125-3-30			30.4	26.3							
EBV-125-3-45*			44.8	38.8							
EBV-150-3-20	1.5	40	19.6	17.0	-	-	1078	1318	1134	1294	125
EBV-150-3-30			30.4	26.3							
EBV-150-3-48*			48.3	41.8							
EBV-2-3-29	2	50	29.2	25.3	-	-	1411	1651	1467	1627	125
EBV-2-3-49			48.8	42.2							
EBV-2-3-75			75.2	65.0							
EBV-2-3-96*			95.5	82.6							

Options/Adders
* Reduced port valve - No characterizing disc
Add HT after the valve CV is a HT (High Temperature Kit) if needed.
For Weathershield -WS please inquire with Inside Sales.
Bypass port CV equal approximately 50% of control port CV
For normally Closed, add a "C" to the end of the valve part number, i e EBV-05-3-003C, otherwise normally open Spring return models only.



EBV - 3-Way Standard Trim with Spring Return Commercial Electric Actuators

3-Way, Modulating - Spring Return Actuators - (200 psi - Close Off)								
Actuator Model Details								
Auxiliary Switches							■	
Conduit Size - Flex(F)/NPT(N)					1/2 N	1/2 N	1/2 N	
Cable - Standard(S)/Plenum(P)					P	P	S	
Manual Override					N/A	Hex Wrench Included	Hex Wrench Included	
Model Number	Valve Size		Flow Coefficient		24 VAC/DC Modulating 2-10 in/out	24 VAC/DC Modulating 0-10 in/out	24 VAC/DC Modulating 0-10 in/out	HT Adder
	In.	mm	Cv	Kv	DCMS24-20-P	DCMS24-62-P	DCMS24-62-A	
EBV-05-3-003	0.5	15	0.3	0.3	839	-	1028	125
EBV-05-3-005			0.5	0.4				
EBV-05-3-009			0.9	0.8				
EBV-05-3-01			1.4	1.2				
EBV-05-3-02			2	1.7				
EBV-05-3-03			3	2.6				
EBV-05-3-05			4.9	4.2				
EBV-05-3-08			8	6.9				
EBV-05-3-13			12.5	10.8				
EBV-05-3-17*			17.2	14.9				
EBV-75-3-05	.75	20	4.9	4.2	877	-	1066	125
EBV-75-3-08			7.8	6.7				
EBV-75-3-12			12.3	10.6				
EBV-75-3-15*			15.3	13.2				
EBV-1-3-08	1	25	7.8	6.7	1076	-	1265	125
EBV-1-3-12			12.1	10.5				
EBV-1-3-20			19.5	16.9				
EBV-1-3-30*			29.9	25.9				
EBV-125-3-12	1.25	32	11.7	10.1	-	1138	1297	125
EBV-125-3-20			19.8	17.1				
EBV-125-3-30			30.4	26.3				
EBV-125-3-45*			44.8	38.8				
EBV-150-3-20	1.5	40	19.6	17.0	-	1270	1429	125
EBV-150-3-30			30.4	26.3				
EBV-150-3-48*			48.3	41.8				
EBV-2-3-29	2	50	29.2	25.3	-	1603	1762	125
EBV-2-3-49			48.8	42.2				
EBV-2-3-75			75.2	65.0				
EBV-2-3-96*			95.5	82.6				

Options/Adders
* Reduced port valve - No characterizing disc
Add HT after the valve CV if a HT (High Temperature Kit) is needed.
For Weathershield -WS please inquire with Inside Sales.
Bypass port CV equal approximately 50% of control port CV
For normally Closed, add a "C" to the end of the valve part number, i e EBV-05-3-003C, otherwise normally open Spring return models only.



BV - 2-Way with NSR & SR Commercial Electric Actuators

2-Way, Non-Spring Return (100 psi Steam and 300 psi Water)

Actuator Model Details															
Time Out						■	■	■	■	■					
Auxiliary Switches Available						■	■	■	■	■	■	■	■	■	■
Conduit Size - Flex(F)/NPT(N)						1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N
Enclosed Terminal Block						■	■	■	■	■	■	■	■	■	■
Model Number	Valve Size		V-Cut	Flow Coefficient		24 VAC/DC On/Off & Floating					24 VAC/DC Modulating				
	In.	mm		100%	60%	D24-70	D24-140	D24-210	D24-280	D24-280-D	DM24-70	DM24-140	DM24-210	DM24-280	DM24-280-D
BV05-CS3-04	0.5	15	15°	4.1	1.6	1387	-	-	-	-	1923	-	-	-	-
BV05-CS3-05			30°	5.5	1.8										
BV05-CS3-09			60°	12.7	2.9										
BV05-CS3-12			90°	14.7	3.2										
BV05-CS3-32			Full Port	32.0	12.6	869					1239				
BV75-CS3-05	.75	20	15°	5.5	2.1	-	1894	-	-	-	-	2497	-	-	-
BV75-CS3-06			30°	7.3	2.4										
BV75-CS3-12			60°	16.2	3.8										
BV75-CS3-15			90°	19.3	4.2										
BV75-CS3-54			Full Port	54.0	21.7		1163					1601			
BV1-CS3-09	1	25	15°	9.8	3.7	-	-	2157	-	-	-	-	2703	-	-
BV1-CS3-13			30°	15.4	5.3										
BV1-CS3-23			60°	32.8	8.0										
BV1-CS3-31			90°	43.8	12.2										
BV1-CS3-105			Full Port	105.0	45.7			1295					1680		
BV125-CS3-11	1.25	32	15°	12.8	4.0	-	-	-	2932	-	-	-	-	3264	-
BV125-CS3-15			30°	17.3	6.0										
BV125-CS3-33			60°	43.4	10.8										
BV125-CS3-52			90°	65.0	17.2										
BV125-CS3-200			Full Port	200.0	91.0				1586					1800	
BV150-CS3-15	1.5	40	15°	17.6	5.5	-	-	-	-	4180	-	-	-	-	5417
BV150-CS3-20			30°	23.8	8.3										
BV150-CS3-46			60°	59.0	14.8										
BV150-CS3-71			90°	90.0	22.6										
BV150-CS3-275			Full Port	275.0	120.0					2554					3556
Adder -A						89	112	103	109	133	118	135	122	119	152

2-Way, Spring Return (100 psi Steam and 300 psi Water)

Actuator Model Details											
Auxiliary Switches Available						■	■	■	■	■	■
Conduit Size - Flex(F)/NPT(N)						3/8 F	3/8 F	3/8 F	3/8 F	3/8 F	3/8 F
Cable - Standard(S)/Plenum(P)						S	S	S	S	S	S
Model Number	Valve Size		V-Cut	Flow Coefficient		24 VAC/DC On/Off			24 VAC/DC Modulating		
	In.	mm		100%	60%	DS24-70	DS24-180	DS24-180-D	DMS24-70	DMS24-180	DMS24-180-D
BV05-CS3-04	0.5	15	15°	4.1	1.6	1537	-	-	2170	-	-
BV05-CS3-05			30°	5.5	1.8						
BV05-CS3-09			60°	12.7	2.9						
BV05-CS3-12			90°	14.7	3.2						
BV05-CS3-32			Full Port	32.0	12.6	1020			1487		
BV75-CS3-05	.75	20	15°	5.5	2.1	-	2229	-	-	2918	-
BV75-CS3-06			30°	7.3	2.4						
BV75-CS3-12			60°	16.2	3.8						
BV75-CS3-15			90°	19.3	4.2						
BV75-CS3-54			Full Port	54.0	21.7		1498			2027	
BV1-CS3-09	1	25	15°	9.8	3.7	-	2345	-	-	3037	-
BV1-CS3-13			30°	15.4	5.3						
BV1-CS3-23			60°	32.8	8.0						
BV1-CS3-31			90°	43.8	12.2						
BV1-CS3-105			Full Port	105.0	45.7		1599			2093	
BV125-CS3-11	1.25	32	15°	12.8	4.0	-	-	3491	-	-	4226
BV125-CS3-15			30°	17.3	6.0						
BV125-CS3-33			60°	43.4	10.8						
BV125-CS3-52			90°	65.0	17.2						
BV125-CS3-200			Full Port	200.0	91.0			2145			2762
Adder -A						93	113	110	122	122	119

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
For normally Closed, add a "C" to the end of the valve part number, i.e. BV05-CS3-04C, otherwise normally open. Spring return models only.
V-port ball valves have a 20 to 90% max angle of controllability.
-D Indicates tandem mounted actuators are required.



BV (SS) - 2-Way with NSR & SR Commercial Electric Actuators

2-Way, Non-Spring Return (100 psi Steam and 300 psi Water)

Actuator Model Details														
Time Out					■	■	■	■	■					
Auxiliary Switches Available					■	■	■	■	■	■	■	■	■	■
Conduit Size - Flex(F)/NPT(N)					1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N
Enclosed Terminal Block					■	■	■	■	■	■	■	■	■	■
Model Number	Valve Size		V-Cut	Flow Coefficient		24 VAC/DC On/Off & Floating					24 VAC/DC Modulating				
	In.	mm		100%	60%	D24-70	D24-140	D24-210	D24-280	D24-280-D	DM24-70	DM24-140	DM24-210	DM24-280	DM24-280-D
BV05-SS3-04	0.5	15	15°	4.1	1.6	1446	-	-	-	-	2001	-	-	-	-
BV05-SS3-05			30°	5.5	1.8										
BV05-SS3-09			60°	12.7	2.9										
BV05-SS3-12			90°	14.7	3.2										
BV05-SS3-32			Full Port	32.0	12.6	927					1316				
BV75-SS3-05	.75	20	15°	5.5	2.1	-	1984	-	-	-	-	2605	-	-	-
BV75-SS3-06			30°	7.3	2.4										
BV75-SS3-12			60°	16.2	3.8										
BV75-SS3-15			90°	19.3	4.2										
BV75-SS3-54			Full Port	54.0	21.7		1254					1709			
BV1-SS3-09	1	25	15°	9.8	3.7	-	-	2259	-	-	-	-	2824	-	-
BV1-SS3-13			30°	15.4	5.3										
BV1-SS3-23			60°	32.8	8.0										
BV1-SS3-31			90°	43.8	12.2										
BV1-SS3-105			Full Port	105.0	45.7			1398					1802		
BV125-SS3-11	1.25	32	15°	12.8	4.0	-	-	-	3057	-	-	-	-	3400	-
BV125-SS3-15			30°	17.3	6.0										
BV125-SS3-33			60°	43.4	10.8										
BV125-SS3-52			90°	65.0	17.2										
BV125-SS3-200			Full Port	200.0	91.0				1711					1935	
BV150-SS3-15	1.5	40	15°	17.6	5.5	-	-	-	-	4357	-	-	-	-	5619
BV150-SS3-20			30°	23.8	8.3										
BV150-SS3-46			60°	59.0	14.8										
BV150-SS3-71			90°	90.0	22.6										
BV150-SS3-275			Full Port	275.0	120.0					2731					3758
Adder -A						90	112	103	109	132	118	134	122	119	152

2-Way, Spring Return (100 psi Steam and 300 psi Water)

Actuator Model Details												
Auxiliary Switches Available					■	■	■	■	■	■		
Conduit Size - Flex(F)/NPT(N)					3/8 F	3/8 F	3/8 F	3/8 F	3/8 F	3/8 F		
Cable - Standard(S)/Plenum(P)					S	S	S	S	S	S		
Model Number	Valve Size		V-Cut	Flow Coefficient		24 VAC/DC On/Off			24 VAC/DC Modulating			
	In.	mm		100%	60%	DS24-70	DS24-180	DS24-180-D	DMS24-70	DMS24-180	DMS24-180-D	
BV05-SS3-04	0.5	15	15°	4.1	1.6	1597	-	-	2249	-	-	
BV05-SS3-05			30°	5.5	1.8							
BV05-SS3-09			60°	12.7	2.9							
BV05-SS3-12			90°	14.7	3.2							
BV05-SS3-32			Full Port	32.0	12.6	1078			1564			
BV75-SS3-05	.75	20	15°	5.5	2.1	-	2318	-	-	3025	-	
BV75-SS3-06			30°	7.3	2.4							
BV75-SS3-12			60°	16.2	3.8							
BV75-SS3-15			90°	19.3	4.2							
BV75-SS3-54			Full Port	54.0	21.7		1589			2134		
BV1-SS3-09	1	25	15°	9.8	3.7	-	2447	-	-	3158	-	
BV1-SS3-13			30°	15.4	5.3							
BV1-SS3-23			60°	32.8	8.0							
BV1-SS3-31			90°	43.8	12.2							
BV1-SS3-105			Full Port	105.0	45.7		1710			2164		
BV125-SS3-11	1.25	32	15°	12.8	4.0	-	-	3616	-	-	4362	
BV125-SS3-15			30°	17.3	6.0							
BV125-SS3-33			60°	43.4	10.8							
BV125-SS3-52			90°	65.0	17.2							
BV125-SS3-200			Full Port	200.0	91.0			2270			2897	
Adder -A						92	113	110	121	121	119	

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
For normally Closed, add a "C" to the end of the valve part number, i.e. BV05-SS3-04C, otherwise normally open. Spring return models only.
V-port ball valves have a 20 to 90% max angle of controllability.
-D Indicates tandem mounted actuators are required.



BV - 2-Way with On/Off Series 70 Industrial Electric Actuators

2-Way, Non-Spring Return (100 psi Steam and 300 psi Water)

Actuator Model Details											
Model Number	Valve Size		V-Cut	Flow Coefficient		Series 70 Actuators On/Off, 120 VAC			Series 70 Actuators On/Off, 24 VAC			Adder for BBU (24V units only)
	In.	mm		100%	60%	70-0081H	70-0121H	70-E301H	70-24-0081H	70-24-0201H	70-24-0501H	
BV05-CS3-04	0.5	15	15°	4.1	1.6	5868	-	-	5693	-	-	3578
BV05-CS3-05			30°	5.5	1.8							
BV05-CS3-09			60°	12.7	2.9							
BV05-CS3-12			90°	14.7	3.2							
BV05-CS3-32			Full Port	32.0	12.6	4944			4769			3578
BV75-CS3-05	.75	20	15°	5.5	2.1	6036	-	-	5861	-	-	3578
BV75-CS3-06			30°	7.3	2.4							
BV75-CS3-12			60°	16.2	3.8							
BV75-CS3-15			90°	19.3	4.2							
BV75-CS3-54			Full Port	54.0	21.7	4992			4817			3578
BV1-CS3-09	1	25	15°	9.8	3.7	6516	-	-	6341	-	-	3578
BV1-CS3-13			30°	15.4	5.3							
BV1-CS3-23			60°	32.8	8.0							
BV1-CS3-31			90°	43.8	12.2							
BV1-CS3-105			Full Port	105.0	45.7	5169			4994			3578
BV125-CS3-11	1.25	32	15°	12.8	4.0	7288	-	-	7113	-	-	3578
BV125-CS3-15			30°	17.3	6.0							
BV125-CS3-33			60°	43.4	10.8							
BV125-CS3-52			90°	65.0	17.2							
BV125-CS3-200			Full Port	200.0	91.0	5309			5134			3578
BV150-CS3-15	1.5	40	15°	17.6	5.5	7407	-	-	7232	-	-	3578
BV150-CS3-20			30°	23.8	8.3							
BV150-CS3-46			60°	59.0	14.8							
BV150-CS3-71			90°	90.0	22.6							
BV150-CS3-275			Full Port	275.0	120.0	5448			5273			3578
BV2-CS3-29	2	50	15°	34.6	10.6	8710	-	-	8535	-	-	3578
BV2-CS3-48			30°	55.0	17.8							
BV2-CS3-104			60°	135.0	33.9							
BV2-CS3-130			90°	167.0	42.3							
BV2-CS3-500			Full Port	500.0	232.0	6609			6434			3578
BV250-CS3-27	2.5	65	15°	31.3	11.7	13631	-	-	13456	-	-	3578
BV250-CS3-56			30°	76.0	20.0							
BV250-CS3-114			60°	162.0	37.9							
BV250-CS3-177			90°	239.0	53.0							
BV250-CS3-780			Full Port	780.0	363.0	9376			9201			3578
BV3-CS3-32	3	80	15°	38.3	13.4	-	15857	-	-	16255	-	3686
BV3-CS3-70			30°	85.0	26.7							
BV3-CS3-150			60°	193.0	46.3							
BV3-CS3-237			90°	359.0	69.0							
BV3-CS3-1150			Full Port	1150.0	531.0		11653			12051		3686
BV4-CS3-76	4	100	15°	96.0	27.9	-	-	19671	-	-	21721	3688
BV4-CS3-159			30°	196.0	58.0							
BV4-CS3-330			60°	437.0	106.0							
BV4-CS3-547			90°	830.0	157.0							
BV4-CS3-2100			Full Port	2100.0	1035.0			14628			16678	3688

Options/Adders
For Battery Back-Up Failsafe Unit (BBU) option on 24VAC actuators add "-BBU".
For Battery Back-UP Failsafe units:
N = Normally Open
C = Normally Closed - Factory default
For normally Closed, add a "C" to the end of the valve part number, i.e. BV05-CS3-04C, otherwise normally open. BBU models only.
V-port ball valves have a 20 to 90% max angle of controllability



2-Way, Non-Spring Return (100 PSI Steam and 300 PSI Water)

Actuator Model Details												
Model Number	Valve Size		V-Cut	Flow Coefficient		Series 70 Actuators Modulating, 120 VAC			Series 70 Actuators Modulating, 24 VAC			Adder for BBU (24V units only)
	In.	mm		100%	60%	70-0081SVH	70-0121SVH	70-E301SVH	70-24-0081SVH	70-24-0201SVH	70-24-0501SVH	
BV05-CS3-04	0.5	15	15°	4.1	1.6	7803	-	-	7726	-	-	3862
BV05-CS3-05			30°	5.5	1.8							
BV05-CS3-09			60°	12.7	2.9							
BV05-CS3-12			90°	14.7	3.2							
BV05-CS3-32			Full Port	32.0	12.6	6879			6802			3862
BV75-CS3-05	.75	20	15°	5.5	2.1	7971	-	-	7894	-	-	3862
BV75-CS3-06			30°	7.3	2.4							
BV75-CS3-12			60°	16.2	3.8							
BV75-CS3-15			90°	19.3	4.2							
BV75-CS3-54			Full Port	54.0	21.7	6927			6850			3862
BV1-CS3-09	1	25	15°	9.8	3.7	8451	-	-	8374	-	-	3862
BV1-CS3-13			30°	15.4	5.3							
BV1-CS3-23			60°	32.8	8.0							
BV1-CS3-31			90°	43.8	12.2							
BV1-CS3-105			Full Port	105.0	45.7	7104			7027			3862
BV125-CS3-11	1.25	32	15°	12.8	4.0	9223	-	-	9146	-	-	3862
BV125-CS3-15			30°	17.3	6.0							
BV125-CS3-33			60°	43.4	10.8							
BV125-CS3-52			90°	65.0	17.2							
BV125-CS3-200			Full Port	200.0	91.0	7244			7167			3862
BV150-CS3-15	1.5	40	15°	17.6	5.5	9342	-	-	9265	-	-	3862
BV150-CS3-20			30°	23.8	8.3							
BV150-CS3-46			60°	59.0	14.8							
BV150-CS3-71			90°	90.0	22.6							
BV150-CS3-275			Full Port	275.0	120.0	7383			7306			3862
BV2-CS3-29	2	50	15°	34.6	10.6	10645	-	-	10568	-	-	3862
BV2-CS3-48			30°	55.0	17.8							
BV2-CS3-104			60°	135.0	33.9							
BV2-CS3-130			90°	167.0	42.3							
BV2-CS3-500			Full Port	500.0	232.0	8544			8467			3862
BV250-CS3-27	2.5	65	15°	31.3	11.7	15566	-	-	15489	-	-	3862
BV250-CS3-56			30°	76.0	20.0							
BV250-CS3-114			60°	162.0	37.9							
BV250-CS3-177			90°	239.0	53.0							
BV250-CS3-780			Full Port	780.0	363.0	11311			11234			3862
BV3-CS3-32	3	80	15°	38.3	13.4	-	17835	-	-	18346	-	3688
BV3-CS3-70			30°	85.0	26.7							
BV3-CS3-150			60°	193.0	46.3							
BV3-CS3-237			90°	359.0	69.0							
BV3-CS3-1150			Full Port	1150.0	531.0		13631			14142		3688
BV4-CS3-76	4	100	15°	96.0	27.9	-	-	21869	-	-	23816	3688
BV4-CS3-159			30°	196.0	58.0							
BV4-CS3-330			60°	437.0	106.0							
BV4-CS3-547			90°	830.0	157.0							
BV4-CS3-2100			Full Port	2100.0	1035.0			16826			18773	3688

Options/Adders
Upon Loss of Signal on Servo units:
N = Normally Open (Reverse Acting)
C = Normally Closed - Factory default
For Battery Back-Up Failsafe Unit (BBU) option on 24VAC actuators add "-BBU".
For Battery Back-UP Failsafe units:
N = Normally Open
C = Normally Closed - Factory default
For normally Closed, add a "C" to the end of the valve part number, i.e. BV05-CS3-04C, otherwise normally open. BBU models only.
V-port ball valves have a 20 to 90% max angle of controllability



BV (SS) - 2-Way with On/Off Series 70 Industrial Electric Actuators

2-Way, Non-Spring Return (100 psi Steam and 300 psi Water)

Actuator Model Details												
Model Number	Valve Size		V-Cut	Flow Coefficient		Series 70 Actuators On/Off, 120 VAC			Series 70 Actuators On/Off, 24 VAC			Adder for BBU (24V units only)
	In.	mm		100%	60%	70-0081H	70-0121H	70-E301H	70-24-0081H	70-24-0201H	70-24-0501H	
BV05-SS3-04	0.5	15	15°	4.1	1.6	5974	-	-	5799	-	-	3578
BV05-SS3-05			30°	5.5	1.8							
BV05-SS3-09			60°	12.7	2.9							
BV05-SS3-12			90°	14.7	3.2							
BV05-SS3-32			Full Port	32.0	12.6	5048			4873			3578
BV75-SS3-05	.75	20	15°	5.5	2.1	6164	-	-	5989	-	-	3578
BV75-SS3-06			30°	7.3	2.4							
BV75-SS3-12			60°	16.2	3.8							
BV75-SS3-15			90°	19.3	4.2							
BV75-SS3-54			Full Port	54.0	21.7	5122			4947			3578
BV1-SS3-09	1	25	15°	9.8	3.7	6675	-	-	6500	-	-	3578
BV1-SS3-13			30°	15.4	5.3							
BV1-SS3-23			60°	32.8	8.0							
BV1-SS3-31			90°	43.8	12.2							
BV1-SS3-105			Full Port	105.0	45.7	5330			5155			3578
BV125-SS3-11	1.25	32	15°	12.8	4.0	7472	-	-	7297	-	-	3578
BV125-SS3-15			30°	17.3	6.0							
BV125-SS3-33			60°	43.4	10.8							
BV125-SS3-52			90°	65.0	17.2							
BV125-SS3-200			Full Port	200.0	91.0	5492			5317			3578
BV150-SS3-15	1.5	40	15°	17.6	5.5	7620	-	-	7445	-	-	3578
BV150-SS3-20			30°	23.8	8.3							
BV150-SS3-46			60°	59.0	14.8							
BV150-SS3-71			90°	90.0	22.6							
BV150-SS3-275			Full Port	275.0	120.0	5661			5486			3578
BV2-SS3-29	2	50	15°	34.6	10.6	8944	-	-	8769	-	-	3578
BV2-SS3-48			30°	55.0	17.8							
BV2-SS3-104			60°	135.0	33.9							
BV2-SS3-130			90°	167.0	42.3							
BV2-SS3-500			Full Port	500.0	232.0	6841			6666			3578
BV250-SS3-27	2.5	65	15°	31.3	11.7	13885	-	-	13710	-	-	3578
BV250-SS3-56			30°	76.0	20.0							
BV250-SS3-114			60°	162.0	37.9							
BV250-SS3-177			90°	239.0	53.0							
BV250-SS3-780			Full Port	780.0	363.0	9631			9456			3578
BV3-SS3-32	3	80	15°	38.3	13.4	-	16178	-	-	16576	-	3686
BV3-SS3-70			30°	85.0	26.7							
BV3-SS3-150			60°	193.0	46.3							
BV3-SS3-237			90°	359.0	69.0							
BV3-SS3-1150			Full Port	1150.0	531.0		11972			12370		3686
BV4-SS3-76	4	100	15°	96.0	27.9	-	-	20151	-	-	22201	3688
BV4-SS3-159			30°	196.0	58.0							
BV4-SS3-330			60°	437.0	106.0							
BV4-SS3-547			90°	830.0	157.0							
BV4-SS3-2100			Full Port	2100.0	1035.0			15105			17155	3688

Options/Adders
For Battery Back-Up Failsafe Unit (BBU) option on 24VAC actuators add "-BBU".
For Battery Back-UP Failsafe units:
N = Normally Open
C = Normally Closed - Factory default
For normally Closed, add a "C" to the end of the valve part number, i.e. BV05-SS3-04C, otherwise normally open. BBU models only.
V-port ball valves have a 20 to 90% max angle of controllability



BV (SS) - 2-Way with Modulating Series 70 Industrial Electric Actuators

2-Way, Non-Spring Return (100 psi Steam and 300 psi Water)

Actuator Model Details												
Model Number	Valve Size		V-Cut	Flow Coefficient		Series 70 Actuators Modulating, 120 VAC			Series 70 Actuators Modulating, 24 VAC			Adder for BBU (24V units only)
	In.	mm		100%	60%	70-0081SVH	70-0121SVH	70-E301SVH	70-24-0081SVH	70-24-0201SVH	70-24-0501SVH	
BV05-SS3-04	0.5	15	15°	4.1	1.6	7909	-	-	7832	-	-	3862
BV05-SS3-05			30°	5.5	1.8							
BV05-SS3-09			60°	12.7	2.9							
BV05-SS3-12			90°	14.7	3.2							
BV05-SS3-32			Full Port	32.0	12.6	6983			6906			3862
BV75-SS3-05	.75	20	15°	5.5	2.1	8099	-	-	8022	-	-	3862
BV75-SS3-06			30°	7.3	2.4							
BV75-SS3-12			60°	16.2	3.8							
BV75-SS3-15			90°	19.3	4.2							
BV75-SS3-54			Full Port	54.0	21.7	7057			6980			3862
BV1-SS3-09	1	25	15°	9.8	3.7	8610	-	-	8533	-	-	3862
BV1-SS3-13			30°	15.4	5.3							
BV1-SS3-23			60°	32.8	8.0							
BV1-SS3-31			90°	43.8	12.2							
BV1-SS3-105			Full Port	105.0	45.7	7265			7188			3862
BV125-SS3-11	1.25	32	15°	12.8	4.0	9407	-	-	9330	-	-	3862
BV125-SS3-15			30°	17.3	6.0							
BV125-SS3-33			60°	43.4	10.8							
BV125-SS3-52			90°	65.0	17.2							
BV125-SS3-200			Full Port	200.0	91.0	7427			7350			3862
BV150-SS3-15	1.5	40	15°	17.6	5.5	9555	-	-	9478	-	-	3862
BV150-SS3-20			30°	23.8	8.3							
BV150-SS3-46			60°	59.0	14.8							
BV150-SS3-71			90°	90.0	22.6							
BV150-SS3-275			Full Port	275.0	120.0	7596			7519			3862
BV2-SS3-29	2	50	15°	34.6	10.6	10879	-	-	10802	-	-	3862
BV2-SS3-48			30°	55.0	17.8							
BV2-SS3-104			60°	135.0	33.9							
BV2-SS3-130			90°	167.0	42.3							
BV2-SS3-500			Full Port	500.0	232.0	8776			8699			3862
BV250-SS3-27	2.5	65	15°	31.3	11.7	15820	-	-	15743	-	-	3862
BV250-SS3-56			30°	76.0	20.0							
BV250-SS3-114			60°	162.0	37.9							
BV250-SS3-177			90°	239.0	53.0							
BV250-SS3-780			Full Port	780.0	363.0	11566			11489			3862
BV3-SS3-32	3	80	15°	38.3	13.4	-	18156	-	-	18667	-	3688
BV3-SS3-70			30°	85.0	26.7							
BV3-SS3-150			60°	193.0	46.3							
BV3-SS3-237			90°	359.0	69.0							
BV3-SS3-1150			Full Port	1150.0	531.0		13950			14461		3688
BV4-SS3-76	4	100	15°	96.0	27.9	-	-	22349	-	-	24296	3688
BV4-SS3-159			30°	196.0	58.0							
BV4-SS3-330			60°	437.0	106.0							
BV4-SS3-547			90°	830.0	157.0							
BV4-SS3-2100			Full Port	2100.0	1035.0			17303			19250	3688

Options/Adders
Upon Loss of Signal on Servo units:
N = Normally Open - (Reverse Acting)
C = Normally Closed (Factory default)
For Battery Back-Up Failsafe Unit (BBU) option on 24VAC actuators add "-BBU".
For Battery Back-UP Failsafe units:
N = Normally Open
C = Normally Closed - Factory default
For normally Closed, add a "C" to the end of the valve part number, i.e. BV05-SS3-04C, otherwise normally open. BBU models only.
V-port ball valves have a 20 to 90% max angle of controllability



2-Way, 24 VAC & 120 VAC, On/Off Actuators - (285 psi WATER/100 psi STEAM Close-Off)

Model Number	Valve Size		Cv		Series 70 120 VAC On/Off		Series 70 24 VAC On/Off		Adder for SS Body	Adder for BBU (24V units only)
	In.	mm	90°	60°	Model	Price	Model	Price		
BVMS2-C150-0095	2	50	95	20	70-0081H	9333	70-24-0081H	9158	660	3578
BVMS3-C150-0287	3	80	287	64	70-0081H	12992	70-24-0081H	12817	978	3578
BVMS4-C150-0436	4	100	436	98	70-0121H	15269	70-24-0201H	15667	1384	3686
BVMS6-C150-0760	6	150	760	191	70-0201H	24661	70-24-0201H	24331	3562	3686
BVMS8-C150-1350	8	200	1350	369	70-E301H	28839	70-24-0501H	30889	5722	3688
BVMS10-C150-2380	10	250	2380	571	70-0501H	43673	70-24-0501H	43674	6934	3688
BVMS12-C150-3410	12	300	3410	780	70-1300H	61712	-	-	11275	-

2-Way, 24 VAC & 120 VAC, Modulating Actuators - (285 psi WATER/100 psi STEAM Close-Off)

Model Number	Valve Size		Cv		Series 70 120 VAC Modulating		Series 70 24 VAC Modulating		Adder for SS Body	Adder for BBU (24V units only)
	In.	mm	90°	60°	Model	Price	Model	Price		
BVMS2-C150-0095	2	50	95	20	70-0081SVH	11268	70-24-0081SVH	11191	660	3862
BVMS3-C150-0287	3	80	287	64	70-0081SVH	14927	70-24-0081SVH	14850	978	3862
BVMS4-C150-0436	4	100	436	98	70-0121SVH	17247	70-24-0201SVH	17758	1384	3688
BVMS6-C150-0760	6	150	760	191	70-0201SVH	26639	70-24-0201SVH	26422	3562	3688
BVMS8-C150-1350	8	200	1350	369	70-E301SVH	31037	70-24-0501SVH	32984	5722	3688
BVMS10-C150-2380	10	250	2380	571	70-0501SVH	45571	70-24-0501SVH	45769	6934	3688
BVMS12-C150-3410	12	300	3410	780	70-1300SVH	63710	-	-	11275	-

Options/Adders
Upon Loss of Signal on Servo units:
N = Normally Open (Reverse Acting)
C = Normally Closed - Factory default
For Battery Back-Up Failsafe Unit (BBU) option on 24VAC actuators add "-BBU".
For Battery Back-UP Failsafe units:
N = Normally Open
C = Normally Closed - Factory default
**For normally Closed, add a "C" to the end of the valve part number, i.e. BVMS2-C150-0095C, otherwise normally open.BBU models only.
**Add "S150" in place of C150 for stainless steel body option.



SS - 2-Way Threaded with On/Off and Modulating Electric Actuators

Simple Set - Floating & On/Off - Non-Fail safe Actuators

Model Number	Valve Size		Description	Price	-WS Adder
	In.	mm			
SS-050-N-L-x/PA24-27	0.5	15	1/2" NPT Threads 3.1 Max. GPM	505	667
SS-050-N-S-x/PA24-27	0.5	15	1/2" NPT Threads 6.9 Max. GPM	505	
SS-075-N-L-x/PA24-27	.75	20	3/4" NPT Thread 3.3 Max. GPM	629	
SS-075-N-S-x/PA24-27	.75	20	3/4" NPT Thread 8.0 Max. GPM	629	
SS-1-N-S-x/PA24-27	1	25	1" NPT Thread 8.1 Max. GPM	1069	
SS-125-N-S-x/PA24-27	1.25	32	1 -1/4" NPT Thread 13.2 Max. GPM	1352	
SS-150-N-S-x/PAM24-100	1.5	40	1-1/2" NPT Thread 33.4 Max. GPM	2716	676
SS-2-N-S-x/PAM24-100	2	50	2" NPT Thread 64.7 Max. GPM	2867	
SS-2-N-H-x/PAM24-112	2	50	2" Ductile NPT Thread 110 Max. GPM	5893	

Simple Set - Floating & On/Off - Fail safe Actuators

Model Number	Valve Size		Description	Price	-WS Adder	-A Adder
	In.	mm				
SS-050-N-L-x/PA24-27-FS	0.5	15	1/2" NPT Threads 3.1 Max. GPM	825	667	-
SS-050-N-S-x/PA24-27-FS	0.5	15	1/2" NPT Threads 6.9 Max. GPM	825		
SS-075-N-L-x/PA24-27-FS	.75	20	3/4" NPT Thread 3.3 Max. GPM	949		
SS-075-N-S-x/PA24-27-FS	.75	20	3/4" NPT Thread 8.0 Max. GPM	949		
SS-1-N-S-x/PA24-27-FS	1	25	1" NPT Thread 8.1 Max. GPM	1389		
SS-125-N-S-x/PA24-27-FS	1.25	32	1 -1/4" NPT Thread 13.2 Max. GPM	1672		
SS-150-N-S-x/PAM24-100-FS	1.5	40	1-1/2" NPT Thread 33.4 Max. GPM	3013	676	
SS-2-N-S-x/PAM24-100-FS	2	50	2" NPT Thread 64.7 Max. GPM	3164		
SS-2-N-H-x/GASRE24-450	2	50	2" Ductile NPT Thread 110 Max. GPM	7625	830	409

Simple Set - Modulating - Non-Fail safe Actuators

Model Number	Valve Size		Description	Price	-WS Adder
	In.	mm			
SS-050-N-L-x/PAM24-27	0.5	15	1/2" NPT Threads 3.1 Max. GPM	593	667
SS-050-N-S-x/PAM24-27	0.5	15	1/2" NPT Threads 6.9 Max. GPM	593	
SS-075-N-L-x/PAM24-27	.75	20	3/4" NPT Thread 3.3 Max. GPM	717	
SS-075-N-S-x/PAM24-27	.75	20	3/4" NPT Thread 8.0 Max. GPM	717	
SS-1-N-S-x/PAM24-27	1	25	1" NPT Thread 8.1 Max. GPM	1157	
SS-125-N-S-x/PAM24-27	1.25	32	1 -1/4" NPT Thread 13.2 Max. GPM	1440	
SS-150-N-S-x/PAM24-100	1.5	40	1-1/2" NPT Thread 33.4 Max. GPM	2716	676
SS-2-N-S-x/PAM24-100	2	50	2" NPT Thread 64.7 Max. GPM	2867	
SS-2-N-H-x/PAM24-112	2	50	2" Ductile NPT Thread 110 Max. GPM	5893	

Simple Set - Modulating - Fail safe Actuators

Model Number	Valve Size		Description	Price	-WS Adder	-A Adder
	In.	mm				
SS-050-N-L-x/PAM24-27-FS	0.5	15	1/2" NPT Threads 3.1 Max. GPM	862	667	-
SS-050-N-S-x/PAM24-27-FS	0.5	15	1/2" NPT Threads 6.9 Max. GPM	862		
SS-075-N-L-x/PAM24-27-FS	.75	20	3/4" NPT Thread 3.3 Max. GPM	986		
SS-075-N-S-x/PAM24-27-FS	.75	20	3/4" NPT Thread 8.0 Max. GPM	986		
SS-1-N-S-x/PAM24-27-FS	1	25	1" NPT Thread 8.1 Max. GPM	1426		
SS-125-N-S-x/PAM24-27-FS	1.25	32	1 -1/4" NPT Thread 13.2 Max. GPM	1709		
SS-150-N-S-x/PAM24-100-FS	1.5	40	1-1/2" NPT Thread 33.4 Max. GPM	3013	676	
SS-2-N-S-x/PAM24-100-FS	2	50	2" NPT Thread 64.7 Max. GPM	3164		
SS-2-N-H-x/GASRE24-450	2	50	2" Ductile NPT Thread 110 Max. GPM	7625	830	409

Options/Adders
"x" Indicates requested GPM flow.
For normally Closed, add a "C" to the end of the valve part number, i.e. SS-050-N-L-xC, otherwise normally open. Fail safe models only.
For optional auxiliary switches on the GA actuator, add -A to the end of the actuator part number.
Add a -WS at the end of the part # if a weather cover is needed.



Strainer/Drain Valve			
Model Number	Valve Size		Price
	In.	mm	
SD-05	0.5	15	502
SD-75	.75	20	567
SD-1	1	25	626
SD-125	1.25	32	1199
SD-150	1.5	40	1295
SD-2	2	50	1794

Hose Kits - Stainless Steel Braided				
Model Number	Diameter		Length	Price Includes 2 Hoses
	In.	mm		
Hose-05-12	0.5	15	12	264
Hose-05-18			18	291
Hose-05-24			24	318
Hose-05-36			36	374
Hose-75-12	.75	20	12	361
Hose-75-18			18	401
Hose-75-24			24	439
Hose-75-36			36	517
Hose-1-12	1	25	12	733
Hose-1-18			18	795
Hose-1-24			24	860
Hose-1-36			36	986
Hose-125-24	1.25	32	24	1311
Hose-125-36			36	1491
Hose-150-24	1.5	40	24	2884
Hose-150-36			36	3184
Hose-2-24	2	50	24	3303
Hose-2-36			36	3574

Replacement Cartridges		
Model Number	Size - in.	Price
CART-SS-050-L	0.5 & .75 Low Flow	301
CART-SS-050-S	0.5 to 1 Standard Flow	301
CART-SS-125-S	1.25	472
CART-SS-150-S	1.5	902
CART-SS-200-S	2	1519



SSM - 2-Way Flanged, ANSI 125 with Spring Return & Non-Spring Return Actuators & Accessories

Simple Set Max - Flanged, ANSI 125, On/Off, Floating, Modulating - Non-Spring Return Actuators

Model Number	Valve Size		Description	Price	-A Adder	-WS Adder
	In.	mm				
SSM-250-A-L-x/PAM24-112	2.5	65	ANSI 125 Flanged 110 Max. GPM	9416	-	676
SSM-250-A-H-x/PAM24-112	2.5	65	ANSI 125 Flanged 154 Max. GPM	10135		
SSM-3-A-L-x/PAM24-112	3	80	ANSI 125 Flanged 150 Max. GPM	9733		
SSM-3-A-H-x/PAM24-112	3	80	ANSI 125 Flanged 189 Max. GPM	10378		
SSM-250-A-L-x/GA24-562	2.5	65	ANSI 125 Flanged 110 Max. GPM	10878	410	830
SSM-250-A-H-x/GA24-562	2.5	65	ANSI 125 Flanged 154 Max. GPM	11597		
SSM-3-A-L-x/GA24-562	3	80	ANSI 125 Flanged 150 Max. GPM	11195		
SSM-3-A-H-x/GA24-562	3	80	ANSI 125 Flanged 189 Max. GPM	11840		
SSM-4-A-L-x/GA24-562	4	100	ANSI 125 Flanged 299 Max. GPM	14207		
SSM-4-A-H-x/GA24-562	4	100	ANSI 125 Flanged 396 Max. GPM	15054		
SSM-5-A-L-x/GA24-562	5	125	ANSI 125 Flanged 484 Max. GPM	19140		
SSM-5-A-H-x/GA24-562	5	125	ANSI 125 Flanged 594 Max. GPM	20558		
SSM-6-A-L-x/GA24-562	6	150	ANSI 125 Flanged 652 Max. GPM	24726		
SSM-6-A-H-x/GA24-562	6	150	ANSI 125 Flanged 859 Max. GPM	26823		
SSM-8-A-L-x/GA24-562	8	200	ANSI 125 Flanged 925 Max. GPM	38073		
SSM-8-A-H-x/GA24-562	8	200	ANSI 125 Flanged 1233 Max. GPM	40592		
SSM-10-A-L-x/GA24-562	10	250	ANSI 125 Flanged 2091 Max. GPM	68242		
SSM-10-A-H-x/GA24-562	10	250	ANSI 125 Flanged 2642 Max. GPM	72703		
SSM-12-A-L-x/GA24-562	12	300	ANSI 125 Flanged 2091 Max. GPM	80073		
SSM-12-A-H-x/GA24-562	12	300	ANSI 125 Flanged 2642 Max. GPM	85326		

Simple Set Max - Flanged, ANSI 125, On/Off, Floating, Modulating - Spring Return Actuators

Model Number	Valve Size		Description	Price	-A Adder	-WS Adder
	In.	mm				
SSM-250-A-L-x/GASRE24-450	2.5	65	ANSI 125 Flanged 110 Max. GPM	11587	409	830
SSM-250-A-H-x/GASRE24-450	2.5	65	ANSI 125 Flanged 154 Max. GPM	12306		
SSM-3-A-L-x/GASRE24-450	3	80	ANSI 125 Flanged 150 Max. GPM	11904		
SSM-3-A-H-x/GASRE24-450	3	80	ANSI 125 Flanged 189 Max. GPM	12549		
SSM-4-A-L-x/GASRE24-450	4	100	ANSI 125 Flanged 299 Max. GPM	14916		
SSM-4-A-H-x/GASRE24-450	4	100	ANSI 125 Flanged 396 Max. GPM	15763		
SSM-5-A-L-x/GASRE24-450	5	125	ANSI 125 Flanged 484 Max. GPM	19849		
SSM-5-A-H-x/GASRE24-450	5	125	ANSI 125 Flanged 594 Max. GPM	21267		
SSM-6-A-L-x/GASRE24-450	6	150	ANSI 125 Flanged 652 Max. GPM	25435		
SSM-6-A-H-x/GASRE24-450	6	150	ANSI 125 Flanged 859 Max. GPM	27532		
SSM-8-A-L-x/GASRE24-450	8	200	ANSI 125 Flanged 925 Max. GPM	38782		
SSM-8-A-H-x/GASRE24-450	8	200	ANSI 125 Flanged 1233 Max. GPM	41301		

Options/Adders
"x" Indicates requested GPM flow.
For normally Closed, add a "C" to the end of the valve part numberand utilize the GASEX24-450 actuator, i.e. SSM-250-A-L-xC/GASEX24-450, otherwise normally open. Fail safe models only.
For optional auxiliary switches on the GA actuator, add -A to the end of the actuator part number.
Add a -WS at the end of the part# if a weather cover is needed.

Strainer/Drain Valve

Model Number	Valve Size		Price
	In.	mm	
SD-250	2.5	65	1941
SD-3	3	80	2102
SD-4	4	100	2411
SD-5	5	125	4559
SD-6	6	150	6019



Simple Set Max - Flanged, ANSI 250, On/Off, Floating, Modulating - Non-Spring Return Actuators

Model Number	Valve Size		Description	Price	-A Adder	-WS Adder
	In.	mm				
SSM-250-A250-L-x/PAM24-112	2.5	65	ANSI 250 Flanged 110 Max. GPM	9905	-	676
SSM-250-A250-H-x/PAM24-112	2.5	65	ANSI 250 Flanged 154 Max. GPM	10643		
SSM-3-A250-L-x/PAM24-112	3	80	ANSI 250 Flanged 150 Max. GPM	10151		
SSM-3-A250-H-x/PAM24-112	3	80	ANSI 250 Flanged 189 Max. GPM	10798		
SSM-250-A250-L-x/GA24-562	2.5	65	ANSI 250 Flanged 110 Max. GPM	11367	410	830
SSM-250-A250-H-x/GA24-562	2.5	65	ANSI 250 Flanged 154 Max. GPM	12105		
SSM-3-A250-L-x/GA24-562	3	80	ANSI 250 Flanged 150 Max. GPM	11613		
SSM-3-A250-H-x/GA24-562	3	80	ANSI 250 Flanged 189 Max. GPM	12260		
SSM-4-A250-L-x/GA24-562	4	100	ANSI 250 Flanged 299 Max. GPM	15866		
SSM-4-A250-H-x/GA24-562	4	100	ANSI 250 Flanged 396 Max. GPM	16714		
SSM-5-A250-L-x/GA24-562	5	125	ANSI 250 Flanged 484 Max. GPM	22824		
SSM-5-A250-H-x/GA24-562	5	125	ANSI 250 Flanged 594 Max. GPM	24241		
SSM-6-A250-L-x/GA24-562	6	150	ANSI 250 Flanged 652 Max. GPM	30663		
SSM-6-A250-H-x/GA24-562	6	150	ANSI 250 Flanged 859 Max. GPM	32758		
SSM-8-A250-L-x/GA24-562	8	200	ANSI 250 Flanged 925 Max. GPM	41058		
SSM-8-A250-H-x/GA24-562	8	200	ANSI 250 Flanged 1233 Max. GPM	43560		
SSM-10-A250-L-x/GA24-562	10	250	ANSI 250 Flanged 2091 Max. GPM	73730		
SSM-10-A250-H-x/GA24-562	10	250	ANSI 250 Flanged 2642 Max. GPM	78210		
SSM-12-A250-L-x/GA24-562	12	300	ANSI 250 Flanged 2091 Max. GPM	86546		
SSM-12-A250-H-x/GA24-562	12	300	ANSI 250 Flanged 2642 Max. GPM	91800		

Simple Set Max - Flanged, ANSI 250, On/Off, Floating, Modulating - Spring Return Actuators

Model Number	Valve Size		Description	Price	-A Adder	-WS Adder
	In.	mm				
SSM-250-A250-L-x/GASRE24-450	2.5	65	ANSI 250 Flanged 110 Max. GPM	12076	409	830
SSM-250-A250-H-x/GASRE24-450	2.5	65	ANSI 250 Flanged 154 Max. GPM	12814		
SSM-3-A250-L-x/GASRE24-450	3	80	ANSI 250 Flanged 150 Max. GPM	12322		
SSM-3-A250-H-x/GASRE24-450	3	80	ANSI 250 Flanged 189 Max. GPM	12969		
SSM-4-A250-L-x/GASRE24-450	4	100	ANSI 250 Flanged 299 Max. GPM	16575		
SSM-4-A250-H-x/GASRE24-450	4	100	ANSI 250 Flanged 396 Max. GPM	17423		
SSM-5-A250-L-x/GASRE24-450	5	125	ANSI 250 Flanged 484 Max. GPM	23533		
SSM-5-A250-H-x/GASRE24-450	5	125	ANSI 250 Flanged 594 Max. GPM	24950		
SSM-6-A250-L-x/GASRE24-450	6	150	ANSI 250 Flanged 652 Max. GPM	31372		
SSM-6-A250-H-x/GASRE24-450	6	150	ANSI 250 Flanged 859 Max. GPM	33467		
SSM-8-A250-L-x/GASRE24-450	8	200	ANSI 250 Flanged 925 Max. GPM	41767		
SSM-8-A250-H-x/GASRE24-450	8	200	ANSI 250 Flanged 1233 Max. GPM	44269		

Options/Adders
"x" Indicates requested GPM flow.
For normally Closed, add a "C" to the end of the valve part numberand utilize the GASEX24-450 actuator, i.e. SSM-250-A-L-xC/GASEX24-450, otherwise normally open. Fail safe models only.
For optional auxiliary switches on the GA actuator, add -A to the end of the actuator part number.
Add a -WS at the end of the part# if a weather cover is needed.

Strainer/Drain Valve

Model Number	Valve Size		Price
	In.	mm	
SD-250	2.5	65	1941
SD-3	3	80	2102
SD-4	4	100	2411
SD-5	5	125	4559
SD-6	6	150	6019



2-Way Valves, Non Fail Safe or Non Spring Return Actuators								
Actuator Model Details								
Auxiliary Switches Available							■	■
Conduit Size - Flex (F)/NPT (N)					1/2 N	1/2 N	1/2 N	1/2 N
Direct Mount					■	■	■	■
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC/DC Modulating	24 VAC Floating	24 VAC Modulating
	In.	mm	Cv	Kv	GA24-67	GAM24-67	GA24-225	GAM24-225
CG05-2-004	0.5	15	0.4	0.3	1183	1337	-	-
CG05-2-006	0.5	15	0.63	0.5	1183	1337	-	-
CG05-2-01	0.5	15	1	0.9	1183	1337	-	-
CG05-2-02	0.5	15	1.6	1.4	1183	1337	-	-
CG05-2-03	0.5	15	2.5	2.2	1183	1337	-	-
CG05-2-04	0.5	15	4	3.5	1183	1337	-	-
CG75-2-07	.75	20	6.3	5.4	1225	1379	-	-
CG1-2-10	1.0	25	10	8.7	1333	1487	-	-
DG125-2-16	1.25	32	16	13.8	-	-	1621	1757
DG150-2-25	1.50	40	25	21.6	-	-	1778	1914
DG2-2-40	2.0	50	40	34.6	-	-	2132	2268
Adder -A					-	-	895	446
Adder -H					-	-	1188	1188

2-Way Valves, Fail Safe or Spring Return Actuators								
Actuator Model Details								
Auxiliary Switches Available							■	■
Conduit Size - Flex (F)/NPT (N)					1/2 N	1/2 N	1/2 N	1/2 N
Direct Mount					■	■	■	■
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC/DC Modulating	24 VAC Floating	24 VAC Modulating
	In.	mm	Cv	Kv	GA24-67-FS	GAM24-67-FS	GAS24-225	GAMS24-225
CG05-2-004	0.5	15	0.4	0.3	1431	1550	-	-
CG05-2-006	0.5	15	0.63	0.5	1431	1550	-	-
CG05-2-01	0.5	15	1	0.9	1431	1550	-	-
CG05-2-02	0.5	15	1.6	1.4	1431	1550	-	-
CG05-2-03	0.5	15	2.5	2.2	1431	1550	-	-
CG05-2-04	0.5	15	4	3.5	1431	1550	-	-
CG75-2-07	.75	20	6.3	5.4	1473	1592	-	-
CG1-2-10	1.0	25	10	8.7	1581	1700	-	-
DG125-2-16	1.25	32	16	13.8	-	-	2054	2184
DG150-2-25	1.50	40	25	21.6	-	-	2211	2341
DG2-2-40	2.0	50	40	34.6	-	-	2565	2695
Adder -A					-	-	895	446
Adder -H					-	-	1188	1188

Options/Adders
For Optional auxiliary switches add -A or -H for stem heater to the end of the actuator part number.
*For normally closed, add a "C" to the end of the valve part number, i.e. DG2-2-40C, otherwise normally open. Spring return models only.



DG Threaded High Close-Off Globe Valves - 2-Way Standard Trim with Electric Actuators

2-Way Valves, Non Spring Return Actuators							
Actuator Model Details							
Auxiliary Switches Available					■	■	■
Conduit Size - Flex (F)/NPT (N)					1/2 N	1/2 N	1/2 N
Direct Mount					■	■	■
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC Floating	24 VAC Modulating
	In.	mm	Cv	Kv	GA24-225	GA24-640-7	GAM24-225
DG05-2-01	0.5	15	1	0.9	1510	-	1645
DG05-2-02	0.5	15	1.6	1.4	1510	-	1645
DG05-2-03	0.5	15	2.5	2.2	1510	-	1645
DG05-2-04	0.5	15	4	3.5	1510	-	1645
DG75-2-07	.75	20	6.3	5.4	1564	-	1699
DG1-2-10	1.0	25	10	8.7	1712	-	1847
DG125-2-16	1.25	32	16	13.8	-	5587	Use standard Closeoff or High Closeoff SR
DG150-2-25	1.50	40	25	21.6	-	5744	Use standard Closeoff or High Closeoff SR
DG2-2-40	2.0	50	40	34.6	-	6098	Use standard Closeoff or High Closeoff SR
Adder -A					895	895	446
Adder -H					1188	1188	1188

2-Way Valves, Spring Return Actuators								
Actuator Model Details								
Auxiliary Switches Available					■	■	■	■
Conduit Size - Flex (F)/NPT (N)					1/2 N	1/2 N	1/2 N	1/2 N
Direct Mount					■	■	■	■
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC Floating	24 VAC Modulating	24 VAC Modulating
	In.	mm	Cv	Kv	GAS24-225	GAS24-640-7	GAMS24-225	VAL-SRS07P
DG05-2-01	0.5	15	1	0.9	1942	-	2072	-
DG05-2-02	0.5	15	1.6	1.4	1942	-	2072	-
DG05-2-03	0.5	15	2.5	2.2	1942	-	2072	-
DG05-2-04	0.5	15	4	3.5	1942	-	2072	-
DG75-2-07	.75	20	6.3	5.4	1997	-	2126	-
DG1-2-10	1.0	25	10	8.7	2145	-	2274	-
DG125-2-16	1.25	32	16	13.8	-	6541	-	4645
DG150-2-25	1.50	40	25	21.6	-	6697	-	4800
DG2-2-40	2.0	50	40	34.6	-	7052	-	5155
Adder -A					895	895	446	446
Adder -H					1188	1188	1188	1188

Options/Adders
For Optional auxiliary switches add -A or -H for stem heater to the end of the actuator part number.
*For normally closed, add a "C" to the end of the valve part number, i.e. DG2-2-40C, otherwise normally open. Spring return models only.
VAL Series actuators fails Retracted



CG/DG Threaded Globe Valves - 2-Way Stainless Steel Trim with Electric Actuators

2-Way Valves, Non Fail Safe or Non Spring Return Actuators								
Actuator Model Details								
Auxiliary Switches Available							■	■
Conduit Size - Flex (F)/NPT (N)					1/2 N	1/2 N	1/2 N	1/2 N
Direct Mount					■	■	■	■
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC/DC Modulating	24 VAC Floating	24 VAC Modulating
	In.	mm	Cv	Kv	GA24-67	GAM24-67	GA24-225	GAM24-225
CG05-2-004SS	0.5	15	0.4	0.3	1636	1790	-	-
CG05-2-006SS	0.5	15	0.63	0.5	1636	1790	-	-
CG05-2-01SS	0.5	15	1	0.9	1636	1790	-	-
CG05-2-02SS	0.5	15	1.6	1.4	1636	1790	-	-
CG05-2-03SS	0.5	15	2.5	2.2	1636	1790	-	-
CG05-2-04SS	0.5	15	4	3.5	1636	1790	-	-
CG75-2-07SS	.75	20	6.3	5.4	1811	1965	-	-
CG1-2-10SS	1.0	25	10	8.7	2074	2228	-	-
DG125-2-16SS	1.25	32	16	13.8	-	-	2783	2919
DG150-2-25SS	1.50	40	25	21.6	-	-	3300	3436
DG2-2-40SS	2.0	50	40	34.6	-	-	3708	3844
Adder -A					-	-	895	446
Adder -H					-	-	1188	1188

2-Way Valves, Fail Safe or Spring Return Actuators								
Actuator Model Details								
Auxiliary Switches Available							■	■
Conduit Size - Flex (F)/NPT (N)					1/2 N	1/2 N	1/2 N	1/2 N
Direct Mount					■	■	■	■
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC/DC Modulating	24 VAC Floating	24 VAC Modulating
	In.	mm	Cv	Kv	GA24-67-FS	GAM24-67-FS	GAS24-225	GAMS24-225
CG05-2-004SS	0.5	15	0.4	0.3	1884	2003	-	-
CG05-2-006SS	0.5	15	0.63	0.5	1884	2003	-	-
CG05-2-01SS	0.5	15	1	0.9	1884	2003	-	-
CG05-2-02SS	0.5	15	1.6	1.4	1884	2003	-	-
CG05-2-03SS	0.5	15	2.5	2.2	1884	2003	-	-
CG05-2-04SS	0.5	15	4	3.5	1884	2003	-	-
CG75-2-07SS	.75	20	6.3	5.4	2059	2178	-	-
CG1-2-10SS	1.0	25	10	8.7	2322	2441	-	-
DG125-2-16SS	1.25	32	16	13.8	-	-	3216	3346
DG150-2-25SS	1.50	40	25	21.6	-	-	3733	3863
DG2-2-40SS	2.0	50	40	34.6	-	-	4141	4271
Adder -A					-	-	895	446
Adder -H					-	-	1188	1188

Options/Adders
For Optional auxiliary switches add -A or -H for stem heater to the end of the actuator part number.
*For normally closed, add a "C" to the end of the valve part number, i.e. DG2-2-40SSC, otherwise normally open. Spring return models only.



DG Threaded High Close-Off Globe Valves - 2-Way Stainless Steel Trim with Electric Actuators

2-Way Valves, Non Spring Return Actuators

Actuator Model Details							
Auxiliary Switches Available					■	■	■
Conduit Size - Flex (F)/NPT (N)					1/2 N	1/2 N	1/2 N
Direct Mount					■	■	■
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC Floating	24 VAC Modulating
	In.	mm	Cv	Kv	GA24-225	GA24-640-7	GAM24-225
DG05-2-01SS	0.5	15	1	0.9	2126	-	2261
DG05-2-02SS	0.5	15	1.6	1.4	2126	-	2261
DG05-2-03SS	0.5	15	2.5	2.2	2126	-	2261
DG05-2-04SS	0.5	15	4	3.5	2126	-	2261
DG75-2-07SS	.75	20	6.3	5.4	2211	-	2346
DG1-2-10SS	1.0	25	10	8.7	2286	-	2421
DG125-2-16SS	1.25	32	16	13.8	-	6748	Use standard Closeoff or High Closeoff SR
DG150-2-25SS	1.50	40	25	21.6	-	7266	Use standard Closeoff or High Closeoff SR
DG2-2-40SS	2.0	50	40	34.6	-	7675	Use standard Closeoff or High Closeoff SR
Adder -A					895	895	446
Adder -H					1188	1188	1188

2-Way Valves, Spring Return Actuators

Actuator Model Details								
Auxiliary Switches Available					■	■	■	■
Conduit Size - Flex (F)/NPT (N)					1/2 N	1/2 N	1/2 N	1/2 N
Direct Mount					■	■	■	■
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC Floating	24 VAC Modulating	24 VAC Modulating
	In.	mm	Cv	Kv	GAS24-225	GAS24-640-7	GAMS24-225	VAL-SRS07P
DG05-2-01SS	0.5	15	1	0.9	2557	-	2688	-
DG05-2-02SS	0.5	15	1.6	1.4	2557	-	2688	-
DG05-2-03SS	0.5	15	2.5	2.2	2557	-	2688	-
DG05-2-04SS	0.5	15	4	3.5	2557	-	2688	-
DG75-2-07SS	.75	20	6.3	5.4	2644	-	2773	-
DG1-2-10SS	1.0	25	10	8.7	2719	-	2848	-
DG125-2-16SS	1.25	32	16	13.8	-	7702	-	5806
DG150-2-25SS	1.50	40	25	21.6	-	8221	-	6324
DG2-2-40SS	2.0	50	40	34.6	-	8628	-	6732
Adder -A					895	895	446	446
Adder -H					1188	1188	1188	1188

Options/Adders
For Optional auxiliary switches add -A or -H for stem heater to the end of the actuator part number.
*For normally closed, add a "C" to the end of the valve part number, i.e. DG2-2-40SSC, otherwise normally open. Spring return models only.
VAL Series actuators fails Retracted



3-Way Valves, Non Fail Safe or Non Spring Return Actuators								
Actuator Model Details								
Auxiliary Switches Available						■	■	
Conduit Size - Flex (F)/NPT (N)					1/2 N	1/2 N	1/2 N	1/2 N
Direct Mount					■	■	■	■
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC/DC Modulating	24 VAC Floating	24 VAC Modulating
	In.	mm	Cv	Kv	GA24-67	GAM24-67	GA24-225	GAM24-225
CG05-3-004	0.5	15	0.4	0.3	1284	1438	-	-
CG05-3-006	0.5	15	0.63	0.5	1284	1438	-	-
CG05-3-01	0.5	15	1	0.9	1284	1438	-	-
CG05-3-02	0.5	15	1.6	1.4	1284	1438	-	-
CG05-3-03	0.5	15	2.5	2.2	1284	1438	-	-
CG05-3-04	0.5	15	4	3.5	1284	1438	-	-
CG75-3-07	.75	20	6.3	5.4	1314	1468	-	-
CG1-3-10	1.0	25	10	8.7	1420	1574	-	-
DG125-3-16	1.25	32	16	13.8	-	-	1741	1877
DG150-3-25	1.50	40	25	21.6	-	-	2374	2510
DG2-3-40	2.0	50	40	34.6	-	-	2635	2771
Adder -A					-	-	895	446
Adder -H					-	-	1188	1188

3-Way Valves, Fail Safe or Spring Return Actuators								
Actuator Model Details								
Auxiliary Switches Available						■	■	
Conduit Size - Flex (F)/NPT (N)					1/2 N	1/2 N	1/2 N	1/2 N
Direct Mount					■	■	■	■
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC/DC Modulating	24 VAC Floating	24 VAC Modulating
	In.	mm	Cv	Kv	GA24-67-FS	GAM24-67-FS	GAS24-225	GAMS24-225
CG05-3-004	0.5	15	0.4	0.3	1532	1651	-	-
CG05-3-006	0.5	15	0.63	0.5	1532	1651	-	-
CG05-3-01	0.5	15	1	0.9	1532	1651	-	-
CG05-3-02	0.5	15	1.6	1.4	1532	1651	-	-
CG05-3-03	0.5	15	2.5	2.2	1532	1651	-	-
CG05-3-04	0.5	15	4	3.5	1532	1651	-	-
CG75-3-07	.75	20	6.3	5.4	1562	1681	-	-
CG1-3-10	1.0	25	10	8.7	1668	1787	-	-
DG125-3-16	1.25	32	16	13.8	-	-	2174	2304
DG150-3-25	1.50	40	25	21.6	-	-	2807	2937
DG2-3-40	2.0	50	40	34.6	-	-	3068	3198
Adder -A					-	-	895	446
Adder -H					-	-	1188	1188

Options/Adders
For Optional auxiliary switches add -A or -H for stem heater to the end of the actuator part number. Only available for GA 225's.
*For normally closed, add a "C" to the end of the valve part number, i.e. DG2-3-40C, otherwise normally open. Spring Return models only.



DG Threaded High Close-Off Globe Valves - 3-Way Standard Trim with Electric Actuators

3-Way Valves, Non Spring Return Actuators							
Actuator Model Details							
Auxiliary Switches Available					■	■	■
Conduit Size - Flex (F)/NPT (N)					1/2 N	1/2 N	1/2 N
Direct Mount					■	■	■
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC Floating	24 VAC Modulating
	In.	mm	Cv	Kv	GA24-225	GA24-640-7	GAM24-225
DG05-3-01	0.5	15	1	0.9	1757	-	1894
DG05-3-02	0.5	15	1.6	1.4	1757	-	1894
DG05-3-03	0.5	15	2.5	2.2	1757	-	1894
DG05-3-04	0.5	15	4	3.5	1757	-	1894
DG75-3-07	.75	20	6.3	5.4	1795	-	1930
DG1-3-10	1.0	25	10	8.7	1964	-	2099
DG125-3-16	1.25	32	16	13.8	-	5707	Use standard Closeoff or High Closeoff SR
DG150-3-25	1.50	40	25	21.6	-	6339	Use standard Closeoff or High Closeoff SR
DG2-3-40	2.0	50	40	34.6	-	6601	Use standard Closeoff or High Closeoff SR
Adder -A					895	895	446
Adder -H					1188	1188	1188

3-Way Valves, Spring Return Actuators								
Actuator Model Details								
Auxiliary Switches Available					■	■	■	■
Conduit Size - Flex (F)/NPT (N)					1/2 N	1/2 N	1/2 N	1/2 N
Direct Mount					■	■	■	■
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC Floating	24 VAC Modulating	24 VAC Modulating
	In.	mm	Cv	Kv	GAS24-225	GAS24-640-7	GAMS24-225	VAL-SRS07P
DG05-3-01	0.5	15	1	0.9	2190	-	2321	-
DG05-3-02	0.5	15	1.6	1.4	2190	-	2321	-
DG05-3-03	0.5	15	2.5	2.2	2190	-	2321	-
DG05-3-04	0.5	15	4	3.5	2190	-	2321	-
DG75-3-07	.75	20	6.3	5.4	2226	-	2357	-
DG1-3-10	1.0	25	10	8.7	2397	-	2526	-
DG125-3-16	1.25	32	16	13.8	-	6661	-	4764
DG150-3-25	1.50	40	25	21.6	-	7293	-	5397
DG2-3-40	2.0	50	40	34.6	-	7556	-	5659
Adder -A					895	895	446	446
Adder -H					1188	1188	1188	1188

Options/Adders
For Optional auxiliary switches add -A or -H for stem heater to the end of the actuator part number.
*For normally closed, add a "C" to the end of the valve part number, i.e. DG2-3-40C, otherwise normally open. Spring Return models only.
VAL Series actuators fails Retracted



2-Way, On/Off, Floating or Modulating Actuators								
Model Number	Valve Size		Flow Coefficient		24 VAC Non-Spring Return		-A Adder	-WS Adder
	In.	mm	Cv	Kv	Model	Price		
DG250-2-63	2.5	65	63	54	GA24-562	4138	410	830
DG3-2-100	3	80	100	85		4607		
DG4-2-160	4	100	160	137		6057		
DG5-2-250	5	125	250	214		8005		
DG6-2-400	6	150	400	340		9195		

2-Way, On/Off, Floating or Modulating Actuators								
Model Number	Valve Size		Flow Coefficient		24 VAC - Normally Open Spring Return		-A Adder	-WS Adder
	In.	mm	Cv	Kv	Model	Price		
DG250-2-63	2.5	65	63	54	GASRE24-450 Normally Retracted	4847	409	830
DG3-2-100	3	80	100	85		5316		
DG4-2-160	4	100	160	137		6766		
DG5-2-250	5	125	250	214		8714		
DG6-2-400	6	150	400	340		9904		

2-Way, On/Off, Floating or Modulating Actuators								
Model Number	Valve Size		Flow Coefficient		24 VAC - Normally Closed Spring Return		-A Adder	-WS Adder
	In.	mm	Cv	Kv	Model	Price		
DG250-2-63C	2.5	65	63	54	GASEX24-450 Normally Extended	4847	409	830
DG3-2-100C	3	80	100	85		5316		
DG4-2-160C	4	100	160	137		6766		
DG5-2-250C	5	125	250	214		8714		
DG6-2-400C	6	150	400	340		9904		

Options/Adders
For optional auxiliary switches on the GA actuator, add -A to the end of the actuator part number.
Add a -WS at the end of the part # if a weather cover is needed for GA Series actuators only.

2-Way, High Close-Off, Modulating Actuators						
Model Number	Valve Size		Flow Coefficient		24 VAC - Normally Open Spring Return	
	In.	mm	Cv	Kv	Model	Price
DG250-2-63	2.5	65	63	54	VAL-SRS07P	5539
DG3-2-100	3	80	100	85		6008
DG4-2-160	4	100	160	137	VAL-SRS15P	8223
DG5-2-250	5	125	250	214		10171
DG6-2-400	6	150	400	340		11361

Valve is shipped ports NO to C Open (see Technical Brochure Page DG3)

Options/Adders
*VAL Series actuators fails Retracted



3-Way, On/Off, Floating or Modulating Actuators

Model Number	Valve Size		Flow Coefficient		24 VAC Non-Spring Return		-A Adder	-WS Adder
	In.	mm	Cv	Kv	Model	Price		
DG250-3-63	2.5	65	63	54	GA24-562	4574	410	830
DG3-3-100	3	80	100	85		5493		
DG4-3-160	4	100	160	137		9808		
DG5-3-250	5	125	250	214		13456		
DG6-3-400	6	150	400	340		16094		

Valve is shipped ports NO to C Open (see Technical Brochure Page DG3)

3-Way, On/Off, Floating or Modulating Actuators

Model Number	Valve Size		Flow Coefficient		24 VAC - Normally Open Spring Return		-A Adder	-WS Adder
	In.	mm	Cv	Kv	Model	Price		
DG250-3-63	2.5	65	63	54	GASRE24-450 Normally Retracted	5283	409	830
DG3-3-100	3	80	100	85		6202		
DG4-3-160	4	100	160	137		10517		
DG5-3-250	5	125	250	214		14165		
DG6-3-400	6	150	400	340		16803		

Valve is shipped ports NO to C Open (see Technical Brochure Page DG3)

3-Way, On/Off, Floating or Modulating Actuators

Model Number	Valve Size		Flow Coefficient		24 VAC - Normally Closed Spring Return		-A Adder	-WS Adder
	In.	mm	Cv	Kv	Model	Price		
DG250-3-63C	2.5	65	63	54	GASEX24-450 Normally Extended	5283	409	830
DG3-3-100C	3	80	100	85		6202		
DG4-3-160C	4	100	160	137		10517		
DG5-3-250C	5	125	250	214		14165		
DG6-3-400C	6	150	400	340		16803		

Valve is shipped ports NC to C Open (see Technical Brochure Page DG3)

Options/Adders
For optional auxiliary switches on the GA actuator, add -A to the end of the actuator part number.
Add a -WS at the end of the part # if a weather cover is needed for GA Series actuators only.
*For normally closed, add a "C" to the end of the valve part number, i.e. DG250-3-63C, otherwise normally open. Spring return models only.

3-Way, High Close-Off, Modulating Actuators

Model Number	Valve Size		Flow Coefficient		24 VAC - Normally Open Spring Return	
	In.	mm	Cv	Kv	Model	Price
DG250-3-63	2.5	65	63	54	VAL-SRS07P	5975
DG3-3-100	3	80	100	85		6894
DG4-3-160	4	100	160	137	VAL-SRS15P	11974
DG5-3-250	5	125	250	214		15622
DG6-3-400	6	150	400	340		18260

Valve is shipped ports NO to C Open (see Technical Brochure Page DG3)

Options/Adders
*VAL Series actuators fails Retracted



2-Way, On/Off, Floating or Modulating Actuators									
Model Number	Valve Size		Flow Coefficient		24 VAC Non-Spring Return		-A Adder	-WS Adder	-HT Adder
	In.	mm	Cv	Kv	Model	Price			
DG250-2-63SS	2.5	65	63	54	GA24-562	6531	410	830	253
DG3-2-100SS	3	80	100	85		6929			
DG4-2-160SS	4	100	160	137		8381			
DG5-2-250SS	5	125	250	214		10421			
DG6-2-400SS	6	150	400	340		11950			

2-Way, On/Off, Floating or Modulating Actuators									
Model Number	Valve Size		Flow Coefficient		24 VAC - Normally Open Spring Return		-A Adder	-WS Adder	-HT Adder
	In.	mm	Cv	Kv	Model	Price			
DG250-2-63SS	2.5	65	63	54	GASRE24-450 Normally Retracted	7240	409	830	253
DG3-2-100SS	3	80	100	85		7638			
DG4-2-160SS	4	100	160	137		9090			
DG5-2-250SS	5	125	250	214		11130			
DG6-2-400SS	6	150	400	340		12659			

2-Way, On/Off, Floating or Modulating Actuators									
Model Number	Valve Size		Flow Coefficient		24 VAC - Normally Closed Spring Return		-A Adder	-WS Adder	-HT Adder
	In.	mm	Cv	Kv	Model	Price			
DG250-2-63SSC	2.5	65	63	54	GASEX24-450 Normally Extended	7240	409	830	253
DG3-2-100SSC	3	80	100	85		7638			
DG4-2-160SSC	4	100	160	137		9090			
DG5-2-250SSC	5	125	250	214		11130			
DG6-2-400SSC	6	150	400	340		12659			

C=Normally Closed

Options/Adders
For optional auxiliary switches on the GA actuator, add -A to the end of the actuator part number.
For optional high temperature kit (media temperatures 266°F to 464°F) on the GA actuator, add -HT to the end of the actuator part number.
Add a -WS at the end of the part # if a weather cover is needed for GA Series actuators only.

2-Way, High Close-Off, Modulating Actuators						
Model Number	Valve Size		Flow Coefficient		24 VAC - Normally Open Spring Return	
	In.	mm	Cv	Kv	Model	Price
DG250-2-63SS	2.5	65	63	54	VAL-SRS07P	7932
DG3-2-100SS	3	80	100	85		8330
DG4-2-160SS	4	100	160	137	VAL-SRS15P	10547
DG5-2-250SS	5	125	250	214		12587
DG6-2-400SS	6	150	400	340		14116

Options/Adders
Valve is shipped ports NO to C Open (see Technical Brochure Page DG3)
*VAL Series actuators fails Retracted



DG Flanged High Close-Off Globe Valves - 2-Way Stainless Steel Trim with Industrial Electric Actuators

2-Way Valves, Non Spring Return Actuators

Actuator Model Details							
Auxiliary Switches Available					■	■	■
Conduit Size - Flex (F)/NPT (N)					1/2 N	1/2 N	1/2 N
Direct Mount					■	■	■
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC Floating	24 VAC Modulating
	In.	mm	Cv	Kv	GA24-225	GA24-640-15	GAM24-225
DG250H-2-63	2.5	65	63	54.5	8134	-	8269
DG3H-2-100	3	80	100	86.5	8997	-	9133
DG4H-2-160	4	100	160	138.4	-	16672	Use standard Closeoff or High Closeoff SR
DG5H-2-250	5	125	250	216.3	-	19050	Use standard Closeoff or High Closeoff SR
DG6H-2-400	6	150	400	346.0	-	22210	Use standard Closeoff or High Closeoff SR
Adder -A					895	895	446
Adder -H					1188	1188	1188

2-Way Valves, Spring Return Actuators

Actuator Model Details								
Auxiliary Switches Available					■	■	■	■
Conduit Size - Flex (F)/NPT (N)					1/2 N	1/2 N	1/2 N	1/2 N
Direct Mount					■	■	■	■
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC Floating	24 VAC Modulating	24 VAC Modulating
	In.	mm	Cv	Kv	GAS24-225	GAS24-640-15	GAMS24-225	VAL-SRS15P
DG250H-2-63	2.5	65	63	54.5	8565	-	8696	-
DG3H-2-100	3	80	100	86.5	9430	-	9560	-
DG4H-2-160	4	100	160	138.4	-	18370	-	15246
DG5H-2-250	5	125	250	216.3	-	20746	-	17622
DG6H-2-400	6	150	400	346.0	-	23907	-	20784
Adder -A					895	895	446	446
Adder -H					1188	1188	1188	1188

Options/Adders
For Optional auxiliary switches add -A or -H for stem heater to the end of the actuator part number.
For normally closed, add a "C" to the end of the valve part number, i.e. DG250H-2-63C, otherwise normally open. Spring return models only.
VAL Series actuators fails Retracted



3L Series Butterfly Valves 2-Way with NSR/SR DC-Series Commercial Electric Actuators

Nylon Coated Disc

2-Way, On/Off & Floating - Nylon Coated Disc

Actuator Model Details						Non-Spring Return		Spring Return			
						DC24-310-T	DC24-310-T-D	DCS24-140	DCS24-140-D	DCS120-140	DCS120-140-D
Model Number	Size		Close-Off psi	Cv		On/Off or Floating		On/Off			
	In.	mm		90˚	60˚	24 VAC/DC		24 VAC/DC		120 VAC	
3LNE-02S2C	2	50	175	87	66	1337	-	1455	-	1498	-
3LNE-25S2C	2.5	65	175	185	98	1376	-	1494	-	1537	-
3LNE-03S2C	3	80	175	360	171	1393	-	-	2090	-	2154
3LNE-04L2C	4	100	50	740	310	1505	-	1623	-	1666	-
3LNE-04S2C	4	100	175	740	310	1505	-	-	2472	-	2549
3LNE-05L2C	5	125	50	1218	470	1804	-	-	2717	-	2781
3LNE-05S2C	5	125	175	1218	470	-	2543	-	-	-	-
3LNE-06L2C	6	150	50	1900	757	-	2789	-	-	-	-
Adder -A						156	156	165	165	165	165
Adder -WS						527	715	Contact Bray			

2-Way, Modulating - Nylon Coated Disc

Actuator Model Details						Non-Spring Return		Spring Return	
						DCM24-310	DCM24-310-D	DCMS24-140	DCMS24-140-D
Model Number	Size		Close-Off psi	Cv		Modulating			
	In.	mm		90˚	60˚	24 VAC/DC		24 VAC/DC	
3LNE-02S2C	2	50	175	87	66	1432	-	1657	-
3LNE-25S2C	2.5	65	175	185	98	1471	-	1696	-
3LNE-03S2C	3	80	175	360	171	1488	-	-	2392
3LNE-04L2C	4	100	50	740	310	1600	-	1825	-
3LNE-04S2C	4	100	175	740	310	1600	-	-	2834
3LNE-05L2C	5	125	50	1218	470	1884	-	-	3019
3LNE-05S2C	5	125	175	1218	470	-	2683	-	-
3LNE-06L2C	6	150	50	1900	757	-	2929	-	-
Adder -A						156	155	165	166
Adder -WS						527	715	Contact Bray	

Stainless Steel Disc

2-Way, On/Off & Floating - Stainless Steel Disc

Actuator Model Details						Non-Spring Return		Spring Return			
						DC24-310-T	DC24-310-T-D	DCS24-140	DCS24-140-D	DCS120-140	DCS120-140-D
Model Number	Size		Close-Off psi	Cv		On/Off or Floating		On/Off			
	In.	mm		90˚	60˚	24 VAC/DC		24 VAC/DC		120 VAC	
3LSE-02S2C	2	50	175	87	66	1344	-	1462	-	1505	-
3LSE-25S2C	2.5	65	175	185	98	1384	-	1502	-	1545	-
3LSE-03S2C	3	80	175	360	171	1400	-	-	2021	-	2082
3LSE-04L2C	4	100	50	740	310	1531	-	-	2086	-	2150
3LSE-04S2C	4	100	175	740	310	1531	-	-	2086	-	2150
3LSE-05L2C	5	125	50	1218	470	2231	-	-	2800	-	2864
3LSE-05S2C	5	125	175	1218	470	-	2626	-	-	-	-
3LSE-06L2C	6	150	50	1900	757	-	2870	-	-	-	-
Adder -A						156	156	165	218	165	221
Adder -WS						527	715	Contact Bray			

2-Way, Modulating - Stainless Steel Disc

Actuator Model Details						Non-Spring Return		Spring Return	
						DCM24-310	DCM24-310-D	DCMS24-140	DCMS24-140-D
Model Number	Size		Close-Off psi	Cv		Modulating			
	In.	mm		90˚	60˚	24 VAC/DC		24 VAC/DC	
3LSE-02S2C	2	50	175	87	66	1439	-	1664	-
3LSE-25S2C	2.5	65	175	185	98	1479	-	1704	-
3LSE-03S2C	3	80	175	360	171	1495	-	-	2311
3LSE-04L2C	4	100	50	740	310	1626	-	-	2388
3LSE-04S2C	4	100	175	740	310	1626	-	-	2388
3LSE-05L2C	5	125	50	1218	470	2326	-	-	3102
3LSE-05S2C	5	125	175	1218	470	-	2766	-	-
3LSE-06L2C	6	150	50	1900	757	-	3010	-	-
Adder -A						156	155	165	228
Adder -WS						527	715	Contact Bray	

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
Add a -WS at the end of the part # if a weather cover is needed.
For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default
-D = Dual mounted actuators



3L Series Butterfly Valves 3-Way with NSR/SR DC-Series Commercial Electric Actuators

Nylon Coated Disc

3-Way, On/Off or Floating - Nylon Coated Disc

Actuator Model Details						Non-Spring Return		Spring Return			
						DC24-310-T	DC24-310-T-D	DCS24-140	DCS24-140-D	DCS120-140	DCS120-140-D
Valve Model Details	Size		Close-Off psi	Cv		On/Off or Floating		On/Off			
	In.	mm		90˚	60˚	24 VAC/DC		24 VAC/DC		120 VAC	
3LNE-02S3X	2	50	175	87	66	2641	-	2759	-	2802	-
3LNE-25S3X	2.5	65	175	185	98	2929	-	-	3457	-	3521
3LNE-03S3X	3	80	175	360	171	3091	-	-	3619	-	3683
3LNE-04L3X	4	100	50	740	310	4323	-	-	4851	-	4915
3LNE-04S3X	4	100	175	740	310	-	4677	-	-	-	-
3LNE-05L3X	5	125	50	1218	470	5065	-	-	5916	-	5980
3LNE-06L3X	6	150	50	1900	757	-	6065	-	-	-	-
Adder -A						156	156	165	165	165	165
Adder -WS						527	672	Contact Bray			

3-Way, Modulating - Nylon Coated Disc

Actuator Model Details						Non-Spring Return		Spring Return	
						DCM24-310	DCM24-310-D	DCMS24-140	DCMS24-140-D
Valve Model Details	Size		Close-Off psi	Cv		Modulating			
	In.	mm		90˚	60˚	24 VAC/DC		24 VAC/DC	
3LNE-02S3X	2	50	175	87	66	2736	-	2961	-
3LNE-25S3X	2.5	65	175	185	98	3024	-	-	3759
3LNE-03S3X	3	80	175	360	171	3186	-	-	3921
3LNE-04L3X	4	100	50	740	310	4418	-	-	5153
3LNE-04S3X	4	100	175	740	310	-	4817	-	-
3LNE-05L3X	5	125	50	1218	470	5154	-	-	6218
3LNE-06L3X	6	150	50	1900	757	-	6196	-	-
Adder -A						156	155	165	166
Adder -WS						527	673	Contact Bray	

Stainless Steel Disc

3-Way, On/Off or Floating - Stainless Steel Disc

Actuator Model Details						Non-Spring Return		Spring Return			
						DC24-310-T	DC24-310-T-D	DCS24-140	DCS24-140-D	DCS120-140	DCS120-140-D
Valve Model Details	Size		Close-Off psi	Cv		On/Off or Floating		On/Off			
	In.	mm		90˚	60˚	24 VAC/DC		24 VAC/DC		120 VAC	
3LSE-02S3X	2	50	175	87	66	2767	-	2773	-	2816	-
3LSE-25S3X	2.5	65	175	185	98	2945	-	-	3473	-	3537
3LSE-03S3X	3	80	175	360	171	3105	-	-	3633	-	3697
3LSE-04L3X	4	100	50	740	310	4375	-	-	4903	-	4967
3LSE-04S3X	4	100	175	740	310	-	4729	-	-	-	-
3LSE-05L3X	5	125	50	1218	470	-	5908	-	6082	-	6146
3LSE-06L3X	6	150	50	1900	757	-	6614	-	-	-	-
Adder -A						156	156	165	165	165	165
Adder -WS						527	715	Contact Bray			

3-Way, Modulating - Stainless Steel Disc

Actuator Model Details						Non-Spring Return		Spring Return	
						DCM24-310-	DCM24-310-D	DCMS24-140	DCMS24-140-D
Valve Model Details	Size		Close-Off psi	Cv		Modulating			
	In.	mm		90˚	60˚	24 VAC/DC		24 VAC/DC	
3LSE-02S3X	2	50	175	87	66	2750	-	2975	-
3LSE-25S3X	2.5	65	175	185	98	3040	-	-	3775
3LSE-03S3X	3	80	175	360	171	3200	-	-	3935
3LSE-04L3X	4	100	50	740	310	4470	-	-	5205
3LSE-04S3X	4	100	175	740	310	-	4869	-	-
3LSE-05L3X	5	125	50	1218	470	-	6048	-	6384
3LSE-06L3X	6	150	50	1900	757	-	6754	-	-
Adder -A						156	155	165	166
Adder -WS						527	715	Contact Bray	

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
Add a -WS at the end of the part # if a weather cover is needed.
X = 3-Way Assemblies (Refer to Configuration Chart, Page 62)
-D = Dual mounted actuators



3L Series Butterfly Valves 2-Way with NSR/SR D-Series Commercial Electric Actuators

Nylon Coated Disc

2-Way, On/Off or Floating - Nylon Coated Disc

Valve Model Details	Size		Close-Off	Cv		Actuator Model Details				
						Non-Spring Return			Spring Return	
						D24-140	D24-210	D24-210-D	DS24-180	DS24-180-D
	In.	mm	psi	90˚	60˚	On/Off & Floating			On/Off	
						24 VAC/DC			24 VAC/DC	
3LNE-02S2C	2	50	175	87	66	1084	-	-	1562	-
3LNE-25S2C	2.5	65	175	185	98	1123	-	-	1601	-
3LNE-03S2C	3	80	175	360	171	-	1325	-	1618	-
3LNE-04L2C	4	100	50	740	310	-	1437	-	1899	-
3LNE-04S2C	4	100	175	740	310	-	-	1940	-	2597
3LNE-05L2C	5	125	50	1218	470	-	2080	-	-	3112
3LNE-05S2C	5	125	175	1218	470	-	-	2597	-	-
3LNE-06L2C	6	150	50	1900	757	-	-	2843	-	3190
					Adder -A	160	160	160	161	161
					Adder -WS	495	495	622	499	622

2-Way, Modulating - Nylon Coated Disc

Valve Model Details	Size		Close-Off	Cv		Actuator Model Details				
						Non-Spring Return			Spring Return	
						DM24-140	DM24-210	DM24-210-D	DMS24-180	DMS24-180-D
	In.	mm	psi	90˚	60˚	Modulating				
						24 VAC/DC			24 VAC/DC	
3LNE-02S2C	2	50	175	87	66	1351	-	-	1894	-
3LNE-25S2C	2.5	65	175	185	98	1390	-	-	1933	-
3LNE-03S2C	3	80	175	360	171	-	1511	-	1950	-
3LNE-04L2C	4	100	50	740	310	-	1623	-	3347	-
3LNE-04S2C	4	100	175	740	310	-	-	2522	-	3174
3LNE-05L2C	5	125	50	1218	470	-	2266	-	-	3689
3LNE-05S2C	5	125	175	1218	470	-	-	3179	-	-
3LNE-06L2C	6	150	50	1900	757	-	-	3425	-	3738
					Adder -A	160	160	161	160	161
					Adder -WS	495	495	622	499	622

Stainless Steel Disc

2-Way, On/Off or Floating - Stainless Steel Disc

Valve Model Details	Size		Close-Off	Cv		Actuator Model Details				
						Non-Spring Return			Spring Return	
						D24-140	D24-210	D24-210-D	DS24-180	DS24-180-D
	In.	mm	psi	90˚	60˚	On/Off & Floating			On/Off	
						24 VAC/DC			24 VAC/DC	
3LSE-02S2C	2	50	175	87	66	1091	-	-	1569	-
3LSE-25S2C	2.5	65	175	185	98	-	1316	-	1609	-
3LSE-03S2C	3	80	175	360	171	-	1332	-	1625	-
3LSE-04L2C	4	100	50	740	310	-	1463	-	1925	-
3LSE-04S2C	4	100	175	740	310	-	-	1966	-	2623
3LSE-05L2C	5	125	50	1218	470	-	2163	-	-	3195
3LSE-05S2C	5	125	175	1218	470	-	-	2680	-	-
3LSE-06L2C	6	150	50	1900	757	-	-	2924	-	-
					Adder -A	160	160	160	161	161
					Adder -WS	495	495	622	499	622

2-Way, Modulating - Stainless Steel Disc

Valve Model Details	Size		Close-Off	Cv		Actuator Model Details				
						Non-Spring Return			Spring Return	
						DM24-140	DM24-210	DM24-210-D	DMS24-180	DMS24-180-D
	In.	mm	psi	90˚	60˚	Modulating				
						24 VAC/DC			24 VAC/DC	
3LSE-02S2C	2	50	175	87	66	1358	-	-	1901	-
3LSE-25S2C	2.5	65	175	185	98	-	1502	-	1941	-
3LSE-03S2C	3	80	175	360	171	-	1518	-	1957	-
3LSE-04L2C	4	100	50	740	310	-	1649	-	3386	-
3LSE-04S2C	4	100	175	740	310	-	-	2548	-	3200
3LSE-05L2C	5	125	50	1218	470	-	2349	-	-	3772
3LSE-05S2C	5	125	175	1218	470	-	-	3262	-	-
3LSE-06L2C	6	150	50	1900	757	-	-	3506	-	-
					Adder -A	160	160	161	160	161
					Adder -WS	495	495	622	499	622

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
Add a -WS at the end of the part # if a weather cover is needed.
For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default
-D = Dual mounted actuators



Nylon Coated Disc

3-Way, On/Off or Floating - Nylon Coated Disc

Actuator Model Details						Non-Spring Return			Spring Return	
						D24-140	D24-210	D24-210-D	DS24-180	DS24-180-D
Valve Model Details	Size		Close-Off psi	Cv		On/Off & Floating			On/Off	
	In.	mm		90˚	60˚	24 VAC/DC			24 VAC/DC	
3LNE-02S3X	2	50	175	87	66	2388	-	-	2866	-
3LNE-25S3X	2.5	65	175	185	98	-	2861	-	3154	-
3LNE-03S3X	3	80	175	360	171	-	3023	-	-	4014
3LNE-04L3X	4	100	50	740	310	-	4255	-	-	5246
3LNE-04S3X	4	100	175	740	310	-	-	4731	-	5246
3LNE-05L3X	5	125	50	1218	470	-	-	5448	-	6311
3LNE-06L3X	6	150	50	1900	757	-	-	6116	-	-
Adder -A						160	160	160	161	161
Adder -WS						495	495	622	499	622

3-Way, Modulating - Nylon Coated Disc

Actuator Model Details						Non-Spring Return			Spring Return	
						DM24-140	DM24-210	DM24-210-D	DMS24-180	DMS24-180-D
Valve Model Details	Size		Close-Off psi	Cv		Modulating				
	In.	mm		90˚	60˚	24 VAC/DC			24 VAC/DC	
3LNE-02S3X	2	50	175	87	66	2655	-	-	3198	-
3LNE-25S3X	2.5	65	175	185	98	-	3047	-	3486	-
3LNE-03S3X	3	80	175	360	171	-	3023	-	-	4591
3LNE-04L3X	4	100	50	740	310	-	4441	-	-	5823
3LNE-04S3X	4	100	175	740	310	-	-	5313	-	5823
3LNE-05L3X	5	125	50	1218	470	-	-	5995	-	6888
3LNE-06L3X	6	150	50	1900	757	-	-	6663	-	-
Adder -A						160	160	161	160	161
Adder -WS						495	495	622	499	622

Stainless Steel Disc

3-Way, On/Off or Floating - Stainless Steel Disc

Actuator Model Details						Non-Spring Return		Spring Return	
						D24-210	D24-210-D	DS24-180	DS24-180-D
Valve Model Details	Size		Close-Off psi	Cv		On/Off & Floating		On/Off	
	In.	mm		90˚	60˚	24 VAC/DC		24 VAC/DC	
3LSE-02S3X	2	50	175	87	66	2587	-	2880	-
3LSE-25S3X	2.5	65	175	185	98	2877	-	3170	-
3LSE-03S3X	3	80	175	360	171	-	3513	-	4028
3LSE-04L3X	4	100	50	740	310	4307	-	-	5298
3LSE-04S3X	4	100	175	740	310	-	4783	-	-
3LSE-05L3X	5	125	50	1218	470	-	5962	-	6477
Adder -A						160	160	161	161
Adder -WS						495	622	499	622

3-Way, Modulating - Stainless Steel Disc

Actuator Model Details						Non-Spring Return		Spring Return	
						DM24-210	DM24-210-D	DMS24-180	DMS24-180-D
Valve Model Details	Size		Close-Off psi	Cv		Modulating			
	In.	mm		90˚	60˚	24 VAC/DC		24 VAC/DC	
3LSE-02S3X	2	50	175	87	66	2773	-	3212	-
3LSE-25S3X	2.5	65	175	185	98	3063	-	3502	-
3LSE-03S3X	3	80	175	360	171	-	3513	-	4605
3LSE-04L3X	4	100	50	740	310	4493	-	-	5875
3LSE-04S3X	4	100	175	740	310	-	5365	-	-
3LSE-05L3X	5	125	50	1218	470	-	6544	-	7054
Adder -A						160	161	160	161
Adder -WS						495	622	499	622

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
X =3-Way Assemblies (Refer to Configuration Chart, Page 62)
Add a -WS at the end of the part # if a weather cover is needed.
-D = Dual mounted actuators



3L Series Butterfly Valves 2-Way with Industrial Electric On/Off Actuators

Nylon Coated Disc

2-Way, 24 VAC and 120 VAC, On/Off - Nylon Coated Disc

Actuator Model Details						Series 70 & AU Series		Series 70		
Valve Model Details	Size		Close-Off psi	Cv		On/Off	Price	On/Off	Price	-BBU Adder (24V Units Only)
	In.	mm		90°	60°	120 VAC		24 VAC		
3LNE-02S2C	2	50	175	87	66	70-0081H	2592	70-24-0081H	2710	2583
3LNE-25S2C	2.5	65	175	185	98	70-0081H	2618	70-24-0081H	3094	2920
3LNE-03S2C	3	80	175	360	171	70-0081H	2669	70-24-0081H	3169	2977
3LNE-04L2C	4	100	50	740	310	70-0081H	3460	70-24-0081H	3458	3020
3LNE-04S2C	4	100	175	740	310	70-0081H	3460	70-24-0081H	3458	3020
3LNE-05L2C	5	125	50	1218	470	70-0081H	3705	70-24-0081H	3699	2869
3LNE-05S2C	5	125	175	1218	470	70-0081H	3705	70-24-0081H	3699	2869
3LNE-06L2C	6	150	50	1900	757	70-0081H	4429	70-24-0081H	4421	3256
3LNE-06S2C	6	150	175	1900	757	70-0081H	4429	70-24-0081H	4421	3256
3LNE-08L2C	8	200	50	3765	1247	70-0121H	6785	70-24-0201H	6635	3244
3LNE-08S2C	8	200	175	3765	1247	70-0121H	6785	70-24-0201H	6635	3244
3LNE-10L2C	10	250	50	6661	2005	70-0121H	7287	70-24-0201H	7685	3686
3LNE-10S2C	10	250	175	6661	2005	70-0201H	8015	70-24-0201H	7685	3686
3LNE-12L2C	12	300	50	10066	2868	70-0201H	8932	70-24-0201H	8602	3686
3LNE-12S2C	12	300	175	10066	2868	70-E301H	10673	70-24-0501H	12789	3688
3LNE-14L2C	14	350	50	11598	3328	70-0501H	13122	70-24-0501H	13123	3688
3LNE-14S2C	14	350	150	11598	3328	70-0501H	13122	70-24-0501H	13123	3688
3LNE-16L2C	16	400	50	15395	4440	70-0501H	16372	70-24-0501H	16373	3688
3LNE-16S2C	16	400	150	15395	4440	70-0651H	16881	-	-	-
3LNE-18L2C	18	450	50	20120	5509	70-0651H	20965	-	-	-
3LNE-18S2C	18	450	150	20120	5509	70-1300H	22684	-	-	-
3LNE-20L2C	20	500	50	25329	7056	70-1300H	25519	-	-	-
3LNE-20S2C	20	500	150	25329	7056	70-1800H	26870	-	-	-
3LNE-24L2C	24	600	50	39396	10267	70-1800H	34041	-	-	-
3LNE-24S2C	24	600	150	39396	10267	AU-4068*	60152	-	-	-
NYF2-C301	30	750	75	52443	18090	AU-4068*	68428	-	-	-
NYF2-C300	30	750	150	52443	18090	AU-7080*	76858	-	-	-

Stainless Steel Disc

2-Way, 24 VAC and 120 VAC, On/Off - Stainless Steel Disc

Actuator Model Details						Series 70 & AU Series		Series 70		
Valve Model Details	Size		Close-Off psi	Cv		On/Off	Price	On/Off	Price	-BBU Adder (24V Units Only)
	In.	mm		90°	60°	120 VAC		24 VAC		
3LSE-02S2C	2	50	175	87	66	70-0081H	2597	70-24-0081H	2715	2583
3LSE-25S2C	2.5	65	175	185	98	70-0081H	2624	70-24-0081H	3101	2919
3LSE-03S2C	3	80	175	360	171	70-0081H	2674	70-24-0081H	3175	2977
3LSE-04L2C	4	100	50	740	310	70-0081H	3481	70-24-0081H	3480	3020
3LSE-04S2C	4	100	175	740	310	70-0081H	3481	70-24-0081H	3480	3020
3LSE-05L2C	5	125	50	1218	470	70-0081H	3769	70-24-0081H	3765	2870
3LSE-05S2C	5	125	175	1218	470	70-0081H	3769	70-24-0081H	3765	2870
3LSE-06L2C	6	150	50	1900	757	70-0081H	4500	70-24-0081H	4494	3256
3LSE-06S2C	6	150	175	1900	757	70-0081H	4500	70-24-0081H	4494	3256
3LSE-08L2C	8	200	50	3765	1247	70-0121H	6575	70-24-0201H	6937	3354
3LSE-08S2C	8	200	175	3765	1247	70-0201H	7237	70-24-0201H	6937	3354
3LSE-10L2C	10	250	50	6661	2005	70-0121H	7412	70-24-0201H	7810	3686
3LSE-10S2C	10	250	175	6661	2005	70-0201H	8140	70-24-0201H	7810	3686
3LSE-12L2C	12	300	50	10066	2868	70-0201H	9765	70-24-0201H	9435	3686
3LSE-12S2C	12	300	175	10066	2868	70-E301H	11506	70-24-0501H	13622	3688
3LSE-14S2C	14	350	150	11598	3328	70-0501H	14621	70-24-0501H	14622	3688
3LSE-16S2C	16	400	150	15395	4440	70-1300H	20517	-	-	-
3LSE-18S2C	18	450	150	20120	5509	70-1300H	26021	-	-	-
3LSE-20S2C	20	500	150	25329	7056	70-1800H	31541	-	-	-
3LSE-24S2C	24	600	150	39396	10267	AU-4068*	63486	-	-	-

Options/Adders
*Heaters standard in AU-Series
For Battery Back-Up Failsafe Option (BBU) on 24 VAC actuators, add "-BBU".

For Battery Back-UP Failsafe units:
N = Normally Open
C = Normally Closed - Factory default



Nylon Coated Disc

2-Way, 24 VAC and 120 VAC, Modulating - Nylon Coated Disc

Actuator Model Details						Series 70 & AU Series		Series 70		
Valve Model Details	Size		Close-Off psi	Cv		Modulating	Price	Modulating	Price	-BBU Adder (24V Units Only)
	In.	mm		90˚	60˚	120 VAC		24 VAC		
3LNE-02S2C	2	50	175	87	66	70-0081SVH	**3084**	70-24-0081SVH	**3310**	**2209**
3LNE-25S2C	2.5	65	175	185	98	70-0081SVH	**3470**	70-24-0081SVH	**3676**	**2436**
3LNE-03S2C	3	80	175	360	171	70-0081SVH	**3516**	70-24-0081SVH	**3762**	**2487**
3LNE-04L2C	4	100	50	740	310	70-0081SVH	**3755**	70-24-0081SVH	**3776**	**2379**
3LNE-04S2C	4	100	175	740	310	70-0081SVH	**3755**	70-24-0081SVH	**3776**	**2379**
3LNE-05L2C	5	125	50	1218	470	70-0081SVH	**3872**	70-24-0081SVH	**3914**	**2275**
3LNE-05S2C	5	125	175	1218	470	70-0081SVH	**3872**	70-24-0081SVH	**3914**	**2275**
3LNE-06L2C	6	150	50	1900	757	70-0081SVH	**6229**	70-24-0081SVH	**6285**	**3522**
3LNE-06S2C	6	150	175	1900	757	70-0081SVH	**6229**	70-24-0081SVH	**6285**	**3522**
3LNE-08L2C	8	200	50	3765	1247	70-0121SVH	**8664**	70-24-0201SVH	**8668**	**3319**
3LNE-08S2C	8	200	175	3765	1247	70-0121SVH	**8664**	70-24-0201SVH	**8668**	**3319**
3LNE-10L2C	10	250	50	6661	2005	70-0121SVH	**9265**	70-24-0201SVH	**9776**	**3688**
3LNE-10S2C	10	250	175	6661	2005	70-0201SVH	**9993**	70-24-0201SVH	**9776**	**3688**
3LNE-12L2C	12	300	50	10066	2868	70-0201SVH	**10910**	70-24-0201SVH	**10693**	**3688**
3LNE-12S2C	12	300	175	10066	2868	70-E301SVH	**12871**	70-24-0501SVH	**14884**	**3688**
3LNE-14L2C	14	350	50	11598	3328	70-0501SVH	**15020**	70-24-0501SVH	**15218**	**3688**
3LNE-14S2C	14	350	150	11598	3328	70-0501SVH	**15020**	70-24-0501SVH	**15218**	**3688**
3LNE-16L2C	16	400	50	15395	4440	70-0501SVH	**18270**	70-24-0501SVH	**18468**	**3688**
3LNE-16S2C	16	400	150	15395	4440	70-0651SVH	**18776**	-	-	-
3LNE-18L2C	18	450	50	20120	5509	70-0651SVH	**22860**	-	-	-
3LNE-18S2C	18	450	150	20120	5509	70-1300SVH	**24682**	-	-	-
3LNE-20L2C	20	500	50	25329	7056	70-1300SVH	**27517**	-	-	-
3LNE-20S2C	20	500	150	25329	7056	70-1800SVH	**28524**	-	-	-
3LNE-24L2C	24	600	50	39396	10267	70-1800SVH	**35695**	-	-	-
3LNE-24S2C	24	600	150	39396	10267	AU-4068SV*	**62562**	-	-	-
NYF2-C301	30	750	75	52443	18090	AU-4068SV*	**70838**	-	-	-
NYF2-C300	30	750	150	52443	18090	AU-7080SV*	**79267**	-	-	-

Stainless Steel Disc

2-Way, 24 VAC and 120 VAC, Modulating - Stainless Steel Disc

Actuator Model Details										
Valve Model Details	Size		Close-Off psi	Cv		Modulating	Price	Modulating	Price	-BBU Adder (24V Units Only)
	In.	mm		90˚	60˚	120 VAC		24 VAC		
3LSE-02S2C	2	50	175	87	66	70-0081SVH	**3088**	70-24-0081SVH	**3314**	**2209**
3LSE-25S2C	2.5	65	175	185	98	70-0081SVH	**3475**	70-24-0081SVH	**3681**	**2437**
3LSE-03S2C	3	80	175	360	171	70-0081SVH	**3520**	70-24-0081SVH	**3767**	**2487**
3LSE-04L2C	4	100	50	740	310	70-0081SVH	**3771**	70-24-0081SVH	**3792**	**2379**
3LSE-04S2C	4	100	175	740	310	70-0081SVH	**3771**	70-24-0081SVH	**3792**	**2379**
3LSE-05L2C	5	125	50	1218	470	70-0081SVH	**3920**	70-24-0081SVH	**3963**	**2275**
3LSE-05S2C	5	125	175	1218	470	70-0081SVH	**3920**	70-24-0081SVH	**3963**	**2275**
3LSE-06L2C	6	150	50	1900	757	70-0081SVH	**6302**	70-24-0081SVH	**6358**	**3523**
3LSE-06S2C	6	150	175	1900	757	70-0081SVH	**6302**	70-24-0081SVH	**6358**	**3523**
3LSE-08L2C	8	200	50	3765	1247	70-0121SVH	**8375**	70-24-0201SVH	**8840**	**3356**
3LSE-08S2C	8	200	175	3765	1247	70-0201SVH	**9037**	70-24-0201SVH	**8840**	**3356**
3LSE-10L2C	10	250	50	6661	2005	70-0121SVH	**9390**	70-24-0201SVH	**9901**	**3688**
3LSE-10S2C	10	250	175	6661	2005	70-0201SVH	**10118**	70-24-0201SVH	**9901**	**3688**
3LSE-12L2C	12	300	50	10066	2868	70-0201SVH	**11743**	70-24-0201SVH	**11526**	**3688**
3LSE-12S2C	12	300	175	10066	2868	70-E301SVH	**13704**	70-24-0501SVH	**15717**	**3688**
3LSE-14S2C	14	350	150	11598	3328	70-0501SVH	**16519**	70-24-0501SVH	**16717**	**3688**
3LSE-16S2C	16	400	150	15395	4440	70-1300SVH	**22515**	-	-	-
3LSE-18S2C	18	450	150	20120	5509	70-1300SVH	**28019**	-	-	-
3LSE-20S2C	20	500	150	25329	7056	70-1800SVH	**33195**	-	-	-
3LSE-24S2C	24	600	150	39396	10267	AU-4068SV*	**65896**	-	-	-

Options/Adders
*Heaters standard in AU-Series
Upon Loss of Signal on Servo units:
N = Normally Open (reverse acting) C = Normally Closed - Factory default
For Battery Back-Up Failsafe Option (BBU) on 24 VAC actuators, add "-BBU" For Battery Back-UP Failsafe units:
N = Normally Open
C = Normally Closed - Factory default



3L Series Butterfly Valves 3-Way with Industrial Electric On/Off Actuators

Nylon Coated Disc

3-Way, 24 VAC and 120 VAC, On/Off - Nylon Coated Disc

Actuator Model Details						Series 70 & AU Series		Series 70		
Valve Model Details	Size		Close-Off psi	Cv		On/Off	Price	On/Off	Price	-BBU Adder (24V Units Only)
	In.	mm		90°	60°	120 VAC		24 VAC		
3LNE-02S3x	2	50	175	87	66	70-0081H	3660	70-24-0081H	3548	2289
3LNE-25S3x	2.5	65	175	185	98	70-0081H	3904	70-24-0081H	3790	2326
3LNE-03S3x	3	80	175	360	171	70-0081H	6168	70-24-0081H	5993	3578
3LNE-04L3x	4	100	50	740	310	70-0081H	7400	70-24-0081H	7225	3578
3LNE-04S3x	4	100	175	740	310	70-0081H	7400	70-24-0081H	7225	3578
3LNE-05L3x	5	125	50	1218	470	70-0081H	8465	70-24-0081H	8290	3578
3LNE-05S3x	5	125	175	1218	470	70-0081H	8465	70-24-0081H	8290	3578
3LNE-06L3x	6	150	50	1900	757	70-0081H	9175	70-24-0081H	9000	3578
3LNE-06S3x	6	150	175	1900	757	70-0081H	9175	70-24-0081H	9000	3578
3LNE-08L3x	8	200	50	3765	1247	70-0121H	10839	70-24-0201H	11217	3501
3LNE-08S3x	8	200	175	3765	1247	70-0201H	11530	70-24-0201H	11217	3501
3LNE-10L3x	10	250	50	6661	2005	70-0201H	12609	70-24-0201H	12279	3686
3LNE-10S3x	10	250	175	6661	2005	70-E301H	14350	70-24-0501H	16400	3688
3LNE-12L3x	12	300	50	10066	2868	70-0201H	15117	70-24-0201H	14787	3686
3LNE-12S3x	12	300	175	10066	2868	70-0501H	18907	70-24-0501H	18908	3688
3LNE-14L3x	14	350	50	11598	3328	70-0501H	30845	70-24-0501H	30846	3688
3LNE-14S3x	14	350	150	11598	3328	70-0651H	31354	-	-	-
3LNE-16L3x	16	400	50	15395	4440	70-0651H	38694	-	-	-
3LNE-16S3x	16	400	150	15395	4440	70-1300H	40413	-	-	-
3LNE-18L3x	18	450	50	20120	5509	70-1300H	52787	-	-	-
3LNE-18S3x	18	450	150	20120	5509	70-1800H	54138	-	-	-
3LNE-20L3x	20	500	50	25329	7056	70-1800H	62330	-	-	-
3LNE-20S3x	20	500	150	25329	7056	AU-4068*	84656	-	-	-

Stainless Steel Disc

3-Way, 24 VAC and 120 VAC, On/Off - Stainless Steel Disc

Actuator Model Details						Series 70 & AU Series		Series 70		
Valve Model Details	Size		Close-Off psi	Cv		On/Off	Price	On/Off	Price	-BBU Adder (24V Units Only)
	In.	mm		90°	60°	120 VAC		24 VAC		
3LSE-02S3x	2	50	175	87	66	70-0081H	3668	70-24-0081H	3556	2290
3LSE-25S3x	2.5	65	175	185	98	70-0081H	3914	70-24-0081H	3801	2325
3LSE-03S3x	3	80	175	360	171	70-0081H	6182	70-24-0081H	6007	3578
3LSE-04L3x	4	100	50	740	310	70-0081H	7452	70-24-0081H	7277	3578
3LSE-04S3x	4	100	175	740	310	70-0081H	7452	70-24-0081H	7277	3578
3LSE-05L3x	5	125	50	1218	470	70-0081H	8631	70-24-0081H	8456	3578
3LSE-05S3x	5	125	175	1218	470	70-0081H	8631	70-24-0081H	8456	3578
3LSE-06L3x	6	150	50	1900	757	70-0081H	9337	70-24-0081H	9162	3578
3LSE-06S3x	6	150	175	1900	757	70-0081H	9337	70-24-0081H	9162	3578
3LSE-08L3x	8	200	50	3765	1247	70-0121H	10996	70-24-0201H	11374	3502
3LSE-08S3x	8	200	175	3765	1247	70-0201H	11688	70-24-0201H	11374	3502
3LSE-10L3x	10	250	50	6661	2005	70-0201H	12859	70-24-0201H	12529	3686
3LSE-10S3x	10	250	175	6661	2005	70-E301H	14600	70-24-0501H	16650	3688
3LSE-12L3x	12	300	50	10066	2868	70-E301H	18524	70-24-0501H	20574	3688
3LSE-12S3x	12	300	175	10066	2868	70-0501H	20573	70-24-0501H	20574	3688
3LSE-14S3x	14	350	150	11598	3328	70-0651H	34352	-	-	-
3LSE-16S3x	16	400	150	15395	4440	70-1300H	44247	-	-	-
3LSE-18S3x	18	450	150	20120	5509	70-1800H	60812	-	-	-
3LSE-20S3x	20	500	150	25329	7056	AU-4068*	93998	-	-	-

Options/Adders
*Heaters standard in AU-Series
X = 3-Way Assemblies (Refer to Configuration Chart, Page 62)
For Battery Back-Up Failsafe Option (BBU) on 24 VAC actuators, add "-BBU"



3L Series Butterfly Valves 3-Way with Industrial Electric Modulating Actuators

Nylon Coated Disc

3-Way, 24 VAC and 120 VAC, Modulating - Nylon Coated Disc

Actuator Model Details						Series 70 & AU Series		Series 70		
Valve Model Details	Size		Close-Off psi	Cv		Modulating	Price	Modulating	Price	-BBU Adder (24V Units Only)
	In.	mm		90˚	60˚	120 VAC		24 VAC		
3LNE-02S3x	2	50	175	87	66	70-0081SVH	**4898**	70-24-0081SVH	**4849**	**2471**
3LNE-25S3x	2.5	65	175	185	98	70-0081SVH	**5162**	70-24-0081SVH	**5112**	**2510**
3LNE-03S3x	3	80	175	360	171	70-0081SVH	**8103**	70-24-0081SVH	**8026**	**3862**
3LNE-04L3x	4	100	50	740	310	70-0081SVH	**9335**	70-24-0081SVH	**9258**	**3862**
3LNE-04S3x	4	100	175	740	310	70-0081SVH	**9335**	70-24-0081SVH	**9258**	**3862**
3LNE-05L3x	5	125	50	1218	470	70-0081SVH	**10400**	70-24-0081SVH	**10323**	**3862**
3LNE-05S3x	5	125	175	1218	470	70-0081SVH	**10400**	70-24-0081SVH	**10323**	**3862**
3LNE-06L3x	6	150	50	1900	757	70-0081SVH	**11110**	70-24-0081SVH	**11033**	**3862**
3LNE-06S3x	6	150	175	1900	757	70-0081SVH	**11110**	70-24-0081SVH	**11033**	**3862**
3LNE-08L3x	8	200	50	3765	1247	70-0121SVH	**12718**	70-24-0201SVH	**13203**	**3504**
3LNE-08S3x	8	200	175	3765	1247	70-0201SVH	**13409**	70-24-0201SVH	**13203**	**3504**
3LNE-10L3x	10	250	50	6661	2005	70-0201SVH	**14587**	70-24-0201SVH	**14370**	**3688**
3LNE-10S3x	10	250	175	6661	2005	70-E301SVH	**16548**	70-24-0501SVH	**18495**	**3688**
3LNE-12L3x	12	300	50	10066	2868	70-0201SVH	**17095**	70-24-0201SVH	**16878**	**3688**
3LNE-12S3x	12	300	175	10066	2868	70-0501SVH	**20805**	70-24-0501SVH	**21003**	**3688**
3LNE-14L3x	14	350	50	11598	3328	70-0501SVH	**32743**	70-24-0501SVH	**32941**	**3688**
3LNE-14S3x	14	350	150	11598	3328	70-0651SVH	**33249**	-	-	-
3LNE-16L3x	16	400	50	15395	4440	70-0651SVH	**40589**	-	-	-
3LNE-16S3x	16	400	150	15395	4440	70-1300SVH	**42411**	-	-	-
3LNE-18L3x	18	450	50	20120	5509	70-1300SVH	**54785**	-	-	-
3LNE-18S3x	18	450	150	20120	5509	70-1800SVH	**55792**	-	-	-
3LNE-20L3x	20	500	50	25329	7056	70-1800SVH	**63984**	-	-	-
3LNE-20S3x	20	500	150	25329	7056	AU-4068SV*	**87066**	-	-	-

Stainless Steel Disc

3-Way, 24 VAC and 120 VAC, Modulating - Stainless Steel Disc

Actuator Model Details										
Valve Model Details	Size		Close-Off psi	Cv		Modulating	Price	Modulating	Price	-BBU Adder (24V Units Only)
	In.	mm		90˚	60˚	120 VAC		24 VAC		
3LSE-02S3x	2	50	175	87	66	70-0081SVH	**4907**	70-24-0081SVH	**4858**	**2471**
3LSE-25S3x	2.5	65	175	185	98	70-0081SVH	**5172**	70-24-0081SVH	**5122**	**2510**
3LSE-03S3x	3	80	175	360	171	70-0081SVH	**8117**	70-24-0081SVH	**8040**	**3862**
3LSE-04L3x	4	100	50	740	310	70-0081SVH	**9387**	70-24-0081SVH	**9310**	**3862**
3LSE-04S3x	4	100	175	740	310	70-0081SVH	**9387**	70-24-0081SVH	**9310**	**3862**
3LSE-05L3x	5	125	50	1218	470	70-0081SVH	**10566**	70-24-0081SVH	**10489**	**3862**
3LSE-05S3x	5	125	175	1218	470	70-0081SVH	**10566**	70-24-0081SVH	**10489**	**3862**
3LSE-06L3x	6	150	50	1900	757	70-0081SVH	**11272**	70-24-0081SVH	**11195**	**3862**
3LSE-06S3x	6	150	175	1900	757	70-0081SVH	**11272**	70-24-0081SVH	**11195**	**3862**
3LSE-08L3x	8	200	50	3765	1247	70-0121SVH	**12875**	70-24-0201SVH	**13361**	**3503**
3LSE-08S3x	8	200	175	3765	1247	70-0201SVH	**13567**	70-24-0201SVH	**13361**	**3503**
3LSE-10L3x	10	250	50	6661	2005	70-0201SVH	**14837**	70-24-0201SVH	**14620**	**3688**
3LSE-10S3x	10	250	175	6661	2005	70-E301SVH	**16798**	70-24-0501SVH	**18745**	**3688**
3LSE-12L3x	12	300	50	10066	2868	70-E301SVH	**20722**	70-24-0501SVH	**22669**	**3688**
3LSE-12S3x	12	300	175	10066	2868	70-0501SVH	**22471**	70-24-0501SVH	**22669**	**3688**
3LSE-14S3x	14	350	150	11598	3328	70-0651SVH	**36247**	-	-	-
3LSE-16S3x	16	400	150	15395	4440	70-1300SVH	**46245**	-	-	-
3LSE-18S3x	18	450	150	20120	5509	70-1800SVH	**62466**	-	-	-
3LSE-20S3x	20	500	150	25329	7056	AU-4068SV*	**96408**	-	-	-

Options/Adders
*Heaters standard in AU-Series
X = 3-Way Assemblies (Refer to Configuration Chart, Page 62)
For Battery Back-Up Failsafe Option (BBU) on 24 VAC actuators, add "-BBU"



3L Series Butterfly Valves 2-Way with Series 92 Double Acting Pneumatic Actuators

Nylon Coated Disc

2-Way, Double Acting Pneumatic - Nylon Coated Disc

Actuator Model Details													
Valve Model Details	Size		Close-Off psi	Cv		92-063	92-083	92-119	92-128	92-160	92-210	92-255	Adder for Manual Override*
	In.	mm		90°	60°								
3LNE-02S2C	2	50	175	87	66	1337	-	-	-	-	-	-	1114
3LNE-25S2C	2.5	65	175	185	98	1337	-	-	-	-	-	-	1114
3LNE-03S2C	3	80	175	360	171	1421	-	-	-	-	-	-	1114
3LNE-04L2C	4	100	50	740	310	-	1749	-	-	-	-	-	1114
3LNE-04S2C	4	100	175	740	310	-	1749	-	-	-	-	-	1114
3LNE-05L2C	5	125	50	1218	470	-	1954	-	-	-	-	-	1114
3LNE-05S2C	5	125	175	1218	470	-	1954	-	-	-	-	-	1114
3LNE-06L2C	6	150	50	1900	757	-	2215	-	-	-	-	-	1114
3LNE-06S2C	6	150	175	1900	757	-	2215	-	-	-	-	-	1646
3LNE-08L2C	8	200	50	3765	1247	-	-	3341	-	-	-	-	1646
3LNE-08S2C	8	200	175	3765	1247	-	-	3341	-	-	-	-	1646
3LNE-10L2C	10	250	50	6661	2005	-	-	4017	-	-	-	-	1646
3LNE-10S2C	10	250	175	6661	2005	-	-	4017	-	-	-	-	1646
3LNE-12L2C	12	300	50	10066	2868	-	-	4465	-	-	-	-	1646
3LNE-12S2C	12	300	175	10066	2868	-	-	-	5794	-	-	-	1646
3LNE-14L2C	14	350	50	11598	3328	-	-	-	6935	-	-	-	1646
3LNE-14S2C	14	350	150	11598	3328	-	-	-	-	8277	-	-	2276
3LNE-16L2C	16	400	50	15395	4440	-	-	-	-	10289	-	-	2276
3LNE-16S2C	16	400	150	15395	4440	-	-	-	-	-	11966	-	2276
3LNE-18L2C	18	450	50	20120	5509	-	-	-	-	-	14356	-	2658
3LNE-18S2C	18	450	150	20120	5509	-	-	-	-	-	14356	-	2658
3LNE-20L2C	20	500	50	25329	7056	-	-	-	-	-	17271	-	3019
3LNE-20S2C	20	500	150	25329	7056	-	-	-	-	-	-	27951	3019
3LNE-24L2C	24	600	50	39396	10267	-	-	-	-	-	-	32254	13642
NYF2-C301	30	750	75	52443	18090	-	-	-	-	-	-	36499	13642

2-Way, Spring Return Pneumatic - Nylon Coated Disc

Actuator Model Details						Series 98 Pneumatic Scotch Yoke (Fail Close)	
Valve Model Details	Size		Close-Off psi	Cv		Part Number	Price
	In.	mm		90°	60°		
3LNE-24S2C	24	600	150	39396	10267	45E2-12-DA	36423
NYF2-C300	30	750	150	52443	18090	14E3-12-DA-C	54746

Stainless Steel Disc

2-Way, Double Acting Pneumatic - Stainless Steel Disc

Actuator Model Details													
Valve Model Details	Size		Close-Off psi	Cv		92-063	92-083	92-119	92-128	92-160	92-210	92-255	Adder for Manual Override*
	In.	mm		90°	60°								
3LSE-02S2C	2	50	175	87	66	1320	-	-	-	-	-	-	1114
3LSE-25S2C	2.5	65	175	185	98	1369	-	-	-	-	-	-	1114
3LSE-03S2C	3	80	175	360	171	1454	-	-	-	-	-	-	1114
3LSE-04L2C	4	100	50	740	310	-	1825	-	-	-	-	-	1114
3LSE-04S2C	4	100	175	740	310	-	1825	-	-	-	-	-	1114
3LSE-05L2C	5	125	50	1218	470	-	2044	-	-	-	-	-	1114
3LSE-05S2C	5	125	175	1218	470	-	2044	-	-	-	-	-	1114
3LSE-06L2C	6	150	50	1900	757	-	2356	-	-	-	-	-	1114
3LSE-06S2C	6	150	175	1900	757	-	2356	-	-	-	-	-	1646
3LSE-08L2C	8	200	50	3765	1247	-	-	3628	-	-	-	-	1646
3LSE-08S2C	8	200	175	3765	1247	-	-	3628	-	-	-	-	1646
3LSE-10L2C	10	250	50	6661	2005	-	-	4577	-	-	-	-	1646
3LSE-10S2C	10	250	175	6661	2005	-	-	4577	-	-	-	-	1646
3LSE-12L2C	12	300	50	10066	2868	-	-	5667	-	-	-	-	1646
3LSE-12S2C	12	300	175	10066	2868	-	-	-	6913	-	-	-	1646
3LSE-14S2C	14	350	150	11598	3328	-	-	-	-	9796	-	-	2276
3LSE-16S2C	16	400	150	15395	4440	-	-	-	-	-	14339	-	2276
3LSE-18S2C	18	450	150	20120	5509	-	-	-	-	-	17994	-	2658
3LSE-20S2C	20	500	150	25329	7056	-	-	-	-	-	-	32342	3019

Options/Adders
* For Manual Override, add "-5" to the end of the part number.
For additional options and adders, see Pages 55 & 56.



Nylon Coated Disc

3-Way, Double Acting Pneumatic - Nylon Coated Disc

Actuator Model Details											
Valve Model Details	Size		Close-Off psi	Cv		92-083	92-119	92-160	92-210	92-255	Adder for Manual Override*
	In.	mm		90˚	60˚						
3LNE-02S3X	2	50	175	87	66	3577	-	-	-	-	1114
3LNE-25S3X	2.5	65	175	185	98	3718	-	-	-	-	1114
3LNE-03S3X	3	80	175	360	171	3861	-	-	-	-	1114
3LNE-04L3X	4	100	50	740	310	4605	-	-	-	-	1114
3LNE-04S3X	4	100	175	740	310	4605	-	-	-	-	1114
3LNE-05L3X	5	125	50	1218	470	5935	-	-	-	-	1114
3LNE-05S3X	5	125	175	1218	470	6103	-	-	-	-	1114
3LNE-06L3X	6	150	50	1900	757	6433	-	-	-	-	1114
3LNE-06S3X	6	150	175	1900	757	6433	-	-	-	-	1646
3LNE-08L3X	8	200	50	3765	1247	-	9199	-	-	-	1646
3LNE-08S3X	8	200	175	3765	1247	-	9199	-	-	-	1646
3LNE-10L3X	10	250	50	6661	2005	-	10992	-	-	-	1646
3LNE-10S3X	10	250	175	6661	2005	-	10992	-	-	-	1646
3LNE-12L3X	12	300	50	10066	2868	-	14853	-	-	-	1646
3LNE-12S3X	12	300	175	10066	2868	-	-	20146	-	-	1646
3LNE-14L3X	14	350	50	11598	3328	-	-	28778	-	-	1646
3LNE-14S3X	14	350	150	11598	3328	-	-	-	32379	-	2276
3LNE-16L3X	16	400	50	15395	4440	-	-	-	40459	-	2276
3LNE-16S3X	16	400	150	15395	4440	-	-	-	-	51439	3019
3LNE-18L3X	18	450	50	20120	5509	-	-	-	45568	-	2658
3LNE-18S3X	18	450	150	20120	5509	-	-	-	-	56868	3019
3LNE-20L3X	20	500	50	25329	7056	-	-	-	54213	-	3019
3LNE-20S3X	20	500	150	25329	7056	-	-	-	-	66361	3019

Stainless Steel Disc

3-Way, Double Acting Pneumatic - Stainless Steel Disc

Actuator Model Details												
Valve Model Details	Size		Close-Off psi	Cv		92-083	92-119	92-128	92-160	92-210	92-255	Adder for Manual Override*
	In.	mm		90˚	60˚							
3LSE-02S3X	2	50	175	87	66	3629	-	-	-	-	-	1114
3LSE-25S3X	2.5	65	175	185	98	3780	-	-	-	-	-	1114
3LSE-03S3X	3	80	175	360	171	3930	-	-	-	-	-	1114
3LSE-04L3X	4	100	50	740	310	4758	-	-	-	-	-	1114
3LSE-04S3X	4	100	175	740	310	4896	-	-	-	-	-	1114
3LSE-05L3X	5	125	50	1218	470	5996	-	-	-	-	-	1114
3LSE-05S3X	5	125	175	1218	470	6283	-	-	-	-	-	1114
3LSE-06L3X	6	150	50	1900	757	6715	-	-	-	-	-	1114
3LSE-06S3X	6	150	175	1900	757	6715	-	-	-	-	-	1646
3LSE-08L3X	8	200	50	3765	1247	-	9774	-	-	-	-	1646
3LSE-08S3X	8	200	175	3765	1247	-	9774	-	-	-	-	1646
3LSE-10L3X	10	250	50	6661	2005	-	12112	-	-	-	-	1646
3LSE-10S3X	10	250	175	6661	2005	-	-	12124	-	-	-	1646
3LSE-12L3X	12	300	50	10066	2868	-	17090	-	-	-	-	1646
3LSE-12S3X	12	300	175	10066	2868	-	-	-	22383	-	-	1646
3LSE-14S3X	14	350	150	11598	3328	-	-	-	-	35421	-	2276
3LSE-16S3X	16	400	150	15395	4440	-	-	-	-	-	56186	3019
3LSE-18S3X	18	450	150	20120	5509	-	-	-	-	-	64999	3019
3LSE-20S3X	20	500	150	25329	7056	-	-	-	-	-	75142	3019

Options/Adders
X = 3-Way Assemblies (Refer to Configuration Chart, Page 62)
* For Manual Override, add "-5" to the end of the part number.
For additional options and adders, see Pages 55 & 56.



3L Series Butterfly Valves 2-Way with Series 93 & 98 Spring Return Pneumatic Actuators

Nylon Coated Disc

2-Way, Spring Return Pneumatic - Nylon Coated Disc

Actuator Model Details										
Valve Model Details	Size		Close-Off psi	Cv		Normally Closed (Fail Closed)	Price	Normally Open (Fail Open)	Price	Adder for Manual Override*
	In.	mm		90˚	60˚					
3LNE-02S2C	2	50	175	87	66	93-0833	1929	93-0832	1862	1114
3LNE-25S2C	2.5	65	175	185	98	93-0833	2038	93-0832	1982	1114
3LNE-03S2C	3	80	175	360	171	93-0834	2137	93-0833	2080	1114
3LNE-04L2C	4	100	50	740	310	93-0833	2281	93-0833	2237	1114
3LNE-04S2C	4	100	175	740	310	93-0836	2486	93-0834	2249	1114
3LNE-05L2C	5	125	50	1218	470	93-0835	2668	93-0834	2432	1114
3LNE-05S2C	5	125	175	1218	470	93-0935	2843	93-0934	2829	1224
3LNE-06L2C	6	150	50	1900	757	93-0935	3044	93-0934	3032	1224
3LNE-06S2C	6	150	175	1900	757	93-1194	3572	93-1193	3463	1647
3LNE-08L2C	8	200	50	3765	1247	93-1194	4253	93-1193	4156	1647
3LNE-08S2C	8	200	175	3765	1247	93-1603	5749	93-1284	4195	1647
3LNE-10L2C	10	250	50	6661	2005	93-1603	6125	93-1283	5803	1647
3LNE-10S2C	10	250	175	6661	2005	93-1605	8104	93-1603	8008	1647
3LNE-12L2C	12	300	50	10066	2868	93-1604	8337	93-1603	8142	1647
3LNE-12S2C	12	300	175	10066	2868	93-2103	11592	93-2102	11428	2596
3LNE-14L2C	14	350	50	11598	3328	93-2103	12914	93-2102	12798	2596
3LNE-14S2C	14	350	150	11598	3328	93-2106	13452	93-2104	13427	2596
3LNE-16L2C	16	400	50	15395	4440	93-2105	15081	93-2103	14829	2596
3LNE-16S2C	16	400	150	15395	4440	93-2554	26353	93-2553	25318	13642
3LNE-18L2C	18	450	50	20120	5509	93-2105	19089	93-2103	18816	2596
3LNE-18S2C	18	450	150	20120	5509	93-2555	30210	93-2553	27993	13642
3LNE-20L2C	20	500	50	25329	7056	93-2553	31383	93-2552	30353	13642
3LNE-20S2C	20	500	150	25329	7056	93-2556	34581	93-2554	33573	13642

2-Way, Spring Return Pneumatic - Nylon Coated Disc

Actuator Model Details						Series 98 Pneumatic Scotch Yoke (Fail Close)	
Valve Model Details	Size		Close-Off psi	Cv		Part Number	Price
	In.	mm		90˚	60˚		
3LNE-24L2C	24	600	50	39396	10267	45E2-12-SR3	53122
3LNE-24S2C	24	600	150	39396	10267	73E2-14-SR4-C	58411
NYF2-C301	30	750	75	52443	18090	73E2-14-SR3-C	64964
NYF2-C300	30	750	150	52443	18090	14E3-14-SR3-C	68920

Stainless Steel Disc

2-Way, Spring Return Pneumatic - Stainless Steel Disc

Actuator Model Details										
Valve Model Details	Size		Close-Off psi	Cv		Normally Closed (Fail Closed)	Price	Normally Open (Fail Open)	Price	Adder for Manual Override*
	In.	mm		90˚	60˚					
3LSE-02S2C	2	50	175	87	66	93-0833	2428	93-0832	2343	1383
3LSE-25S2C	2.5	65	175	185	98	93-0833	2570	93-0833	2499	1383
3LSE-03S2C	3	80	175	360	171	93-0834	2694	93-0833	2626	1383
3LSE-04L2C	4	100	50	740	310	93-0834	2926	93-0833	2871	1383
3LSE-04S2C	4	100	175	740	310	93-0935	3180	93-0933	2886	1383
3LSE-05L2C	5	125	50	1218	470	93-0835	3423	93-0834	3132	1383
3LSE-05S2C	5	125	175	1218	470	93-1193	3640	93-1194	3625	1520
3LSE-06L2C	6	150	50	1900	757	93-0935	3954	93-0934	3940	1520
3LSE-06S2C	6	150	175	1900	757	93-1194	4612	93-1193	4475	2044
3LSE-08L2C	8	200	50	3765	1247	93-1195	5637	93-1193	5516	2044
3LSE-08S2C	8	200	175	3765	1247	93-1603	7494	93-1283	5564	2044
3LSE-10L2C	10	250	50	6661	2005	93-1603	8300	93-1283	7900	2044
3LSE-10S2C	10	250	175	6661	2005	93-1605	10757	93-1603	10638	2044
3LSE-12L2C	12	300	50	10066	2868	93-1605	11738	93-1603	11496	2044
3LSE-12S2C	12	300	175	10066	2868	93-2104	15782	93-2103	15578	3223
3LSE-14S2C	14	350	150	11598	3328	93-2553	18589	93-2552	18557	3748
3LSE-16S2C	16	400	150	15395	4440	93-2554	35666	93-2554	34381	16938
3LSE-18S2C	18	450	150	20120	5509	93-2553	42023	93-2553	39272	16938

2-Way, Spring Return Pneumatic - Stainless Steel Disc

Actuator Model Details						Series 98 Pneumatic Scotch Yoke (Fail Close)	
Valve Model Details	Size		Close-Off PSI	Cv		Part Number	Price
	In.	mm		90˚	60˚		
3LSE-20S2C	20	500	150	25329	7056	45E2-12-SR3	56432
3LSE-24S2C	24	600	150	39396	10267	45E2-12-SR3	74604
NYF2-C301	30	750	75	52443	18090	45E2-12-SR3	84822
NYF2-C300	30	750	150	52443	18090	14E3-14-SR3-C	89734

Options/Adders
* For Manual Override, add "-5" to the end of the part number.
For additional options and adders, see Pages 55 & 56.
For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default



Nylon Coated Disc

3-Way, Spring Return Pneumatic - Nylon Coated Disc

Actuator Model Details						93-0834	93-0935	93-1194	93-1605	93-2105	93-2554
Valve Model Details	Size		Close-Off psi	Cv							
	In.	mm		90˚	60˚						
3LNE-02S3X	2	50	175	87	66	4827	-	-	-	-	-
3LNE-25S3X	2.5	65	175	185	98	4609	-	-	-	-	-
3LNE-03S3X	3	80	175	360	171	4783	-	-	-	-	-
3LNE-04L3X	4	100	50	740	310	5479	-	-	-	-	-
3LNE-04S3X	4	100	175	740	310	-	5815	-	-	-	-
3LNE-05L3X	5	125	50	1218	470	-	6147	-	-	-	-
3LNE-05S3X	5	125	175	1218	470	-	-	7269	-	-	-
3LNE-06L3X	6	150	50	1900	757	-	7046	-	-	-	-
3LNE-06S3X	6	150	175	1900	757	-	-	7373	-	-	-
3LNE-08L3X	8	200	50	3765	1247	-	-	10096	-	-	-
3LNE-08S3X	8	200	175	3765	1247	-	-	-	15562	-	-
3LNE-10L3X	10	250	50	6661	2005	-	-	-	16870	-	-
3LNE-10S3X	10	250	175	6661	2005	-	-	-	16870	-	-
3LNE-12L3X	12	300	50	10066	2868	-	-	-	20862	-	-
3LNE-12S3X	12	300	175	10066	2868	-	-	-	-	33467	-
3LNE-14L3X	14	350	50	11598	3328	-	-	-	-	41283	-
3LNE-14S3X	14	350	150	11598	3328	-	-	-	-	-	50170
3LNE-16L3X	16	400	50	15395	4440	-	-	-	-	-	55508
3LNE-18L3X	18	450	50	20120	5509	-	-	-	-	-	61284
3LNE-20L3X	20	500	50	25329	7056	-	-	-	-	-	65120

Stainless Steel Disc

3-Way, Spring Return Pneumatic - Stainless Steel Disc

Actuator Model Details						93-0835	93-0935	93-1195	93-1605	93-2105	93-2554
Valve Model Details	Size		Close-Off psi	Cv							
	In.	mm		90˚	60˚						
3LSE-02S3X	2	50	175	87	66	4880	-	-	-	-	-
3LSE-25S3X	2.5	65	175	185	98	4899	-	-	-	-	-
3LSE-03S3X	3	80	175	360	171	5088	-	-	-	-	-
3LSE-04L3X	4	100	50	740	310	5904	-	-	-	-	-
3LSE-04S3X	4	100	175	740	310	-	6256	-	-	-	-
3LSE-05L3X	5	125	50	1218	470	5291	-	-	-	-	-
3LSE-05S3X	5	125	175	1218	470	-	-	7807	-	-	-
3LSE-06L3X	6	150	50	1900	757	-	7675	-	-	-	-
3LSE-06S3X	6	150	175	1900	757	-	-	8018	-	-	-
3LSE-08L3X	8	200	50	3765	1247	-	-	11168	-	-	-
3LSE-08S3X	8	200	175	3765	1247	-	-	-	16136	-	-
3LSE-10L3X	10	250	50	6661	2005	-	-	-	17991	-	-
3LSE-10S3X	10	250	175	6661	2005	-	-	-	17991	-	-
3LSE-12L3X	12	300	50	10066	2868	-	-	-	23099	-	-
3LSE-12S3X	12	300	175	10066	2868	-	-	-	-	35703	-
3LSE-14S3X	14	350	150	11598	3328	-	-	-	-	-	53210
3LSE-16S3X	16	400	150	15395	4440	-	-	-	-	-	60254
3LSE-18S3X	18	450	150	20120	5509	-	-	-	-	-	68558
3LSE-20S3X	20	500	150	25329	7056	-	-	-	-	-	73900

Options/Adders
X = 3-Way Assemblies (Refer to Configuration Chart, Page 62)
* For Manual Override, add "-5" to the end of the part number.
For additional options and adders, see Pages 55 & 56.



2-Way

2-Way, On/Off or Floating - ANSI 150

Actuator Model Details						Non-Spring Return		Spring Return	
						DC24-310-T	DC24-310-T-D	DS24-180	DS24-180-D
Model Number	Size		Close-Off psi	Cv		On/Off or Floating		On/Off	
	In.	mm		90˚	60˚	24 VAC/DC		24 VAC/DC	
MKL2-C025	2.5	65	285	160	78	3816	-	4210	-
MKL2-C030	3	80		185	123	3901	-	-	4993
MKL2-C040	4	100		375	250	-	4786	-	5497
Adder -A						156	156	161	161
Adder -WS						527	715	499	622

2-Way, Modulating - ANSI 150

Actuator Model Details						Non-Spring Return		Spring Return	
						DCM24-310	DCM24-310-D	DMS24-180	DMS24-180-D
Model Number	Size		Close-Off psi	Cv		Modulating			
	In.	mm		90˚	60˚	24 VAC/DC		24 VAC/DC	
MKL2-C025	2.5	65	285	160	78	3911	-	4542	-
MKL2-C030	3	80		185	123	3996	-	-	5570
MKL2-C040	4	100		375	250	-	4926	-	6074
Adder -A						156	155	160	161
Adder -WS						527	715	499	622

3-Way

3-Way, On/Off or Floating - ANSI 150

Actuator Model Details						Non-Spring Return		Spring Return
						DC24-310-T	DC24-310-T-D	DS24-180-D
Model Number	Size		Close-Off psi	Cv		On/Off or Floating		On/Off
	In.	mm		90˚	60˚	24 VAC/DC		24 VAC/DC
MKL3-x025	2.5	65	285	160	78	8147	-	9070
MKL3-x030	3	80		185	123	-	8799	9368
MKL3-x040	4	100		375	250	-	10477	-
Adder -A						156	156	161
Adder -WS						527	715	622

3-Way, Modulating - ANSI 150

Actuator Model Details						Non-Spring Return		Spring Return
						DCM24-310	DCM24-310-D	DMS24-180-D
Model Number	Size		Close-Off psi	Cv		Modulating		
	In.	mm		90˚	60˚	24 VAC/DC		24 VAC/DC
MKL3-x025	2.5	65	285	160	78	8242	-	9647
MKL3-x030	3	80		185	123	-	8939	9945
MKL3-x040	4	100		375	250	-	10617	-
Adder -A						156	155	161
Adder -WS						527	715	622

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
X = 3-Way Assemblies (Refer to Configuration Chart, Page 62)
Add a -WS at the end of the part # if a weather cover is needed.

For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default
-D = Dual mounted actuators



MK Series Butterfly Valves 2-Way with Industrial Electric Actuators (ANSI 150)

On/Off

2-Way, 120 VAC, On/Off - ANSI 150

Actuator Model Details					Series 70 Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM		
Valve Model Details	Size		Cv		Close-Off psi	On/Off 120 VAC	Price	Close-Off psi	On/Off 120 VAC	Price
	In.	mm	90˚	60˚						
MKL2-C025	2.5	65	160	78	285	70-0081H	6583	285	70-0081H	6583
MKL2-C030	3	80	185	123		70-0081H	6668		70-0081H	6668
MKL2-C040	4	100	375	250		70-0081H	7172		70-0081H	7172
MKL2-C050	5	125	790	360		70-0121H	9318		70-0121H	9318
MKL2-C060	6	150	1350	510		70-0121H	9402		70-0121H	9402
MKL2-C080	8	200	2800	1060		70-0201H	11812		70-E301H	13553
MKL2-C100	10	250	4300	1630		70-E301H	14729		70-0501H	16844
MKL2-C120	12	300	6650	2530		70-0501H	18022		70-0651H	18531
MKL2-C140	14	350	7650	2900		70-0651H	23241		70-1300H	25025
MKL2-C160	16	400	9800	3700		70-1300H	37911		70-1800H	39262
MKL2-C180	18	450	10500	5100		70-1800H	44645	250	AU-2130*	62768
MKL2-C200	20	500	13500	6500	200	70-1800H	57134	200	AU-2130*	75551

2-Way, 24 VAC, On/Off - ANSI 150

Actuator Model Details					Series 70 Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM			
Valve Model Details	Size		Cv		Close-Off psi	On/Off 24 VAC	Price	Close-Off psi	On/Off 24 VAC	Price	-BBU Adder (24V Units Only)
	In.	mm	90˚	60˚							
MKL2-C025	2.5	65	160	78	285	70-24-0081H	6408	285	70-24-0081H	6408	3578
MKL2-C030	3	80	185	123		70-24-0081H	6493		70-24-0081H	6493	3578
MKL2-C040	4	100	375	250		70-24-0081H	6997		70-24-0081H	6997	3578
MKL2-C050	5	125	790	360		70-24-0201H	9716		70-24-0201H	9716	3686
MKL2-C060	6	150	1350	510		70-24-0201H	9800		70-24-0201H	9800	3686
MKL2-C080	8	200	2800	1060		70-24-0201H	11482		70-24-0501H	15669	3686
MKL2-C100	10	250	4300	1630		70-24-0501H	16845		70-24-0501H	16845	3688
MKL2-C120	12	300	6650	2530		70-24-0501H	18023		-	-	3688

Modulating

2-Way, 120 VAC, Modulating - ANSI 150

Actuator Model Details					Series 70 Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM		
Valve Model Details	Size		Cv		Close-Off psi	Modulating 120 VAC	Price	Close-Off psi	Modulating 120 VAC	Price
	In.	mm	90˚	60˚						
MKL2-C025	2.5	65	160	78	285	70-0081SVH	8518	285	70-0081SVH	8518
MKL2-C030	3	80	185	123		70-0081SVH	8603		70-0081SVH	8603
MKL2-C040	4	100	375	250		70-0081SVH	9107		70-0081SVH	9107
MKL2-C050	5	125	790	360		70-0121SVH	11296		70-0121SVH	11296
MKL2-C060	6	150	1350	510		70-0121SVH	11380		70-0121SVH	11380
MKL2-C080	8	200	2800	1060		70-0201SVH	13790		70-E301SVH	15751
MKL2-C100	10	250	4300	1630		70-E301SVH	16927		70-0501SVH	18742
MKL2-C120	12	300	6650	2530		70-0501SVH	19920		70-0651SVH	20426
MKL2-C140	14	350	7650	2900		70-0651SVH	25136		70-1300SVH	27023
MKL2-C160	16	400	9800	3700		70-1300SVH	39909		70-1800SVH	40916
MKL2-C180	18	450	10500	5100		70-1800SVH	46299	250	AU-2130SV*	65176
MKL2-C200	20	500	13500	6500	200	70-1800SVH	58788	200	AU-2130SV*	77959

2-Way, 24 VAC, Modulating - ANSI 150

Actuator Model Details					Series 70 Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM			
Valve Model Details	Size		Cv		Close-Off psi	Modulating 24 VAC	Price	Close-Off psi	Modulating 24 VAC	Price	-BBU Adder (24V Units Only)
	In.	mm	90˚	60˚							
MKL2-C025	2.5	65	160	78	285	70-24-0081SVH	8441	285	70-24-0081SVH	8441	3862
MKL2-C030	3	80	185	123		70-24-0081SVH	8526		70-24-0081SVH	8526	3862
MKL2-C040	4	100	375	250		70-24-0081SVH	9030		70-24-0081SVH	9030	3862
MKL2-C050	5	125	790	360		70-24-0201SVH	11807		70-24-0201SVH	11807	3688
MKL2-C060	6	150	1350	510		70-24-0201SVH	11891		70-24-0201SVH	11891	3688
MKL2-C080	8	200	2800	1060		70-24-0201SVH	13573		70-24-0501SVH	17764	3688
MKL2-C100	10	250	4300	1630		70-24-0501SVH	18940		70-24-0501SVH	18940	3688
MKL2-C120	12	300	6650	2530		70-24-0501SVH	20118		-	-	3688

Options/Adders
*Heaters standard in AU-Series
Upon Loss of Signal on Servo units:
N = Normally Open (Reverse Acting)
C = Normally Closed - Factory default

For Battery Back-Up Failsafe Option (BBU) option on 24 VAC actuators, add "-BBU".
For Battery Back-UP Failsafe units:
N = Normally Open
C = Normally Closed - Factory default
Note: The actuator sizes shown here are based on maximum valve pressure rating. Use "Seat Reatiner Upstream for Unidirectional Closeoff; Use Downstream for Bi-Directional Closeoff.
For applications at lower pressure requirements, consult factory for smaller actuator choices.



MK Series Butterfly Valves 2-Way with Industrial Electric Actuators (ANSI 300)

On/Off

2-Way, 120 VAC, On/Off - ANSI 300

Actuator Model Details					Series 70 Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM		
Valve Model Details	Size		Cv		Close-Off psi	On/Off 120 VAC	Price	Close-Off psi	On/Off 120 VAC	Price
	In.	mm	90°	60°						
MKL2-C253	2.5	65	160	78	740	70-0081H	6668	550	70-0081H	6668
MKL2-C033	3	80	185	123	740	70-0081H	7341	550	70-0081H	7341
MKL2-C043	4	100	375	250	550	70-0081H	8938	350	70-0081H	8938
MKL2-C053	5	125	790	360	350	70-0121H	11084	550	70-0201H	11812
MKL2-C063	6	150	1000	530	550	70-0201H	11980	350	70-0201H	11980
MKL2-C083	8	200	2000	950	350	70-E301H	13889	550	70-0501H	16004
MKL2-C103	10	250	2650	1200	350	70-0501H	24246	350	70-0651H	24755
MKL2-C123	12	300	4000	1690	740	70-1300H	29567	550	70-1300H	29567
MKL2-C143	14	350	4100	1770	350	70-1300H	38753	350	70-1800H	40104
MKL2-C163	16	400	7800	2970	350	70-1800H	54908	740	AU-4068	81019
MKL2-C183	18	450	9500	4530	740	AU-4068*	82866	550	AU-4068*	82866
MKL2-C203	20	500	11000	5400	550	AU-4068*	91780	350	AU-4068*	91780

2-Way, 24 VAC, On/Off - ANSI 300

Actuator Model Details					Series 70 Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM			
Valve Model Details	Size		Cv		Close-Off psi	On/Off 24 VAC	Price	Close-Off psi	On/Off 24 VAC	Price	-BBU Adder (24V Units Only)
	In.	mm	90°	60°							
MKL2-C253	2.5	65	160	78	740	70-24-0081H	6493	550	70-24-0081H	6493	3578
MKL2-C033	3	80	185	123	740	70-24-0081H	7166	550	70-24-0081H	7166	3578
MKL2-C043	4	100	375	250	550	70-24-0081H	8763	350	70-24-0081H	8763	3578
MKL2-C053	5	125	790	360	350	70-24-0201H	11482	550	70-24-0201H	11482	3686
MKL2-C063	6	150	1000	530	550	70-24-0201H	11650	350	70-24-0201H	11650	3686
MKL2-C083	8	200	2000	950	350	70-24-0501H	16005	550	70-24-0501H	16005	3688
MKL2-C103	10	250	2650	1200	350	70-24-0501H	24247	-	-	-	3688

Modulating

2-Way, 120 VAC, Modulating - ANSI 300

Actuator Model Details					Series 70 & AU Series Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM		
Valve Model Details	Size		Cv		Close-Off psi	Modulating 120 VAC	Price	Close-Off psi	Modulating 120 VAC	Price
	In.	mm	90°	60°						
MKL2-C253	2.5	65	160	78	740	70-0081SVH	8603	550	70-0081SVH	8603
MKL2-C033	3	80	185	123	740	70-0081SVH	9276	550	70-0081SVH	9276
MKL2-C043	4	100	375	250	550	70-0081SVH	10873	350	70-0081SVH	10873
MKL2-C053	5	125	790	360	350	70-0121SVH	13062	550	70-0201SVH	13790
MKL2-C063	6	150	1000	530	550	70-0201SVH	13958	350	70-0201SVH	13958
MKL2-C083	8	200	2000	950	350	70-E301SVH	16087	550	70-0501SVH	17902
MKL2-C103	10	250	2650	1200	350	70-0501SVH	26144	350	70-0651SVH	26650
MKL2-C123	12	300	4000	1690	740	70-1300SVH	31565	550	70-1300SVH	31565
MKL2-C143	14	350	4100	1770	350	70-1300SVH	40751	350	70-1800SVH	41758
MKL2-C163	16	400	7800	2970	350	70-1800SVH	56562	740	AU-4068SV	83429
MKL2-C183	18	450	9500	4530	740	AU-4068SV*	85276	550	AU-4068SV*	85276
MKL2-C203	20	500	11000	5400	550	AU-4068SV*	94190	350	AU-4068SV*	94190

2-Way, 24 VAC, Modulating - ANSI 300

Actuator Model Details					Series 70 Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM			
Valve Model Details	Size		Cv		Close-Off psi	Modulating 24 VAC	Price	Close-Off psi	Modulating 24 VAC	Price	-BBU Adder (24V Units Only)
	In.	mm	90°	60°							
MKL2-C253	2.5	65	160	78	740	70-24-0081SVH	8526	550	70-24-0081SVH	8526	3862
MKL2-C033	3	80	185	123	740	70-24-0081SVH	9199	550	70-24-0081SVH	9199	3862
MKL2-C043	4	100	375	250	550	70-24-0081SVH	10796	350	70-24-0081SVH	10796	3862
MKL2-C053	5	125	790	360	350	70-24-0201SVH	13573	550	70-24-0201SVH	13573	3688
MKL2-C063	6	150	1000	530	550	70-24-0201SVH	13741	350	70-24-0201SVH	13741	3688
MKL2-C083	8	200	2000	950	350	70-24-0501SVH	18100	550	70-24-0501SVH	18100	3688
MKL2-C103	10	250	2650	1200	350	70-24-0501SVH	26342	-	-	-	3688

Options/Adders
*Heaters standard in AU-Series
Upon Loss of Signal on Servo units:
N = Normally Open (Reverse Acting)
C = Normally Closed - Factory default

For Battery Back-Up Failsafe Option (BBU) option on 24 VAC actuators, add "-BBU".
For Battery Back-UP Failsafe units:
N = Normally Open
C = Normally Closed - Factory default
Note: The actuator sizes shown here are based on maximum valve pressure rating. Use "Seat Reatiner Upstream for Unidirectional Closeoff; Use Downstream for Bi-Directional Closeoff.
For applications at lower pressure requirements, consult factory for smaller actuator choices.



MK Series Butterfly Valves 3-Way with Industrial Electric Actuators (ANSI 150)

3-Way, 24 VAC & 120 VAC, On/Off - ANSI 150

Actuator Model Details												
Valve Model Details	Size		Close-Off psi	Cv		Series 70 120 VAC		Series 70 24 VAC		AU-Series 120 VAC		
	In.	mm		90˚	60˚	Model #	Price	Model #	Price	Model #	Price	-BBU Adder (24V Units Only)
MKL3-X025	2.5	65	250	160	78	70-0081H	11224	70-24-0081H	11049	-	-	3578
MKL3-X030	3	80		185	123	70-0081H	11522	70-24-0081H	11347	-	-	3578
MKL3-X040	4	100		375	250	70-0121H	15268	70-24-0201H	15666	-	-	3686
MKL3-X050	5	125		790	360	70-0121H	15473	70-24-0201H	15871	-	-	3686
MKL3-X060	6	150		1350	510	70-0121H	15859	70-24-0201H	16257	-	-	3686
MKL3-X080	8	200		2800	1060	70-0201H	20035	70-24-0201H	19705	-	-	3686
MKL3-X100	10	250		4300	1630	70-0501H	26345	70-24-0501H	26346	-	-	3688
MKL3-X120	12	300		6650	2530	70-0651H	29884	-	-	-	-	-
MKL3-X140	14	350		7650	2900	70-1300H	52293	-	-	-	-	-
MKL3-X160	16	400		9800	3700	-	-	-	-	AU-2130*	97754	-
MKL3-X180	18	450		10500	5100	-	-	-	-	AU-4068*	116339	-
MKL3-X200	20	500		13500	6500	-	-	-	-	AU-4068*	143417	-

3-Way, 24 VAC & 120 VAC, Modulating - ANSI 150

Actuator Model Details												
Valve Model Details	Size		Close-Off psi	Cv		Series 70 120 VAC		Series 70 24 VAC		AU-Series 120 VAC		
	In.	mm		90˚	60˚	Model #	Price	Model #	Price	Model #	Price	-BBU Adder (24V Units Only
MKL3-X025	2.5	65	250	160	78	70-0081SVH	13159	70-24-0081SVH	13082	-	-	3862
MKL3-X030	3	80		185	123	70-0081SVH	13457	70-24-0081SVH	13380	-	-	3862
MKL3-X040	4	100		375	250	70-0121SVH	17246	70-24-0201SVH	17757	-	-	3688
MKL3-X050	5	125		790	360	70-0121SVH	17451	70-24-0201SVH	17962	-	-	3688
MKL3-X060	6	150		1350	510	70-0121SVH	17837	70-24-0201SVH	18348	-	-	3688
MKL3-X080	8	200		2800	1060	70-0201SVH	22013	70-24-0201SVH	21796	-	-	3688
MKL3-X100	10	250		4300	1630	70-0501SVH	28243	70-24-0501SVH	28441	-	-	3688
MKL3-X120	12	300		6650	2530	70-0651SVH	31779	-	-	-	-	-
MKL3-X140	14	350		7650	2900	70-1300SVH	54291	-	-	-	-	-
MKL3-X160	16	400		9800	3700	-	-	-	-	AU-2130SV*	100162	-
MKL3-X180	18	450		10500	5100	-	-	-	-	AU-4068SV*	118749	-
MKL3-X200	20	500		13500	6500	-	-	-	-	AU-4068SV*	145827	-

Options/Adders
X = 3-Way Assemblies (Refer to Configuration Chart, Page 62)
*Heaters standard in AU-Series
For Battery Back-Up Failsafe Option (BBU) on 24 VAC actuators, add "-BBU" to the end of the part number.



MK Series Butterfly Valves 2-Way with Double Acting Pneumatic Actuators (ANSI 150 & 300)

2-Way, Double Acting Pneumatic - ANSI 150

Actuator Model Details						Series 92 Seat Retainer UPSTREAM		Series 92 Seat Retainer DOWNSTREAM		Adder for Manual Override*
Valve Model Details	Size		Close-Off psi	Cv						
	In.	mm		90°	60°	Model #	Price	Model #	Price	
MKL2-C025	2.5	65	285	160	78	S92-83	3164	S92-83	3164	1113
MKL2-C030	3	80		185	123	S92-83	3315	S92-83	3315	1113
MKL2-C040	4	100		375	250	S92-83	3655	S92-83	3655	1113
MKL2-C050	5	125		790	360	S92-93	4989	S92-119	5467	1113
MKL2-C060	6	150		1350	510	S92-93	5109	S92-119	5590	1645
MKL2-C080	8	200		2800	1060	S92-119	7593	S92-119	7593	1645
MKL2-C100	10	250		4300	1630	S92-128	13274	S92-160	14291	1645
MKL2-C120	12	300		6650	2530	S92-160	16753	S92-210	21218	1645
MKL2-C140	14	350		7650	2900	S92-210	26737	S92-210	26737	2276
MKL2-C160	16	400		9800	3700	S92-210	33772	S92-255	43314	3020
MKL2-C180	18	450		10500	5100	S92-255	52006	S92-255	52006	3020
MKL2-C200	20	500		13500	6500	S92-255	63288	S92-255	63288	3020

2-Way, Double Acting Pneumatic - ANSI 300

Actuator Model Details						Series 92 Seat Retainer UPSTREAM		Series 92 Seat Retainer DOWNSTREAM		Adder for Manual Override*
Valve Model Details	Size		Close-Off psi	Cv						
	In.	mm		90°	60°	Model #	Price	Model #	Price	
MKL2-C253	2.5	65	740	160	78	S92-83	3211	S92-83	3211	1113
MKL2-C033	3	80		185	123	S92-83	4456	S92-93	4589	1113
MKL2-C043	4	100		375	250	S92-83	5375	S92-93	5508	1113
MKL2-C053	5	125		790	360	S92-119	7144	S92-128	7450	1113
MKL2-C063	6	150		1000	530	S92-119	10349	S92-160	11623	1645
MKL2-C083	8	200		2000	950	S92-160	14903	S92-160	14903	1645
MKL2-C103	10	250		2650	1200	S92-210	24348	S92-210	24348	1645
MKL2-C123	12	300		4000	1690	S92-210	25402	S92-255	35716	3020
MKL2-C143	14	350		4100	1770	S92-255	45230	S92-255	45230	3020
MKL2-C163	16	400		7800	2970	S92-255	53766	Consult Factory		3020

Options/Adders
* For Manual Override, add "-5" to the end of the part number.
* Manual overrides sized for seat retainer upstream. For seat retainer downstream, consult factory.
For additional options and adders, see Pages 55 & 56.

Note
The actuator sizes shown here are based on maximum valve pressure rating.
Use "Seat Retainer Upstream for Unidirectional Close off; Use Downstream for Bi-Directional Close Off
For applications at lower pressure requirements, consult factory for smaller actuator choices.



MK Series Butterfly Valves 2-Way with Spring Return Actuators (ANSI 150 & 300)

2-Way, Spring Return - ANSI 150

Actuator Model Details						Series 93 Seat Retainer UPSTREAM				Series 93 Seat Retainer DOWNSTREAM				Adder for Manual Override*
Valve Model Details	Size		Close-Off psi	Cv		Normally Open (N.O.)		Normally Closed (N.C.)		Normally Open (N.O.)		Normally Closed (N.C.)		
	In.	mm		90°	60°	Model #	Price	Model #	Price	Model #	Price	Model #	Price	
MKL2-C025	2.5	65	285	160	78	93-833	**3331**	93-834	**3380**	93-834	**3379**	93-835	**3441**	**1113**
MKL2-C030	3	80		185	123	93-833	**3481**	93-834	**3529**	93-834	**3529**	93-836	**3655**	**1113**
MKL2-C040	4	100		375	250	93-834	**3914**	93-836	**4010**	93-934	**4071**	93-936	**4123**	**1113**
MKL2-C050	5	125		790	360	93-1193	**5769**	93-1194	**5858**	93-1283	**6007**	93-1196	**6052**	**1113**
MKL2-C060	6	150		1350	510	93-1193	**5901**	93-1195	**6079**	93-1283	**6139**	93-1285	**6477**	**1645**
MKL2-C080	8	200		2800	1060	93-1602	**9144**	93-1604	**9398**	93-1603	**9271**	93-1605	**9527**	**1645**
MKL2-C100	10	250		4300	1630	93-2102	**19728**	93-2103	**19983**	93-2103	**19983**	93-2105	**20620**	**1645**
MKL2-C120	12	300		6650	2530	93-2103	**22709**	93-2105	**23219**	93-2552	**35038**	93-2553	**35662**	**3020**
MKL2-C140	14	350		7650	2900	93-2552	**41952**	93-2553	**42578**	93-2553	**42579**	93-2555	**45884**	**3020**
MKL2-C160	16	400		9800	3700	93-2553	**51194**	93-2555	**52443**	Contact Bray				**3020**

2-Way, Spring Return - ANSI 300

Actuator Model Details						Series 93 Seat Retainer UPSTREAM				Series 93 Seat Retainer DOWNSTREAM				Adder for Manual Override*
Valve Model Details	Size		Close-Off psi	Cv		Normally Open (N.O.)		Normally Closed (N.C.)		Normally Open (N.O.)		Normally Closed (N.C.)		
	In.	mm		90°	60°	Model #	Price	Model #	Price	Model #	Price	Model #	Price	
MKL2-C253	2.5	65	740	160	78	93-934	**3598**	93-1193	**4104**	93-1193	**4104**	93-1194	**4164**	**1113**
MKL2-C033	3	80		185	123	93-934	**4838**	93-1193	**5345**	93-1193	**5345**	93-1194	**5405**	**1113**
MKL2-C043	4	100		375	250	93-1193	**6241**	93-1194	**6326**	93-1283	**6466**	93-1196	**6440**	**1113**
MKL2-C053	5	125		790	360	93-1603	**8733**	93-1604	**8854**	93-1604	**8854**	93-1606	**9095**	**1113**
MKL2-C063	6	150		1000	530	93-1603	**16157**	93-1605	**16397**	93-2102	**16855**	93-2104	**17341**	**1645**
MKL2-C083	8	200		2000	950	93-2103	**20382**	93-2104	**20625**	93-2104	**20625**	93-2106	**21233**	**1645**
MKL2-C103	10	250		2650	1200	93-2552	**37432**	93-2553	**38028**	93-2553	**38028**	93-2555	**41181**	**3020**
MKL2-C123	12	300		4000	1690	93-2553	**60212**	93-2555	**61401**	Contact Bray				**3020**

Options/Adders
* For Manual Override, add "-5" to the end of the part number.
* Manual overrides sized for seat retainer upstream. For seat retainer downstream, consult factory.

For additional options and adders, see Pages 55 & 56.

For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default

Note
The actuator sizes shown here are based on maximum valve pressure rating.
Use "Seat Retainer Upstream for Unidirectional Close off; Use Downstream for Bi-Directional Close off
For applications at lower pressure requirements, consult factory for smaller actuator choices.



3-Way, Double Acting Pneumatic - ANSI 150

Actuator Model Details						Series 92 Double Acting		Adder for Manual Override*
Valve Model Details	Size		Close-Off psi	Cv		Model #	Price	
	In.	mm		90°	60°			
MKL3-x025	2.5	65	250	160	78	S92-083	6752	1113
MKL3-x030	3	80		185	123	S92-083	7130	1113
MKL3-x040	4	100		375	250	S92-083	8253	1113
MKL3-x050	5	125		790	360	S92-119	11734	1113
MKL3-x060	6	150		1350	510	S92-119	11975	1645
MKL3-x080	8	200		2800	1060	S92-128	17478	1645
MKL3-x100	10	250		4300	1630	S92-160	31386	1645
MKL3-x120	12	300		6650	2530	S92-210	42455	1645
MKL3-x140	14	350		7650	2900	S92-210	64609	2276
MKL3-x160	16	400		9800	3700	S92-255	78916	3020
MKL3-x180	18	450		10500	5100	S92-255	93389	3020
MKL3-x200	20	500		13500	6500	S92-255	117929	3020

3-Way, Spring Return Pneumatic - ANSI 150

Actuator Model Details						Series 93 Spring Return		Adder for Manual Override*
Valve Model Details	Size		Close-Off psi	Cv		Model #	Price	
	In.	mm		90°	60°			
MKL3-x025	2.5	65	250	160	78	S93-934	7128	1113
MKL3-x030	3	80		185	123	S93-934	7506	1113
MKL3-x040	4	100		375	250	S93-1193	9160	1113
MKL3-x050	5	125		790	360	S93-1284	12518	1113
MKL3-x060	6	150		1350	510	S93-1603	13668	1645
MKL3-x080	8	200		2800	1060	S93-2103	24439	1645
MKL3-x100	10	250		4300	1630	S93-2552	45207	3020
MKL3-x120	12	300		6650	2530	S93-2553	51988	3020
MKL3-x140	14	350		7650	2900	S93-2553	70537	3020
MKL3-x160	16	400		9800	3700	Consult Factory		
MKL3-x180	18	450		10500	5100	Consult Factory		
MKL3-x200	20	500		13500	6500	Consult Factory		

Options/Adders
X = 3-Way Assemblies (Refer to Configuration Chart, Page 62)
* For Manual Override, add "-5" to the end of the part number.
* Manual overrides sized for seat retainer upstream. For seat retainer downstream, consult factory.
For additional options and adders, see Pages 55 & 56.



Electric Damper Actuators - Non Spring-Return

Model Number	Voltage	Torque	On/ Off	Floating	Modulating	Time Out	Auxiliary Switches	Exposed Terminal Block	Enclosed Terminal Block	Conduit NPT(N) FLEX (F)	Cable Plenum (P) Standard (S)	List Price
D24-35-T-TS	24 VAC	35	X[1]	X				X			-	215
D24-35-TP			X[1]	X							P	237
DM24-35-TS					X			X			-	385
DM24-35					X						P	382
DC24-44-TP	24 VAC	44		X							P	204
DC24-44-TPTO	24 VAC/DC		X	X		X					P	273
DC24-44-TAP	24 VAC			X			X				P	431
DCM24-44-P	24 VAC/DC				X	X					P	333
DCM24-44-AP					X	X	X				P	544
D24-70	24 VAC/DC	70	X	X		X			X	1/2 N	-	390
D24-70-A			X	X		X	X		X	1/2 N	-	550
DM24-70					X				X	1/2 N	-	512
DM24-70-A					X		X		X	1/2 N	-	672
DC24-88-TP	24 VAC	88		X						1/2 N	P	480
DC24-88-TAP	24 VAC/DC		X	X		X	X				P	641
DCM24-88-P					X	X				1/2 N	P	502
DCM24-88-AP					X	X	X				P	661
D24-140	24 VAC/DC	140	X	X		X			X	1/2 N	-	452
D24-140-A			X	X		X	X		X	1/2 N	-	612
DM24-140					X				X	1/2 N	-	719
DM24-140-A					X		X		X	1/2 N	-	879
D24-210	24 VAC/DC	210	X	X		X			X	1/2 N	-	637
D24-210-A			X	X		X	X		X	1/2 N	-	797
DM24-210					X				X	1/2 N	-	823
DM24-210-A					X		X		X	1/2 N	-	983
D24-280	24 VAC/DC	280	X	X		X			X	1/2 N	-	806
D24-280-A			X	X		X	X		X	1/2 N	-	966
DM24-280					X				X	1/2 N	-	905
DM24-280-A					X		X		X	1/2 N	-	1065
DC24-310-T	24 VAC/DC	310	X	X		X				3/8 F	S	705
DC24-310-TA			X	X		X	X			3/8 F	S	861
DCM24-310					X	X				3/8 F	S	800
DCM24-310-A					X	X	X			3/8 F	S	956

Options

[1] Relay Required for On/Off Control



Electric Damper Actuators - Spring-Return									
Model Number	Voltage	Torque	On/ Off	Floating	Modulating	Auxiliary Switches	Conduit NPT(N) FLEX (F)	Cable Plenum (P) Standard (S)	List Price
DCS24-20-P	24 VAC/DC	20	X				1/2 N	P	397
DCS24-20-AP			X			X		P	622
DCMS24-20-P					X		1/2 N	P	616
DS24-27	24 VAC/DC	27	X				1/2 N	S	423
DS24-27-A			X			X	1/2 N	S	588
DMS24-27					X		1/2 N	P	667
DMS24-27-A					X	X	1/2 N	S	828
DSU20-27	120/240 VAC		X				1/2 N	S	541
DSU20-27-A			X			X	1/2 N	S	708
DCS24-62-P	24 VAC/DC	62	X				1/2 N	P	449
DCS24-62-AP			X			X	1/2 N	P	689
DCMS24-62-P					X		1/2 N	P	641
DCMS24-62-A					X	X	1/2 N	S	800
DCS120-62	120 VAC		X				1/2 N	S	505
DCS120-62-A			X			X	1/2 N	S	665
DS24-70	24 VAC/DC	70	X				3/8 F[1]	S	659
DS24-70-A			X			X	3/8 F[1]	S	824
DMS24-70					X		3/8 F[1]	S	847
DMS24-70-A					X	X	3/8 F[1]	S	1011
DS120-70	120 VAC		X				3/8 F[1]	S	685
DS120-70-A			X			X	3/8 F[1]	S	848
DCS24-140	24 VAC/DC	160	X				3/8 F	S	823
DCS24-140-A			X			X	3/8 F	S	988
DCMS24-140					X		3/8 F	S	1025
DCMS24-140-A					X	X	3/8 F	S	1190
DCS120-140	120 VAC		X				3/8 F	S	866
DCS120-140-A			X			X	3/8 F	S	1031
DS24-180	24 VAC/DC	180	X				3/8 F[1]	S	930
DS24-180-A			X			X	3/8 F[1]	S	1091
DMS24-180					X		3/8 F[1]	S	1262
DMS24-180-A					X	X	3/8 F[1]	S	1422
DS120-180	120 VAC		X				3/8 F[1]	S	1058
DS120-180-A			X			X	3/8 F[1]	S	1217

Options

[1] To convert to a 1/2" NPT conduit connection fittings with part numbers M9104-100E and 985-008 will be required



Electric ST2 Actuators - Non Spring-Return										
Model Number	**Voltage**	**Torque**	**On/ Off**	**Floating**	**Modulating**	**Time Out**	**Auxiliary Switches**	**Conduit NPT(N) FLEX (F)**	**Cable Plenum (P) Standard (S)**	**List Price**
VA24-35-P	24 VAC	35	X[2]	X				3/8 F[1]	P	**241**
VA24-35-PTO			X	X		X		3/8 F[1]	P	**311**
VAM24-35-P					X			3/8 F[1]	P	**374**
VAM24-90-P	24 VAC/DC	88	X	X	X	X		1/2 N[3]	P	**405**
VAM24-90-P-A			X	X	X	X	X	1/2 N[3]	P	**570**

Electric ST2 Actuators - Spring-Return								
Model Number	**Voltage**	**Torque**	**On/ Off**	**Floating**	**Modulating**	**Auxiliary Switches**	**Conduit NPT(N) FLEX (F)[1]**	**List Price**
VAS24-27	24 VAC/DC	27	X				1/2 N	**481**
VAS24-27-A			X			X	1/2 N	**653**
VAMS24-27					X		1/2 N	**678**
VAMS24-27-A					X	X	1/2 N	**840**
VASU20-27	120/240 VAC	27	X				1/2 N	**539**
VASU20-27-A			X			X	1/2 N	**703**
VAS24-70	24 VAC/DC	70	X				3/8 F[1]	**621**
VAS24-70-A			X			X	3/8 F[1]	**786**
VAMS24-70					X		3/8 F[1]	**840**
VAMS24-70-A					X	X	3/8 F[1]	**1005**
VAS120-70	120 VAC	70	X				3/8 F[1]	**667**
VAS120-70-A			X			X	3/8 F[1]	**832**

Options

[1] To convert to a 1/2" NPT conduit connection fittings with part numbers M9104-100E and 985-008 will be required
[2] Relay Required for On/Off Control
[3] 1/2" N Conduit Connection fittings optional with part number M9300-100E



Series 92/93 High Pressure Pneumatic Actuators		
Model Number	Description	Price
92-063	Double Acting-Pneumatic rack and pinion actuator	840
92-083		1097
92-093		1373
92-119		1966
92-128		2342
92-160		3925
92-210		6508
92-255		15098
93-634	Spring Return-Pneumatic rack and pinion actuator	1485
93-834		2054
93-934		2496
93-1194		3154
93-1284		3724
93-1604		5413
93-2104		8315
93-2554		20171

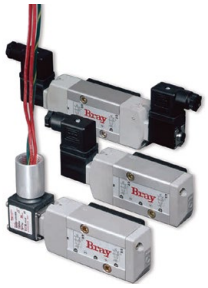
Assembly Adders



5A Status Monitor (SPDT Auxiliary Switch)		
Model No.	P/N Suffix	Price
5A	SW	742



VP200 Pneumatic Positioner (Gauges- 2 ea. 0-160 PSI & 1ea. 0-30 PSI)		
Model No.	P/N Suffix	Price
V200P	P	2726



Solenoid Air Valve			
Model No.	Voltage	P/N Suffix	Price
S63 Single Coil	24 VAC	S4	460
S63 Single Coil	120 VAC	S	



S 6A Electro-Pneumatic Positioner (Shown with optional gauges)		
Model No.	P/N Suffix	Price
S 6A	EP	4698



Speed Controls	
P/N Suffix	Price
C	158

Note
To order these accessories factory mounted, add the P/N suffix to the end of the actuator part number, and add the list price shown.

EXAMPLE: MKL2-C030/93-834-EPFSG
(6A with feedback, switch and gauges)



High Pressure Pneumatic Actuator Accessories			
Model Number	Adder to Valve Assembly	Description	Price
63125A-214105P4	add -S4	S63 Single coil solenoid, 24 VAC for electric On/Off control of S92/93 actuators	460
63125A-214115P4	add -S	S63 Single coil solenoid, 110 VAC for electric On/Off control of S92/93 actuators	460
63125A-214145P4	add -S4D	S63 Single coil solenoid, 24 VDC for electric On/Off control of S92/93 actuators	460
Contact Bray	add -DS4(24) or -DS(120)	S63 Double coil solenoid, 24 or 110 VAC for electric On/Off control of S92/93 actuators	-
5A0000-126A2536	replacement	5A Status Monitor (Mounting Kit Not Included)	595
5B0000-22600534		5A Mounting Kit- Non-Adjustable For S98 & S92/93 Actuators - Sizes 063 - 128	60
5B0000-22601534		5A Mounting Kit- Adjustable For S98 & S92, 93 Actuators - Sizes 063 - 255	108
6A6DR5-0200NN005KA0	replacement	S6A Double-Acting Electro-pneumatic positioner 4-20 mA	4653
6A6DR5-0100NN005KA0	replacement	S6A Single-Acting Electro-pneumatic positioner, 4-20 mA,	4653
6A6DR4-0046K	add -S	S6A Optional mechanical switch	1585
6A6DR4-0046J	add -F	S6A Optional position feedback module	1647
6A0250-22701536	add -G	S6A Single-Acting Optional gauge block assembly	249
6A0250-22702536	add -G	S6A Double-Acting Optional gauge block assembly	279
6A0630-24610536		S6A Mounting kit, S92/93 sizes 63-128	308
6A1600-24610536		S6A Mounting kit, S92/93 sizes 160-255	386
551000-74603533	add -FR	S55 Bray Filter Regulator S92/93 Actuators	400
V200P	replacement	Pneumatic Positioner 3-15 PSI S92/93 Actuators- Includes Gauges- 2 ea. 0-160 psi & 1ea. 0-30 psi	2718
V200-MTG-1		V200P Mounting kit, S92/93 sizes 63-127	238
V200-MTG-2		V200P Mounting kit, S92/93 sizes 160-255	308
V200M	add -S	V200P Optional Mechanical Switch Kit	915
V200MA	add -F	V200P Optional 4-20mA Position Feedback Module	1599
V200B	add -B	V200P Beacon Indicator	198
V200G30	replacement	V200P Guage 0-30 psi	46
V200G160	replacement	V200P Guage 0-160 psi	46



Series 70 Industrial Electric Actuator, 120 VAC - On/Off		
Model Number	Description	Price
70-0081H	120 VAC, Two position, 800 lb-in., NEMA 4, Heater	3782
70-0121H	120 VAC, Two position, 1200 lb-in., NEMA 4, Heater	5850
70-0201H	120 VAC, Two position, 2000 lb-in., NEMA 4, Heater	6578
70-E301H	120 VAC, Two position, 3000 lb-in., NEMA 4, Heater	8319
70-0501H	120 VAC, Two position, 5000 lb-in., NEMA 4, Heater	10368
70-0651H	120 VAC, Two position, 6500 lb-in., NEMA 4, Heater	10877
70-1300H	120 VAC, Two position, 13000 lb-in., NEMA 4, Heater	12596
70-1800H	120 VAC, Two position, 18000 lb-in., NEMA 4, Heater	13947

Series 70 Industrial Electric Actuator, 120 VAC - Modulating		
Model Number	Description	Price
70-0081SVH	120 VAC, Modulating, 800 lb-in., NEMA 4, Heater	5717
70-0121SVH	120 VAC, Modulating, 1200 lb-in., NEMA 4, Heater	7828
70-0201SVH	120 VAC, Modulating, 2000 lb-in., NEMA 4, Heater	8556
70-E301SVH	120 VAC, Modulating, 3000 lb-in., NEMA 4, Heater	10517
70-0501SVH	120 VAC, Modulating, 5000 lb-in., NEMA 4, Heater	12266
70-0651SVH	120 VAC, Modulating, 6500 lb-in., NEMA 4, Heater	12772
70-1300SVH	120 VAC, Modulating, 13000 lb-in., NEMA 4, Heater	14594
70-1800SVH	120 VAC, Modulating, 18000 lb-in., NEMA 4, Heater	15601

Series 70 Industrial Electric Actuator, 24 VAC & 24 VAC/DC - On/Off		
Model Number	Description	Price
70-24-0081H	24 VAC/DC, Two position, 800 lb-in., NEMA 4, Heater	3607
70-24-0201H	24 VAC/DC, Two position, 2000 lb-in., NEMA 4, Heater	6248
70-24-0501H	24 VAC, Two position, 5000 lb-in., NEMA 4, Heater	10369

Series 70 Industrial Electric Actuator, 24 VAC/DC - Modulating		
Model Number	Description	Price
70-24-0081SVH	24 VAC/DC, Modulating, 800 lb-in., NEMA 4, Heater	5640
70-24-0201SVH	24 VAC/DC, Modulating, 2000 lb-in., NEMA 4, Heater	8339
70-24-0501SVH	24 VAC/DC, Modulating, 5000 lb-in., NEMA 4, Heater	12464

Series 70 Industrial Electric Actuator, 24 VAC/30 VDC - On/Off with Battery Backup Unit		
Model Number	Description	Price
70-24-0081H-BBU	24 VAC/30 VDC, Two position, 800 lb-in., NEMA 4, Heater, & Battery Back Unit	7185
70-24-0201H-BBU	24 VAC/30 VDC, Two position, 2000 lb-in., NEMA 4, Heater, & Battery Back Unit	9934
70-24-0501H-BBU	24 VAC/30 VDC, Two position, 5000 lb-in., NEMA 4, Heater, & Battery Back Unit	14057

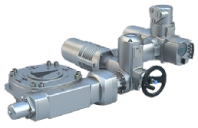
Series 70 Industrial Electric Actuator, 24 VAC/30 VDC - Modulating with Battery Backup Unit		
Model Number	Description	Price
70-24-0081SVH-BBU	24 VAC/30 VDC, Modulating, 800 lb-in., NEMA 4, Heater, & Battery Back Unit	9502
70-24-0201SVH-BBU	24 VAC/30 VDC, Modulating, 2000 lb-in., NEMA 4, Heater, & Battery Back Unit	12027
70-24-0501SVH-BBU	24 VAC/30 VDC, Modulating, 5000 lb-in., NEMA 4, Heater, & Battery Back Unit	16152



Battery Backup Unit Retrofit - Unmounted Price does NOT include Servo. For Servo's rated Rev. J or later		
Model Number	**Description**	**Price**
BBU-24-MOD	24 VAC, Two Position or Modulating, 800 - 5000 lb-in., NEMA 4	**3688**

Series 70 Battery Backup Unit Replacement Battery		
Model Number	**Description**	**Price**
BBU-24-BAT	24 VAC, SLA (Sealed Lead Acid) Power Sonic PS1212 or Equal. Set of Two	**491**

Series 70 Industrial Electric Actuator, 24 VAC & 24 VAC/DC - On/Off Kits		
Model Number	**Description**	**Price**
700006-22950536	120 VAC Heater, helps prevent condensation build up - *recommended for outdoor use	**102**
700006-22951536	24 VAC Heater, helps prevent condensation build up - *recommended for outdoor use	**102**
70A012-22920536	120 VAC Servo NXT Kit S70 actuators 70-0081 to 70-0651	**2631**
*For Servo Pro kits for 70-0061 units manufactured prior to 7/2017, contact Bray		
70A180-22920536	120 VAC Servo NXT Kit for 70-1300 & 70-1800 S70 actuators	**2631**
700000-77664536	120/230 VAC Servo NXT, UL Board Only	**2496**
70A012-22922536	24 VAC Servo NXT Kit S70 actuators 70-24-0081 (new round dome models only), 70-24-0201 & 70-24-0501	**2499**
700000-77641536	24 VAC Servo NXT Board Only	**2367**
700000-22952536	24 VAC On/Off CONTROLLER KIT 800 to 2K in/lb Units	**1251**
700000-77629536	24 VAC On/Off CONTROLLER Board Only- 800 to 2K in/lb Units	**1183**
S70-5P-KIT	S70 Turk 5 PIN Cordset	**773**
700000-12410536	Control Station for manual local electrical operation of S70 actuators W/SERVO 110V (Non-Keyed) ** For all others please contact factory	**2158**



AU Series Industrial Electric Actuators		
Model Number	**Description**	**Price**
AU-2130	120 VAC, On/Off, 21300 lb-in., NEMA 4	**31315**
AU-4068	120 VAC, On/Off, 40680 lb-in., NEMA 4	**34928**
AU-7080	120 VAC, On/Off, 70800 lb-in., NEMA 4	**43358**
AU-2130SV	120 VAC, Modulating, 21300 lb-in., NEMA 4	**33723**
AU-4068SV	120 VAC, Modulating, 40680 lb-in., NEMA 4	**37338**
AU-7080SV	120 VAC, Modulating, 70800 lb-in., NEMA 4	**45767**

Note
AU actuators do NOT include bushing. For retrofit application contact Bray for required bushing.



Linear PIC and Globe Valve Electric Actuators & Accessories - GA(S), VAL & PA(M) Series

GA Series - Non-Fail Safe or Non-Spring Return Electric Actuators

Model Number	Voltage	Force lbs.	Control Signal	Stall Detection	Aux. Switches	Conduit Adapter	NEMA 2 (IP54)	NEMA 1 (IP20)	Price	-A Adder	-H Adder
GA24-67	24 VAC	67	Floating	X	-	X	X	-	674	-	-
GAM24-67	24 VAC/DC	67	Modulating		-		X	-	828	-	-
GA24-225	24 VAC	225	Floating		X		-	X	902	895	1188
GAM24-225	24 VAC	225	Modulating		X		-	X	1038	446	1188

GA(S) Series - Fail Safe or Spring Return Electric Actuators

Model Number	Voltage	Force lbs.	Control Signal	Stall Detection	Aux. Switches	Conduit Adapter	NEMA 2 (IP54)	NEMA 1 (IP20)	Price	-A Adder	-H Adder
GA24-67-FS	24 VAC	67	Floating	X	-	X	X	-	922	-	-
GAM24-67-FS	24 VAC/DC	67	Modulating		-		X	-	1041	-	-
GAS24-225	24 VAC	225	Floating		X		-	X	1335	895	1188
GAMS24-225	24 VAC	225	Modulating		X		-	X	1465	446	1188

Options/Adders
For optional auxilliary switches on the GA225 actuators, add -A to the end of the actuator part number, and add appropiate adder to the list price.
For optional Stem Heater on the GA225 actuator, add -H to the end of the actuator part number, and add appropiate adder to the list price.

GA(S) Series Linear Electric Actuators

Model Number		Voltage	Force lbs.	Control Signal	Time Out	Aux. Switches	Enclosed Terminal Block	NEMA 4 (IP66)	Price	-A Adder	-HT Adder
GA24-562	Non-Spring Return	24 VAC/ DC	562	On/Off, Floating & Modulating	X	X	X	X	2271	410	253
GASRE24-450	Spring Return		450						2980		
GASEX24-450											

Options/Adders
For optional auxiliary switches on the GA actuator, add -A to the end of the actuator part number.
For optional high temperature kit (media temperatures 266°F to 464°F) on the GA actuator, add -HT to the end of the actuator part number.

GA(S) Series Mounting Kits for PIC Valves

Model Number	Applicable Actuator	Applicable Valves	Price
SS-MTG-150/PA100	PAM24-110	SSM 1.5" & 2"	567
SSM-MTG-1/GA	GA & GAS	SSM 2.5" & 3"	439
SSM-MTG-2/GA	GA & GAS	GA-SSM 4" to 12"	439
		GAS-SSM 4" to 8"	



VAL Series Spring Return Linear Electric Actuators

Model Number		Voltage	Force lbs.	Control Signal	Applicable Valves	Enclosed Terminal Block	NEMA 1* (IP66)	Price
VAL-SRS07P	Spring Return	24 VAC	1000	Modulating	2.5" - 3" Globe Valves	X	X	3925
VAL-SRS15P					4" - 6" Globe Valves			4842



PA(M) Series Non-Fail Safe Actuators

Model Number	Voltage	Force lbs.	Control Signal	Cable Wiring	Price
PA24-27	24 VAC/ DC	27	On/Off & Floating	X	312
PAM24-27		27	Modulating		400
PAM24-100		100	On/Off, Floating & Modulating		797
PAM24-112		112			1248

PA(M) Series Fail Safe Actuators

Model Number	Voltage	Force lbs.	Control Signal	Cable Wiring	Price
PA24-27-FS	24 VAC/ DC	27	On/Off & Floating	X	632
PAM24-27-FS		27	Modulating		669
PAM24-100-FS		100	On/Off, Floating & Modulating		1094



2-Way Butterfly Valve Retrofit Kits	
Size	**Price**
2″ thru 6″	**962**
8″ thru 12″	**904**
14″ thru 16″	**2628**

3-Way Butterfly Valve Retrofit Kits	
Size	**Price**
2″ thru 6″	**3854**
8″ thru 12″	**4989**
14″ thru 16″	**6578**

Notes:
Butterfy retrofit kits include couples/brackets/adapters as required.
3-way kits also include the master/slave linkage components.
The actuator cost is not included in the above kit prices.
Consult factory for actuator sizing for the make/model/size of the valve to retrofitted. They will provide correct kit part No.
Consult factory for lead time.



Retrofits for Globe Valves

Existing Valve Manufacturer		Retrofit Kit #	Valve Size				
			2.5	3	4	5	6
Bray DG Series/Siemens/ Landis/Staefa 599 Series		GRK-BRA-1	349		-	-	-
		GRK-BRA-2	-	-	424		
Honeywell	V5011	GRK-HON-1	592				
	V5013	GRK-HON-2					
Johnson Controls	VG2000	GRK-JCI	651				
	VG7000	GRK-JCI-1	625				
Schneider	VB-8000	GRK-SCH-2	625				
	VB-9313						

Notes:
The actuator cost is not included in the above kit prices.

GA(S) Series Industrial Electric Actuators

Model Number		Voltage	Force lbs.	Control Signal	Control Signal	Time Out	Aux. Switches	Enclosed Terminal Block	NEMA 4 (IP66)	Price	-A Adder	-HT Adder
GA24-562	Non-Spring Return	24 VAC/ DC	562	On/Off Floating Modulating	X	X	X	X	X	2271	410	253
GASRE24-450	Spring Return		450							2980		
GASEX24-450												

Options/Adders
For optional auxiliary switches on the GA actuator, add -A to the end of the actuator part number.
For optional high temperature kit (media temperatures 266°F to 464°F) on the GA actuator, add -HT to the end of the actuator part number.

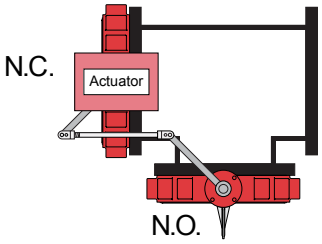


Large Weather Shields for D-Series on Ball Valves and Butterfly Valves		
Model Number	Description - Actuators Covered	Price
WS-B-S180	DS-180	499
WS-B-S180-T	Tandem DS-180	622
WS-B-280	D-140, D-210, and D-280	495
BF-BKT-L3	Required for Assembly	52
WS-B-280-T	Tandem D-140, D-210, and D-280	622
BF-BKT-L1	Required for Assembly	52
WS-B-310	DC-310	527
WS-B-310-T	Tandem DC-310	715
M9000-342	ST2 Direct Mount (VA Series) Actuators- NEMA 4, 4X	1411

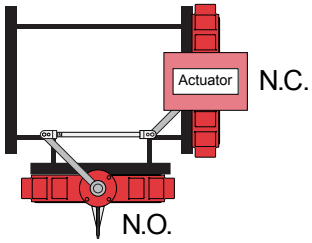
Weather Covers for PIC and Globe Valve Actuators		
Model Number	Description - Actuators Covered	Price
WS-PA27	PA27	667
WS-PA100	PA100/PA112	676
WS-GA450/562	GA450/562	830

Spring Return and Non-Spring Return

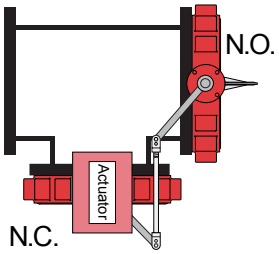
Configuration 1



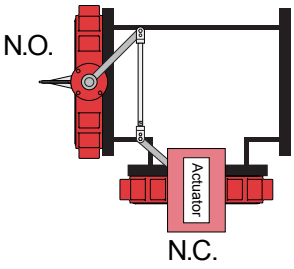
Configuration 2



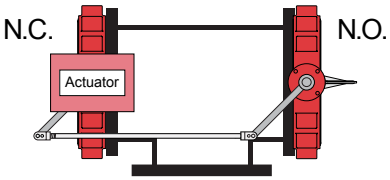
Configuration 3



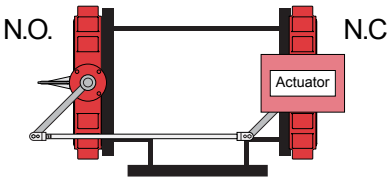
Configuration 4



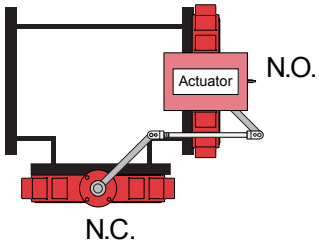
Configuration 5



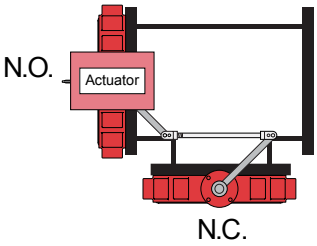
Configuration 6



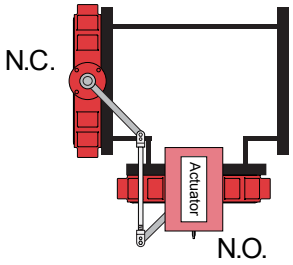
Configuration 7



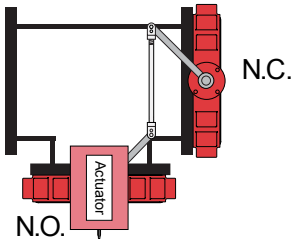
Configuration 8



Configuration 9



Configuration 10
(PN placeholder is 0)



Note: All 3-Way butterfly valve assembly orders should have configuration specified. Pricing remains the same, however Bray must know the specifications in order to manufacture the appropriate linkage kit.

Note: Configurations 7, 8, 9, & 10 with power fail-safe actuators will be configured as Forward Acting & Fail Open. Actuators without power fail-safe capabilities will be set to Reverse Acting, when configurable.

Note: Unless otherwise requested valve will be shipped as illustrated by Configuration 3.

Terms and Conditions of Sale

1. APPLICABILITY.
These terms and conditions
of sale (these "Terms") are the only terms which govern the sale of the products ("Products") by Bray International, Inc. and its subsidiaries, branches and divisions (as applicable, "Bray" or "Seller") to a purchaser of Products ("Buyer") from Bray. Notwithstanding anything herein to the contrary, if a written contract signed by Bray and a Buyer covers the sale of Products covered hereby, the terms and conditions of such contract shall prevail to the extent they are inconsistent with these Terms. References to (i) "Bray factory" are to the applicable Bray national or regional headquarters of Seller in the country where the order is received and (ii) "dollars" or "$" are to United States dollars unless specified otherwise.

2. ENTIRE AGREEMENT.
These Terms and the quotation (the "Quotation") which they accompany (collectively, the "Agreement") comprise the entire agreement between Bray and Buyer relating to the Products that are the subject of such Quotation, and supersede all prior or contemporaneous understandings, agreements, negotiations, representations and warranties and communications, both written and oral. These Terms prevail over any of Buyer's general terms and conditions of purchase regardless of whether or when Buyer submitted its purchase order or such terms. Buyer's acceptance of the Quotation is expressly limited to these Terms, and Bray objects to, and is not bound by, any terms or conditions that differ from, add to, or modify these Terms. Fulfillment of Buyer's order does not constitute acceptance of any of Buyer's terms and conditions and does not serve to modify or amend these Terms. Notwithstanding anything to the contrary in these Terms or any Agreement, Bray shall not be obligated to make, or otherwise fulfill the terms of, any sale of Products to Buyer in an order amount less than Two Hundred and Fifty Dollars ($250).

3. QUOTATIONS.
Unless stated otherwise in writing by Seller, all Quotations made by Seller are for immediate acceptance. Seller reserves the right to withdraw and/or revise any Quotation at any time prior to final acceptance by Buyer.

4. PRICE.
Buyer shall purchase the Products from Seller at the prices (the "Prices") set forth in Seller's published price list in force as of the date Buyer's order is received by Bray. All Prices (and any applicable discounts) for Products are subject to change without notice. Any order that is delayed for delivery at Buyer's request or is otherwise scheduled to be made in excess of one hundred twenty (120) days from the order date will be invoiced at published list prices and discounts effective at the time of shipment unless otherwise specifically agreed at the time of Seller's order acceptance. Any extra expenses incurred by Seller, such as engineering, tagging, taxes, service calls, export crating or other expenses, will be added to the invoice after notification to Buyer of the extra costs.

5. TAXES. Prices are exclusive of all sales, use and excise taxes, and any other similar taxes, duties, fees and charges of any kind imposed by any governmental authority (including those arising from changes in laws or regulations affecting foreign exchange) on any amounts payable by Buyer. Buyer shall be responsible for all such charges, costs and taxes, and if payable or paid by Seller, then added to the Price.

6. PAYMENT TERMS.
A. All invoices for domestic (U.S.) Buyers will be due net thirty (30) days from date of invoice unless otherwise stated by Seller. All invoices for international (non-U.S.) Buyers will require confirmed, irrevocable letters of c redit due upon delivery to freight forwarder at its United States port for shipment, unless otherwise agreed by Seller. Seller reserves the right (including if it determines subsequently that Buyer's financial condition becomes unsatisfactory to Seller) to (i) require payment on "cash in advance" basis, (ii) require a confirmed, irrevocable letter of credit or other acceptable security (including preservation of any lien rights) before shipment, or (iii) cancel shipment at any time prior to delivery of the Products (without further obligation or liability on Seller's part). In such cases, an order will be considered valid only upon receipt of any such advance payment or provision of security. Credit terms are provided solely at the discretion of Seller and may be denied for any reason by Seller.
B. Buyer shall pay interest on all late payments at the lesser of: (i) the rate of two percent (2%) per month and (ii) the highest rate permissible under applicable law. Buyer shall reimburse Seller for all costs incurred in collecting any late payments, including, without limitation, attorney fees and court costs. In addition to all other remedies available under these Terms or at law (which are not waived by Seller's exercise of any rights hereunder), Seller shall be entitled to suspend the delivery of any Products if Buyer fails to pay any amounts when due hereunder.
C. Buyer shall not withhold or delay payment of any amounts due and payable by reason of any set-off of any claim, counterclaim, abatement, delay of customer payment or dispute with Seller, whether relating to Seller's breach, bankruptcy or otherwise.

7. CREDIT.
Shipments and deliveries of Products to Buyer shall remain at all times subject to the approval of Seller's credit department. Seller, in addition to any other
rights and remedies, may, at its option, decline to make shipments or deliveries hereunder except upon receipt of payment or satisfactory security or otherwise upon terms and conditions satisfactory to Seller. Should Seller elect to extend credit to Buyer, Seller may limit or deny further extensions of credit in Seller's sole discretion. Any extension of open payment terms by Seller is dependent on Buyer's ongoing ability to support its working capital requirements for its business.

8. DELIVERY.
A. The Products will be delivered within a reasonable time after the receipt of Buyer's order. Delivery dates are approximate and are dependent upon prompt receipt of all necessary Buyer-furnished information and materials (if applicable). Penalty fees/liquidated damages that may be associated with any late delivery will not apply unless mutually agreed in writing at the time of order acknowledgement.
B. Unless otherwise agreed in writing by the parties, Seller shall make the Products available at the Bray factory (the "Delivery Point"). The title to and risk of loss for Products passes to Buyer upon signing of the bill of lading by the transportation company (which signifies the delivery of the Products to the transportation company for shipment to Buyer). Buyer shall be responsible for all loading costs and provide equipment and labor reasonably suited for receipt of the Products at the Delivery Point.
C. All Prices are quoted ExWorks (EXW) Bray factory or such other place that Seller shall designate on the Quotation. Seller does not insure shipments beyond the Delivery Point and,

therefore, all claims of lost or damaged Products in transit must be filed directly with the transportation company by Buyer. Seller shall select the method of shipment and the carrier for the Products. Seller may ship via the Buyer's choice if routing is satisfactory and rates equal to or less than Seller's normal choice. In the case of higher than normal special shipping requirements, Seller will ship the Products at Buyer's expense (including a handling fee or collect basis) and Buyer will not receive any credit for freight charges that under normal circumstances would be incurred by Seller. There may be only one destination per order.
D. Bray's standard document package will be provided—please see associated Quotation for details on what is included in document package for associated Product(s); document package will be delivered via electronic delivery (additional charges may apply if hard copy is required).
E. If for any reason Buyer fails to accept delivery of Products on the date fixed pursuant to Seller's notice to Buyer that the Products are being made available for delivery at the Delivery Point: (i) risk of loss to the Products shall pass to Buyer, (ii) the Products shall be deemed to have been delivered and accepted by Buyer and (iii) Seller, at its option, may store the Products until Buyer picks them up, whereupon Buyer shall be liable for all related costs and expenses (including, without limitation, storage and insurance). Any failure of Buyer to provide appropriate instructions, documents, licenses or authorizations in connection with delivery of Products shall be deemed to be a failure of Buyer to accept delivery of Products at such time as such Products are otherwise available for delivery. Any orders held by Seller more than t h i r t y (30) days may be treated as a cancelled and the Products deemed returned.

9. INSPECTION AND REJECTION OF NONCONFORMING PRODUCTS.
A. Buyer shall inspect the Products within ten (10) days of receipt ("Inspection Period"). Buyer will be deemed to have accepted the Products unless it notifies Seller in writing of any Nonconforming Products during the Inspection Period and furnishes such written evidence or other documentation as reasonably required by Seller. "Nonconforming Products" means that the Products shipped are different than those identified in Buyer's purchase order.
B. If Buyer timely notifies Seller of any Nonconforming Products during the Inspection Period, Seller shall, in its sole discretion, (i) replace such Nonconforming Products with conforming Products, or (ii) credit or refund the Price for such Nonconforming Products, together with any reasonable shipping and handling expenses incurred by Buyer in connection therewith. Buyer shall ship, at its expense and risk of loss, the Nonconforming Products to the Bray factory or such other place that Seller shall designate on the Quotation. Upon Seller's confirmation of the nonconforming nature of the Nonconforming Products, Seller shall credit the Buyer's expense for such shipment against the Buyer's payment obligations to Seller. If Seller exercises its option to replace such Nonconforming Products, Seller shall, after receiving Buyer's shipment of returned Nonconforming Products, ship to Buyer the replaced Products and the terms of Section 8(B) shall apply for such replaced Products, except that Seller shall be responsible for the costs and expenses for such shipment.
C. Buyer acknowledges and agrees that the remedies set forth in Section 9(B) (exercised in accordance with these Terms) are Buyer's exclusive remedies for the delivery of Nonconforming Products.

10. CHANGE ORDER / CANCELLATIONS.
Orders received and accepted by Seller may not be changed or cancelled except on terms satisfactory to Seller and which prevent Seller from incurring any loss. Seller will not accept changes or cancellations of Products, whether standard, non-standard or special, without full reimbursement of all related expenses incurred to date. Buyer must request all cancellations and change orders in writing, and must be signed by an authorized representative of Seller to be effective. Any changes or cancellations of Projects will be subject to appropriate changes in discounts, freight costs and other charges to Buyer.

11. LIMITED WARRANTY.
A. Seller warrants to Buyer that, for a period of thirtysix (36) months from the date of Bray's shipment (the "Warranty Period") from its manufacturing facility, Products manufactured by Seller will be free from defects in materials and workmanship when used for the purposes for which they were designed and manufactured. Seller does not warrant the Products against chemical or stress corrosion or against any other failure (including normal wear and tear due to operation or the environment) other than from defects in materials or workmanship.
B. THE EXPRESS WARRANTY SET FORTH IN SECTION 1.11(A) IS EXCLUSIVE AND IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS INTENDED OR GIVEN.
C. Products manufactured by a third party ("Third Party Product") may constitute, contain, be contained in, incorporated into, attached to or packaged together with, the Products. Third Party Products are not covered by the warranty in Section 11(A). For the avoidance of doubt, SELLER MAKES NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO ANY THIRD PARTY PRODUCT.
D. The Seller shall not be liable for a breach of the warranty set forth in Section 11(A) unless: (i) Buyer gives written notice to Seller of the defect during the Warranty Period and, in any event, within fourteen (14) days of the time when Buyer discovers or ought to have discovered the defect; (ii) Seller is given a reasonable opportunity after receiving the notice to examine such Products and Buyer (if requested to do so by Seller) returns such Products to Bray's factory or such other place that Seller shall designate on the Quotation for the examination to take place there; (iii) Products are stored, maintained and shipped in accordance with Seller's applicable guidelines therefor (available to Buyer in product information available at https://www.bray.com/resources/documents/manual guides? page=1, please contact productspec@bray.com with any questions concerning the guidelines) and (iv) Seller reasonably verifies Buyer's claim that the Products are defective. Buyer shall return (freight prepaid) the defective Product to Bray at Bray's factory or such other place that Seller shall designate on the Quotation no later than ninety (90) days of Buyer's initial written notice to Seller of the defect. Upon Seller's confirmation of Products in breach of the warranty provided under Section 11(A), Seller shall credit the Buyer's expense for shipment against the Buyer's payment obligations to Seller and, if Seller exercises its option to replace such defective Products, Seller shall ship to Buyer the replaced Products and the terms of Section 8(B) shall apply for such replaced Products, except that Seller shall be responsible for the costs and expenses for such shipment. Seller shall not be obligated for any on-site costs, including removal and reinstallation of any warranted Products. Upon request, Buyer shall provide Seller reasonable and clear access to the warranted Products.
E. The Seller shall not be liable for a breach of the warranty set forth in Section 11(A) if: (i) Buyer makes any further use of such Products after giving such notice; (ii) the defect arises because Buyer failed to follow Seller's oral or written instructions as to the storage, installation, commissioning, use or maintenance of the Products; or (iii) Buyer alters or repairs such Products without the prior written consent of Seller.
F. Subject to Section 11(D) and Section 11(E) above, with respect to any such Products during the Warranty Period, Seller shall, in its sole discretion, either: (i) repair or replace such Products (or the defective part) or (ii) credit or refund the price of such

Products at the pro rata contract rate provided that, if Seller so requests, Buyer shall, at Seller's expense, return such Products to Seller. THE REMEDIES SET FORTH IN THIS SECTION 11(F) SHALL BE THE BUYER'S SOLE AND EXCLUSIVE REMEDY AND SELLER'S SOLE AND ENTIRE LIABILITY FOR ANY BREACH OF THE LIMITED WARRANTY SET FORTH IN SECTION 11(A).

12. LIMITATION OF LIABILITY.
A. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY CONSEQUENTIAL, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY OR PUNITIVE DAMAGES, LOST PROFITS OR REVENUES OR DIMINUTION IN VALUE, ARISING OUT OF OR RELATING TO ANY BREACH OF THESE TERMS, WHETHER OR NOT THE POSSIBILITY OF SUCH DAMAGES HAS BEEN DISCLOSED IN ADVANCE BY BUYER OR COULD HAVE BEEN REASONABLY FORESEEN BY BUYER, REGARDLESS OF THE LEGAL OR EQUITABLE THEORY (CONTRACT, TORT OR OTHERWISE) UPON WHICH THE CLAIM IS BASED, AND NOTWITHSTANDING
THE FAILURE OF ANY AGREED OR OTHER REMEDY OF ITS ESSENTIAL PURPOSE. No action, regardless of form, may be brought by Buyer more than one (1) year after the cause of action has accrued. B. IN NO EVENT SHALL SELLER'S AGGREGATE LIABILITY ARISING OUT OF OR RELATED TO ANY PRODUCT, WHETHER ARISING OUT OF OR RELATED TO BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, EXCEED THE
TOTAL OF THE AMOUNTS PAID TO SELLER FOR SUCH PRODUCT.

13. AUTHORIZED RETURNS.
All sales of Products to Buyer are made on a one- way basis and no Products may be returned without prior written approval from Seller. Generally, in addition to the requirement for prior written approval, Bray will accept returns from a Buyer only if the return request is timely made following shipment of the applicable Product(s) to Buyer and the Product(s) are in good, reusable condition and remain standard Bray products (i.e., not custom-made, obsolete or buyout products). In regard to any returns, Seller generally issues credit (from which Seller may deduct shipping, restocking and reconditioning expenses).

14. INTELLECTUAL PROPERTY RIGHTS.
All copyrights, patents, trademarks, trade secrets, know-how and other intellectual property or proprietary rights pursuant to the laws of any jurisdiction worldwide ("IP Rights") associated with or relating to the Products shall belong solely and exclusively to Seller. Seller will retain all IP Rights used to create, embodied in, used in and otherwise relating to the Products and any of their component parts, and Buyer shall not acquire any ownership interest in any of Seller's IP Rights. Buyer shall use Seller's IP Rights only in accordance with these Terms and any instructions of Seller. No license, either express or implied, is granted in any IP Rights of Seller. If Buyer acquires any IP Rights in or relating to any Product by operation of law or otherwise, such rights are deemed and are hereby irrevocably assigned to Seller without further action. Buyer shall, at Seller's expense, execute such documents and do such things as are necessary to enable Seller to protect its IP Rights.

15. DESIGN CHANGES.
Seller reserves the right to change, discontinue or alter the design and construction of Products without prior notice and without further obligation.

16. COMPLIANCE WITH LAW.
Buyer shall comply with all applicable laws, regulations and ordinances, and shall maintain in effect all the licenses, permissions, authorizations, consents and permits that it needs to carry out its obligations under the Agreement. Upon Seller request, Buyer agrees to provide Seller with information about the end use (including location of) of any products purchased. In furtherance of the foregoing (and without limitation thereto), please note the following in regards to compliance: A. Trade Compliance. Buyer must comply with all laws governing export/import control and regulation, including, without limitation, laws governing re exporting. If Buyer is obtaining Product(s) for resale, such compliance requires that Buyer know of the end- use, end user, ultimate destination or other facts relating to such sale of Product(s), and be alerted to "red flags" in the circumstances related to such sale. Buyer is obligated to comply with Bray's trade compliance program in regards to any sale and purchase of Product(s). Buyer should contact Bray to confirm compliance with the requirements of this program. B. Anti-Corruption Laws. Buyer must comply with all anti-corruption and bribery laws and regulations,including, without limitation the United Kingdom's Bribery Act of 2010 and the United States' Foreign Corrupt Practices Act. Buyer must not pay, offer or promise to pay, directly or indirectly, anything of value for purposes of influencing an official decision or seeking influence in regards to any such decision from a person or organization affiliated with any government body, organization or business entity owned in part or in whole by a government body. Buyer must contact Bray in regards to any transaction in respect of Product(s) provided under this Agreement that could implicate such laws. Bray may immediately terminate, without any liability, any sale, agreement or association with any person violating such laws.

17. TERMINATION.
In addition to any remedies that may be provided under the Agreement, Seller may terminate the Agreement with immediate effect upon written notice to Buyer, if Buyer: (i) fails to pay any amount when due; (ii) has not otherwise performed or complied with any of the terms of the Agreement, in whole or in part; or (iii) becomes insolvent, files a petition for bankruptcy or commences or has commenced against it proceedings relating to bankruptcy, receivership, reorganization or assignment for the benefit of creditors.

18. WAIVER.
No waiver by Seller of any of the provisions of these Terms or the Agreement is effective unless explicitly set forth in writing and signed by Seller. No failure to exercise, or delay in exercising, any rights, remedy, power or privilege arising from the Agreement operates or may be construed as a waiver thereof. No single or partial exercise of any right, remedy, power or privilege hereunder precludes any other or further exercise thereof or the exercise of any other right, remedy, power or privilege.

19. CONFIDENTIAL INFORMATION.
All Confidential Information (as defined below) of Seller disclosed by Seller to Buyer, whether disclosed orally or disclosed or accessed in written, electronic or other form or media, and whether or not marked, designated or otherwise identified as "confidential," in connection with these Terms or the Agreement is confidential, solely for the use of performing this Agreement and may not be disclosed or copied unless authorized in advance by Seller in writing. Upon Seller's request, Buyer shall promptly return all Confidential Information received from Seller. Seller shall be entitled to injunctive relief for any violation of this Section. For purposes of this Agreement, "Confidential Information" means all non-public, confidential or proprietary information of Seller including, but not limited to, business affairs, business plans, trade secrets, intellectual property, specifications, samples, patterns, designs, client
information, customer information, supplier information, technical data, developments, properties, systems, procedures, ser-

vices, processes, methods, drawings, know- how, equipment, development plans, documents, manuals, strategies, training materials, costs, pricing, discounts or rebates, inventions, discoveries or any other confidential matters acquired in respect of the Seller or the Products.

20. FORCE MAJEURE.
Neither Seller nor Buyer shall be in breach of contract nor liable to the other party for any delay or damages if prevented from performance of these Terms and the Agreement (other than the payment of money) by any condition of force majeure which is beyond the control and not caused by the negligence of the party so affected ("Force Majeure"). Force Majeure includes, but shall not be limited to, earthquakes, floods, hurricanes, named tropical storms, lightning strikes, ice storms, blizzards, icebergs, pack ice, air and sea disasters, explosions and fire, epidemics, acts of God, acts of public enemy, war, terrorism, national emergency, invasion, insurrection, riot, strike, lockout, blockade or other industrial disputes, any laws, rules, regulations, orders, directives or requirements of or interference by any government or government agency (including any thereof or any affecting foreign exchange or otherwise making the terms of sale materially impractical on the basis of the economics relating to the agreed sale price or of illegality), inability or delay in obtaining supplies of adequate or suitable materials, power outage or other circumstances not within the control of the party and which, by the exercise of reasonable diligence, the party is unable to prevent or remedy, whether similar or dissimilar, foreseen or unforeseen. Seller shall have such additional time as may be reasonably necessary to perform its obligations upon the occurrence of any Force Majeure event.

21. ASSIGNMENT.
Buyer shall not assign any of its rights or delegate any of its obligations under this Agreement without the prior written consent of Seller. Any purported assignment or delegation in violation of this Section is null and void. No assignment or delegation relieves Buyer of any of its obligations under this Agreement.

22. AMENDMENT AND MODIFICATION.
These Terms may only be amended or modified in a writing which specifically states that it amends these Terms and is signed by an authorized representative of each of Seller and Buyer.

23. RELATIONSHIP OF THE PARTIES.
The relationship between the parties is that of independent contractors. Nothing contained in these Terms or the Agreement shall be construed as creating any agency, partnership, joint venture or other form of joint enterprise, employment or fiduciary relationship between Seller and Buyer, and neither party shall have authority to contract for or bind the other party in any manner whatsoever.

24. NO THIRD-PARTY BENEFICIARIES.
These Terms and the Agreement are for the sole benefit of the Seller and Buyer and their respective successors and permitted assigns, and nothing herein, express or implied, is intended to or shall confer upon any other person or entity any legal or equitable right, benefit or remedy of any nature whatsoever under or by reason of these Terms.

25. GOVERNING LAW / JURISDICTION / JURY WAIVER. THESE TERMS, THE AGREEMENT AND THE RELATIONS BETWEEN THE PARTIES SHALL BE GOVERNED BY THE PROCEDURAL AND UBSTANTIVE LAWS OF THE STATE OF TEXAS, EXCLUSIVE OF CONFLICT OF LAWS PRINCIPLES WHICH WOULD DIRECT THE APPLICATION OF THE SUBSTANTIVE OR PROCEDURAL LAW OF ANOTHER JURISDICTION. IN THE EVENT TEXAS LAW IS RULED
OR ORDERED TO NOT APPLY TO ANY DISPUTE BETWEEN THE PARTIES, THEN FOR PURPOSES OF THAT DISPUTE THESE TERMS, THE AGREEMENT AND THE RELATIONS BETWEEN THE PARTIES SHALL BE GOVERNED BY THE LAWS OF THE JURISDICTION IN WHICH BRAY'S FACTORY APPLICABLE TO THE SALE IS LOCATED, EXCLUSIVE OF CONFLICT OF LAWS PRINCIPLES WHICH WOULD DIRECT THE APPLICATION OF THE SUBSTANTIVE OR PROCEDUAL LAW OF ANOTHER JURISDICTION. IF BRAY'S FACTORY APPLICABLE TO THE SALE IS
LOCATED IN ANY STATE, TERRITORY, OR DISTRICT OF THE UNITED STATES OF AMERICA, EACH PARTY: (A) IRREVOCABLY SUBMITS TO THE JURISDICTION AND VENUE OF THE COURTS LOCATED IN HARRIS COUNTY, TEXAS FOR THE RESOLUTION OF ANY AND ALL DISPUTES ARISING FROM OR RELATING TO THESE TERMS, THE AGREEMENT AND THE RELATIONS BETWEEN THE PARTIES; AND (B) KNOWINGLY AND VOLUNTARILY WAIVES ALL RIGHTS TO A JURY TRIAL IN ANY LEGAL PROCEEDING RELATING TO THESE TERMS, THE AGREEMENT AND THE RELATIONS BETWEEN THE PARTIES. IF BRAY'S FACTORY APPLICABLE TO THE SALE IS NOT LOCATED IN ANY STATE, TERRITORY, OR DISTRICT OF THE UNITED STATES OF AMERICA, EACH PARTY AGREES ALL DISPUTES ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT OR THE ORDER(S) SHALL BE FINALLY SETTLED, SUBJECT TO THE DEFENSES ALLOWED BY APPLICABLE LAW, UNDER THE RULES OF
ARBITRATION OF THE INTERNATIONAL CHAMBER OF COMMERCE BY A SINGLE ARBITRATOR APPOINTED IN ACCORDANCE WITH THE SAID RULES. THE ARBITRATION SHALL BE CONDUCTED IN ENGLISH WITHIN THE LIMITS OF THE CITY OF HOUSTON, TEXAS. THE ARBITRATOR MUST MEET EACH OF THE FOLLOWING QUALIFICATIONS IN ORDER TO BE APPOINTED: (1) BE A GRADUATE OF A LAW SCHOOL LOCATED IN THE UNITED STATES; (2) HAVE MORE THAN TWENTY YEARS OF EXPERIENCE IN LITIGATING AND/OR ARBITRATING COMPLEX COMMERCIAL DISPUTES; (3) BE LICENSED TO PRACTICE LAW IN THE STATE OF TEXAS; AND (4) BE IMPARTIAL. THE ARBITRATOR WILL HAVE THE AUTHORITY TO APPORTION LIABILITY BETWEEN THE PARTIES, BUT WILL NOT HAVE THE AUTHORITY TO AWARD ANY DAMAGES OR REMEDIES NOT AVAILABLE UNDER, OR IN EXCESS OF, THE EXPRESS TERMS OF THESE TERMS OR THE AGREEMENT. THE ARBITRATION AWARD WILL BE PRESENTED TO THE PARTIES IN WRITING, AND UPON THE REQUEST OF EITHER PARTY, WILL INCLUDE FINDINGS OF FACT AND CONCLUSIONS OF LAW. THE AWARD MAY BE CONFIRMED AND ENFORCED IN ANY COURT OF COMPETENT JURISDICTION. BUYER AND SUPPLIER HEREBY CONSENT AND SUBMIT TO THE AFOREMENTIONED ARBITRATION AND THE JURISDICTION OF ANY LOCAL, STATE OR FEDERAL COURT LOCATED WITHIN HOUSTON, TEXAS, AS JURISDICTION FOR REVIEW OR CHALLENGE OF THE ARBITRATION RESULTS AND WAIVE ANY RIGHT SUCH PARTY MAY HAVE TO TRANSFER THE VENUE TO ANY OTHER JURISDICTION. THE PARTIES EXPRESSLY RESERVE ALL RIGHTS TO PURSUE INJUNCTIVE RELIEF IN ANY COURT LOCATED IN HOUSTON, TEXAS. THE PARTIES ACKNOWLEDGE AND AGREE THAT THIS AGREEMENT INCLUDES ACTIVITIES IN INTERSTATE COMMERCE (AND, ACCORDINGLY, THE FEDERAL ARBITRATION ACT OF THE UNITED STATES SHALL CONTROL AND APPLY TO ALL ARBITRATIONS CONDUCTED HEREUNDER, NOTWITHSTANDING ANY STATE LAW PROVISIONS TO THE CONTRARY).

26. NOTICES.
All notices, request, consents, claims, demands, waivers and other communications hereunder (each, a "Notice") shall be in writing and addressed to the parties at the addresses set forth

on the face of the Quotation or to such other address that may be designated by the receiving party in writing. All Notices shall be delivered by personal delivery, nationally recognized overnight courier (with all fees pre-paid), facsimile (with confirmation of transmission), email or certified or registered mail (in each case, return receipt requested, postage prepaid). Except as otherwise provided in the Agreement, a Notice is effective only (i) upon receipt of the receiving party (and confirmation of such receipt in respect of facsimile or email transmissions), and (ii) if the party giving the Notice has complied with the requirements of this Section.

27. SEVERABILITY.
If any of these Terms or other terms or provision of the Agreement are determined to be invalid, illegal or unenforceable in any jurisdiction, such invalidity, illegality or unenforceability shall not affect any other term or provision or invalidate or render unenforceable such term or provision in any other jurisdiction.

28. CLERICAL ERRORS.
Seller reserves the right to correct all stenographic or clerical errors or omissions in any documents (whether Quotations, invoices or other documents).

29. SURVIVAL.
Any provision of the Agreement that by its nature should apply after any termination or expiration of the Agreement, including (but not limited to) the following provisions: Compliance with Laws, Confidentiality, Governing Law / Jurisdiction and Survival, shall survive any such termination or expiration.

30. PUBLISHED DATA.
All published dimensions, weights, temperatures, pre sure ratings and other Product data are approximate. CANCELLATION, CHANGE ORDERS AND RETURNED GOODS POLICY ADDENDUM As guidance and further clarification on the applicable terms and conditions relating to change orders or cancellations, Bray will accept changes and cancellations generally subject to Buyer agreement to pay all costs and expenses incurred by Bray for the order, including, without limitation, costs and expenses relating to engineering, financing costs (including those for any performance or warranty obligations), restocking, order administration, supplies, freight, duties and inspection. For standard product, Bray will generally apply a twentyfive percent (25%) cancellation fee unless such amount is not sufficient to recapture Bray's fees and expenses (e.g., financing costs, freight, duties, etc.) relating to the order. For non standard products (i.e., product with unique feature(s) or specifically designed for the applicable purchase), the cancellation charge will usually be the purchase price of the product(s). For any such agreed cancellation or change, Bray will calculate the specific amount of such costs and expenses incurred to the date of such cancellation or change and advise Buyer of the applicable amount owed. For any standard product returns, exceptional costs such as freight, duties and financing costs will be added to any standard cancellation fee. For any non standard product returns, the cancellation charge will additionally include amounts incurred in co nection with the return. Specific terms and conditions relating to the foregoing and the events and circumstances relating to the novel coronavirus COVID-19: Bray will agree to delay the delivery of orders beyond a previously agreed delivery date as long as the Buyer pays an additional storage fee of five percent (5%) relating to such applicable order(s); provided, however, that the applicable order(s) must nevertheless be shipped and invoiced by no later than ninety (90) days after the previously agreed delivery date or the applicable order(s) will be deemed canceled and the cancellation charge (as outlined above) therefor shall be charged.

Bray COMMERCIAL

EBV Series-DC Actuators

Characterized Ball Valves

2-Way & 3-Way • 1/2"- 2"

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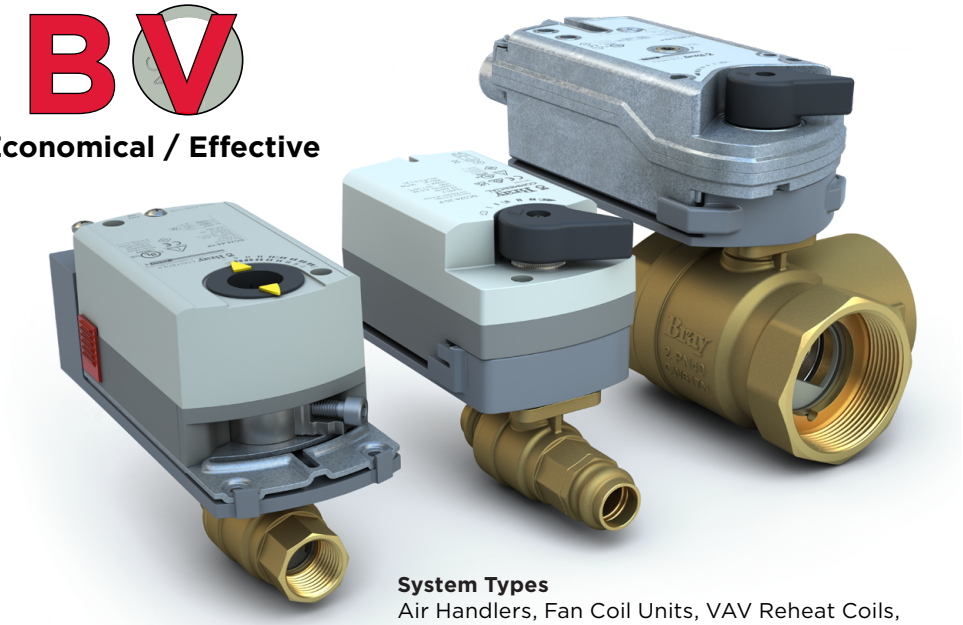
Application

The Bray Commercial EBV Series characterized control ball valves are industry leading solutions for energy efficient, economical and effective control of a wide range of equipment in HVAC applications.



EBV

Energy Efficient / Economical / Effective



System Types
Air Handlers, Fan Coil Units, VAV Reheat Coils, Chilled Beams and Computer Room Air Conditioners

Features and Benefits

- **Energy Efficient**

ANSI/FCI 70-2 Class VI leakage to eliminate unnecessary pump head loss.
Low torque for smaller, energy efficient actuators.

- **Economical**

Lower torque design allows smaller, more cost effective actuators.
Bray's world class engineering and manufacturing with over 30 years of experience ensures efficient processes and resulting lower costs.

- **Effective**

High 200 psi Close-Off rating.
High flow capacity to meet most any application.
High 500:1 Rangeability
Stainless Steel trim standard for water temperatures up to 284°F and steam up to 15 psig.
Multiple Cv's for an equal percentage flow characteristic on the control port.

- **Warranty**

5 Years - High Reliability tested to over 200K cycles.

EBV Series - Valve Body Specifications

Technical Specifications - EBV Valve Body			
Service	Hot Water, Chilled Water, Condenser Water up to 60% Glycol 15 psig (103 kPa) Saturated Steam @ 250˚F for HVAC Systems		
Size Range	**2-Way & 3-Way -** 1/2" through 2" (DN 15 to 50)		
Valve Body Pressure/ Temperature Rating	Cold Working Pressure	580 psi (PN 40)	
	Water (with Standard Mounting)	-20˚F to 203˚F @ 580 psi (-29˚C to 95˚C)	
	Water (with "High Temp" Mounting)	-20˚F to 284˚F @ 464 psi (-29˚C to 140˚C)	
	Saturated Steam (with "High Temp" Mounting)	15 psig (103 kPa) at 250˚F (121˚C)	
Maximum Recommended Operating Pressure Drop	50 psid Maximum Differential Pressure for Valves with Characterized Flow Control Disk and 30 psid Maximum for Quiet Service Ball Valves		
Flow Characteristics	**2-Way**	Equal Percentage	
	3-Way	Equal Percentage Port A, Linear Port B (Bypass)	
Rangeability	Greater than 500:1 (No disc)		
Ambient Conditions	See Actuator Specifications		
Close-Off	200 psi		
Leakage	Control Port - ANSI/FCI 70-2 Class VI Bypass Port < 1% of Maximum Flow		
End Connections	NPT Threaded, Sweat & Press, BSPP		
Materials	**Body**	Forged Brass	
	Ball	300 Series Stainless Steel	
	Stem		
	Seats	RPTFE	
	Stem Seals	EPDM O-Rings	
	Characterizing Disk	AMODEL®	
Weights (NPT) (Valve Body Only)	**Size**	**2-Way**	**3-Way**
	1/2"	0.71 lb. (0.32 kg)	0.79 lb. (0.36 kg)
	3/4"	0.75 lb. (0.34 kg)	0.93 lb. (0.42 kg)
	1"	1.30 lb. (0.59 kg)	1.59 lb. (0.72 kg)
	1-1/4"	2.05 lb. (0.93 kg)	2.56 lb. (1.16 kg)
	1-1/2"	2.73 lb. (1.24 kg)	3.37 lb. (1.53 kg)
	2"	4.61 lb. (2.09 kg)	5.80 lb. (2.63 kg)
Compliance CRN	0C25972		
Warranty	5 Years limited from time of shipment.		

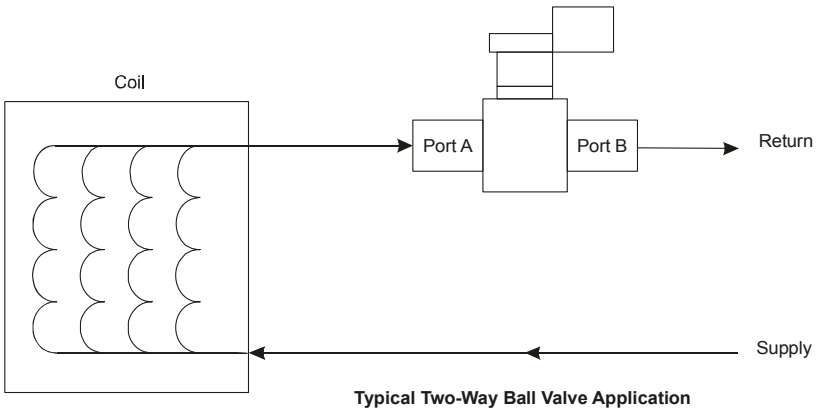
Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

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1-888-412-2729

EBV Series - 2-Way Piping Schematics



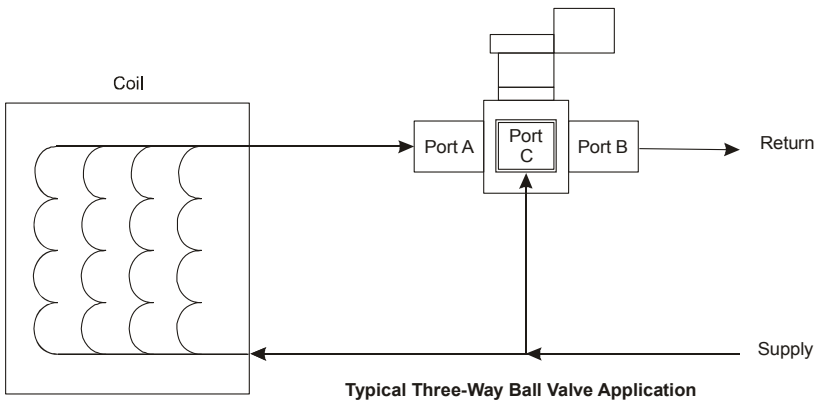
Typical Two-Way Ball Valve Application

Note: Mount the valve downstream from the coil to minimize heat transfer to the actuator.

2-Way - Default Configuration for EBV Series Ball Valves			
Valve Position at Actuator Position	2-Way Non-Spring Return	2-Way Spring Return N.O. (Normally Open)	2-Way Spring Return N.C. (Normally Closed)
Valve Position w/ Act CCW	Open	Open	Open
Valve position w/Act CW	Closed	Closed	Closed
Valve Position w power removed	Last Position	Open	Closed
Modulating actuator control signal Action (Direct Acting)*	CCW at 0; CW at Max	CCW at 0, CW at Max	CW at 0, CCW at Max

*Proportional MODULATING actuators include a switch to field convert from Direct Acting to Reverse Action

EBV Series - 3-Way Piping Schematics



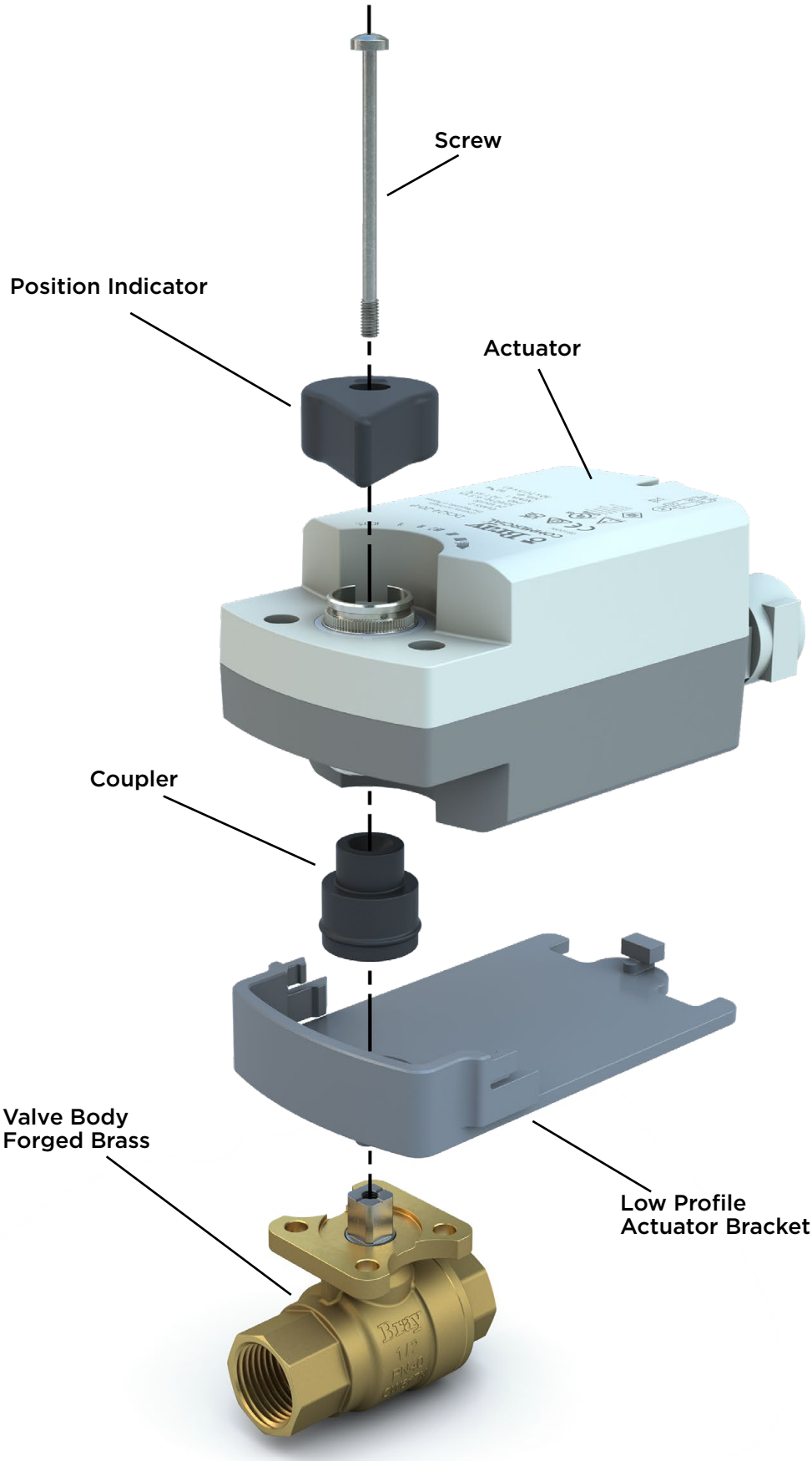
Typical Three-Way Ball Valve Application

Note: Mount the valve downstream from the coil to minimize heat transfer to the actuator. For pure diverting applications (one inlet/two outlets), only the standard port (no characterization disc) versions will work.

3-Way - Default Configuration for EBV Series Ball Valves			
Valve Position at Actuator Position	3-Way Non-Spring Return	3-Way Spring Return N.O. (Normally Open)	3-Way Spring Return N.C. (Normally Closed)
Valve Position w/ Act CCW	A open to B	A open to B	A open to B
Valve position w/Act CW	C open to B	C open to B	C open to B
Valve Position w power removed	Last Position	A open to B	C open to B
Modulating actuator control signal Action (Direct Acting)*	CCW at 0; CW at Max	CCW at 0, CW at Max	CW at 0, CCW at Max

*Proportional MODULATING actuators include a switch to field convert from Direct Acting to Reverse Action

EBV Series - 2-Way Exploded View - Direct Mount Actuators

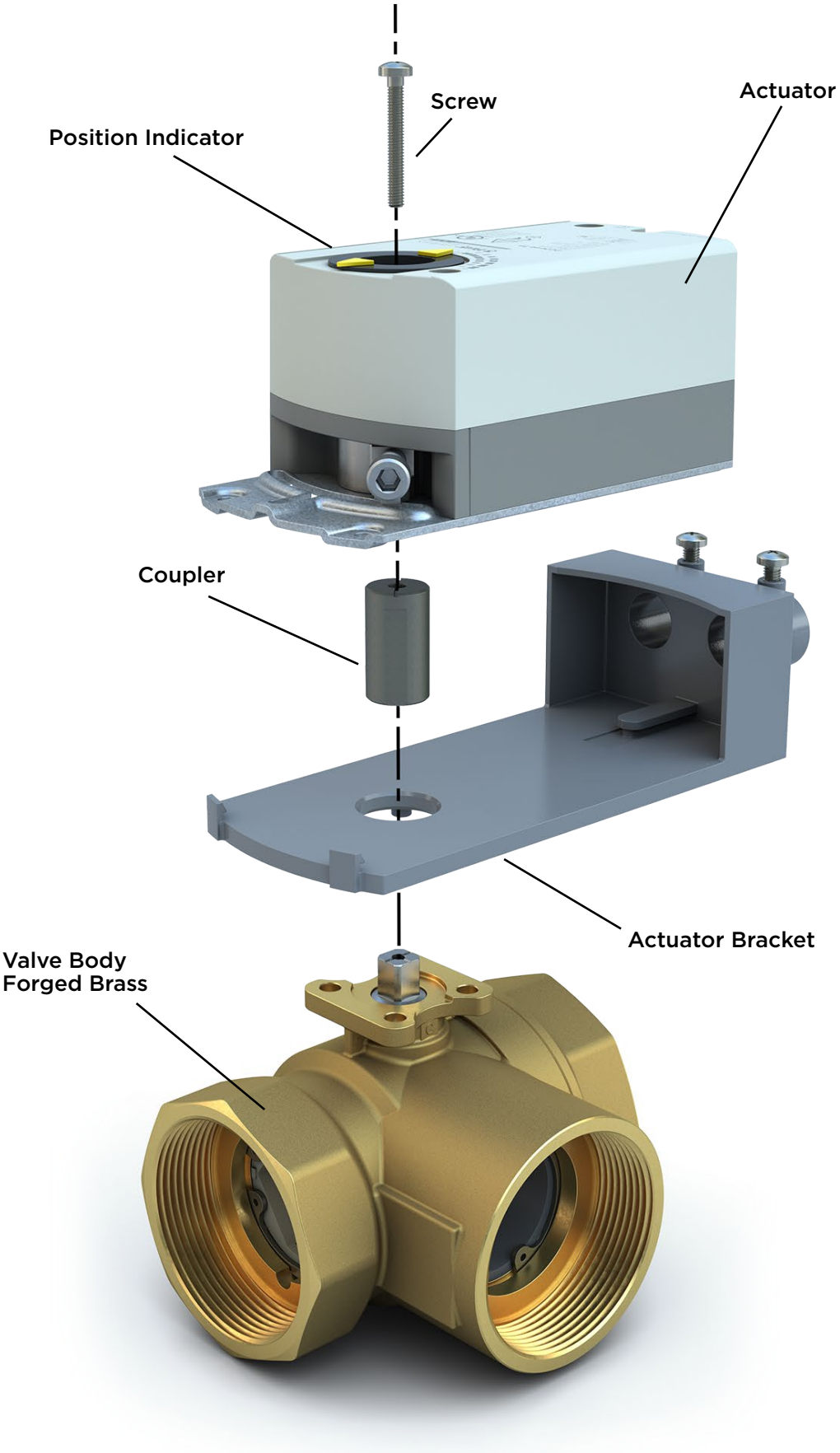


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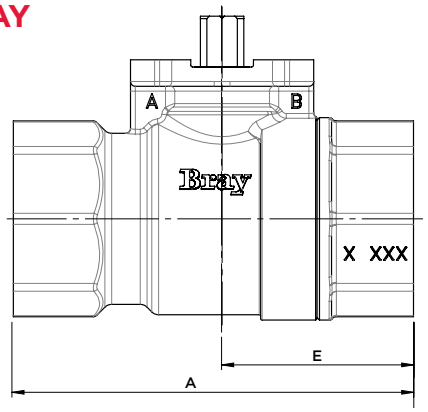
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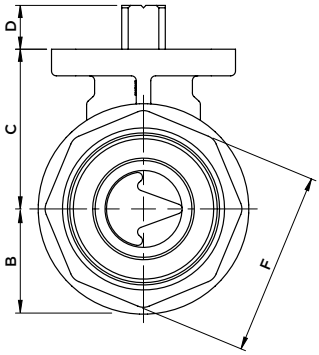
EBV Series - 3-Way Exploded View - Universal Mount Actuators



EBV Series - Valve Body Dimensions

2-WAY





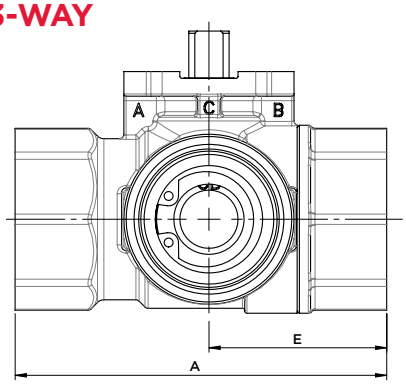


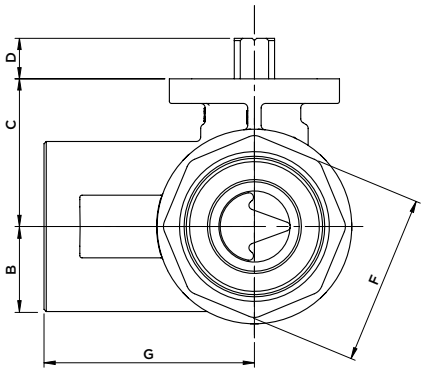
2-WAY - VALVE BODY DIMENSIONS in. (mm)

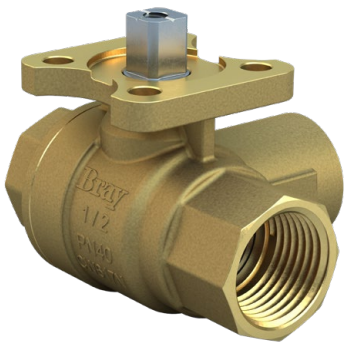
EBV Valve Model # Prefix	Size		Flow Coefficient		A (NPT)	A (SWEAT/ PRESS)	B	C	D	E	F	Weights - lbs. (kg)	
	in.	mm	Cv	Kv								NPT	SWEAT/ PRESS
EBV-05-2-x	1/2	15	0.3-17.2	0.3-14.9	2.60 (66)	4.60 (117)	0.59 (15)	1.14 (29)	0.35 (9)	1.22 (31)	1.00 (25)	0.71 (0.32)	0.93 (0.42)
EBV-75-2-x	3/4	20	4.9-15.3	4.2-13.2	2.28 (68)	4.74 (120.5)	0.59 (15)	1.14 (29)	0.35 (9)	1.30 (33)	1.22 (31)	0.75 (0.34)	1.15 (0.52)
EBV-1-2-x	1	25	7.8-29.9	6.7-25.9	3.27 (83)	5.45 (138.5)	0.79 (20)	1.30 (33)	0.36 (9.1)	1.56 (39.7)	1.50 (38)	1.30 (0.59)	1.76 (0.80)
EBV-125-2-x	1-1/4	32	11.7-44.8	10.1-38.8	3.66 (93)	-	0.98 (25)	1.59 (40.5)	0.36 (9.15)	1.79 (45.5)	1.89 (48)	2.05 (0.93)	-
EBV-150-2-x	1-1/2	40	19.6-48.3	17.0-41.8	3.94 (100)	-	1.06 (27)	1.67 (42.5)	0.36 (9.15)	1.93 (49)	2.13 (54)	2.73 (1.24)	-
EBV-2-2-x	2	50	29.2-95.5	25.3-82.6	4.61 (117)	-	1.46 (37)	1.93 (49)	0.35 (9)	2.24 (57)	2.68 (68)	4.61 (2.09)	-

x = Cv

3-WAY







3-WAY - VALVE BODY DIMENSIONS in. (mm)

EBV Valve Model # Prefix	Size		Flow Coefficient		A (NPT)	A (SWEAT/ PRESS)	B	C	D	E	F	G (NPT)	G (SWEAT/ PRESS)	Weights - lbs. (kg)	
	in.	mm	Cv	Kv										NPT	SWEAT/ PRESS
EBV-05-3-x	1/2	15	0.3-17.2	0.3-14.9	2.60 (66)	4.60 (117)	0.59 (15)	1.14 (29)	0.35 (9)	1.22 (31)	1.00 (25)	1.46 (37)	1.93 (49)	0.79 (0.36)	1.12 (0.51)
EBV-75-3-x	3/4	20	4.9-15.3	4.2-13.2	2.28 (68)	4.74 (120.5)	0.59 (15)	1.14 (29)	0.35 (9)	1.30 (33)	1.22 (31)	1.50 (38)	1.93 (49)	0.93 (0.42)	1.59 (0.72)
EBV-1-3-x	1	25	7.8-29.9	6.7-25.9	3.27 (83)	5.45 (138.5)	0.79 (20)	1.30 (33)	0.36 (9.1)	1.56 (39.7)	1.50 (38)	1.85 (47)	2.15 (54.7)	1.59 (0.72)	2.47 (1.12)
EBV-125-3-x	1-1/4	32	11.7-44.8	10.1-38.8	3.66 (93)	-	0.98 (25)	1.59 (40.5)	0.36 (9.15)	1.79 (45.5)	1.89 (48)	2.07 (52.5)	-	2.56 (1.16)	-
EBV-150-3-x	1-1/2	40	19.6-48.3	17.0-41.8	3.94 (100)	-	1.06 (27)	1.67 (42.5)	0.36 (9.15)	1.93 (49)	2.13 (54)	2.19 (55.5)	-	3.37 (1.53)	-
EBV-2-3-x	2	50	29.2-95.5	25.3-82.6	4.61 (117)	-	1.46 (37)	1.93 (49)	0.35 (9)	2.24 (57)	2.68 (68)	2.56 (65)	-	5.80 (2.63)	-

x = Cv

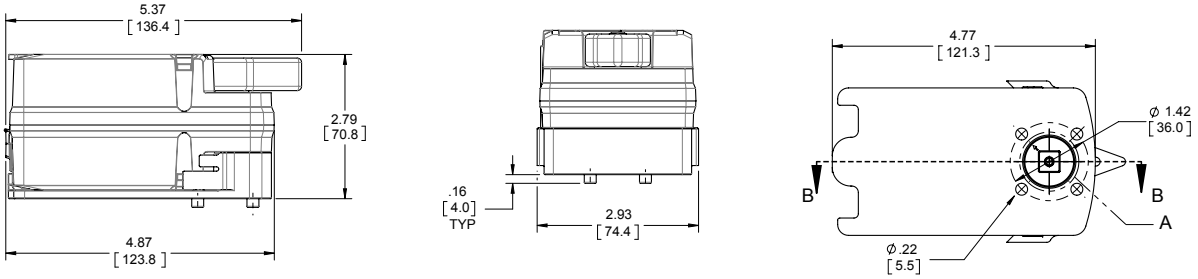
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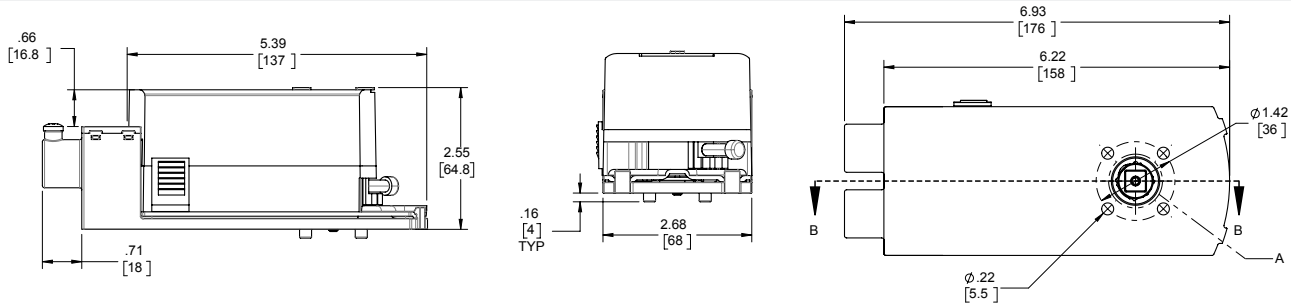
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EBV Series - Actuator Dimensions

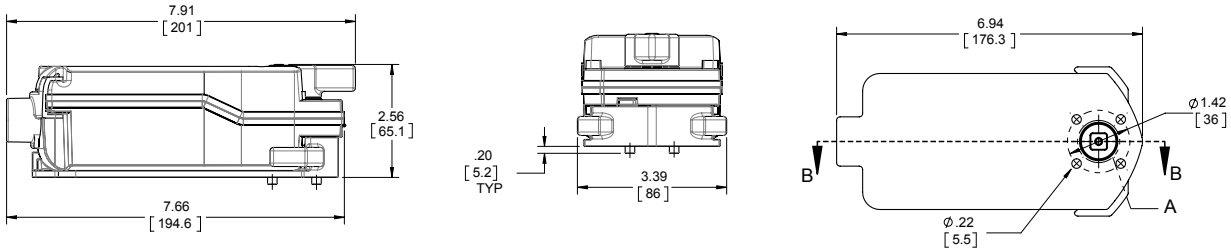
DCS(M)-20 Series



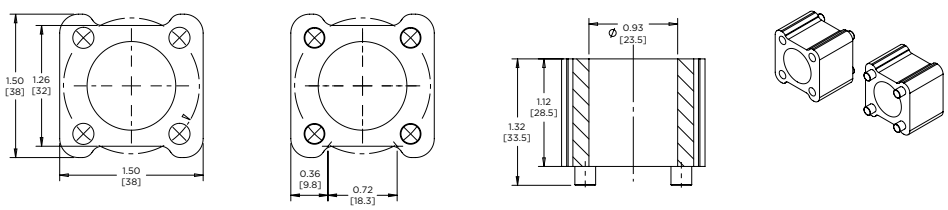
DC(M)-44 Series



DCS(M)-62 Series



Optional High Temperature Barrier



EBV - Valve Sizing Tips

Step One

Determine the designed Cv by using the following equation.

$$Cv = \frac{Q\sqrt{G}}{\sqrt{\Delta P}}$$

Where
Q = Flow in gallons per minute (GPM) required to pass through the valve
G = Specific gravity of fluid *
ΔP = Designed pressure drop across the valve in psi
Cv = Flow coefficient

Notes

* Specific gravity is negligible (equal to 1) for water below 200˚F. Use actual specific gravity of pure fluids other than water. In most cases, the valve selected for a H_2O mixture will not be affected by the specific gravity.

Example

The Specific Gravity of 50% Water (Compound 1) and 50% Ethylene Glycol Solution (Compound 2):

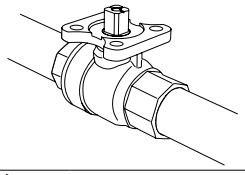
FORMULA	$\frac{1}{G\ soln} = \frac{wt\%\ of\ Compound\ 1}{Specific\ Gravity\ (G)} + \frac{wt\%\ of\ Compound\ 2}{Specific\ Gravity\ (G)}$
EXAMPLE	$G\ soln = \frac{0.5}{1.0} + \frac{0.5}{1.113} = 1.05$

Step Two

Determine whether the valve should be line size or sized to match the designed pressure drop (typical for modulating applications where precise control is required.)

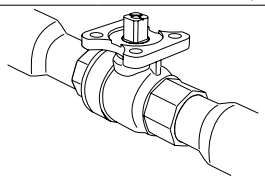
Option 1

LINE SIZE
Go to page EBV-9, EBV Series Quick Reference Charts. Using the line size, find a valve of the same size with a Cv that best matches the one calculated in Step 1.



Option 2

SIZE FOR PRECISE CONTROL
Go to page EBV-10 (2-Way or 3-Way), EBV Series Piping Geometry Charts. Find the line size at the top of the chart. Scan down the page to the Cv that best matches the one calculated in Step 1.



Step Three

Determine the actual pressure drop using the below equation.

$$\Delta P = \left(\frac{Q\sqrt{G}}{Cv} \right)^2$$

If the pressure drop is acceptable†, go to Step 4.
If not, repeat Steps 2 and 3, selecting an alternate valve.

Step Four

Check to be sure that the close-off requirements are met. Refer to Page EBV-11 - EBV-14.

† Recommended to be no higher than 35 psi or match the designed pressure drop, 3, 4, 5, and 6 psi are commonly accepted for modulating applications.

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2-Way/3-Way GPM - Quick Reference Chart												
Valve Size	Model Number	Differential Pressure (psi)										
		1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	7.0	10.0
		GPM										
1/2"	EBV-05-x-003	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.8	0.9
	EBV-05-x-005	0.5	0.6	0.7	0.8	0.9	0.9	1.0	1.1	1.1	1.3	1.6
	EBV-05-x-009	0.9	1.1	1.3	1.4	1.6	1.7	1.8	1.9	2.0	2.4	2.8
	EBV-05-x-01	1.4	1.7	2.0	2.2	2.4	2.6	2.8	3.0	3.1	3.7	4.4
	EBV-05-x-02	2	2.4	2.8	3.2	3.5	3.7	4.0	4.2	4.5	5.3	6.3
	EBV-05-x-03	3	3.7	4.2	4.7	5.2	5.6	6.0	6.4	6.7	7.9	9.5
	EBV-05-x-05	4.9	6.0	6.9	7.7	8.5	9.2	9.8	10.4	11.0	13.0	15.5
	EBV-05-x-08	8	9.8	11.3	12.6	13.9	15.0	16.0	17.0	17.9	21.2	25.3
	EBV-05-x-13	12.5	15.3	17.7	19.8	21.7	23.4	25.0	26.5	28.0	33.1	39.5
	EBV-05-x-17	17.2*	21.1	24.3	27.2	29.8	32.2	34.4	36.5	38.5	45.5	54.4
3/4"	EBV-75-x-05	4.9	6.0	6.9	7.7	8.5	9.2	9.8	10.4	11.0	13.0	15.5
	EBV-75-x-08	7.8	9.6	11.0	12.3	13.5	14.6	15.6	16.5	17.4	20.6	24.7
	EBV-75-x-12	12.3	15.1	17.4	19.4	21.3	23.0	24.6	26.1	27.5	32.5	38.9
	EBV-75-x-15	15.3*	18.7	21.6	24.2	26.5	28.6	30.6	32.5	34.2	40.5	48.4
1"	EBV-1-x-08	7.8	9.6	11.0	12.3	13.5	14.6	15.6	16.5	17.4	20.6	24.7
	EBV-1-x-12	12.1	14.8	17.1	19.1	21.0	22.6	24.2	25.7	27.1	32.0	38.3
	EBV-1-x-20	19.5	23.9	27.6	30.8	33.8	36.5	39.0	41.4	43.6	51.6	61.7
	EBV-1-x-30	29.9*	36.6	42.3	47.3	51.8	55.9	59.8	63.4	66.9	79.1	94.6
1-1/4"	EBV-125-x-12	11.7	14.3	16.5	18.5	20.3	21.9	23.4	24.8	26.2	31.0	37.0
	EBV-125-x-20	19.8	24.2	28.0	31.3	34.3	37.0	39.6	42.0	44.3	52.4	62.6
	EBV-125-x-30	30.4	37.2	43.0	48.1	52.7	56.9	60.8	64.5	68.0	80.4	96.1
	EBV-125-x-45	44.8*	54.9	63.4	70.8	77.6	83.8	89.6	95.0	100.2	118.5	141.7
1-1/2"	EBV-150-x-20	19.6	24.0	27.7	31.0	33.9	36.7	39.2	41.6	43.8	51.9	62.0
	EBV-150-x-30	30.4	37.2	43.0	48.1	52.7	56.9	60.8	64.5	68.0	80.4	96.1
	EBV-150-x-48	48.3*	59.2	68.3	76.4	83.7	90.4	96.6	102.5	108.0	127.8	152.7
2"	EBV-2-x-29	29.2	35.8	41.3	46.2	50.6	54.6	58.4	61.9	65.3	77.3	92.3
	EBV-2-x-49	48.8	59.8	69.0	77.2	84.5	91.3	97.6	103.5	109.1	129.1	154.3
	EBV-2-x-75	75.2	92.1	106.3	118.9	130.3	140.7	150.4	159.5	168.2	199.0	237.8
	EBV-2-x-96	95.5*	117.0	135.1	151.0	165.4	178.7	191.0	202.6	213.5	252.7	302.0

x = 2-Way or 3-Way Assemblies

* No characterizing disc

EBV Series - Adjusted Cv Chart for Piping Geometry Factor (Fp)

2-Way/3-Way PIPING GEOMETRY CHART - At Full Open (Adjusted Cv) - (200 psi Close-Off)										
Valve Size	Model Number	Nominal Cv	Pipe Size							
			1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
1/2"	EBV-05-x-003	0.3	0.30	0.30	0.30	-	-	-	-	-
1/2"	EBV-05-x-005	0.5	0.50	0.50	0.50	-	-	-	-	-
1/2"	EBV-05-x-009	0.9	0.90	0.90	0.89	-	-	-	-	-
1/2"	EBV-05-x-01	1.4	1.40	1.39	1.38	-	-	-	-	-
1/2"	EBV-05-x-02	2	2.00	1.97	1.94	-	-	-	-	-
1/2"	EBV-05-x-03	3	3.00	2.89	2.81	-	-	-	-	-
1/2"	EBV-05-x-05	4.9	4.90	4.47	4.20	-	-	-	-	-
1/2"	EBV-05-x-08	8	8.00	6.46	5.70	-	-	-	-	-
1/2"	EBV-05-x-13	12.5	12.50	8.24	6.81	-	-	-	-	-
1/2"	EBV-05-x-17	17.2*	17.20	9.24	7.34	-	-	-	-	-
3/4"	EBV-75-x-05	4.9	-	4.90	4.84	4.78	-	-	-	-
3/4"	EBV-75-x-08	7.8	-	7.80	7.57	7.33	-	-	-	-
3/4"	EBV-75-x-12	12.3	-	12.30	11.45	10.67	-	-	-	-
3/4"	EBV-75-x-15	15.3*	-	15.30	13.75	12.45	-	-	-	-
1"	EBV-1-x-08	7.8	-	-	7.80	7.75	7.68	-	-	-
1"	EBV-1-x-12	12.1	-	-	12.10	11.91	11.66	-	-	-
1"	EBV-1-x-20	19.5	-	-	19.50	18.74	17.82	-	-	-
1"	EBV-1-x-30	29.9*	-	-	29.90	27.35	24.70	-	-	-
1-1/4"	EBV-125-x-12	11.7	-	-	-	11.70	11.65	11.50	-	-
1-1/4"	EBV-125-x-20	19.8	-	-	-	19.80	19.55	18.87	-	-
1-1/4"	EBV-125-x-30	30.4	-	-	-	30.40	29.53	27.33	-	-
1-1/4"	EBV-125-x-45	44.8*	-	-	-	44.80	42.16	36.40	-	-
1-1/2"	EBV-150-x-20	19.6	-	-	-	-	19.60	19.36	19.11	-
1-1/2"	EBV-150-x-30	30.4	-	-	-	-	30.40	29.54	28.65	-
1-1/2"	EBV-150-x-48	48.3*	-	-	-	-	48.30	45.07	42.07	-
2"	EBV-2-x-29	29.2	-	-	-	-	-	29.20	29.03	28.80
2"	EBV-2-x-49	48.8	-	-	-	-	-	48.80	48.03	47.01
2"	EBV-2-x-75	75.2	-	-	-	-	-	75.20	72.46	69.11
2"	EBV-2-x-96	95.5*	-	-	-	-	-	95.50	90.06	83.87

x = 2-Way or 3-Way Assemblies

* No characterizing disc

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2-Way, On/Off & Floating - Non-Spring Return Actuators - (200 psi - Close Off)							
Actuator Model Details							
Floating with Time Out/Overload Protection						■	
Auxiliary Switches							■
Conduit Size - Flex(F)/NPT(N)					3/8 F	3/8 F	3/8 F
Cable - Standard(S)/Plenum(P)					P	P	P
Manual Override					Push Button	Push Button	Push Button
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC/DC On/ Off & Floating	24 VAC Floating
	In.	mm	Cv	Kv	DC24-44-TP	DC24-44-TPTO	DC24-44-TAP
EBV-05-2-003	0.5	15	0.3	0.3	✓	✓	✓
EBV-05-2-005			0.5	0.4			
EBV-05-2-009			0.9	0.8			
EBV-05-2-01			1.4	1.2			
EBV-05-2-02			2	1.7			
EBV-05-2-03			3	2.6			
EBV-05-2-05			4.9	4.2			
EBV-05-2-08			8	6.9			
EBV-05-2-13			12.5	10.8			
EBV-05-2-17*			17.2	14.9			
EBV-75-2-05	.75	20	4.9	4.2	✓	✓	✓
EBV-75-2-08			7.8	6.7			
EBV-75-2-12			12.3	10.6			
EBV-75-2-15*			15.3	13.2			
EBV-1-2-08	1	25	7.8	6.7	✓	✓	✓
EBV-1-2-12			12.1	10.5			
EBV-1-2-20			19.5	16.9			
EBV-1-2-30*			29.9	25.9			
EBV-125-2-12	1.25	32	11.7	10.1	✓	✓	✓
EBV-125-2-20			19.8	17.1			
EBV-125-2-30			30.4	26.3			
EBV-125-2-45*			44.8	38.8			
EBV-150-2-20	1.5	40	19.6	17.0	✓	✓	✓
EBV-150-2-30			30.4	26.3			
EBV-150-2-48*			48.3	41.8			
EBV-2-2-29	2	50	29.2	25.3	✓	✓	✓
EBV-2-2-49			48.8	42.2			
EBV-2-2-75			75.2	65.0			
EBV-2-2-96*			95.5	82.6			

* No characterizing disc



EBV Series - 2-Way - Non-Spring Return Close-Off Chart (psi)

2-Way, Modulating - Non-Spring Return Actuators - (200 psi - Close Off)						
Actuator Model Details						
Modulating with Time Out/Overload Protection					■	■
Auxiliary Switches						■
Conduit Size - Flex(F)/NPT(N)					3/8 F	3/8 F
Cable - Standard(S)/Plenum(P)					P	P
Manual Override					Push Button	Push Button
Model Number	Valve Size		Flow Coefficient		24 VAC/DC Modulating 0/2-10V in 0/2-10V out	24 VAC/DC Modulating 0/2-10V in 0/2-10V out
	In.	mm	Cv	Kv	DCM24-44-P	DCM24-44-AP
EBV-05-2-003	0.5	15	0.3	0.3	✓	✓
EBV-05-2-005			0.5	0.4		
EBV-05-2-009			0.9	0.8		
EBV-05-2-01			1.4	1.2		
EBV-05-2-02			2	1.7		
EBV-05-2-03			3	2.6		
EBV-05-2-05			4.9	4.2		
EBV-05-2-08			8	6.9		
EBV-05-2-13			12.5	10.8		
EBV-05-2-17*			17.2	14.9		
EBV-75-2-05	.75	20	4.9	4.2	✓	✓
EBV-75-2-08			7.8	6.7		
EBV-75-2-12			12.3	10.6		
EBV-75-2-15*			15.3	13.2		
EBV-1-2-08	1	25	7.8	6.7	✓	✓
EBV-1-2-12			12.1	10.5		
EBV-1-2-20			19.5	16.9		
EBV-1-2-30*			29.9	25.9		
EBV-125-2-12	1.25	32	11.7	10.1	✓	✓
EBV-125-2-20			19.8	17.1		
EBV-125-2-30			30.4	26.3		
EBV-125-2-45*			44.8	38.8		
EBV-150-2-20	1.5	40	19.6	17.0	✓	✓
EBV-150-2-30			30.4	26.3		
EBV-150-2-48*			48.3	41.8		
EBV-2-2-29	2	50	29.2	25.3	✓	✓
EBV-2-2-49			48.8	42.2		
EBV-2-2-75			75.2	65.0		
EBV-2-2-96*			95.5	82.6		

* No characterizing disc



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2-Way, On/Off - Spring Return Actuators - (200 psi - Close Off)												
Actuator Model Details												
Auxiliary Switches						■		■		■		
Conduit Size - Flex(F)/NPT(N)					1/2 N		1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N
Cable - Standard(S)/Plenum(P)					P	P	P	S	S	S		
Manual Override					N/A	N/A	Hex Wrench Included	Hex Wrench Included	Hex Wrench Included	Hex Wrench Included		
Model Number	Valve Size		Flow Coefficient		24 VAC/DC On/Off	24 VAC/DC On/Off	24 VAC/DC On/Off	24 VAC/DC On/Off	120 VAC On/Off	120 VAC On/Off		
	In.	mm	Cv	Kv	DCS24-20-P	DCS24-20-AP	DCS24-62-P	DCS24-62-A	DCS120-62	DCS120-62-A		
EBV-05-2-003	0.5	15	0.3	0.3	✓	✓	-	-	✓	✓		
EBV-05-2-005			0.5	0.4								
EBV-05-2-009			0.9	0.8								
EBV-05-2-01			1.4	1.2								
EBV-05-2-02			2	1.7								
EBV-05-2-03			3	2.6								
EBV-05-2-05			4.9	4.2								
EBV-05-2-08			8	6.9								
EBV-05-2-13			12.5	10.8								
EBV-05-2-17*			17.2	14.9								
EBV-75-2-05	.75	20	4.9	4.2	✓	✓	-	-	✓	✓		
EBV-75-2-08			7.8	6.7								
EBV-75-2-12			12.3	10.6								
EBV-75-2-15*			15.3	13.2								
EBV-1-2-08	1	25	7.8	6.7	✓	✓	-	-	✓	✓		
EBV-1-2-12			12.1	10.5								
EBV-1-2-20			19.5	16.9								
EBV-1-2-30*			29.9	25.9								
EBV-125-2-12	1.25	32	11.7	10.1	-	-	✓	✓	✓	✓		
EBV-125-2-20			19.8	17.1								
EBV-125-2-30			30.4	26.3								
EBV-125-2-45*			44.8	38.8								
EBV-150-2-20	1.5	40	19.6	17.0	-	-	✓	✓	✓	✓		
EBV-150-2-30			30.4	26.3								
EBV-150-2-48*			48.3	41.8								
EBV-2-2-29	2	50	29.2	25.3	-	-	✓	✓	✓	✓		
EBV-2-2-49			48.8	42.2								
EBV-2-2-75			75.2	65.0								
EBV-2-2-96*			95.5	82.6								

* No characterizing disc



EBV Series - 2-Way - Spring Return Close-Off Chart (psi)

2-Way, Modulating - Spring Return Actuators - (200 psi - Close Off)							
Actuator Model Details							
Auxiliary Switches							■
Conduit Size - Flex(F)/NPT(N)					1/2 N	1/2 N	1/2 N
Cable - Standard(S)/Plenum(P)					P	P	S
Manual Override					N/A	Hex Wrench Included	Hex Wrench Included
Model Number	Valve Size		Flow Coefficient		24 VAC Modulating 2-10 in/out	24 VAC Modulating 0-10 in/out	24 VAC Modulating 0-10 in/out
	In.	mm	Cv	Kv	DCMS24-20-P	DCMS24-62-P	DCMS24-62-A
EBV-05-2-003	0.5	15	0.3	0.3	✓	-	✓
EBV-05-2-005			0.5	0.4			
EBV-05-2-009			0.9	0.8			
EBV-05-2-01			1.4	1.2			
EBV-05-2-02			2	1.7			
EBV-05-2-03			3	2.6			
EBV-05-2-05			4.9	4.2			
EBV-05-2-08			8	6.9			
EBV-05-2-13			12.5	10.8			
EBV-05-2-17*			17.2	14.9			
EBV-75-2-05	.75	20	4.9	4.2	✓	-	✓
EBV-75-2-08			7.8	6.7			
EBV-75-2-12			12.3	10.6			
EBV-75-2-15*			15.3	13.2			
EBV-1-2-08	1	25	7.8	6.7	✓	-	✓
EBV-1-2-12			12.1	10.5			
EBV-1-2-20			19.5	16.9			
EBV-1-2-30*			29.9	25.9			
EBV-125-2-12	1.25	32	11.7	10.1	-	✓	✓
EBV-125-2-20			19.8	17.1			
EBV-125-2-30			30.4	26.3			
EBV-125-2-45*			44.8	38.8			
EBV-150-2-20	1.5	40	19.6	17.0	-	✓	✓
EBV-150-2-30			30.4	26.3			
EBV-150-2-48*			48.3	41.8			
EBV-2-2-29	2	50	29.2	25.3	-	✓	✓
EBV-2-2-49			48.8	42.2			
EBV-2-2-75			75.2	65.0			
EBV-2-2-96*			95.5	82.6			

* No characterizing disc



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3-Way, On/Off & Floating - Non-Spring Return Actuators - (200 psi - Close Off)							
Actuator Model Details							
Floating with Time Out/Overload Protection						■	
Auxiliary Switches							■
Conduit Size - Flex(F)/NPT(N)					3/8 F	3/8 F	3/8 F
Cable - Standard(S)/Plenum(P)					P	P	P
Manual Override					Push Button	Push Button	Push Button
Model Number	Valve Size		Flow Coefficient		24 VAC Floating	24 VAC/DC On/ Off & Floating	24 VAC Floating
	In.	mm	Cv	Kv	DC24-44-TP	DC24-44-TPTO	DC24-44-TAP
EBV-05-3-003	0.5	15	0.3	0.3	✓	✓	✓
EBV-05-3-005			0.5	0.4			
EBV-05-3-009			0.9	0.8			
EBV-05-3-01			1.4	1.2			
EBV-05-3-02			2	1.7			
EBV-05-3-03			3	2.6			
EBV-05-3-05			4.9	4.2			
EBV-05-3-08			8	6.9			
EBV-05-3-13			12.5	10.8			
EBV-05-3-17*			17.2	14.9			
EBV-75-3-05	.75	20	4.9	4.2	✓	✓	✓
EBV-75-3-08			7.8	6.7			
EBV-75-3-12			12.3	10.6			
EBV-75-3-15*			15.3	13.2			
EBV-1-3-08	1	25	7.8	6.7	✓	✓	✓
EBV-1-3-12			12.1	10.5			
EBV-1-3-20			19.5	16.9			
EBV-1-3-30*			29.9	25.9			
EBV-125-3-12	1.25	32	11.7	10.1	✓	✓	✓
EBV-125-3-20			19.8	17.1			
EBV-125-3-30			30.4	26.3			
EBV-125-3-45*			44.8	38.8			
EBV-150-3-20	1.5	40	19.6	17.0	✓	✓	✓
EBV-150-3-30			30.4	26.3			
EBV-150-3-48*			48.3	41.8			
EBV-2-3-29	2	50	29.2	25.3	✓	✓	✓
EBV-2-3-49			48.8	42.2			
EBV-2-3-75			75.2	65.0			
EBV-2-3-96*			95.5	82.6			

* No characterizing disc



EBV Series - 3-Way - Non-Spring Return Close-Off Chart (psi)

3-Way, Modulating - Non-Spring Return Actuators - (200 psi - Close Off)						
Actuator Model Details						
Modulating with Time Out/Overload Protection					■	■
Auxiliary Switches						■
Conduit Size - Flex(F)/NPT(N)					3/8 F	3/8 F
Cable - Standard(S)/Plenum(P)					P	P
Manual Override					Push Button	Push Button
Model Number	Valve Size		Flow Coefficient		24 VAC/DC Modulating 0/2-10V in 0/2-10V out	24 VAC/DC Modulating 0/2-10V in 0/2-10V out
	In.	mm	Cv	Kv	DCM24-44-P	DCM24-44-AP
EBV-05-3-003	0.5	15	0.3	0.3	✓	✓
EBV-05-3-005			0.5	0.4		
EBV-05-3-009			0.9	0.8		
EBV-05-3-01			1.4	1.2		
EBV-05-3-02			2	1.7		
EBV-05-3-03			3	2.6		
EBV-05-3-05			4.9	4.2		
EBV-05-3-08			8	6.9		
EBV-05-3-13			12.5	10.8		
EBV-05-3-17*			17.2	14.9		
EBV-75-3-05	.75	20	4.9	4.2	✓	✓
EBV-75-3-08			7.8	6.7		
EBV-75-3-12			12.3	10.6		
EBV-75-3-15*			15.3	13.2		
EBV-1-3-08	1	25	7.8	6.7	✓	✓
EBV-1-3-12			12.1	10.5		
EBV-1-3-20			19.5	16.9		
EBV-1-3-30*			29.9	25.9		
EBV-125-3-12	1.25	32	11.7	10.1	✓	✓
EBV-125-3-20			19.8	17.1		
EBV-125-3-30			30.4	26.3		
EBV-125-3-45*			44.8	38.8		
EBV-150-3-20	1.5	40	19.6	17.0	✓	✓
EBV-150-3-30			30.4	26.3		
EBV-150-3-48*			48.3	41.8		
EBV-2-3-29	2	50	29.2	25.3	✓	✓
EBV-2-3-49			48.8	42.2		
EBV-2-3-75			75.2	65.0		
EBV-2-3-96*			95.5	82.6		

* No characterizing disc



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3-Way, On/Off - Spring Return Actuators - (200 psi - Close Off)										
Actuator Model Details										
Auxiliary Switches					■		■		■	
Conduit Size - Flex(F)/NPT(N)					1/2 N		1/2 N	1/2 N	1/2 N	1/2 N
Cable - Standard(S)/Plenum(P)					P	P	P	S	S	S
Manual Override					N/A	N/A	Hex Wrench Included	Hex Wrench Included	Hex Wrench Included	Hex Wrench Included
Model Number	Valve Size		Flow Coefficient		24 VAC/DC On/Off	24 VAC/DC On/Off	24 VAC/DC On/Off	24 VAC/DC On/Off	120 VAC On/Off	120 VAC On/Off
	In.	mm	Cv	Kv	DCS24-20-P	DCS24-20-AP	DCS24-62-P	DCS24-62-A	DCS120-62	DCS120-62-A
EBV-05-3-003	0.5	15	0.3	0.3	✓	✓	-	-	✓	✓
EBV-05-3-005			0.5	0.4						
EBV-05-3-009			0.9	0.8						
EBV-05-3-01			1.4	1.2						
EBV-05-3-02			2	1.7						
EBV-05-3-03			3	2.6						
EBV-05-3-05			4.9	4.2						
EBV-05-3-08			8	6.9						
EBV-05-3-13			12.5	10.8						
EBV-05-3-17*			17.2	14.9						
EBV-75-3-05	.75	20	4.9	4.2	✓	✓	-	-	✓	✓
EBV-75-3-08			7.8	6.7						
EBV-75-3-12			12.3	10.6						
EBV-75-3-15*			15.3	13.2						
EBV-1-3-08	1	25	7.8	6.7	✓	✓	-	-	✓	✓
EBV-1-3-12			12.1	10.5						
EBV-1-3-20			19.5	16.9						
EBV-1-3-30*			29.9	25.9						
EBV-125-3-12	1.25	32	11.7	10.1	-	-	✓	✓	✓	✓
EBV-125-3-20			19.8	17.1						
EBV-125-3-30			30.4	26.3						
EBV-125-3-45*			44.8	38.8						
EBV-150-3-20	1.5	40	19.6	17.0	-	-	✓	✓	✓	✓
EBV-150-3-30			30.4	26.3						
EBV-150-3-48*			48.3	41.8						
EBV-2-3-29	2	50	29.2	25.3	-	-	✓	✓	✓	✓
EBV-2-3-49			48.8	42.2						
EBV-2-3-75			75.2	65.0						
EBV-2-3-96*			95.5	82.6						

* No characterizing disc



3-Way, Modulating - Spring Return Actuators - (200 psi - Close Off)							
Actuator Model Details							
Auxiliary Switches							■
Conduit Size - Flex(F)/NPT(N)					1/2 N	1/2 N	1/2 N
Cable - Standard(S)/Plenum(P)					P	P	S
Manual Override					N/A	Hex Wrench Included	Hex Wrench Included
Model Number	Valve Size		Flow Coefficient		24 VAC Modulating 2-10 in/out	24 VAC Modulating 0-10 in/out	24 VAC Modulating 0-10 in/out
	In.	mm	Cv	Kv	DCMS24-20-P	DCMS24-62-P	DCMS24-62-A
EBV-05-3-003	0.5	15	0.3	0.3	✓	-	✓
EBV-05-3-005			0.5	0.4			
EBV-05-3-009			0.9	0.8			
EBV-05-3-01			1.4	1.2			
EBV-05-3-02			2	1.7			
EBV-05-3-03			3	2.6			
EBV-05-3-05			4.9	4.2			
EBV-05-3-08			8	6.9			
EBV-05-3-13			12.5	10.8			
EBV-05-3-17*			17.2	14.9			
EBV-75-3-05	.75	20	4.9	4.2	✓	-	✓
EBV-75-3-08			7.8	6.7			
EBV-75-3-12			12.3	10.6			
EBV-75-3-15*			15.3	13.2			
EBV-1-3-08	1	25	7.8	6.7	✓	-	✓
EBV-1-3-12			12.1	10.5			
EBV-1-3-20			19.5	16.9			
EBV-1-3-30*			29.9	25.9			
EBV-125-3-12	1.25	32	11.7	10.1	-	✓	✓
EBV-125-3-20			19.8	17.1			
EBV-125-3-30			30.4	26.3			
EBV-125-3-45*			44.8	38.8			
EBV-150-3-20	1.5	40	19.6	17.0	-	✓	✓
EBV-150-3-30			30.4	26.3			
EBV-150-3-48*			48.3	41.8			
EBV-2-3-29	2	50	29.2	25.3	-	✓	✓
EBV-2-3-49			48.8	42.2			
EBV-2-3-75			75.2	65.0			
EBV-2-3-96*			95.5	82.6			

* No characterizing disc



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The Benefits of Ball Valves in Commercial Applications

Ball valves are generally a superior alternative to globe valves where precise control is required. Ball valves tend to offer higher close-off's and rangeability ratios while providing smaller size, weights and costs. Ball valves also offer more Cv options in order to more closely match your specifications.

Bray offers two distinct lines. These characterized ball valves provide superior control characteristics, low torque requirements for years of trouble free service and multiple actuator options.

NPT Threaded Comparative Valve Specifications		
	EBV Series	BV Series
Valve Body Pressure Rating	580 psi	1000 psi
Max Water Temperature	284˚F @ 36 psi	225˚F @ 1000 psi
Steam	15 psig @ 250°F	150 psig
Max Recommended Operating Pressure Drop	50 psi	80 psi
Leakage	Class VI	Bubble Tight

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

EBV Series - Model Number Matrix

EBV	Prefix: EBV Series											Valve Series
	-											-
		1	Valve Size 05 (1/2"), 75 (3/4"), 1 (1"), 125 (1-1/4"), 150 (1-1/2"), 2 (2")									Valve Size
			-									-
				2	Configuration (2 = 2-Way & 3 = 3-Way)							Configuration
					-							-
						08	Cv					Cv
							C	C = Normally Closed				Normally Closed
								/				/
									DC24-44	Actuator Series - Refer to Close-Off Charts		Actuator Series
EBV	-	1	-	2	-	08		/	DC24-44	1" EBV Body, 2-Way Configuration, 8 Cv, / DC24-44 Actuator		Example

Note: Valve assemblies ship normally Open from Factory unless you denote normally closed with a "C" after valve CV.

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Bray Commercial provides automated Butterfly, Ball, Globe and Pressure Independent Control Valves to the commercial building HVAC market throughout the world Whereever valve performance is required to maintain climate controlled environments, Bray can provide the required automated valves to meet the demanding flow applications of chiller/boiler isolation, air handlers and terminal units for new construction, retrofit and/or LEED certification applications in buildings.

Building Types

- Healthcare
- Data Centers
- Government and Municipal
- Sports/Entertainment/ Convention Centers
- K-12 and University Education
- Transportation
- Hotels
- Office Buildings
- Retail

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LOOKING FOR MORE

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09/23/26

EBV Flanged

Flanged Characterized Ball Valves

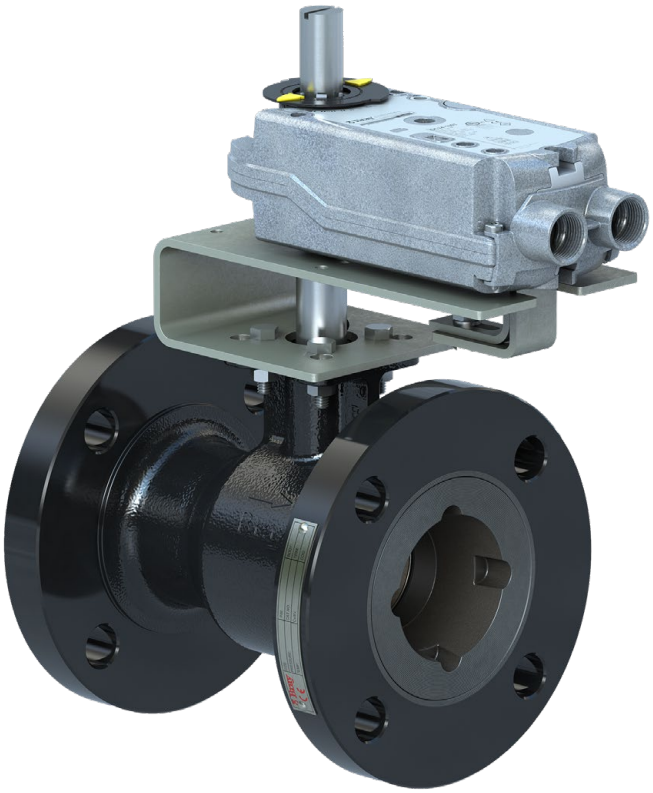
2-Way and 3-Way — 2-1/2″ to 6″ (DN 65 to DN 150)

Application

EBVF Series Flanged Ball Valves are designed to regulate the flow of hot water, chilled water, and 50% glycol solutions to the demand of a controller in Heating, Ventilating, and Air Conditioning (HVAC) systems. The valves come in sizes of 2-1/2″ — 6″, The ANSI 150 and PN 16 flanged valves come in both 2-way and 3-way configurations and are available in multiple Cv ratings.

Bray offers the valve, linkage, and actuator assemblies for factory or field mounting with either spring return or non-spring return actuators.

The EBVF is designed for electronic actuator operation to a maximum close-off pressure of 100 psi and for temperature ranges 0˚ to 284˚F





EBV

Energy Efficient / Economical / Effective

Features and Benefits

- **Energy Efficient**

ANSI/FCI 70-2 Class VI leakage to eliminate unnecessary pump head loss.
Low torque for smaller, energy efficient actuators.

- **Economical**

Lower torque design allows smaller, more cost effective actuators.
Bray's world class engineering and manufacturing with over 30 years of experience ensures efficient processes and resulting lower costs.

- **Effective**

High 100 psi Close-Off rating.
High flow capacity to meet most any application.
High 500:1 Rangeability
Stainless Steel trim standard for water temperatures up to 284°F and steam up to 15 psig.
Multiple Cv's replaceable discs for an equal percentage flow characteristic on the control port.

- **Warranty**

5 Years - High Reliability tested to over 100K cycles.

EBV Flanged - Valve Body Specifications

Technical Specifications - EBV Flanged Valve Body			
Service	Hot Water, Chilled Water, 50/50 Glycol Solutions, and 25 psig (172 kPa) Saturated Steam for HVAC Systems		
Size Range	**2-Way & 3-Way -** 2-1/2″ through 6″ (DN 65 to 150)		
Valve Fluid Temperature Limits	0° to 284°F (-18° to 140°C)		
Valve Body Pressure/ Temperature Rating	**Water**	ANSI Class 150 250 psi at -20° to 100°F (29° to 38°C) 235 psi at: 200°F (93°C) 218 psi at: 284°F (140°C)	
	Steam	25 psig (172 kPa) Saturated Steam for HVAC Systems	
Maximum Close-Off Pressure	**2-Way**	100 psi (689 kPa)	
	3-Way	50 psi (345 kPa)	
Maximum Recommended Operating Pressure Drop	30 psi (207 kPa) for quiet service		
Flow Characteristics	**2-Way**	Equal Percentage	
	3-Way	Equal Percentage Flow Characteristics of In-line Port or Linear Percentage Flow Characteristics of Angle Port	
Rangeability	Greater than 500:1		
Leakage	**Control Port**	Class VI	
	Bypass Port	1% of Maximum Flow	
End Connections	ANSI Class 150 Flange & EN 1092-2 PN16		
Ambient Operating Temperature	-25°F (-32°C) to 122°F (50°C)		
Materials	**Body**	Ductile Iron	
	Ball	304 Stainless Steel	
	Stem		
	Seats	RPTFE	
	Stem Seals	EPDM O-Rings	
	Characterizing Disk	Amodel®	
Weights (Valve Body Only)	**Size**	**2-Way**	**3-Way**
	2-1/2″	27 lb. (12 kg.)	38 lb. (17 kg.)
	3″	31 lb. (14 kg.)	44 lb. (20 kg.)
	4″	49 lb. (22 kg.)	64 lb. (29 kg.)
	5″	57 lb. (26 kg.)	73 lb. (33 kg.)
	6″	73 lb. (33 kg.)	97 lb. (44 kg.)
Certifications	CRN, CE, and PED		
Warranty	5 Years limited from time of shipment.		

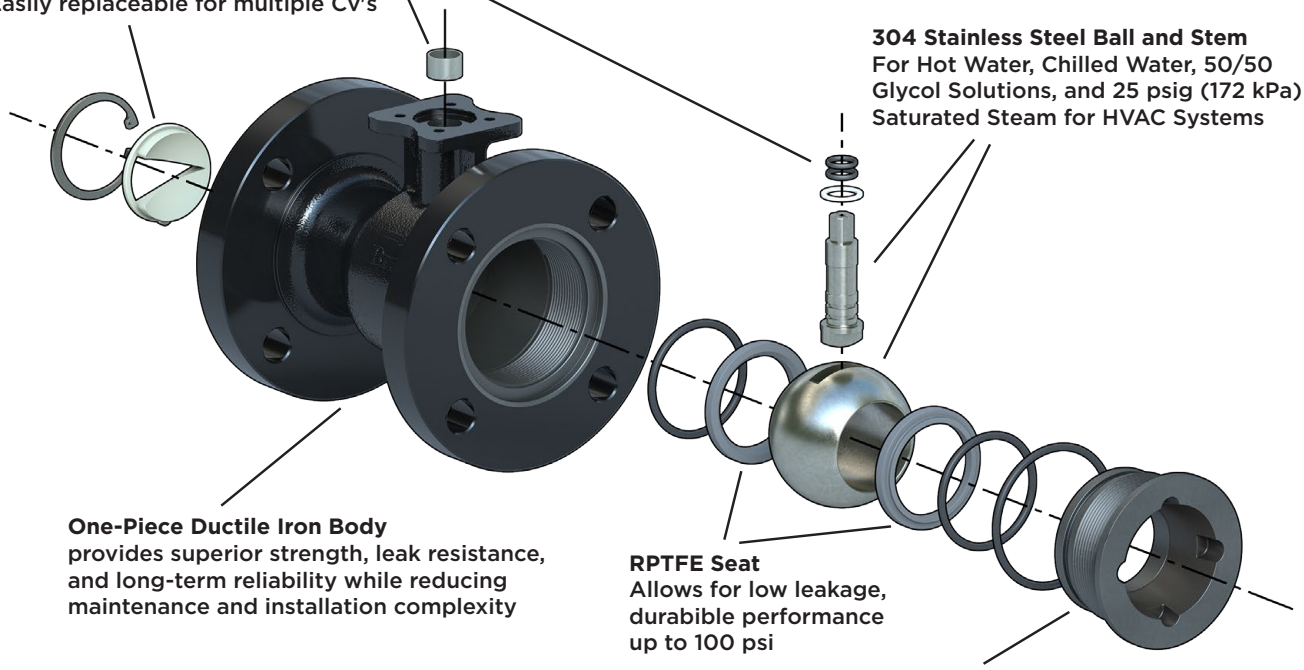
Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

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EBV Flanged - Ductile Iron Body Exploded View



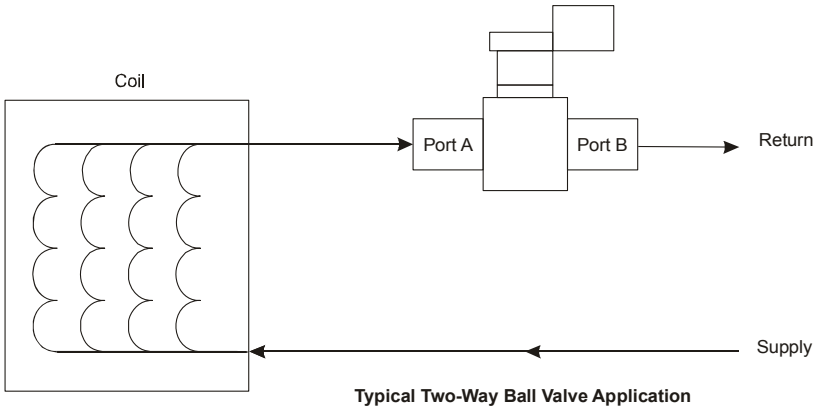
EBV Flanged Series - Assembly Number Matrix

EBVF	Prefix: EBV Flanged						Valve Series
	3-	Valve Size 250 = 2-1/2" 3 = 3" 4 = 4" 5 = 5" 6 = 6"					Valve Size
		2-	Configuration - 2-Way Configuration - 3-Way				Configuration
			118		Cv of 118 - (See Dimension Chart on Page 5 for a full list of Cv's)		Cv
				DC24-180-T	Actuator Series - Refer to Close-Off Charts		Actuator Series
EBVF-	**3-**	**2-**	**118**	**/DC24-180-T**	**Flanged EBV Valve, 3", 2-Way, Cv of 118, with a DC24-180-T Actuator**		EBVF-3-2-118/ DC24-180-T

EBV Flanged Series - Bare Valve Number Matrix

1C	Prefix: EBV Flanged							Valve Series
	0300-	Valve Size 0250 = 2-1/2" 0300 = 3" 0400 = 4" 0500 = 5" 0600 = 6"						Valve Size
		110 - Assembly						Assembly
			2	Configuration - 2-Way Configuration - 3-Way				Configuration
				4	4 = ANSI 150 5 = PN16			End Connection
					C	Trim Body Ductile Iron Ball 304 SS Stem 304 SS Seat RPTFE Disc Amodel® O-Ring EPDM		Trim
						11800	= Cv of 118 - (See Dimension Chart on Page 5 for a full list of Cv's)	Cv
1C	**0300-**	**110**	**2**	**4**	**C**	**11800**	**3", 2-Way, Flanged, ANSI 150, Ductile Iron Body, Cv of 118**	1C0300-11024C11800

EBV Flanged - 2-Way Piping Schematics



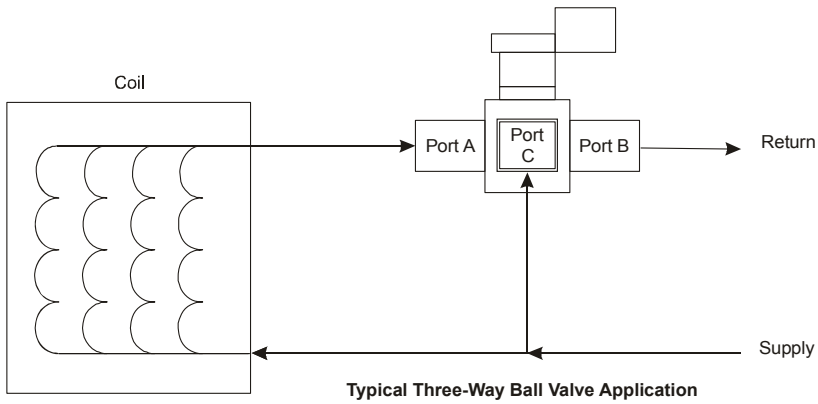
Typical Two-Way Ball Valve Application

Note: Mount the valve downstream from the coil to minimize heat transfer to the actuator.

2-Way - Default Configuration for EBV Flanged Ball Valves			
Valve Position at Actuator Position	2-Way Non-Spring Return	2-Way Spring Return N.O. (Normally Open)	2-Way Spring Return N.C. (Normally Closed)
Valve Position w/ Act CCW	Open	Open	Open
Valve position w/Act CW	Closed	Closed	Closed
Valve Position w power removed	Last Position	Open	Closed
Modulating actuator control signal Action (Direct Acting)*	CCW at 0; CW at Max	CCW at 0, CW at Max	CW at 0, CCW at Max

*Proportional MODULATING actuators include a switch to field convert from Direct Acting to Reverse Action

EBV Flanged - 3-Way Piping Schematics



Typical Three-Way Ball Valve Application

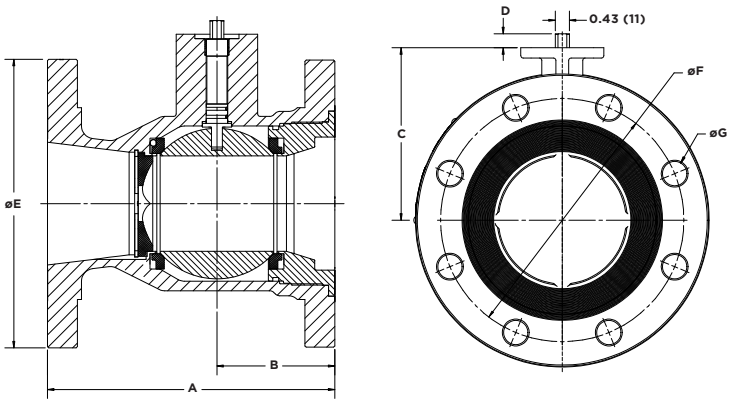
Note: Mount the valve downstream from the coil to minimize heat transfer to the actuator. For pure diverting applications (one inlet/two outlets), only the standard port (no characterization disc) versions will work.

3-Way - Default Configuration for EBV Flanged Ball Valves			
Valve Position at Actuator Position	3-Way Non-Spring Return	3-Way Spring Return N.O. (Normally Open)	3-Way Spring Return N.C. (Normally Closed)
Valve Position w/ Act CCW	A open to B	A open to B	A open to B
Valve position w/Act CW	C open to B	C open to B	C open to B
Valve Position w power removed	Last Position	A open to B	C open to B
Modulating actuator control signal Action (Direct Acting)*	CCW at 0; CW at Max	CCW at 0, CW at Max	CW at 0, CCW at Max

*Proportional MODULATING actuators include a switch to field convert from Direct Acting to Reverse Action

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2-WAY

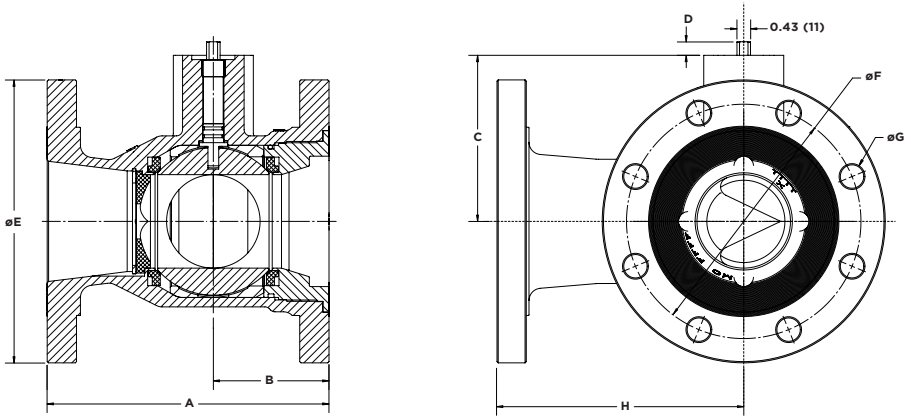


2-WAY - EBV FLANGED VALVE BODY DIMENSIONS in. (mm)

EBV Valve Model # Prefix	Size		Flow Coefficient		A	B	C	D	E	F	G	Weights lbs. (kg)
	in.	mm	Cv	Kv								
EBVF-250-2-48	2-1/2	65	48	41.5	7.48 (190)	3.15 (80)	3.74 (95)	0.43 (11)	7.28 (185)	5.50 (139.7)	0.75 (19.1)	27 (12)
EBVF-250-2-75			75	64.9								
EBVF-250-2-118			118	102.1								
EBVF-250-2-198			198	171.3								
EBVF-3-2-75	3	80	75	64.9	7.99 (203)	3.27 (83)	3.74 (95)	0.43 (11)	7.87 (200)	6.00 (152.4)	0.75 (19.1)	31 (14)
EBVF-3-2-118			118	102.1								
EBVF-3-2-198*			198	171.3								
EBVF-4-2-118	4	100	118	102.1	9.02 (229)	3.70 (94)	5.31 (135)	0.43 (11)	9.06 (230)	7.50 (190.5)	0.75 (19.1)	49 (22)
EBVF-4-2-177			177	153.1								
EBVF-4-2-191			191	164.4								
EBVF-4-2-360			360	311.4								
EBVF-5-2-292	5	125	292	252.6	10.00 (254)	3.80 (96.5)	5.31 (135)	0.43 (11)	10.04 (255)	8.50 (215.9)	0.88 (22.2)	57 (26)
EBVF-5-2-360*			360	311.4								
EBVF-6-2-365*	6	150	365	315.7	12.52 (318)	4.45 (113)	5.31 (135)	0.43 (11)	11.22 (285)	9.50 (241.3)	0.88 (22.2)	73 (33)

* No Cv disc

3-WAY

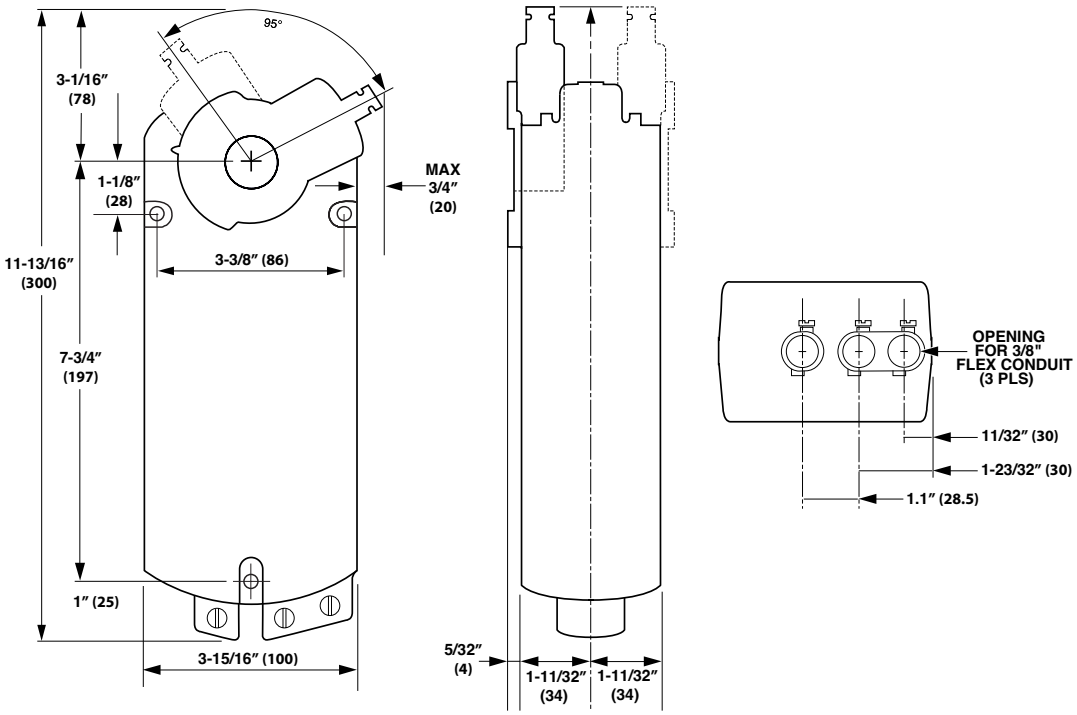


3-WAY - EBV FLANGED VALVE BODY DIMENSIONS in. (mm)

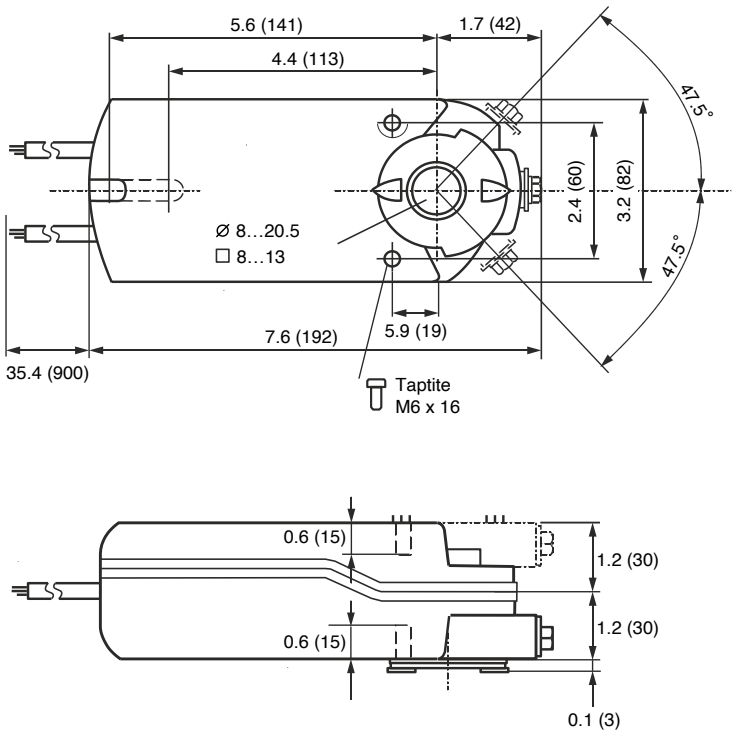
EBV Valve Model # Prefix	Size		Flow Coefficient		A	B	C	D	E	F	G	H	Weights lbs. (kg)
	in.	mm	Cv	Kv									
EBVF-250-3-48	2-1/2	65	48	41.5	7.48 (190)	3.15 (80)	3.74 (95)	0.43 (11)	7.28 (185)	5.50 (139.7)	0.75 (19.1)	7.09 (180)	38 (17)
EBVF-250-3-75			75	64.9									
EBVF-250-3-118			118	102.1									
EBVF-250-3-198			198	171.3									
EBVF-3-3-75	3	80	75	64.9	7.99 (203)	3.27 (83)	3.74 (95)	0.43 (11)	7.87 (200)	6.00 (152.4)	0.75 (19.1)	7.42 (188.5)	44 (20)
EBVF-3-3-118			118	102.1									
EBVF-3-3-198*			198	171.3									
EBVF-4-3-118	4	100	118	102.1	9.02 (229)	3.70 (94)	5.31 (135)	0.43 (11)	9.06 (230)	7.50 (190.5)	0.75 (19.1)	7.89 (200.5)	64 (29)
EBVF-4-3-177			177	153.1									
EBVF-4-3-191			191	164.4									
EBVF-4-3-360			360	311.4									
EBVF-5-3-292	5	125	292	252.6	10.00 (254)	3.80 (96.5)	5.31 (135)	0.43 (11)	10.04 (255)	8.50 (215.9)	0.88 (22.2)	8.50 (216)	73 (33)
EBVF-5-3-360*			360	311.4									
EBVF-6-3-365*	6	150	365	315.7	12.52 (318)	4.45 (113)	5.31 (135)	0.43 (11)	11.22 (285)	9.50 (241.3)	0.88 (22.2)	9.27 (235.5)	97 (44)

* No Cv disc

DC(M)S-140 & DC(M)-310 Series



DC(M)-180 Series



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EBV Flanged - Piping Geometry Chart (Adjusted Cv) — 2-1/2" - 6"

Valve Model Number	Valve Size		Flow Coefficient		Pipe Size/At Full Open (Adjusted Cv)						
	in.	mm	Cv	Kv	2.5"	3"	4"	5"	6"	8"	10"
EBVF-250-x-48	2.5	65	48	41.5	48.0	47.8	47.1	-	-	-	-
EBVF-250-x-75			75	64.9	75.0	74.2	71.8	-	-	-	-
EBVF-250-x-118			118	102.1	118.0	114.8	106.7	-	-	-	-
EBVF-250-x-198			198	171.3	198.0	184.0	155.2	-	-	-	-
EBVF-3-x-75	3	80	75	64.9	-	75.0	74.2	73.3	-	-	-
EBVF-3-x-118			118	102.1	-	118.0	114.9	111.6	-	-	-
EBVF-3-x-198*			198	171.3	-	198.0	184.2	171.4	-	-	-
EBVF-4-x-118	4	100	118	102.1	-	-	118.0	117.3	116.4	-	-
EBVF-4-x-177			177	153.1	-	-	177.0	174.7	171.6	-	-
EBVF-4-x-191			191	164.4	-	-	191.0	188.1	184.3	-	-
EBVF-4-x-360			360	311.4	-	-	360.0	341.6	320.3	-	-
EBVF-5-x-292	5	125	292	252.6	-	-	-	292.0	288.9	280.3	-
EBVF-5-x-360*			360	311.4	-	-	-	360.0	354.3	338.7	-
EBVF-6-x-365*	6	150	365	315.7	-	-	-	-	365.0	359.1	352.7

* No Cv Disc
x = 2-Way or 3-Way

EBV Flanged - GPM Quick Reference Chart — 2-1/2" - 6"

Valve Model Number	Valve Size		Flow Coefficient		Differential Pressure (psi)									
	in.	mm	Cv	Kv	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	7.00	10.00
EBVF-250-x-48	2.5	65	48	41.5	58.8	67.9	75.9	83.1	89.8	96.0	101.8	107.3	127.0	151.8
EBVF-250-x-75			75	64.9	91.9	106.1	118.6	129.9	140.3	150.0	159.1	167.7	198.4	237.2
EBVF-250-x-118			118	102.1	144.5	166.9	186.6	204.4	220.8	236.0	250.3	263.9	312.2	373.1
EBVF-250-x-198			198	171.3	242.5	280.0	313.1	342.9	370.4	396.0	420.0	442.7	523.9	626.1
EBVF-3-x-75	3	80	75	64.9	91.9	106.1	118.6	129.9	140.3	150.0	159.1	167.7	198.4	237.2
EBVF-3-x-118			118	102.1	144.5	166.9	186.6	204.4	220.8	236.0	250.3	263.9	312.2	373.1
EBVF-3-x-198*			198	171.3	242.5	280.0	313.1	342.9	370.4	396.0	420.0	442.7	523.9	626.1
EBVF-4-x-118	4	100	118	102.1	144.5	166.9	186.6	204.4	220.8	236.0	250.3	263.9	312.2	373.1
EBVF-4-x-177			177	153.1	216.8	250.3	279.9	306.6	331.1	354.0	375.5	395.8	468.3	559.7
EBVF-4-x-191			191	164.4	233.9	270.1	302.0	330.8	357.3	382.0	405.2	427.1	505.3	604.0
EBVF-4-x-360			360	311.4	440.9	509.1	569.2	623.5	673.5	720.0	763.7	805.0	952.5	1138.4
EBVF-5-x-292	5	125	292	252.6	357.6	413.0	461.7	505.8	546.3	584.0	619.4	652.9	772.6	923.4
EBVF-5-x-360*			360	311.4	440.9	509.1	569.2	623.5	673.5	720.0	763.7	805.0	952.5	1138.4
EBVF-6-x-365*	6	150	365	315.7	447.0	516.2	577.1	632.2	682.9	730.0	774.3	816.2	965.7	1154.2

* No Cv Disc
x = 2-Way or 3-Way

EBV Flanged - 2-Way Actuator Selection and Close-Off Charts

2-Way, On/Off, Floating & Modulating - Non-Spring Return Actuators - (100 psi - Close Off)								
Actuator Model Details								
Optional Auxiliary Switches					■	■	-	■
Time Out					■	■	■	■
Conduit Size - Flex(F)/NPT(N)					1/2 N	3/8 F	1/2 N	3/8 F
Cable - Standard(S)					S	S	S	S
Model Number	Valve Size		Flow Coefficient		24 VAC/DC On/Off & Floating		24 VAC/DC Modulating	
	In.	mm	Cv	Kv	DC24-180-T	DC24-310-T	DCM24-180	DCM24-310
EBVF-250-2-48	2.5	65	48	41.5	✓	-	✓	-
EBVF-250-2-75			75	64.9				
EBVF-250-2-118			118	102.1				
EBVF-250-2-198			198	171.3				
EBVF-3-2-75	3	80	75	64.9	✓	-	✓	-
EBVF-3-2-118			118	102.1				
EBVF-3-2-198*			198	171.3				
EBVF-4-2-118	4	100	118	102.1	-	✓	-	✓
EBVF-4-2-177			177	153.1				
EBVF-4-2-191			191	164.4				
EBVF-4-2-360			360	311.4				
EBVF-5-2-292	5	125	292	252.6	-	✓	-	✓
EBVF-5-2-360*			360	311.4				
EBVF-6-2-365 *	6	150	365	315.7	-	✓	-	✓
Adder -A					✓	✓	-	✓
Adder -WS					-	✓	-	✓

* No Cv Disc

2-Way, On/Off & Modulating - Spring Return Actuators - (100 psi - Close Off)								
Actuator Model Details								
Optional Auxiliary Switches					■	■	■	■
Conduit Size - Flex(F)/NPT(N)					3/8 F	3/8 F	3/8 F	3/8 F
Cable - Standard(S)					S	S	S	S
Model Number	Valve Size		Flow Coefficient		24 VAC/DC On/Off		24 VAC/DC Modulating	
	In.	mm	Cv	Kv	DCS24-140	DCS24-140-D	DCMS24-140	DCMS24-140-D
EBVF-250-2-48	2.5	65	48	41.5	✓	-	✓	-
EBVF-250-2-75			75	64.9				
EBVF-250-2-118			118	102.1				
EBVF-250-2-198			198	171.3				
EBVF-3-2-75	3	80	75	64.9	✓	-	✓	-
EBVF-3-2-118			118	102.1				
EBVF-3-2-198*			198	171.3				
EBVF-4-2-118	4	100	118	102.1	-	✓	-	✓
EBVF-4-2-177			177	153.1				
EBVF-4-2-191			191	164.4				
EBVF-4-2-360			360	311.4				
EBVF-5-2-292	5	125	292	252.6	-	✓	-	✓
EBVF-5-2-360*			360	311.4				
EBVF-6-2-365*	6	150	365	315.7	-	✓	-	✓
Adder -A					✓	✓	✓	✓
Adder -WS					✓	✓	✓	✓

* No Cv Disc

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
Add a -WS at the end of the part # if a weather cover is needed.
*Reduced port valve - No characterizing disc
For normally Closed, add a "C" to the end of the valve part number, i.e. EBVF-250-2-48C, otherwise normally open. Spring return models only

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3-Way, On/Off, Floating & Modulating - Non-Spring Return Actuators - (50 psi - Close Off)								
Actuator Model Details								
Optional Auxiliary Switches					■	■	-	■
Time Out					■	■	■	■
Conduit Size - Flex(F)/NPT(N)					1/2 N	3/8 F	1/2 N	3/8 F
Cable - Standard(S)					S	S	S	S
Model Number	Valve Size		Flow Coefficient		24 VAC/DC On/Off & Floating		24 VAC/DC Modulating	
	In.	mm	Cv	Kv	DC24-180-T	DC24-310-T	DCM24-180	DCM24-310
EBVF-250-3-48	2.5	65	48	41.5	✓	-	✓	-
EBVF-250-3-75			75	64.9				
EBVF-250-3-118			118	102.1				
EBVF-250-3-198			198	171.3				
EBVF-3-3-75	3	80	75	64.9	✓	-	✓	-
EBVF-3-3-118			118	102.1				
EBVF-3-3-198*			198	171.3				
EBVF-4-3-118	4	100	118	102.1	-	✓	-	✓
EBVF-4-3-177			177	153.1				
EBVF-4-3-191			191	164.4				
EBVF-4-3-360			360	311.4				
EBVF-5-3-292	5	125	292	252.6	-	✓	-	✓
EBVF-5-3-360*			360	311.4				
EBVF-6-3-365*	6	150	365	315.7	-	✓	-	✓
Adder -A					✓	✓	-	✓
Adder -WS					-	✓	-	✓

* No Cv Disc

3-Way, On/Off & Modulating - Spring Return Actuators - (50 psi - Close Off)								
Actuator Model Details								
Optional Auxiliary Switches					■	■	■	■
Conduit Size - Flex(F)/NPT(N)					3/8 F	3/8 F	3/8 F	3/8 F
Cable - Standard(S)					S	S	S	S
Model Number	Valve Size		Flow Coefficient		24 VAC/DC On/Off		24 VAC/DC Modulating	
	In.	mm	Cv	Kv	DCS24-140	DCS24-140-D	DCMS24-140	DCMS24-140-D
EBVF-250-3-48	2.5	65	48	41.5	✓	-	✓	-
EBVF-250-3-75			75	64.9				
EBVF-250-3-118			118	102.1				
EBVF-250-3-198			198	171.3				
EBVF-3-3-75	3	80	75	64.9	✓	-	✓	-
EBVF-3-3-118			118	102.1				
EBVF-3-3-198*			198	171.3				
EBVF-4-3-118	4	100	118	102.1	-	✓	-	✓
EBVF-4-3-177			177	153.1				
EBVF-4-3-191			191	164.4				
EBVF-4-3-360			360	311.4				
EBVF-5-3-292	5	125	292	252.6	-	✓	-	✓
EBVF-5-3-360*			360	311.4				
EBVF-6-3-365*	6	150	365	315.7	-	✓	-	✓
Adder -A					✓	✓	✓	✓
Adder -WS					✓	✓	✓	✓

* No Cv Disc

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
Add a -WS at the end of the part # if a weather cover is needed.
*Reduced port valve - No characterizing disc
For normally Closed, add a "C" to the end of the valve part number, i.e. EBVF-250-3-48C, otherwise normally open. Spring return models only

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Bray COMMERCIAL

BV Series

Threaded Industrial Control Ball Valves

2-Way • 1/2"- 4"

CONTENTS

DOCUMENT
- Features
- Specifications
- Cv Chart
- Cut-Away View
- Dimensions
- Close-Off Charts

LOOKING FOR MORE

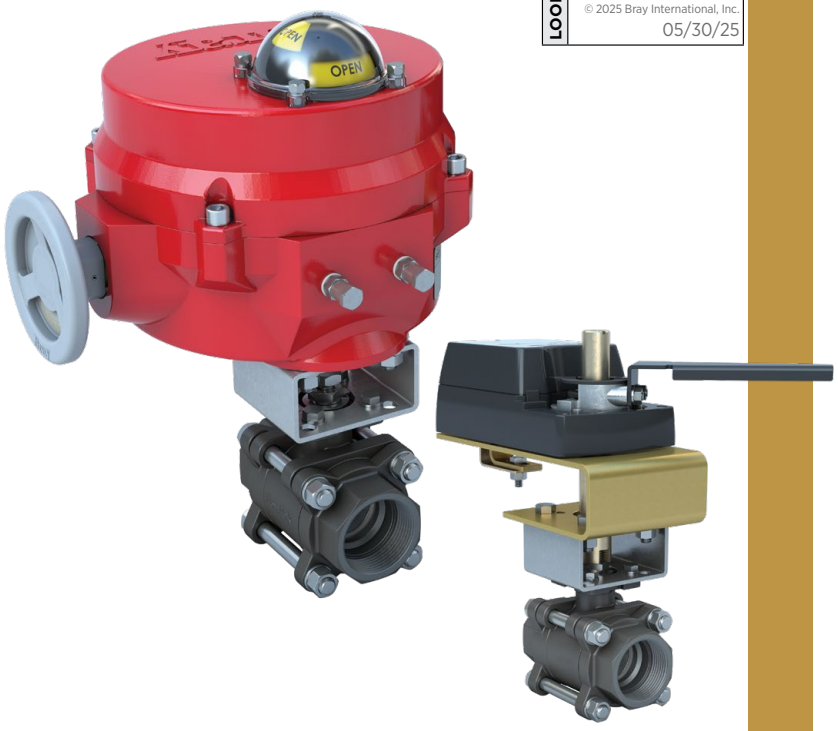
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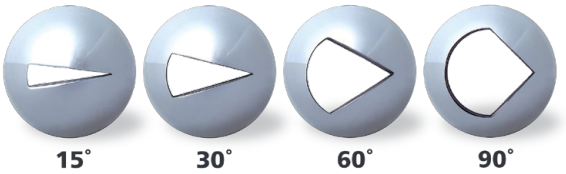
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Application

The BV Series Threaded Industrial Ball Valve product line is ideally suited to high temperature and high pressure water or steam as well as a wide range of heavy commercial HVAC control applications. These valves provide exceptional characterized control, high rangeability, flow capacity and pressure drops; all with bi-directional bubble tight shut off.

Valves in this range feature investment cast 3 piece construction, Carbon Steel housings and Stainless Steel balls and stems with NPT threaded connections. Characterized V-Balls and full port versions provide multiple Cv values in each size.





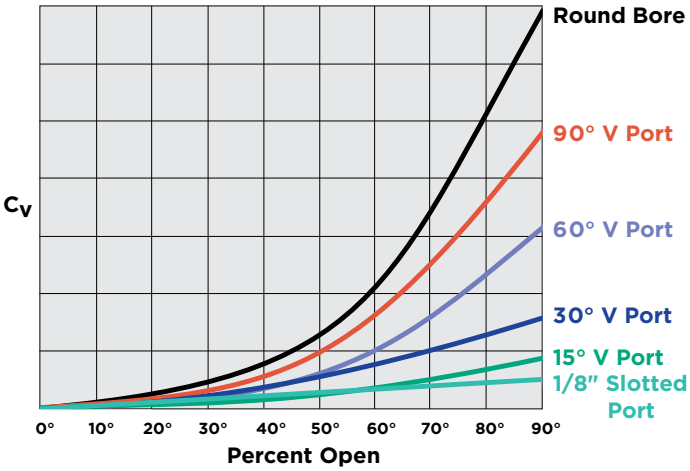
Increased Linear Response

Due to the in-line design inherent with characterized control ball valves, line media flows linearly through the piping system. The direct pattern provides increased media control and rapid response times to controller commands.

Features and Benefits

- **High Cycle Packing Design**
  - *Years of trouble free service*
- **Bubble Tight Shut-Off with Zero Leakage**
  - *Energy efficient*
- **3-Piece Body Design**
  - *Allows in-line servicing*
- **Phosphate Coated Carbon Steel Bodies**
  - *For cost effective applications up to 1,000 psi at 225˚F*
- **Commercial Grade & NEMA 4 Actuators**
  - *Reliable, cost effective control*

Flow Curve Chart



These curves of standard ports are general guidelines and are not specific to any particular valve size.

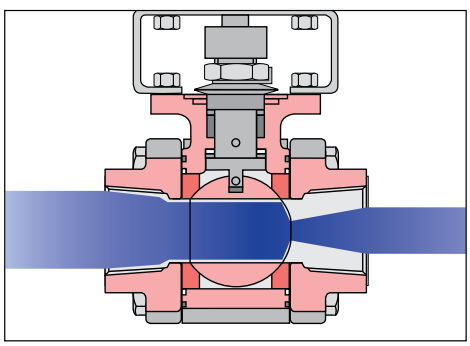
BV Series - Specifications

Technical Specifications - BV Series Valve Body (BV = "Equivalent to Bray/FlowTek S7/8000 Series")			
Carbon Steel Body		**V-Port**	**Full-Port**
Service	Chilled/Hot Water, 50/50 Glycol Solutions and Saturated Steam		
Size Range	**2-Way**	1/2" to 4" Threaded Valves	
Maximum Fluid Temperature	**Water**	-20˚ to 500˚F @ 300 psi (-28˚ to 260˚C @ 2068 kPa)	
	Steam	100 psi (689 kPa)	
Valve Body Pressure Rating	1000 psi (6895 kPa)		
Maximum Close-Off Pressure	300 psi (2,068 kPa) For higher Close-Off's contact Bray.		
Maximum Recommended Operating Pressure Drop	**Water**	80 psi (551 kPa)	
	Steam	50 psi (344 kPa)	
Flow Characteristic	**V15 Port**	Linear	N/A
	V30 Port	Modified Equal Percentage	N/A
	V60 & Full Port	Equal Percentage	N/A
Rangeability	200:1		
Leakage	Bubble Tight per API 598		
End Connections	Threaded NPT		
Ambient Operating Temperature Range	See Actuator Rating (Optional high temperature mounting kit may be required)		
Materials	**Body**	WCB Carbon Steel	
	Ball & Stem	316 Stainless Steel	
	Seat	Tek-Fil®	RPTFE
	Stem Seal/ Packing	RPTFE	
	Body Bolts	TFM	
	Body Bolts	SS304	
Warranty	3 Years limited from time of shipment.		

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

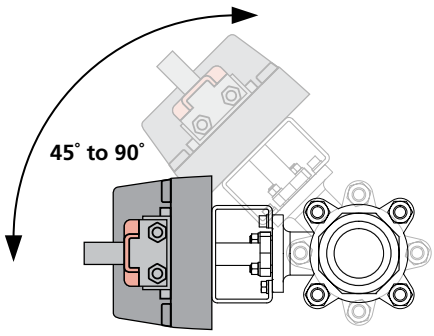
BV - Piping Diagram

- V-Port valves- Note the arrow engraved on the ends which show the flow going from the bolt head to the nut so that the V-ball is downstream.
- Full Port valves are bi-directional.



Media Flow entering valve from left. Installing the V downstream is preferred.

BV - For Steam Applications



Install valve with stem at 45˚ to 90˚ from vertical.

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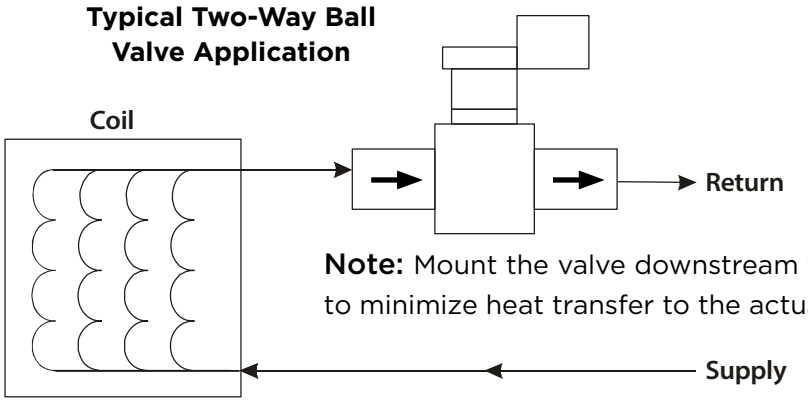
BV Series - Flow Coefficient Cv Chart

BV-Segmented Ball Valve - Tek Fil Seat - Class 150												
Model Number	Valve Size		V-Cut	Percent of Ball Rotation										
	In.	mm		10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
BV05-CS3-04	0.5	15	15°	0.04	0.1	0.4	0.6	0.9	1.6	2.1	2.8	3.6	4.1
BV05-CS3-05			30°	0.04	0.2	0.4	0.7	1.2	1.8	2.5	3.4	4.7	5.5
BV05-CS3-09			60°	0.04	0.2	0.7	1.1	1.8	2.9	4.3	7	9.4	12.7
BV05-CS3-12			90°	0.06	0.4	0.8	1.3	2.1	3.2	4.7	8.3	11.6	14.7
BV05-CS3-32			Full Port	0.00	0.0	0.7	3.7	7.8	12.6	17.9	23.3	28.6	32
BV75-CS3-05	.75	20	15°	0.05	0.2	0.5	0.9	1.3	2.1	2.8	3.7	4.8	5.5
BV75-CS3-06			30°	0.07	0.3	0.6	1	1.6	2.4	3.3	4.5	6.1	7.3
BV75-CS3-12			60°	0.07	0.3	0.9	1.5	2.4	3.8	5.6	9.2	12.4	16.2
BV75-CS3-15			90°	0.08	0.5	1.1	1.7	2.7	4.2	6.2	10.9	15.3	19.3
BV75-CS3-54			Full Port	0.00	0.0	2.5	7.7	14.2	21.7	29.7	38	46.2	54
BV1-CS3-09	1	25	15°	0.06	0.3	0.9	1.5	2.3	3.7	4.7	6.5	8.5	9.8
BV1-CS3-13			30°	0.08	0.4	1.3	2.1	3.5	5.3	7.7	10.5	12.8	15.4
BV1-CS3-23			60°	0.09	0.6	1.7	2.8	5.1	8	11.9	18.7	23.2	32.8
BV1-CS3-31			90°	0.11	0.9	2.8	5.1	7.7	12.2	17.3	22.5	31	43.8
BV1-CS3-105			Full Port	0.00	1.2	8.6	19.4	32.4	45.7	61	77	92	105
BV125-CS3-11	1.25	32	15°	0.03	1.3	0.8	1.6	2.8	4	5.9	8	10.8	12.8
BV125-CS3-15			30°	0.05	0.4	1.4	2.5	4.1	6	8.8	118	17.9	17.3
BV125-CS3-33			60°	0.07	0.6	2	3.4	6.5	10.8	15.4	22.4	33.4	43.4
BV125-CS3-52			90°	0.08	0.7	2.9	5.4	10.2	17.2	25.5	35.6	51	65
BV125-CS3-200			Full Port	0.00	5.3	20.7	41.3	65	91	119	147	174	200
BV150-CS3-15	1.5	40	15°	0.05	0.3	1.2	2.3	3.8	5.5	8.1	11	14.9	17.6
BV150-CS3-20			30°	0.07	0.6	1.9	3.4	5.7	8.3	12.1	16.2	20.4	23.8
BV150-CS3-46			60°	0.09	0.9	2.8	4.7	8.9	14.8	21.2	30.7	45.9	59
BV150-CS3-71			90°	0.10	1.1	4	7.4	14.1	22.6	31.9	48.3	71	90
BV150-CS3-275			Full Port	0.00	3.4	22.7	50	83	120	159	199	238	275
BV2-CS3-29	2	50	15°	0.06	0.6	2.2	4.5	7.4	10.6	15.4	21.4	28.8	34.6
BV2-CS3-48			30°	0.09	1.2	3.8	7.5	12.3	17.8	26.4	36.5	48.1	55
BV2-CS3-104			60°	0.11	1.5	5.8	10.4	20.6	33.9	48.8	69	104	135
BV2-CS3-130			90°	0.16	1.9	7.3	13.6	25.4	42.3	55	87	129	167
BV2-CS3-500			Full Port	0.00	15.5	54	106	166	232	300	369	437	500
BV250-CS3-27	2.5	65	15°	0.07	0.7	2.4	5.2	8.1	11.7	16.4	22.3	27.2	31.3
BV250-CS3-56			30°	0.09	1.2	4.4	7.9	13.4	20	30.4	41.9	56	76
BV250-CS3-114			60°	0.13	1.5	5.9	11.9	23.2	37.9	59	83	113	162
BV250-CS3-177			90°	0.17	1.8	7.3	16.5	31.2	53	77	118	177	239
BV250-CS3-780			Full Port	0.00	25.8	87	168	262	363	470	577	682	780
BV3-CS3-32	3	80	15°	0.08	0.8	2.9	6.6	9.5	13.4	19.4	26.6	31.8	38.3
BV3-CS3-70			30°	0.12	1.2	4.1	9.4	15.9	26.7	38.9	53	69	85
BV3-CS3-150			60°	0.15	2.9	6.7	15.8	29.3	46.3	73	106	149	193
BV3-CS3-237			90°	0.20	4.1	8.6	21	41	69	105	161	237	359
BV3-CS3-1150			Full Port	0.00	33.8	123	242	380	531	689	848	1004	1150
BV4-CS3-76	4	100	15°	0.11	1.4	3.7	8.9	16.7	27.9	41.9	59	75	96
BV4-CS3-159			30°	0.16	1.8	7.8	18.6	35.2	58	87	124	158	196
BV4-CS3-330			60°	0.26	2.2	12.4	33.7	63	106	160	234	329	437
BV4-CS3-547			90°	0.35	4.4	19.9	50	91	157	240	365	546	830
BV4-CS3-2100			Full Port	7.5	118	296	516	766	1035	1314	1592	1861	2100

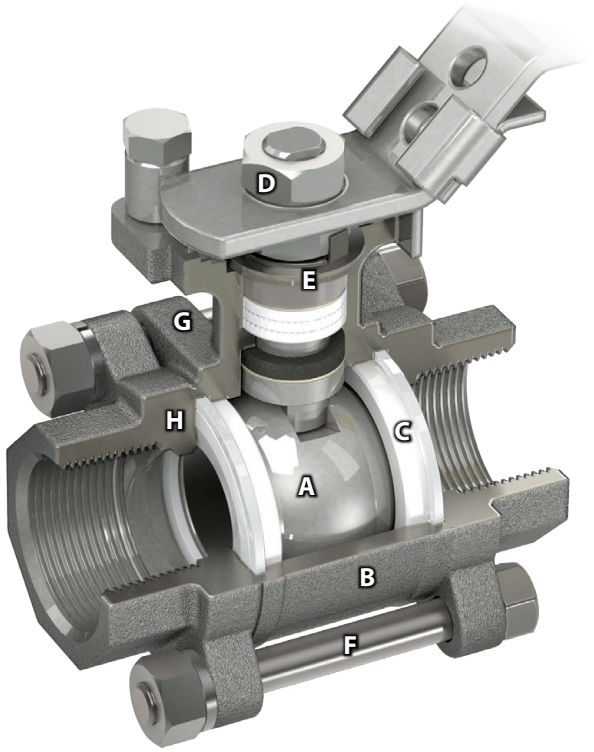
V-port ball valves have a 20 to 90% max angle of controllability. Therefore, the above assumes modulating actuators and the valve is operating at 60% and 90 % open. Full port valves are assumed to be on/off application and the CV's are stated at 100% open.

BV - Mode of Actuation

Typical Two-Way Ball Valve Application



Note: Mount the valve downstream from the coil to minimize heat transfer to the actuator.



Ball (A) Is a precision machined and mirror finished for bubble-tight shut off with less operating torque. Ball edges have machined curvatures to reduce seat wear and provide a high cycle life.

Body (B) Valve bodies are investment cast and solution annealed/normalized for the highest quality and added strength. Body castings are marked with a foundry heat number for full traceability. Carbon steel bodies are phosphate coated for increased corrosion resistance.

Seat (C) The seat design ensures bi-directional, bubble-tight sealing while providing the lowest possible torque. This seat design reduces friction, minimizes seat wear and reduces operating torque.

Double Lock Nut Design (D) These double lock nuts allow handles to be easily and safely removed while the valve is under full line pressure.

Live-Loaded Stem Seals (E) The live-loaded seals considerably increase the number of cycles between maintenance adjustments.

Body Bolts (F) Standard material is 304 Stainless Steel.

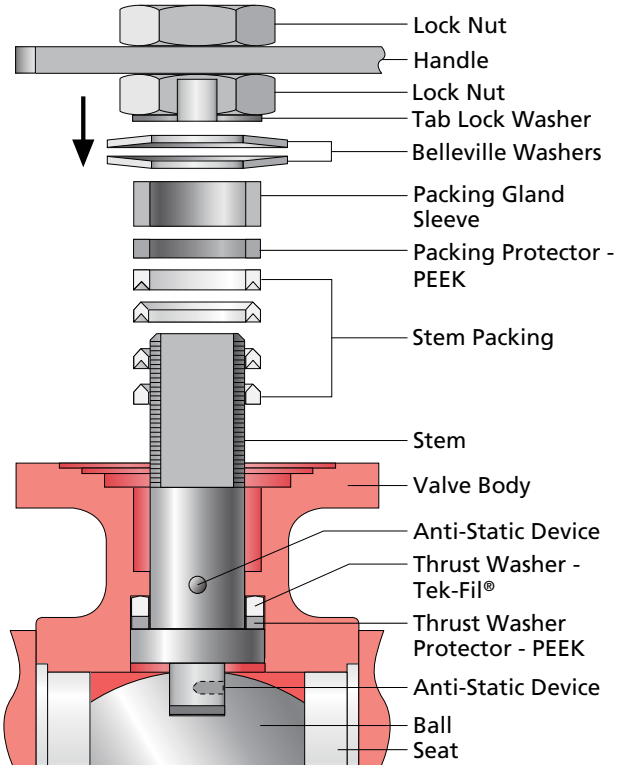
Body Hinges (G) Heavy duty hinges, throughout the entire size range, provide positive alignment of body to end connection during swing-out, in-line servicing.

End Connections (H) Full range of interchangeable connections. Anti-Static Protection BV Series valves feature anti-static grounding devices as standard. These devices ensure electrical continuity between valve ball, stem and body, thus eliminating the possibility of static electrical charges creating sparks within the valve.

Smart Stem

Valve Sizes 1/2" through 2-1/2"

These Interchangeable series of valves feature strong, large diameter stems with live-loaded, self-adjusting sealing utilizing belleville washers which automatically adjust to compensate for changes in temperature and wear. Manual adjustments which can cause damage to the seal and seat are not required. The assembly is secured by a saddle-type lock washer which prevents stem nuts from un-threading in high cycle automation applications.



Stem Packing

An adjustable V-ring design creates a multiple seal between the stem and body. Each stem assembly is composed of three or four (dependent on valve size) rings providing a very high cycle life by resisting creep and cold flow. The Thrust Washer and the Thrust Washer Protector combine to provide a primary seal, reduce torque and prevent galling. This arrangement is a BV Series exclusive.

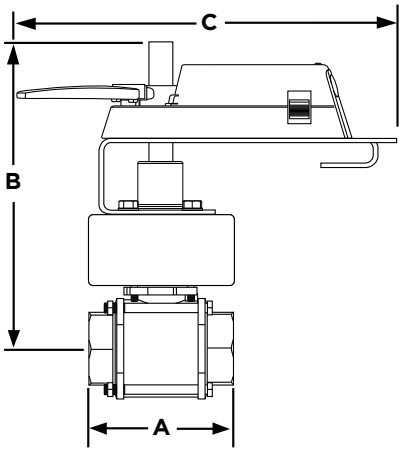
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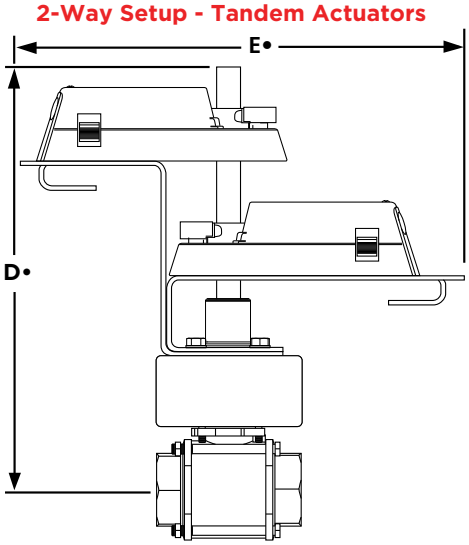
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BV Series - 2-Way - Threaded Ball Valve/Commercial Actuator Dimensions

2-Way Setup - Single Actuator



2-Way Setup - Tandem Actuators



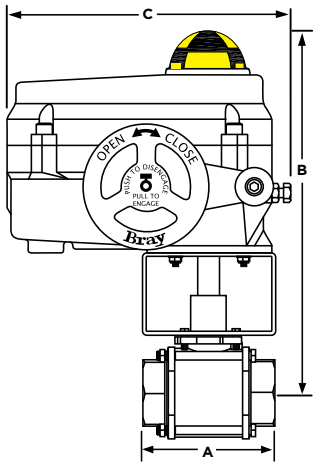
BV Series - 2-Way - Threaded Ball Valve/Commercial Actuator Dimensions in. (mm)

Model Number	Valve Size		V-Cut	Flow Coefficient		Single Mount Actuators			Tandem Mount Actuators		Weight[1]	
	In.	mm		100%	60%	A	B	C	D•	E•	lbs.	kg.
BV05-CS3-04	0.5	15	15°	4.1	1.6	2.8 (71)	9.7 (246)	14.5 (368)	-	-	1.8	.82
BV05-CS3-05			30°	5.5	1.8							
BV05-CS3-09			60°	12.7	2.9							
BV05-CS3-12			90°	14.7	3.2							
BV05-CS3-32			Full Port	32	12.6							
BV75-CS3-05	.75	20	15°	5.5	2.1	3.4 (86)	9.8 (249)	14.5 (368)	-	-	2.3	1.04
BV75-CS3-06			30°	7.3	2.4							
BV75-CS3-12			60°	16.2	3.8							
BV75-CS3-15			90°	19.3	4.2							
BV75-CS3-54			Full Port	54	21.7							
BV1-CS3-09	1	25	15°	9.8	3.7	3.6 (91)	10.2 (259)	14.5 (368)	-	-	3.4	1.50
BV1-CS3-13			30°	15.4	5.3							
BV1-CS3-23			60°	32.8	8							
BV1-CS3-31			90°	43.8	12.2							
BV1-CS3-105			Full Port	105	45.7							
BV125-CS3-11	1.25	32	15°	12.8	4	4.3 (109)	10.4 (264)	14.5 (368)	17.5 (445)	18.0 (457)	4.9	2.20
BV125-CS3-15			30°	17.3	6							
BV125-CS3-33			60°	43.4	10.8							
BV125-CS3-52			90°	65	17.2							
BV125-CS3-200			Full Port	200	91							
BV150-CS3-15	1.5	40	15°	17.6	5.5	4.8 (122)	-	-	17.9 (455)	18.0 (457)	7.6	3.40
BV150-CS3-20			30°	23.8	8.3							
BV150-CS3-46			60°	59	14.8							
BV150-CS3-71			90°	90	22.6							
BV150-CS3-275			Full Port	275	120							

[1]- Weights are for valve bodies only.
• Indicates tandem mounted actuators are required.
- Largest Actuator dimension shown.
For steam applications, install valve with stem at 45˚ to 90˚ from vertical.

BV Series - 2-Way - Threaded Ball Valve/Industrial Actuator Dimensions

2-Way Setup - Industrial Actuator



BV Series - 2-Way - Threaded Ball Valve/Industrial Actuator Dimensions in. (mm)

Model Number	Valve Size		V-Cut	Flow Coefficient		Single Mount Actuators			Weight[1]	
	In.	mm		100%	60%	A	B	C	lbs.	kg.
BV05-CS3-04	0.5	15	15°	4.1	1.6	2.8 (71)	9.8 (249)	7.5 (191)	1.8	.82
BV05-CS3-05			30°	5.5	1.8					
BV05-CS3-09			60°	12.7	2.9					
BV05-CS3-12			90°	14.7	3.2					
BV05-CS3-32			Full Port	32	12.6					
BV75-CS3-05	.75	20	15°	5.5	2.1	3.4 (86)	9.9 (252)	7.5 (191)	2.3	1.04
BV75-CS3-06			30°	7.3	2.4					
BV75-CS3-12			60°	16.2	3.8					
BV75-CS3-15			90°	19.3	4.2					
BV75-CS3-54			Full Port	54	21.7					
BV1-CS3-09	1	25	15°	9.8	3.7	3.6 (91)	10.3 (262)	7.5 (191)	3.4	1.50
BV1-CS3-13			30°	15.4	5.3					
BV1-CS3-23			60°	32.8	8					
BV1-CS3-31			90°	43.8	12.2					
BV1-CS3-105			Full Port	105	45.7					
BV125-CS3-11	1.25	32	15°	12.8	4	4.3 (109)	10.5 (267)	7.5 (191)	4.9	2.20
BV125-CS3-15			30°	17.3	6					
BV125-CS3-33			60°	43.4	10.8					
BV125-CS3-52			90°	65	17.2					
BV125-CS3-200			Full Port	200	91					
BV150-CS3-15	1.5	40	15°	17.6	5.5	4.8 (122)	11.2 (285)	7.5 (191)	7.6	3.40
BV150-CS3-20			30°	23.8	8.3					
BV150-CS3-46			60°	59	14.8					
BV150-CS3-71			90°	90	22.6					
BV150-CS3-275			Full Port	275	120					
BV2-CS3-29	2	50	15°	34.6	10.6	5.6 (142)	11.5 (292)	7.5 (191)	11.4	5.20
BV2-CS3-48			30°	55	17.8					
BV2-CS3-104			60°	135	33.9					
BV2-CS3-130			90°	167	42.3					
BV2-CS3-500			Full Port	500	232					
BV250-CS3-27	2.5	65	15°	31.3	11.7	7.3 (231)	13.4 (340)	10.1 (257)	21.8	9.90
BV250-CS3-56			30°	76	20					
BV250-CS3-114			60°	162	37.9					
BV250-CS3-177			90°	239	53					
BV250-CS3-780			Full Port	780	363					
BV3-CS3-32	3	80	15°	38.3	13.4	8.0 (257)	15.8 (401)	10.1 (257)	34.6	15.7
BV3-CS3-70			30°	85	26.7					
BV3-CS3-150			60°	193	46.3					
BV3-CS3-237			90°	359	69					
BV3-CS3-1150			Full Port	1150	531					
BV4-CS3-76	4	100	15°	96	27.9	9.1 (353)	17.2 (437)	12.1 (308)	54.7	24.8
BV4-CS3-159			30°	196	58					
BV4-CS3-330			60°	437	106					
BV4-CS3-547			90°	830	157					
BV4-CS3-2100			Full Port	2100	1035					

[1]- Weights are for valve bodies only.
- Largest Actuator dimension shown.
For steam applications, install valve with stem at 45˚ to 90˚ from vertical.

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BV Series - 2-Way with NSR & SR Commercial Electric Actuators Close-Off Charts

2-Way, Non-Spring Return (100 psi Steam and 300 psi Water)

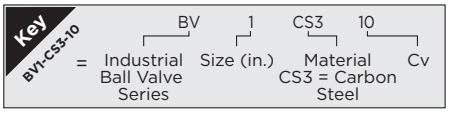
Actuator Model Details															
Time Out			■	■	■	■	■								
Auxiliary Switches Available			■	■	■	■	■	■	■	■	■	■			
Conduit Size - Flex(F)/NPT(N)			1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N	1/2 N			
Enclosed Terminal Block			■	■	■	■	■	■	■	■	■	■			
Model Number	Valve Size		V-Cut	Flow Coefficient		24 VAC/DC On/Off & Floating					24 VAC/DC Modulating				
	In.	mm		100%	60%	D24-70	D24-140	D24-210	D24-280	D24-280-D	DM24-70	DM24-140	DM24-210	DM24-280	DM24-280-D
BV05-CS3-04	0.5	15	15°	4.1	1.6	X	-	-	-	-	X	-	-	-	-
BV05-CS3-05			30°	5.5	1.8										
BV05-CS3-09			60°	12.7	2.9										
BV05-CS3-12			90°	14.7	3.2										
BV05-CS3-32			Full Port	32	12.6										
BV75-CS3-05	.75	20	15°	5.5	2.1	-	X	-	-	-	-	X	-	-	-
BV75-CS3-06			30°	7.3	2.4										
BV75-CS3-12			60°	16.2	3.8										
BV75-CS3-15			90°	19.3	4.2										
BV75-CS3-54			Full Port	54	21.7										
BV1-CS3-09	1	25	15°	9.8	3.7	-	-	X	-	-	-	-	X	-	-
BV1-CS3-13			30°	15.4	5.3										
BV1-CS3-23			60°	32.8	8										
BV1-CS3-31			90°	43.8	12.2										
BV1-CS3-105			Full Port	105	45.7										
BV125-CS3-11	1.25	32	15°	12.8	4	-	-	-	X	-	-	-	-	X	-
BV125-CS3-15			30°	17.3	6										
BV125-CS3-33			60°	43.4	10.8										
BV125-CS3-52			90°	65	17.2										
BV125-CS3-200			Full Port	200	91										
BV150-CS3-15	1.5	40	15°	17.6	5.5	-	-	-	-	X	-	-	-	-	X
BV150-CS3-20			30°	23.8	8.3										
BV150-CS3-46			60°	59	14.8										
BV150-CS3-71			90°	90	22.6										
BV150-CS3-275			Full Port	275	120										

2-Way, Spring Return (100 psi Steam and 300 psi Water)

Actuator Model Details											
Auxiliary Switches Available			■	■	■	■	■	■			
Conduit Size - Flex(F)/NPT(N)			3/8 F	3/8 F	3/8 F	3/8 F	3/8 F	3/8 F			
Cable - Standard(S)/Plenum(P)			S	S	S	S	S	S			
Model Number	Valve Size		V-Cut	Flow Coefficient		24 VAC/DC On/Off			24 VAC/DC Modulating		
	In.	mm		100%	60%	DS24-70	DS24-180	DS24-180-D	DMS24-70	DMS24-180	DMS24-180-D
BV05-CS3-04	0.5	15	15°	4.1	1.6	X	-	-	X	-	-
BV05-CS3-05			30°	5.5	1.8						
BV05-CS3-09			60°	12.7	2.9						
BV05-CS3-12			90°	14.7	3.2						
BV05-CS3-32			Full Port	32	12.6						
BV75-CS3-05	.75	20	15°	5.5	2.1	-	X	-	-	X	-
BV75-CS3-06			30°	7.3	2.4						
BV75-CS3-12			60°	16.2	3.8						
BV75-CS3-15			90°	19.3	4.2						
BV75-CS3-54			Full Port	54	21.7						
BV1-CS3-09	1	25	15°	9.8	3.7	-	X	-	-	X	-
BV1-CS3-13			30°	15.4	5.3						
BV1-CS3-23			60°	32.8	8						
BV1-CS3-31			90°	43.8	12.2						
BV1-CS3-105			Full Port	105	45.7						
BV125-CS3-11	1.25	32	15°	12.8	4	-	-	X	-	-	X
BV125-CS3-15			30°	17.3	6						
BV125-CS3-33			60°	43.4	10.8						
BV125-CS3-52			90°	65	17.2						
BV125-CS3-200			Full Port	200	91						

Options/Adders
1. For optional auxiliary switches, add -A to the end of the actuator part number.
2. For normally Closed, add a "C" to the end of the valve part number, i.e. BV05-CS3-04C, otherwise normally open. Spring return models only. Add "SS3" in place of CS3 for Stainless Steel body option.

V-port ball valves have a 20 to 90% max angle of controllability.
-D Indicates tandem mounted actuators are required.



2-Way, Non-Spring Return (100 psi Steam and 300 psi Water)

Actuator Model Details											
Model Number	Valve Size		V-Cut	Flow Coefficient		Series 70 Actuators On/Off, 120 VAC			Series 70 Actuators On/Off, 24 VAC		
	In.	mm		100%	60%	70-0081H	70-0121H	70-E301H	70-24-0081H	70-24-0201H	70-24-0501H
BV05-CS3-04	0.5	15	15°	4.1	1.6	X	-	-	X	-	-
BV05-CS3-05			30°	5.5	1.8						
BV05-CS3-09			60°	12.7	2.9						
BV05-CS3-12			90°	14.7	3.2						
BV05-CS3-32			Full Port	32	12.6						
BV75-CS3-05	.75	20	15°	5.5	2.1	X	-	-	X	-	-
BV75-CS3-06			30°	7.3	2.4						
BV75-CS3-12			60°	16.2	3.8						
BV75-CS3-15			90°	19.3	4.2						
BV75-CS3-54			Full Port	54	21.7						
BV1-CS3-09	1	25	15°	9.8	3.7	X	-	-	X	-	-
BV1-CS3-13			30°	15.4	5.3						
BV1-CS3-23			60°	32.8	8						
BV1-CS3-31			90°	43.8	12.2						
BV1-CS3-105			Full Port	105	45.7						
BV125-CS3-11	1.25	32	15°	12.8	4	X	-	-	X	-	-
BV125-CS3-15			30°	17.3	6						
BV125-CS3-33			60°	43.4	10.8						
BV125-CS3-52			90°	65	17.2						
BV125-CS3-200			Full Port	200	91						
BV150-CS3-15	1.5	40	15°	17.6	5.5	X	-	-	X	-	-
BV150-CS3-20			30°	23.8	8.3						
BV150-CS3-46			60°	59	14.8						
BV150-CS3-71			90°	90	22.6						
BV150-CS3-275			Full Port	275	120						
BV2-CS3-29	2	50	15°	34.6	10.6	X	-	-	X	-	-
BV2-CS3-48			30°	55	17.8						
BV2-CS3-104			60°	135	33.9						
BV2-CS3-130			90°	167	42.3						
BV2-CS3-500			Full Port	500	232						
BV250-CS3-27	2.5	65	15°	31.3	11.7	X	-	-	X	-	-
BV250-CS3-56			30°	76	20						
BV250-CS3-114			60°	162	37.9						
BV250-CS3-177			90°	239	53						
BV250-CS3-780			Full Port	780	363						
BV3-CS3-32	3	80	15°	38.3	13.4	-	X	-	-	X	-
BV3-CS3-70			30°	85	26.7						
BV3-CS3-150			60°	193	46.3						
BV3-CS3-237			90°	359	69						
BV3-CS3-1150			Full Port	1150	531						
BV4-CS3-76	4	100	15°	96	27.9	-	-	X	-	-	X
BV4-CS3-159			30°	196	58						
BV4-CS3-330			60°	437	106						
BV4-CS3-547			90°	830	157						
BV4-CS3-2100			Full Port	2100	1035						

Options/Adders
1. For Battery Back-Up Failsafe Unit (BBU) option on 24 VAC actuators add "-BBU".
2. For normally Closed, add a "C" to the end of the valve part number, i.e. BV05-CS3-04C, otherwise normally open. BBU models only.
   Add "SS3" in place of CS3 for Stainless Steel body option.

V-port ball valves have a 20 to 90% max angle of controllability.

Key BV1-CS3-10 = BV (Industrial Ball Valve Series) 1 (Size (in.)) CS3 (Material CS3 = Carbon Steel) 10 (Cv)

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BV Series - 2-Way with Modulating Series 70 Industrial Electric Actuators Close-Off Chart

2-Way, Non-Spring Return (100 psi Steam and 300 psi Water)

Actuator Model Details											
Model Number	Valve Size		V-Cut	Flow Coefficient		Series 70 Actuators Modulating, 120 VAC			Series 70 Actuators Modulating, 24 VAC		
	In.	mm		100%	60%	70-0081SVH	70-0121SVH	70-E301SVH	70-24-0081SVH	70-24-0201SVH	70-24-0501SVH
BV05-CS3-04	0.5	15	15°	4.1	1.6	X	-	-	X	-	-
BV05-CS3-05			30°	5.5	1.8						
BV05-CS3-09			60°	12.7	2.9						
BV05-CS3-12			90°	14.7	3.2						
BV05-CS3-32			Full Port	32	12.6						
BV75-CS3-05	.75	20	15°	5.5	2.1	X	-	-	X	-	-
BV75-CS3-06			30°	7.3	2.4						
BV75-CS3-12			60°	16.2	3.8						
BV75-CS3-15			90°	19.3	4.2						
BV75-CS3-54			Full Port	54	21.7						
BV1-CS3-09	1	25	15°	9.8	3.7	X	-	-	X	-	-
BV1-CS3-13			30°	15.4	5.3						
BV1-CS3-23			60°	32.8	8						
BV1-CS3-31			90°	43.8	12.2						
BV1-CS3-105			Full Port	105	45.7						
BV125-CS3-11	1.25	32	15°	12.8	4	X	-	-	X	-	-
BV125-CS3-15			30°	17.3	6						
BV125-CS3-33			60°	43.4	10.8						
BV125-CS3-52			90°	65	17.2						
BV125-CS3-200			Full Port	200	91						
BV150-CS3-15	1.5	40	15°	17.6	5.5	X	-	-	X	-	-
BV150-CS3-20			30°	23.8	8.3						
BV150-CS3-46			60°	59	14.8						
BV150-CS3-71			90°	90	22.6						
BV150-CS3-275			Full Port	275	120						
BV2-CS3-29	2	50	15°	34.6	10.6	X	-	-	X	-	-
BV2-CS3-48			30°	55	17.8						
BV2-CS3-104			60°	135	33.9						
BV2-CS3-130			90°	167	42.3						
BV2-CS3-500			Full Port	500	232						
BV250-CS3-27	2.5	65	15°	31.3	11.7	X	-	-	X	-	-
BV250-CS3-56			30°	76	20						
BV250-CS3-114			60°	162	37.9						
BV250-CS3-177			90°	239	53						
BV250-CS3-780			Full Port	780	363						
BV3-CS3-32	3	80	15°	38.3	13.4	-	X	-	-	X	-
BV3-CS3-70			30°	85	26.7						
BV3-CS3-150			60°	193	46.3						
BV3-CS3-237			90°	359	69						
BV3-CS3-1150			Full Port	1150	531						
BV4-CS3-76	4	100	15°	96	27.9	-	-	X	-	-	X
BV4-CS3-159			30°	196	58						
BV4-CS3-330			60°	437	106						
BV4-CS3-547			90°	830	157						
BV4-CS3-2100			Full Port	2100	1035						

Options/Adders
1. For Battery Back-Up Failsafe Unit (BBU) option on 24 VAC actuators add "-BBU".
2. For normally Closed, add a "C" to the end of the valve part number, i.e. BV05-CS3-04C, otherwise normally open. BBU models only.
   Add "SS3" in place of CS3 for Stainless Steel body option.

V-port ball valves have a 20 to 90% max angle of controllability.

Key
BV1-CS3-10 = BV (Industrial Ball Valve Series) 1 (Size (in.)) CS3 (Material CS3 = Carbon Steel) 10 (Cv)

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Bray COMMERCIAL

BVM Series (ANSI 150)

Flanged Industrial Control Ball Valves

2-Way • 2-1/2"- 12"

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Features
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Cut-Away View
Close-Off Charts
Pressure/Temp Charts
Dimensions

LOOKING FOR MORE

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05/17/26

Application

The BVM Series of Flanged Industrial Ball Valves are ideally suited to a wide range of steam and water applications that require a high degree of rangeability. These valves provide exceptional characterized control, flow capacity and pressure drops; all with bi-directional ANSI class VI shut off.

Our exclusive Thrust Washer and Thrust Washer Protector design combine to provide a primary seal, reduce torque and prevent galling. The BVM Series ball valves also feature a floating ball design for low torque and increased cycle life. Characterized V-Balls and full port versions provide multiple Cv values in each size.

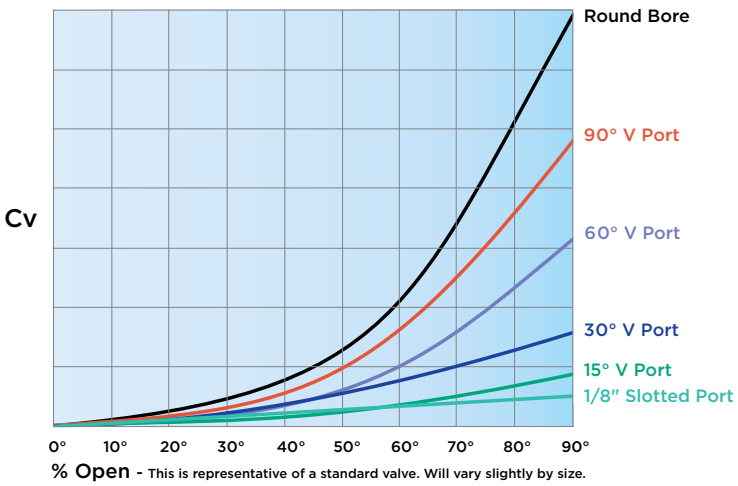


Features and Benefits

- **High Cycle Packing Design**
  Years of trouble free service
- **Bubble Tight Shut-Off with Zero Leakage**
  Energy efficient
- **Independent Packing Gland**
  Allows in-line servicing
- **Phosphate Coated Carbon Steel Bodies**
  For cost effective applications up to 225°F at 285 psi
- **Available NEMA 4 Actuators**
  Reliable, cost effective control

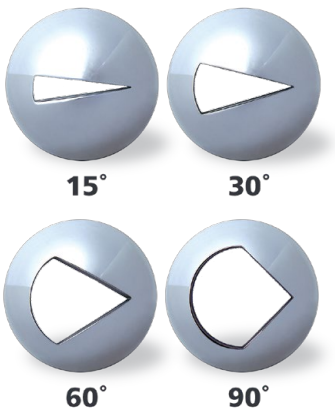
Flow Curve Chart

These curves of standard ports are general guidelines and are not specific to any particular valve size.



Increased Linear Response

Due to the in-line design inherent with characterized control ball valves, line media flows linearly through the piping system. The direct pattern provides increased media control and rapid response times to controller commands.



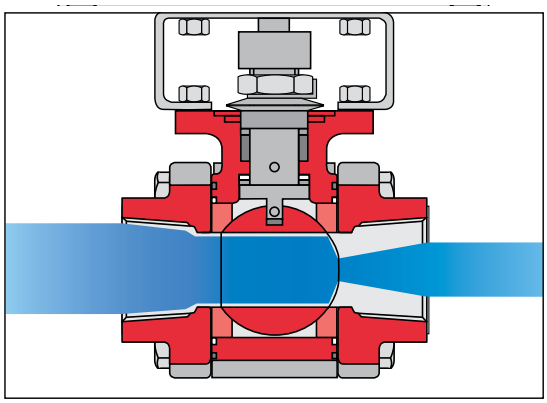
BVM Series - Specifications

Technical Specifications - BVM Flanged Industrial Ball Valve Body (BVM = "Equivalent to Bray/FlowTek F15 Series")			
		V-Port	Full- Port
Service		Chilled/Hot Water, 50/50 Glycol Solutions & Saturated Steam	
Size Range	2-Way	2-1/2" to 12" Flanged Valves	
Valve Fluid Temperature Limits	Water	Meets ASME Class 150 temperatures	
	Saturated Steam	100 psi (689 kPa)	
Valve Body Pressure Rating		ANSI Class 150	
Maximum Close-Off Pressure		285 psi (1,965 kPa)	
Maximum Recommended Operating Pressure Drop	Water	80 psi (551 kPa)	
	Steam	50 psi (344 kPa)	
Flow Characteristic	V15 Port	Linear	N/A
	V30 Port	Modified Equal Percentage	N/A
	V60 & 90 Port	Equal Percentage	N/A
Rangeability		200:1	
Leakage		Bubble Tight per API 598	
End Connections		ANSI Class 150	
Ambient Operating Temperature Range		See Actuator Rating (Optional high temperature mounting kit may be required)	
Materials	Body	WCB Carbon Steel	
	Ball & Stem	316 Stainless Steel	
	Seat	Tek-Fil®	TFM
	Stem Seal/Packing	RPTFE	
	Body Seal	316/Graphite	
	Body Bolts	ASTM A 193 B7	
Warranty		3 Years limited from time of shipment.	

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

BVM - Piping Diagram

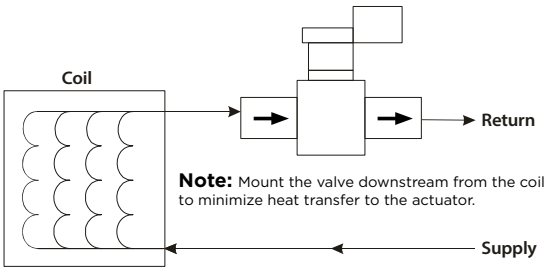
- V-Port Valves - Note the arrow engraved on the ends which shows the flow going from the bolt head to the nut so that the V-ball is downstream.
- Full Port Valves are bi-directional.



Media Flow entering valve from left.
Installing the V downstream is preferred.

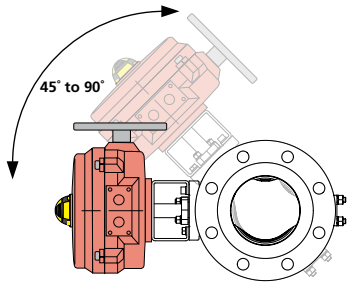
BVM - Mode of Actuation

Typical Two-Way Ball Valve Application



BVM - For Steam Applications

Install valve with stem at 45˚ to 90˚ from vertical.



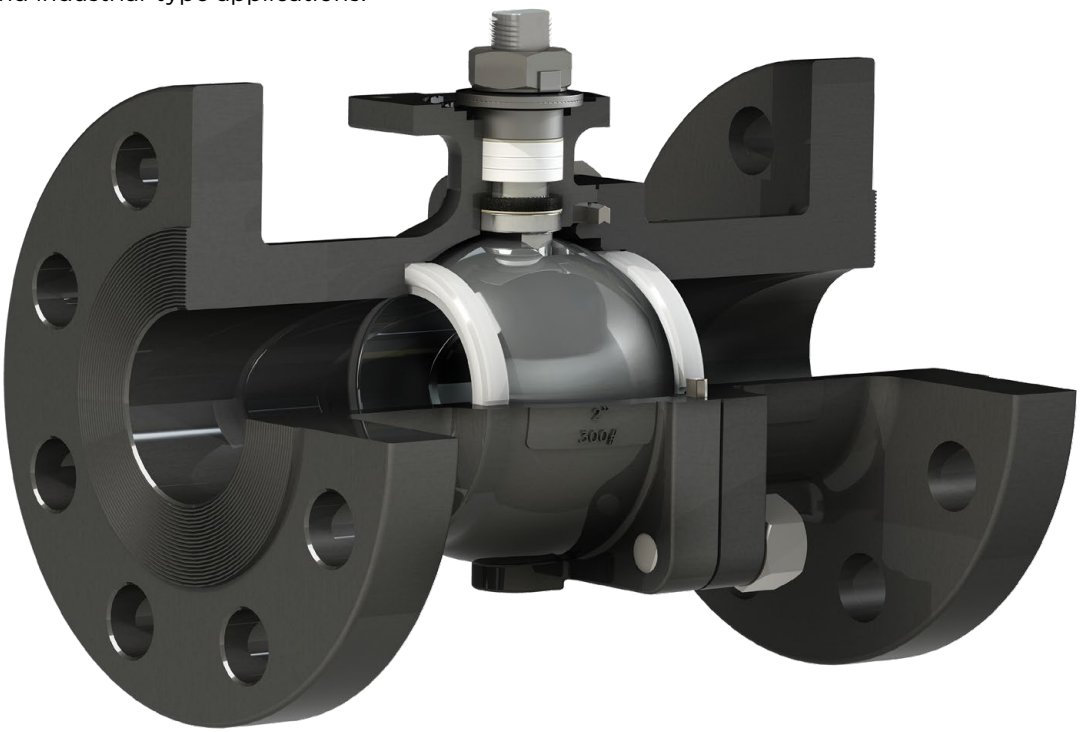
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BVM Series - Cut Away View

The **BVM Flanged Series Ball Valves** feature a floating ball design for low torque and increased cycle life. Most standard large size valves feature trunnion-type ball support. These rugged ball valves are ideal for heavy commercial and industrial-type applications.



Stem Seals

BVM Flanged Series Valves 2½" – 12" valves utilize an independent packing gland which can be easily adjusted without removing mounting hardware or operator. The packing gland is contoured to more uniformly distribute the load across the packing. The primary stem seal is a combination of a thrust washer and a thrust washer protector. An adjustable stem packing creates a secondary seal between the stem and body. The stem packing is composed of RPTFE V-rings as standard – graphite stem packing is standard on all Fire Safe valves.

Ball

BVM Flanged Series Valves balls are precision machined and mirror finished for bubble-tight shut off and less operating torque. As an added safety feature, a hole in the stem slot of each ball equalizes pressure between the body cavity and the line media flow.

Seat

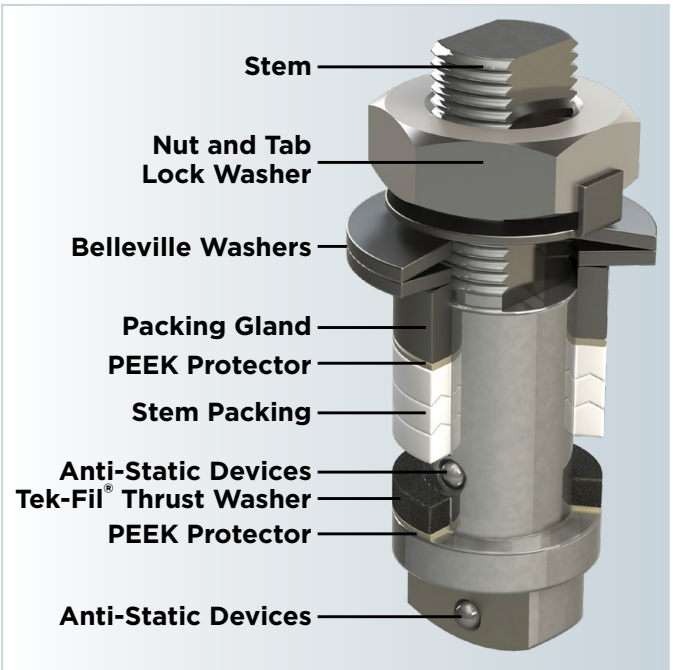
The seat design ensures bi-directional, bubble-tight sealing with low operating torque. All resilient seats feature relief slots or seat O.D. clearance to relieve pressure past the upstream seat, and positive preloading to ensure low pressure/vacuum sealing.

Stem Assemblies

BVM Flanged Series Valves are heavy duty, high quality stems with double "D" connection to ball and operator mounting. Stems are mated with the ball to ensure positive contact. All stems are internal entry and blowout proof for maximum safety.

Stem Packing

An adjustable V-ring design creates a multiple seal between the stem and body. Each stem assembly is composed of three or four (dependent on valve size) rings providing a very high cycle life by resisting creep and cold flow. The Thrust Washer and the Thrust Washer Protector combine to provide a primary seal, reduce torque and prevent galling.



BVM Series - Flow Coefficient Cv Chart

Flow Coefficient Cv Chart

Model Number	Valve Size		V-Cut	Flow Coefficient		Percent of Ball Rotation									
	In.	mm		100%	60%	15%	20%	30%	40%	50%	60%	70%	80%	90%	100%
BVM250-CF15-27	2.5	65	15°	27.2	23.5	0.07	0.77	2.40	5.23	8.06	11.73	16.42	22.31	27.24	31.30
BVM250-CF15-56			30°	56.3	48.5	0.09	1.15	4.42	7.91	13.39	20.05	30.43	41.92	56.30	76.95
BVM250-CF15-114			60°	113.7	98.0	0.13	1.46	5.91	11.90	23.24	37.92	59.31	83.29	113.65	162.50
BVM250-CF15-177			90°	177.3	152.8	0.17	1.83	7.29	16.45	31.16	53.53	77.89	118.29	177.32	239.45
BVM250-CF15-780			Full Port	780.0	672.4	0.00	25.80	87.60	168.60	262.10	363.90	470.20	577.50	682.30	780.00
BVM3-CF15-32	3	80	15°	31.8	27.4	0.08	0.89	2.96	6.65	9.58	13.42	19.47	26.67	31.79	38.31
BVM3-CF15-70			30°	69.8	60.1	0.12	1.20	4.15	9.49	15.96	26.78	38.91	53.31	69.77	85.91
BVM3-CF15-150			60°	149.9	129.2	0.15	2.89	6.70	15.82	29.36	46.32	73.60	106.74	149.88	193.20
BVM3-CF15-237			90°	237.3	204.6	0.20	4.12	8.65	21.09	41.09	69.27	105.91	161.04	237.23	359.21
BVM3-CF15-1150			Full Port	1150.0	991.3	0.00	33.80	123.70	242.70	380.80	531.50	689.30	848.70	1004.50	1150.00
BVM4-CF15-76	4	100	15°	75.5	65.1	0.11	1.40	3.73	8.86	16.76	27.91	41.85	59.24	75.49	96.37
BVM4-CF15-159			30°	158.5	136.7	0.16	1.75	7.84	18.59	35.21	58.60	87.89	124.41	158.53	196.35
BVM4-CF15-330			60°	329.5	284.0	0.26	2.20	12.44	33.67	62.98	106.26	160.49	233.96	329.96	437.29
BVM4-CF15-547			90°	546.6	471.2	0.35	4.37	19.68	50.29	91.83	240.51	240.51	365.15	546.62	830.86
BVM4-CF15-2100			Full Port	2100.0	1810.2	7.50	118.90	296.20	516.20	766.50	1035.80	1314.30	1592.70	1861.80	2100.00
BVM6-CF15-134	6	150	15°	134.4	115.9	0.20	2.50	6.64	15.77	29.85	49.70	74.54	105.51	134.44	171.62
BVM6-CF15-282			30°	282.3	243.3	0.29	3.12	13.97	33.11	62.70	104.37	156.53	221.56	282.33	349.69
BVM6-CF15-587			60°	586.8	505.8	0.46	5.41	22.15	59.97	112.16	189.24	285.82	416.68	586.83	800.80
BVM6-CF15-974			90°	973.5	839.2	0.66	7.79	35.05	89.56	163.55	280.37	428.34	650.32	973.50	1479.70
BVM6-CF15-5000			Full Port	5000.0	4310.0	14.15	224.30	631.80	1149.90	1746.30	2392.50	3064.20	3738.80	4393.30	5000.00
BVM8-CF15-346	8	200	15°	345.5	297.8	0.34	4.23	11.32	26.84	50.80	84.58	126.84	195.00	345.50	692.07
BVM8-CF15-481			30°	480.5	414.2	0.49	5.32	23.77	56.35	106.70	177.62	266.39	377.06	480.47	595.11
BVM8-CF15-999			60°	998.7	860.9	0.79	6.66	23.81	102.06	190.87	322.06	486.41	709.11	998.69	1325.18
BVM8-CF15-1657			90°	1656.8	1428.2	1.05	13.26	59.64	152.42	278.33	477.14	728.86	1106.69	1656.77	2518.18
BVM8-CF15-9600			Full Port	9600.0	8275.2	63.70	600.70	1416.30	2418.30	3552.30	4768.20	6023.10	7275.90	8485.10	9600.00
BVM10-CF15-545	10	250	15°	545.0	469.8	0.53	6.62	17.69	41.94	79.38	132.15	198.20	350.00	545.00	856.36
BVM10-CF15-751			30°	750.7	647.1	0.77	8.31	37.14	88.05	166.73	277.53	416.24	589.16	750.74	929.87
BVM10-CF15-1561			60°	1560.5	1345.2	1.23	10.41	37.20	159.47	298.23	503.22	760.02	1107.99	1560.45	2070.90
BVM10-CF15-2589			90°	2588.7	2231.5	1.64	20.72	93.20	238.16	434.90	745.53	1139.00	1729.20	2588.70	3934.65
BVM10-CF15-15000			Full Port	15000.0	12930.0	184.20	1085.20	2381.60	3950.90	5712.40	7591.50	9523.90	11447.00	13298.40	15000.00
BVM12-CF15-1101	12	300	15°	1101.1	949.1	0.74	9.26	24.76	58.72	111.13	185.01	277.47	564.00	1101.07	1638.90
BVM12-CF15-1051			30°	1051.0	906.0	1.07	11.63	52.00	123.25	233.42	388.54	582.73	824.82	1051.03	1301.81
BVM12-CF15-2185			60°	2184.6	1883.2	1.72	14.57	52.08	223.25	417.52	704.51	1064.03	1551.19	2184.63	2899.26
BVM12-CF15-3624			90°	3624.2	3124.0	2.29	29.00	130.47	333.42	608.85	1043.74	1594.59	2420.88	3624.18	5508.51
BVM12-CF15-21000			Full Port	21000.0	18102.0	139.30	1314.00	3046.40	5290.00	7770.70	10430.50	13175.60	15916.10	18561.20	21000.00

Piping and Installation Tips – For control applications select a valve which offers calculated Cv for the minimum and maximum flow between 15% and 80% of port opening.

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2-Way, 24 VAC and 120 VAC, On/Off Actuators (100 psi Steam and 285 psi Water)

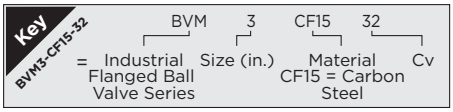
Actuator Model Details

Model Number	Valve Size		V-Cut	Flow Coefficient		Series 70/AU Actuators On/Off, 120VAC	Series 70 Actuators On/Off, 24VAC
	In.	mm		100%	60%	Model	Model
BVM250-CF15-27	2.5	65	15°	31.30	11.73	70-0081H	70-24-0081H
BVM250-CF15-56			30°	76.95	20.05	70-0081H	70-24-0081H
BVM250-CF15-114			60°	162.50	37.92	70-0081H	70-24-0081H
BVM250-CF15-177			90°	239.45	53.53	70-0081H	70-24-0081H
BVM250-CF15-780			Full Port	780.00	363.90	70-0081H	70-24-0081H
BVM3-CF15-32	3	80	15°	38.31	13.42	70-0121H	70-24-0201H
BVM3-CF15-70			30°	85.91	26.78	70-0121H	70-24-0201H
BVM3-CF15-150			60°	193.20	46.32	70-0121H	70-24-0201H
BVM3-CF15-237			90°	359.21	69.27	70-0121H	70-24-0201H
BVM3-CF15-1150			Full Port	1150.00	531.50	70-0121H	70-24-0201H
BVM4-CF15-76	4	100	15°	96.37	27.91	70-E301H	70-24-0501H
BVM4-CF15-159			30°	196.35	58.60	70-E301H	70-24-0501H
BVM4-CF15-330			60°	437.29	106.26	70-E301H	70-24-0501H
BVM4-CF15-547			90°	830.86	240.51	70-E301H	70-24-0501H
BVM4-CF15-2100			Full Port	2100.00	1035.80	70-E301H	70-24-0501H
BVM6-CF15-134	6	150	15°	171.62	49.70	70-0651H	70-24-0501H*
BVM6-CF15-282			30°	349.69	104.37	70-0651H	70-24-0501H*
BVM6-CF15-587			60°	800.80	189.24	70-0651H	70-24-0501H*
BVM6-CF15-974			90°	1479.70	280.37	70-0651H	70-24-0501H*
BVM6-CF15-5000			Full Port	5000.00	2392.50	70-0651H	70-24-0501H*
BVM8-CF15-346	8	200	15°	692.07	84.58	70-1300H	-
BVM8-CF15-481			30°	595.11	177.62	70-1300H	-
BVM8-CF15-999			60°	1325.18	322.06	70-1300H	-
BVM8-CF15-1657			90°	2518.18	477.14	70-1300H	-
BVM8-CF15-9600			Full Port	9600.00	4768.20	70-1300H	-
BVM10-CF15-545	10	250	15°	856.36	132.15	AU-2130	-
BVM10-CF15-751			30°	929.87	277.53	AU-2130	-
BVM10-CF15-1561			60°	2070.90	503.22	AU-2130	-
BVM10-CF15-2589			90°	3934.65	745.53	AU-2130	-
BVM10-CF15-15000			Full Port	15000.00	7591.50	AU-2130	-
BVM12-CF15-1101	12	300	15°	1638.90	185.01	AU-4068	-
BVM12-CF15-1051			30°	1301.81	388.54	AU-4068	-
BVM12-CF15-2185			60°	2899.26	704.51	AU-4068	-
BVM12-CF15-3624			90°	5508.51	1043.74	AU-4068	-
BVM12-CF15-21000			Full Port	21000.00	10430.50	AU-4068	-

Options/Adders

1. For Battery Back-Up Failsafe Option (BBU) option on 24VAC actuators, add "-BBU".
** Add "SF15" in place of CF15 for Stainless Steel body option.
* Steam Only
2. **For normally Closed, add a "C" to the end of the valve part number, i.e. BVM250-CF15-27C, otherwise normally open. Fail safe models only.

V-port ball valves have a 20 to 85% max angle of controllability.



2-Way, 24 VAC and 120 VAC, Modulating Actuators (100 psi Steam and 285 psi Water)

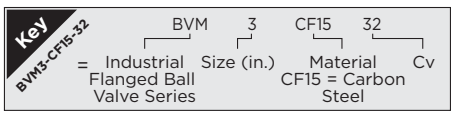
Actuator Model Details

Model Number	Valve Size		V-Cut	Flow Coefficient		Series 70/AU Actuators Modulating, 120VAC	Series 70 Actuators Modulating, 24VAC
	In.	mm		100%	60%	Model	Model
BVM250-CF15-27	2.5	65	15°	31.30	11.73	70-0081SVH	70-24-0081SVH
BVM250-CF15-56			30°	76.95	20.05	70-0081SVH	70-24-0081SVH
BVM250-CF15-114			60°	162.50	37.92	70-0081SVH	70-24-0081SVH
BVM250-CF15-177			90°	239.45	53.53	70-0081SVH	70-24-0081SVH
BVM250-CF15-780			Full Port	780.00	363.90	70-0081SVH	70-24-0081SVH
BVM3-CF15-32	3	80	15°	38.31	13.42	70-0121SVH	70-24-0201SVH
BVM3-CF15-70			30°	85.91	26.78	70-0121SVH	70-24-0201SVH
BVM3-CF15-150			60°	193.20	46.32	70-0121SVH	70-24-0201SVH
BVM3-CF15-237			90°	359.21	69.27	70-0121SVH	70-24-0201SVH
BVM3-CF15-1150			Full Port	1150.00	531.50	70-0121SVH	70-24-0201SVH
BVM4-CF15-76	4	100	15°	96.37	27.91	70-E301SVH	70-24-0501SVH
BVM4-CF15-159			30°	196.35	58.60	70-E301SVH	70-24-0501SVH
BVM4-CF15-330			60°	437.29	106.26	70-E301SVH	70-24-0501SVH
BVM4-CF15-547			90°	830.86	240.51	70-E301SVH	70-24-0501SVH
BVM4-CF15-2100			Full Port	2100.00	1035.80	70-E301SVH	70-24-0501SVH
BVM6-CF15-134	6	150	15°	171.62	49.70	70-0651SVH	70-24-0501SVH*
BVM6-CF15-282			30°	349.69	104.37	70-0651SVH	70-24-0501SVH*
BVM6-CF15-587			60°	800.80	189.24	70-0651SVH	70-24-0501SVH*
BVM6-CF15-974			90°	1479.70	280.37	70-0651SVH	70-24-0501SVH*
BVM6-CF15-5000			Full Port	5000.00	2392.50	70-0651SVH	70-24-0501SVH*
BVM8-CF15-346	8	200	15°	692.07	84.58	70-1300SVH	-
BVM8-CF15-481			30°	595.11	177.62	70-1300SVH	-
BVM8-CF15-999			60°	1325.18	322.06	70-1300SVH	-
BVM8-CF15-1657			90°	2518.18	477.14	70-1300SVH	-
BVM8-CF15-9600			Full Port	9600.00	4768.20	70-1300SVH	-
BVM10-CF15-545	10	250	15°	856.36	132.15	AU-2130SV	-
BVM10-CF15-751			30°	929.87	277.53	AU-2130SV	-
BVM10-CF15-1561			60°	2070.90	503.22	AU-2130SV	-
BVM10-CF15-2589			90°	3934.65	745.53	AU-2130SV	-
BVM10-CF15-15000			Full Port	15000.00	7591.50	AU-2130SV	-
BVM12-CF15-1101	12	300	15°	1638.90	185.01	AU-4068SV	-
BVM12-CF15-1051			30°	1301.81	388.54	AU-4068SV	-
BVM12-CF15-2185			60°	2899.26	704.51	AU-4068SV	-
BVM12-CF15-3624			90°	5508.51	1043.74	AU-4068SV	-
BVM12-CF15-21000			Full Port	21000.00	10430.50	AU-4068SV	-

Options/Adders

1. For Battery Back-Up Failsafe Option (BBU) option on 24VAC actuators, add "-BBU".
** Add "SF15" in place of CF15 for Stainless Steel body option.
* Steam Only
2. **For normally Closed, add a "C" to the end of the valve part number, i.e. BVM250-CF15-27C, otherwise normally open. Fail safe models only.

V-port ball valves have a 20 to 85% max angle of controllability.



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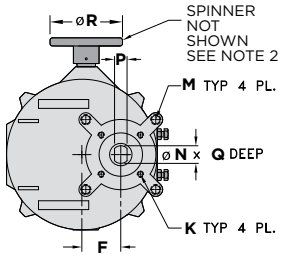
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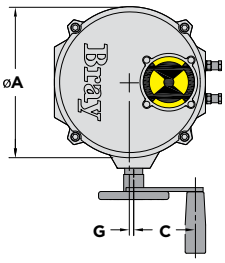
BVM Series - 2-Way - Flanged Ball Valve/70 Series Actuator Dimensions

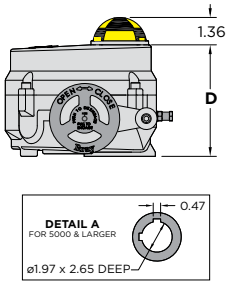
70-0081 TO 70-0651

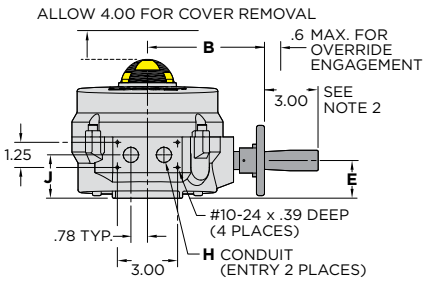
Series 70 Actuator - DIMENSIONS In./(mm)

Actuator Model Number	øA	B	C	D	E	F	G	H	J	K UNC x B.C. (MM x B.C.)	M UNC x B.C. (MM x B.C.)	N	P	Q	øR	Weight lbs. (kg)
S70-0081	7.5 (191)	5.8 (147)	3.0 (76)	5.6 (141)	1.9 (48)	1.94 (49.2)	.19 (4.7)	1/2 (M20 x 1.5)	2.2 (55)	5/16-18 x ø2.76 [M8 x 1.25 x ø70]	—	.75 (19.0)	.51 (13.0)	1.75 (44.5)	3.5 (89)	13 (6)
S70-0121 S70-0201 S70-E301	10.1 (256)	7.8 (198)	3.7 (93)	6.6 (168)	2.4 (62)	2.69 (68.3)	.56 (14.3)	3/4 (M25 x 1.5)	2.6 (66)	5/16-18 x ø2.76 [M8 x 1.25 x ø70]	1/2-13 x ø4.92 [M12 x 1.75 x ø125]	1.18 (30.0)	.87 (22.0)	2.22 (56.3)	8.0 (203)	28 (13)
S70-0501 S70-0651	12.1 (308)	9.5 (241)	5.5 (139)	7.2 (183)	2.9 (73)	3.19 (80.9)	.56 (14.3)	3/4 (M25 x 1.5)	3.1 (78)	1/2-13 x ø4.92 [M12 x 1.75 x ø125]	3/4-10 x ø6.50 [M20 x 2.5 x ø165]	See Detail A			12.0 (305)	48 (22)





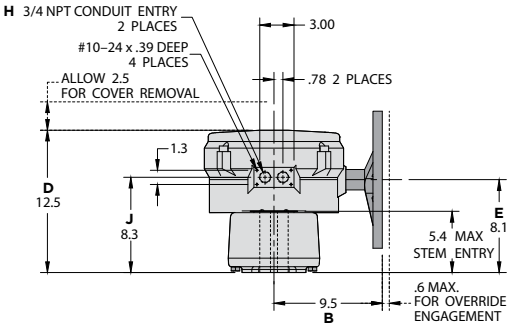


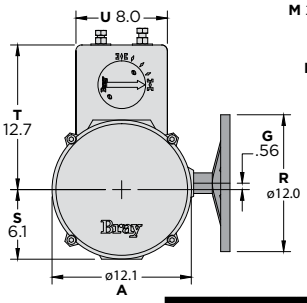


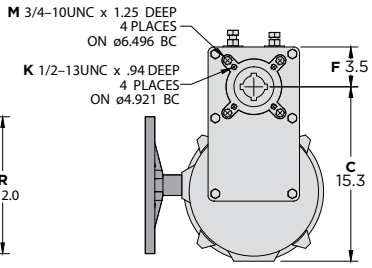
70-1300 TO 70-1800

Series 70 Actuator - DIMENSIONS In./(mm)

Actuator Model Number	øA	B	C	D	E	F	G	H	J	K UNC x B.C. (MM x B.C.)	M UNC x B.C. (MM x B.C.)	N	P	Q	øR	S	T	U	Weight lbs. (kg)
S70-1300 S70-1800	12.1 (308)	9.5 (241)	15.3 (389)	12.5 (316)	8.1 (206)	3.5 (89)	.56 (14.3)	3/4 (M25 x 1.5)	8.3 (211)	1/2-13 x ø4.921 F12 (12 x 125 BC x 23.9)	3/4-10 x ø6.496 F16 (20 x 165 BC x 31.8)	See Stem Bore Detail			12.0 (305)	6.1 (155)	12.7 (322)	8.0 (203)	118 (54)

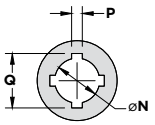






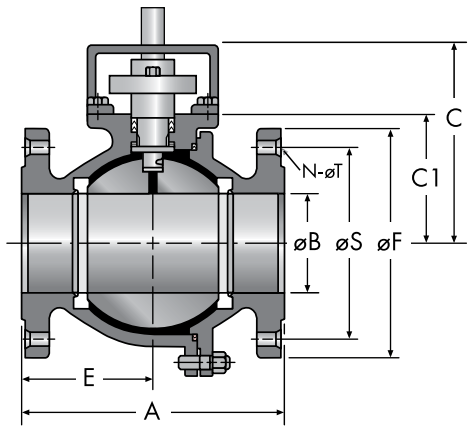
STEM BORE DETAIL In./(mm)

Size	N	P	Q
70-1306 70-1806	2.51 (63.6)	0.63 (15.9)	3.05 (77.5)
70-1316 70-1816	1.97 (50.0)	0.47 (12.0)	2.38 (60.6)



STEM BORE DETAIL

VALVE BODY



ANSI Class 150 in. (mm)

SIZE	A	øB	C	C1	E	øF	øS	N / øT	Cv (Kv)	Weight LBS (KG)
2-1/2″ (65)	7.5 (191)	2.6 (65)	7.4 (188)	3.4 (86)	3.1 (78)	7.0 (178)	5.5 (140)	4 x 0.75 (4 x 19.0)	780 (675)	36 (16)
3″ (80)	8.0 (203)	3.0 (76)	7.7 (196)	3.7 (93)	3.7 (95)	7.5 (191)	6.0 (152)	4 x 0.75 (4 x 19.0)	1150 (995)	45 (20)
4″ (100)	9.0 (229)	4.0 (101)	8.4 (224)	4.4 (112)	4.5 (114)	9.0 (229)	7.5 (191)	8 x 0.75 (8 x 19.0)	2100 (1817)	65 (30)
6″ (150)	15.5 (394)	6.0 (152)	11.2 (284)	7.2 (182)	7.6 (194)	11.0 (279)	9.5 (241)	8 x 0.88 (8 x 22.0)	5000 (4325)	157 (71)
8″ (200)	18.0 (457)	7.9 (200)	11.6 (295)	7.6 (193)	8.4 (212)	13.5 (343)	11.8 (299)	8 x 0.88 (8 x 22.0)	9600 (8304)	290 (132)
10″ (250)	21.0 (533)	9.8 (250)	15.9 (404)	9.9 (251)	10.5 (266)	16.0 (406)	14.3 (362)	12 x 1.00 (12 x 25.0)	15000 (12975)	500 (227)
12″ (300)	24.0 (610)	11.8 (300)	17.5 (445)	11.5 (291)	12.0 (305)	19.0 (483)	17.0 (432)	12 x 1.00 (12 x 25.0)	21000 (18165)	700 (318)

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Bray Commercial provides automated Butterfly, Ball, Globe and Pressure Independent Control Valves to the commercial building HVAC market throughout the world Where ever valve performance is required to maintain climate controlled environments, Bray can provide the required automated valves to meet the demanding flow applications of chiller/boiler isolation, air handlers and terminal units for new construction, retrofit and/or LEED certification applications in buildings.

Building Types

- Healthcare
- Data Centers
- Government and Municipal
- Sports/Entertainment/ Convention Centers
- K-12 and University Education
- Transportation
- Hotels
- Office Buildings
- Retail

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Bray COMMERCIAL

BVMS Series (ANSI 150)
Flanged Industrial Control Segmented Ball Valves
2-Way • 2"- 12"

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Specifications
Cut-Away View
Close-Off Charts
Pressure/Temp Charts
Dimensions
LOOKING FOR MORE

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04/16/26

Application

The BVMS Series Industrial Ball valves are flanged segmented valves designed for control and On/Off applications where high temperature and high pressure water or steam are used. The valves feature a characterized ball segment for high rangeability with a splined stem connection for precise control, as well as a low friction shaft and thrust bearings for longer life and smaller actuators.

These valves provide ample flow capacity, equal percentage flow characteristics and Class VI leakage. Valve bodies are one-piece carbon steel with cast Stainless Steel balls and ASNI 150 flanges.

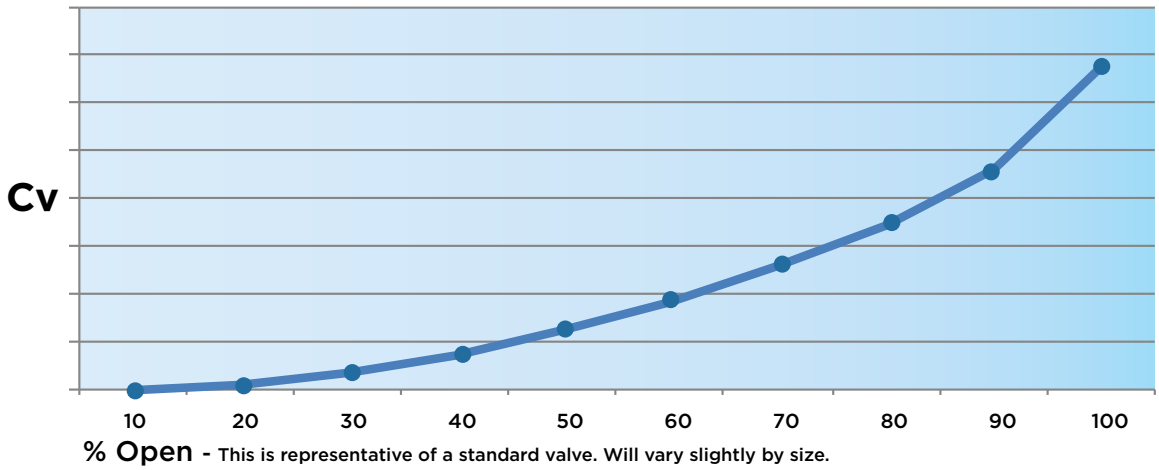


Features and Benefits

- **Characterized Ball Segment**
  High Rangeability in excess of 300:1
- **ANSI Class VI Leakage Rating**
  Suitable for HVAC applications
- **One Piece Phosphate Coated Carbon Steel Bodies**
  For cost effective applications up to 380°F at 200 psi
- **Available NEMA 4 Actuators**
  Reliable, cost effective control

Applications
Heat Exchangers, Standard and Computer Room Air Conditioning Units.

Flow Curve Chart



% Open - This is representative of a standard valve. Will vary slightly by size.

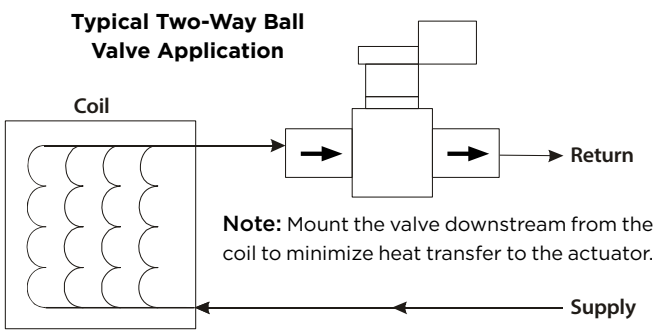
BVMS Series - Specifications

Technical Specifications - BVMS Segmented Industrial Ball Valve Body (BVMS = "Equivalent to Bray/FlowTek S19 Series")		
Service	Chilled/Hot Water, 50/50 Glycol Solutions and Saturated Steam	
Size Range	**2-Way**	2" to 12" Flanged Segmented Valves
Maximum Fluid Temperature	**Water**	-20˚ to 380˚F @ 200 psi (-28˚ to 193˚C @ 1378 kPa)
	Saturated Steam	100 psig (689 kPa) with upgraded AFLAS (FEPM) O-Ring
Valve Body Pressure Rating	ANSI Class 150	
Maximum Close-Off Pressure	**Water**	285 psi (1965 kPa)
	Saturated Steam	100 psig (689 kPa)
Maximum Recommended Operating Pressure Drop	1/3 of Inlet Pressure	
Flow Characteristic	Equal Percentage	
Rangeability	300:1	
Leakage	ANSI Class VI	
End Connections	ANSI Class 150	
Ambient Operating Temperature Range	See Actuator Rating (Optional high temperature mounting kit may be required)	
Materials	**Body**	ASTM A216 Gr WCB Carbon Steel
	Ball Segment	316 Stainless Steel
	Stem	ASTM A564 Type 630 Cond H1150D (17-4PH)
	Seat	Tek-Fil
	Stem Seal/Packing	PTFE + Carbon Fiber
	Gasket	PTFE
	O-Ring	Viton (FKM) or Optional AFLAS (FEPM) for steam
Warranty	3 Years limited from time of shipment.	

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

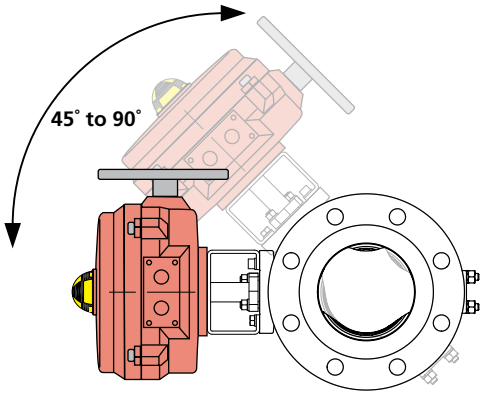
BVMS - Mode of Actuation

Typical Two-Way Ball Valve Application



BVMS - For Steam Applications

Install valve with stem at 45˚ to 90˚ from vertical.

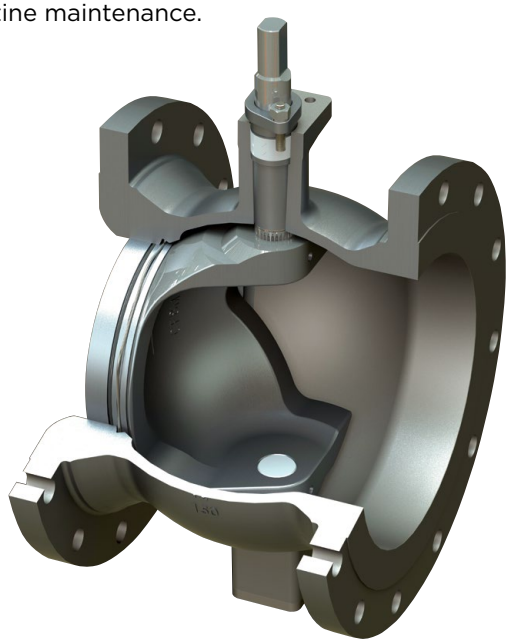


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BVMS Series - Cut Away View

Ball - Stem Connection

- Close-fit splined connection between stem and the segment offers extra strength with no lost motion or dead band.
- Perfectly oriented, specially designed shaft pin facilitates self-alignment of the ball segment while simplifying the assembly and disassembly during routine maintenance.



Seat

- Standard soft seat design uses Tek-Fil® to maintain exceptional chemical and heat resistance.
- Tek-Fil® provides higher compressive strength, lower co-efficient of friction, superior abrasion and wear resistance, lower permeability, lower porosity, and reduced cold flow.
- Directs the flow away from the sealing area.
- Pressure energized seat design offers excellent sealing even at very low differential pressures. Self-aligning seat is independent of external pipe loads and offers excellent sealing even in adverse conditions.

Bearings

- Stem and end post bearings are low friction and maintenance free.
- Made of wear resistant PTFE compound supported by metal fabric.
- Additional thrust bearing on stem collar for high pressure applications eliminates unbalanced axial load for consistent high performance and precision control.

BVMS - 2-Way-On/Off & Modulating Series 70 Industrial Electric Actuators Close-Off Charts

2-Way, 24 VAC & 120 VAC, On/Off Actuators - (285 psi WATER/100 psi STEAM Close-Off)

Model Number	Valve Size		Flow Coefficient		Series 70 120 VAC On/Off	Series 70 24 VAC On/Off
	In.	mm	100%	60%	Model	Model
BVMS2-C150-0095	2	50	95	20	70-0081H	70-24-0081H
BVMS3-C150-0287	3	80	287	64	70-0081H	70-24-0081H
BVMS4-C150-0436	4	100	436	98	70-0121H	70-24-0201H
BVMS6-C150-0760	6	150	760	191	70-0201H	70-24-0201H
BVMS8-C150-1350	8	200	1350	369	70-E301H	70-24-0501H
BVMS10-C150-2380	10	250	2380	571	70-0501H	70-24-0501H
BVMS12-C150-3410	12	300	3410	780	70-1300H	-

2-Way, 24 VAC & 120 VAC, Modulating Actuators - (285 psi WATER/100 psi STEAM Close-Off)

Model Number	Valve Size		Flow Coefficient		Series 70 120 VAC Modulating	Series 70 24 VAC Modulating
	In.	mm	100%	60%	Model	Model
BVMS2-C150-0095	2	50	95	20	70-0081SVH	70-24-0081SVH
BVMS3-C150-0287	3	80	287	64	70-0081SVH	70-24-0081SVH
BVMS4-C150-0436	4	100	436	98	70-0121SVH	70-24-0201SVH
BVMS6-C150-0760	6	150	760	191	70-0201SVH	70-24-0201SVH
BVMS8-C150-1350	8	200	1350	369	70-E301SVH	70-24-0501SVH
BVMS10-C150-2380	10	250	2380	571	70-0501SVH	70-24-0501SVH
BVMS12-C150-3410	12	300	3410	780	70-1300SVH	-

Options/Adders
1. For Battery Back-Up Failsafe Unit (BBU) option on 24 VAC actuators add "-BBU".
2. For normally Closed, add a "C" to the end of the valve part number, i.e. BVMS2-C150-0095C, otherwise normally open. BBU models only.

Add "S150" in place of C150 for Stainless Steel body option.

Key BVMS2-C150-0095

BVMS = Industrial Flanged Ball Valve Series | 2 = Size (in.) | C = Material CF15 = Carbon Steel | 150 = ANSI Class | 0095 = Cv

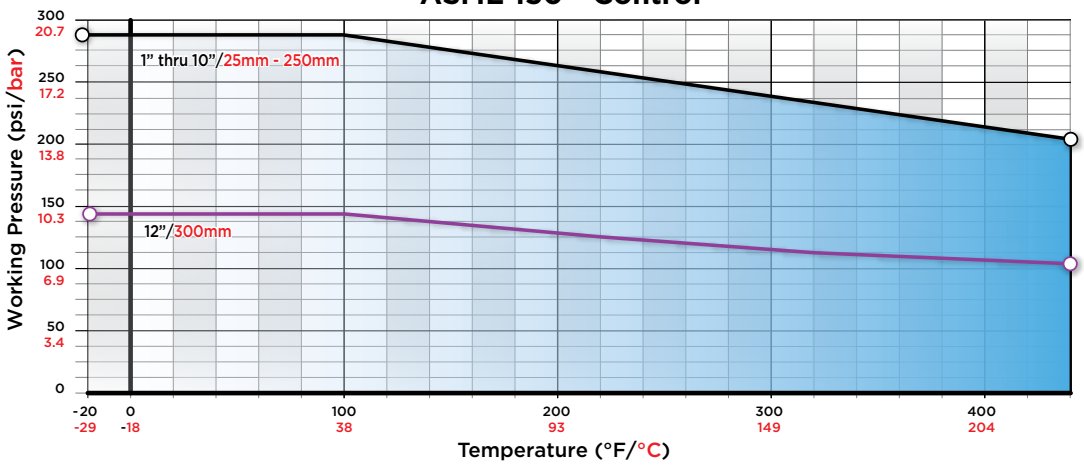
BVMS Series - Flow Coefficient Cv Chart

BVMS-Segmented Ball Valve - Tek Fil Seat - Class 150														
Model Number	Valve Size		Flow Coefficient		Percent of Ball Rotation									
	In.	mm	100%	60%	15%	20%	30%	40%	50%	60%	70%	80%	90%	100%
BVMS2-C150-0095	2	50	95	20	0.00	0.00	1.21	5.1	11.2	19.5	29.5	44.0	70.0	95.0
BVMS3-C150-0287	3	80	287	64	0.17	2.1	10.4	24.0	41.0	64.0	93.0	131.0	181.0	287.0
BVMS4-C150-0436	4	100	436	98	1.8	6.0	20.6	41.0	68.0	98.0	136.0	196.0	283.0	436.0
BVMS6-C150-0760	6	150	760	191	2.7	11.2	38.5	77.4	126.0	191.2	274.6	364.5	584.0	760.0
BVMS8-C150-1350	8	200	1350	369	8.2	23.0	73.0	145.0	247.0	369.0	517.0	686.0	922.5	1350.0
BVMS10-C150-2380	10	250	2380	571	17.2	43.0	121.0	238.0	385.0	571.0	790.0	1046.0	1372.0	2380.0
BVMS12-C150-3410	12	300	3410	780	17.7	52.0	157.0	322.0	532.0	780.0	1094.0	1458.0	1954.0	3410.0

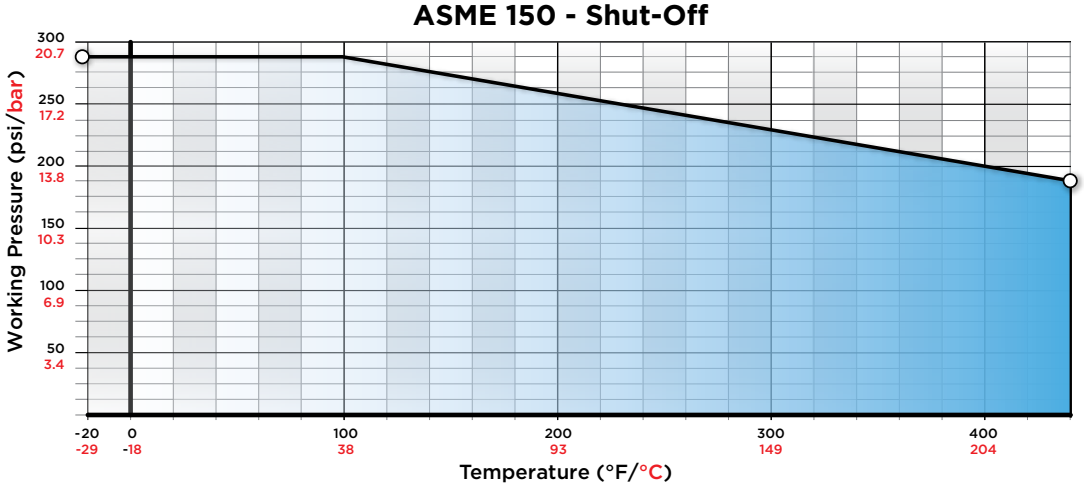
Piping and Installation Tips – For control applications select a valve which offers calculated Cv for the minimum and maximum flow between 15% and 80% of port opening.

BVMS - Pressure/Temperature Chart

ASME 150 - Control



ASME 150 - Shut-Off

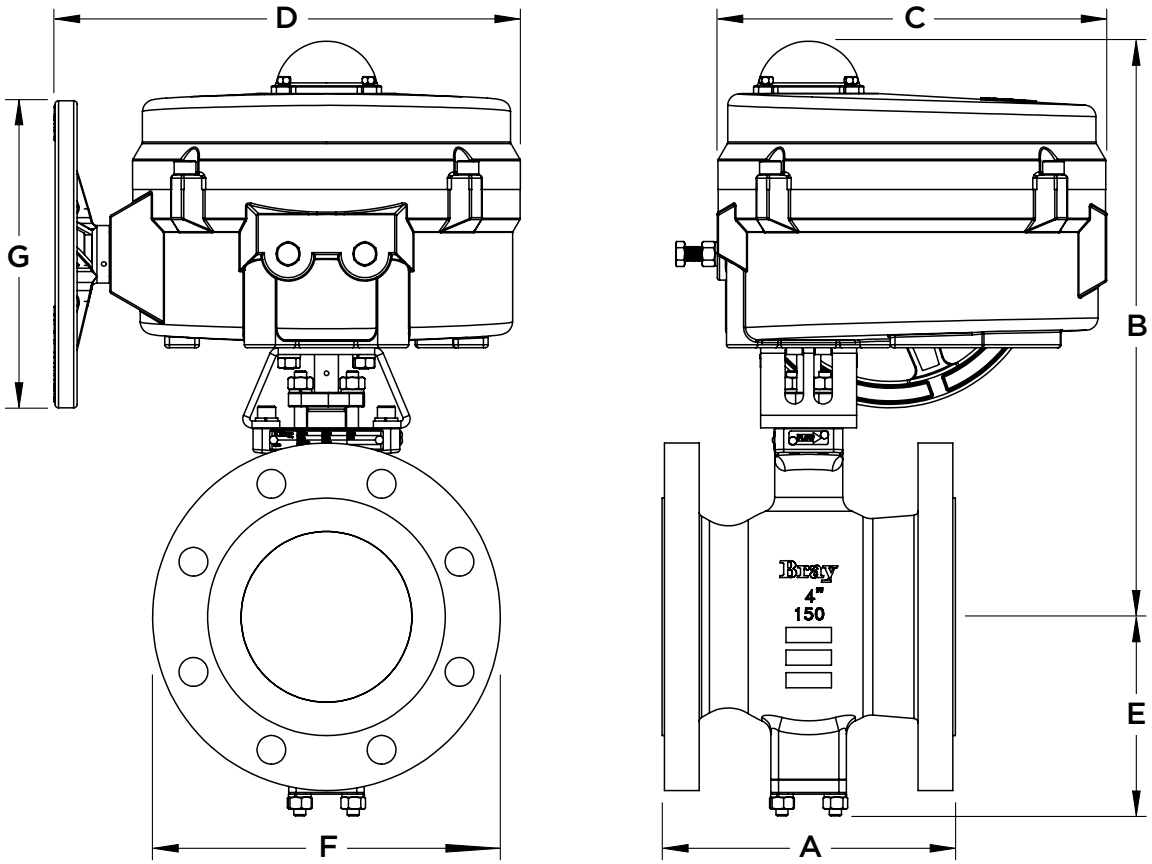


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BVMS Series - 2-Way - Segmented Ball Valve/Actuator Dimensions



BVMS Dimensions – ANSI 150 – 2" - 12" - 2-Way, Segmented with Industrial Actuators - in. (mm)												
Model Number	Valve Size		Flow Coefficient		A	B	C	D	E	F	G	Weight
	In.	mm	Cv	Kv								
BVMS2-C150-0095	2	50	95	82	4.9 (124)	12.9 (327)	7.5 (191)	9.3 (236)	3.9 (99)	6.0 (152)	3.5 (89)	17.9 [8.1]
BVMS3-C150-0287	3	80	287	247	6.5 (165)	12.9 (327)	7.5 (191)	9.3 (236)	4.8 (121)	7.5 (190)	3.5 (89)	32.0 [14.4]
BVMS4-C150-0436	4	100	436	375	7.6 (194)	15.0 (380)	10.1 (256)	12.1 (308)	5.2 (133)	9.1 (230)	8.0 (203)	45.2 [20.5]
BVMS6-C150-0760	6	150	760	654	9.0 (229)	19.0 (481)	10.1 (256)	12.1 (308)	7.6 (193)	11.0 (280)	8.0 (203)	86.0 [39.0]
BVMS8-C150-1350	8	200	1350	1161	9.6 (243)	20.1 (522)	12.1 (308)	13.1 (333)	8.4 (213)	13.6 (345)	12.0 (305)	131.0 [59.4]
BVMS10-C150-2380	10	250	2380	2047	11.7 (297)	20.1 (522)	12.1 (308)	13.1 (333)	10.1 (256)	16.0 (406)	12.0 (305)	191.0 [86.7]
BVMS12-C150-3410	12	300	3410	2933	13.3 (338)	25.8 (656)	12.1 (308)	14.8 (375)	11.5 (292)	19.0 (483)	12.0 (305)	302.0 [137.0]

Dimensions for largest Actuator shown
Weights (valve only) are in lbs. [kg in brackets]

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Simple Set®

Pressure Independent Control Valves

2-Way — 1/2" - 2"

Application

The Bray Simple Set® is a threaded pressure independent control (PIC) valve designed for a wide variety of hot water and chilled water control applications. The SS Series combines high rangeability control and dynamic balancing into a single compact housing, eliminating the material, installation and commissioning costs of a separate balancing component.

The maximum flow rate is easily set by hand with an adjustment on the top of the valve. The unique design of the Simple Set provides full stroke of the control element, even when the flow rate setting is a small percentage of the maximum flow capacity of the valve.

Simple Set valves achieve a continuous flow rate at any fixed position of the valve irrespective of inlet pressure change. This prevents overflow at any load condition, which contributes to optimal coil performance and primary equipment efficiency.



System Types
Fan Coils, VAV Reheat Coils, Chilled Beams, Computer Room Air Conditioning Units and Air Handling Units.

Features and Benefits

- **Brass Housing with High Flow Cavity**
  Robust design, resistant to high temperatures and moderate levels of particulate.
- **Low Pressure Drop**
  Reduces pump head requirements for added energy efficiency.
- **Long Stroke**
  Provides greater controlability.
- **No minimum straight pipe lengths required before or after the valve**
  Provides for maximum piping flexibility, even in crowded mechanical rooms.

Technical Specifications - Valve Body		
Service	Hot Water, Chilled Water, Up to 50% Glycol	
Size Range	**2-Way -** 1/2" through 2" (DN 15 to 50)	
Body Cold Working Pressure Ratings	375 psi (25 Bar)	
Media Temperature Range	32°F to 248°F (0°C to 120°C)	
Operational ΔP	**Minimum**	Varies by size. See pages SS-10 & SS-11
	Maximum	58 psid (400kPa)
Max. Close-Off Pressure	58 psid (400kPa)	
Valve Operation	Push Down to Close, Normally Open	
Shut-Off Leakage	ANSI Class IV (0.01%)	
Stroke	1/2" to 1 -1/4" = 0.22" (5.5mm) 1.5" to 2" = 0.59" (15mm)	
Rangeability	>100:1	
End Connections	NPT Threaded	
Materials	**Body**	DZR Brass
	Flow Regulation Unit	PPS 40% Glass
	Diaphragm	HNBR
	Spring	Stainless Steel
	O-Rings	EPDM
Weights (Valve Body Only)	**1/2"**	1.98 lb. (.90 kg)
	3/4"	1.98 lb. (.90 kg)
	1"	2.21 lb. (1.00 kg)
	1-1/4"	3.35 lb. (1.60 kg)
	1-1/2"	6.34 lb. (2.90 kg)
	2"	8.70 lb. (4.00 kg)
Warranty	5 Years limited from time of shipment.	
Approvals & Certifications	PED 2014/68/EU, ROHS 2011/65/EU	

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

Auto-Stroke Settings for Modulating (Analog) - (PAM Series)

Analog actuators perform an Auto-Stroke sequence upon every power-up. The Auto-Stroke sequence runs from 0 to the end position and back in order to automatically detect the stroke limits and calibrate the input signal to the detected stroke limits. The Auto-Stroke sequence can take up to a maximum of 2 minutes to complete.

⚠ CAUTION

If the actuator and/or adaptor are removed from the valve after initial installation, an Auto-Stroke sequence must be initiated must be initiated to recalibrate the actuator. To do so, remove and reapply the power.

Notice

During the Auto-Stroke sequence, the status LED remains on and the actuator will not perform any other action.

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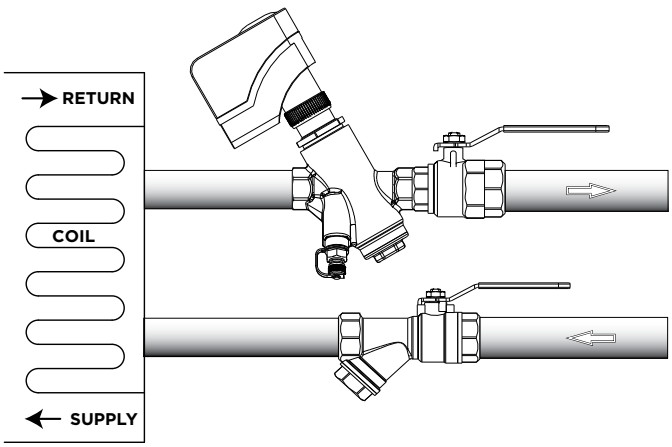
Simple Set - Actuator Specifications

Technical Specifications - Actuators						
Actuator Models	For Valves Sizes 1/2" to 1 -1/4"				For Valves Sizes 1.5" to 2"	
	PA24-27	PA24-27-FS	PAM24-27	PAM24-27-FS	PAM24-100	PAM24-100-FS
	On/Off & Floating		Modulating		On/Off, Floating & Modulating	
	Non-Fail Safe	Fail Safe	Non-Fail Safe	Fail Safe	Non-Fail Safe	Fail Safe
Supply Voltage	22 to 26 AC/DC				22 to 26 VAC or 23 to 32 VDC	
Power Consumption	5VA	10VA	5VA	10VA	6VA	6VA, 20VA Start Up
Control Signal	2 Position On/Off or 3-Point Floating		Analog, 0-10VDC or 2-10VDC; 4-20mA with external 500Ω resistor		2 Position On/Off (Digital-Pulse Width Modulation), 3 Point Floating, Modulating (Analog), 2-10VDC; 4-20mA	
Input Impedance	4.7 K		10.0 K	100.0 K	100.0 K	
Feedback Signal	No		0-10VDC or 2-10VDC		4 to 20 mA or 2 to 10VDC adjustable	
Failsafe Function	No	Yes (60 Sec. Runtime)	No	Yes (60 Sec. Runtime)	No	Yes (60 Sec. Runtime)
Anti-Stick	No		Optional[1]		Yes	
Operation Time	120 Seconds				90 Seconds	
Enclosure Rating	NEMA type 3R (Equivalent to IP54)					
Ambient Temperature	36°F to 122°F (2°C to 50°C)				0°F to 122° (-18°C to 50°C)	
Humidity Rating	5 to 95% RH Non Condensing					
Connection	3 wires 18 AWG halogen free cable, 3.2 ft.	4 wires 18 AWG halogen free cable, 3.2 ft.			Terminal Connection. Use 18 AWG Minimum	
Noise Rating	>35dBA					
Dimensions	(L) 4.09" x (W) 2.08" x (H) 3.62"			(L) 4.09" x (W) 2.08" x (H) 4.18"	(L) 4.80" x (W) 3.60" x (H) 6.93"	
Weight	0.9 lb. (0.4 kg)				2.0 lb. (0.9 kg)	
Warranty	5 Years limited from time of shipment					
Agency Listing	UL, C Є					

[1]Anti-Stick Option

With the anti-stick option activated, the actuator will make one full cycle every 24 hours, if the actuator constantly has been in fully open or fully closed position during the previous 24 hours. This operation will clear up any possible impurities accumulated in the valve, and re-calculate the end positions.

Simple Set - Piping Diagram



The pipe system shall be properly ventilated to avoid risk of air pockets.

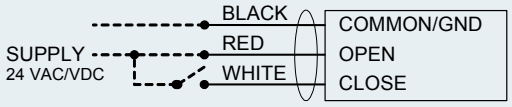
Glycolic mixtures up to 50% are applicable (both ethylene and propylene).

Bray can accept no responsibility if another actuator is used instead of the actuator provided.

Simple Set - Actuator Wiring

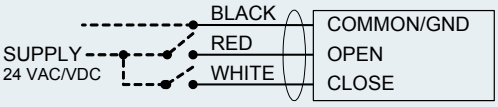
WIRING - (CABLE)

PA24-27 (27 lb force)
ON/OFF, NON-FAILSAFE





PA24-27 (27 lb force)
FLOATING, NON-FAILSAFE



DIP SWITCHES

DIP Switches
(default settings shown)

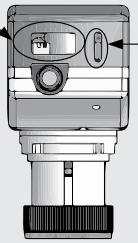
Not used

1) Rotation Direction



Switch Off: Default
Red wire = Open (Stem Up)
White wire = Close (Stem Down)

Switch On: Red wire = Close (Stem Down)
White wire = Open (Stem Up)

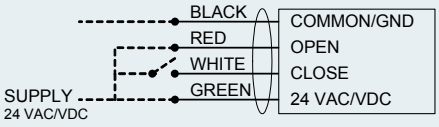


LED Status
Normal: Flash 0.5 sec ON / 10 sec OFF
Error: Flash 0.2 sec ON / 0.2 sec OFF

NOTE: For additional operating information consult PA24-27 IOM Manual.The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

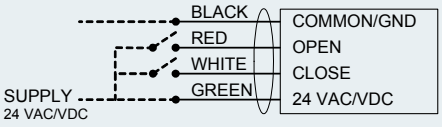
WIRING - (CABLE)

PA24-27-FS (27 lb force)
ON/OFF, FAILSAFE





PA24-27-FS (27 lb force)
FLOATING, FAILSAFE



DIP SWITCHES

DIP Switches
(default settings shown)

2) Failsafe Direction

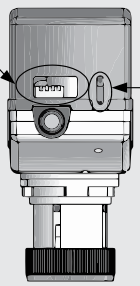


Switch Off: Valve Normally Open (Stem Up)

Switch On: Valve Normally Closed (Stem Down)

Switch Off: Default
Red wire = Open (Stem Up)
White wire = Close (Stem Down)

Switch On: Red wire = Close (Stem Down)
White wire = Open (Stem Up)



LED Status
Normal: Flash 0.5 sec ON / 10 sec OFF
Error: Flash 0.2 sec ON / 0.2 sec OFF
Failsafe Operation: OFF

NOTE: The Enerdrive system is a patented method of storing energy (using super capacitors) that is later used to drive the actuator to it failsafe position during a power failure. For additional operating information consult PA24-27 IOM Manual.The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

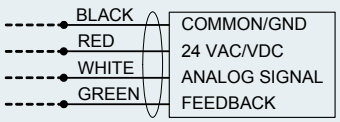
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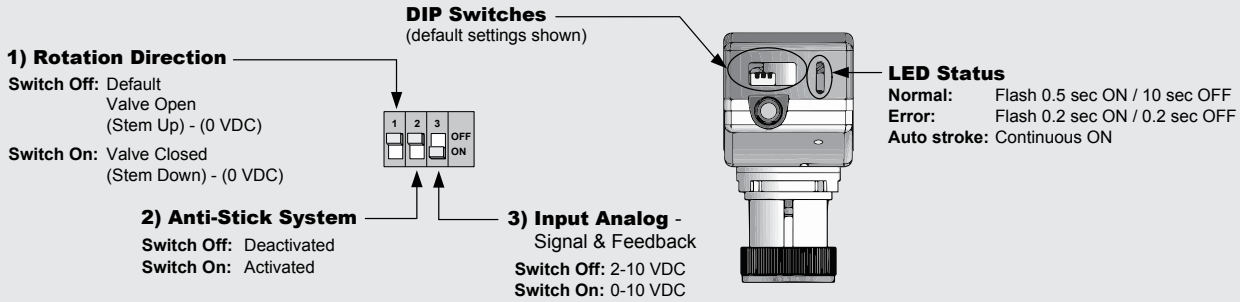
WIRING - (CABLE)

PAM24-27 (27 lb force)
MODULATING (ANALOG), NON-FAILSAFE





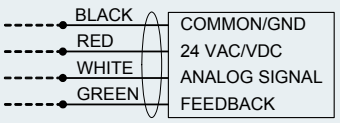
DIP SWITCHES



NOTE: For additional operating information consult PAM24-27 IOM Manual.The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

WIRING - (CABLE)

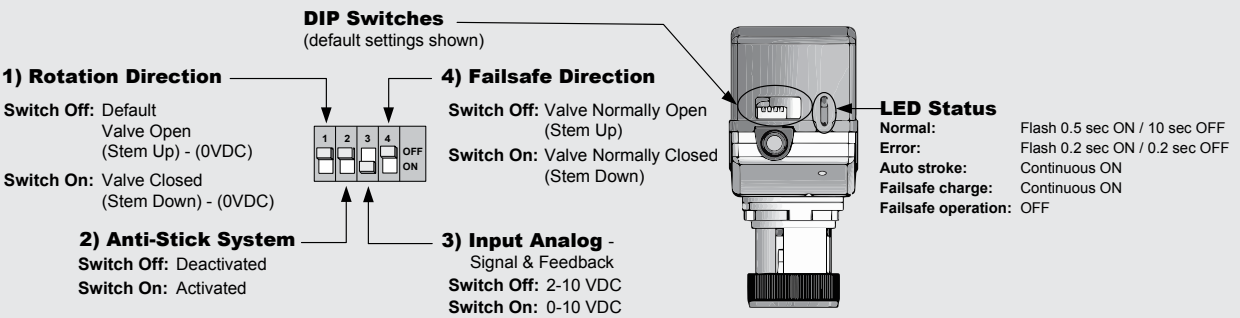
PAM24-27-FS (27 lb force)
MODULATING (ANALOG), FAILSAFE



FAILSAFE CONTROLLED BY DIP SWITCHES



DIP SWITCHES

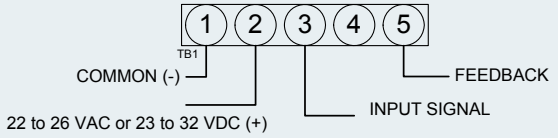


NOTE: The Enerdrive system is a patented method of storing energy (using super capacitors) that is later used to drive the actuator to it failsafe position during a power failure. For additional operating information consult PAM24-27 IOM Manual.The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

WIRING - (TERMINAL)

PAM24-100 (100 lb force)

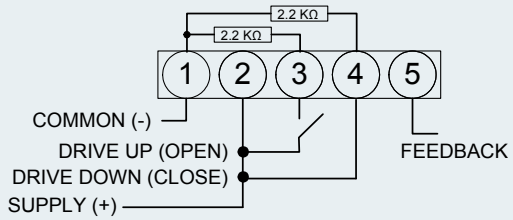
ON/OFF, FLOATING & MODULATING (ANALOG) , NON-FAILSAFE

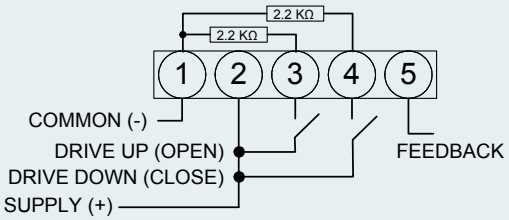




DIGITAL SIGNAL

3 WIRE / 2 POSITION ON/OFF	4 WIRE / 3 POINT FLOATING



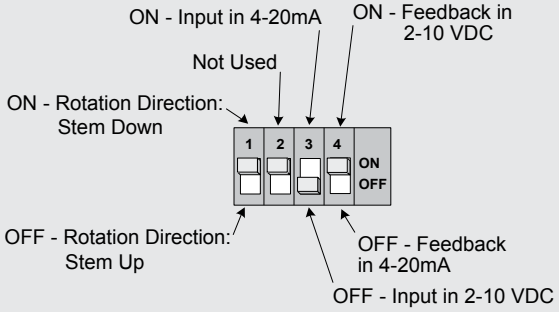


Special Consideration for Digital Control

In this mode, the actuator is sensitive to induced electrical voltages **from external sources**. To prevent such interference, if the signal on pins 4 and 3 on TB1 are from an **external 24 VAC source**, install a resistor 2.2 kohm, 0.5W between pins 4 and 1 and another of 2.2 kohms, 0.5W between pins 3 and 1 of TB1. These resistors are included.

NOTE: For additional operating information consult PAM24-100 IOM Manual.The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

DIP SWITCHES - DIGITAL SIGNAL



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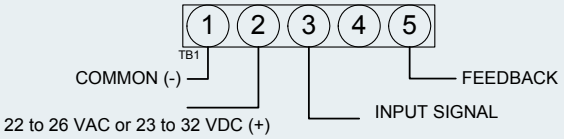
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WIRING - (TERMINAL)

PAM24-100-FS (100 lb force)

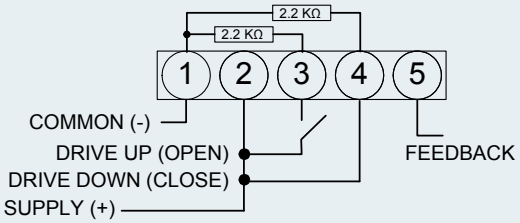
ON/OFF, FLOATING & MODULATING (ANALOG) ,FAILSAFE

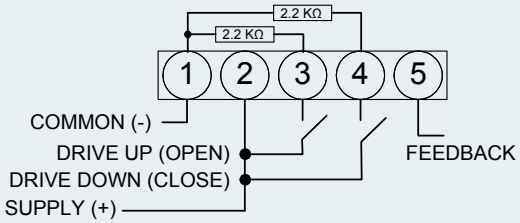




DIGITAL SIGNAL

3 WIRE / 2 POSITION ON/OFF	4 WIRE / 3 POINT FLOATING



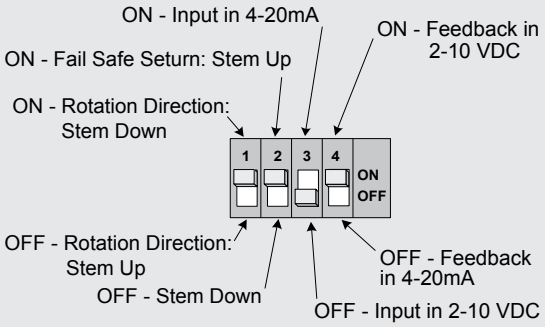


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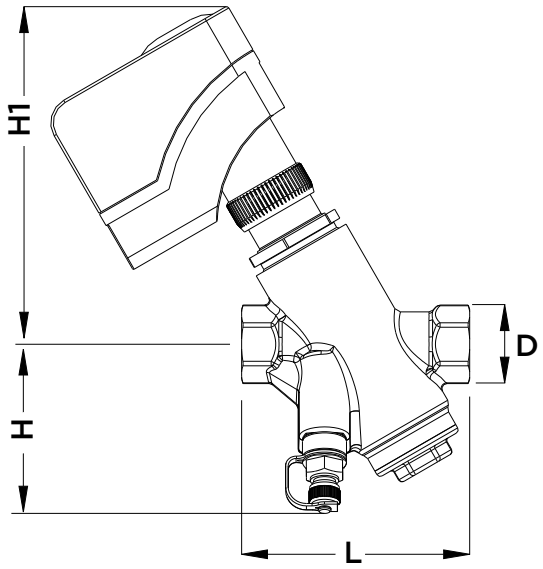
NOTE: The Enerdrive system is a patented method of storing energy (using super capacitors) that is later used to drive the actuator to it failsafe position during a power failure. For additional operating information consult PAM24-100 IOM Manual.The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

DIP SWITCHES - DIGITAL SIGNAL

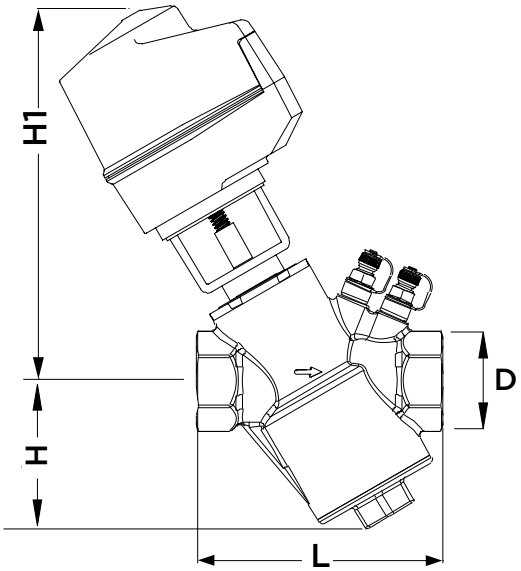


Simple Set - Valve/Actuator Dimensions

1/2" TO 1-1/4"



1-1/2" TO 2"



Simple Set - Technical Data and Dimensions

Valve Size			1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
Flow Rate	Liters per hour (l/h)	Low Flow Cartridge	75 - 700	77 - 745	-	-	-	-
		Std. Flow Cartridge	291 - 1576	305 - 1821	400 - 1830	690 - 3000	541 - 7582	596 - 14700
	Gallons per minute (gpm)	Low Flow Cartridge	.3 - 3.1	.3 - 3.3	-	-	-	-
		Std. Flow Cartridge	1.3 - 6.9	1.3 - 8.0	1.8 - 8.1	3.0 - 13.2	2.4 - 33.4	2.6 - 64.7
Dimensions in., (mm)		L	3.62, (92)	3.62, (92)	3.78, (96)	5.0, (128)	5.71, (145)	6.34, (161)
		H	2.68, (68)	2.68, (68)	2.68, (68)	3.03, (77)	3.43, (87)	3.70, (94)
		H1	7.88, (200)	7.88, (200)	7.88, (200)	6.04, (153)	16.00, (406)	15.25, (387)
		D	1.18, (30)	1.42, (36)	1.73, (44)	2.05, (52)	2.33, (59)	3.07, (78)
Weight		lbs., (kg)	2.50, (1.14)	2.50, (1.14)	2.60, (1.18)	4.10, (1.86)	7.90, (3.60)	10.30, (4.70)

Dimensions may vary, depending on the actuator.
Dimensions are shown for the largest actuator currently available.
Dimensions are shown in inches and are approximate.

Simple Set - Model Number Matrix

								Valve Series
SS	Prefix: Simple Set							
	1	Valve Size (1/2" to 2")						Valve Size
		N	End Connections - NPT					End Connections
			S	Flow Range Pressure Cartridge - (H) High, (L) Low or (S) Standard				Cartridge
				X	Flow Setting GPM. See Charts on Page SS-10 & SS-11			GPM
					/			/
						PA24-27	24V On/Off & Floating - Non-Fail Safe	Actuator Selection
						PA24-27-FS	24V On/Off & Floating - Fail Safe	
						PAM24-27	24V Modulating - Non-Fail Safe	
						PAM24-27-FS	24V Modulating - Fail Safe	
						PAM24-100	24V On/Off, Floating & Modulating - Non-Fail Safe	
						PAM24-100-FS	24V On/Off, Floating & Modulating - Fail Safe	
SS	1	N	S	1.8	/	PA24-27	1" Simple Set Body, NPT End Connections, Standard Flow Rate, GPM of 1.8, 24V PA Series Actuator	Example

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Function

Unlike conventional control valve sizing where valves are sized to a Cv, the Simple Set valves are simply sized for flow and pipe size. Refer to the ordering table for the wide range of flow values available.

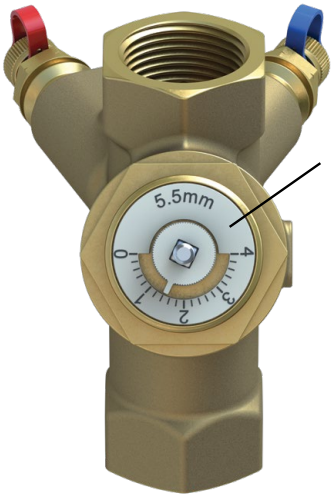
Notice

If valve size differs from pipe size, dP across the valve can not exceed the rating of the valve.

Design

The design of Simple Set combines high performance with small size and compact construction.
The main components of the valve are:

Pre-Setting Dial (Detail)

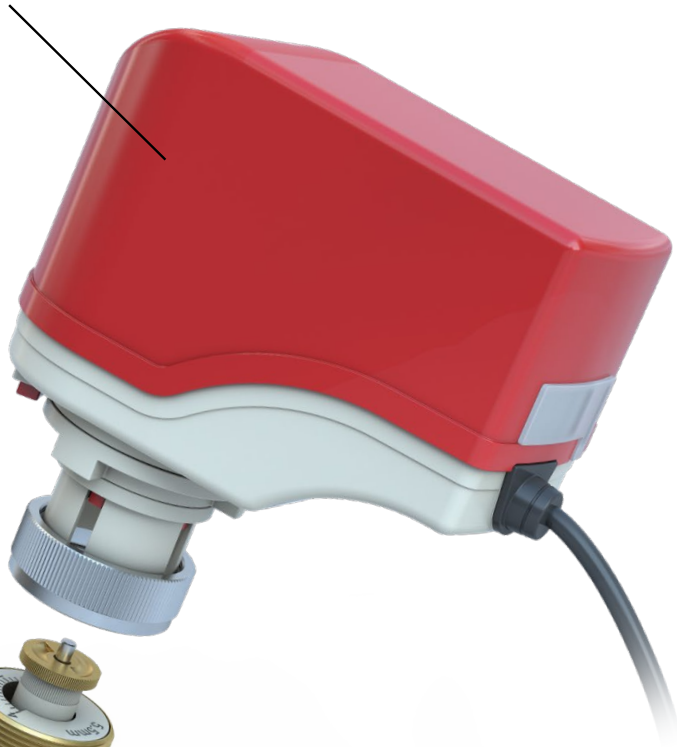


3. Pre-Setting Dial

Sets maximum flow allowed through the valve.

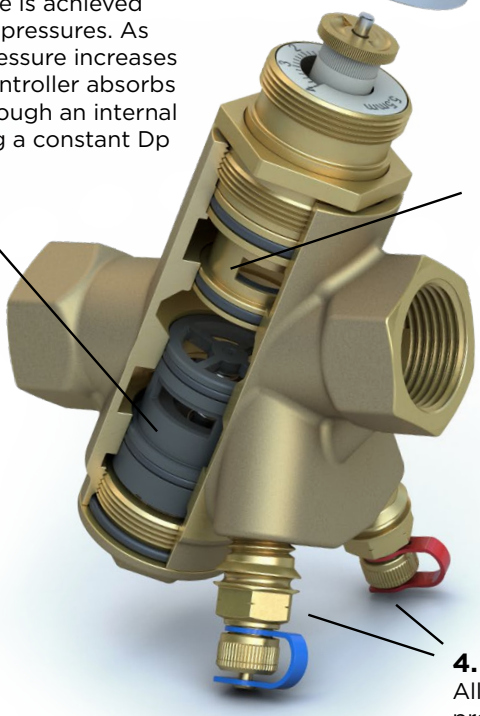
5. Actuator

Reacts to building controller call for more or less flow.



1. Pressure Control Cartridge

Ensures constant flow rate is achieved under fluctuating system pressures. As the system differential pressure increases and decreases, the Dp controller absorbs and releases pressure through an internal capillary tube maintaining a constant Dp across the valve.



2. Modulating Control Component

1. Rotates laterally to limit max flow through the valve per the Pre-Setting Scale.
2. Moves vertically in response to the actuator call for more or less flow.

4. P/T Plugs

Allows for measurement of pressure and temperature.

Simple Set - Flow Rate Charts

1/2"		1/2" Low Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow l/h	Flow GPM
SS-050-N-L-0.3	0.3	2.2	75.0	0.3
SS-050-N-L-0.4	0.4	2.2	81.8	0.4
SS-050-N-L-0.5	0.6	2.2	106.7	0.5
SS-050-N-L-0.6	0.8	2.2	134.0	0.6
SS-050-N-L-0.7	1	2.2	161.3	0.7
SS-050-N-L-0.8	1.2	2.5	190.8	0.8
SS-050-N-L-1.0	1.4	2.5	222.6	1.0
SS-050-N-L-1.1	1.6	2.5	256.7	1.1
SS-050-N-L-1.3	1.8	2.5	290.7	1.3
SS-050-N-L-1.4	2	2.5	327.1	1.4
SS-050-N-L-1.6	2.2	2.5	365.7	1.6
SS-050-N-L-1.8	2.4	2.5	404.3	1.8
SS-050-N-L-2.0	2.6	2.5	442.9	2.0
SS-050-N-L-2.1	2.8	2.5	481.5	2.1
SS-050-N-L-2.3	3	2.5	520.1	2.3
SS-050-N-L-2.5	3.2	2.5	556.5	2.5
SS-050-N-L-2.6	3.4	2.5	592.8	2.6
SS-050-N-L-2.8	3.6	2.5	629.1	2.8
SS-050-N-L-3.0	3.8	2.5	672.3	3.0
SS-050-N-L-3.1	4	2.5	699.5	3.1

1/2"		1/2" Standard Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow l/h	Flow GPM
SS-050-N-S-1.3	0.3	2.8	291.0	1.3
SS-050-N-S-1.4	0.4	2.8	308.0	1.4
SS-050-N-S-1.7	0.6	2.8	378.0	1.7
SS-050-N-S-2.0	0.8	2.8	459.0	2.0
SS-050-N-S-2.5	1	2.8	575.0	2.5
SS-050-N-S-2.9	1.2	2.8	654.0	2.9
SS-050-N-S-3.4	1.4	2.8	765.0	3.4
SS-050-N-S-3.9	1.6	2.9	875.0	3.9
SS-050-N-S-4.3	1.8	2.9	977.0	4.3
SS-050-N-S-4.7	2	2.9	1066.0	4.7
SS-050-N-S-5.0	2.2	3.0	1145.0	5.0
SS-050-N-S-5.3	2.4	3.0	1213.0	5.3
SS-050-N-S-5.6	2.6	3.0	1274.0	5.6
SS-050-N-S-5.9	2.8	3.0	1329.0	5.9
SS-050-N-S-6.1	3	3.0	1390.0	6.1
SS-050-N-S-6.3	3.2	3.1	1424.0	6.3
SS-050-N-S-6.5	3.4	3.2	1466.0	6.5
SS-050-N-S-6.6	3.6	3.2	1505.0	6.6
SS-050-N-S-6.8	3.8	3.3	1542.0	6.8
SS-050-N-S-6.9	4	3.3	1576.0	6.9

3/4"		3/4" Low Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow l/h	Flow GPM
SS-075-N-L-0.3	0.3	2.3	77.2	0.3
SS-075-N-L-0.4	0.4	2.3	81.8	0.4
SS-075-N-L-0.5	0.6	2.3	106.7	0.5
SS-075-N-L-0.6	0.8	2.3	136.3	0.6
SS-075-N-L-0.7	1	2.3	168.1	0.7
SS-075-N-L-0.9	1.2	2.6	197.6	0.9
SS-075-N-L-1.0	1.4	2.6	227.1	1.0
SS-075-N-L-1.2	1.6	2.6	268.0	1.2
SS-075-N-L-1.3	1.8	2.6	304.3	1.3
SS-075-N-L-1.5	2	2.6	345.2	1.5
SS-075-N-L-1.7	2.2	2.6	388.4	1.7
SS-075-N-L-1.9	2.4	2.6	431.5	1.9
SS-075-N-L-2.1	2.6	2.6	474.7	2.1
SS-075-N-L-2.3	2.8	2.6	517.8	2.3
SS-075-N-L-2.5	3	2.6	567.8	2.5
SS-075-N-L-2.6	3.2	2.6	599.6	2.6
SS-075-N-L-2.8	3.4	2.6	635.9	2.8
SS-075-N-L-3.0	3.6	2.6	672.3	3.0
SS-075-N-L-3.1	3.8	2.6	706.4	3.1
SS-075-N-L-3.3	4	2.6	745.0	3.3

3/4"		3/4" Standard Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow l/h	Flow GPM
SS-075-N-S-1.3	0.3	2.8	305.0	1.3
SS-075-N-S-1.5	0.4	2.8	333.0	1.5
SS-075-N-S-1.8	0.6	2.9	406.0	1.8
SS-075-N-S-2.1	0.8	3	487.0	2.1
SS-075-N-S-2.6	1	3.2	598.0	2.6
SS-075-N-S-3.0	1.2	3.2	672.0	3.0
SS-075-N-S-3.4	1.4	3.2	775.0	3.4
SS-075-N-S-3.9	1.6	3.2	884.0	3.9
SS-075-N-S-4.4	1.8	3.2	993.0	4.4
SS-075-N-S-4.8	2	3.2	1100.0	4.8
SS-075-N-S-5.3	2.2	3.2	1201.0	5.3
SS-075-N-S-5.7	2.4	3.2	1294.0	5.7
SS-075-N-S-6.1	2.6	3.2	1379.0	6.1
SS-075-N-S-6.4	2.8	3.2	1457.0	6.4
SS-075-N-S-6.8	3	3.2	1544.0	6.8
SS-075-N-S-7.0	3.2	3.2	1593.0	7.0
SS-075-N-S-7.3	3.4	3.2	1653.0	7.3
SS-075-N-S-7.5	3.6	3.3	1709.0	7.5
SS-075-N-S-7.8	3.8	3.3	1761.0	7.8
SS-075-N-S-8.0	4	3.3	1821.0	8.0

Note: Min. Delta P Available at Selected Flow Rate.
See Website for Specifc Flow Rate Settings Calculator

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Simple Set - Flow Rate Charts

1"		1" Standard Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow l/h	Flow GPM
SS-1-N-S-1.8	0.3	3.9	400.0	1.8
SS-1-N-S-1.8	0.4	3.9	414.0	1.8
SS-1-N-S-2.1	0.6	3.9	470.0	2.1
SS-1-N-S-2.3	0.8	3.9	532.0	2.3
SS-1-N-S-2.7	1	3.9	618.0	2.7
SS-1-N-S-3.0	1.2	3.9	676.0	3.0
SS-1-N-S-3.4	1.4	3.9	762.0	3.4
SS-1-N-S-3.8	1.6	4	857.0	3.8
SS-1-N-S-4.2	1.8	4	961.0	4.2
SS-1-N-S-4.7	2	4	1071.0	4.7
SS-1-N-S-5.2	2.2	4	1182.0	5.2
SS-1-N-S-5.7	2.4	4	1286.0	5.7
SS-1-N-S-6.1	2.6	4	1381.0	6.1
SS-1-N-S-6.5	2.8	4	1467.0	6.5
SS-1-N-S-6.9	3	4.1	1560.0	6.9
SS-1-N-S-7.1	3.2	4.1	1611.0	7.1
SS-1-N-S-7.4	3.4	4.2	1673.0	7.4
SS-1-N-S-7.6	3.6	4.3	1730.0	7.6
SS-1-N-S-7.8	3.8	4.4	1781.0	7.8
SS-1-N-S-8.1	4	4.5	1830.0	8.1

1-1/4"		1-1/4" Standard Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow l/h	Flow GPM
SS-125-N-S-3.0	0.3	3	690.0	3.0
SS-125-N-S-3.2	0.4	3.1	735.0	3.2
SS-125-N-S-4.0	0.6	3.1	910.0	4.0
SS-125-N-S-4.8	0.8	3.1	1079.0	4.8
SS-125-N-S-5.5	1	3.2	1245.0	5.5
SS-125-N-S-6.2	1.2	3.2	1406.0	6.2
SS-125-N-S-6.9	1.4	3.2	1564.0	6.9
SS-125-N-S-7.6	1.6	3.2	1718.0	7.6
SS-125-N-S-8.2	1.8	3.2	1869.0	8.2
SS-125-N-S-8.9	2	3.2	2017.0	8.9
SS-125-N-S-9.5	2.2	3.2	2162.0	9.5
SS-125-N-S-10.1	2.4	3.2	2304.0	10.1
SS-125-N-S-10.8	2.6	3.2	2444.0	10.8
SS-125-N-S-11.4	2.8	3.2	2581.0	11.4
SS-125-N-S-12.1	3	3.2	2748.0	12.1
SS-125-N-S-12.3	3.2	3.2	2787.0	12.3
SS-125-N-S-12.5	3.4	3.3	2837.0	12.5
SS-125-N-S-12.7	3.6	3.3	2887.0	12.7
SS-125-N-S-12.9	3.8	3.4	2938.0	12.9
SS-125-N-S-13.2	4	3.5	3000.0	13.2

1-1/2"		1-1/2" Standard Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow l/h	Flow GPM
SS-150-N-S-2.4	0.3	3.0	541.0	2.4
SS-150-N-S-3.1	0.4	3.0	695.0	3.1
SS-150-N-S-5.7	0.6	3.0	1291.0	5.7
SS-150-N-S-8.2	0.8	3.0	1856.0	8.2
SS-150-N-S-10.9	1	3.0	2480.0	10.9
SS-150-N-S-12.8	1.2	3.1	2912.0	12.8
SS-150-N-S-15.0	1.4	3.2	3409.0	15.0
SS-150-N-S-17.1	1.6	3.4	3887.0	17.1
SS-150-N-S-19.1	1.8	3.5	4346.0	19.1
SS-150-N-S-21.1	2	3.6	4797.0	21.1
SS-150-N-S-23.0	2.2	3.7	5231.0	23.0
SS-150-N-S-24.9	2.4	3.8	5653.0	24.9
SS-150-N-S-26.7	2.6	3.9	6064.0	26.7
SS-150-N-S-28.5	2.8	3.9	6465.0	28.5
SS-150-N-S-30.3	3	4.0	6875.0	30.3
SS-150-N-S-31.0	3.2	4.2	7051.0	31.0
SS-150-N-S-31.6	3.4	4.4	7183.0	31.6
SS-150-N-S-32.2	3.6	4.5	7315.0	32.2
SS-150-N-S-32.8	3.8	4.7	7447.0	32.8
SS-150-N-S-33.4	4	4.9	7582	33.4

2"		2" Standard Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow l/h	Flow GPM
SS-2-N-S-2.6	0.3	4.9	596.0	2.6
SS-2-N-S-3.5	0.4	4.9	797.0	3.5
SS-2-N-S-7.1	0.6	4.9	1613.0	7.1
SS-2-N-S-10.8	0.8	4.9	2449.0	10.8
SS-2-N-S-15.5	1	4.9	3514.0	15.5
SS-2-N-S-18.3	1.2	4.9	4161.0	18.3
SS-2-N-S-22.1	1.4	4.9	5025.0	22.1
SS-2-N-S-25.9	1.6	4.9	5885.0	25.9
SS-2-N-S-29.7	1.8	4.9	6736.0	29.7
SS-2-N-S-33.3	2	4.9	7572.0	33.3
SS-2-N-S-36.9	2.2	4.9	8387.0	36.9
SS-2-N-S-40.4	2.4	4.9	9180.0	40.4
SS-2-N-S-43.8	2.6	4.9	9946.0	43.8
SS-2-N-S-47.1	2.8	4.9	10686.0	47.1
SS-2-N-S-50.9	3	4.9	11568.0	50.9
SS-2-N-S-53.2	3.2	5.0	12082.0	53.2
SS-2-N-S-56.1	3.4	5.1	12740.0	56.1
SS-2-N-S-58.9	3.6	5.3	13372.0	58.9
SS-2-N-S-61.6	3.8	5.4	13988.0	61.6
SS-2-N-S-64.7	4	5.5	14700.0	64.7

Note: Min. Delta P Available at Selected Flow Rate.
See Website for Specifc Flow Rate Settings Calculator

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Bray Commercial provides automated Butterfly, Ball, Globe and Pressure Independent Control Valves to the commercial building HVAC market throughout the world Whereever valve performance is required to maintain climate controlled environments, Bray can provide the required automated valves to meet the demanding flow applications of chiller/boiler isolation, air handlers and terminal units for new construction, retrofit and/or LEED certification applications in buildings.

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LOOKING FOR MORE

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08/27/26

Simple Set Max®

Pressure Independent Control Valves

ANSI 125 • 2-Way — 2-1/2"- 12"

Application

The Bray Simple Set Max® is a flanged pressure independent control (PIC) valve designed for a wide variety of hot water and chilled water control applications. The SSM Series combines high range-ability control with dynamic balancing into a single compact housing, eliminating material installation and commissioning costs of separate balancing components.

The maximum flow rate is easily set by hand with an adjustment on the top of the valve. The unique design of the Simple Set Max provides full stroke of the control element, even when the flow rate setting is a small percentage of the maximum flow capacity of the valve.

Simple Set Max valves provide a continuous flow rate at any fixed position of the valve irrespective of inlet pressure change. This prevents overflow at any load condition, which contributes to optimal coil performance and primary equipment efficiency.



System Types

Air Handling Units
Heat Exchangers
Computer Rooms
and more.

Features and Benefits

- **Cast/Ductile Iron housing with Stainless Steel flow regulation unit**

  Robust design, resistant to high temperatures and moderate levels of particulate.

- **Low pressure drop**

  Reduces pump head requirements for added energy efficiency

- **Easily adjustable flow rates and actuator characteristics**

  Saves time and money in commissioning and start up.

- **No minimum straight pipe lengths required upstream or downstream of the valve**

  Provides for maximum piping flexibility, even in crowded mechanical rooms.

Simple Set Max - Valve Body Specifications

Technical Specifications - Valve		
Service	Hot Water, Chilled Water, 50-50 Glycol Solutions	
Size Range	**2-Way**	2-1/2" through 12" (DN 65 to 300)
Cold Working Pressure	2-1/2" through 12" - 200 psi @ 100˚F, ANSI 125	
Media Temperature Range	**2.5" to 5"**	32°F to 248°F (0°C to 120°C)
	6" to 12"	32°F to 230°F (0°C to 110°C)
Min. Operational ΔP	Refer to Flow Rate Charts on Page SSM-5 thru SSM-8	
Max. Operational ΔP	116 psid (800kPa)	
Max. Close-Off Pressure	116 psi (800kPa)	
Valve Operation	Push down to close, Normally Open	
Shut-Off Leakage	<ANSI Class IV (0.01%)	
Flow Rate Range	19.27 to 2641 GPM	
Stroke	**2.5" & 3"**	0.79" (20mm)
	4" & 5"	1.58" (40mm)
	6" & 8"	1.69" (43mm)
	10" & 12"	1.89" (48mm)
Rangeability	>100:1	
Flange Connections	ANSI 125	
Test Ports	1/4" NPT	
Materials	**Body**	2-1/2" thru 6" – Cast Iron 8" thru 12" – Ductile Iron
	Flow Regulation Unit	Stainless Steel
	Diaphragm	Reinforced EPDM (Ethylene Propylene Diene Monomer)
	Spring	Stainless Steel
	O-Rings	EPDM
Weights	See Dimensions	

Disclaimer - The pipe system shall be properly ventilated to avoid risk of air pockets. Glycolic mixtures up to 50% are applicable (both ethylene and propylene). Bray can accept no responsibility if another actuator is used instead of the Bray actuator recommendation: Water treatment to VDI 2035.

Simple Set Max - Model Number Matrix

SSM	Prefix: Simple Set Max							Valve Series
	5	Valve Size (2-1/2" to 12")						Valve Size
		A	End Connections - ANSI Flanged					End Connections
			L	Flow Range Pressure Cartridge - (H) High, (L) Low				Cartridge
				X	Flow Setting GPM. See Charts on Page SSM-5 & SSM-6			GPM
					/			/
						PAM24-112	24V On/Off & Floating - Non-Fail Safe	Actuator Selection
						GA24-562	24V On/Off, Floating and Modulating	
						GASRE24-450	24V On/Off, Floating and Modulating, Shaft Normally Retracted	
						GASEX24-450	24V On/Off, Floating and Modulating, Shaft Normally Extended	
SSM	**5**	**A**	**L**	**246**	/	**GA24-562**	**5" Simple Set Max Body, NPT End Connections, Low Flow Rate, GPM of 246, 24V GA24-562 Actuator**	Example

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Simple Set Max ANSI 125 Dimensions with PAM24-112 Actuator — 2-1/2" - 3"

ANSI 125 Model #	Connection		Flow Range	Please Reference the Illustration											
				L		H		H1		D		W		Weight	
x = Flow in GPM	in.	mm	GPM	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs	kg
SSM-250-A-L-x	2.5	65	19.27 - 110.06	10.87	276	3.51	89	15.50	394	7.01	178	6.41	163	35	16
SSM-250-A-H-x	2.5	65	26.21 - 154.11	10.87	276	3.51	89	15.50	394	7.01	178	6.41	163	35	16
SSM-3-A-L-x	3.0	80	25.53 - 149.78	11.73	298	3.75	95	16.35	415	7.52	191	7.96	202	55	25
SSM-3-A-H-x	3.0	80	30.92 - 189.47	11.73	298	3.75	95	16.35	415	7.52	191	7.96	202	55	25

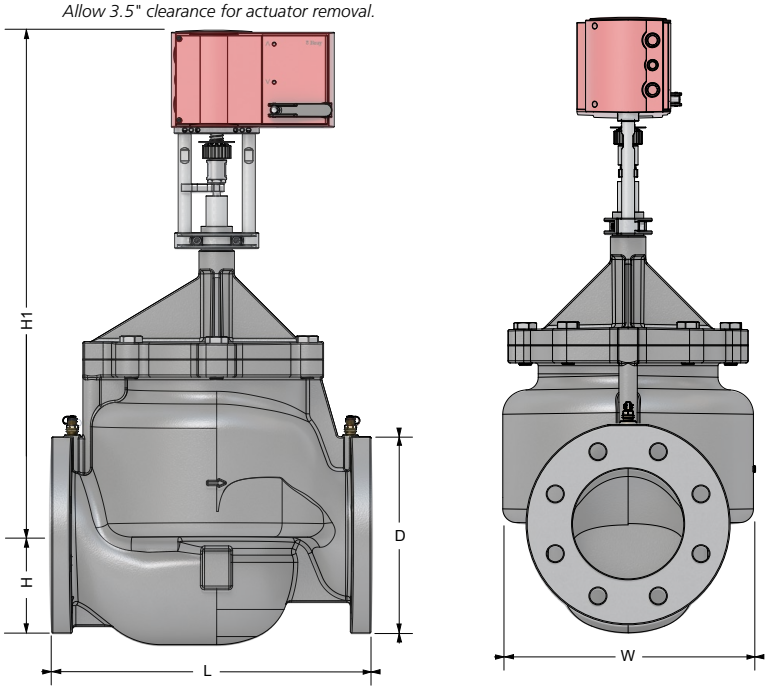
Simple Set Max ANSI 125 Dimensions with GA(S) Actuators — 2-1/2" - 12"

ANSI 125 Model #	Connection		Flow Range	Please Reference the Illustration											
				L		H		H1		D		W		Weight	
x = Flow in GPM	in.	mm	GPM	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs	kg
SM-250-A-L-x	2.5	65	19.27 - 110.06	10.87	276	3.51	89	15.50	394	7.01	178	6.41	163	41	19
SSM-250-A-H-x	2.5	65	26.21 - 154.11	10.87	276	3.51	89	19.12	486	7.01	178	6.41	163	41	19
SSM-3-A-L-x	3.0	80	25.53 - 149.78	11.73	298	3.75	95	19.98	507	7.52	191	7.96	202	61	28
SSM-3-A-H-x	3.0	80	30.92 - 189.47	11.73	298	3.75	95	19.98	507	7.52	191	7.96	202	61	28
SSM-4-A-L-x	4.0	100	53.41-299.41	13.86	352	4.51	115	24.52	623	9.02	229	10.53	267	123	56
SSM-4-A-H-x	4.0	100	64.99-396.54	13.86	352	4.51	115	24.52	623	9.02	229	10.53	267	123	56
SSM-5-A-L-x	5.0	125	81.45-484.32	15.75	400	5.00	127	25.58	650	10.00	254	11.90	302	171	78
SSM-5-A-H-x	5.0	125	101.26-594.37	15.75	400	5.00	127	25.58	650	10.00	254	11.90	302	171	78
SSM-6-A-L-x	6.0	150	112.71-651.59	17.76	451	5.49	139	27.26	692	10.98	279	14.00	356	241	109
SSM-6-A-H-x	6.0	150	140.89-858.56	17.76	451	5.49	139	27.26	692	10.98	279	14.00	356	241	109
SSM-8-A-L-x	8.0	200	418-925	23.62	600	7.48	190	27.38	695	14.96	380	18.58	472	386	175
SSM-8-A-H-x	8.0	200	572-1233	23.62	600	7.48	190	27.38	695	14.96	380	18.58	472	386	175
SSM-10-A-L-x	10.0	250	837-2091	28.74	730	8.74	222	33.44	849	17.48	444	21.69	551	677	307
SSM-10-A-H-x	10.0	250	1079-2641	28.74	730	8.74	222	33.44	849	17.48	444	21.69	551	677	307
SSM-12-A-L-x	12.0	300	837-2091	33.46	850	10.24	260	33.44	849	20.47	520	28.39	721	1036	470
SSM-12-A-H-x	12.0	300	1079 - 2641	33.46	850	10.24	260	33.44	849	20.47	520	28.39	721	1036	470

Weights shown are for valve/actuator assemblies

Add 3.2 lbs. (1.5 kg) for spring return GA(S) actuator

Allow 3.5" clearance for actuator removal.



Unlike conventional control valve sizing where valves are sized to a Cv, the Simple Set Max valves are simply sized for flow and pipe size. Refer to the ordering table for the wide range of flow values available.

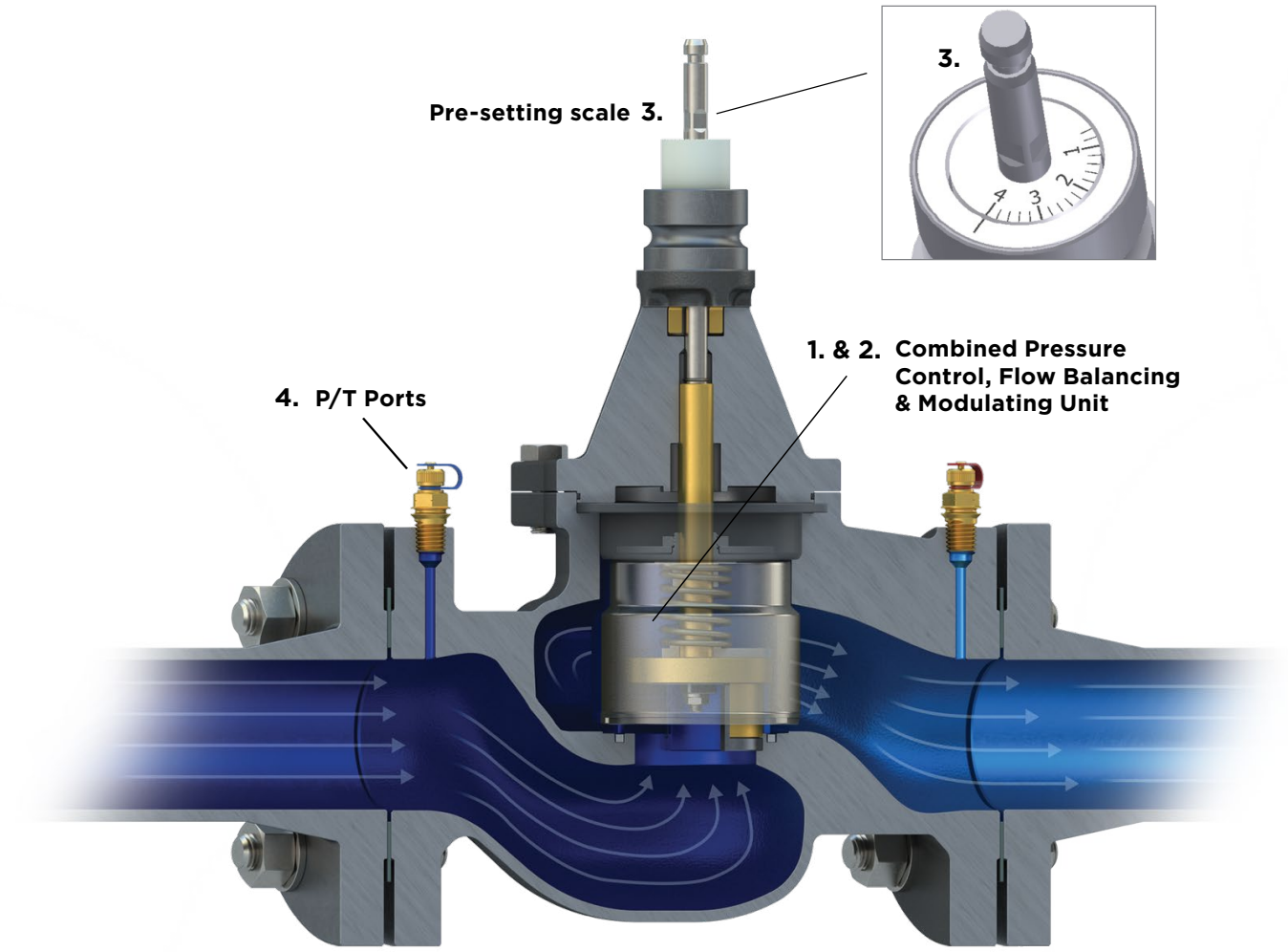
The design of Simple Set Max combines high performance and a compact design.
The main components of the valve are:

1. **Differential Pressure Control Cartridge -** Ensures constant flow rate is achieved under fluctuating system pressures. As the system differential pressure increases and decreases, the Dp controller absorbs and releases pressure through an internal capillary tube maintaining a constant Dp across the valve.

2. **Modulating Control Component -**
   1. Rotates laterally to limit max flow through the valve per the Pre-Setting Scale.
   2. Moves vertically in response to the actuator call for more or less flow.

3. **Presetting Scale -** Sets maximum flow allowed through valve.

4. **P/T Ports -** Allows for measurement of water flow and temperature.



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Simple Set Max - ANSI 125 Flow Rate Charts

2-1/2"		2-1/2" Low Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-250-A-L-19	0.6	2.18	4.4	19
SSM-250-A-L-24	0.8	2.18	5.6	24
SSM-250-A-L-29	1.0	2.18	6.6	29
SSM-250-A-L-34	1.2	2.31	7.7	34
SSM-250-A-L-38	1.4	2.41	8.6	38
SSM-250-A-L-42	1.6	2.49	9.6	42
SSM-250-A-L-46	1.8	2.55	10.5	46
SSM-250-A-L-51	2.0	2.61	11.5	51
SSM-250-A-L-55	2.2	2.66	12.5	55
SSM-250-A-L-60	2.4	2.7	13.5	60
SSM-250-A-L-65	2.6	2.76	14.7	65
SSM-250-A-L-70	2.8	2.82	15.8	70
SSM-250-A-L-75	3.0	2.9	17.1	75
SSM-250-A-L-81	3.2	3	18.5	81
SSM-250-A-L-88	3.4	3.11	19.9	88
SSM-250-A-L-95	3.6	3.26	21.5	95
SSM-250-A-L-102	3.8	3.42	23.2	102
SSM-250-A-L-110	4.0	3.59	25.0	110

2-1/2"		2-1/2" High Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-250-A-H-26	0.6	4.35	6.0	26
SSM-250-A-H-33	0.8	4.35	7.6	33
SSM-250-A-H-40	1.0	4.35	9.1	40
SSM-250-A-H-46	1.2	4.51	10.5	46
SSM-250-A-H-53	1.4	4.6	11.9	53
SSM-250-A-H-59	1.6	4.64	13.3	59
SSM-250-A-H-65	1.8	4.65	14.7	65
SSM-250-A-H-71	2.0	4.64	16.0	71
SSM-250-A-H-77	2.2	4.64	17.5	77
SSM-250-A-H-84	2.4	4.67	19.0	84
SSM-250-A-H-91	2.6	4.74	20.6	91
SSM-250-A-H-98	2.8	4.87	22.3	98
SSM-250-A-H-106	3.0	5.09	24.1	106
SSM-250-A-H-114	3.2	5.4	26.0	114
SSM-250-A-H-123	3.4	5.81	28.0	123
SSM-250-A-H-133	3.6	6.36	30.2	133
SSM-250-A-H-143	3.8	7.06	32.5	143
SSM-250-A-H-154	4.0	8.01	35.0	154

3"		3" Low Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-3-A-L-26	0.6	2.32	5.3	26
SSM-3-A-L-30	0.8	2.32	6.9	30
SSM-3-A-L-36	1.0	2.33	8.3	36
SSM-3-A-L-42	1.2	2.41	9.6	42
SSM-3-A-L-48	1.4	2.47	10.9	48
SSM-3-A-L-54	1.6	2.52	12.2	54
SSM-3-A-L-59	1.8	2.57	13.5	59
SSM-3-A-L-65	2.0	2.61	14.8	65
SSM-3-A-L-71	2.2	2.65	16.2	71
SSM-3-A-L-77	2.4	2.7	17.6	77
SSM-3-A-L-84	2.6	2.75	19.1	84
SSM-3-A-L-91	2.8	2.82	20.7	91
SSM-3-A-L-99	3.0	2.9	22.4	99
SSM-3-A-L-107	3.2	3	24.3	107
SSM-3-A-L-116	3.4	3.13	26.4	116
SSM-3-A-L-126	3.6	3.28	28.7	126
SSM-3-A-L-138	3.8	3.44	31.2	138
SSM-3-A-L-150	4.0	3.61	34.0	150

3"		3" High Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-3-A-H-31	0.6	3.34	7.0	31
SSM-3-A-H-40	0.8	3.34	9.0	40
SSM-3-A-H-48	1.0	3.34	11.0	48
SSM-3-A-H-56	1.2	3.43	12.8	56
SSM-3-A-H-64	1.4	3.49	14.5	64
SSM-3-A-H-71	1.6	3.53	16.2	71
SSM-3-A-H-79	1.8	3.57	18.0	79
SSM-3-A-H-86	2.0	3.61	19.6	86
SSM-3-A-H-94	2.2	3.68	21.4	94
SSM-3-A-H-102	2.4	3.77	23.2	102
SSM-3-A-H-111	2.6	3.91	25.1	111
SSM-3-A-H-119	2.8	4.11	27.1	119
SSM-3-A-H-129	3.0	4.39	29.3	129
SSM-3-A-H-139	3.2	4.75	31.6	139
SSM-3-A-H-150	3.4	5.19	34.1	150
SSM-3-A-H-162	3.6	5.73	36.8	162
SSM-3-A-H-175	3.8	6.39	39.8	175
SSM-3-A-H-189	4.0	7.19	43.0	189

Note: Min. Delta P (psid) Available at Selected Flow Rate.
See Website for Specific Flow Rate Settings Calculator

Simple Set Max - ANSI 125 Flow Rate Charts

4"		4" Low Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-4-A-L-53	0.6	2.75	12.1	53
SSM-4-A-L-67	0.8	2.83	15.3	67
SSM-4-A-L-80	1.0	2.9	18.1	80
SSM-4-A-L-91	1.2	2.96	20.8	91
SSM-4-A-L-102	1.4	3.02	23.2	102
SSM-4-A-L-112	1.6	3.08	25.5	112
SSM-4-A-L-122	1.8	3.13	27.8	122
SSM-4-A-L-132	2.0	3.19	30.0	132
SSM-4-A-L-143	2.2	3.25	32.4	143
SSM-4-A-L-154	2.4	3.32	34.9	154
SSM-4-A-L-166	2.6	3.4	37.6	166
SSM-4-A-L-179	2.8	3.5	40.6	179
SSM-4-A-L-194	3.0	3.63	44.0	194
SSM-4-A-L-210	3.2	3.78	47.7	210
SSM-4-A-L-229	3.4	3.98	51.9	229
SSM-4-A-L-249	3.6	4.25	56.7	249
SSM-4-A-L-273	3.8	4.6	62.0	273
SSM-4-A-L-299	4.0	5.08	68.0	299

4"		4" High Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-4-A-H-65	0.6	4.14	14.8	65
SSM-4-A-H-83	0.8	4.24	18.9	83
SSM-4-A-H-99	1.0	4.35	22.6	99
SSM-4-A-H-114	1.2	4.48	26.0	114
SSM-4-A-H-128	1.4	4.61	29.1	128
SSM-4-A-H-141	1.6	4.75	32.1	141
SSM-4-A-H-154	1.8	4.91	35.1	154
SSM-4-A-H-168	2.0	5.08	38.1	168
SSM-4-A-H-181	2.2	5.27	41.2	181
SSM-4-A-H-196	2.4	5.5	44.5	196
SSM-4-A-H-212	2.6	5.78	48.2	212
SSM-4-A-H-230	2.8	6.11	52.2	230
SSM-4-A-H-250	3.0	6.52	56.7	250
SSM-4-A-H-272	3.2	7.05	61.9	272
SSM-4-A-H-298	3.4	7.7	67.7	298
SSM-4-A-H-327	3.6	8.51	74.2	327
SSM-4-A-H-360	3.8	9.56	81.7	360
SSM-4-A-H-396	4.0	10.87	90.0	396

5"		5" Low Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-5-A-L-81	0.6	2.32	18.5	81
SSM-5-A-L-104	0.8	2.32	23.6	104
SSM-5-A-L-125	1.0	2.32	28.5	125
SSM-5-A-L-147	1.2	2.39	33.3	147
SSM-5-A-L-167	1.4	2.46	38.0	167
SSM-5-A-L-188	1.6	2.51	42.6	188
SSM-5-A-L-207	1.8	2.56	47.1	207
SSM-5-A-L-227	2.0	2.61	51.5	227
SSM-5-A-L-246	2.2	2.67	55.9	246
SSM-5-A-L-266	2.4	2.73	60.4	266
SSM-5-A-L-286	2.6	2.81	65.0	286
SSM-5-A-L-308	2.8	2.91	69.8	308
SSM-5-A-L-330	3.0	3.05	75.0	330
SSM-5-A-L-355	3.2	3.23	80.6	355
SSM-5-A-L-382	3.4	3.48	86.7	382
SSM-5-A-L-412	3.6	3.83	93.6	412
SSM-5-A-L-446	3.8	4.34	101.3	446
SSM-5-A-L-484	4.0	5.08	110.0	484

5"		5" High Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-5-A-H-101	0.6	3.92	23.0	101
SSM-5-A-H-132	0.8	3.92	29.9	131
SSM-5-A-H-161	1.0	3.92	36.5	161
SSM-5-A-H-188	1.2	3.99	42.8	188
SSM-5-A-H-215	1.4	4.05	48.7	215
SSM-5-A-H-240	1.6	4.1	54.5	240
SSM-5-A-H-264	1.8	4.15	60.0	264
SSM-5-A-H-288	2.0	4.21	65.5	288
SSM-5-A-H-312	2.2	4.27	70.9	312
SSM-5-A-H-336	2.4	4.35	76.4	336
SSM-5-A-H-361	2.6	4.46	82.0	361
SSM-5-A-H-387	2.8	4.6	87.8	387
SSM-5-A-H-414	3.0	7.79	94.0	414
SSM-5-A-H-443	3.2	5.05	100.7	443
SSM-5-A-H-475	3.4	5.41	108.0	475
SSM-5-A-H-511	3.6	5.92	116.0	511
SSM-5-A-H-550	3.8	6.65	125.0	550
SSM-5-A-H-594	4.0	7.69	135.0	594

Note: Min. Delta P (psid) Available at Selected Flow Rate.
See Website for Specific Flow Rate Settings Calculator

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Simple Set Max - ANSI 125 Flow Rate Charts

6"		6" Low Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-6-A-L-113	0.6	3.05	25.6	113
SSM-6-A-L-143	0.8	3.05	32.6	143
SSM-6-A-L-173	1.0	3.05	39.2	173
SSM-6-A-L-201	1.2	3.05	45.6	201
SSM-6-A-L-228	1.4	3.05	51.8	228
SSM-6-A-L-255	1.6	3.05	58.0	255
SSM-6-A-L-282	1.8	3.05	64.1	282
SSM-6-A-L-310	2.0	3.19	70.4	310
SSM-6-A-L-338	2.2	3.39	76.8	338
SSM-6-A-L-367	2.4	3.61	83.4	367
SSM-6-A-L-398	2.6	3.86	90.3	398
SSM-6-A-L-429	2.8	4.11	97.5	429
SSM-6-A-L-462	3.0	4.35	105.0	462
SSM-6-A-L-497	3.2	4.58	112.9	497
SSM-6-A-L-533	3.4	4.77	121.1	533
SSM-6-A-L-571	3.6	4.93	129.7	571
SSM-6-A-L-610	3.8	5.03	138.7	610
SSM-6-A-L-652	4.0	5.08	148.0	652

6"		6" High Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-6-A-H-141	0.6	4.79	32.0	141
SSM-6-A-H-182	0.8	4.79	41.3	182
SSM-6-A-H-220	1.0	4.79	50.0	220
SSM-6-A-H-256	1.2	4.79	58.2	256
SSM-6-A-H-291	1.4	4.79	66.0	291
SSM-6-A-H-324	1.6	4.79	73.7	324
SSM-6-A-H-358	1.8	4.79	81.3	358
SSM-6-A-H-392	2.0	4.93	89.0	392
SSM-6-A-H-427	2.2	5.16	96.9	427
SSM-6-A-H-463	2.4	5.46	105.2	463
SSM-6-A-H-501	2.6	5.82	113.9	501
SSM-6-A-H-542	2.8	6.23	123.1	542
SSM-6-A-H-586	3.0	6.68	133.0	586
SSM-6-A-H-632	3.2	7.14	143.6	632
SSM-6-A-H-683	3.4	7.69	155.1	683
SSM-6-A-H-737	3.6	8.23	167.4	737
SSM-6-A-H-796	3.8	8.81	180.7	796
SSM-6-A-H-859	4.0	9.44	195.0	859

8"		8" Low Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-8-A-L-418	1	1.6	95.0	418
SSM-8-A-L-446	1.25	1.7	101.2	446
SSM-8-A-L-477	1.5	1.8	108.4	477
SSM-8-A-L-512	1.75	1.9	116.4	512
SSM-8-A-L-550	2	2.1	125.0	550
SSM-8-A-L-591	2.25	2.3	134.2	591
SSM-8-A-L-634	2.5	2.5	144.0	634
SSM-8-A-L-679	2.75	2.7	154.2	679
SSM-8-A-L-726	3	2.9	164.9	726
SSM-8-A-L-775	3.25	3.2	175.9	775
SSM-8-A-L-824	3.5	3.4	187.2	824
SSM-8-A-L-875	3.75	3.7	198.5	875
SSM-8-A-L-925	4	3.9	210.0	925

8"		8" High Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-8-A-H-572	1	4.5	130.0	572
SSM-8-A-H-612	1.25	4.6	139.0	612
SSM-8-A-H-655	1.5	4.9	148.8	655
SSM-8-A-H-701	1.75	5.4	159.1	701
SSM-8-A-H-749	2	6.0	170.0	749
SSM-8-A-H-799	2.25	6.6	181.6	799
SSM-8-A-H-853	2.5	7.3	193.7	853
SSM-8-A-H-909	2.75	8.1	206.5	909
SSM-8-A-H-968	3	8.8	220.0	968
SSM-8-A-H-1031	3.25	9.6	234.1	1031
SSM-8-A-H-1095	3.5	10.3	248.8	1095
SSM-8-A-H-1163	3.75	10.8	264.1	1163
SSM-8-A-H-1233	4	11.3	280.1	1233

Note: Min. Delta P (psid) Available at Selected Flow Rate.
See Website for Specific Flow Rate Settings Calculator

Simple Set Max - ANSI 125 Flow Rate Charts

10"		10" Low Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-10-A-L-837	1	1.5	190.0	837
SSM-10-A-L-920	1.25	1.5	209.1	920
SSM-10-A-L-998	1.5	1.7	226.6	998
SSM-10-A-L-1071	1.75	1.9	243.3	1071
SSM-10-A-L-1145	2	2.2	260.0	1145
SSM-10-A-L-1221	2.25	2.5	277.3	1221
SSM-10-A-L-1303	2.5	3.0	295.9	1303
SSM-10-A-L-1394	2.75	3.2	316.6	1394
SSM-10-A-L-1497	3	3.6	340.0	1497
SSM-10-A-L-1615	3.25	4.0	366.8	1615
SSM-10-A-L-1751	3.5	4.4	397.8	1751
SSM-10-A-L-1909	3.75	4.8	433.6	1909
SSM-10-A-L-2091	4	5.1	474.9	2091

10"		10" High Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-10-A-H-1079	1	2.2	245.1	1079
SSM-10-A-H-1144	1.25	2.4	259.9	1144
SSM-10-A-H-1225	1.5	2.7	278.2	1225
SSM-10-A-H-1321	1.75	3.1	299.9	1321
SSM-10-A-H-1431	2	3.6	325.0	1431
SSM-10-A-H-1553	2.25	4.2	352.7	1553
SSM-10-A-H-1687	2.5	4.9	383.1	1687
SSM-10-A-H-1830	2.75	5.7	415.7	1830
SSM-10-A-H-1981	3	6.5	449.9	1981
SSM-10-A-H-2140	3.25	7.4	486.0	2140
SSM-10-A-H-2303	3.5	8.3	523.0	2303
SSM-10-A-H-2471	3.75	9.2	561.1	2471
SSM-10-A-H-2642	4	10.2	600.1	2642

12"		12" Low Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-12-A-L-837	1	1.5	190.0	837
SSM-12-A-L-920	1.25	1.5	209.1	920
SSM-12-A-L-998	1.5	1.7	226.6	998
SSM-12-A-L-1071	1.75	1.9	243.3	1071
SSM-12-A-L-1145	2	2.2	260.0	1145
SSM-12-A-L-1221	2.25	2.5	277.3	1221
SSM-12-A-L-1303	2.5	3.0	295.9	1303
SSM-12-A-L-1394	2.75	3.2	316.6	1394
SSM-12-A-L-1497	3	3.6	340.0	1497
SSM-12-A-L-1615	3.25	4.0	366.8	1615
SSM-12-A-L-1751	3.5	4.4	397.8	1751
SSM-12-A-L-1909	3.75	4.8	433.6	1909
SSM-12-A-L-2091	4	5.1	474.9	2091

12"		12" High Flow Rate Cartridge		
Model Number	Pre-Set	Min. Delta P (psid)	Flow m³/h	Flow GPM
SSM-12-A-H-1079	1	2.2	245.1	1079
SSM-12-A-H-1144	1.25	2.4	259.9	1144
SSM-12-A-H-1225	1.5	2.7	278.2	1225
SSM-12-A-H-1321	1.75	3.1	299.9	1321
SSM-12-A-H-1431	2	3.6	325.0	1431
SSM-12-A-H-1553	2.25	4.2	352.7	1553
SSM-12-A-H-1687	2.5	4.9	383.1	1687
SSM-12-A-H-1830	2.75	5.7	415.7	1830
SSM-12-A-H-1981	3	6.5	449.9	1981
SSM-12-A-H-2140	3.25	7.4	486.0	2140
SSM-12-A-H-2303	3.5	8.3	523.0	2303
SSM-12-A-H-2471	3.75	9.2	561.1	2471
SSM-12-A-H-2642	4	10.2	600.1	2642

Note: Min. Delta P (psid) Available at Selected Flow Rate.
See Website for Specific Flow Rate Settings Calculator

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Bray Commercial provides automated Butterfly, Ball, Globe and Pressure Independent Control Valves to the commercial building HVAC market throughout the world Whereever valve performance is required to maintain climate controlled environments, Bray can provide the required automated valves to meet the demanding flow applications of chiller/boiler isolation, air handlers and terminal units for new construction, retrofit and/or LEED certification applications in buildings.

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- K-12 and University Education
- Transportation
- Hotels
- Office Buildings
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05/29/26

Flanged DG Series

Flanged Globe Valves

2-Way & 3-Way • 2-1/2"- 6"

Flanged DG Series Globe Valves provide stable and accurate control of both water, 50/50 water Glycol solutions and steam heat exchangers on fan coil units, VAV reheat coils, and air handling units up to 900 GPM. These globe valves feature rangability of greater than 100:1 to provide precise control.

Two way standard trim valves provide an equal percentage flow characteristic for use on hot water and chilled water.

Two way stainless trim valves - recommended for steam applications, and 3-way mixing valves provide a linear flow characteristic.

All Flanged DG Series Globe Valves feature a cartridge style packing, which is easily replaceable while the valve is in line. Constant plug guiding and precision-machined metal to metal seating assures ANSI Class IV shutoff (.01%) which provides low leakage and energy conservation.





Features and Benefits

- **Rangeability >100:1**
  - *Superior control accuracy*
- **Cartridge Packing**
  - *Easily replaceable while valve is in line*
- **2-Way and 3-Way bodies from 2-1/2" to 6"**
  - *Covers all applications from fan coil units to air handling units*
- **Stainless Steel Trim Option**
  - *Applicable to steam inlet pressure up to 15 psi*

Flanged DG Series - Specifications

Technical Specifications - Flanged Globe Valve Body					
Service		Chilled/Hot Water		Steam (0 to 15 psi Max Inlet Pressure)	
		Chilled/Hot Water, 50/50 Glycol Solutions & Saturated Steam			
Size Range		2-1/2" – 6", 2-Way Normally Open, 3-Way Universal Mixing or Diverting		2-1/2" – 6", 2-Way Normally Open	
Available Cv's		63, 100, 160, 250, 400			
Media Temperature Range		20°F to 250°F (–7°C to 120°C)			
Max Inlet Temperature/Pressure		°F	psi	°F	psi
		-20° to 150° 200° 250°	200 190 175	250°	15
Maximum Recommended Differential Pressure		50 psi Water		15 psig Steam	
Valve Body Pressure Rating		ANSI Class 125			
Maximum Close-Off Pressure		Refer to Close-Off Charts			
Close-Off Ratings		According to ANSI/FCI 70-2			
Flow Characteristic		Equal Percentage for 2-Way valves with standard trim. Linear for 2-Way valves with Stainless Steel trim. 3-Way is equal percentage NC port, and linear for NO port.			
Stroke		2-1/2" and 3" — 3/4" (20 mm) 4", 5" and 6" — 1-1/2" (40 mm)			
Leakage Rate		Class IV (0.01% of Cv)			
Rangeability		> 100:1			
Seat Style		Flanged - Metal to metal			
Materials	Body	Cast iron ASTM A 126 Class B			
	Stem	Stainless Steel (ASTM A582 Type 303)			
	Valve Trim Required	Bronze		Stainless Steel (noted by SS in the valve P/N)	
	Packing	Double Ethylene propylene (EPDM) O-Rings			
Certifications		CRN - OC24303.5			
Warranty		5 Years limited from time of shipment.			

Note - Normally closed available upon request.
High temperature steam available upon request.
When the valve is used for diverting applications, the max DP is restricted to 90% of the max DP that is specified for the valve when it is used in a mixing application

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards.
For application at conditions beyond these specifications, consult the local Bray office.
Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

Flanged DG Series - Actuator Options

GA Series



- **Multiple control inputs for both spring return and non spring return models.**
  Meets the requirements of virtually any heat exchanger control application
- **GA(S) Series automatically adapts to valve stroke**
  Built-in intelligence matches the actuator to the valve stroke.
- **GA(S) Series automatically connects spindle after application of control voltage**
  Easy assembly with valve.
- **Spring Return Models**
  Available "fail up/retracted" and "fail down/extended"

VAL Series

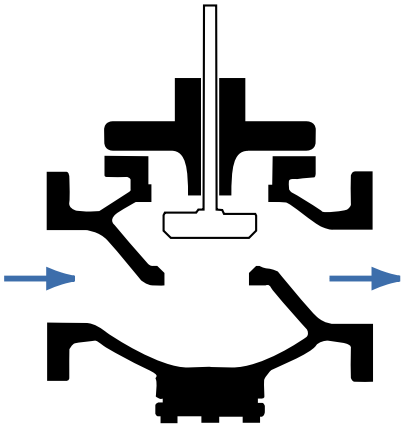


- **High Output Force**
  Provides high close-off pressure ratings
- **Direct Mount to Bray DG Series Globe Valves**
  Eases installation and minimizes space requirements
- **Spring Return Operation**
  Returns valve to the open position upon loss of power
- **User-Selectable Input Signals**
  Accepts current or voltage inputs
- **Visual and Electronic Position Indication**
  Provides position feedback and provides for remote monitoring

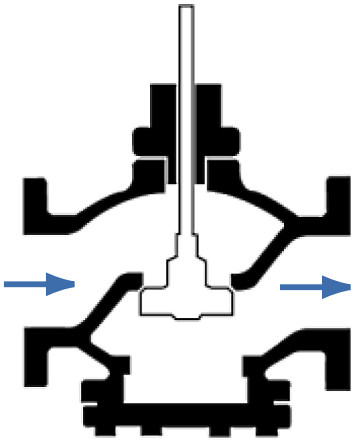
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Flanged DG Series - Piping Setup for 2-Way Valves

2-Way Application:
Push down to Close



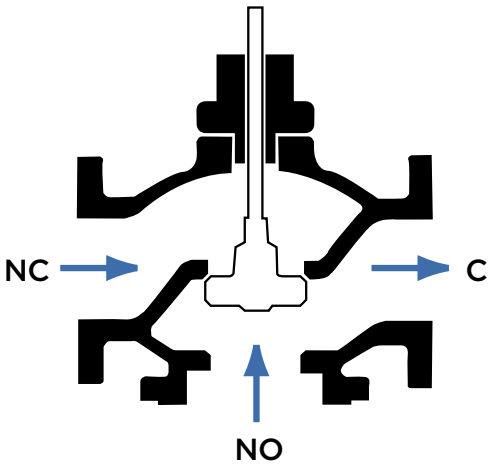
2-Way Application:
Push down to Open



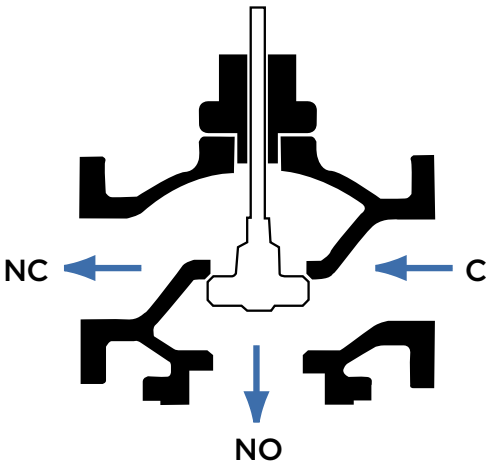
Any configuration of fail open, fail closed, reverse acting or direct acting can be set up upon special request. Push down to close is the standard configuration.

Flanged DG Series - Mixing and Diverting Piping Setup for 3-Way Valves

3-Way Mixing:
Stem down = Flow from NC to C (Common).
Stem up = Flow from NO to C (Common).



3-Way Diverting:
Stem down = Flow from C (Common) to NC.
Stem up = Flow from C (Common) to NO.



Any configuration of fail open, fail closed, reverse acting or direct acting can be set up upon special request. All diverting globe valves will ship in the above configuration unless otherwise specified.

Flanged DG Series - Mode of Actuation

GA(S) Series Linear Actuators:

GA actuators can be wired for three modes of actuation; 2-point on/off, 3-point floating or proportional actuation. When the actuator is used for proportional actuation the unit can be wired such that the shaft will extend or retract with an increasing signal. For wiring instructions reference installation instructions. 0-10 VDC feedback is available for all three modes of actuation.

1) For non-spring return model GA24-562, if power is removed the actuator will fail in place. For wiring instructions reference installation instructions.

2) Two different spring return models can be selected. The GASEX24-450 is designed such that the shaft will extend when power is removed and the GASRE24-450 is designed such that the shaft will retract when power is removed.

1) For non spring return assemblies a fully extended shaft will close the valve and a fully retracted shaft will open the valve.

2) For spring return assemblies the spring extended models are used for normally closed assemblies and the spring retracted models are used for normally open assemblies.

3 Way Valve Assemblies:

1) For non spring return assemblies a fully extended shaft will make port NC open to C and a fully retracted shaft will make port NO open to C.

2) For spring return assemblies the spring extended models are used when the normal position desired is port NC open to C and the spring retracted models are used when the normal position desired is port NO open to C.

VAL Series Linear Actuators:

VAL actuators are spring return and used for proportional actuation only. The unit is designed such that the shaft will retract when power is removed. The actuator shaft will extend with an increasing signal. 0-10 VDC or 4-20 mA feedback is available.

2 Way Valve Assemblies:

Valve assemblies are designed to be normally open since the actuators' spring normally retracts the shaft.

3 Way Valve Assemblies:

Valve assemblies are used when the normal position desired is port NO open to C since the actuators' spring normally retracts the shaft.

Flanged DG Series - 2-Way Actuator Selection and Close-Off Charts

2-Way (Flanged DG) with GA(S) Series Actuator - Close-Off Chart (psi) - Water*							
Actuator Model Details					Non-Spring Return	Spring Return Normally Open	Spring Return Normally Closed
					GA24-562	GASRE24-450	GASEX24-450
Model Number	Size		Flow Coefficient		On/Off, Floating and Modulating		
	In.	mm	Cv	Kv	24 VAC (±20%) at 50/60 Hz or 24 VDC (±15%)		
DG250-2-63X	2.5	65	63	54	86	69	69
DG3-2-100X	3	80	100	85	57	45	45
DG4-2-160X	4	100	160	137	37	29	29
DG5-2-250X	5	125	250	214	24	19	19
DG6-2-400X	6	150	400	340	16	12	13

X - indicates "N = Normally Open", Shaft Retracted or
"C = Normally Closed", Shaft Extended
No Specification is required for Non-Spring Return Actuators
-A - add at end of part number for optional Auxiliary Switches
* Above Close-Off ratings apply to steam up to 15 psi for SS trim models only. Steam Close-Offs should not exceed 15 psi.

2-Way (Flanged DG) with VAL[1] Series Actuator - Close-Off Chart (psi) - Water*								
Actuator Model Details					Spring Return Normally Open		Spring Return Normally Closed	
					VAL-SRS07P	VAL-SRS15P	VAL-SRS07P	VAL-SRS15P
Model Number	Size		Flow Coefficient		Modulating			
	In.	mm	Cv	Kv	24 VAC (±20%), 50/60 Hz			
DG250-2-63X	2.5	65	63	54	153	-	97	-
DG3-2-100X	3	80	100	85	101	-	63	-
DG4-2-160X	4	100	160	137	-	65	-	39
DG5-2-250X	5	125	250	214	-	42	-	25
DG6-2-400X	6	150	400	340	-	29	-	17

X - indicates "N = Normally Open", Shaft Retracted or
"C = Normally Closed", Shaft Extended
* Above Close-Off ratings apply to steam up to 15 psi for SS trim models only. Steam Close-Offs should not exceed 15 psi.

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Flanged DG Series - 3-Way Actuator Selection and Close-Off Charts

3-Way (Flanged DG) with GA(S) Series Actuator - Close-Off Chart (psi) - Water*								
Actuator Model Details					Non-Spring Return Shaft Retracted[1]	Non-Spring Return Shaft Extended[2]	Spring Return Normally Retracted[3]	Spring Return Normally Extended[4]
					GA24-562	GA24-562	GASRE24-450	GASEX24-450
Model Number	Size		Flow Coefficient		On/Off, Floating and Modulating			
	In.	mm	Cv	Kv	24 VAC (±20%) at 50/60 Hz or 24 VDC (±15%)			
DG250-3-63	2.5	65	63	54	85	86	68	69
DG3-3-100	3	80	100	85	55	57	44	45
DG4-3-160	4	100	160	137	34	37	27	29
DG5-3-250	5	125	250	214	22	24	18	19
DG6-3-400	6	150	400	340	15	16	12	13

1 - Indicates Shaft Retracted. Ports NO to C open
2 - Indicates Shaft Extended. Ports NC to C open
3 - Valve is shipped ports NO to C open
4 - Valve is shipped ports NC to C open
-A - add at end of part number for optional Auxiliary Switches
* Above Close-Off ratings apply to steam up to 15 psi for SS trim models only. Steam Close-Offs should not exceed 15 psi.

3-Way (Flanged DG) with VAL[5] Series Actuator - Close-Off Chart (psi) - Water*								
Actuator Model Details					Spring Return Shaft Retracted[1]		Spring Return Shaft Extended[2]	
					VAL-SRS07P	VAL-SRS15P	VAL-SRS07P	VAL-SRS15P
Model Number	Size		Flow Coefficient		Modulating			
	In.	mm	Cv	Kv	24 VAC (±20%), 50/60 Hz			
DG250-3-63	2.5	65	63	54	97	-	153	-
DG3-3-100	3	80	100	85	63	-	101	-
DG4-3-160	4	100	160	137	-	39	-	65
DG5-3-250	5	125	250	214	-	25	-	42
DG6-3-400	6	150	400	340	-	17	-	29

1 - Indicates Shaft Retracted. Ports NO to C open
2 - Indicates Shaft Extended. Ports NC to C open
5 - VAL Series Actuators are Spring Return,Shaft Retracted
* Above Close-Off ratings apply to steam up to 15 psi for SS trim models only. Steam Close-Offs should not exceed 15 psi.

Flanged DG Series - Adjusted Cv Chart

Adjusted Cv Chart - (Flanged DG)											
Mode/Valve Size					Pipe Size /At Full Open (Adjusted Cv)						
Model Number	Size		Flow Coefficient								
	In.	mm	Cv	Kv	2-1/2"	3"	4"	5"	6"	8"	10"
DG250-X-63	2.5	65	63	54	63.0	62.7	61.7	61.1	-	-	-
DG3-X-100	3	80	100	85	-	100.0	98.7	97.3	96.3	-	-
DG4-X-160	4	100	160	137	-	-	160.0	158.9	157.3	155.2	-
DG5-X-250	5	125	250	214	-	-	-	250.0	248.7	245.0	242.5
DG5-X-400	6	150	400	340	-	-	-	-	400.0	394.8	389.1

X = (2) for 2-Way
(3) for 3-Way

Steam Sizing Table (Flow Rate lbs./hr)

Cv	Low Pressure Steam Inlet Pressure (psig)								Medium Pressure Steam Inlet Pressure (psig)						High Pressure Steam Inlet Pressure (psig)	
	2		5		10		15		20		25		40		50	
	ΔP		ΔP		ΔP		ΔP		ΔP		ΔP		ΔP		ΔP	
	0.2*	1.6	0.5*	4.0	1.0*	8.0	1.5*	12.0	2.0*	14.0	2.5*	16.0	4.0*	23.0	5.0*	27.0
0.4	2.2	5.9	3.7	9.5	5.9	13.9	7.8	17.5	9.7	20.4	11.6	23.4	17.1	32.4	20.7	38.3
0.95	5.2	14	8.8	22.6	13.9	32.9	18.5	41.5	23	48.5	27.5	55.5	40.6	77	49.2	90.9
0.99	5.4	14.6	9.2	23.5	14.5	34.3	19.3	43.3	24	50.6	28.6	57.8	42.3	80.2	51.3	94.8
1.1	6	16.2	10.2	26.2	16.1	38.1	21.5	48.1	26.7	56.2	31.8	64.3	47	89.1	57	105.3
1.3	7.1	19.2	12.2	31	19	45.1	25.4	56.8	31.5	66.4	37.6	75.9	55.5	105.3	67.4	124.4
1.8	9.8	27	18.7	43	26.3	62.4	35.1	78.7	43.7	91.9	52.1	105.2	76.9	145.8	93.3	172.3
2.2	12	32.4	20.4	52	32	76	43	96	53	112	63.6	128.5	94	178	114	210.3
2.5	13.6	37	23	59	37	87	49	109	61	128	72	146	107	203	130	239
3.3	18	49	31	79	48	114	64	144	80	169	95	193	141	267	171	316
3.6	19.6	53	34	86	53	125	70	157	87	184	104	210	154	292	187	345
3.8	20.7	56	35	90	56	132	74	166	92	194	110	222	162	308	197	364
4.0	22	59	37	95	58	139	78	175	97	204	116	234	171	324	207	383
5.0	27	74	47	119	73	173	98	219	121	255	145	292	214	405	259	479
5.5	30	81	51	131	80	191	107	240	134	281	159	321	235	446	285	526
6.0	33	89	56	143	88	208	117	262	146	306	174	351	256	486	311	574
6.2	34	91	58	147	91	215	121	271	150	317	179	362	265	502	321	593
7.4	40	109	69	176	108	257	144	324	180	378	214	432	316	599	384	708
7.5	41	111	70	178	110	260	146	328	182	383	217	438	320	608	389	718
8.2	45	121	76	195	120	284	160	359	199	419	237	479	350	664	425	785
8.5	46	125	79	202	124	295	166	372	206	434	246	497	363	689	441	814
9.0	49	133	84	214	131	312	176	393	218	460	260	526	385	729	466	861
10.5	57	155	98	250	153	364	205	459	255	536	304	613	449	851	544	1005
11.0	60	162	102	262	161	381	215	481	267	562	318	643	470	891	570	1053
15.0	82	221	139	357	219	520	293	656	304	766	434	876	641	1215	777	1436
16.0	87	236	149	380	234	555	312	700	388	817	463	935	684	1296	829	1531
17.4	95	257	162	414	254	603	340	761	422	889	503	1016	743	1409	902	1665
25.0	136	369	232	594	365	867	488	1093	607	1277	723	1460	1068	2025	1296	2393
35.8	195	528	333	851	523	1241	699	1565	867	1828	1036	2091	1529	2900	1856	3427
40.0	218	590	372	951	584	1387	780	1749	970	2043	1157	2337	1709	3240	2073	3829
45.0	245	664	418	1070	657	1560	878	1967	1092	2298	1302	2629	1923	3645	2332	4307
56	305	826	521	1331	818	1942	1093	2448	1359	2860	1620	3271	2392	4536	2903	5360
65	354	958	604	1545	949	2254	1268	2842	1577	3320	1881	3797	2777	5265	3369	6221
70	381	1032	651	1664	1022	2427	1366	3061	1698	3575	2025	4089	2991	5670	3628	6670
75	409	1106	697	1783	1095	2601	1463	3279	1820	3830	2170	4381	3204	6075	3887	7179
85	463	1253	790	2021	1241	2947	1658	3716	2062	4341	2459	4966	3631	6885	4406	8136
100	545	1475	930	2377	1460	3468	1951	4372	2426	5107	2893	5842	4272	8101	5183	9571
115	627	1696	1069	2734	1680	3988	2244	5028	2790	5873	3327	6718	4913	9316	5961	11007
145	790	2138	1348	3447	2118	5028	2829	6340	3518	7405	4195	8471	6195	11746	7516	13878
170	926	2507	1580	4042	2483	5895	3177	7433	4124	8682	4918	9931	7263	13771	8811	16271
200	1090	2949	1859	4755	2921	6935	3902	8744	4852	10214	5786	11684	8544	16201	10366	19143
235	1281	3465	2184	5587	3432	8149	4585	10275	5701	12002	6799	13729	10040	19036	12180	22493
275	1499	4055	2556	6538	4016	9536	5366	12024	6672	14044	7956	16065	11749	22277	14254	26321
350	1907	5161	3253	8321	5112	12136	6829	15303	8491	17875	10126	20447	14953	28352	18141	33500
425	2316	6267	3950	10104	6207	14737	8292	18582	10311	21705	12296	24828	18157	34427	22028	40678
440	2398	6488	4090	10461	6426	15257	8585	19238	10675	22471	12730	25704	18798	35642	22806	42114
640	3488	9437	5949	15215	9347	22192	12487	27982	15527	32685	18516	37388	27342	51844	33172	61257
680	3706	10027	6321	16166	9931	23579	13268	29731	16498	34728	19673	39725	29051	55084	35245	65085
1125	6131	16589	10457	26746	16430	39010	21950	49187	27294	57454	32547	65722	48063	91131	58310	107678
1150	6267	16958	10689	27340	16796	39877	22438	50280	27900	58731	33271	67182	49131	93156	59606	110071
1750	9537	25805	16267	41604	25558	60682	34145	76513	42457	89373	50629	102234	74764	141760	90705	167499
1850	10082	27280	17196	43982	27019	64150	36096	80885	44883	94481	53522	108076	79036	149860	95888	177070
2600	14169	38339	24167	61812	37972	90157	50730	113677	63079	132783	75220	151890	111078	210614	134762	248855
2650	14442	39076	24632	63001	38703	91890	51706	115863	64292	135337	76667	154811	113214	214665	137353	253641
3400	18529	50136	31604	80831	49656	117897	66339	148654	82488	173640	98365	198625	145256	275419	176227	325426
4500	24524	66356	41828	-	65722	-	87802	-	109175	-	130189	-	-	-	-	-
5400	29429	79628	50194	-	78866	-	105362	-	-	-	-	-	-	-	-	-
7000	38148	-	65066	-	102234	-	-	-	-	-	-	-	-	-	-	-
10000	54498	-	92952	-	-	-	-	-	-	-	-	-	-	-	-	-

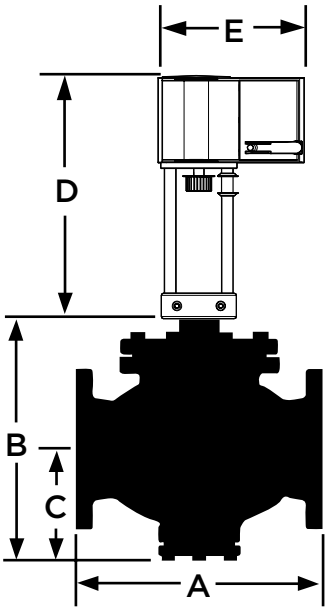
* Indicates 2-Position Control Applications. Higher Pressure Drop for Modulating Control Applications.
Note: Steam Capacity in Pounds per Hour. Table is Based on Saturated Steam.

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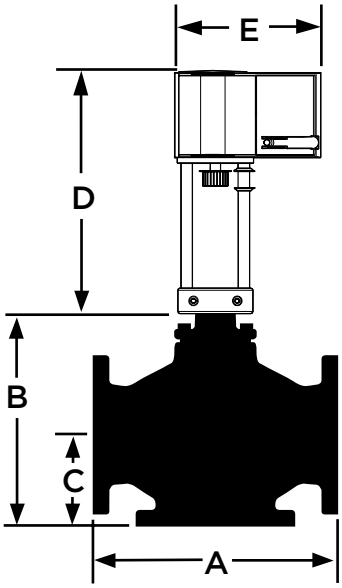
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2-Way Setup



3-Way Setup



2-Way Dimensions for GA(S) Series Actuator with Flanged DG Valve

Model Number	Size		Flow Coefficient		Stroke in.(mm)	A	B	C	D Actuator Height	E Actuator Width	Weight[1]	
	In.	mm	Cv	Kv							lbs.	kg.
DG250-2-63	2.5	65	63	54	3/4 (20)	10-7/8 (276)	11 (281)	4-7/8 (123)	11-3/8 (289)	9-1/16 (230)	62	28
DG3-2-100	3	80	100	85	3/4 (20)	11-3/4 (299)	12-1/4 (312)	5-5/16 (135)			79	35
DG4-2-160	4	100	160	137	1-1/2 (40)	13-7/8 (352)	13-9/16 (345)	6-5/16 (160)	12-5/16 (313)		129	58
DG5-2-250	5	125	250	214	1-1/2 (40)	15-3/4 (400)	15-3/16 (385)	7 (177)			162	73
DG6-2-400	6	150	400	340	1-1/2 (40)	17-3/4 (451)	16-3/4 (426)	7-7/8 (200)			222	101

[1] Weights are for Valve Only.
Add 3.94 in. for optional High Media Temperature Height Extender

Non-Spring Return Actuator Weight 9.1 lb. (4.1 kg)
Spring Return Actuator Weight 12.3 lb. (5.6 kg)

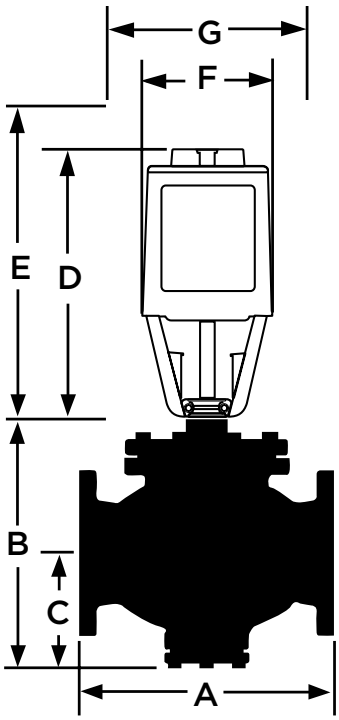
3-Way Dimensions for GA(S) Series Actuator with Flanged DG Valve

Model Number	Size		Flow Coefficient		Stroke in.(mm)	A	B	C	D Actuator Height	E Actuator Width	Weight[1]	
	In.	mm	Cv	Kv							lbs.	kg.
DG250-3-63	2.5	65	63	54	3/4 (20)	10-7/8 (276)	9-3/8 (239)	3-3/4 (95)	11-3/8 (289)	9-1/16 (230)	50	23
DG3-3-100	3	80	100	85	3/4 (20)	11-3/4 (299)	10-3/4 (272)	4-3/8 (111)			65	30
DG4-3-160	4	100	160	137	1-1/2 (40)	13-7/8 (352)	12-1/2 (317)	5-1/8 (132)	12-5/16 (313)		110	50
DG5-3-250	5	125	250	214	1-1/2 (40)	15-3/4 (400)	13-3/4 (349)	5-3/4 (146)			136	62
DG6-3-400	6	150	400	340	1-1/2 (40)	17-3/4 (451)	15-1/2 (393)	6-5/8 (167)			141	64

[1] Weights are for Valve Only.
Add 3.94 in. for optional High Media Temperature Height Extender

Non-Spring Return Actuator Weight 9.1 lb. (4.1 kg)
Spring Return Actuator Weight 12.3 lb. (5.6 kg)

2-Way Setup



2-Way Dimensions for VAL Series Actuator with Flanged DG Valve - (Normally Open)

Model Number	Size		Flow Coefficient		Stroke in.(mm)	A	B	C	D Actuator Height	E Service Height	F Actuator Width		G Service Width	Weight[1]	
	In.	mm	Cv	Kv							Housing and panel	Housing		lbs.	kg.
DG250-2-63	2.5	65	63	54	3/4 (20)	10-7/8 (276)	11 (281)	4-7/8 (123)	14-3/4 (375)	22-3/4 (578)	8-15/16 (226)	7 (177)	25 (635)	62	28
DG3-2-100	3	80	100	85	3/4 (20)	11-3/4 (299)	12-1/4 (312)	5-5/16 (135)						79	35
DG4-2-160	4	100	160	137	1-1/2 (40)	13-7/8 (352)	13-9/16 (345)	6-5/16 (160)						129	58
DG5-2-250	5	125	250	214	1-1/2 (40)	15-3/4 (400)	15-3/16 (385)	7 (177)						162	73
DG6-2-400	6	150	400	340	1-1/2 (40)	17-3/4 (451)	16-3/4 (426)	7-7/8 (200)						222	101

[1] Weights are for Valve Only.

VAL-SRS07P Actuator Weight 18.9 lb. (8.6 kg)
VAL-SRS15P Actuator Weight 22.0 lb. (10.0 kg)

2-Way Dimensions for VAL Series Actuator with Flanged DG Valve - (Normally Closed)

Model Number	Size		Flow Coefficient		Stroke in.(mm)	A	B	C	D Actuator Height	E Service Height	F Actuator Width		G Service Width	Weight[1]	
	In.	mm	Cv	Kv							Housing and panel	Housing		lbs.	kg.
DG250-2-63C	2.5	65	63	54	3/4 (20)	10-7/8 (276)	10-5/8 (269)	5 (125)	14-3/4 (375)	22-3/4 (578)	8-15/16 (226)	7 (177)	25 (635)	60	27
DG3-2-100C	3	80	100	85	3/4 (20)	11-3/4 (299)	12 (303)	5-5/8 (142)						78	35
DG4-2-160C	4	100	160	137	1-1/2 (40)	13-7/8 (352)	14 (354)	6-5/8 (168)						128	58
DG5-2-250C	5	125	250	214	1-1/2 (40)	15-3/4 (400)	15-1/4 (388)	7-1/2 (185)						160	72
DG6-2-400C	6	150	400	340	1-1/2 (40)	17-3/4 (451)	17-1/16 (433)	8-3/16 (207)						219	100

[1] Weights are for Valve Only.

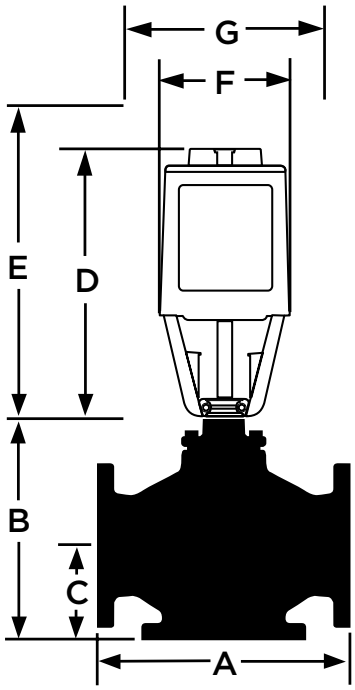
VAL-SRS07P Actuator Weight 18.9 lb. (8.6 kg)
VAL-SRS15P Actuator Weight 22.0 lb. (10.0 kg)

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3-Way Setup



3-Way Dimensions for VAL Series Actuator with Flanged DG Valve

Model Number	Size		Flow Coefficient		Stroke in.(mm)	A	B	C	D Actuator Height	E Service Height	F Actuator Width		G Service Width	Weight[1]	
	In.	mm	Cv	Kv							Housing and panel	Housing		lbs.	kg.
DG250-3-63	2.5	65	63	54	3/4 (20)	10-7/8 (276)	9-3/8 (239)	3-3/4 (95)	14-3/4 (375)	22-3/4 (578)	8-15/16 (226)	7 (177)	25 (635)	50	23
DG3-3-100	3	80	100	85	3/4 (20)	11-3/4 (299)	10-3/4 (272)	4-3/8 (111)						65	30
DG4-3-160	4	100	160	137	1-1/2 (40)	13-7/8 (352)	12-1/2 (317)	5-1/8 (132)						110	50
DG5-3-250	5	125	250	214	1-1/2 (40)	15-3/4 (400)	13-3/4 (349)	5-3/4 (146)						136	62
DG6-3-400	6	150	400	340	1-1/2 (40)	17-3/4 (451)	15-1/2 (393)	6-5/8 (167)						141	64

[1] Weights are for Valve Only.

VAL-SRS07P Actuator Weight 18.9 lb. (8.6 kg)
VAL-SRS15P Actuator Weight 22.0 lb. (10.0 kg)

Bray COMMERCIAL

CG/DG Series

Threaded Globe Valves

2-Way and 3-Way — 1/2"- 2"

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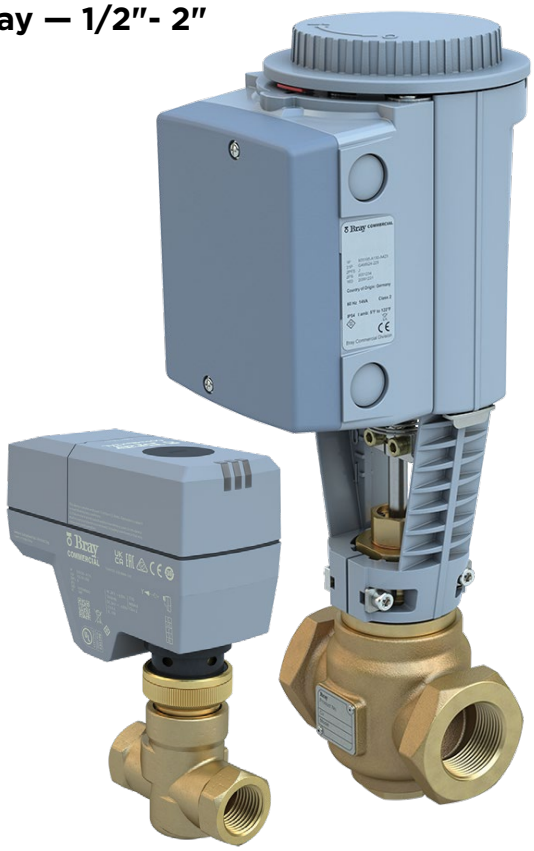
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Application

Bray Commercial's CG/DG Series threaded globe valves provide stable and accurate control of both water and steam heat exchangers on a wide range of HVAC applications. These brass bodied valves are available in both brass and Stainless-Steel trim in 2-Way and 3-Way configurations for cost effective solutions to your applications.

Constant plug guiding and precision-machined metal to metal seating assures ANSI Class IV shutoff (.01%) which provides low leakage and energy conservation up to 283 GPM. These high close-off globe valves feature a rangeability greater than 100:1 for precise control. Available with floating or modulating control in both spring and non-spring return versions.



System Types
Baseboard Heating, Fan Coil Units, Terminal Units, VAV Reheat Coils, and Unit Ventilators

Features and Benefits

- **ANSI Class IV leakage**

  Less than 0.01% of Cv at rated Close-Off pressure – for maximum energy efficiency

- **Superior Control**

  High rangeability and equal percentage flow characteristic

- **Versatile**

  Available with Stainless Steel Trim for steam applications up to 15 PSI (103 kPa) on CG valves, 100 PSI (689 kPa) on DG valves

- **5-Year Warranty**

  Industry leading 5-year warranty from the industry's premier valve automation supplier

CG/DG Series Globe Valves - Valve Body Specifications

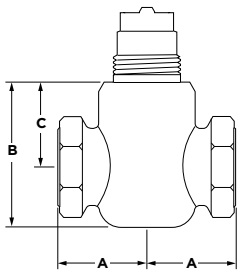
Technical Specifications - Threaded Globe Valve Body			
Service		**CG Series**	**DG Series**
		Chilled/Hot Water, 50/50 Glycol Solutions & Saturated Steam	
Size Range		1/2" – 1", 2-Way Normally Open**, 3-Way Mixing	1-1/4" – 2"***, 2-Way Normally Open**, 3-Way Universal Mixing or Diverting****
Available Cv's		0.4 to 10 (See page CG/DG 6)	16 to 40 (See page CG/DG 6)
Media Temperature Range		**Water/Steam —** 35° to 250°F (2° to 120°C)	**Water —** 20°F to 250°F (–7°C to 120°C) **Steam —** 337°F (170°C) Maximum Stainless Steel Trim Only
Max Inlet Temperature/Pressure		**Water —** 20˚F (–7°C) @ 400 psi (2758 kPa) to 250˚F (120°C) @ 365 psi (2517 kPa)	
		Steam — 15 psi (103 kPa) Stainless Steel Trim Only	**Steam —** 100 psi (689 kPa) Stainless Steel Trim Only
Maximum Differential Pressure		**Water —** 25 psid (173 kPa) Brass Trim/50 psid (345 kPa) Stainless Steel Trim	
		Steam — 15 psid (103 kPa) Stainless Steel Trim Only	**Steam —** 50 psid (345 kPa) Stainless Steel Trim Only
Valve Body Pressure Rating		ANSI Class 250	
Maximum Close-Off Pressure		Refer to Close-Off Charts (See page CG/DG 6)	
Close-Off Ratings		According to ANSI/FCI 70-2	
Flow Characteristic		2-Way Valves - Equal Percentage* 3-Way Valves - A (Coil) = Equal Percentage, B (Bypass) = Linear	
Stem Lift		7/32" Stroke	3/4" Stroke
Leakage Rate		Class IV (0.01% of Cv)	
Rangeability		Cv < 1 — > 50:1 Cv > 1 — > 100:1	> 100:1
End Connections		Female NPT	
Materials	**Body**	1/2" & 3/4" C37700 Forged Brass 1" UNS CA 844 Bronze	UNS CA 844 Bronze
	Stem	Stainless Steel (ASTM A582 Type 303)	
	Globe	**Water —** Brass **Steam —** Stainless Steel	
	Packing	Ethylene propylene (EPDM) O-Ring	Brass Trim = EPDM Stainless Steel Trim = Teflon V-Ring/ EPDM -O-Ring
Certifications		CE, CRN - OC24303.5	
Warranty		5 Years limited from time of shipment.	

Note - * Linear flow characteristic available upon request. (DG Series only, with modulating actuators)
** Normally closed available upon request
*** DG available in 1/2" to 1" for steam applications up to 100 (689 kPa) psi or 3-Way Diverting applications..
**** When the valve is used for diverting applications, the max DP is restricted to 90% of the max DP that is specified for the valve when it is used in a mixing application

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

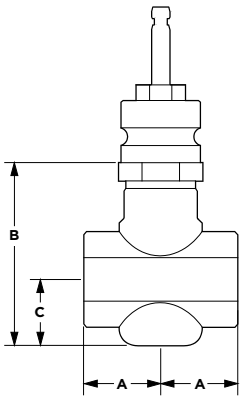
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2-Way - Valve Dimensions



CG Series Dimensions

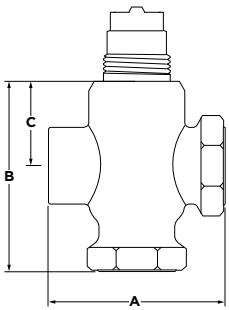
Valve Model Number	Size		A	B	C	Weight	
	in.	mm				lb.	kg.
CG05-2-xxx	1/2	15	1-3/8 (35)	2-1/4 (57)	1-5/16 (33)	1.3	0.6
CG75-2-xxx	3/4	20	1-5/8 (41)	2-3/8 (59)	1-5/16 (33)	1.8	0.8
CG1-2-xxx	1	25	1-15/16 (49)	2-3/4 (69)	1-9/16 (39)	2.6	1.2



DG Series Dimensions

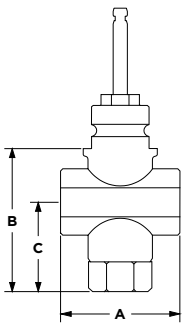
Valve Model Number	Size		A	B	C	Weight	
	in.	mm				lb.	kg.
DG125-2-16	1-1/4	32	2-1/2 (62)	4-1/8 (104)	1-5/8 (40)	7	3.2
DG150-2-25	1-1/2	40	2-9/16 (65)	4-1/4 (109)	1-3/4 (44)	9	4.1
DG2-2-40	2	50	3-1/8 (79)	4-9/16 (116)	2 (51)	13	5.9

3-Way - Valve Dimensions



CG Series Dimensions

Valve Model Number	Size		A	B	C	Weight	
	in.	mm				lb.	kg.
CG05-3-xxx	1/2	15	2-3/4 (70)	2-15/16 (74)	1-5/16 (33)	1.5	0.7
CG75-3-xxx	3/4	20	3-1/4 (83)	2-3/8 (59)	1-5/16 (33)	2.3	1.05
CG1-3-xxx	1	25	3-7/8 (98)	3-15/16 (99)	1-9/16 (39)	3.3	1.5

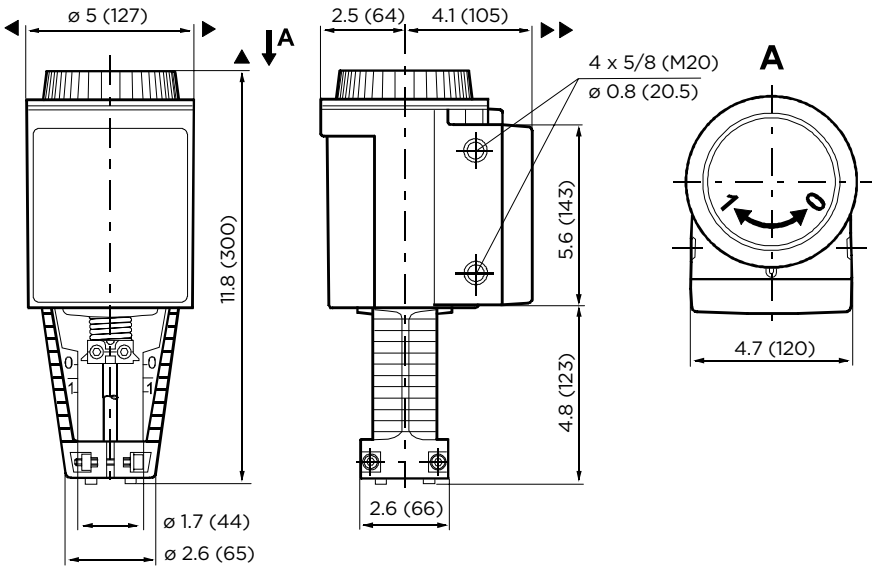


DG Series Dimensions

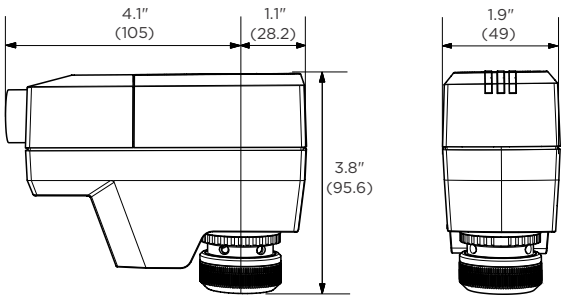
Valve Model Number	Size		A	B	C	Weight	
	in.	mm				lb.	kg.
DG125-3-16	1-1/4	32	4-15/16 (125)	4-5/8 (116)	2-15/16 (74)	7	3.2
DG150-3-25	1-1/2	40	5-1/8 (130)	4-5/8 (117)	3 (76)	9	4.1
DG2-3-40	2	50	6-1/4 (158)	4-3/4 (121)	3-3/16 (81)	13	5.9

CG/DG Series Globe Valves - Actuator Dimensions

GA(M)(S)24-225 Series



GA(M)24-67 Series



CG/DG Series Globe Valves - Part Number Matrix

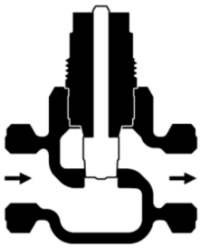
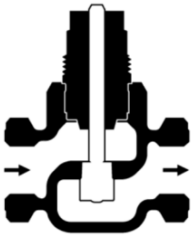
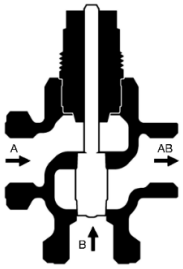
CG	Prefix: CG Series Globe Valves - (1/2" to 1") DG Series Globe Valves - (1-1/4" to 2")												Valve Series
	05	Valve Size (1/2" to 2")											Valve Size
		-											-
			2	Configuration - 2-Way or 3-Way									Configuration
				-									-
					004	CV							Cv
						SS	SS = Stainless Steel						SS
							C	C = Normally Closed					C
								/					/
									GA24-67	Non-Fail Safe, 24 VAC, Floating			Actuator Selection
									GAM24-67	Non-Fail Safe, 24 VAC/DC, 0 to 10 VDC, Modulating			
									GA24-67-FS	Fail Safe, 24 VAC, Floating			
									GAM24-67-FS	Fail Safe, 24 VAC/DC, 0 to 10 VDC, Modulating			
									GA24-225	Non-Spring Return, 24 VAC, Floating			
									GAM24-225	Non-Spring Return, 24 VAC, 0 to 10 VDC/4-20mA, Modulating			
									GAS24-225	Spring Return, 24 VAC, Floating			
									GAMS24-225	Spring Return, 24 VAC, 0 to 10 VDC/4-20mA, Modulating			
CG	**05**	**-**	**2**	**-**	**004**			**/**	**GA24-67**	**1/2" Globe Valve, 2-Way, Flow Coefficient Cv of 004, GA24-67 Actuator**			Example

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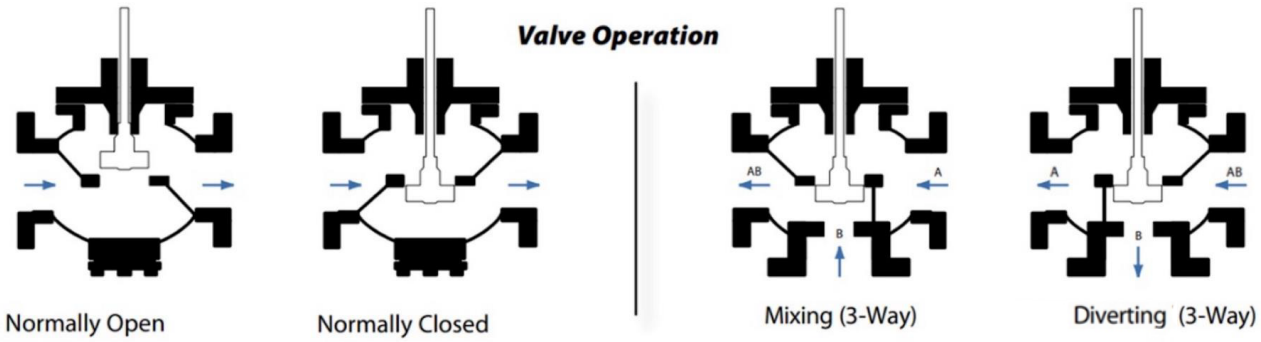
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CG Series Globe Valves - Piping Diagrams

	Normally Open Valve	Normally Closed Valve	Three-Way Valve
Example PN	*CGxx-2-xx*	*CGxx-2-xxC*	*CGxx-3-xx*
Actuator **Extends**	Valve Closes	Valve Opens	Valve opens between Port A and AB
Actuator **Retracts**	Valve Opens	Valve Closes	Valve opens between Port B and Port AB
Valve Diagram			

DG Series Globe Valves - Piping Diagrams

	Normally Open Valve	Normally Closed Valve	Three-Way Valve Universal Mixing/Diverting
Example PN	*DGxx-2-xx*	*DGxx-2-xxC*	*DGxx-3-xx*
Actuator **Extends** (**0** to **1**)	Valve Closes	Valve Opens	Valve Opens between Port A and AB
Actuator **Retracts** (**1** to **0**)	Valve Opens	Valve Closes	Valve Opens between Port B and AB



CG/DG Series Globe Valves - Close-Off Charts

2-Way Close-Off Chart (PSI)

Actuator Model Details				Non-Fail Safe		Non-Spring Return		Fail Safe		Spring Return	
				GA24-67	GAM24-67	GA24-225	GAM24-225	GA24-67-FS	GAM24-67-FS	GAMS24-225	GAMS24-225
Model Number	Size		Cv	Floating	Modulating	Floating	Modulating	Floating	Modulating	Floating	Modulating
	In.	mm		24 VAC	24 VAC 0 to 10 VDC	24 VAC	24 VAC 0-10 VDC/4-20mA	24 VAC	0 to 10 VDC*	24 VAC	24 VAC 0-10 VDC/4-20mA
CG05-2-004	.5	15	0.4	120	120	-		120	120	-	
CG05-2-006	.5	15	0.63								
CG05-2-01	.5	15	1								
CG05-2-02	.5	15	1.6								
CG05-2-03	.5	15	2.5	65	65	-		65	65	-	
CG05-2-04	.5	15	4								
CG75-2-07	.75	20	6.3	55	55	-		55	55	-	
CG1-2-10	1.0	25	10								
DG125-2-16	1.25	32	16	-	-	124		-	-	124	
DG150-2-25	1.5	40	25	-	-	80		-	-	80	
DG2-2-40	2.0	50	40	-	-	49		-	-	49	

3-Way Close-Off Chart (PSI)

Actuator Model Details				Non-Fail Safe		Non-Spring Return		Fail Safe		Spring Return	
				GA24-67	GAM24-67	GA24-225	GAM24-225	GA24-67-FS	GAM24-67-FS	GAMS24-225	GAMS24-225
Model Number	Size		Cv	Floating	Modulating	Floating	Modulating	Floating	Modulating	Floating	Modulating
	In.	mm		24 VAC	24 VAC 0 to 10 VDC	24 VAC	24 VAC 0-10 VDC/4-20mA	24 VAC	0 to 10 VDC*	24 VAC	24 VAC 0-10 VDC/4-20mA
CG05-3-004	.5	15	0.4	95	95	-		95	95	-	
CG05-3-006	.5	15	0.63								
CG05-3-01	.5	15	1								
CG05-3-02	.5	15	1.6								
CG05-3-03	.5	15	2.5	50	50	-		50	50	-	
CG05-3-04	.5	15	4								
CG75-3-07	.75	20	6.3	40	40	-		40	40	-	
CG1-3-10	1.0	25	10								
DG125-3-16	1.25	32	16	-	-	117		-	-	117	
DG150-3-25	1.5	40	25	-	-	73		-	-	73	
DG2-3-40	2.0	50	40	-	-	44		-	-	44	

NOTE: Values in chart are for 10 VDC supplied to the actuator.

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CG/DG Series Globe Valves - Steam Capacity Chart

Steam Capacity Chart - lb/hr (CG & DG)													
Mode/Valve Size				Inlet Pressure (PSI)									
				2		5			10			15	
Model Number	Size		Cv	lb/hr									
	In.	mm		1	2	3	4	5	6	8	10	9	12	15
CG05-2-004	.5	15	0.4	4.78	6.66	8.78	10	11	14	15	17	18	19	22
CG05-2-006	.5	15	0.63	7.53	11	14	16	17	21	24	26	28	31	34
CG05-2-01	.5	15	1	12	17	22	25	28	34	38	42	45	48	54
CG05-2-02	.5	15	1.6	19	27	35	40	44	54	61	67	72	78	87
CG052-03	.5	15	2.5	30	42	55	62	69	85	96	104	112	121	135
CG05-2-04	.5	15	4	48	67	88	100	110	136	153	167	179	194	217
CG75-2-07	.75	20	6.3	75	105	138	157	174	214	241	263	282	305	341
CG1-2-10	1.0	25	10	120	166	219	250	275	339	382	417	447	485	542
DG125-2-16SS	1.25	32	16	191	266	351	400	441	542	611	667	716	775	867
DG150-2-25SS	1.5	40	25	299	416	549	625	689	847	955	1042	1118	1211	1355
DG2-2-40SS	2.0	50	40	478	666	878	1000	1102	1356	1529	1667	1789	1938	2168

Steam Capacity Chart - lb/hr (DG Only)									
Mode/Valve Size				Inlet Pressure (PSI)					
				25			50		100
Model Number	Size		Cv	lb/hr					
	In.	mm		5	15	20	15	30	32.5	50	57.5
DG125-2-16SS	1.25	32	16	648	1044	1158	1392	1835	1885	3182	3340
DG150-2-25SS	1.5	40	25	1013	1632	1810	2175	2867	2946	4972	5220
DG2-2-40SS	2.0	50	40	1620	2611	2895	3480	4587	4713	7956	8351

NOTE: Table is expressed in pounds per hour (lb/h).

CG/DG Series Globe Valves - Adjusted Cv Chart

Adjusted Cv Chart - (CG & DG)											
Mode/Valve Size				Pipe Size /At Full Open (Adjusted Cv)								
Model Number	Size		Cv									
	In.	mm		1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3'	4"
CG05-X-004	.5	15	0.4	0.40	0.40	0.40	0.40	-	-	-	-	-
CG05-X-006	.5	15	0.63	0.63	0.63	0.63	0.63	-	-	-	-	-
CG05-X-01	.5	15	1	1.00	1.00	0.99	0.99	-	-	-	-	-
CG05-X-02	.5	15	1.6	1.60	1.58	1.57	1.56	-	-	-	-	-
CG05X-03	.5	15	2.5	2.50	2.44	2.39	2.36	-	-	-	-	-
CG05-X-04	.5	15	4	4.00	3.76	3.59	3.50	-	-	-	-	-
CG75-X-07	.75	20	6.3	-	6.30	6.18	6.04	5.96	-	-	-	-
CG1-X-10	1.0	25	10	-	-	10.00	9.89	9.75	9.56	-	-	-
DG125-X-16SS	1.25	32	16	-	-	-	16.00	15.87	15.50	15.26	-	-
DG150-X-25SS	1.5	40	25	-	-	-	-	25.00	24.52	24.00	23.65	-
DG2-X-40SS	2.0	50	40	-	-	-	-	-	40.00	39.57	39.00	38.23

X = (2) for 2-Way
(3) for 3-Way

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Bray Commercial provides automated Butterfly, Ball, Globe and Pressure Independent Control Valves to the commercial building HVAC market throughout the world Whereever valve performance is required to maintain climate controlled environments, Bray can provide the required automated valves to meet the demanding flow applications of chiller/boiler isolation, air handlers and terminal units for new construction, retrofit and/or LEED certification applications in buildings.

Building Types

- Healthcare
- Data Centers
- Government and Municipal
- Sports/Entertainment/ Convention Centers
- K-12 and University Education
- Transportation
- Hotels
- Office Buildings
- Retail

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Bray COMMERCIAL

3L Series

Resilient Seated Butterfly Valves

2-Way — 2"- 24" and 3-Way — 2"- 20"

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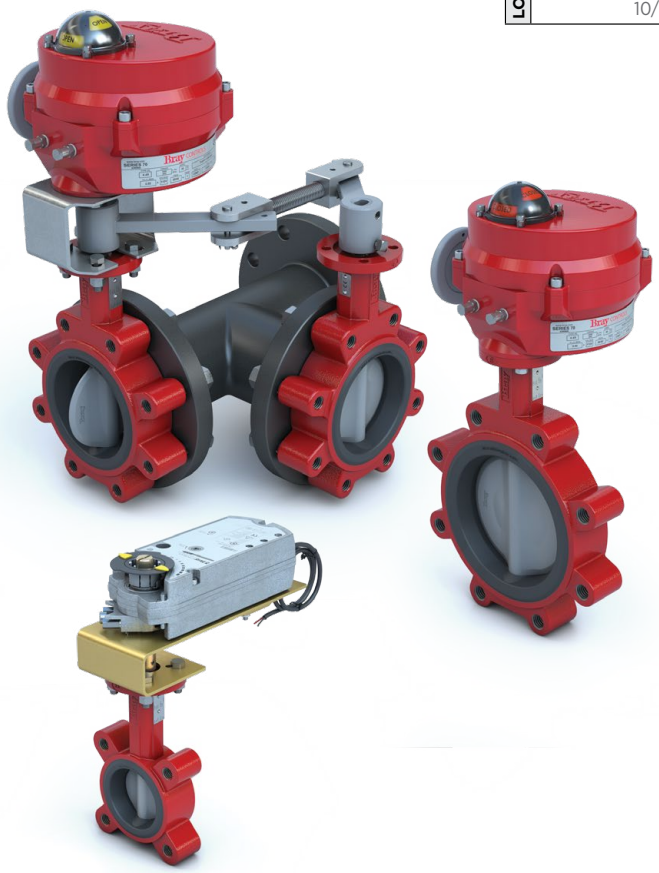
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Application

Bray's 3L Series Nylon 11 coated and Stainless Steel disc resilient seated butterfly valves are designed for maximum reliability and low torque for the most efficient automation possible. Specifically designed for automated applications on chilled water, hot water and condenser water, all automated butterfly valves are 100% factory tested for bubble tight shut-off and industry leading low torque operation.

3L Series valves are available in 2-way configurations to 24" and 3-way configurations in sizes from 2" to 20". Actuators include industrial electric, commercial electric, high pressure pneumatic and low pressure pneumatic in both spring return and non spring return variations for On/Off and Modulating control applications. Differential pressure ratings are available for high Close-Off (up to 175 psi) and low Close-Off (50 psi) requirements.



Features and Benefits

- **High purity Peroxide Cured EPDM seats**

  Low torque and superior rubber stability over the shelf life and service life of the valve

- **Nylon coated ductile iron disc - 3LNE Series**

  Superior corrosion and abrasion resistance extends the life of the valve
  Reduced torque requirements

- **Dead-End Service Rated**

  Fully automatable for dead-end service applications

- **Wide variety of direct mount actuators**

  Reduces size, cost and hysteresis

- **Full and 50 psi close-off pressure ratings available**

  For maximum actuator pricing efficiency

3L Series Butterfly Valves - Valve Body Specifications

Technical Specifications		
Service	Hot Water, Chilled Water, Condenser Water up to 50% Glycol	
Size Range	**2-Way** **3-Way**	2″ through 24″ (DN 50 to 600) 2″ through 20″ (DN 50 to 500)
Body Style	One Piece Lug, 2-Way and 3-Way, for ANSI 125 and ANSI 150 Flanges	
Flow Characteristics	Modified Equal Percentage – See Page 3L-3	
Flow Coefficients	See Page 3L-8	
Fluid Temperature Limits	-20 to 250˚F (-28˚ to 121˚C)	
Maximum Fluid Velocity	30 ft/second (9 m/second)	
Leakage	Bubble tight at rated maximum differential pressure	
Body Cold Working Pressure Ratings	250 psi (17.2 Bar)	
Close-Off - Pressure Ratings Dead End Service Rated	**2″ to 12″**	50 or 175 psi
	14″ to 24″	50 or 150 psi
	Automated versions for 250 psi Dead End rated service available.	
	See pages 3L-12 to 3L-22	
Materials (other materials available upon request)	**Body**	A536 Gr. 65-45-12 High Temperature Polyester Coated Ductile Iron
	Disc	3LNE Series - Nylon 11 coated 3LSE Series - 316 Stainless Steel
	Seat	EPDM (Ethylene Propylene Diene Monomer) - Peroxide Cured
	Stem	416 Stainless Steel
	Upper & Lower Stem Bearing	Steel/Bronze + PTFE Self-lubricating
	Tee	Ductile Iron (3-Way valves only)
Weights	See Dimensions	
Design Standard	MSS SP-67, API 609, Category A	
Testing Standard	MSS SP-61, API 598, EN 12266-1	
Face to Face	MSS SP-67, API 609, Category A, EN 558	
Approvals & Certifications	ABS, ATEX, Bureau Veritas, CRN, DNV, FDA 21 CFR 177.1550, NSF 61/372, PED, PE(S)R	

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

3L Series Butterfly Valves - Advantages

MOLDED-IN SEAT
Tightly controlled vulcanization process produces accurate and repeatable dimensions, which leads to consistently lower torques over the valve's lifetime.

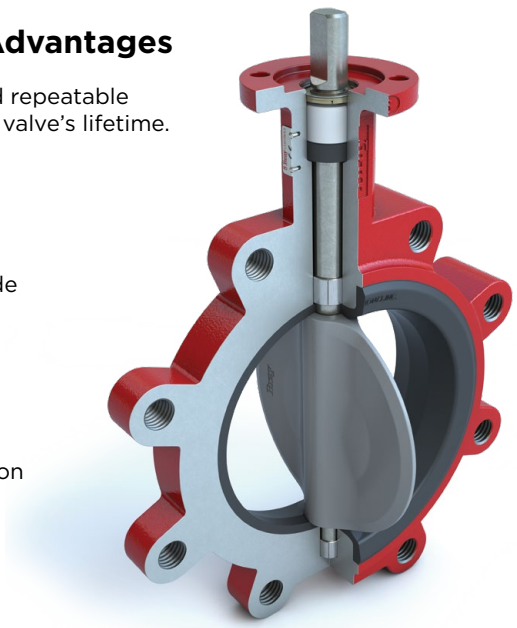
PRECISION ENGINEERED PROFILED DISC SEALING EDGE
Extends the valve life by reducing seat wear.

ROBUST FLANGE SEALING
Tear-dropped shaped seat face enables tight sealing with a wide variety of industrial flanges.

END OF LINE SERVICE
Sealing at full rated differential pressure.

ISO 5211 TOP FLANGE
Direct mounting capability between the valve and Bray actuation reduces package height and complexity.

UPPER AND LOWER STEM BEARINGS
Reduce operating torque and increase reliability in high cycle applications.



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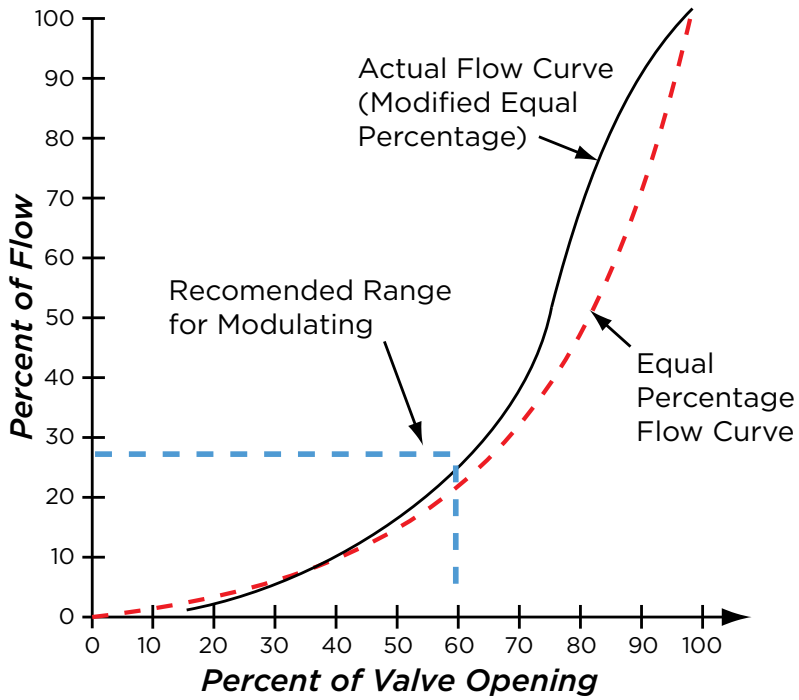
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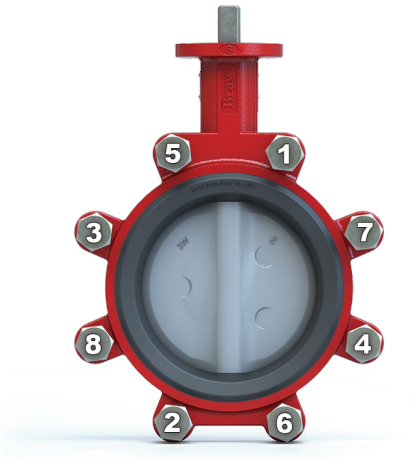
3L Series Butterfly Valves - Cv's at Various Angles of Openings

Low and Standard Pressure Cv Disc Values									
	ANGLE OF DISC OPENING								
Valve Size	**10˚**	**20˚**	**30˚**	**40˚**	**50˚**	**60˚***	**70˚**	**80˚**	**90˚**
2″	1	1	15	29	46	66	73	86	87
2.5″	1	8	26	44	66	98	141	177	185
3″	2	22	43	71	112	171	256	338	360
4″	8	37	78	118	192	310	505	689	740
5″	9	53	98	170	288	470	759	1131	1218
6″	13	86	175	297	479	757	1190	1715	1900
8″	19	121	254	429	754	1247	2096	3376	3765
10″	37	178	365	728	1215	2005	3342	5814	6661
12″	69	240	492	1008	1696	2868	4961	8455	10066
14″	110	287	609	1141	1975	3328	5571	9269	11598
16″	147	421	844	1547	2651	4440	7412	12214	15395
18″	190	470	968	1807	3228	5509	9382	18231	20120
20″	230	675	1341	2455	4210	7056	11803	19637	25329
24″	317	952	1957	3592	6128	10267	17226	29061	39396

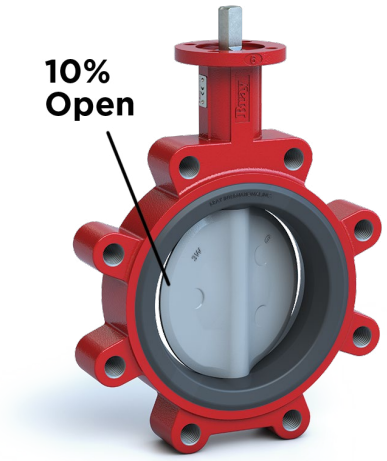
3L Series Butterfly Valves - Equal Percentage Flow Curve Chart



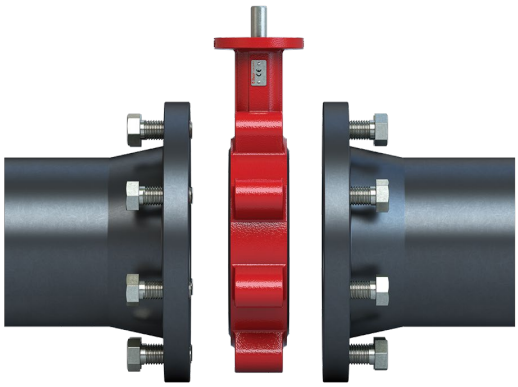
3L Series Butterfly Valves - Installation Tips



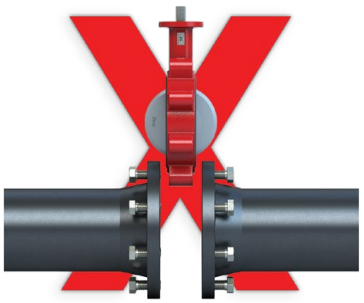
Valve Size	Bolt Size - inches	Maximum Bolt Torque Requirement (ft-lbs)
2" & 2.5"	5/8 - 11 Threads UNC-2B	30
3"	5/8 - 11 Threads UNC-2B	35
4"	5/8 - 11 Threads UNC-2B	35 - 40
5"	3/4 - 10 Threads UNC-2B	35 - 45
6"	3/4 - 10 Threads UNC-2B	35 - 50
8"	3/4 - 10 Threads UNC-2B	45 - 55
10"	7/8 - 9 Threads UNC-2B	55 - 75
12"	7/8 - 9 Threads UNC-2B	65 - 110
14" & 16"	1 - 8 Threads UN-2B	75 - 120
18" & 20"	1-1/8 - 8 Threads UN-2B	85 - 130
24"	1-1/4 - 8 Threads UN-2B	100 - 150



Lower the valve into the open pipe work with the disc in the 10˚ open position. Valves with non-spring actuators are shipped in this position.



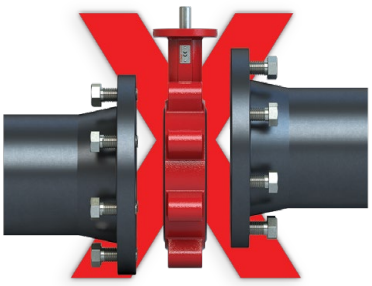
Once the valve is placed in the pipe work, turn the disc to the full-open position. Gradually remove the flange spreaders. Center the valve body to the flanges, and tighten the bolts hand-tight. Slowly close the valve clockwise to check for adequate disc clearance. Return disc to full-open position and cross tighten all bolts to proper torque specification (see tightening pattern above). DO NOT install with disc in fully closed position. This will cause seat distortion. When flange bolts are tightened, rubber will close around disc edge creating excessive torque in initial operation.



DO NOT lower the valve into the pipe with the pipe work spread in sufficiently or with the disc in the fully open position. This can lead to disc edge damage and can impact the flange.



DO NOT USE FLANGE GASKETS The Butterfly Valve seat has a molded-in O-Ring that creates a positive seal against standard ANSI flange faces*.



INCORRECT pipe alignment will cause interference between disc edge and flange face creating leakage, excessive torque, and damage to disc and seat.

* When installing valve in a grooved-type piping system, consult piping manufacturer's specification to choose proper sealing surface. Installing valve without proper surface may cause damage to the valve seat or leakage at the valve.

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Bray Butterfly Valves for HVAC Applications

Bray is the largest butterfly valve manufacturer in the western hemisphere for a reason. Bray's in house design team and Bray owned ISO 9001 manufacturing facilities have over 30 years of experience with this product. Our track record of reliability in thousands of installations over time bear this out.

Bray Commercial Division offers two distinct lines of butterfly valves for HVAC applications. These low torque, high cycle life designs have emerged as the design standard in the commercial building market worldwide.

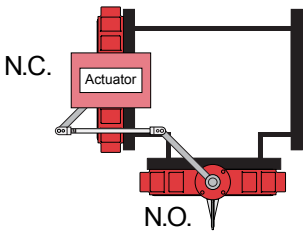
Comparative Valve Specifications		
	3L Series	**MK Series**
Design	Resilient Seated, Nylon Coated or Stainless Steel Disc	Double Offset, Pressure assisted, but not pressure dependent seat design. Stainless Steel Disc
Max. Close-Off Pressure	50 to 175 psi	ANSI 150- 285 psi ANSI 300- 740 psi
Temperature Rating	-20° F to 250° F	-40° F to 500° F

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

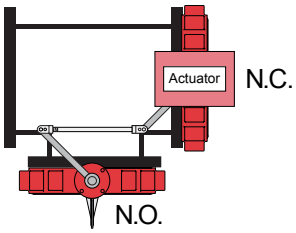


Spring Return and Non-Spring Return

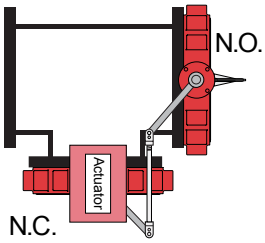
Configuration 1



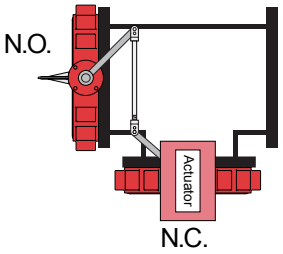
Configuration 2



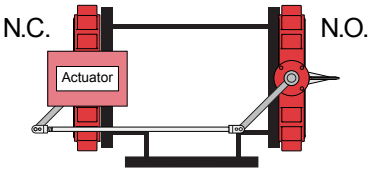
Configuration 3



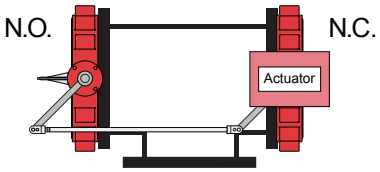
Configuration 4



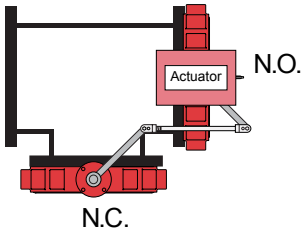
Configuration 5



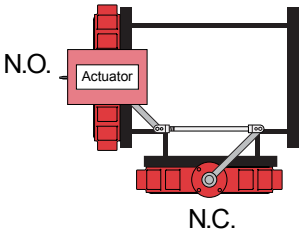
Configuration 6



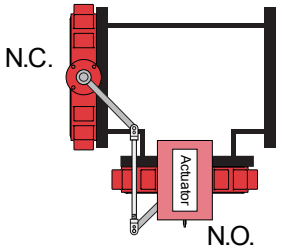
Configuration 7



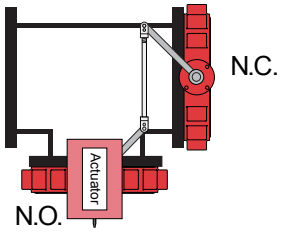
Configuration 8



Configuration 9



Configuration 10
(PN placeholder is 0)



Note: All 3-Way butterfly valve assembly orders should have configuration specified. Pricing remains the same, however Bray must know the specifications in order to manufacture the appropriate linkage kit.

Note: Configurations 7, 8, 9, & 10 with power fail-safe actuators will be configured as Forward Acting & Fail Open. Actuators without power fail-safe capabilities will be set to Reverse Acting, when configurable.

Note: Unless otherwise requested valve will be shipped as illustrated by Configuration 3.

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3L Series Butterfly Valves - Part Number Matrix

3 Series 3L Ductile Iron Body, 416 SS Stem, EPDM Seat												Valve Series
	L Lug Body **W** Wafer Body											Body Type
		N 3LN Series - Nylon 11 coated **S** 3LS Series - 316 Stainless Steel										Disc Material
			E EPDM (Ethylene Propylene Diene Monomer) - Peroxide Cured									Seat Material
				-								
					XX Size (in.) 08=8", 12=12", etc.							Valve Size
						L Low = 50 psi **S** Standard = 175/150 psi **H** High = 250 psi						Close-Off Pressure
							2 2-Way **3** 3-Way					Valve Type
								C 2-way Assembly, Normally Closed **N** 2-way Assembly, Normally Open **X** For 3-Way only - (X= Configuration # - See page 3L-6)				Configuration
									/			
										70-xxxx Series 70 Electric Actuators **AU** Auma Actuators **92-xxx** High Pressure Pneumatic, Double Acting **93-xxx** High Pressure Pneumatic, Spring Return **98-xxx** High Pressure Pneumatic, Spring Return **D or DC** Commercial Electric Actuators			Actuator
											SV Servo Card for 0-10 VDC or 4-20 mA modulation **H** Anti-Condensation Heater **BBU** Battery Back-Up Unit		Electric Actuator Accessories
												-S 120 VAC Solenoid Valve **-S4** 24 VAC Solenoid Valve **-SW** Valve Status Monitor for Pneumatic Actuator **-C** 1-Set Speed Controls for Solenoids **-P** 3-15 psi Pneumatic Positioner **-EP** 4-20 mA Electro-Pneumatic Positioner **-05** Declutchable Handwheel Manual Override	Pneumatic Actuator Accessories
3	**L**	**N**	**E**	**-**	**12**	**S**	**2**	**C**	**/**	**70-E301**	**SVH**		**12" lugged butterfly valve, ductile iron body, standard pressure nylon coated disc, EPDM seat, 2-Way, normally closed with 3,000 in/lb 120 V modulating actuator with heater.**	Examples
3	**L**	**N**	**E**	**-**	**06**	**L**	**3**	**5**	**/**	**70-24-0081**			**6" lugged butterfly valve, ductile iron body, undercut nylon coated disc, EPDM seat, three way configuration 5 with 800 in/lb 24 V On/Off S70 actuator**	

2-Way & 3-Way PIPING GEOMETRY CHART - Adjusted Cv at 60° Rotation

Valve Size	Model Number	Nominal Cv	Pipe Size																
			2"	2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"
2"	3L_E-02S**	66	66	64	62														
2.5"	3L_E-25S**	98		98	96	91													
3"	3L_E-03S**	171			171	162	153												
4"	3L_E-04X**	310				310	298	284											
5"	3L_E-05X**	470					470	457	425										
6"	3L_E-06X**	757						757	708	663									
8"	3L_E-08X**	1247							1247	1198	1140								
10"	3L_E-10X**	2005								2005	1944	1860							
12"	3L_E-12X**	2868									2868	2803	2700						
14"	3L_E-14X**	3328										3328	3285	3209					
16"	3L_E-16X**	4440											4440	4391	4301				
18"	3L_E-18X**	5509												5509	5461	5368			
20"	3L_E-20X**	7056													7056	7001	6889	6766	
24"	3L_E-24X**	10267															10267	10207	9124

** = (2C) 2-Way - Normally Closed
(2N) 2-Way - Normally Open
(3) 3-Way + Configuration Number (see pg. 3L-6)

X or S = (L) Low Pressure or (S) Standard Pressure

_ = (N) Nylon Coated Disc or (S) Stainless Steel Disc

2-Way & 3-Way PIPING GEOMETRY CHART - Adjusted Cv at 90° Rotation

Valve Size	Model Number	Nominal Cv	Pipe Size																
			2"	2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"
2"	3L_E-02S**	87	87	83	78														
2.5"	3L_E-25S**	185		185	173	149													
3"	3L_E-03S**	360			360	292	248												
4"	3L_E-04X**	740				740	611	509											
5"	3L_E-05X**	1218					1218	1039	773										
6"	3L_E-06X**	1900						1900	1379	1111									
8"	3L_E-08X**	3765							3765	2841	2250								
10"	3L_E-10X**	6661								6661	5112	3985							
12"	3L_E-12X**	10066									10066	8009	6271						
14"	3L_E-14X**	11598										11598	10079	8368					
16"	3L_E-16X**	15395											15395	13669	11507				
18"	3L_E-18X**	20120												20120	18108	15385	13431		
20"	3L_E-20X**	25329													25329	23088	19833	17369	
24"	3L_E-24X**	39396															39396	36382	31593

** = (2C) 2-Way - Normally Closed
(2N) 2-Way - Normally Open
(3) 3-Way + Configuration Number (see pg. 3L-6)

X or S = (L) Low Pressure or (S) Standard Pressure

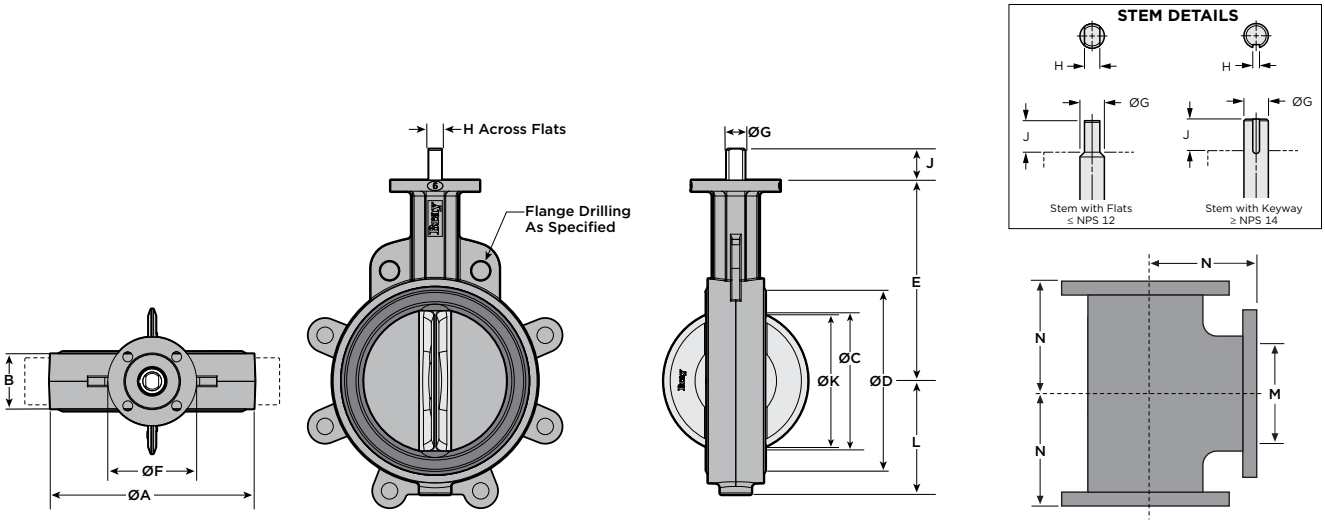
_ = (N) Nylon Coated Disc or (S) Stainless Steel Disc

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3L Series Butterfly Valves - Valve Dimensions



VALVE BODY DIMENSIONS in. (mm)

Valve Model Number	Size		A	B	C	D	E	F	G	H	J	K*	L	
	in.	mm											Wafer	Lug
3L_E-02S**	2	50	3.7 (94)	1.7 (43)	2.0 (51)	2.8 (71)	5.5 (140)	3.5 (90)	0.6 (14)	0.39 (10)	1.25 (32)	1.3 (32)	2.2 (56)	2.3 (58)
3L_E-25S**	2.5	65	4.3 (106)	1.8 (46)	2.5 (64)	3.3 (84)	6.0 (152)	3.5 (90)	0.6 (14)	0.39 (10)	1.25 (32)	1.9 (48)	2.5 (63)	2.6 (65)
3L_E-03S**	3	80	4.9 (124)	1.8 (46)	3.0 (76)	4.0 (100)	6.3 (159)	3.5 (90)	0.6 (14)	0.39 (10)	1.25 (32)	2.5 (64)	2.8 (71)	2.8 (71)
3L_E-04x**	4	100	6.1 (154)	2.1 (52)	4.1 (103)	5.1 (129)	7.0 (178)	3.5 (90)	0.6 (16)	0.43 (11)	1.25 (32)	3.6 (91)	3.4 (87)	4.1 (104)
3L_E-05x**	5	125	7.1 (179)	2.2 (56)	5.0 (128)	6.2 (157)	7.5 (191)	3.5 (90)	0.8 (19)	0.51 (13)	1.25 (32)	4.6 (117)	4.0 (102)	4.6 (117)
3L_E-06x**	6	150	8.1 (206)	2.2 (56)	5.8 (146)	7.1 (180)	8.0 (203)	3.5 (90)	0.8 (19)	0.51 (13)	1.25 (32)	5.4 (137)	4.5 (115)	5.1 (129)
3L_E-08x**	8	200	10.5 (267)	2.4 (60)	7.8 (197)	9.3 (237)	9.5 (241)	5.9 (150)	0.9 (22)	0.63 (16)	1.25 (32)	7.5 (190)	5.8 (146)	6.1 (154)
3L_E-10x**	10	250	12.6 (324)	2.7 (68)	9.8 (249)	11.4 (291)	10.8 (273)	5.9 (150)	1.2 (30)	0.87 (22)	2.0 (51)	9.5 (242)	7.1 (181)	7.7 (195)
3L_E-12x**	12	300	14.9 (373)	3.1 (78)	11.8 (299)	13.5 (342)	12.3 (311)	5.9 (150)	1.2 (30)	0.87 (22)	2.0 (51)	11.5 (291)	8.1 (206)	9.0 (229)
3L_E-14x**	14	350	17.1 (433)	3.1 (78)	13.3 (337)	15.3 (388)	13.6 (346)	5.9 (150)	1.4 (35)	.39x.39 (10x10)	2.0 (51)	13.0 (331)	9.4 (238)	9.9 (252)
3L_E-16x**	16	400	19.2 (488)	4.0 (102)	15.3 (387)	17.4 (442)	14.8 (375)	5.9 (150)	1.4 (35)	.39x.39 (10x10)	2.0 (51)	14.9 (377)	10.8 (273)	11.3 (287)
3L_E-18x**	18	450	21.1 (536)	4.5 (114)	17.3 (438)	19.5 (495)	16.0 (406)	8.3 (210)	2.0 (50)	.47x.39 (12x10)	2.5 (64)	16.8 (427)	12.0 (305)	12.2 (309)
3L_E-20x**	20	500	23.3 (591)	5.0 (127)	19.3 (489)	21.6 (548)	17.3 (438)	8.3 (210)	2.0 (50)	.47x.39 (12x10)	2.5 (64)	18.8 (476)	14.0 (356)	14.0 (356)
3L_E-24S**	24	600	28.2 (716)	6.1 (154)	23.3 (591)	25.6 (650)	19.5 (495)	8.3 (210)	2.5 (64)	.62x.62 (16x16)	4.0 (102)	22.7 (575)	17.6 (446)	17.6 (446)

** = (2C) 2-Way - Normally Closed
(2N) 2-Way - Normally Open
(3) 3-Way + Configuration Number (see pg. 3L-6)

X or S = (L) Low Pressure or (S) Standard Pressure

_ = (N) Nylon Coated Disc or (S) Stainless Steel Disc

***Note:** K dimension is the disc chordal diameter at the valve face.

VALVE BODY DIMENSIONS in. (mm) - Continued

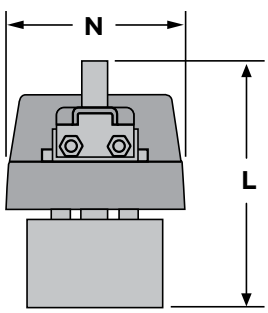
Size		Top Plate Drilling			Lug Bolt Data			Tee		Adp. Code	Weights - lbs. (kg)		
in.	mm	Bolt Circle	Hole Qty	Hole Dia.	BC	Holes	Threads	M	N		Wafer	Lug	Tee***
2	50	2.8 (70)	4	0.4 (10)	4.8 (122)	4	5/8-11	2.0 (51)	4.5 (114)	A	6 (2.7)	7 (3.2)	19 (8.6)
2.5	65	2.8 (70)	4	0.4 (10)	5.5 (140)	4	5/8-11	2.5 (64)	5.0 (127)	A	7 (3.2)	8 (3.36)	27 (12.3)
3	80	2.8 (70)	4	0.4 (10)	6.0 (152)	4	5/8-11	3.0 (76)	5.5 (140)	A	8 (3.6)	9 (4.1)	39 (17.7)
4	100	2.8 (70)	4	0.4 (10)	7.5 (191)	8	5/8-11	4.0 (102)	6.5 (165)	B	12 (5.4)	16 (7.3)	62 (28.1)
5	125	2.8 (70)	4	0.4 (10)	8.5 (216)	8	3/4-10	5.0 (127)	7.5 (191)	C	15 (6.8)	21 (9.5)	79 (35.78)
6	150	2.8 (70)	4	0.4 (10)	9.5 (241)	8	3/4-10	6.0 (152)	8.0 (203)	C	19 (8.6)	25 (11.3)	96 (43.5)
8	200	4.9 (125)	4	0.6 (15)	11.8 (300)	8	3/4-10	8.0 (203)	9.0 (229)	D	34 (15.4)	40 (18.1)	155 (70.3)
10	250	4.9 (125)	4	0.6 (15)	14.3 (363)	12	7/8-9	10.0 (254)	11.0 (279)	E	51 (23.1)	62 (28.1)	270 (122.5)
12	300	4.9 (125)	4	0.6 (15)	17.0 (432)	12	7/8-9	12.0 (305)	12.0 (305)	E	68 (3.8)	91 (41.3)	380 (172.4)
14	350	4.9 (125)	4	0.6 (15)	18.8 (478)	12	1-8	14.0 (356)	14.0 (356)	F	105 (47.6)	122 (55.3)	435 (197.3)
16	400	4.9 (125)	4	0.6 (15)	21.3 (541)	16	1-8	16.0 (406)	15.0 (381)	F	150 (68.0)	166 (75.3)	550 (249.5)
18	450	6.5 (165)	4	0.8 (21)	22.8 (579)	16	1-1/8-8	18.0 (457)	16.5 (419)	G	212 (96.1)	233 (105.7)	665 (301.6)
20	500	6.5 (165)	4	0.8 (21)	25.0 (635)	20	1-1/8-8	20.0 (508)	18.0 (457)	G	285 (129.3)	340 (154.0)	855 (387.8)
24	600	6.5 (165)	4	0.8 (21)	29.5 (749)	20	1-1/4-8	-	-	H	410 (186.0)	490 (222.3)	-

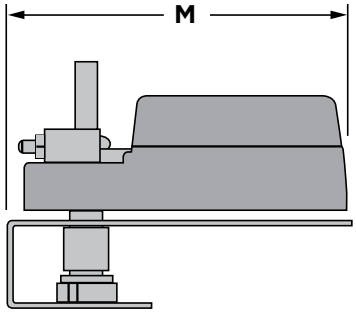
***Tee weight is the weight of the Tee alone. For 3-Way assemblies add the weight of two lug valves.

BOLT SIZE - in.

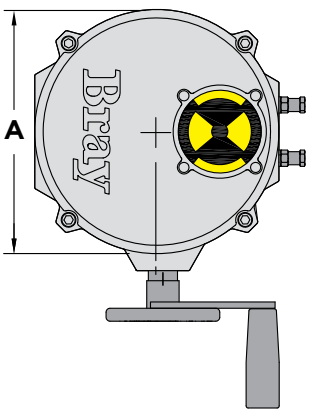
Size		Bolt Size - in.
in.	mm	
2	50	5/8 - 11 Threads UNC-2B
2.5	65	
3	80	
4	100	
5	125	3/4 - 10 Threads UNC-2B
6	150	
8	200	
10	250	7/8 - 9 Threads UNC-2B
12	300	
14	350	1 - 8 Threads UN-2B
16	400	
18	450	1-1/8 - 8 Threads UN-2B
20	500	
24	600	1-1/4 - 8 Threads UN-2B

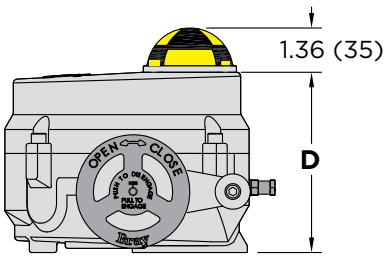
COMMERCIAL ACTUATOR DIMENSIONS in. (mm)				
Actuator Model Number	L	M	N	Weight lbs. (kg)
DCS-140 Series	7.4 (188)	11.0 (279)	4.0 (102)	4.9 (2.2)
DC-310 Series	7.4 (188)	11.0 (279)	4.0 (102)	4.4 (2.0)
D-140/210 Series	6.7 (170)	7.5 (191)	4.0 (102)	2.9 (1.3)
DS-180 Series	7.4 (188)	11.0 (279)	4.0 (102)	6.4 (2.9)
Tandem Actuators	11.8 (300)	18.0 (457)	4.0 (102)	12.8 (5.8)

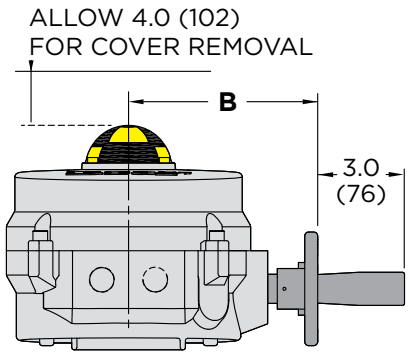




INDUSTRIAL ACTUATOR DIMENSIONS in. (mm)					
Actuator Model Number	A	B	D*		Weight lbs. (kg)
			2-Way	3-Way	
70-0081 (Small Frame)	7.5 (191)	5.8 (147)	5.6 (141)	8.6 (218)	13 (6)
70-0121/0201/E301	10.1 (256)	7.8 (198)	6.6 (168)	10.7 (273)	28 (13)
70-0501/0651	12.1 (308)	9.5 (241)	7.2 (183)	13.2 (335)	48 (22)
70-1300/1800	12.1 (308)	9.5 (241)	12.5 (316)	20.5 (521)	118 (54)
AU-4068	32.1 (815)	28.9 (734)	12.3 (312)	22.3 (566)	195 (88)
AU-7080	32.1 (815)	31.9 (810)	12.3 (312)	-	285 (129)







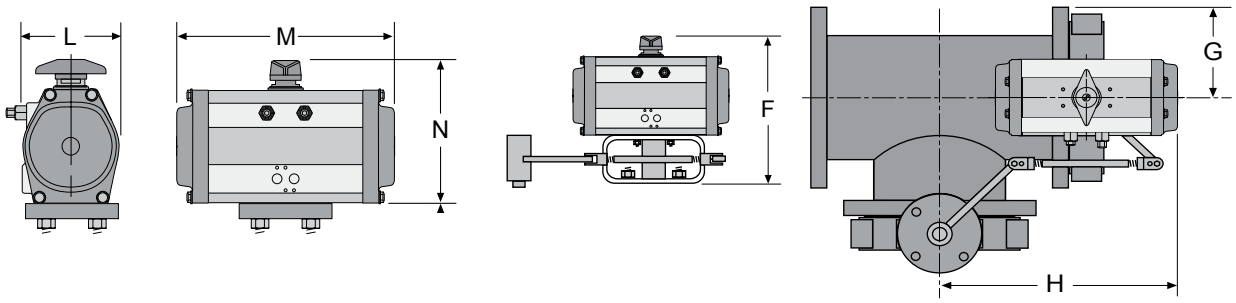
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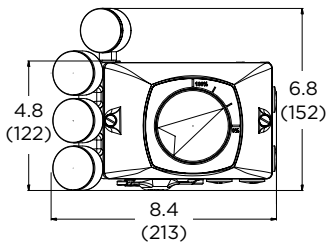
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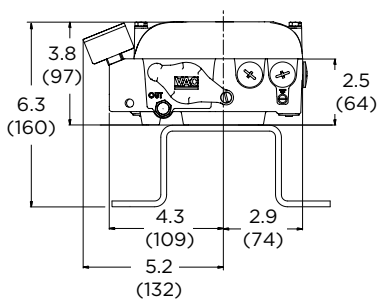
PNEUMATIC ACTUATOR DIMENSIONS in. (mm)								
Actuator Model Number	L	M	N	F	G	H	Weight lbs. (kg)	
							Double Acting	Spring Return
92/93-063	3.1 (79)	5.6 (142)	4.5 (114)	7.5 (191)	3.0 (76)	9.1 (231)	3.4 (1.5)	4.1 (1.9)
92/93-083	4.1 (104)	7.4 (188)	5.4 (137)	8.4 (213)	4.5 (114)	13.3 (338)	6.3 (3)	8.1 (4)
92/93-093	4.4 (112)	9.1 (231)	5.8 (147)	8.8 (224)	5.5 (140)	14.9 (378)	8.5 (4)	10.8 (5)
92/93-119	5.2 (132)	12.4 (325)	7.3 (185)	11.4 (290)	8.0 (203)	19.9 (505)	16.9 (8)	22.3 (10)
92/93-128	5.6 (142)	12.8 (734)	8.1 (2.6)	12.2 (310)	8.0 (203)	19.9 (505)	21.0 (10)	27.6 (13)
92/93-160	7.2 (183)	15.5 (394)	9.4 (239)	13.5 (343)	10.5 (267)	26.6 (676)	38.8 (18)	53.2 (24)
92/93-210	9.0 (229)	19.6 (498)	11.6 (295)	17.6 (447)	13.8 (351)	33.1 (841)	77.8 (35)	109.6 (50)
92/93-255	10.8 (274)	28.8 (732)	13.5 (343)	19.5 (495)	13.8 (351)	33.1 (841)	167.0 (76)	210.8 (96)
98-45E2-...	14.8 (376)	52.8 (1341)	9.7 (246)	-	-	-	183 (83)	355 (161)
98-14E3-...	21.3 (541)	72.6 (1844)	12.1 (307)	-	-	-	485 (220)	937 (425)
98-73E2-...	16.8 (427)	60.1 (1527)	11.8 (300)	-	-	-	254 (115)	547 (248)

Allow 3.0" for Series 92/93 actuator removal and up to 12" for Series 98

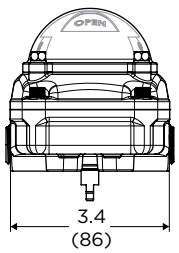


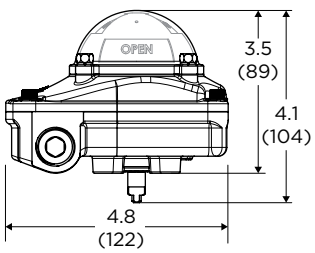
VP200 Pneumatic Positioner



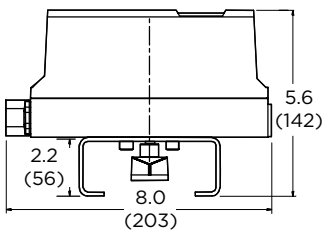


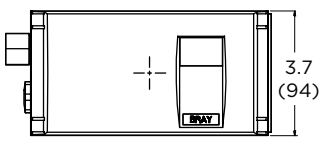
Series 5A Switch Box





Series 6A Electro Pneumatic Positioner





2-Way with NSR/SR DC-Series Commercial Electric Actuators

Nylon Coated Disc

2-Way, On/Off & Floating - Nylon Coated Disc

Actuator Model Details						Non-Spring Return		Spring Return			
						DC24-310-T	DC24-310-T-D	DCS24-140	DCS24-140-D	DCS120-140	DCS120-140-D
Model Number	Size		Close-Off psi	Cv		Floating		On/Off			
	In.	mm		90˚	60˚	24 VAC		24 VAC/DC		120 VAC	
3LNE-02S2C	2	50	175	87	66	X	-	X	-	X	-
3LNE-25S2C	2.5	65	175	185	98	X	-	X	-	X	-
3LNE-03S2C	3	80	175	360	171	X	-	-	X	-	X
3LNE-04L2C	4	100	50	740	310	X	-	X	-	X	-
3LNE-04S2C	4	100	175	740	310	X	-	-	X	-	X
3LNE-05L2C	5	125	50	1218	470	X	-	-	X	-	X
3LNE-06L2C	6	150	50	1900	757	-	X	-	-	-	-

2-Way, Modulating - Nylon Coated Disc

Actuator Model Details						Non-Spring Return		Spring Return	
						DCM24-310	DCM24-310-D	DCMS24-140	DCMS24-140-D
Model Number	Size		Close-Off psi	Cv		Modulating			
	In.	mm		90˚	60˚	24 VAC		24 VAC/DC	
3LNE-02S2C	2	50	175	87	66	X	-	X	-
3LNE-25S2C	2.5	65	175	185	98	X	-	X	-
3LNE-03S2C	3	80	175	360	171	X	-	-	X
3LNE-04L2C	4	100	50	740	310	X	-	X	-
3LNE-04S2C	4	100	175	740	310	X	-	-	X
3LNE-05L2C	5	125	50	1218	470	X	-	-	X
3LNE-06L2C	6	150	50	1900	757	-	X	-	-

Stainless Steel Disc

2-Way, On/Off & Floating - Stainless Steel Disc

Actuator Model Details						Non-Spring Return		Spring Return			
						DC24-310-T	DC24-310-T-D	DCS24-140	DCS24-140-D	DCS120-140	DCS120-140-D
Model Number	Size		Close-Off psi	Cv		Floating		On/Off			
	In.	mm		90˚	60˚	24 VAC		24 VAC/DC		120 VAC	
3LSE-02S2C	2	50	175	87	66	X	-	X	-	X	-
3LSE-25S2C	2.5	65	175	185	98	X	-	X	-	X	-
3LSE-03S2C	3	80	175	360	171	X	-	-	X	-	X
3LSE-04L2C	4	100	50	740	310	X	-	-	X	-	X
3LSE-04S2C	4	100	175	740	310	X	-	-	X	-	X
3LSE-05L2C	5	125	50	1218	470	X	-	-	X	-	X
3LSE-06L2C	6	150	50	1900	757	-	X	-	-	-	-

2-Way, Modulating - Stainless Steel Disc

Actuator Model Details						Non-Spring Return		Spring Return	
						DCM24-310	DCM24-310-D	DCMS24-140	DCMS24-140-D
Model Number	Size		Close-Off psi	Cv		Modulating			
	In.	mm		90˚	60˚	24 VAC		24 VAC/DC	
3LSE-02S2C	2	50	175	87	66	X	-	X	-
3LSE-25S2C	2.5	65	175	185	98	X	-	X	-
3LSE-03S2C	3	80	175	360	171	X	-	-	X
3LSE-04L2C	4	100	50	740	310	X	-	-	X
3LSE-04S2C	4	100	175	740	310	X	-	-	X
3LSE-05L2C	5	125	50	1218	470	X	-	-	X
3LSE-06L2C	6	150	50	1900	757	-	X	-	-

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default
-D = Dual mounted actuators

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3-Way with NSR/SR DC-Series Commercial Electric Actuators

Nylon Coated Disc

3-Way, On/Off or Floating - Nylon Coated Disc

Actuator Model Details						Non-Spring Return		Spring Return			
						DC24-310-T	DC24-310-T-D	DCS24-140	DCS24-140-D	DCS120-140	DCS120-140-D
Valve Model Details	Size		Close-Off psi	Cv		Floating		On/Off			
	In.	mm		90˚	60˚	24 VAC		24 VAC/DC		120 VAC	
3LNE-02S3X	2	50	175	87	66	X	-	X	-	X	-
3LNE-25S3X	2.5	65	175	185	98	X	-	-	X	-	X
3LNE-03S3X	3	80	175	360	171	X	-	-	X	-	X
3LNE-04L3X	4	100	50	740	310	X	-	-	X	-	X
3LNE-04S3X	4	100	175	740	310	-	X	-	-	-	-
3LNE-05L3X	5	125	50	1218	470	X	-	-	X	-	X
3LNE-06L3X	6	150	50	1900	757	-	X	-	-	-	-

3-Way, Modulating - Nylon Coated Disc

Actuator Model Details						Non-Spring Return		Spring Return	
						DCM24-310	DCM24-310-D	DCMS24-140	DCMS24-140-D
Valve Model Details	Size		Close-Off psi	Cv		Modulating			
	In.	mm		90˚	60˚	24 VAC		24 VAC/DC	
3LNE-02S3X	2	50	175	87	66	X	-	X	-
3LNE-25S3X	2.5	65	175	185	98	X	-	-	X
3LNE-03S3X	3	80	175	360	171	X	-	-	X
3LNE-04L3X	4	100	50	740	310	X	-	-	X
3LNE-04S3X	4	100	175	740	310	-	X	-	-
3LNE-05L3X	5	125	50	1218	470	X	-	-	X
3LNE-06L3X	6	150	50	1900	757	-	X	-	-

Stainless Steel Disc

3-Way, On/Off or Floating - Stainless Steel Disc

Actuator Model Details						Non-Spring Return		Spring Return			
						DC24-310-T	DC24-310-T-D	DCS24-140	DCS24-140-D	DCS120-140	DCS120-140-D
Valve Model Details	Size		Close-Off psi	Cv		Floating		On/Off			
	In.	mm		90˚	60˚	24 VAC		24 VAC/DC		120 VAC	
3LSE-02S3X	2	50	175	87	66	X	-	X	-	X	-
3LSE-25S3X	2.5	65	175	185	98	X	-	-	X	-	X
3LSE-03S3X	3	80	175	360	171	X	-	-	X	-	X
3LSE-04L3X	4	100	50	740	310	X	-	-	X	-	X
3LSE-04S3X	4	100	175	740	310	-	X	-	-	-	-
3LSE-05L3X	5	125	50	1218	470		X	-	X	-	X
3LSE-06L3X	6	150	50	1900	757	-	X	-	-	-	-

3-Way, Modulating - Stainless Steel Disc

Actuator Model Details						Non-Spring Return		Spring Return	
						DCM24-310-	DCM24-310-D	DCMS24-140	DCMS24-140-D
Valve Model Details	Size		Close-Off psi	Cv		Modulating			
	In.	mm		90˚	60˚	24 VAC		24 VAC/DC	
3LSE-02S3X	2	50	175	87	66	X	-	X	-
3LSE-25S3X	2.5	65	175	185	98	X	-	-	X
3LSE-03S3X	3	80	175	360	171	X	-	-	X
3LSE-04L3X	4	100	50	740	310	X	-	-	X
3LSE-04S3X	4	100	175	740	310	-	X	-	-
3LNE-05L3X	5	125	50	1218	470	-	X	-	X
3LSE-06L3X	6	150	50	1900	757	-	X	-	-

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
X =3-Way Assemblies (Refer to Configuration Chart, Page 6)
-D = Dual mounted actuators

2-Way with NSR/SR D-Series Commercial Electric Actuators

Nylon Coated Disc

2-Way, On/Off or Floating - Nylon Coated Disc

Valve Model Details	Size		Close-Off psi	Cv		Non-Spring Return			Spring Return	
						D24-140	D24-210	D24-210-D	DS24-180	DS24-180-D
	In.	mm		90˚	60˚	On/Off & Floating			On/Off	
						24 VAC/DC			24 VAC/DC	
3LNE-02S2C	2	50	175	87	66	X	-	-	X	-
3LNE-25S2C	2.5	65	175	185	98	X	-	-	X	-
3LNE-03S2C	3	80	175	360	171	-	X	-	X	-
3LNE-04L2C	4	100	50	740	310	-	X	-	X	-
3LNE-04S2C	4	100	175	740	310	-	-	X	-	X
3LNE-05L2C	5	125	50	1218	470	-	X		-	X
3LNE-05S2C	5	125	175	1218	470	-	-	X	-	-
3LNE-06L2C	6	150	50	1900	757	-	-	X	-	X

2-Way, Modulating - Nylon Coated Disc

Valve Model Details	Size		Close-Off psi	Cv		Non-Spring Return			Spring Return	
						DM24-140	DM24-210	DM24-210-D	DMS24-180	DMS24-180-D
	In.	mm		90˚	60˚	Modulating				
						24 VAC/DC			24 VAC/DC	
3LNE-02S2C	2	50	175	87	66	X	-	-	X	-
3LNE-25S2C	2.5	65	175	185	98	X	-	-	X	-
3LNE-03S2C	3	80	175	360	171	-	X	-	X	-
3LNE-04L2C	4	100	50	740	310	-	X	-	X	-
3LNE-04S2C	4	100	175	740	310	-	-	X	-	X
3LNE-05L2C	5	125	50	1218	470	-	X	-	-	X
3LNE-05S2C	5	125	175	1218	470	-	-	X	-	-
3LNE-06L2C	6	150	50	1900	757	-	-	X	-	X

Stainless Steel Disc

2-Way, On/Off or Floating - Stainless Steel Disc

Valve Model Details	Size		Close-Off psi	Cv		Non-Spring Return			Spring Return	
						D24-140	D24-210	D24-210-D	DS24-180	DS24-180-D
	In.	mm		90˚	60˚	On/Off & Floating			On/Off	
						24 VAC/DC			24 VAC/DC	
3LSE-02S2C	2	50	175	87	66	X	-	-	X	-
3LSE-25S2C	2.5	65	175	185	98	-	X	-	X	-
3LSE-03S2C	3	80	175	360	171	-	X	-	X	-
3LSE-04L2C	4	100	50	740	310	-	X	-	X	-
3LSE-04S2C	4	100	175	740	310	-	-	X	-	X
3LSE-05L2C	5	125	50	1218	470	-	X	-	-	X
3LSE-05S2C	5	125	175	1218	470	-	-	X	-	-
3LSE-06L2C	6	150	50	1900	757	-	-	X	-	-

2-Way, Modulating - Stainless Steel Disc

Valve Model Details	Size		Close-Off psi	Cv		Non-Spring Return			Spring Return	
						DM24-140	DM24-210	DM24-210-D	DMS24-180	DMS24-180-D
	In.	mm		90˚	60˚	Modulating				
						24 VAC/DC			24 VAC/DC	
3LSE-02S2C	2	50	175	87	66	X	-	-	X	-
3LSE-25S2C	2.5	65	175	185	98	-	X	-	X	-
3LSE-03S2C	3	80	175	360	171	-	X	-	X	-
3LSE-04L2C	4	100	50	740	310	-	X	-	X	-
3LSE-04S2C	4	100	175	740	310	-	-	X	-	X
3LSE-05L2C	5	125	50	1218	470	-	X	-	-	X
3LSE-05S2C	5	125	175	1218	470	-	-	X	-	-
3LSE-06L2C	6	150	50	1900	757	-	-	X	-	-

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default
-D = Dual mounted actuators

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3-Way with NSR/SR Series with D-Series Commercial Electric Actuators

Nylon Coated Disc

3-Way, On/Off or Floating - Nylon Coated Disc

Valve Model Details	Size		Close-Off psi	Cv		Non-Spring Return			Spring Return	
						D24-140	D24-210	D24-210-D	DS24-180	DS24-180-D
	In.	mm		90˚	60˚	On/Off & Floating			On/Off	
						24 VAC/DC			24 VAC/DC	
3LNE-02S3X	2	50	175	87	66	X	-	-	X	-
3LNE-25S3X	2.5	65	175	185	98	-	X	-	X	-
3LNE-03S3X	3	80	175	360	171	-	X	-	-	X
3LNE-04L3X	4	100	50	740	310	-	X	-	-	X
3LNE-04S3X	4	100	175	740	310	-	-	X	-	X
3LNE-05L3X	5	125	50	1218	470	-	-	X	-	X
3LNE-06L3X	6	150	50	1900	757	-	-	X	-	-

3-Way, Modulating - Nylon Coated Disc

Valve Model Details	Size		Close-Off psi	Cv		Non-Spring Return			Spring Return	
						DM24-140	DM24-210	DM24-210-D	DMS24-180	DMS24-180-D
	In.	mm		90˚	60˚	Modulating				
						24 VAC/DC			24 VAC/DC	
3LNE-02S3X	2	50	175	87	66	X	-	-	X	-
3LNE-25S3X	2.5	65	175	185	98	-	X	-	X	-
3LNE-03S3X	3	80	175	360	171	-	X	-	-	X
3LNE-04L3X	4	100	50	740	310	-	X	-	-	X
3LNE-04S3X	4	100	175	740	310	-	-	X	-	X
3LNE-05L3X	5	125	50	1218	470	-	-	X	-	X
3LNE-06L3X	6	150	50	1900	757	-	-	X	-	-

Stainless Steel Disc

3-Way, On/Off or Floating - Stainless Steel Disc

Valve Model Details	Size		Close-Off psi	Cv		Non-Spring Return		Spring Return	
						D24-210	D24-210-D	DS24-180	DS24-180-D
	In.	mm		90˚	60˚	On/Off & Floating		On/Off	
						24 VAC/DC		24 VAC/DC	
3LSE-02S3X	2	50	175	87	66	X	-	X	-
3LSE-25S3X	2.5	65	175	185	98	X	-	X	-
3LSE-03S3X	3	80	175	360	171	-	X	-	X
3LSE-04L3X	4	100	50	740	310	X	-	-	X
3LSE-04S3X	4	100	175	740	310	-	X	-	-
3LSE-05L3X	5	125	50	1218	470	-	X	-	X

3-Way, Modulating - Stainless Steel Disc

Valve Model Details	Size		Close-Off psi	Cv		Non-Spring Return		Spring Return	
						DM24-210	DM24-210-D	DMS24-180	DMS24-180-D
	In.	mm		90˚	60˚	Modulating			
						24 VAC/DC		24 VAC/DC	
3LSE-02S3X	2	50	175	87	66	X	-	X	-
3LSE-25S3X	2.5	65	175	185	98	X	-	X	-
3LSE-03S3X	3	80	175	360	171	-	X	-	X
3LSE-04L3X	4	100	50	740	310	X	-	-	X
3LSE-04S3X	4	100	175	740	310	-	X	-	-
3LSE-05L3X	5	125	50	1218	470	-	X	-	X

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
X = 3-Way Assemblies (Refer to Configuration Chart, Page 6)
-D = Dual mounted actuators

2-Way with Industrial Electric Actuators

Nylon Coated Disc

2-Way, 24 VAC and 120 VAC, On/Off & Modulating - Nylon Coated Disc									
Actuator Model Details						Series 70 & AU Series		Series 70	
Valve Model Details	Size		Close-Off psi	Cv		On/Off	Modulating	On/Off	Modulating
	In.	mm		90˚	60˚	120 VAC	120 VAC	24 VAC	24 VAC
3LNE-02S2C	2	50	175	87	66	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-25S2C	2.5	65	175	185	98	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-03S2C	3	80	175	360	171	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-04L2C	4	100	50	740	310	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-04S2C	4	100	175	740	310	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-05L2C	5	125	50	1218	470	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-05S2C	5	125	175	1218	470	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-06L2C	6	150	50	1900	757	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-06S2C	6	150	175	1900	757	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-08L2C	8	200	50	3765	1247	70-0121	70-0121SV	70-24-0201	70-24-0201SV
3LNE-08S2C	8	200	175	3765	1247	70-0121	70-0121SV	70-24-0201	70-24-0201SV
3LNE-10L2C	10	250	50	6661	2005	70-0121	70-0121SV	70-24-0201	70-24-0201SV
3LNE-10S2C	10	250	175	6661	2005	70-0201	70-0201SV	70-24-0201	70-24-0201SV
3LNE-12L2C	12	300	50	10066	2868	70-0201	70-0201SV	70-24-0201	70-24-0201SV
3LNE-12S2C	12	300	175	10066	2868	70-E301	70-E301SV	70-24-0501	70-24-0501SV
3LNE-14L2C	14	350	50	11598	3328	70-0501	70-0501SV	70-24-0501	70-24-0501SV
3LNE-14S2C	14	350	150	11598	3328	70-0501	70-0501SV	70-24-0501	70-24-0501SV
3LNE-16L2C	16	400	50	15395	4440	70-0501	70-0501SV	70-24-0501	70-24-0501SV
3LNE-16S2C	16	400	150	15395	4440	70-0651	70-0651SV	-	-
3LNE-18L2C	18	450	50	20120	5509	70-0651	70-0651SV	-	-
3LNE-18S2C	18	450	150	20120	5509	70-1300	70-1300SV	-	-
3LNE-20L2C	20	500	50	25329	7056	70-1300	70-1300SV	-	-
3LNE-20S2C	20	500	150	25329	7056	70-1800	70-1800SV	-	-
3LNE-24L2C	24	600	50	39396	10267	70-1800	70-1800SV	-	-
3LNE-24S2C	24	600	150	39396	10267	AU-4068	AU-4068SV	-	-
NYF2-C301	30	750	75	52443	18090	AU-4068	AU-4068SV	-	-
NYF2-C300	30	750	150	52443	18090	AU-7080	AU-7080SV	-	-

Stainless Steel Disc

2-Way, 24 VAC and 120 VAC, On/Off & Modulating - Stainless Steel Disc									
Actuator Model Details						Series 70 & AU Series		Series 70	
Valve Model Details	Size		Close-Off psi	Cv		On/Off	Modulating	On/Off	Modulating
	In.	mm		90˚	60˚	120 VAC	120 VAC	24 VAC	24 VAC
3LSE-02S2C	2	50	175	87	66	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-25S2C	2.5	65	175	185	98	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-03S2C	3	80	175	360	171	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-04L2C	4	100	50	740	310	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-04S2C	4	100	175	740	310	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-05L2C	5	125	50	1218	470	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-05S2C	5	125	175	1218	470	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-06L2C	6	150	50	1900	757	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-06S2C	6	150	175	1900	757	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-08L2C	8	200	50	3765	1247	70-0121	70-0121SV	70-24-0201	70-24-0201SV
3LSE-08S2C	8	200	175	3765	1247	70-0201	70-0201SV	70-24-0201	70-24-0201SV
3LSE-10L2C	10	250	50	6661	2005	70-0121	70-0121SV	70-24-0201	70-24-0201SV
3LSE-10S2C	10	250	175	6661	2005	70-0201	70-0201SV	70-24-0201	70-24-0201SV
3LSE-12L2C	12	300	50	10066	2868	70-0201	70-0201SV	70-24-0201	70-24-0201SV
3LSE-12S2C	12	300	175	10066	2868	70-E301	70-E301SV	70-24-0501	70-24-0501SV
3LSE-14S2C	14	350	150	11598	3328	70-0501	70-0501SV	70-24-0501	70-24-0501SV
3LSE-16S2C	16	400	150	15395	4440	70-1300	70-1300SV	-	-
3LSE-18S2C	18	450	150	20120	5509	70-1300	70-1300SV	-	-
3LSE-20S2C	20	500	150	25329	7056	70-1800	70-1800SV	-	-
3LSE-24S2C	24	600	150	39396	10267	AU-4068	AU-4068SV	-	-

Options/Adders
For Heater/Thermostat kit, add "H" to the actuator part number.
For Battery Back-Up Failsafe Option (BBU) option on 24 VAC actuators, add "-BBU".
For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default

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3-Way with Industrial Electric Actuators

Nylon Coated Disc

3-Way, 24 VAC and 120 VAC, On/Off & Modulating - Nylon Coated Disc									
Actuator Model Details						Series 70 & AU Series		Series 70	
Valve Model Details	Size		Close-Off psi	Cv		On/Off	Modulating	On/Off	Modulating
	In.	mm		90°	60°	120 VAC	120 VAC	24 VAC	24 VAC
3LNE-02S3X	2	50	175	87	66	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-25S3X	2.5	65	175	185	98	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-03S3X	3	80	175	360	171	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-04L3X	4	100	50	740	310	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-04S3X	4	100	175	740	310	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-05L3X	5	125	50	1218	470	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-05S3X	5	125	175	1218	470	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-06L3X	6	150	50	1900	757	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-06S3X	6	150	175	1900	757	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LNE-08L3X	8	200	50	3765	1247	70-0121	70-0121SV	70-24-0201	70-24-0201SV
3LNE-08S3X	8	200	175	3765	1247	70-0201	70-0201SV	70-24-0201	70-24-0201SV
3LNE-10L3X	10	250	50	6661	2005	70-0201	70-0201SV	70-24-0201	70-24-0201SV
3LNE-10S3X	10	250	175	6661	2005	70-E301	70-E301SV	70-24-0501	70-24-0501SV
3LNE-12L3X	12	300	50	10066	2868	70-0201	70-0201SV	70-24-0201	70-24-0201SV
3LNE-12S3X	12	300	175	10066	2868	70-0501	70-0501SV	70-24-0501	70-24-0501SV
3LNE-14L3X	14	350	50	11598	3328	70-0501	70-0501SV	70-24-0501	70-24-0501SV
3LNE-14S3X	14	350	150	11598	3328	70-0651	70-0651SV	-	-
3LNE-16L3X	16	400	50	15395	4440	70-0651	70-0651SV	-	-
3LNE-16S3X	16	400	150	15395	4440	70-1300	70-1300SV	-	-
3LNE-18L3X	18	450	50	20120	5509	70-1300	70-1300SV	-	-
3LNE-18S3X	18	450	150	20120	5509	70-1800	70-1800SV	-	-
3LNE-20L3X	20	500	50	25329	7056	70-1800	70-1800SV	-	-
3LNE-20S3X	20	500	150	25329	7056	AU-4068	AU-4068SV	-	-

Stainless Steel Disc

3-Way, 24 VAC and 120 VAC, On/Off & Modulating - Stainless Steel Disc									
Actuator Model Details						Series 70 & AU Series		Series 70	
Valve Model Details	Size		Close-Off psi	Cv		On/Off	Modulating	On/Off	Modulating
	In.	mm		90°	60°	120 VAC	120 VAC	24 VAC	24 VAC
3LSE-02S3X	2	50	175	87	66	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-25S3X	2.5	65	175	185	98	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-03S3X	3	80	175	360	171	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-04L3X	4	100	50	740	310	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-04S3X	4	100	175	740	310	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-05L3X	5	125	50	1218	470	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-05S3X	5	125	175	1218	470	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-06L3X	6	150	50	1900	757	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-06S3X	6	150	175	1900	757	70-0081	70-0081SV	70-24-0081	70-24-0081SV
3LSE-08L3X	8	200	50	3765	1247	70-0121	70-0121SV	70-24-0201	70-24-0201SV
3LSE-08S3X	8	200	175	3765	1247	70-0201	70-0201SV	70-24-0201	70-24-0201SV
3LSE-10L3X	10	250	50	6661	2005	70-0201	70-0201SV	70-24-0201	70-24-0201SV
3LSE-10S3X	10	250	175	6661	2005	70-E301	70-E301SV	70-24-0501	70-24-0501SV
3LSE-12L3X	12	300	50	10066	2868	70-E301	70-E301SV	70-24-0501	70-24-0501SV
3LSE-12S3X	12	300	175	10066	2868	70-0501	70-0501SV	70-24-0501	70-24-0501SV
3LSE-14S3X	14	350	150	11598	3328	70-0651	70-0651SV	-	-
3LSE-16S3X	16	400	150	15395	4440	70-1300	70-1300SV	-	-
3LSE-18S3X	18	450	150	20120	5509	70-1800	70-1800SV	-	-
3LSE-20S3X	20	500	150	25329	7056	AU-4068	AU-4068SV	-	-

Options/Adders
X = 3-Way Assemblies (Refer to Configuration Chart, Page 6)
For Heater/Thermostat kit, add "H" to the actuator part number.
For Battery Back-Up Failsafe Option (BBU) option on 24 VAC actuators, add "-BBU".

2-Way with Series 92 Double Acting Pneumatic Actuators

Nylon Coated Disc

2-Way, Double Acting Pneumatic - Nylon Coated Disc

Actuator Model Details												
Valve Model Details	Size		Close-Off psi	Cv		92-063	92-083	92-119	92-128	92-160	92-210	92-255
	In.	mm		90˚	60˚							
3LNE-02S2C	2	50	175	87	66	X	-	-	-	-	-	-
3LNE-25S2C	2.5	65	175	185	98	X	-	-	-	-	-	-
3LNE-03S2C	3	80	175	360	171	X	-	-	-	-	-	-
3LNE-04L2C	4	100	50	740	310	-	X	-	-	-	-	-
3LNE-04S2C	4	100	175	740	310	-	X	-	-	-	-	-
3LNE-05L2C	5	125	50	1218	470	-	X	-	-	-	-	-
3LNE-05S2C	5	125	175	1218	470	-	X	-	-	-	-	-
3LNE-06L2C	6	150	50	1900	757	-	X	-	-	-	-	-
3LNE-06S2C	6	150	175	1900	757	-	X	-	-	-	-	-
3LNE-08L2C	8	200	50	3765	1247	-	-	X	-	-	-	-
3LNE-08S2C	8	200	175	3765	1247	-	-	X	-	-	-	-
3LNE-10L2C	10	250	50	6661	2005	-	-	X	-	-	-	-
3LNE-10S2C	10	250	175	6661	2005	-	-	X	-	-	-	-
3LNE-12L2C	12	300	50	10066	2868	-	-	X	-	-	-	-
3LNE-12S2C	12	300	175	10066	2868	-	-	-	X	-	-	-
3LNE-14L2C	14	350	50	11598	3328	-	-	-	X	-	-	-
3LNE-14S2C	14	350	150	11598	3328	-	-	-	-	X	-	-
3LNE-16L2C	16	400	50	15395	4440	-	-	-	-	X	-	-
3LNE-16S2C	16	400	150	15395	4440	-	-	-	-	-	X	-
3LNE-18L2C	18	450	50	20120	5509	-	-	-	-	-	X	-
3LNE-18S2C	18	450	150	20120	5509	-	-	-	-	-	X	-
3LNE-20L2C	20	500	50	25329	7056	-	-	-	-	-	X	-
3LNE-20S2C	20	500	150	25329	7056	-	-	-	-	-	-	X
3LNE-24L2C	24	600	50	39396	10267	-	-	-	-	-	-	X
NYF2-C301	30	750	75	52443	18090	-	-	-	-	-	-	X

2-Way, Spring Return Pneumatic - Nylon Coated Disc

Actuator Model Details						Series 98 Pneumatic Scotch Yoke (Fail Close)	
Valve Model Details	Size		Close-Off psi	Cv		98-45E2-12-DA	98-14E3-12-DA-C
	In.	mm		90˚	60˚		
3LNE-24S2C	24	600	150	39396	10267	X	-
NYF2-C300	30	750	150	52443	18090	-	X

Stainless Steel Disc

2-Way, Double Acting Pneumatic - Stainless Steel Disc

Actuator Model Details												
Valve Model Details	Size		Close-Off psi	Cv		92-063	92-083	92-119	92-128	92-160	92-210	92-255
	In.	mm		90˚	60˚							
3LSE-02S2C	2	50	175	87	66	X	-	-	-	-	-	-
3LSE-25S2C	2.5	65	175	185	98	X	-	-	-	-	-	-
3LSE-03S2C	3	80	175	360	171	X	-	-	-	-	-	-
3LSE-04L2C	4	100	50	740	310	-	X	-	-	-	-	-
3LSE-04S2C	4	100	175	740	310	-	X	-	-	-	-	-
3LSE-05L2C	5	125	50	1218	470	-	X	-	-	-	-	-
3LSE-05S2C	5	125	175	1218	470	-	X	-	-	-	-	-
3LSE-06L2C	6	150	50	1900	757	-	X	-	-	-	-	-
3LSE-06S2C	6	150	175	1900	757	-	X	-	-	-	-	-
3LSE-08L2C	8	200	50	3765	1247	-	-	X	-	-	-	-
3LSE-08S2C	8	200	175	3765	1247	-	-	X	-	-	-	-
3LSE-10L2C	10	250	50	6661	2005	-	-	X	-	-	-	-
3LSE-10S2C	10	250	175	6661	2005	-	-	X	-	-	-	-
3LSE-12L2C	12	300	50	10066	2868	-	-	X	-	-	-	-
3LSE-12S2C	12	300	175	10066	2868	-	-	-	X	-	-	-
3LSE-14S2C	14	350	150	11598	3328	-	-	-	-	X	-	-
3LSE-16S2C	16	400	150	15395	4440	-	-	-	-	-	X	-
3LSE-18S2C	18	450	150	20120	5509	-	-	-	-	-	X	-
3LSE-20S2C	20	500	150	25329	7056	-	-	-	-	-	-	X

Options/Adders
* For Manual Override, add "-5" to the end of the part number.
For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default

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3-Way with Series 92 Double Acting Pneumatic Actuators

Nylon Coated Disc

3-Way, Double Acting Pneumatic - Nylon Coated Disc

Actuator Model Details						92-063	92-083	92-119	92-160	92-210	92-255
Valve Model Details	Size		Close-Off psi	Cv							
	In.	mm		90˚	60˚						
3LNE-02S3X	2	50	175	87	66	X	-	-	-	-	-
3LNE-25S3X	2.5	65	175	185	98	X	-	-	-	-	-
3LNE-03S3X	3	80	175	360	171	X	-	-	-	-	-
3LNE-04L3X	4	100	50	740	310	X	-	-	-	-	-
3LNE-04S3X	4	100	175	740	310	X	-	-	-	-	-
3LNE-05L3X	5	125	50	1218	470	X	-	-	-	-	-
3LNE-05S3X	5	125	175	1218	470	-	X	-	-	-	-
3LNE-06L3X	6	150	50	1900	757	-	X	-	-	-	-
3LNE-06S3X	6	150	175	1900	757	-	X	-	-	-	-
3LNE-08L3X	8	200	50	3765	1247	-	-	X	-	-	-
3LNE-08S3X	8	200	175	3765	1247	-	-	X	-	-	-
3LNE-10L3X	10	250	50	6661	2005	-	-	X	-	-	-
3LNE-10S3X	10	250	175	6661	2005	-	-	X	-	-	-
3LNE-12L3X	12	300	50	10066	2868	-	-	X	-	-	-
3LNE-12S3X	12	300	175	10066	2868	-	-	-	X	-	-
3LNE-14L3X	14	350	50	11598	3328	-	-	-	X	-	-
3LNE-14S3X	14	350	150	11598	3328	-	-	-	-	X	-
3LNE-16L3X	16	400	50	15395	4440	-	-	-	-	X	-
3LNE-16S3X	16	400	150	15395	4440	-	-	-	-	-	X
3LNE-18L3X	18	450	50	20120	5509	-	-	-	-	X	-
3LNE-18S3X	18	450	150	20120	5509	-	-	-	-	-	X
3LNE-20L3X	20	500	50	25329	7056	-	-	-	-	X	-
3LNE-20S3X	20	500	150	25329	7056	-	-	-	-	-	X

Stainless Steel Disc

3-Way, Double Acting Pneumatic - Stainless Steel Disc

Actuator Model Details						92-063	92-083	92-119	92-128	92-160	92-210	92-255
Valve Model Details	Size		Close-Off psi	Cv								
	In.	mm		90˚	60˚							
3LSE-02S3X	2	50	175	87	66	X	-	-	-	-	-	-
3LSE-25S3X	2.5	65	175	185	98	X	-	-	-	-	-	-
3LSE-03S3X	3	80	175	360	171	X	-	-	-	-	-	-
3LSE-04L3X	4	100	50	740	310	X	-	-	-	-	-	-
3LSE-04S3X	4	100	175	740	310	-	X	-	-	-	-	-
3LSE-05L3X	5	125	50	1218	470	-	X	-	-	-	-	-
3LSE-05S3X	5	125	175	1218	470	-	X	-	-	-	-	-
3LSE-06L3X	6	150	50	1900	757	-	X	-	-	-	-	-
3LSE-06S3X	6	150	175	1900	757	-	X	-	-	-	-	-
3LSE-08L3X	8	200	50	3765	1247	-	-	X	-	-	-	-
3LSE-08S3X	8	200	175	3765	1247	-	-	X	-	-	-	-
3LSE-10L3X	10	250	50	6661	2005	-	-	X	-	-	-	-
3LSE-10S3X	10	250	175	6661	2005	-	-	-	X	-	-	-
3LSE-12L3X	12	300	50	10066	2868	-	-	X	-	-	-	-
3LSE-12S3X	12	300	175	10066	2868	-	-	-	-	X	-	-
3LSE-14S3X	14	350	150	11598	3328	-	-	-	-	-	X	-
3LSE-16S3X	16	400	150	15395	4440	-	-	-	-	-	-	X
3LSE-18S3X	18	450	150	20120	5509	-	-	-	-	-	-	X
3LSE-20S3X	20	500	150	25329	7056	-	-	-	-	-	-	X

Options/Adders
X = 3-Way Assemblies (Refer to Configuration Chart, Page 6)
* For Manual Override, add "-5" to the end of the part number.

2-Way with Series 93 & 98 Spring Return Pneumatic Actuators

Nylon Coated Disc

2-Way, Spring Return Pneumatic - Nylon Coated Disc							
Actuator Model Details						Normally Closed (Fail Closed)	Normally Open (Fail Open)
Valve Model Details	Size		Close-Off psi	Cv			
	In.	mm		90˚	60˚		
3LNE-02S2C	2	50	175	87	66	93-0833	93-0832
3LNE-25S2C	2.5	65	175	185	98	93-0833	93-0832
3LNE-03S2C	3	80	175	360	171	93-0834	93-0833
3LNE-04L2C	4	100	50	740	310	93-0833	93-0833
3LNE-04S2C	4	100	175	740	310	93-0836	93-0834
3LNE-05L2C	5	125	50	1218	470	93-0835	93-0834
3LNE-05S2C	5	125	175	1218	470	93-0935	93-0934
3LNE-06L2C	6	150	50	1900	757	93-0935	93-0934
3LNE-06S2C	6	150	175	1900	757	93-1194	93-1193
3LNE-08L2C	8	200	50	3765	1247	93-1194	93-1193
3LNE-08S2C	8	200	175	3765	1247	93-1603	93-1284
3LNE-10L2C	10	250	50	6661	2005	93-1603	93-1283
3LNE-10S2C	10	250	175	6661	2005	93-1605	93-1603
3LNE-12L2C	12	300	50	10066	2868	93-1604	93-1603
3LNE-12S2C	12	300	175	10066	2868	93-2103	93-2102
3LNE-14L2C	14	350	50	11598	3328	93-2103	93-2102
3LNE-14S2C	14	350	150	11598	3328	93-2106	93-2104
3LNE-16L2C	16	400	50	15395	4440	93-2105	93-2103
3LNE-16S2C	16	400	150	15395	4440	93-2554	93-2553
3LNE-18L2C	18	450	50	20120	5509	93-2105	93-2103
3LNE-18S2C	18	450	150	20120	5509	93-2555	93-2553
3LNE-20L2C	20	500	50	25329	7056	93-2553	93-2552
3LNE-20S2C	20	500	150	25329	7056	93-2556	93-2554

2-Way, Spring Return Pneumatic - Nylon Coated Disc									
Actuator Model Details						Series 98 Pneumatic Scotch Yoke (Fail Close)			
Valve Model Details	Size		Close-Off psi	Cv		98-45E2-12-SR3	98-73E2-14-SR4-C	98-73E2-14-SR3-C	98-14E3-14-SR3-C
	In.	mm		90˚	60˚				
3LNE-24L2C	24	600	50	39396	10267	X	-	-	-
3LNE-24S2C	24	600	150	39396	10267	-	X	-	-
NYF2-C301	30	750	75	52443	18090	-	-	X	-
NYF2-C300	30	750	150	52443	18090	-	-	-	41094

Stainless Steel Disc

2-Way, Spring Return Pneumatic - Stainless Steel Disc							
Actuator Model Details						Normally Closed (Fail Closed)	Normally Open (Fail Open)
Valve Model Details	Size		Close-Off psi	Cv			
	In.	mm		90˚	60˚		
3LSE-02S2C	2	50	175	87	66	93-0833	93-0832
3LSE-25S2C	2.5	65	175	185	98	93-0833	93-0833
3LSE-03S2C	3	80	175	360	171	93-0834	93-0833
3LSE-04L2C	4	100	50	740	310	93-0834	93-0833
3LSE-04S2C	4	100	175	740	310	93-0935	93-0933
3LSE-05L2C	5	125	50	1218	470	93-0835	93-0834
3LSE-05S2C	5	125	175	1218	470	93-1193	93-1194
3LSE-06L2C	6	150	50	1900	757	93-0935	93-0934
3LSE-06S2C	6	150	175	1900	757	93-1194	93-1193
3LSE-08L2C	8	200	50	3765	1247	93-1195	93-1193
3LSE-08S2C	8	200	175	3765	1247	93-1603	93-1283
3LSE-10L2C	10	250	50	6661	2005	93-1603	93-1283
3LSE-10S2C	10	250	175	6661	2005	93-1605	93-1603
3LSE-12L2C	12	300	50	10066	2868	93-1605	93-1603
3LSE-12S2C	12	300	175	10066	2868	93-2104	93-2103
3LSE-14S2C	14	350	150	11598	3328	93-2553	93-2552
3LSE-16S2C	16	400	150	15395	4440	93-255	93-2554
3LSE-18S2C	18	450	150	20120	5509	93-2553	93-2553

2-Way, Spring Return Pneumatic - Stainless Steel Disc							
Actuator Model Details						Series 98 Pneumatic Scotch Yoke (Fail Close)	
Valve Model Details	Size		Close-Off psi	Cv		98-45E2-12-SR3	98-14E3-14-SR3-C
	In.	mm		90˚	60˚		
3LSE-20S2C	20	500	150	25329	7056	X	-
3LSE-24S2C	24	600	150	39396	10267	X	-
NYF2-C301	30	750	75	52443	18090	X	-
NYF2-C300	30	750	150	52443	18090	-	X

Options/Adders
* For Manual Override, add "-5" to the end of the part number.
For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default

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3-Way with Series 93 Spring Return Pneumatic Actuators

Nylon Coated Disc

3-Way, Spring Return Pneumatic - Nylon Coated Disc

Actuator Model Details											
Valve Model Details	Size		Close-Off psi	Cv		93-0834	93-0935	93-1194	93-1605	93-2105	93-2554
	In.	mm		90˚	60˚						
3LNE-02S3X	2	50	175	87	66	X	-	-	-	-	-
3LNE-25S3X	2.5	65	175	185	98	X	-	-	-	-	-
3LNE-03S3X	3	80	175	360	171	X	-	-	-	-	-
3LNE-04L3X	4	100	50	740	310	X	-	-	-	-	-
3LNE-04S3X	4	100	175	740	310	-	X	-	-	-	-
3LNE-05L3X	5	125	50	1218	470	-	X	-	-	-	-
3LNE-05S3X	5	125	175	1218	470	-	-	X	-	-	-
3LNE-06L3X	6	150	50	1900	757	-	X	-	-	-	-
3LNE-06S3X	6	150	175	1900	757	-	-	X	-	-	-
3LNE-08L3X	8	200	50	3765	1247	-	-	X	-	-	-
3LNE-08S3X	8	200	175	3765	1247	-	-	-	X	-	-
3LNE-10L3X	10	250	50	6661	2005	-	-	-	X	-	-
3LNE-10S3X	10	250	175	6661	2005	-	-	-	X	-	-
3LNE-12L3X	12	300	50	10066	2868	-	-	-	X	-	-
3LNE-12S3X	12	300	175	10066	2868	-	-	-	-	X	-
3LNE-14L3X	14	350	50	11598	3328	-	-	-	-	X	-
3LNE-14S3X	14	350	150	11598	3328	-	-	-	-	-	X
3LNE-16L3X	16	400	50	15395	4440	-	-	-	-	-	X
3LNE-18L3X	18	450	50	20120	5509	-	-	-	-	-	X
3LNE-20L3X	20	500	50	25329	7056	-	-	-	-	-	X

Stainless Steel Disc

3-Way, Spring Return Pneumatic - Stainless Steel Disc

Actuator Model Details											
Valve Model Details	Size		Close-Off psi	Cv		93-0835	93-0935	93-1195	93-1605	93-2105	93-2554
	In.	mm		90˚	60˚						
3LSE-02S3X	2	50	175	87	66	X	-	-	-	-	-
3LSE-25S3X	2.5	65	175	185	98	X	-	-	-	-	-
3LSE-03S3X	3	80	175	360	171	X	-	-	-	-	-
3LSE-04L3X	4	100	50	740	310	X	-	-	-	-	-
3LSE-04S3X	4	100	175	740	310	-	X	-	-	-	-
3LSE-05L3X	5	125	50	1218	470	X	-	-	-	-	-
3LSE-05S3X	5	125	175	1218	470	-	-	X	-	-	-
3LSE-06L3X	6	150	50	1900	757	-	X	-	-	-	-
3LSE-06S3X	6	150	175	1900	757	-	-	X	-	-	-
3LSE-08L3X	8	200	50	3765	1247	-	-	X	-	-	-
3LSE-08S3X	8	200	175	3765	1247	-	-	-	X	-	-
3LSE-10L3X	10	250	50	6661	2005	-	-	-	X	-	-
3LSE-10S3X	10	250	175	6661	2005	-	-	-	X	-	-
3LSE-12L3X	12	300	50	10066	2868	-	-	-	X	-	-
3LSE-12S3X	12	300	175	10066	2868	-	-	-	-	X	-
3LSE-14S3X	14	350	150	11598	3328	-	-	-	-	-	X
3LSE-16S3X	16	400	150	15395	4440	-	-	-	-	-	X
3LSE-18S3X	18	450	150	20120	5509	-	-	-	-	-	X
3LSE-20S3X	20	500	150	25329	7056	-	-	-	-	-	X

Options/Adders
X = 3-Way Assemblies (Refer to Configuration Chart, Page 6)
* For Manual Override, add "-5" to the end of the part number.

3L Series - Valve Sizing Tips

Step One

Determine the designed Cv by using the following equation.*

$$Cv = \frac{Q\sqrt{G}}{\sqrt{\Delta P}}$$

Where
Q = Flow in gallons per minute (GPM) required to pass through the valve
G = Specific gravity of fluid**
ΔP = Designed pressure drop across the valve in psi
Cv = Flow coefficient

Notes

** Specific gravity is negligible (equal to 1) for water below 200˚F. Use actual specific gravity of pure fluids other than water. In most cases, the valve selected for a H_2O mixture will not be affected by the specific gravity.

Example

The Specific Gravity of 50% Water (Compound 1) and 50% Ethylene Glycol Solution (Compound 2):

$$\frac{1}{\text{Specific Gravity}} = \frac{0.5}{1.0} + \frac{0.5}{1.113} = 1.05$$

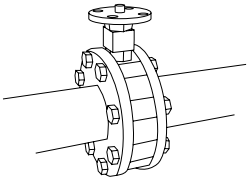
$$\frac{1}{G_{soln}} = \frac{\text{wt\% of Compound 1}}{\text{Specific Gravity (G)}} + \frac{\text{wt\% of Compound 2}}{\text{Specific Gravity (G)}}$$

Step Two

Determine whether the valve should be line size or sized to match the designed pressure drop (typical for modulating applications where precise control is required.)

Option 1

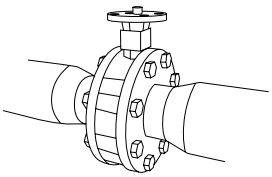
LINE SIZE
On/Off Valves
Select the valve size to equal the pipe size.



Option 2

SIZE FOR MODULATING CONTROL
Modulating Valves
Size the valve for design flow at 60 degrees open.

60˚ rotation for modulating control



Step Three

Determine the actual pressure drop using the below equation.

$$\Delta P = \left(\frac{Q\sqrt{G}}{Cv} \right)^2$$

If the pressure drop is acceptable†, go to Step 4.
If not, repeat Steps 2 and 3, selecting an alternate valve.

Step Four

Check to be sure that the Close-Off requirements are met. Refer to Page 3L-12 - 3L-22.

† Recommended to be no higher than 25 psi or match the designed pressure drop, 3, 4, 5, and 6 psi are commonly accepted for modulating applications.
* For modulating butterfly valves, size for design flow at 60˚ rotation

Bray COMMERCIAL

NY/AB Series

Resilient Seated Butterfly Valves

2-Way — 2"- 30" and 3-Way — 2"- 20"

CONTENTS

DOCUMENT
- Features
- Valve Specs
- Sizing/Install Tips
- Piping Geometry
- Dimensions
- Close-Off's

LOOKING FOR MORE

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Application

Bray's NY/AB Series resilient-seated butterfly valves set the standard for quality, reliability, and long service life across a wide range of HVAC applications. The valves are available with nylon-coated, aluminum-bronze, or stainless-steel discs, and all three disc configurations use peroxide-cured EPDM seats.

Designed specifically for automated chilled-water, hot-water, and condenser-water applications, every automated NY/AB Series butterfly valve is factory tested to verify bubble-tight shutoff and low seating and unseating torque. Two-way configurations are available in sizes through 30 inches, while three-way configurations are available in sizes from 2 through 20 inches.

Actuation options include industrial electric, commercial electric, high-pressure pneumatic, and low-pressure pneumatic actuators. Spring-return and non-spring-return configurations are available for on/off and modulating-control applications. Differential-pressure ratings are available for both high-close-off requirements of up to 175 psi and low-close-off requirements of 50 psi.



Features and Benefits

- **High purity Peroxide Cured EPDM seats**

  Low torque and superior rubber stability over the shelf life and service life of the valve

- **Nylon coated ductile iron disc - NY Series**

  Superior corrosion and abrasion resistance extends the life of the valve
  Reduced torque requirements

- **Internal disc-to-stem connection**

  High strength and easy serviceability

- **Wide variety of direct mount actuators**

  Reduces size, cost and hysteresis

- **Full and 50 psi close-off pressure ratings available**

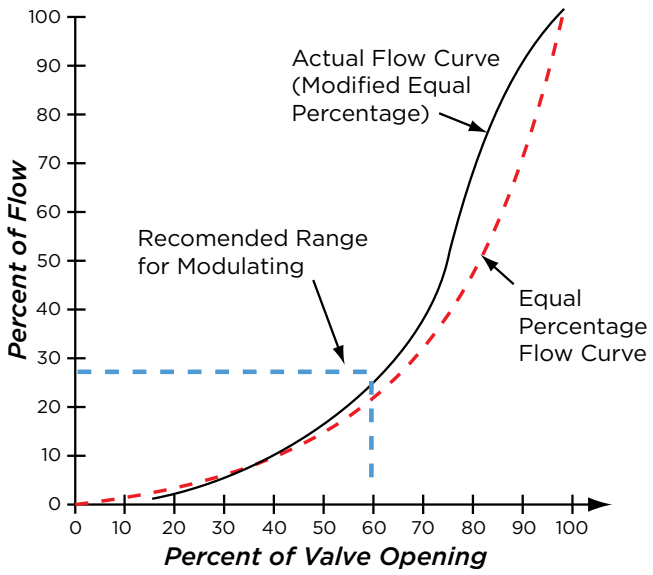
  For maximum actuator pricing efficiency

NY/AB Series Butterfly Valves - Valve Body Specifications

Technical Specifications		
Service	Hot Water, Chilled Water, Condenser Water up to 50% Glycol	
Size Range	**2-Way** **3-Way**	2″ through 30″ (DN 50 to 750) 2″ through 20″ (DN 50 to 500)
Body Style	One Piece Lug, 2-Way and 3-Way, for ANSI 125 and ANSI 150 flanges	
Flow Characteristics	Modified Equal Percentage – See Page NY/AB-3	
Flow Coefficients	See Piping Gemotery Charts on Page NY/AB-9	
Fluid Temperature Limits	-20 to 250˚F (-28 to 121˚C)	
Maximum Fluid Velocity	30 ft/second (9 m/second)	
Leakage	Bubble tight at rated maximum differential pressure	
Body Cold Working Pressure Ratings	250 psi (17.2 Bar)	
Close-Off - Pressure Ratings	**2″ to 12″**	Valve part numbers ending in “0” — 175 psi
	14″ to 30″	Valve part numbers ending in “0” — 150 psi
	2″ to 20″	Valve part numbers ending in “1” — 50 psi
	24″ to 30″	Valve part numbers ending in “1” — 75 psi
	See pages NY/AB-12 to NY/AB-22	
Materials (other materials available upon request)	**Body**	Cast Iron - 2″ Extended Neck; Polyester Powder Coated
	Disc	NY - Ductile Iron, Nylon 11 Coated AB - Aluminum Bronze SS - 316 Stainless Steel
	Seat	EPDM (Ethylene Propylene Diene Monomer) - Peroxide Cured - Replaceable
	Stem	416 Stainless Steel
	Tee	Ductile Iron (3-way valves only)
Weights	See Dimensions	
Design Standard	MSS SP-67, API 609, Category A	
Testing Standard	MSS SP-61, API 598, EN 12266-1	
Face to Face	MSS SP-67, API 609, Category A, EN 558	
Approvals & Certifications	ABS, ATEX, Bureau Veritas, CRN, DNV, FDA 21 CFR 177.1550, NSF 61/372, PED, PE(S)R	

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

NY/AB Series Butterfly Valves - Equal Percentage Flow Curve Chart



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Disc to Stem Connection

The NY/AB Series offers Double "D" precision machined flats on the stem and in the disc. The internal, non-wetted connections eliminate exposed external disc to stem connections.
The disc and the stem connection minimizes hysteresis and produces maximum strength engagements. All stem designs incorporate a blowout proof feature.



NY - (Nylon 11 Coating)

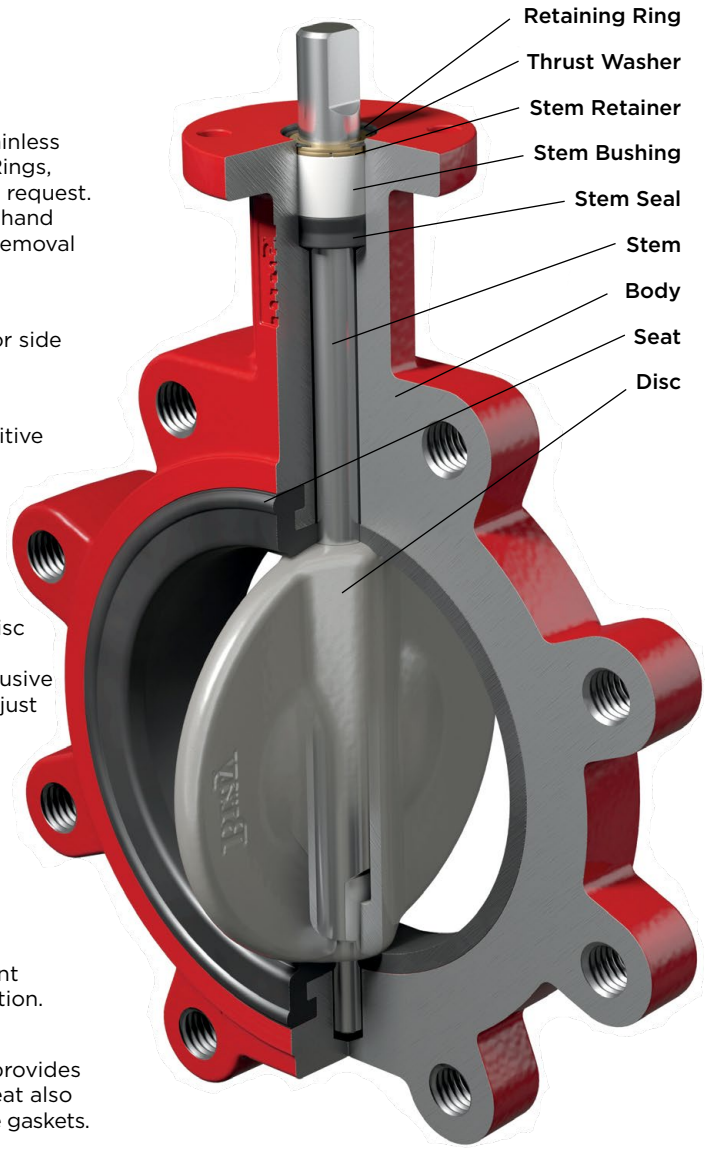
Nylon 11 has superior corrosion resistance and has been used successfully as a disc coating in many applications.

Weatherability

Bray's Nylon 11 coating has been salt spray tested in excess of 2000 hours and used in seawater immersion service for over 30 years without any deterioration of the coating resulting in no corrosion to the coated metal components.

Seat Design

The seat is designed to seal with slip-on or weld-neck flanges and the molded O-Ring eliminates the need for flange gaskets. The tongue and groove locks the seat in place and makes the valve dead end capable.



STEM RETAINING ASSEMBLY

The stem is retained in the body by means of a unique Stainless Steel Spirolox® retaining ring, a thrust washer and two C-Rings, manufactured from brass as standard, stainless steel upon request. The retaining ring may be easily removed with a standard hand tool. The stem retaining assembly prevents unintentional removal of the stem during field service..

STEM BUSHING

Non-corrosive, heavy duty acetal bushing absorbs actuator side thrust.

STEM SEAL

Double "U" cup seal design is self-adjusting and gives positive sealing in both directions.

NECK

Extended neck length allows for 2" of piping insulation and is easily accessible for mounting actuators.

STEM

Precision double "D" disc to stem connection drives the disc without the need for screws or pins. The close tolerance, double "D" connection that drives the valve disc is an exclusive feature of the Bray valve. Disassembly of the Bray stem is just a matter of pulling the stem out of the disc.

PRIMARY & SECONDARY SEALS

These seals prevent line media from coming in contact with the stem or body. Primary Seal is achieved by an interference fit of the molded seat flat with the disc hub. Secondary Seal is created because the stem diameter is greater than the diameter of the seat stem hole.

BODY

One-piece wafer or lug style. Polyester coating for excellent corrosion resistance. Nylon 11 coating is available as an option.

SEAT

Bray's tongue and groove seat design lowers torque and provides complete isolation of flowing media from the body. The seat also features a molded O-Ring which eliminates the use of flange gaskets.

DISC

Casting is spherically machined and hand polished to provide a bubble-tight shutoff, minimum torque, and longer seat life.

NY/AB Series Butterfly Valves - Cv's at Various Angles of Openings

Low and Standard Pressure Cv Disc Values									
	ANGLE OF DISC OPENING								
Valve Size	10°	20°	30°	40°	50°	60°*	70°	80°	90°
2"	1	7	16	27	43	61	84	114	144
2.5"	1.5	11	24	43	67	107	163	223	282
3"	2	15	35	61	96	154	267	364	461
4"	3	27	62	109	171	274	496	701	841
5"	5	43	98	170	268	428	775	1146	1376
6"	6	56	129	225	354	567	1025	1543	1850
8"	12	102	241	421	680	1081	1862	2842	3316
10"	19	162	382	667	1076	1710	2948	4525	5430
12"	27	235	555	1005	1594	2563	4393	6731	8077
14"	34	299	756	1320	2149	3384	5939	9974	10538
16"	45	397	1001	1749	2847	4483	7867	11761	13966
18"	58	507	1281	2237	3643	5736	10062	14496	17214
20"	72	632	1595	2786	4536	7144	12535	18812	22339
24"	259	1028	2387	4244	6962	11040	18235	27186	33154
30"	420	1652	3986	7080	11328	18090	28844	43003	52443

* When selecting a butterfly valve for a modulating application, use a valve where the calculated Cv falls between 0 - 60 degrees.

NY/AB Series Butterfly Valves - Applications

Bray Butterfly Valves for HVAC Applications
Bray is the largest butterfly valve manufacturer in the western hemisphere for a reason. Bray's in house design team and Bray owned ISO 9001 manufacturing facilities have over 30 years of experience with this product. Our track record of reliability in thousands of installations over time bear this out.

Bray Commercial Division offers two distinct lines of butterfly valves for HVAC applications. These low torque, high cycle life designs have emerged as the design standard in the commercial building market worldwide.

Comparative Valve Specifications		
	NY/AB Series	MK Series
Design	Resilient Seated, Nylon Coated, Aluminium Bronze or Stainless Steel Disc	Double Offset, Pressure assisted, but not pressure dependent seat design. Stainless Steel Disc
Maximum Close-Off Pressure	175 psi	ANSI 150- 285 psi ANSI 300- 740 psi
Temperature Rating	-20° F to 250°F	-40° F to 500°F

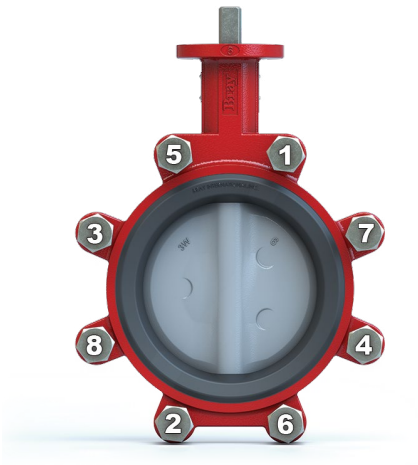


Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

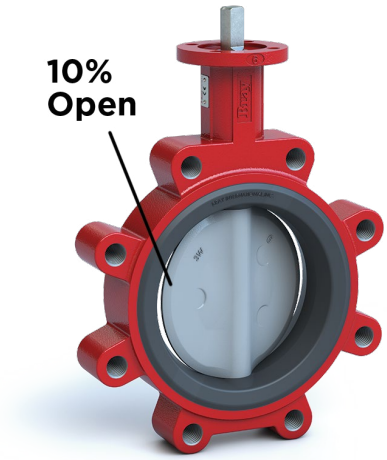
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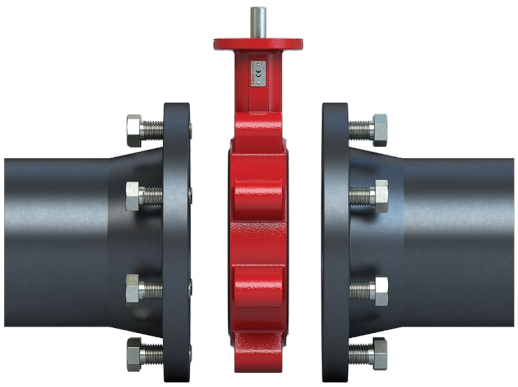
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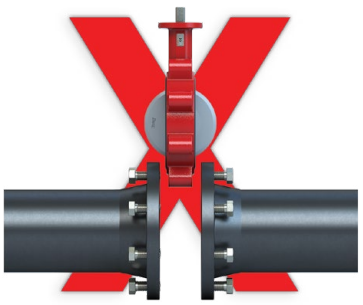
Valve Size	Bolt Size - inches	Maximum Bolt Torque Requirement (ft-lbs)
2" & 2.5"	5/8 - 11 Threads UNC-2B	30
3"	5/8 - 11 Threads UNC-2B	35
4"	5/8 - 11 Threads UNC-2B	35 - 40
5"	3/4 - 10 Threads UNC-2B	35 - 45
6"	3/4 - 10 Threads UNC-2B	35 - 50
8"	3/4 - 10 Threads UNC-2B	45 - 55
10"	7/8 - 9 Threads UNC-2B	55 - 75
12"	7/8 - 9 Threads UNC-2B	65 - 110
14" & 16"	1 - 8 Threads UN-2B	75 - 120
18" & 20"	1-1/8 - 7 Threads UN-2B	85 - 130
24"	1-1/4 - 7 Threads UN-2B	150 - 155
30"	1-1/4 - 7 Threads UN-2B	150 - 155



Lower the valve into the open pipe work with the disc in the 10˚ open position. Valves with non-spring actuators are shipped in this position.



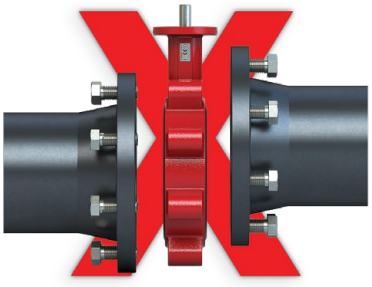
Once the valve is placed in the pipe work, turn the disc to the full-open position. Gradually remove the flange spreaders. Center the valve body to the flanges, and tighten the bolts hand-tight. Slowly close the valve clockwise to check for adequate disc clearance. Return disc to full-open position and cross tighten all bolts to proper torque specification (see tightening pattern above). DO NOT install with disc in fully closed position. This will cause seat distortion. When flange bolts are tightened, rubber will close around disc edge creating excessive torque in initial operation.



DO NOT lower the valve into the pipe with the pipe work spread in sufficiently or with the disc in the fully open position. This can lead to disc edge damage and can impact the flange.



DO NOT USE FLANGE GASKETS The Butterfly Valve seat has a molded-in O-Ring that creates a positive seal against standard ANSI flange faces*.



INCORRECT pipe alignment will cause interference between disc edge and flange face creating leakage, excessive torque, and damage to disc and seat.

* When installing valve in a grooved-type piping system, consult piping manufacturer's specification to choose proper sealing surface. Installing valve without proper surface may cause damage to the valve seat or leakage at the valve.

NY/AB Series - Valve Sizing Tips

Step One

Determine the designed Cv by using the following equation.*

$$Cv = \frac{Q\sqrt{G}}{\sqrt{\Delta P}}$$

Where
Q = Flow in gallons per minute (GPM) required to pass through the valve
G = Specific gravity of fluid**
ΔP = Designed pressure drop across the valve in psi
Cv = Flow coefficient

Notes

** Specific gravity is negligible (equal to 1) for water below 200˚F. Use actual specific gravity of pure fluids other than water. In most cases, the valve selected for a H_2O mixture will not be affected by the specific gravity.

Example

The Specific Gravity of 50% Water (Compound 1) and 50% Ethylene Glycol Solution (Compound 2):

$$\frac{1}{\text{Specific Gravity}} = \frac{0.5}{1.0} + \frac{0.5}{1.113} = 1.05$$

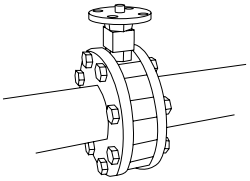
$$\frac{1}{G_{soln}} = \frac{\text{wt\% of Compound 1}}{\text{Specific Gravity (G)}} + \frac{\text{wt\% of Compound 2}}{\text{Specific Gravity (G)}}$$

Step Two

Determine whether the valve should be line size or sized to match the designed pressure drop (typical for modulating applications where precise control is required.)

Option 1

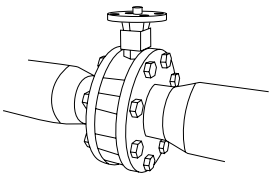
LINE SIZE
On/Off Valves
Select the valve size to equal the pipe size.



Option 2

SIZE FOR MODULATING CONTROL
Modulating Valves
Size the valve for design flow at 60 degrees open.

60˚ rotation for modulating control



Step Three

Determine the actual pressure drop using the below equation.

$$\Delta P = \left(\frac{Q\sqrt{G}}{Cv} \right)^2$$

If the pressure drop is acceptable†, go to Step 4.
If not, repeat Steps 2 and 3, selecting an alternate valve.

Step Four

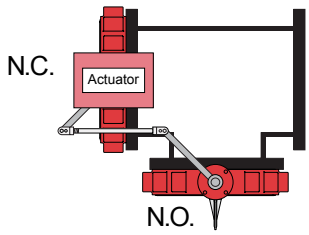
Check to be sure that the Close-Off requirements are met. Refer to Page NY/AB-13 - NY/AB-21.

† Recommended to be no higher than 25 psi or match the designed pressure drop, 3, 4, 5, and 6 psi are commonly accepted for modulating applications.
* For modulating butterfly valves, size for design flow at 60˚ rotation

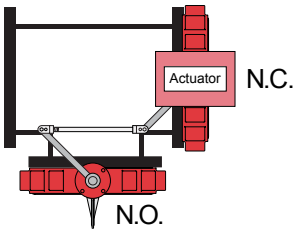
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Spring Return and Non-Spring Return

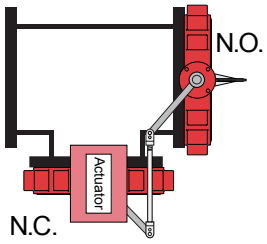
Configuration 1



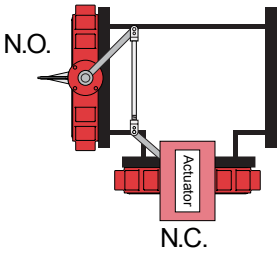
Configuration 2



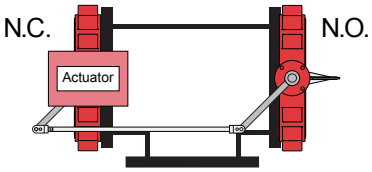
Configuration 3



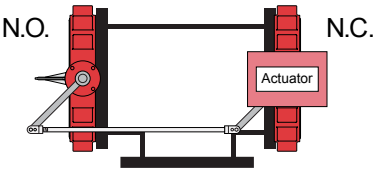
Configuration 4



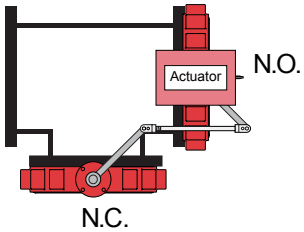
Configuration 5



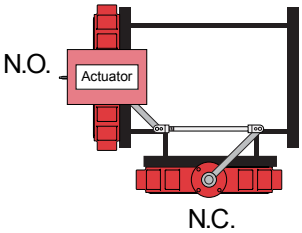
Configuration 6



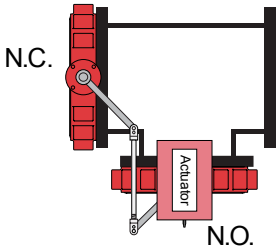
Configuration 7



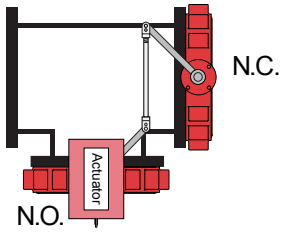
Configuration 8



Configuration 9



Configuration 10
(PN placeholder is 0)



Note: All 3-Way butterfly valve assembly orders should have configuration specified. Pricing remains the same, however Bray must know the specifications in order to manufacture the appropriate linkage kit.

Note: Configurations 7, 8, 9, & 10 with power fail-safe actuators will be configured as Forward Acting & Fail Open. Actuators without power fail-safe capabilities will be set to Reverse Acting, when configurable.

Note: Unless otherwise requested valve will be shipped as illustrated by Configuration 3.

NY/AB Series Butterfly Valves - Part Number Matrix

NY **AB** **SS**	Series 31, 35, & 36 Cast Iron Body, Nylon-Coated Ductile Iron Disc, 416 SS Stem, EPDM Seat. Series 31 Cast Iron Body, Aluminum-Bronze Disc, 416 SS Stem, EPDM Seat. Series 31, 35, & 36 Cast Iron Body, 316 Stainless Steel Disc, 416 SS Stem, EPDM Seat.										Valve Series
	L Lug Body **F** Flange Body										Body Type
		2 2-Way Valve Assembly **3** 3-Way Valve Assembly									Valve Type
			-								
				C 2-way Assembly, Normally Closed **N** 2-way Assembly, Normally Open **X** For 3-Way only - (X= Configuration # - See page NY/AB-6)							Configuration
					XX Size (in.) 08=8", 12=12", etc.							Valve Size
						0 Series 31 Cast Iron Body, 175 psi 2"-12", 150 psi 14"-20" **1** Series 31 Cast Iron Body, 50 psi 4"-20" (reduced dia. disc)					Valve Shut-Off Rating
							/				
								70-xxxx Series 70 Electric Actuators **AU** Auma Actuators **92-xxx** High Pressure Pneumatic, Double Acting **93-xxx** High Pressure Pneumatic, Spring Return **98-xxx** High Pressure Pneumatic, Spring Return **D or DC** Commercial Electric Actuators			Actuator
									SV Servo Card for 0-10 VDC or 4-20 mA modulation **H** Anti-Condensation Heater **BBU** Battery Back-Up Unit			Electric Actuator Accessories
										-S 120 VAC Solenoid Valve **-S4** 24 VAC Solenoid Valve **-SW** Valve Status Monitor for Pneumatic Actuator **-C** 1-Set Speed Controls for Solenoids **-P** 3-15 psi Pneumatic Positioner **-EP** 4-20 mA Electro-Pneumatic Positioner **-05** Declutchable Handwheel Manual Override	Pneumatic Actuator Accessories
NY	**L**	**2**	**-**	**C**	**12**	**1**	**/**	**70-E301**	**SVH**	**12" lugged 2-way butterfly valve, cast iron body, undercut nylon coated ductile iron disc, 416 SS Stem, EPDM Seat, Series 70-E301, 120 VAC modulating electric actuator with heater**		Examples

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2-Way & 3-Way PIPING GEOMETRY CHART - Adjusted Cv at 60° Rotation

Valve Size	Model Number	Nominal Cv	Pipe Size																			
			2"	2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	34"
2"	_ _ L*-C020	61	61	59	57	55	54															
2.5"	_ _ L*-C025	107		107	104	98	94	92														
3"	_ _ L*-C030	154			154	140	140	136	131													
4"	_ _ L*-C040	274				274	265	255	242	235												
5"	_ _ L*-C050	428					428	418	393	378	370											
6"	_ _ L*-C060	567						567	545	524	510	501										
8"	_ _ L*-C080	1081							1081	1048	1008	980										
10"	_ _ L*-C100	1710								1710	1671	1617	1572									
12"	_ _ L*-C120	2563									2563	2516	2441	2374								
14"	_ _ L*-C140	3384										3384	3338	3258	3182							
16"	_ _ L*-C160	4483											4483	4432	4340	4246						
18"	_ _ L*-C180	5736												5736	5682	5577	5466					
20"	_ _ L*-C200	7144													7144	7087	6971	6843				
24"	_ _ F2-C240	11040															11040	11021	10953			
30"	_ _ F2-C300	18090																		18090	18064	17937

C = Normally Closed - Factory Default
N = Normally Open

* = **2** (2-Way) or
* = **3 + Configuration Number** (3-Way) - See page NY/AB-6

_ _ = (NY) Nylon Coated Disc, (AB) Aluminium Bronze Disc or (S) Stainless Steel Disc

2-Way & 3-Way PIPING GEOMETRY CHART - Adjusted Cv at 90° Rotation

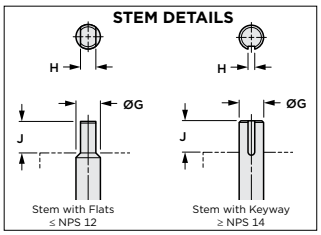
Valve Size	Model Number	Nominal Cv	Pipe Size																			
			2"	2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	34"
2"	_ _ L*-C020	144	144	127	111	96	90															
2.5"	_ _ L*-C025	282		282	245	187	165	154														
3"	_ _ L*-C030	461			461	340	274	246	223													
4"	_ _ L*-C040	841				841	664	538	442	406												
5"	_ _ L*-C050	1376					1376	1132	808	700	649											
6"	_ _ L*-C060	1850						1850	1360	1101	988	929										
8"	_ _ L*-C080	3316							3316	2633	2142	1898										
10"	_ _ L*-C100	5430								5430	4487	3667	3219									
12"	_ _ L*-C120	8077									8077	6892	5590	4974								
14"	_ _ L*-C140	10538										10538	9360	7942	6998							
16"	_ _ L*-C160	13966											13966	12640	10872	9607						
18"	_ _ L*-C180	17214												17214	15902	13962	12454					
20"	_ _ L*-C200	22239													22239	20756	18296	16308				
24"	_ _ F2-C240	11040															33154	32638	31007			
30"	_ _ F2-C300	18090																		52443	51817	49787

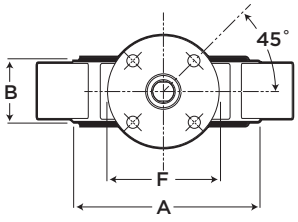
C = Normally Closed - Factory Default
N = Normally Open

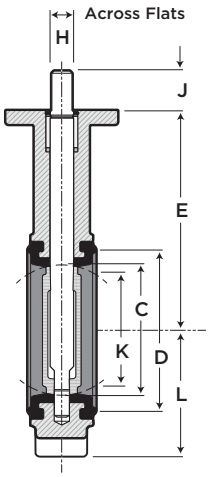
* = **2** (2-Way) or
* = **3 + Configuration Number** (3-Way) - See page NY/AB-6

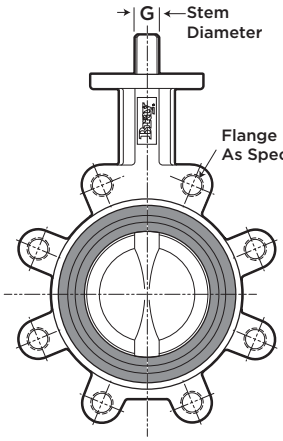
_ _ = (NY) Nylon Coated Disc, (AB) Aluminium Bronze Disc or (S) Stainless Steel Disc

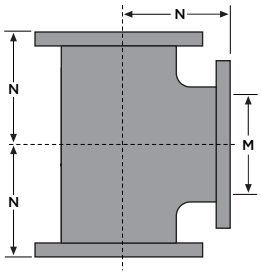
NY/AB Series Butterfly Valves - Valve Dimensions











VALVE BODY DIMENSIONS — in. (mm)

Size		A	B	C	D	E	F	G	H	J	K*	L	
in.	mm											Wafer	Lug
2	50	3.7 (94)	1.6 (41)	2.0 (51)	2.9 (74)	5.5 (140)	3.5 (90)	0.6 (14)	0.39 (10)	1.25 (32)	1.3 (32)	2.2 (56)	2.3 (58)
2.5	65	4.2 (107)	1.8 (46)	2.5 (64)	3.4 (86)	6.0 (152)	3.5 (90)	0.6 (14)	0.39 (10)	1.25 (32)	1.9 (48)	2.5 (63)	2.6 (65)
3	80	4.9 (124)	1.8 (46)	3.0 (76)	4.2 (107)	6.3 (159)	3.5 (90)	0.6 (14)	0.39 (10)	1.25 (32)	2.6 (66)	2.8 (71)	2.8 (71)
4	100	6.1 (154)	2.0 (51)	4.0 (102)	5.2 (132)	7.0 (178)	3.5 (90)	0.6 (16)	0.43 (11)	1.25 (32)	3.6 (91)	3.4 (87)	4.1 (104)
5	125	7.1 (179)	2.1 (52)	5.0 (128)	6.2 (157)	7.5 (191)	3.5 (90)	0.8 (19)	0.51 (13)	1.25 (32)	4.6 (117)	4.0 (102)	4.6 (117)
6	150	8.1 (206)	2.1 (52)	5.8 (146)	7.0 (178)	8.0 (203)	3.5 (90)	0.8 (19)	0.51 (13)	1.25 (32)	5.5 (140)	4.5 (115)	5.1 (129)
8	200	10.5 (267)	2.5 (64)	7.8 (197)	9.5 (241)	9.5 (241)	5.9 (150)	0.9 (22)	0.63 (16)	1.25 (32)	7.5 (190)	5.8 (146)	6.1 (154)
10	250	12.8 (325)	2.5 (64)	9.8 (249)	11.5 (292)	10.7 (272)	5.9 (150)	1.2 (30)	0.87 (22)	2.0 (51)	9.5 (242)	7.1 (181)	7.7 (195)
12	300	14.9 (378)	3.0 (76)	11.8 (299)	13.5 (342)	12.3 (311)	5.9 (150)	1.2 (30)	0.87 (22)	2.0 (51)	11.5 (291)	8.1 (206)	9.0 (229)
14	350	16.9 (429)	3.0 (76)	13.3 (337)	15.3 (388)	13.6 (346)	5.9 (150)	1.4 (35)	.39x.39 (10x10)	2.0 (51)	13.0 (331)	9.4 (238)	9.9 (252)
16	400	19.1 (485)	4.0 (102)	15.3 (387)	17.1 (434)	14.8 (375)	8.3 (210)	1.4 (35)	.39x.39 (10x10)	2.0 (51)	14.9 (377)	10.8 (273)	11.3 (287)
18	450	21.1 (536)	4.3 (109)	17.3 (438)	19.5 (495)	16.0 (406)	8.3 (210)	2.0 (50)	.47x.39 (12x10)	2.5 (64)	16.9 (429)	12.0 (305)	12.2 (309)
20	500	23.3 (591)	5.0 (127)	19.3 (489)	21.6 (548)	17.3 (438)	8.3 (210)	2.0 (50)	.47x.39 (12x10)	2.5 (64)	18.7 (476)	14.0 (348)	14.0 (358)
24	600	33.0 (838)	5.9 (151)	23.3 (591)	25.8 (654)	19.5 (495)	8.3 (210)	2.5 (64)	.62x.62 (16x16)	4.0 (102)	22.7 (575)	-	17.6 (446)
30	750	38.8 (984)	6.6 (167)	29.9 (744)	32.1 (816)	23.0 (584)	11.8 (300)	3.0 (76)	.62x.62 (16x16)	4.0 (102)	28.7 (730)	-	20.8 (529)

***Note:** K dimension is the disc chordal diameter at the valve face.

VALVE BODY DIMENSIONS — in. (mm) - Continued

Size		Top Plate Drilling			Lug Bolt Data			Tee		Adp. Code	Weight lbs. (kg)		
in.	mm	Bolt Circle	Hole Qty	Hole Dia.	BC	Holes	Threads	M	N		Wafer	Lug	Tee**
2	50	2.8 (70)	4	0.4 (10)	4.8 (122)	4	5/8-11	2.0 (51)	4.5 (114)	A	6 (2.5)	7 (3)	19 (8.6)
2.5	65	2.8 (70)	4	0.4 (10)	5.5 (140)	4	5/8-11	2.5 (64)	5.0 (127)	A	7 (3)	8 (4)	27 (12.3)
3	80	2.8 (70)	4	0.4 (10)	6.0 (152)	4	5/8-11	3.0 (76)	5.5 (140)	A	8 (3.5)	9 (4)	39 (17.7)
4	100	2.8 (70)	4	0.4 (10)	7.5 (191)	8	5/8-11	4.0 (102)	6.5 (165)	B	12 (5.4)	15 (7)	62 (28.1)
5	125	2.8 (70)	4	0.4 (10)	8.5 (216)	8	3/4-10	5.0 (127)	7.5 (191)	C	14 (6.4)	20 (9)	79 (35.78)
6	150	2.8 (70)	4	0.4 (10)	9.5 (241)	8	3/4-10	6.0 (152)	8.0 (203)	C	17 (8.7)	23 (10)	96 (43.5)
8	200	4.9 (125)	4	0.6 (15)	11.8 (300)	8	3/4-10	8.0 (203)	9.0 (229)	D	34 (15)	42 (19)	155 (70.3)
10	250	4.9 (125)	4	0.6 (15)	14.3 (363)	12	7/8-9	10.0 (254)	11.0 (279)	E	49 (22)	66 (30)	270 (122.5)
12	300	4.9 (125)	4	0.6 (15)	17.0 (432)	12	7/8-9	12.0 (305)	12.0 (305)	E	67 (30)	88 (40)	380 (172.4)
14	350	4.9 (125)	4	0.6 (15)	18.8 (478)	12	1-8	14.0 (356)	14.0 (356)	F	95 (43)	114 (52)	435 (197.3)
16	400	4.9 (125)	4	0.6 (15)	21.3 (541)	16	1-8	16.0 (406)	15.0 (381)	F	135 (61)	166 (75)	550 (249.5)
18	450	6.5 (165)	4	0.8 (21)	22.8 (579)	16	1-1/8-7	18.0 (457)	16.5 (419)	G	200 (91)	226 (103)	665 (301.6)
20	500	6.5 (165)	4	0.8 (21)	25.0 (635)	20	1-1/8-7	20.0 (508)	18.0 (457)	G	260 (118)	305 (138)	855 (387.8)
24	600	6.5 (165)	4	0.8 (21)	29.5 (749)	20	1-1/4-7	-	-	H	-	500 (226)	-
30	750	10 (254)	8	.71 (18)	36.0 (914)	28	1-1/4-7	-	-	G	-	855 (388)	-

**Tee weight is the weight of the Tee alone. For 3-Way assemblies add the weight of two lug valves.

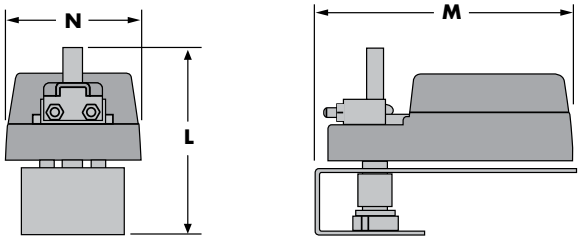
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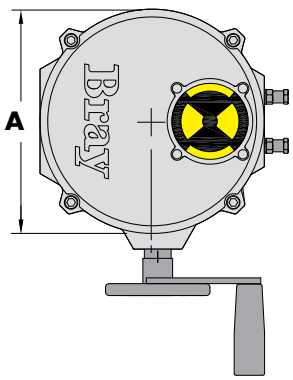
COMMERCIAL ACTUATOR DIMENSIONS — in. (mm)

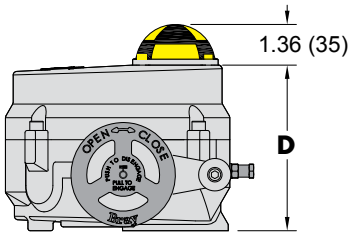
Actuator Model Number	L	M	N	Weight lbs. (kg)
DCS-140 Series	7.4 (188)	11.0 (279)	4.0 (102)	4.9 (2.2)
DC-310 Series	7.4 (188)	11.0 (279)	4.0 (102)	4.4 (2.0)
D-140/210 Series	6.7 (170)	7.5 (191)	4.0 (102)	2.9 (1.3)
DS-180 Series	7.4 (188)	11.0 (279)	4.0 (102)	6.4 (2.9)
Tandem Actuators	11.8 (300)	18.0 (457)	4.0 (102)	12.8 (5.8)

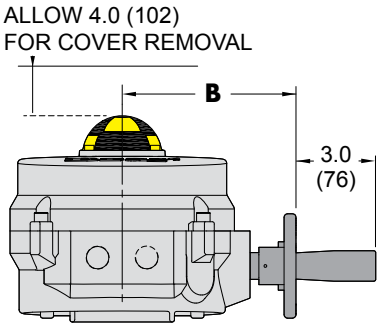


INDUSTRIAL ACTUATOR DIMENSIONS — in. (mm)

Actuator Model Number	A	B	D*		Weight lbs. (kg)
			2-Way	3-Way	
70-0081	7.5 (191)	5.8 (147)	5.6 (141)	8.6 (218)	13 (6)
70-0121/0201/E301	10.1 (256)	7.8 (198)	6.6 (168)	10.7 (273)	28 (13)
70-0501/0651	12.1 (308)	9.5 (241)	7.2 (183)	13.2 (335)	48 (22)
70-1300/1800	12.1 (308)	9.5 (241)	12.5 (316)	20.5 (521)	118 (54)
AU-4068	32.1 (815)	28.9 (734)	12.3 (312)	22.3 (566)	195 (88)
AU-7080	32.1 (815)	31.9 (810)	12.3 (312)	-	285 (129)



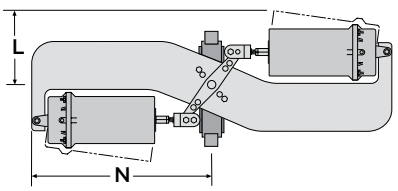


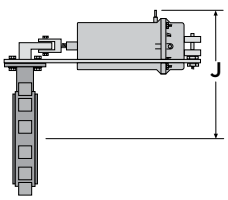


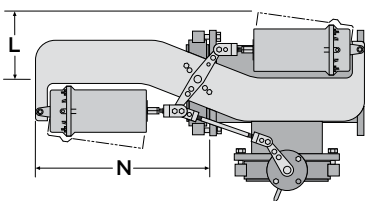
LP PNEUMATIC ACTUATOR DIMENSIONS — in. (mm)

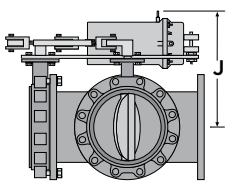
Low Pressure Pneumatic Actuator Model Number	J	L	N		Weight lbs. (kg)
			2-Way	3-Way	
D-3153	13.8 (351)	5.7 (145)	16.0 (406)	10.9 (277)	8.0 (3.6)
D-3244	14.4 (366)	7.3 (185)	20.0 (508)	12.0 (305)	13.6 (6.2)
D-3246	16.4 (417)	8.9 (226)	25.8 (655)	13.7 (348)	17.6 (8.0)
D-3246-D	17.6 (447)	8.9 (226)	22.8 (579)	24.00 (610)	35.1 (15.9)

Largest valve/actuator combination shown
L = Maximum swing of the actuator
N = Maximum swing of the arm



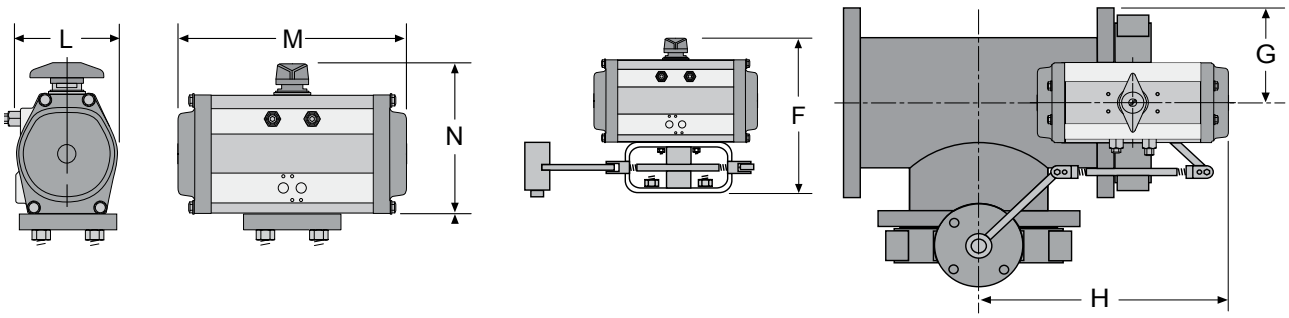




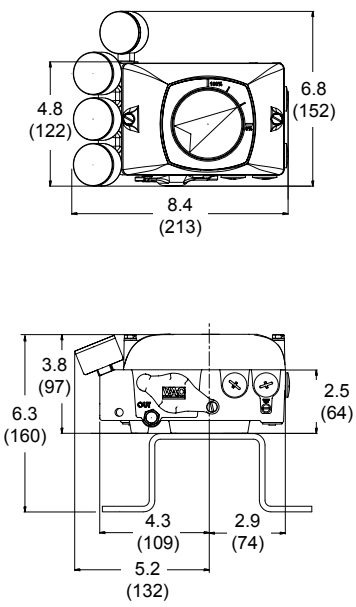


PNEUMATIC ACTUATOR DIMENSIONS — in. (mm)								
Actuator Model Number	L	M	N	F	G	H	Weight lbs. (kg)	
							Double Acting	Spring Return
92/93-063	3.1 (79)	5.6 (142)	4.5 (114)	7.5 (191)	3.0 (76)	9.1 (231)	3.4 (1.5)	4.1 (1.9)
92/93-083	4.1 (104)	7.4 (188)	5.4 (137)	8.4 (213)	4.5 (114)	13.3 (338)	6.3 (3)	8.1 (4)
92/93-093	4.4 (112)	9.1 (231)	5.8 (147)	8.8 (224)	5.5 (140)	14.9 (378)	8.5 (4)	10.8 (5)
92/93-119	5.2 (132)	12.4 (325)	7.3 (185)	11.4 (290)	8.0 (203)	19.9 (505)	16.9 (8)	22.3 (10)
92/93-128	5.6 (142)	12.8 (734)	8.1 (2.6)	12.2 (310)	8.0 (203)	19.9 (505)	21.0 (10)	27.6 (13)
92/93-160	7.2 (183)	15.5 (394)	9.4 (239)	13.5 (343)	10.5 (267)	26.6 (676)	38.8 (18)	53.2 (24)
92/93-210	9.0 (229)	19.6 (498)	11.6 (295)	17.6 (447)	13.8 (351)	33.1 (841)	77.8 (35)	109.6 (50)
92/93-255	10.8 (274)	28.8 (732)	13.5 (343)	19.5 (495)	13.8 (351)	33.1 (841)	167.0 (76)	210.8 (96)
98-45E2-...	14.8 (376)	52.8 (1341)	9.7 (246)	-	-	-	183 (83)	355 (161)
98-14E3-...	21.3 (541)	72.6 (1844)	12.1 (307)	-	-	-	485 (220)	937 (425)
98-73E2-...	16.8 (427)	60.1 (1527)	11.8 (300)	-	-	-	254 (115)	547 (248)

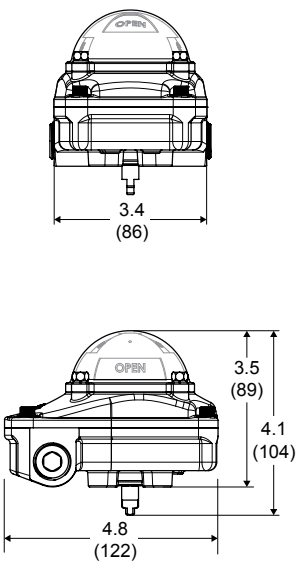
Allow 3.0" for Series 92/93 actuator removal and up to 12" for Series 98



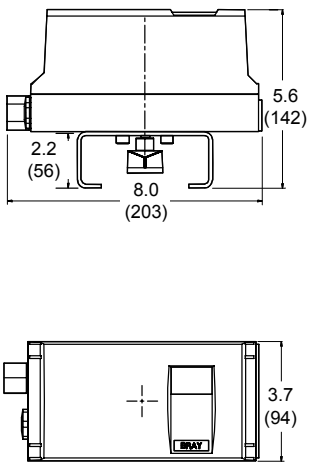
VP200 Pneumatic Positioner



Series 5A Switch Box



Series 6A Electro Pneumatic Positioner



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2 & 3-Way with NSR/SR DC-Series Commercial Electric Actuators

2-Way

2-Way, On/Off or Floating

Actuator Model Details						Non-Spring Return		Spring Return			
						DC24-310-T	DC24-310-T-D	DCS24-140	DCS24-140-D	DCS120-140	DCS120-140-D
Model Number	Size		Close-Off psi	Cv		Floating		On/Off			
	In.	mm		90˚	60˚	24 VAC		24 VAC/DC		120 VAC	
NYL2-C020	2	50	175	144	61	X	-	X	-	X	-
NYL2-C025	2.5	65	175	282	107	X	-	X	-	X	-
NYL2-C030	3	80	175	461	154	X	-	-	X	-	X
NYL2-C041	4	100	50	841	274	X	-	-	X	-	X
NYL2-C040	4	100	175	841	274	-	X	-	-	-	-
NYL2-C051	5	125	50	1376	428	X	-	-	X	-	X
NYL2-C061	6	150	50	1850	567	-	X	-	-	-	-

2-Way, Modulating

Actuator Model Details						Non-Spring Return		Spring Return	
						DCM24-310	DCM24-310-D	DCMS24-140	DCMS24-140-D
Model Number	Size		Close-Off psi	Cv		24 VAC		24 VAC/DC	
	In.	mm		90˚	60˚	Modulating			
NYL2-C020	2	50	175	144	61	X	-	X	-
NYL2-C025	2.5	65	175	282	107	X	-	X	-
NYL2-C030	3	80	175	461	154	X	-	-	X
NYL2-C041	4	100	50	841	274	X	-	-	X
NYL2-C040	4	100	175	841	274	-	X	-	-
NYL2-C051	5	125	50	1376	428	X	-	-	X
NYL2-C061	6	150	50	1850	567	-	X	-	-

3-Way

3-Way, On/Off or Floating

Actuator Model Details						Non-Spring Return		Spring Return			
						DC24-310-T	DC24-310-T-D	DCS24-140	DCS24-140-D	DCS120-140	DCS120-140-D
Model Number	Size		Close-Off psi	Cv		Floating		On/Off			
	In.	mm		90˚	60˚	24 VAC		24 VAC/DC		120 VAC	
NYL3-x020	2	50	175	144	61	X	-	X	-	X	-
NYL3-x025	2.5	65	175	282	107	X	-	-	X	-	X
NYL3-x030	3	80	175	461	154	X	-	-	X	-	X
NYL3-x041	4	100	50	841	274	X	-	-	X	-	X
NYL3-x040	4	100	175	841	274	-	X	-	-	-	-
NYL3-x051	5	125	50	1376	428	-	X	-	-	-	-
NYL3-x061	6	150	50	1850	567	-	X	-	-	-	-

3-Way, Modulating

Actuator Model Details						Non-Spring Return		Spring Return	
						DCM24-310	DCM24-310-D	DCMS24-140	DCMS24-140-D
Model Number	Size		Close-Off psi	Cv		Modulating			
	In.	mm		90˚	60˚	24 VAC		24 VAC/DC	
NYL3-x020	2	50	175	144	61	X	-	X	-
NYL3-x025	2.5	65	175	282	107	X	-	-	X
NYL3-x030	3	80	175	461	154	X	-	-	X
NYL3-x041	4	100	50	841	274	X	-	-	X
NYL3-x040	4	100	175	841	274	-	X	-	-
NYL3-x051	5	125	50	1376	428	-	X	-	-
NYL3-x061	6	150	50	1850	567	-	X	-	-

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
X = 3-Way Assemblies (Refer to Configuration Chart, Page 7)
For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default
-D = Dual mounted actuators
Replace NYL with ABL in part number when choosing Aluminium Bronze Disc

2 & 3-Way with NSR/SR D-Series Commercial Electric Actuators

2-Way

2-Way, On/Off or Floating

Actuator Model Details						Non-Spring Return			Spring Return	
						D24-140	D24-210	D24-210-D	DS24-180	DS24-180-D
Model Number	Size		Close-Off psi	Cv		On/Off & Floating			On/Off	
	In.	mm		90˚	60˚	24 VAC/DC			24 VAC/DC	
NYL2-C020	2	50	175	144	61	X	-	-	X	-
NYL2-C025	2.5	65	175	282	107	X	-	-	X	-
NYL2-C030	3	80	175	461	154	-	X	-	X	-
NYL2-C041	4	100	50	841	274	-	X	-	X	-
NYL2-C040	4	100	175	841	274	-	-	X	-	X
NYL2-C051	5	125	50	1376	428	-	X	-	-	X
NYL2-C050	5	125	175	1376	428	-	-	-	-	-
NYL2-C061	6	150	50	1850	567	-	-	X	-	-

2-Way, Modulating

Actuator Model Details						Non-Spring Return			Spring Return	
						DM24-140	DM24-210	DM24-210-D	DMS24-180	DMS24-180-D
Model Number	Size		Close-Off psi	Cv		Modulating				
	In.	mm		90˚	60˚	24 VAC/DC				
NYL2-C020	2	50	175	144	61	X	-	-	X	-
NYL2-C025	2.5	65	175	282	107	X	-	-	X	-
NYL2-C030	3	80	175	461	154	-	X	-	X	-
NYL2-C041	4	100	50	841	274	-	X	-	X	-
NYL2-C040	4	100	175	841	274	-	-	X	-	X
NYL2-C051	5	125	50	1376	428	-	X	-	-	X
NYL2-C050	5	125	175	1376	428	-	-	-	-	-
NYL2-C061	6	150	50	1850	567	-	-	X	-	-

3-Way

3-Way, On/Off or Floating

Actuator Model Details						Non-Spring Return			Spring Return	
						D24-140	D24-210	D24-210-D	DS24-180	DS24-180-D
Model Number	Size		Close-Off psi	Cv		On/Off & Floating			On/Off	
	In.	mm		90˚	60˚	24 VAC/DC			24 VAC/DC	
NYL3-x020	2	50	175	144	61	X	-	-	X	-
NYL3-x025	2.5	65	175	282	107	-	X	-	X	-
NYL3-x030	3	80	175	461	154	-	X	-	-	X
NYL3-x041	4	100	50	841	274	-	X	-	-	X
NYL3-x040	4	100	175	841	274	-	-	X	-	-
NYL3-x051	5	125	50	1376	428	-	-	X	-	-
NYL3-x061	6	150	50	1850	567	-	-	X	-	-

3-Way, Modulating

Actuator Model Details						Non-Spring Return			Spring Return	
						DM24-140	DM24-210	DM24-210-D	DMS24-180	DMS24-180-D
Model Number	Size		Close-Off psi	Cv		Modulating				
	In.	mm		90˚	60˚	24 VAC/DC				
NYL3-x020	2	50	175	144	61	X	-	-	X	-
NYL3-x025	2.5	65	175	282	107	-	X	-	X	-
NYL3-x030	3	80	175	461	154	-	X	-	-	X
NYL3-x041	4	100	50	841	274	-	X	-	-	X
NYL3-x040	4	100	175	841	274	-	-	X	-	-
NYL3-x051	5	125	50	1376	428	-	-	X	-	-
NYL3-x061	6	150	50	1850	567	-	-	X	-	-

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
X = 3-Way Assemblies (Refer to Configuration Chart, Page 7)
For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default
-D = Dual mounted actuators
Replace NYL with ABL in part number when choosing Aluminium Bronze Disc

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Bray COMMERCIAL
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2-Way with Industrial Electric Actuators

Nylon Coated Disc

2-Way, 24 VAC and 120 VAC, On/Off & Modulating - Nylon Coated Disc									
Actuator Model Details						Series 70 & AU Series		Series 70	
Valve Model Details	Size		Close-Off psi	Cv		On/Off	Modulating	On/Off	Modulating
	In.	mm		90˚	60˚	120 VAC	120 VAC	24 VAC	24 VAC
NYL2-C020	2	50	175	144	61	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL2-C025	2.5	65	175	282	107	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL2-C030	3	80	175	461	154	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL2-C041	4	100	50	841	274	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL2-C040	4	100	175	841	274	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL2-C051	5	125	50	1376	428	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL2-C050	5	125	175	1376	428	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL2-C061	6	150	50	1850	567	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL2-C060	6	150	175	1850	567	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL2-C081	8	200	50	3316	1081	70-0121	70-0121SV	70-24-0201	70-24-0201SV
NYL2-C080	8	200	175	3316	1081	70-0201	70-0201SV	70-24-0201	70-24-0201SV
NYL2-C101	10	250	50	5430	1710	70-0201	70-0201SV	70-24-0201	70-24-0201SV
NYL2-C100	10	250	175	5430	1710	70-E301	70-E301SV	70-24-0501	70-24-0501SV
NYL2-C121	12	300	50	8077	2563	70-E301	70-E301SV	70-24-0501	70-24-0501SV
NYL2-C120	12	300	175	8077	2563	70-0501	70-0501SV	70-24-0501	70-24-0501SV
NYL2-C141	14	350	50	10538	3384	70-0501	70-0501SV	70-24-0501	70-24-0501SV
NYL2-C140	14	350	150	10538	3384	70-0651	70-0651SV	-	-
NYL2-C161	16	400	50	13966	4483	70-0501	70-0501SV	70-24-0501	70-24-0501SV
NYL2-C160	16	400	150	13966	4483	70-1300	70-1300SV	-	-
NYL2-C181	18	450	50	17214	5736	70-0651	70-0651SV	-	-
NYL2-C180	18	450	150	17214	5736	70-1300	70-1300SV	-	-
NYL2-C201	20	500	50	22339	7144	70-1300	70-1300SV	-	-
NYL2-C200	20	500	150	22339	7144	70-1800	70-1800SV	-	-
NYF2-C241	24	600	75	33154	11040	70-1800	70-1800SV	-	-
NYF2-C240	24	600	150	33154	11040	AU-4068	AU-4068SV	-	-
NYF2-C301	30	750	75	52443	18090	AU-4068	AU-4068SV	-	-
NYF2-C300	30	750	150	52443	18090	AU-7080	AU-7080SV	-	-

Aluminum Bronze Disc

2-Way, 24 VAC and 120 VAC, On/Off & Modulating - Aluminum Bronze Disc									
Actuator Model Details						Series 70 & AU Series		Series 70	
Valve Model Details	Size		Close-Off psi	Cv		On/Off	Modulating	On/Off	Modulating
	In.	mm		90˚	60˚	120 VAC	120 VAC	24 VAC	24 VAC
ABL2-C020	2	50	175	144	61	70-0081	70-0081SV	70-24-0081	70-24-0081SV
ABL2-C025	2.5	65	175	282	107	70-0081	70-0081SV	70-24-0081	70-24-0081SV
ABL2-C030	3	80	175	461	154	70-0081	70-0081SV	70-24-0081	70-24-0081SV
ABL2-C041	4	100	50	841	274	70-0081	70-0081SV	70-24-0081	70-24-0081SV
ABL2-C040	4	100	175	841	274	70-0081	70-0081SV	70-24-0081	70-24-0081SV
ABL2-C051	5	125	50	1376	428	70-0081	70-0081SV	70-24-0081	70-24-0081SV
ABL2-C050	5	125	175	1376	428	70-0081	70-0081SV	70-24-0081	70-24-0081SV
ABL2-C061	6	150	50	1850	567	70-0081	70-0081SV	70-24-0081	70-24-0081SV
ABL2-C060	6	150	175	1850	567	70-0121	70-0121SV	70-24-0201	70-24-0201SV
ABL2-C081	8	200	50	3316	1081	70-0121	70-0121SV	70-24-0201	70-24-0201SV
ABL2-C080	8	200	175	3316	1081	70-0201	70-0201SV	70-24-0201	70-24-0201SV
ABL2-C101	10	250	50	5430	1710	70-0201	70-0201SV	70-24-0201	70-24-0201SV
ABL2-C100	10	250	175	5430	1710	70-E301	70-E301SV	70-24-0501	70-24-0501SV
ABL2-C121	12	300	50	8077	2563	70-E301	70-E301SV	70-24-0501	70-24-0501SV
ABL2-C120	12	300	175	8077	2563	70-0501	70-0501SV	70-24-0501	70-24-0501SV
ABL2-C141	14	350	50	10538	3384	70-0501	70-0501SV	70-24-0501	70-24-0501SV
ABL2-C140	14	350	150	10538	3384	70-0651	70-0651SV	-	-
ABL2-C161	16	400	50	13966	4483	70-0651	70-0651SV	70-24-0501	70-24-0501SV
ABL2-C160	16	400	150	13966	4483	70-1300	70-1300SV	-	-
ABL2-C181	18	450	50	17214	5736	70-0651	70-0651SV	-	-
ABL2-C180	18	450	150	17214	5736	70-1300	70-1300SV	-	-
ABL2-C201	20	500	50	22339	7144	70-1300	70-1300SV	-	-
ABL2-C200	20	500	150	22339	7144	70-1800	70-1800SV	-	-

Options/Adders
For Heater/Thermostat kit, add "H" to the actuator part number.
For Battery Back-Up Failsafe Option (BBU) option on 24 VAC actuators, add "-BBU".
For Battery Back-UP Failsafe units:
N = Normally Open
C = Normally Closed - Factory default

3-Way with Industrial Electric Actuators

Nylon Coated Disc

3-Way, 24 VAC and 120 VAC, On/Off & Modulating - Nylon Coated Disc									
Actuator Model Details						Series 70 & AU Series		Series 70	
Valve Model Details	Size		Close-Off psi	Cv		On/Off	Modulating	On/Off	Modulating
	In.	mm		90°	60°	120 VAC	120 VAC	24 VAC	24 VAC
NYL3-x020	2	50	175	144	61	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL3-x025	2.5	65	175	282	107	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL3-x030	3	80	175	461	154	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL3-x041	4	100	50	841	274	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL3-x040	4	100	175	841	274	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL3-x051	5	125	50	1376	428	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL3-x050	5	125	175	1376	428	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL3-x061	6	150	50	1850	567	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL3-x060	6	150	175	1850	567	70-0081	70-0081SV	70-24-0081	70-24-0081SV
NYL3-x081	8	200	50	3316	1081	70-0121	70-0121SV	70-24-0201	70-24-0201SV
NYL3-x080	8	200	175	3316	1081	70-0201	70-0201SV	70-24-0201	70-24-0201SV
NYL3-x101	10	250	50	5430	1710	70-E301	70-E301SV	70-24-0501	70-24-0501SV
NYL3-x100	10	250	175	5430	1710	70-0501	70-0501SV	70-24-0501	70-24-0501SV
NYL3-x121	12	300	50	8077	2563	70-0501	70-0501SV	70-24-0501	70-24-0501SV
NYL3-x120	12	300	175	8077	2563	70-0651	70-0651SV	-	-
NYL3-x141	14	350	50	10538	3384	70-0501	70-0501SV	70-24-0501	70-24-0501SV
NYL3-x140	14	350	150	10538	3384	70-1300	70-1300SV	-	-
NYL3-x161	16	400	50	13966	4483	70-0651	70-0651SV	-	-
NYL3-x160	16	400	150	13966	4483	70-1300	70-1300SV	-	-
NYL3-x181	18	450	50	17214	5736	70-1300	70-1300SV	-	-
NYL3-x180	18	450	150	17214	5736	70-1800	70-1800SV	-	-
NYL3-x201	20	500	50	22339	7144	70-1800	70-1800SV	-	-
NYL3-x200	20	500	150	22339	7144	AU-4068	AU-4068SV	-	-

Aluminum Bronze Disc

3-Way, 24 VAC and 120 VAC, On/Off & Modulating - Aluminium Bronze Disc									
Actuator Model Details						Series 70 & AU Series		Series 70	
Valve Model Details	Size		Close-Off psi	Cv		On/Off	Modulating	On/Off	Modulating
	In.	mm		90°	60°	120 VAC	120 VAC	24 VAC	24 VAC
ABL3-x020	2	50	175	144	61	70-0081	70-0081SV	70-24-0081	70-24-0081SV
ABL3-x025	2.5	65	175	282	107	70-0081	70-0081SV	70-24-0081	70-24-0081SV
ABL3-x030	3	80	175	461	154	70-0081	70-0081SV	70-24-0081	70-24-0081SV
ABL3-x041	4	100	50	841	274	70-0081	70-0081SV	70-24-0081	70-24-0081SV
ABL3-x040	4	100	175	841	274	70-0081	70-0081SV	70-24-0081	70-24-0081SV
ABL3-x051	5	125	50	1376	428	70-0081	70-0081SV	70-24-0081	70-24-0081SV
ABL3-x050	5	125	175	1376	428	70-0121	70-0121SV	70-24-0201	70-24-0201SV
ABL3-x061	6	150	50	1850	567	70-0121	70-0121SV	70-24-0201	70-24-0201SV
ABL3-x060	6	150	175	1850	567	70-0201	70-0201SV	70-24-0201	70-24-0201SV
ABL3-x081	8	200	50	3316	1081	70-0201	70-0201SV	70-24-0201	70-24-0201SV
ABL3-x080	8	200	175	3316	1081	70-E301	70-E301SV	70-24-0201	70-24-0201SV
ABL3-x101	10	250	50	5430	1710	70-E301	70-E301SV	70-24-0501	70-24-0501SV
ABL3-x100	10	250	175	5430	1710	70-0501	70-0501SV	70-24-0501	70-24-0501SV
ABL3-x121	12	300	50	8077	2563	70-0501	70-0501SV	70-24-0501	70-24-0501SV
ABL3-x120	12	300	175	8077	2563	70-0651	70-0651SV	70-24-0501	70-24-0501SV
ABL3-x141	14	350	50	10538	3384	70-0501	70-0501SV	70-24-0501	70-24-0501SV
ABL3-x140	14	350	150	10538	3384	70-1300	70-1300SV	-	-
ABL3-x161	16	400	50	13966	4483	70-0651	70-0651SV	-	-
ABL3-x160	16	400	150	13966	4483	70-1300	70-1300SV	-	-
ABL3-x181	18	450	50	17214	5736	70-1300	70-1300SV	-	-
ABL3-x180	18	450	150	17214	5736	70-1800	70-1800SV	-	-
ABL3-x201	20	500	50	22339	7144	70-1800	70-1800SV	-	-
ABL3-x200	20	500	150	22339	7144	AU-4068	AU-4068SV	-	-

Options/Adders
X = 3-Way Assemblies (Refer to Configuration Chart, Page 7)
For Heater/Thermostat kit, add "H" to the actuator part number.
For Battery Back-Up Failsafe Option (BBU) option on 24 VAC actuators, add "-BBU".

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2-Way with Series 92 Double Acting Pneumatic Actuators

Nylon Coated Disc

2-Way, Double Acting Pneumatic - Nylon Coated Disc

Actuator Model Details													
Valve Model Details	Size		Close-Off psi	Cv		92-063	92-083	92-093	92-119	92-128	92-160	92-210	92-255
	In.	mm		90°	60°								
NYL2-C020	2	50	175	144	61	X	-	-	-	-	-	-	-
NYL2-C025	2.5	65	175	282	107	X	-	-	-	-	-	-	-
NYL2-C030	3	80	175	461	154	X	-	-	-	-	-	-	-
NYL2-C041	4	100	50	841	274	-	X	-	-	-	-	-	-
NYL2-C040	4	100	175	841	274	-	X	-	-	-	-	-	-
NYL2-C051	5	125	50	1376	428	-	X	-	-	-	-	-	-
NYL2-C050	5	125	175	1376	428	-	X	-	-	-	-	-	-
NYL2-C061	6	150	50	1850	567	-	X	-	-	-	-	-	-
NYL2-C060	6	150	175	1850	567	-	-	X	-	-	-	-	-
NYL2-C081	8	200	50	3316	1081	-	-	-	X	-	-	-	-
NYL2-C080	8	200	175	3316	1081	-	-	-	X	-	-	-	-
NYL2-C101	10	250	50	5430	1710	-	-	-	X	-	-	-	-
NYL2-C100	10	250	175	5430	1710	-	-	-	-	X	-	-	-
NYL2-C121	12	300	50	8077	2563	-	-	-	X	-	-	-	-
NYL2-C120	12	300	175	8077	2563	-	-	-	-	-	X	-	-
NYL2-C141	14	350	50	10538	3384	-	-	-	-	-	X	-	-
NYL2-C140	14	350	175	10538	3384	-	-	-	-	-	-	X	-
NYL2-C161	16	400	50	13966	4483	-	-	-	-	-	X	-	-
NYL2-C160	16	400	175	13966	4483	-	-	-	-	-	-	X	-
NYL2-C181	18	450	50	17214	5736	-	-	-	-	-	-	X	-
NYL2-C180	18	450	175	17214	5736	-	-	-	-	-	-	X	-
NYL2-C201	20	500	50	22339	7144	-	-	-	-	-	-	X	-
NYL2-C200	20	500	175	22339	7144	-	-	-	-	-	-	-	X
NYF2-C241	24	600	75	33154	11040	-	-	-	-	-	-	-	X
NYF2-C301	30	750	75	52443	18090	-	-	-	-	-	-	-	X

2-Way, Spring Return Pneumatic - Nylon Coated Disc

Actuator Model Details						Series 98 Pneumatic Scotch Yoke (Fail Close)	
Valve Model Details	Size		Close-Off psi	Cv		98-45E2-12-DA	98-14E3-12-DA-C
	In.	mm		90°	60°		
NYF2-C240	24	600	150	33154	11040	X	-
NYF2-C300	30	750	150	52443	18090	-	X

Aluminium Bronze Disc

2-Way, Double Acting Pneumatic - Aluminium Bronze Disc

Actuator Model Details													
Valve Model Details	Size		Close-Off psi	Cv		92-063	92-083	92-093	92-119	92-128	92-160	92-210	92-255
	In.	mm		90°	60°								
ABL2-C020	2	50	175	144	61	X	-	-	-	-	-	-	-
ABL2-C025	2.5	65	175	282	107	X	-	-	-	-	-	-	-
ABL2-C030	3	80	175	461	154	X	-	-	-	-	-	-	-
ABL2-C041	4	100	50	841	274	-	X	-	-	-	-	-	-
ABL2-C040	4	100	175	841	274	-	X	-	-	-	-	-	-
ABL2-C051	5	125	50	1376	428	-	X	-	-	-	-	-	-
ABL2-C050	5	125	175	1376	428	-	-	X	-	-	-	-	-
ABL2-C061	6	150	50	1850	567	-	X	-	-	-	-	-	-
ABL2-C060	6	150	175	1850	567	-	-	X	-	-	-	-	-
ABL2-C081	8	200	50	3316	1081	-	-	-	X	-	-	-	-
ABL2-C080	8	200	175	3316	1081	-	-	-	X	-	-	-	-
ABL2-C101	10	250	50	5430	1710	-	-	-	X	-	-	-	-
ABL2-C100	10	250	175	5430	1710	-	-	-	-	-	X	-	-
ABL2-C121	12	300	50	8077	2563	-	-	-	-	X	-	-	-
ABL2-C120	12	300	175	8077	2563	-	-	-	-	-	X	-	-
ABL2-C141	14	350	50	10538	3384	-	-	-	-	-	X	-	-
ABL2-C140	14	350	175	10538	3384	-	-	-	-	-	-	X	-
ABL2-C161	16	400	50	13966	4483	-	-	-	-	-	X	-	-
ABL2-C160	16	400	175	13966	4483	-	-	-	-	-	-	X	-
ABL2-C181	18	450	50	17214	5736	-	-	-	-	-	-	X	-
ABL2-C180	18	450	175	17214	5736	-	-	-	-	-	-	X	-
ABL2-C201	20	500	50	22339	7144	-	-	-	-	-	-	X	-
ABL2-C200	20	500	175	22339	7144	-	-	-	-	-	-	-	X

Options/Adders
* For Manual Override, add "-5" to the end of the part number.
For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default

3-Way with Series 92 Double Acting Pneumatic Actuators

Nylon Coated Disc

3-Way, Double Acting Pneumatic - Nylon Coated Disc

Valve Model Details	Size		Close-Off psi	Cv		Actuator Model Details						
	In.	mm		90°	60°	92-083	92-093	92-119	92-128	92-160	92-210	92-255
NYL3-x020	2	50	175	144	61	X	-	-	-	-	-	-
NYL3-x025	2.5	65	175	282	107	X	-	-	-	-	-	-
NYL3-x030	3	80	175	461	154	X	-	-	-	-	-	-
NYL3-x041	4	100	50	841	274	X	-	-	-	-	-	-
NYL3-x040	4	100	175	841	274	X	-	-	-	-	-	-
NYL3-x-051	5	125	50	841	274	-	X	-	-	-	-	-
NYL3-x050	5	125	175	1376	428	-	-	X	-	-	-	-
NYL3-x061	6	150	50	1850	567	-	X	-	-	-	-	-
NYL3-x060	6	150	175	1850	567	-	-	X	-	-	-	-
NYL3-x081	8	200	50	3316	1081	-	-	X	-	-	-	-
NYL3-x080	8	200	175	3316	1081	-	-	-	X	-	-	-
NYL3-x101	10	250	50	5430	1710	-	-	X	-	-	-	-
NYL3-x100	10	250	175	5430	1710	-	-	-	-	X	-	-
NYL3-x121	12	300	50	8077	2563	-	-	-	-	X	-	-
NYL3-x120	12	300	175	8077	2563	-	-	-	-	-	X	-
NYL3-x141	14	350	50	10538	3384	-	-	-	-	X	-	-
NYL3-x140	14	350	150	10538	3384	-	-	-	-	-	X	-
NYL3-x161	16	400	50	13966	4483	-	-	-	-	-	X	-
NYL3-x160	16	400	150	13966	4483	-	-	-	-	-	-	X
NYL3-x181	18	450	50	17214	5736	-	-	-	-	-	X	-
NYL3-x180	18	450	150	17214	5736	-	-	-	-	-	-	X
NYL3-x201	20	500	50	22339	7144	-	-	-	-	-	X	-
NYL3-x200	20	500	150	22339	7144	-	-	-	-	-	-	X

Aluminium Bronze Disc

3-Way, Double Acting Pneumatic - Aluminium Bronze Disc

Valve Model Details	Size		Close-Off psi	Cv		Actuator Model Details						
	In.	mm		90°	60°	92-083	92-093	92-119	92-128	92-160	92-210	92-255
ABL3-x020	2	50	175	144	61	X	-	-	-	-	-	-
ABL3-x025	2.5	65	175	282	107	X	-	-	-	-	-	-
ABL3-x030	3	80	175	461	154	X	-	-	-	-	-	-
ABL3-x041	4	100	50	841	274	X	-	-	-	-	-	-
ABL3-x040	4	100	175	841	274	X	-	-	-	-	-	-
ABL3-x051	5	125	50	1376	428	-	X	-	-	-	-	-
ABL3-x050	5	125	175	1376	428	-	-	X	-	-	-	-
ABL3-x061	6	150	50	1850	567	-	-	X	-	-	-	-
ABL3-x060	6	150	175	1850	567	-	-	X	-	-	-	-
ABL3-x081	8	200	50	3316	1081	-	-	X	-	-	-	-
ABL3-x080	8	200	175	3316	1081	-	-	-	X	-	-	-
ABL3-x101	10	250	50	5430	1710	-	-	-	X	-	-	-
ABL3-x100	10	250	175	5430	1710	-	-	-	-	X	-	-
ABL3-x121	12	300	50	8077	2563	-	-	-	-	X	-	-
ABL3-x120	12	300	175	8077	2563	-	-	-	-	-	X	-
ABL3-x141	14	350	50	10538	3384	-	-	-	-	X	-	-
ABL3-x140	14	350	150	10538	3384	-	-	-	-	-	X	-
ABL3-x161	16	400	50	13966	4483	-	-	-	-	-	X	-
ABL3-x160	16	400	150	13966	4483	-	-	-	-	-	-	X
ABL3-x181	18	450	50	17214	5736	-	-	-	-	-	X	-
ABL3-x180	18	450	150	17214	5736	-	-	-	-	-	-	X
ABL3-x201	20	500	50	22339	7144	-	-	-	-	-	X	-
ABL3-x200	20	500	150	22339	7144	-	-	-	-	-	-	X

Options/Adders
X = 3-Way Assemblies (Refer to Configuration Chart, Page 7)
* For Manual Override, add "-5" to the end of the part number.

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2-Way with Series 93 & 98 Spring Return Pneumatic Actuators

Nylon Coated Disc

2-Way, High Pressure Spring Return Pneumatic - Nylon Coated Disc

Actuator Model Details						Normally Closed (N.C.)	Normally Open (N.O.)
Valve Model Details	Size		Close-Off psi	Cv		Model #	Model #
	In.	mm		90˚	60˚		
NYL2-C020	2	50	175	144	61	93-0834	93-0834
NYL2-C025	2.5	65	175	282	107	93-0834	93-0833
NYL2-C030	3	80	175	461	154	93-0834	93-0833
NYL2-C041	4	100	50	841	274	93-0834	93-0833
NYL2-C040	4	100	175	841	274	93-0935	93-0934
NYL2-C051	5	125	50	1376	428	93-0935	93-0934
NYL2-C050	5	125	175	1376	428	93-1194	93-1194
NYL2-C061	6	150	50	1850	567	93-1193	93-0934
NYL2-C060	6	150	175	1850	567	93-1195	93-1194
NYL2-C081	8	200	50	3316	1081	93-1195	93-1193
NYL2-C080	8	200	175	3316	1081	93-1604	93-1603
NYL2-C101	10	250	50	5430	1710	93-1604	93-1283
NYL2-C100	10	250	175	5430	1710	93-2103	93-2102
NYL2-C121	12	300	50	8077	2563	93-1605	93-1603
NYL2-C120	12	300	175	8077	2563	93-2105	93-2103
NYL2-C141	14	350	50	10538	3384	93-2104	93-2102
NYL2-C140	14	350	150	10538	3384	93-2106	93-2552
NYL2-C161	16	400	50	13966	4483	93-2105	93-2103
NYL2-C160	16	400	150	13966	4483	93-2554	93-2553
NYL2-C181	18	450	50	17214	5736	93-2105	93-2103
NYL2-C180	18	450	150	17214	5736	93-2555	93-2553
NYL2-C201	20	500	50	22339	7144	93-2553	93-2552
NYL2-C200	20	500	150	22339	7144	93-2556	93-2554

2-Way, High Pressure Spring Return Pneumatic - Nylon Coated Disc

Actuator Model Details						Series 98 Pneumatic Scotch Yoke (Fail Close)			
Valve Model Details	Size		Close-Off psi	Cv		45E2-12-SR3	73E2-14-SR4-C	73E2-14-SR3-C	14E3-18-SR5-C
	In.	mm		90˚	60˚				
NYF2-C241	24	600	75	33154	11040	X	-	-	-
NYF2-C240	30	750	150	33154	11040	-	X	-	-
NYF2-C301	24	600	75	52443	18090	-	-	X	-
NYF2-C300	30	750	150	52443	18090	-	-	-	X

Aluminium Bronze Disc

2-Way, High Pressure Spring Return Pneumatic - Aluminium Bronze Disc

Actuator Model Details						Normally Closed (N.C.)	Normally Open (N.O.)
Valve Model Details	Size		Close-Off psi	Cv		Model #	Model #
	In.	mm		90˚	60˚		
ABL2-C020	2	50	175	144	61	93-0834	93-0834
ABL2-C025	2.5	65	175	282	107	93-0834	93-0833
ABL2-C030	3	80	175	461	154	93-0835	93-0834
ABL2-C041	4	100	50	841	274	93-0835	93-0833
ABL2-C040	4	100	175	841	274	93-1193	93-0934
ABL2-C051	5	125	50	1376	428	93-0935	93-0934
ABL2-C050	5	125	175	1376	428	93-1195	93-1193
ABL2-C061	6	150	50	1850	567	93-1193	93-1192
ABL2-C060	6	150	175	1850	567	93-1196	93-1283
ABL2-C081	8	200	50	3316	1081	93-1196	93-1194
ABL2-C080	8	200	175	3316	1081	93-1605	93-1603
ABL2-C101	10	250	50	5430	1710	93-1604	93-1602
ABL2-C100	10	250	175	5430	1710	93-2104	93-2102
ABL2-C121	12	300	50	8077	2563	93-1606	93-1603
ABL2-C120	12	300	175	8077	2563	93-2105	93-2103
ABL2-C141	14	350	50	10538	3384	93-2104	93-2103
ABL2-C140	14	350	150	10538	3384	93-2553	93-2552
ABL2-C161	16	400	50	13966	4483	93-2105	93-2103
ABL2-C160	16	400	150	13966	4483	93-2554	93-2553
ABL2-C181	18	450	50	17214	5736	93-2106	93-2104
ABL2-C180	18	450	150	17214	5736	93-2556	93-2554
ABL2-C201	20	500	50	22339	7144	93-2553	93-2552

Options/Adders
* For Manual Override, add "-5" to the end of the part number.
For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default

3-Way with Series 93 Spring Return Pneumatic Actuators

Nylon Coated Disc

3-Way, Spring Return Pneumatic - Nylon Coated Disc

Valve Model Details	Size		Close-Off psi	Cv		93-0834	93-0934	93-1194	93-1284	93-1604	93-2104	93-2554
	In.	mm		90˚	60˚							
NYL3-x020	2	50	175	144	61	x	-	-	-	-	-	-
NYL3-x025	2.5	65	175	282	107	-	x	-	-	-	-	-
NYL3-x030	3	80	175	461	154	-	-	x	-	-	-	-
NYL3-x041	4	100	50	841	274	-	x	-	-	-	-	-
NYL3-x040	4	100	175	841	274	-	-	x	-	-	-	-
NYL3-x051	5	125	50	1376	428	-	-	x	-	-	-	-
NYL3-x050	5	125	175	1376	428	-	-	-	x	-	-	-
NYL3-x061	6	150	50	1850	567	-	-	x	-	-	-	-
NYL3-x060	6	150	175	1850	567	-	-	-	-	x	-	-
NYL3-x081	8	200	50	3316	1081	-	-	-	-	x	-	-
NYL3-x080	8	200	175	3316	1081	-	-	-	-	-	x	-
NYL3-x101	10	250	50	5430	1710	-	-	-	-	-	x	-
NYL3-x100	10	250	175	5430	1710	-	-	-	-	-	x	-
NYL3-x121	12	300	50	8077	2563	-	-	-	-	-	x	-
NYL3-x120	12	300	175	8077	2563	-	-	-	-	-	-	x
NYL3-x141	14	350	50	10538	3384	-	-	-	-	-	x	-
NYL3-x140	14	350	150	10538	3384	-	-	-	-	-	-	x
NYL3-x161	16	400	50	13966	4483	-	-	-	-	-	-	x
NYL3-x181	18	450	50	17214	5736	-	-	-	-	-	-	x
NYL3-x201	20	500	50	22339	7144	-	-	-	-	-	-	x

Aluminium Bronze Disc

3-Way, Spring Return Pneumatic - Aluminium Bronze Disc

Valve Model Details	Size		Close-Off psi	Cv		93-0934	93-1194	93-1284	93-1604	93-2104	93-2554	93-2555
	In.	mm		90˚	60˚							
ABL3-x020	2	50	175	144	61	x	-	-	-	-	-	-
ABL3-x025	2.5	65	175	282	107	-	x	-	-	-	-	-
ABL3-x030	3	80	175	461	154	-	-	x	-	-	-	-
ABL3-x041	4	100	50	841	274	-	x	-	-	-	-	-
ABL3-x040	4	100	175	841	274	-	-	x	-	-	-	-
ABL3-x051	5	125	50	1376	428	-	-	x	-	-	-	-
ABL3-x050	5	125	175	1376	428	-	-	-	x	-	-	-
ABL3-x061	6	150	50	1850	567	-	-	x	-	-	-	-
ABL3-x060	6	150	175	1850	567	-	-	-	-	x	-	-
ABL3-x081	8	200	50	3316	1081	-	-	-	x	-	-	-
ABL3-x080	8	200	175	3316	1081	-	-	-	-	x	-	-
ABL3-x101	10	250	50	5430	1710	-	-	-	-	x	-	-
ABL3-x100	10	250	175	5430	1710	-	-	-	-	-	x	-
ABL3-x121	12	300	50	8077	2563	-	-	-	-	x	-	-
ABL3-x120	12	300	175	8077	2563	-	-	-	-	-	x	-
ABL3-x141	14	350	50	10538	3384	-	-	-	-	-	x	-
ABL3-x140	14	350	150	10538	3384	-	-	-	-	-	-	x
ABL3-x161	16	400	50	13966	4483	-	-	-	-	-	x	-
ABL3-x181	18	450	50	17214	5736	-	-	-	-	-	x	-
ABL3-x201	20	500	50	22339	7144	-	-	-	-	-	-	x

Options/Adders
X = 3-Way Assemblies (Refer to Configuration Chart, Page 7)
* For Manual Override, add "-5" to the end of the part number.

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2 & 3-Way with Low Pressure Pneumatic Actuators

Nylon Coated Disc

2-Way, Low Pressure Pneumatic - Nylon Coated Disc

Actuator Model Details					D-3153	D-3244	D-3246	D-3246-D
Valve Model Details	Size		Close-Off psi	Cv	Single Actuator			Tandem Actuators
	In.	mm		70°				
NYL2-C020	2	50	175	84	X	-	-	-
NYL2-C025	2.5	65	175	163	X	-	-	-
NYL2-C030	3	80	175	267	X	-	-	-
NYL2-C041	4	100	50	496	X	-	-	-
NYL2-C040	4	100	175	496	-	X	-	-
NYL2-C051	5	125	50	775	-	X	-	-
NYL2-C050	5	125	175	775	-	-	X	-
NYL2-C061	6	150	50	1025	-	-	X	-
NYL2-C060	6	150	175	1025	-	-	X	-
NYL2-C081	8	200	50	1862	-	-	X	-
NYL2-C080	8	200	175	1862	-	-	-	X
NYL2-C101	10	250	50	2948	-	-	-	X

3-Way, Low Pressure Pneumatic - Nylon Coated Disc

Actuator Model Details					D-3153	D-3244	D-3246	D-3246-D
Valve Model Details	Size		Close-Off psi	Cv	Single Actuator			Tandem Actuators
	In.	mm		70°				
NYL3-x020	2	50	175	84	X	-	-	-
NYL3-x025	2.5	65	175	163	-	X	-	-
NYL3-x030	3	80	175	267	-	X	-	-
NYL3-x041	4	100	50	496	-	X	-	-
NYL3-x040	4	100	175	496	-	-	X	-
NYL3-x051	5	125	50	775	-	-	X	-
NYL3-x050	5	125	175	775	-	-	X	-
NYL3-x061	6	150	50	1025	-	-	X	-
NYL3-x060	6	150	175	1025	-	-	-	X
NYL3-x081	8	200	50	1862	-	-	-	X

Aluminium Bronze Disc

2-Way, Low Pressure Pneumatic - Aluminium Bronze Disc

Actuator Model Details					D-3153	D-3244	D-3246	D-3246-D
Valve Model Details	Size		Close-Off psi	Cv	Single Actuator			Tandem Actuators
	In.	mm		70°				
ABL2-C020	2	50	175	84	X	-	-	-
ABL2-C025	2.5	65	175	163	X	-	-	-
ABL2-C030	3	80	175	267	X	-	-	-
ABL2-C041	4	100	50	496	X	-	-	-
ABL2-C040	4	100	175	496	-	X	-	-
ABL2-C051	5	125	50	775	-	X	-	-
ABL2-C050	5	125	175	775	-	-	X	-
ABL2-C061	6	150	50	1025	-	-	X	-
ABL2-C060	6	150	175	1025	-	-	X	-
ABL2-C081	8	200	50	1862	-	-	X	-
ABL2-C080	8	200	175	1862	-	-	-	X
ABL2-C101	10	250	50	2948	-	-	-	X

3-Way, Low Pressure Pneumatic - Aluminium Bronze Disc

Actuator Model Details					D-3153	D-3244	D-3246	D-3246-D
Valve Model Details	Size		Close-Off psi	Cv	Single Actuator			Tandem Actuators
	In.	mm		70°				
ABL3-x020	2	50	175	84	X	-	-	-
ABL3-x025	2.5	65	175	163	-	X	-	-
ABL3-x030	3	80	175	267	-	X	-	-
ABL3-x041	4	100	50	496	-	X	-	-
ABL3-x040	4	100	175	496	-	-	X	-
ABL3-x051	5	125	50	775	-	-	X	-
ABL3-x050	5	125	175	775	-	-	X	-
ABL3-x061	6	150	50	1025	-	-	X	-
ABL3-x060	6	150	175	1025	-	-	-	X
ABL3-x081	8	200	50	1862	-	-	-	X

Options/Adders
X = 3-Way Assemblies (Refer to Configuration Chart, Page 7)
-D = Dual mounted actuators

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Bray COMMERCIAL

MK Series

High Performance Butterfly Valves

2-Way & 3-Way — 2-1/2"- 20"

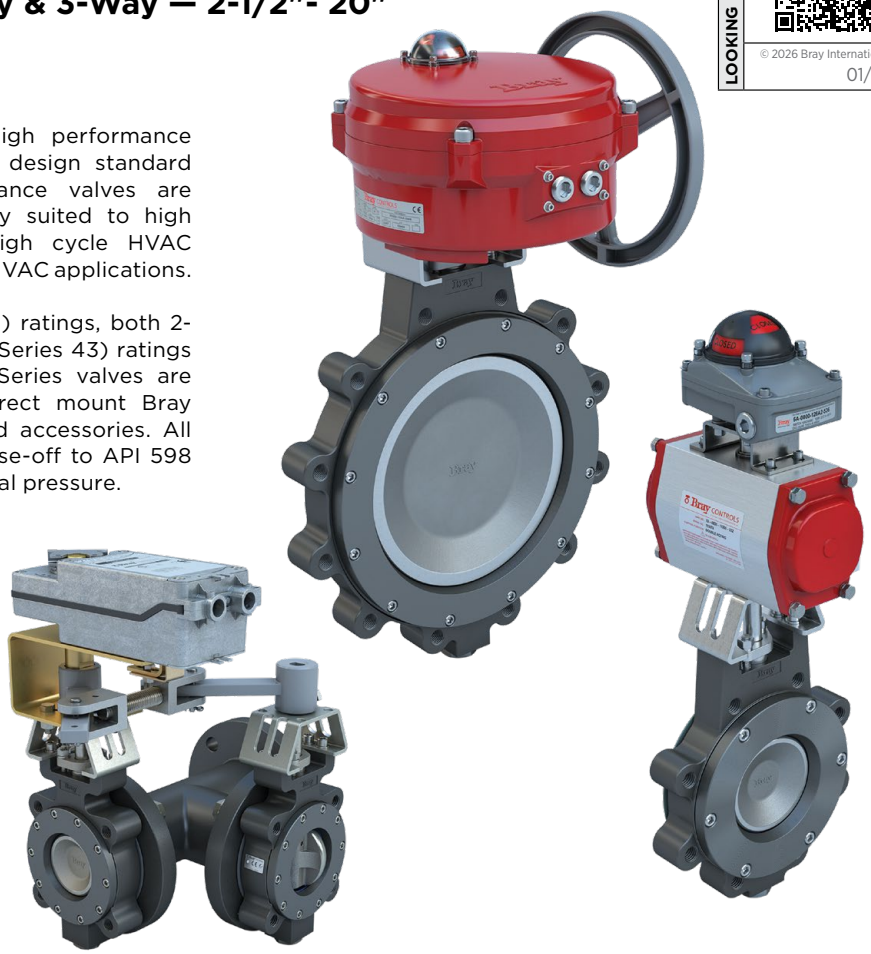
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- Features
- Valve Specs
- Materials
- Cv Chart
- Dimensions
- Close-Off's

LOOKING FOR MORE

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Application

The Bray McCannalok MK Series high performance butterfly valves set the quality and design standard by which all other high performance valves are measured. The MK Series is ideally suited to high pressure, high temperature, and high cycle HVAC applications as well as mission critical HVAC applications.

Available in ANSI Class 150 (Series 41) ratings, both 2-way and 3-way, and ANSI Class 300 (Series 43) ratings in 2-way configurations, Bray's MK Series valves are provided with a wide variety of direct mount Bray electric and pneumatic actuators and accessories. All valves are tested for bubble tight close-off to API 598 standards at maximum rated differential pressure.

Features and Benefits

- **Double Offset Stem/Disc Design**
  Reduced seat wear, zero leakage, and low torque
- **Blow-Out Proof Stem**
  Safety and ease of use
- **Energized RPTFE Seat**
  Zero leakage, self adjusting for wear and easily field replaceable
- **Pressure Assisted, but not Pressure Dependent Seat Design**
  Optimal performance and sealing at high or low differential pressures
- **Adjustable PTFE Packing**
  Packing can be adjusted while the valve is in service
- **Dead End Rating Equal to Nominal Pressure Rating**
  Allows the control valve to also function as an isolation valve

MK Series Butterfly Valves - Valve Body Specifications

Technical Specifications		
Service	Hot Water, Chilled Water, Condenser Water up to 50% Glycol & Steam	
Size Range	2-1/2" through 20" (DN 65 to 500)	
Body Style	**Lug**	2-Way — ANSI 150 and ANSI 300 Flanges 3-Way — ANSI 150 Flanges only
Flow Characteristics	Modified Equal Percentage	
Fluid Temperature Limits	Water -40 to 500˚F (-40 to 260˚C)	
Maximum Fluid Velocity	30 ft/second (9 m/second)	
Leakage	Bubble tight at rated maximum differential pressure	
Body Cold Working Pressure Ratings	**ANSI 150** **ANSI 300**	285 PSI (20 BAR) 740 PSI (50 BAR)
Close-Off Pressure Ratings	See pages MK-13 to MK-19	
Maximum Steam Pressure	**On/Off Applications** **Modulating Applications**	150 PSI (10 BAR) 50 PSI (3.5 BAR)
Materials (other materials available upon request)	**Body**	Carbon Steel
	Disc	316 Stainless Steel
	Seat	RPTFE
	Packing	PTFE (adjustable)
	Stem	17-4 Stainless Steel
	Tee	Ductile Iron (3-Way ANSI 150 valves only)
Weights	See Dimensions - Page MK-10 to MK-12	
Design Standard	API 609 Category B, ASME B16.34, ASME BPVC VIII, EN 593, EN 12516, MSS SP 68	
Face to Face	API 609 Category B, ASME B16.10, EN 558, ISO 5752	
Approvals	ABS Type, ATEX 2014/34/EU, Bureau Veritas Type, China Classification Society (CCS) Type, CRN, DNV, EC1935, TR CU	
Certifications	ANSI/NSF 61/372 (SS Bodies Only), CE: PED 2014/68/EU, SIL 3 Capable	

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

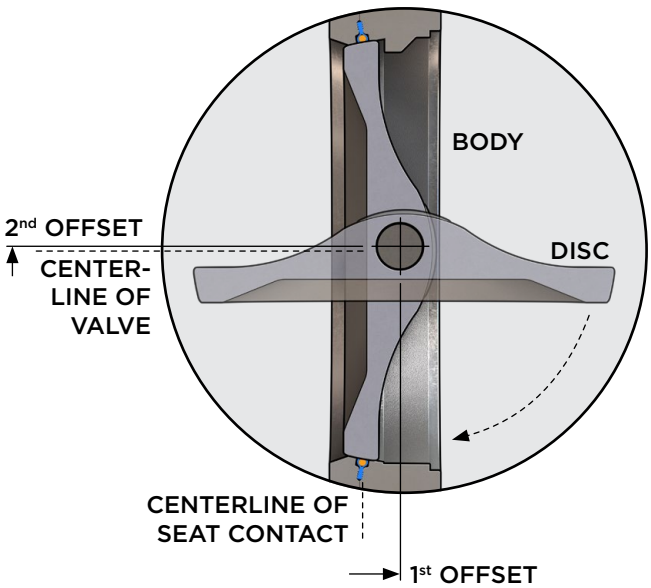
MK Series Butterfly Valves - Double Offset Stem & Disc Design

The disc motion of the double offset design provides many performance benefits:

DISC OPENING
- Cam-action movement pulls disc away from seat.
- Reduces seat wear.

OPEN POSITION
- Disc does not contact seat.
- Eliminates seat deformation.
- Reduces operating torques.
- Extends service life.

DISC CLOSING
- Linear motion pushes disc onto seat.
- Wiping action prevents undesirable material buildup.



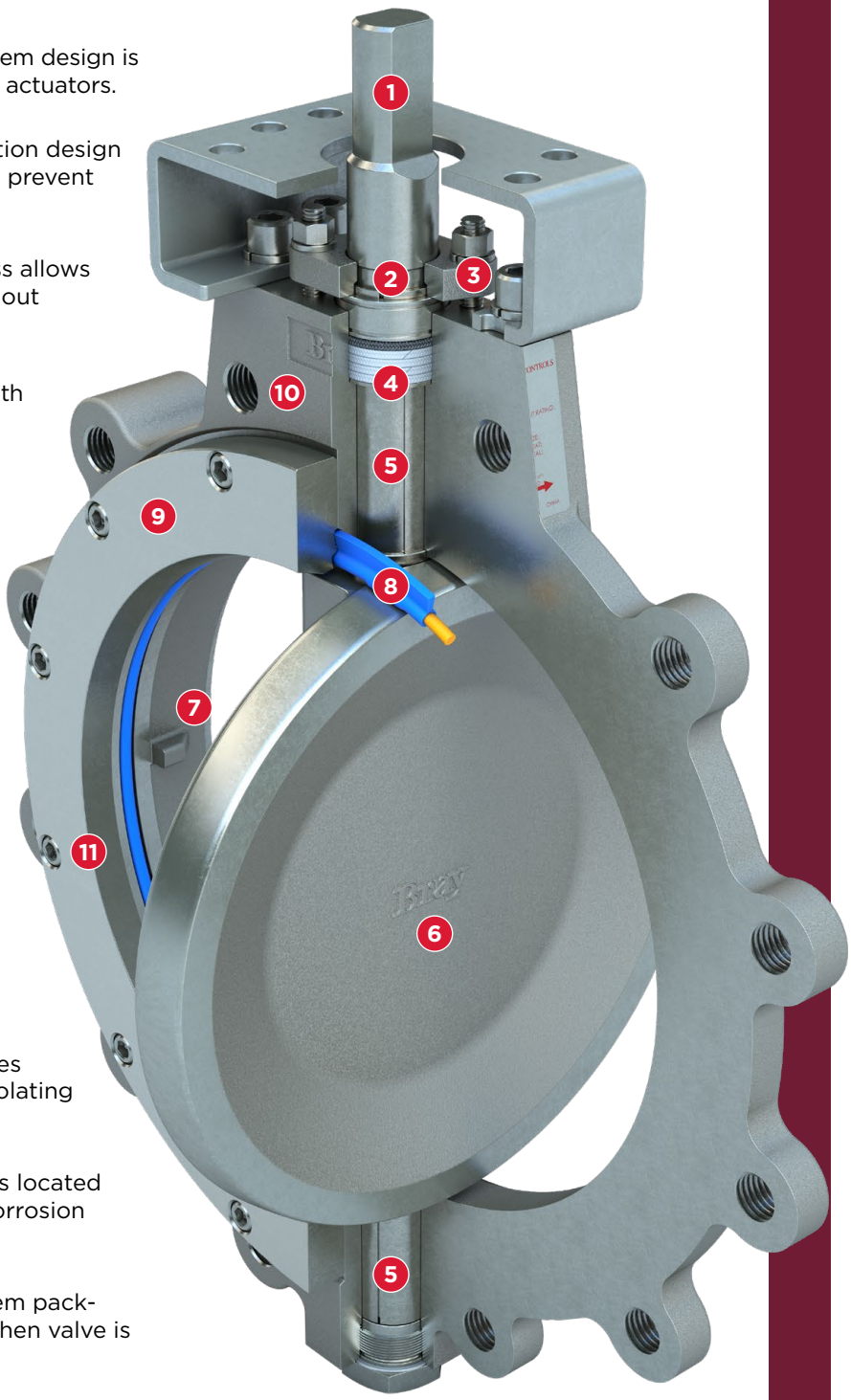
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Design Features

1. **STEM DESIGN:** High-strength, one-piece stem design is standardized for interchangeability of Bray actuators.
2. **BLOWOUT-PROOF STEM:** The stem retention design does not rely on actuation components to prevent stem blowout.
3. **ADJUSTABLE STEM PACKING:** Easy access allows simple quarter-turn field adjustments without actuator removal.
4. **STEM SEAL SYSTEM:** PTFE packing rings with carbon fiber anti-extrusion ring provides constant compression for a positive seal around the stem. Options are available for high temperature, high cycle and firesafe applications.
5. **STEM BEARINGS:** Top and bottom bearings securely support the stem, provide excellent corrosion resistance, and minimize deflection from high temperatures and mechanical loading forces.
6. **DISC:** The disc is engineered to maximize flow and minimize resistance for optimal flow rates.
7. **INTERNAL OVER-TRAVEL STOP:** Designed to minimize possible seat damage — extending the service life of the seat.
8. **BIDIRECTIONAL RESILIENT SEAT:** Provides bidirectional zero-leakage sealing while isolating the energizer from line media.
9. **FULL-FACED SEAT RETAINER:** Cap screws located outside sealing area are protected from corrosion while allowing simple seat replacement.
10. **BODY:** Extended neck allows access to stem packing adjustments and actuator mounting when valve is fully insulated.
11. **DEAD-END SERVICE:** Lug and double-flanged bodies are full rated for bidirectional dead-end service.



MK Series Butterfly Valves - Materials of Construction

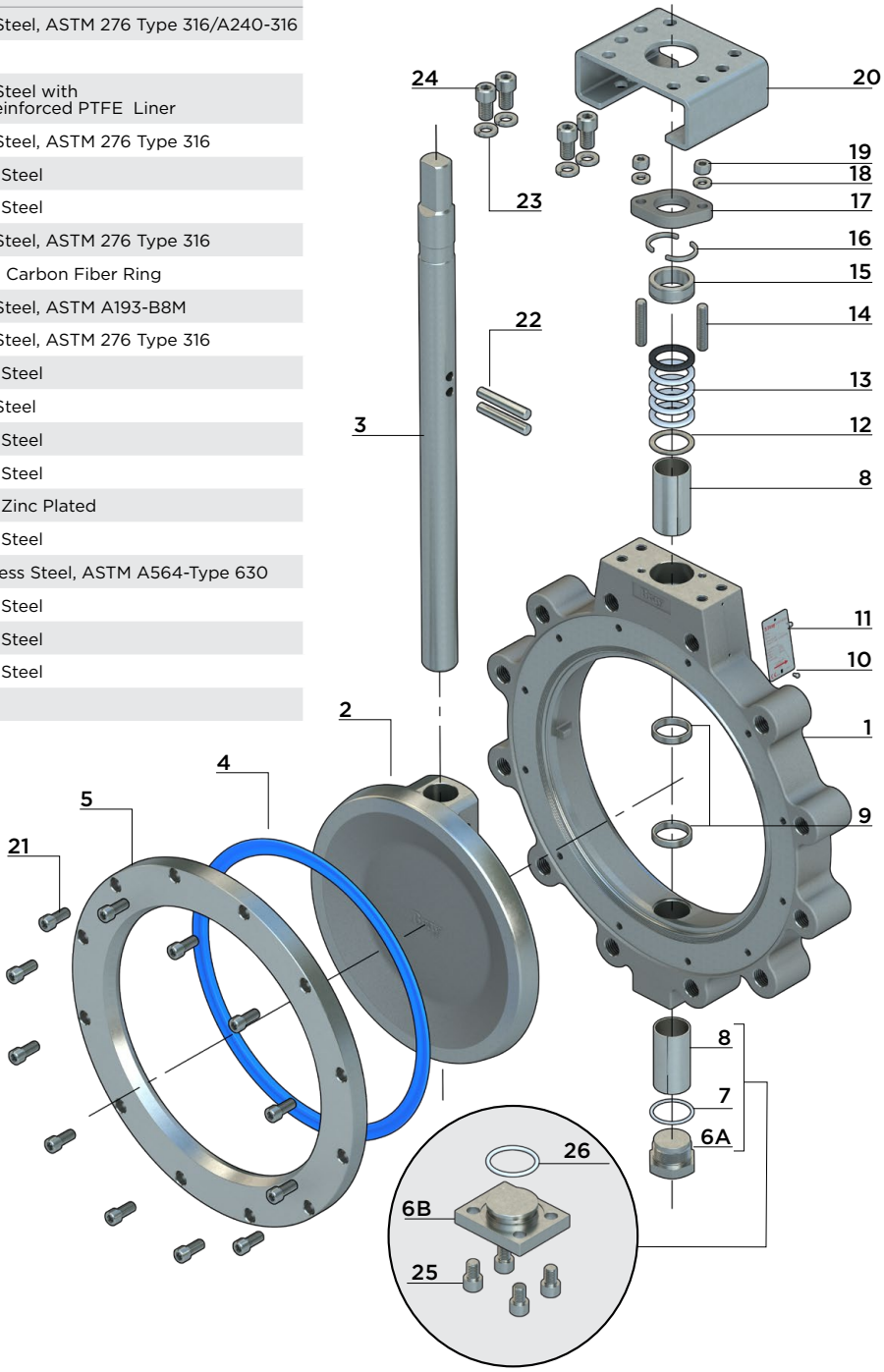
ITEM	DESCRIPTION	MATERIAL
1	Body	Carbon Steel, ASTM A216 Gr. WCB/A516 Gr. 70
		Stainless Steel, ASTM A351 Gr. CF8M
2	Disc	Stainless Steel, ASTM A351 Gr. CF8M
3	Stem	17-4 PH Stainless Steel, ASTM A564-Type 630
4	Seat Assembly	RPTFE[1] with Resilient Energizer
5	Seat Retainer	Carbon Steel, ASTM A216 Gr. WCB/A516 Gr. 70
		Stainless Steel, ASTM A351 Gr. CF8M
6A	Locating Plug	316 Stainless Steel, ASTM 276 Type 316/A240-316
6B	Bottom Plate	Carbon Steel, Phosphate Coated
		316 Stainless Steel, ASTM 276 Type 316/A240-316
7	Gasket, Locating Plug	PTFE
8	Bearing	316 Stainless Steel with Glass Fiber Reinforced PTFE Liner
9	Disc Spacers	316 Stainless Steel, ASTM 276 Type 316
10	Drive Screw	18-8 Stainless Steel
11	ID Tag	18-8 Stainless Steel
12	Thrust Washer	316 Stainless Steel, ASTM 276 Type 316
13	Stem Seal Set	PTFE rings + 1 Carbon Fiber Ring
14	Stud	316 Stainless Steel, ASTM A193-B8M
15	Gland Ring	316 Stainless Steel, ASTM 276 Type 316
16	Retaining Ring	18-8 Stainless Steel
17	Gland Retainer	316 Stainless Steel
18	Lock Washers	18-8 Stainless Steel
19	Hex Nut	18-8 Stainless Steel
20	Mounting Bracket	Carbon Steel, Zinc Plated
21	Cap Screws	18-8 Stainless Steel
22	Taper Pins	17-4 PH Stainless Steel, ASTM A564-Type 630
23	Lock Washers	18-8 Stainless Steel
24	Cap Screws	18-8 Stainless Steel
25	Cap Screws	18-8 Stainless Steel
26	Gasket, Bottom Plate	PTFE

NOTES

Material specifications provided for reference only, and are subject to change without notice.

Additional materials available upon request.

[1]RTFE is supplied by Bray as RPTFE (reinforced polytetrafluoroethylene.)



For Sizes Greater than 14" (DN 350)

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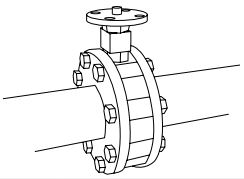
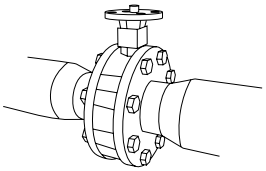
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ANSI Class 150 - Low and Standard Pressure Cv Disc Values									
	ANGLE OF DISC OPENING								
Valve Size	10˚	20˚	30˚	40˚	50˚	60˚*	70˚	80˚	90˚
2.5"	3	8	16	30	50	78	100	136	160
3"	5	14	32	56	87	123	155	178	185
4"	10	31	63	115	175	250	315	365	375
5"	16	41	78	146	238	360	500	675	790
6"	35	81	140	218	330	510	750	1,070	1,350
8"	65	165	280	456	685	1,060	1,590	2,230	2,800
10"	100	250	450	700	1,050	1,630	2,430	3,450	4,300
12"	155	390	700	1,080	1,630	2,530	3,750	5,330	6,650
14"	175	450	810	1,250	1,890	2,900	4,300	6,100	7,650
16"	230	580	1,020	1,530	2,420	3,700	5,510	7,860	9,800
18"	170	500	1,180	2,220	3,520	5,100	6,960	9,100	10,500
20"	200	640	1,530	2,820	4,500	6,500	8,800	11,700	13,500

ANSI Class 300 - Low and Standard Pressure Cv Disc Values									
	ANGLE OF DISC OPENING								
Valve Size	10˚	20˚	30˚	40˚	50˚	60˚*	70˚	80˚	90˚
2.5"	3	8	16	30	50	78	100	136	160
3"	5	14	32	56	87	123	155	178	185
4"	10	31	63	115	175	250	315	365	375
5"	16	41	78	146	238	360	500	675	790
6"	26	79	138	240	370	530	710	875	1,000
8"	47	121	240	405	630	950	1,360	1,720	2,000
10"	61	150	295	510	780	1,200	1,740	2,250	2,650
12"	92	220	430	710	1,100	1,690	2,500	3,400	4,000
14"	100	240	490	830	1,200	1,770	2,600	3,500	4,100
16"	180	420	730	1,160	1,840	2,970	4,550	6,540	7,800
18"	94	440	1,080	1,970	3,110	4,530	6,170	8,000	9,500
20"	110	530	1,250	2,330	3,720	5,400	7,300	9,570	11,000

* When selecting a butterfly valve for a modulating application, use a valve where the calculated Cv falls between 0 - 60 degrees.

MK Series Butterfly Valves - Valve Sizing Steps

MK Series - Valve Sizing Tips			
Step One	Determine the designed Cv by using the following equation.*	$Cv = \frac{Q\sqrt{G}}{\sqrt{\Delta P}}$	
	Where **Q** = Flow in gallons per minute (GPM) required to pass through the valve **G** = Specific gravity of fluid** **ΔP** = Designed pressure drop across the valve in PSI **Cv** = Flow coefficient		
	Notes	** Specific gravity is negligible (equal to 1) for water below 200˚F. Use actual specific gravity of pure fluids other than water. In most cases, the valve selected for a H_2O mixture will not be affected by the specific gravity.	
	Example	The Specific Gravity of 50% Water (Compound 1) and 50% Ethylene Glycol Solution (Compound 2):	$\frac{1}{\text{Specific Gravity}} = \frac{0.5}{1.0} + \frac{0.5}{1.113} = 1.05$ $\frac{1}{G_{soln}} = \frac{\text{wt\% of Compound 1}}{\text{Specific Gravity (G)}} + \frac{\text{wt\% of Compound 2}}{\text{Specific Gravity (G)}}$
Step Two	Determine whether the valve should be line size or sized to match the designed pressure drop (typical for modulating applications where precise control is required.)		
	Option 1	**LINE SIZE** On/Off Valves Select the valve size to equal the pipe size.	
	Option 2	**SIZE FOR MODULATING CONTROL** Modulating Valves Size the valve for design flow at 60 degrees open. ***60˚ rotation for modulating control***	
Step Three	Determine the actual pressure drop using the below equation.	$\Delta P = \left(\frac{Q\sqrt{G}}{Cv} \right)^2$	
	If the pressure drop is acceptable†, go to Step 4. If not, repeat Steps 2 and 3, selecting an alternate valve.		
Step Four	Check to be sure that the Close-Off requirements are met. Refer to Page MK-13 to MK-19		

† Recommended to be no higher than 25 PSI or match the designed pressure drop, 3, 4, 5, and 6 PSI are commonly accepted for modulating applications.
* For modulating butterfly valves, size for design flow at 60˚ rotation

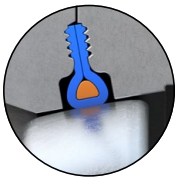
MK Series Butterfly Valves - Set Features

- Proven zero-leakage shutoff in both directions.Interference-fit sealing, even when there is no differential line pressure.
- Pressure-assisted sealing is energized by line media pressure, providing a tighter seal in higher differential pressure services.
- Extended service life with reliable sealing after 1 million cycles.
- Resilient energizer ring is fully encapsulated by the seat and isolated from all line media contact.
- Full-faced retainer secures seat in the correct position, even without mating flange.
- Seat self-adjusts for wear and temperature changes, providing longer service life.
- Simplified seat replacement.

INTERFERENCE-FIT SEALING
Provides bidirectional sealing for low pressure applications.

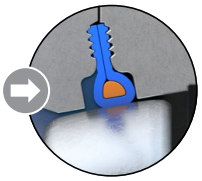


Disc in Open Position. Seat non-compressed.

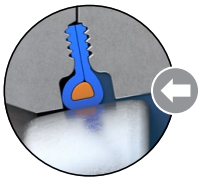


Disc in Closed Position. No line pressure.

PRESSURE-ASSISTED SEALING
Provides tighter bidirectional sealing in higher pressure applications.



Disc in Closed Position. Line pressure applied from the preferred flow direction.

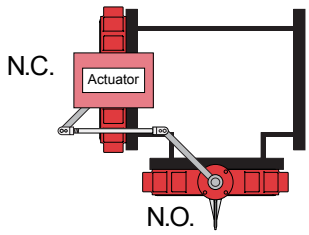


Disc in Closed Position. Line pressure applied from the non-preferred flow direction.

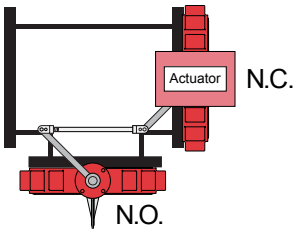
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Spring Return and Non-Spring Return

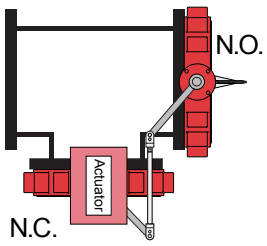
Configuration 1



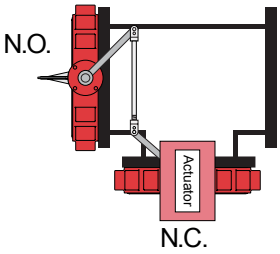
Configuration 2



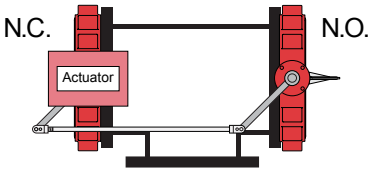
Configuration 3



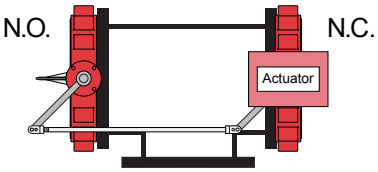
Configuration 4



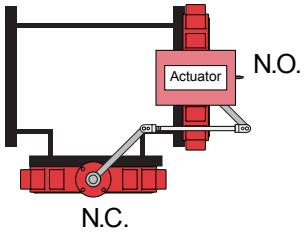
Configuration 5



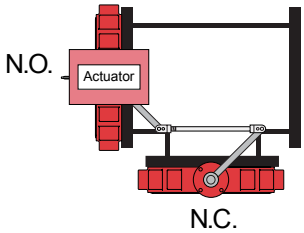
Configuration 6



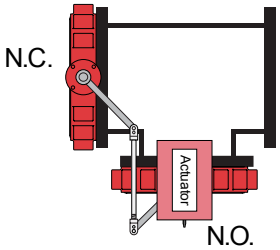
Configuration 7



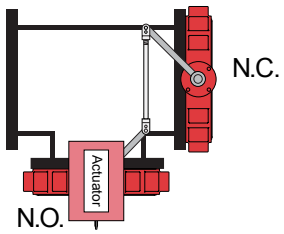
Configuration 8



Configuration 9



Configuration 10
(PN placeholder is 0)



Note: All 3-Way butterfly valve assembly orders should have configuration specified. Pricing remains the same, however Bray must know the specifications in order to manufacture the appropriate linkage kit.

Note: Configurations 7, 8, 9, & 10 with power fail-safe actuators will be configured as Forward Acting & Fail Open. Actuators without power fail-safe capabilities will be set to Reverse Acting, when configurable.

Note: Unless otherwise requested valve will be shipped as illustrated by Configuration 3.

MK Series Butterfly Valves - Part Number Matrix

MK	Series 41, ANSI 150, Carbon Steel Body, 316 Stainless Steel Disc, 17-4 SS Stem, RPTFE Seat. Series 43 , ANSI 300, Carbon Steel Body, 316 Stainless Steel Disc, 17-4 SS Stem, RPTFE Seat.										Valve Series
	L Lug Body										Body Type
		2 2-Way Valve Assembly **3** 3-Way Valve Assembly									Valve Type
			-								
				C 2-way Assembly, Normally Closed **N** 2-way Assembly, Normally Open **X** For 3-Way only - (X= Configuration # - See page MK-7)						Configuration
					XX Size (in.) 08=8", 12=12", etc.						Valve Size
						0 Series 41 Carbon Steel Body, **3** Series 43 Carbon Steel Body,					Valve Shut-Off Rating
							/				
								70-xxxx Series 70 Electric Actuators **AU** Auma Actuators **92-xxx** High Pressure Pneumatic, Double Acting **93-xxx** High Pressure Pneumatic, Spring Return **D or DC** Commercial Electric Actuators			Actuator
									SV Servo Card for 0-10 VDC or 4-20 mA modulation **H** Anti-Condensation Heater **BBU** Battery Back-Up Unit		Electric Actuator Accessories
										-S 120 VAC Solenoid Valve **-S4** 24 VAC Solenoid Valve **-SW** Valve Status Monitor for Pneumatic Actuator **-C** 1-Set Speed Controls for Solenoids **-P** 3-15 PSI Pneumatic Positioner **-EP** 4-20 mA Electro-Pneumatic Positioner **-05** Declutchable Handwheel Manual Override	Pneumatic Actuator Accessories
MK	**L**	**2**	**-**	**C**	**12**	**3**	**/**	**70-1300**	**SVH**	**12" lugged 2-way butterfly valve, carbon steel body, 316 SS Disc,17-4 SS Stem, RPTFE Seat, Series 70-1300, 120 VAC modulating electric actuator with heater**	Examples

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ANSI 150 — 60° Rotation

2-Way & 3-Way - ANSI 150 - UpStream PIPING GEOMETRY CHART - Adjusted Cv at 60° Rotation

Valve Size	Model Number	Nominal Cv	Pipe Size													
			2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"
2.5"	MKL_-*025	78	78	77	74											
3"	MKL_-*030	123		123	119	116										
4"	MKL_-*040	250			250	244	236									
5"	MKL_-*050	360				360	354	339								
6"	MKL_-*060	510					510	494	478							
8"	MKL_-*080	1060						1060	1030	992						
10"	MKL_-*100	1630							1630	1597	1549					
12"	MKL_-*120	2530								2530	2485	2413				
14"	MKL_-*140	2900									2900	2872	2820			
16"	MKL_-*160	3700										3700	3672	3618		
18"	MKL_-*180	5100											5100	5062	4987	
20"	MKL_-*200	6500												6500	6457	6369

ANSI 150 — 90° Rotation

2-Way & 3-Way - ANSI 150 - UpStream PIPING GEOMETRY CHART - Adjusted Cv at 90° Rotation

Valve Size	Model Number	Nominal Cv	Pipe Size													
			2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"
2.5"	MKL_-*025	160	160	152	135											
3"	MKL_-*030	185		185	174	163										
4"	MKL_-*040	375			375	354	331									
5"	MKL_-*050	790				790	734	620								
6"	MKL_-*060	1350					1350	1120	962							
8"	MKL_-*080	2800						2800	2351	1982						
10"	MKL_-*100	4300							4300	3785	3253					
12"	MKL_-*120	6650								6650	5941	5118				
14"	MKL_-*140	7650									7650	7162	6464			
16"	MKL_-*160	9800										9800	9307	8530		
18"	MKL_-*180	10500											10500	10180	9611	
20"	MKL_-*200	13500												13500	13126	12432

ANSI 300 — 60° Rotation

2-Way - ANSI 300 - UpStream PIPING GEOMETRY CHART - Adjusted Cv at 60° Rotation

Valve Size	Model Number	Nominal Cv	Pipe Size													
			2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"
2.5"	MKL2-*253	78	78	77	74											
3"	MKL2-*033	123		123	119	116										
4"	MKL2-*043	250			250	244	236									
5"	MKL2-*053	360				360	354	339								
6"	MKL2-*063	530					530	512	494							
8"	MKL2-*083	950						950	928	900						
10"	MKL2-*103	1200							1200	1187	1167					
12"	MKL2-*123	1690								1690	1676	1654				
14"	MKL2-*143	1770									1770	1763	1751			
16"	MKL2-*163	2970										2970	2955	2927		
18"	MKL2-*183	4530											4530	4503	4451	
20"	MKL2-*203	5400												5400	5375	5324

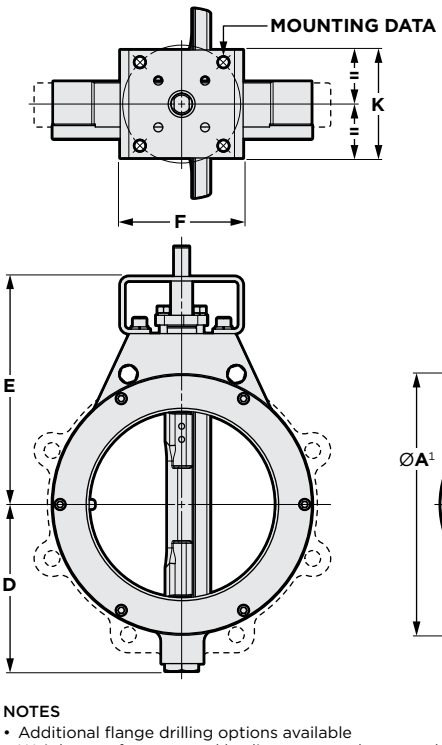
ANSI 300 — 90° Rotation

2-Way - ANSI 300 - UpStream PIPING GEOMETRY CHART - Adjusted Cv at 90° Rotation

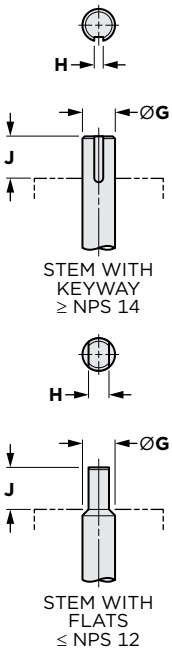
Valve Size	Model Number	Nominal Cv	Pipe Size													
			2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"
2.5"	MKL2-*253	160	160	152	135											
3"	MKL2-*033	185		185	174	163										
4"	MKL2-*043	375			375	354	331									
5"	MKL2-*053	790				790	734	620								
6"	MKL2-*063	1000					1000	895	808							
8"	MKL2-*083	2000						2000	1816	1629						
10"	MKL2-*103	2650							2650	2515	2339					
12"	MKL2-*123	4000								4000	3829	3579				
14"	MKL2-*143	4100									4100	4019	3883			
16"	MKL2-*163	7800										7800	7544	7112		
18"	MKL2-*183	9500											9500	9261	8827	
20"	MKL2-*203	11000												11000	10795	10399

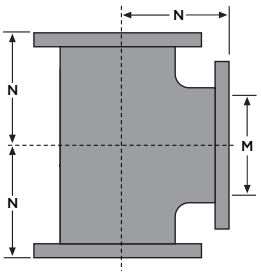
_ = 2-Way or 3-Way
* = Configuration (N) = Normally Open, (C) = Normally Closed

MK Series Butterfly Valves - Valve Dimensions



STEM DETAILS





TEE DIMENSIONS - in. (mm)			WEIGHT lbs
Size	M	N	
2	2.0 (51)	4.5 (114)	19
2.5	2.5 (64)	5.0 (127)	27
3	3.0 (76)	5.5 (140)	39
4	4.0 (102)	6.5 (165)	62
5	5.0 (127)	7.5 (191)	79
6	6.0 (152)	8.0 (203)	96
8	8.0 (203)	9.0 (229)	155
10	10.0 (254)	11.0 (279)	270
12	12.0 (305)	12.0 (305)	380
14	14.0 (356)	14.0 (356)	435
16	16.0 (406)	15.0 (381)	550
18	18.0 (457)	16.5 (419)	665
20	20.0 (508)	18.0 (457)	855

Tee weight is the weight of the Tee alone. For 3-Way assemblies add the weight of two lug valves.

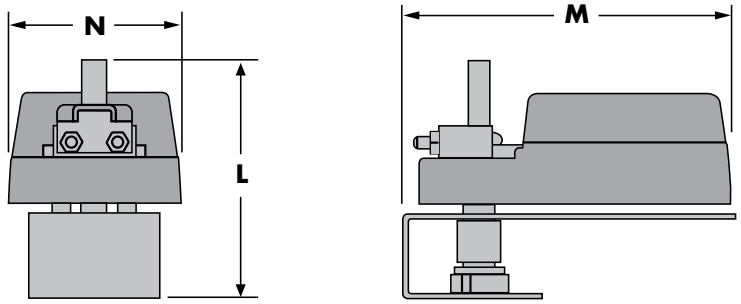
NOTES
- Additional flange drilling options available
- Weights are for cast steel bodies, except when noted.

1 Dimension A is diameter of raised face flange.
2 Dimension C is absolute minimum pipe ID at valve face (without gasket).
3 Flame cut body weights. Flame cut steel and Stainless Steel bodies vary.

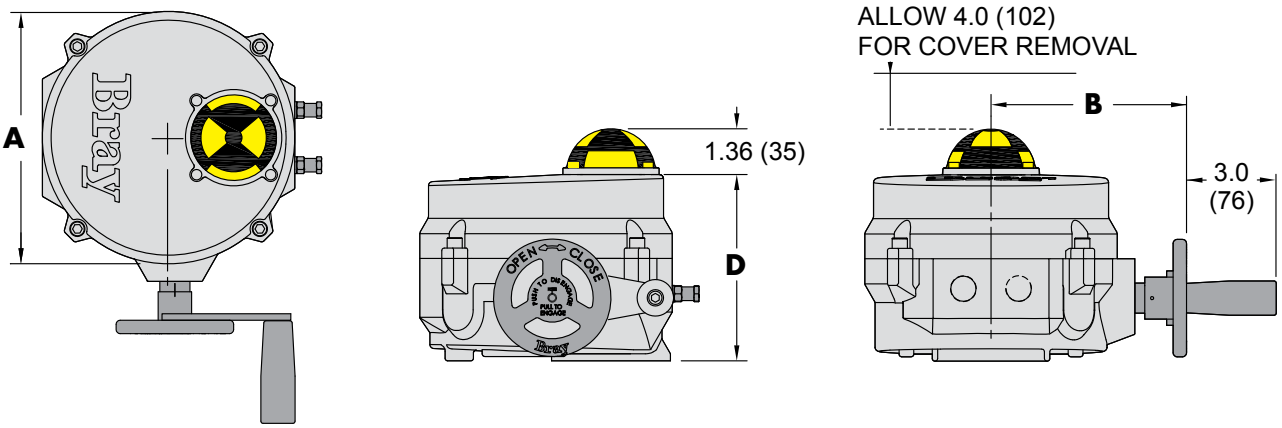
ANSI CLASS 150 (Series 41) DIMENSIONS - in.												Mounting Data			WEIGHT lbs	
Size	ØA1	B	ØC2	D	E	F	ØG	H	J	K	L	Bolt Circle	Hole Qty	Hole Dia	Wafer	Lug
2 ½	4.75	1.88	2.32	3.82	6.38	4.36	0.63	0.43	1.25	2.50	0.77	2.76	4	0.38	11	13
3	5.25	1.88	2.90	4.10	6.63	4.36	0.63	0.43	1.25	2.50	0.77	2.76	4	0.38	13	15
4	6.72	2.03	3.83	4.72	7.50	4.36	0.63	0.43	1.25	2.50	0.75	2.76	4	0.38	20	23
5	7.62	2.23	4.81	5.07	7.50	5.12	0.75	0.51	1.25	4.50	0.94	4.92	4	0.53	27	32
6	8.62	2.23	5.88	5.57	8.00	5.12	0.75	0.51	1.25	4.50	0.94	4.92	4	0.53	32	36
8	10.81	2.40	7.94	6.94	9.50	5.12	0.88	0.63	1.25	4.50	0.94	4.92	4	0.53	48	54
10	13.06	2.75	10.02	8.56	10.75	6.12	1.18	0.87	2.00	4.50	1.07	4.92	4	0.53	79	93
12	15.42	3.08	11.87	10.18	12.25	6.12	1.18	0.87	2.00	4.50	1.13	4.92	4	0.53	118	134
14	17.24	3.73	13.00	11.95	14.50	7.75	1.38	.39 x .39	2.00	6.50	1.42	4.92	4	0.53	211	221
16	19.50	4.11	14.75	13.10	11.75	10.38	1.97	.47 x .39	2.50	6.50	1.66	6.50	4	0.81	314	337
18	21.38	4.61	16.62	14.37	20.00	10.38	1.97	.47 x .39	2.50	6.50	1.86	6.50	4	0.81	404	429
20	23.62	5.03	18.50	15.55	22.75	10.38	2.50	.63 x .63	4.00	6.50	2.06	6.50	4	0.81	533	568

ANSI CLASS 300 (Series 43) DIMENSIONS - in.												Mounting Data			WEIGHT lbs	
Size	ØA1	B	ØC2	D	E	F	ØG	H	J	K	L	Bolt Circle	Hole Qty	Hole Dia	Wafer	Lug
2 ½	4.75	1.88	2.32	3.82	6.38	4.36	0.63	0.43	1.25	2.50	0.77	2.76	4	0.38	11	13
3	5.25	1.88	2.90	4.10	6.63	4.36	0.63	0.43	1.25	2.50	0.77	2.76	4	0.38	13	15
4	6.72	2.03	3.83	4.72	7.50	4.36	0.63	0.43	1.25	2.50	0.75	2.76	4	0.38	20	23
5	8.25	2.23	4.81	5.07	8.00	5.12	0.75	0.51	1.25	4.50	0.94	4.92	4	0.53	33	39
6	8.88	2.42	5.76	6.25	8.75	5.12	0.87	0.63	1.25	4.50	0.99	4.92	4	0.53	41	51
8	10.94	2.82	7.63	7.55	10.00	6.12	1.18	0.87	2.00	4.50	1.10	4.92	4	0.53	69	83
10	13.26	3.28	9.50	9.36	11.38	6.12	1.38	.39 x .39	2.00	4.50	1.28	4.92	4	0.53	114	137
12	15.42	3.62	11.37	10.89	13.50	7.75	1.38	.39 x .39	2.00	6.50	1.40	4.92	4	0.53	173	210
14	17.27	4.66	11.50	12.50	18.25	10.38	1.97	.47 x .39	2.50	6.50	2.13	6.50	4	0.81	333	445
16	19.50	5.35	14.38	14.18	21.00	10.38	2.50	.63 x .63	4.00	6.50	2.50	6.50	4	0.81	454	531
18	21.38	5.98	15.25	15.43	21.00	15.38	2.50	.63 x .63	4.00	11.75	2.65	10.00	8	0.67	609	753
20	23.76	6.33	16.50	16.80	22.25	15.38	3.00	.75 x .75	4.00	11.75	2.90	10.00	8	0.67	783	960

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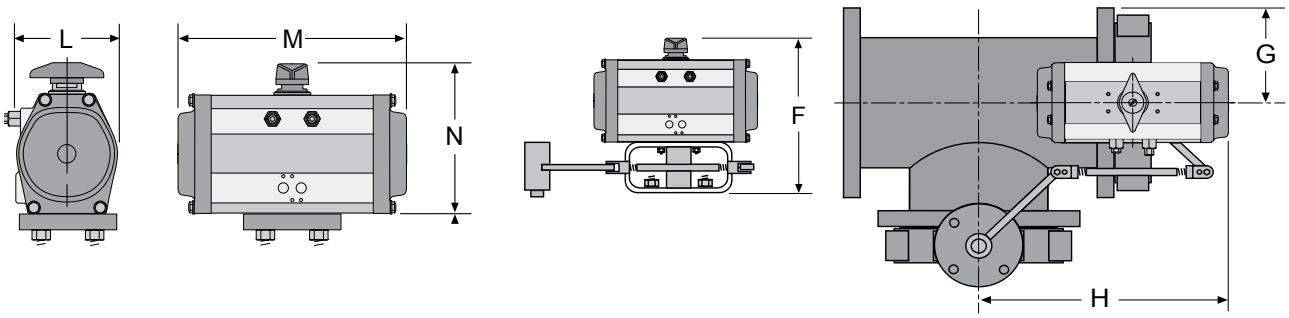
COMMERCIAL ACTUATOR DIMENSIONS — in. (mm)				
Actuator Model Number	L	M	N	Weight lbs. (kg)
DCS-140 Series	7.4 (188)	11.0 (279)	4.0 (102)	4.9 (2.2)
DC-310 Series	7.4 (188)	11.0 (279)	4.0 (102)	4.4 (2.0)
D-140/210 Series	6.7 (170)	7.5 (191)	4.0 (102)	2.9 (1.3)
DS-180 Series	7.4 (188)	11.0 (279)	4.0 (102)	6.4 (2.9)
Tandem Actuators	11.8 (300)	18.0 (457)	4.0 (102)	12.8 (5.8)



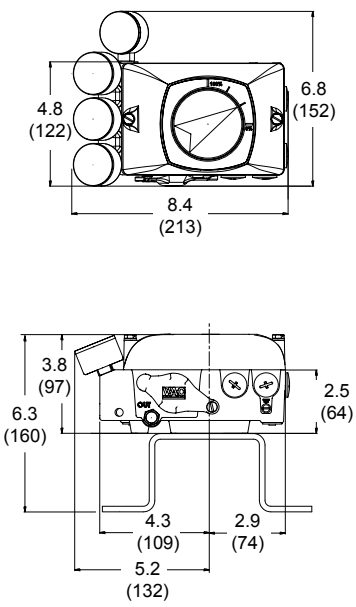
INDUSTRIAL ACTUATOR DIMENSIONS — in. (mm)					
Actuator Model Number	A	B	D*		Weight lbs. (kg)
			2-Way	3-Way	
70-0081	7.5 (191)	5.8 (147)	5.6 (141)	8.6 (218)	13 (6)
70-0121/0201/E301	10.1 (256)	7.8 (198)	6.6 (168)	10.7 (273)	28 (13)
70-0501/0651	12.1 (308)	9.5 (241)	7.2 (183)	13.2 (335)	48 (22)
70-1300/1800	12.1 (308)	9.5 (241)	12.5 (316)	20.5 (521)	118 (54)
AU-4068	32.1 (815)	28.9 (734)	12.3 (312)	22.3 (566)	195 (88)
AU-7080	32.1 (815)	31.9 (810)	12.3 (312)	-	285 (129)

PNEUMATIC ACTUATOR DIMENSIONS — in. (mm)								
Actuator Model Number	L	M	N	F	G	H	Weight lbs. (kg)	
							Double Acting	Spring Return
92/93-063	3.1 (79)	5.6 (142)	4.5 (114)	7.5 (191)	3.0 (76)	9.1 (231)	3.4 (1.5)	4.1 (1.9)
92/93-083	4.1 (104)	7.4 (188)	5.4 (137)	8.4 (213)	4.5 (114)	13.3 (338)	6.3 (3)	8.1 (4)
92/93-093	4.4 (112)	9.1 (231)	5.8 (147)	8.8 (224)	5.5 (140)	14.9 (378)	8.5 (4)	10.8 (5)
92/93-119	5.2 (132)	12.4 (325)	7.3 (185)	11.4 (290)	8.0 (203)	19.9 (505)	16.9 (8)	22.3 (10)
92/93-128	5.6 (142)	12.8 (734)	8.1 (2.6)	12.2 (310)	8.0 (203)	19.9 (505)	21.0 (10)	27.6 (13)
92/93-160	7.2 (183)	15.5 (394)	9.4 (239)	13.5 (343)	10.5 (267)	26.6 (676)	38.8 (18)	53.2 (24)
92/93-210	9.0 (229)	19.6 (498)	11.6 (295)	17.6 (447)	13.8 (351)	33.1 (841)	77.8 (35)	109.6 (50)
92/93-255	10.8 (274)	28.8 (732)	13.5 (343)	19.5 (495)	13.8 (351)	33.1 (841)	167.0 (76)	210.8 (96)
98-45E2-...	14.8 (376)	52.8 (1341)	9.7 (246)	-	-	-	183 (83)	355 (161)
98-14E3-...	21.3 (541)	72.6 (1844)	12.1 (307)	-	-	-	485 (220)	937 (425)
98-73E2-...	16.8 (427)	60.1 (1527)	11.8 (300)	-	-	-	254 (115)	547 (248)

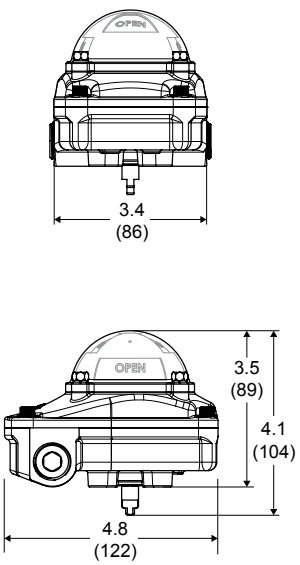
Allow 3.0″ for Series 92/93 actuator removal and up to 12″ for Series 98



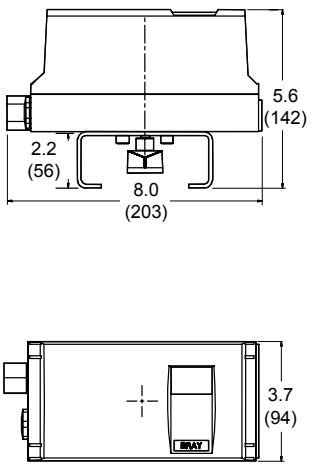
VP200 Pneumatic Positioner



Series 5A Switch Box



Series 6A Electro Pneumatic Positioner



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MK Series Butterfly Valves 2 & 3-Way with NSR/SR DC-Series Commercial Electric Actuators (ANSI 150)

2-Way

2-Way, On/Off or Floating - ANSI 150

Actuator Model Details						Non-Spring Return		Spring Return	
						DC24-310-T	DC24-310-T-D	DS24-180	DS24-180-D
Model Number	Size		Close-Off PSI	Cv		Floating		On/Off	
	In.	mm		90˚	60˚	24 VAC		24 VAC/DC	
	2.5	65	285	160	78	x	-	x	-
MKL2-C030	3	80		185	123	x	-	-	x
MKL2-C040	4	100		375	250	-	x	-	x

2-Way, Modulating - ANSI 150

Actuator Model Details						Non-Spring Return		Spring Return	
						DCM24-310	DCM24-310-D	DMS24-180	DMS24-180-D
Model Number	Size		Close-Off PSI	Cv		Modulating			
	In.	mm		90˚	60˚	24 VAC		24 VAC/DC	
MKL2-C025	2.5	65	285	160	78	x	-	x	-
MKL2-C030	3	80		185	123	x	-	-	x
MKL2-C040	4	100		375	250	-	x	-	x

3-Way

3-Way, On/Off or Floating - ANSI 150

Actuator Model Details						Non-Spring Return		Spring Return	
						DC24-310-T	DC24-310-T-D	DS24-180	DS24-180-D
Model Number	Size		Close-Off PSI	Cv		Floating		On/Off	
	In.	mm		90˚	60˚	24 VAC		24 VAC/DC	
MKL3-x025	2.5	65	285	160	78	x	-	-	x
MKL3-x030	3	80		185	123	-	x	-	x
MKL3-x040	4	100		375	250	-	x	-	-

3-Way, Modulating - ANSI 150

Actuator Model Details						Non-Spring Return		Spring Return	
						DCM24-310	DCM24-310-D	DMS24-180	DMS24-180-D
Model Number	Size		Close-Off PSI	Cv		Modulating			
	In.	mm		90˚	60˚	24 VAC		24 VAC/DC	
MKL3-x025	2.5	65	285	160	78	x	-	-	x
MKL3-x030	3	80		185	123	-	x	-	x
MKL3-x040	4	100		375	250	-	x	-	-

Options/Adders
For optional auxiliary switches, add -A to the end of the actuator part number.
X = 3-Way Assemblies (Refer to Configuration Chart, Page 22)
For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default
-D = Dual mounted actuators

MK Series Butterfly Valves 2-Way with Industrial Electric Actuators (ANSI 150)

2-Way, 120 VAC, On/Off & Modulating - ANSI 150

Actuator Model Details					Series 70 Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM		
Valve Model Details	Size		Cv		Close-Off PSI	On/Off	Modulating	Close-Off PSI	On/Off	Modulating
	In.	mm	90°	60°		120 VAC	120 VAC		120 VAC	120 VAC
MKL2-C025	2.5	65	160	78	285	70-0081	70-0081SV	285	70-0081	70-0081SV
MKL2-C030	3	80	185	123		70-0081	70-0081SV		70-0081	70-0081SV
MKL2-C040	4	100	375	250		70-0081	70-0081SV		70-0081	70-0081SV
MKL2-C050	5	125	790	360		70-0121	70-0121SV		70-0121	70-0121SV
MKL2-C060	6	150	1350	510		70-0121	70-0121SV		70-0121	70-0121SV
MKL2-C080	8	200	2800	1060		70-0201	70-0201SV		70-E301	70-E301SV
MKL2-C100	10	250	4300	1630		70-E301	70-E301SV		70-0501	70-0501SV
MKL2-C120	12	300	6650	2530		70-0501	70-0501SV		70-0651	70-0651SV
MKL2-C140	14	350	7650	2900		70-0651	70-0651SV		70-1300	70-1300SV
MKL2-C160	16	400	9800	3700		70-1300	70-1300SV		70-1800	70-1800SV
MKL2-C180	18	450	10500	5100		70-1800	70-1800SV	250	AU-2130	AU-2130SV
MKL2-C200	20	500	13500	6500	200	70-1800	70-1800SV	200	AU-2130	AU-2130SV

2-Way, 24 VAC, On/Off & Modulating - ANSI 150

Actuator Model Details					Series 70 Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM		
Valve Model Details	Size		Cv		Close-Off PSI	On/Off	Modulating	Close-Off PSI	On/Off	Modulating
	In.	mm	90°	60°		24 VAC	24 VAC		24 VAC	24 VAC
MKL2-C025	2.5	65	160	78	285	70-24-0081	70-24-0081SV	285	70-24-0081	70-24-0081SV
MKL2-C030	3	80	185	123		70-24-0081	70-24-0081SV		70-24-0081	70-24-0081SV
MKL2-C040	4	100	375	250		70-24-0081	70-24-0081SV		70-24-0081	70-24-0081SV
MKL2-C050	5	125	790	360		70-24-0201	70-24-0201SV		70-24-0201	70-24-0201SV
MKL2-C060	6	150	1350	510		70-24-0201	70-24-0201SV		70-24-0201	70-24-0201SV
MKL2-C080	8	200	2800	1060		70-24-0201	70-24-0201SV		70-24-0501	70-24-0501SV
MKL2-C100	10	250	4300	1630		70-24-0501	70-24-0501SV		70-24-0501	70-24-0501SV
MKL2-C120	12	300	6650	2530		70-24-0501	70-24-0501SV		-	-

Options/Adders
For Heater/Thermostat kit, add "H" to the actuator part number.
For Battery Back-Up Failsafe Option (BBU) option on 24 VAC actuators, add "-BBU"
For Battery Back-UP Failsafe units:
N = Normally Open
C = Normally Closed - Factory default

Note
The actuator sizes shown here are based on maximum valve pressure rating.
Use "Seat Retainer Upstream for Unidirectional Close off; Use Downstream for Bi-Directional Close off
For applications at lower pressure requirements, consult factory for smaller actuator choices.

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MK Series Butterfly Valves 2-Way with Industrial Electric Actuators (ANSI 300)

2-Way, 120 VAC, On/Off & Modulating - ANSI 300

Actuator Model Details					Series 70 & AU Series Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM		
Valve Model Details	Size		Cv		Close-Off PSI	On/Off	Modulating	Close-Off PSI	On/Off	Modulating
	In.	mm	90˚	60˚		120 VAC	120 VAC		120 VAC	120 VAC
MKL2-C253	2.5	65	160	78	740	70-0081	70-0081SV	550	70-0081	70-0081SV
MKL2-C033	3	80	185	123	740	70-0081	70-0081SV	550	70-0081	70-0081SV
MKL2-C043	4	100	375	250	550	70-0081	70-0081SV	350	70-0081	70-0081SV
MKL2-C053	5	125	790	360	350	70-0121	70-0121SV	550	70-0201	70-0201SV
MKL2-C063	6	150	1000	530	550	70-0201	70-0201SV	350	70-0201	70-0201SV
MKL2-C083	8	200	2000	950	350	70-E301	70-E301SV	550	70-0501	70-0501SV
MKL2-C103	10	250	2650	1200	350	70-0501	70-0501SV	350	70-0651	70-0651SV
MKL2-C123	12	300	4000	1690	740	70-1300	70-1300SV	550	70-1300	70-1300SV
MKL2-C143	14	350	4100	1770	350	70-1300	70-1300SV	350	70-1800	70-1800SV
MKL2-C163	16	400	7800	2970	350	70-1800	70-1800SV	740	AU-4068	AU-4068SV
MKL2-C183	18	450	9500	4530	740	AU-4068	AU-4068SV	550	AU-4068	AU-4068SV
MKL2-C203	20	500	11000	5400	550	AU-4068	AU-4068SV	350	AU-4068	AU-4068SV

2-Way, 24 VAC, On/Off & Modulating - ANSI 300

Actuator Model Details					Series 70 Seat Retainer UPSTREAM			Series 70 & AU Series Seat Retainer DOWNSTREAM		
Valve Model Details	Size		Cv		Close-Off PSI	On/Off	Modulating	Close-Off PSI	On/Off	Modulating
	In.	mm	90˚	60˚		24 VAC	24 VAC		24 VAC	24 VAC
MKL2-C253	2.5	65	160	78	740	70-24-0081	70-24-0081SV	550	70-24-0081	70-24-0081SV
MKL2-C033	3	80	185	123	740	70-24-0081	70-24-0081SV	550	70-24-0081	70-24-0081SV
MKL2-C043	4	100	375	250	550	70-24-0081	70-24-0081SV	350	70-24-0081	70-24-0081SV
MKL2-C053	5	125	790	360	350	70-24-0201	70-24-0201SV	550	70-24-0201	70-24-0201SV
MKL2-C063	6	150	1000	530	550	70-24-0201	70-24-0201SV	350	70-24-0201	70-24-0201SV
MKL2-C083	8	200	2000	950	350	70-24-0501	70-24-0501SV	550	70-24-0501	70-24-0501SV
MKL2-C103	10	250	2650	1200	350	70-24-0501	70-24-0501SV	-	-	-

Options/Adders
For Heater/Thermostat kit, add "H" to the actuator part number.
For Battery Back-Up Failsafe Option (BBU) option on 24 VAC actuators, add "-BBU"
For Battery Back-UP Failsafe units:
N = Normally Open
C = Normally Closed - Factory default

Note
The actuator sizes shown here are based on maximum valve pressure rating.
Use "Seat Retainer Upstream for Unidirectional Close off; Use Downstream for Bi-Directional Close off
For applications at lower pressure requirements, consult factory for smaller actuator choices.

MK Series Butterfly Valves 3-Way with Industrial Electric Actuators (ANSI 150)

3-Way, 24 VAC & 120 VAC, On/Off - ANSI 150

Actuator Model Details						Series 70 120 VAC	Series 70 24 VAC	AU-Series 120 VAC
Valve Model Details	Size		Close-Off PSI	Cv		Model #	Model #	Model #
	In.	mm		90˚	60˚			
MKL3-X025	2.5	65	250	160	78	70-0081	70-24-0081	-
MKL3-X030	3	80		185	123	70-0081	70-24-0081	-
MKL3-X040	4	100		375	250	70-0121	70-24-0201	-
MKL3-X050	5	125		790	360	70-0121	70-24-0201	-
MKL3-X060	6	150		1350	510	70-0121	70-24-0201	-
MKL3-X080	8	200		2800	1060	70-0201	70-24-0201	-
MKL3-X100	10	250		4300	1630	70-0501	70-24-0501	-
MKL3-X120	12	300		6650	2530	70-0651	-	-
MKL3-X140	14	350		7650	2900	70-1300	-	-
MKL3-X160	16	400		9800	3700	-	-	AU-2130
MKL3-X180	18	450		10500	5100	-	-	AU-4068
MKL3-X200	20	500		13500	6500	-	-	AU-4068

3-Way, 24 VAC & 120 VAC, Modulating - ANSI 150

Actuator Model Details						Series 70 120 VAC	Series 70 24 VAC	AU-Series 120 VAC
Valve Model Details	Size		Close-Off PSI	Cv		Model #	Model #	Model #
	In.	mm		90˚	60˚			
MKL3-X025	2.5	65	250	160	78	70-0081SV	70-24-0081SV	-
MKL3-X030	3	80		185	123	70-0081SV	70-24-0081SV	-
MKL3-X040	4	100		375	250	70-0121SV	70-24-0201SV	-
MKL3-X050	5	125		790	360	70-0121SV	70-24-0201SV	-
MKL3-X060	6	150		1350	510	70-0121SV	70-24-0201SV	-
MKL3-X080	8	200		2800	1060	70-0201SV	70-24-0201SV	-
MKL3-X100	10	250		4300	1630	70-0501SV	70-24-0501SV	-
MKL3-X120	12	300		6650	2530	70-0651SV	-	-
MKL3-X140	14	350		7650	2900	70-1300SV	-	-
MKL3-X160	16	400		9800	3700	-	-	AU-2130SV
MKL3-X180	18	450		10500	5100	-	-	AU-4068SV
MKL3-X200	20	500		13500	6500	-	-	AU-4068SV

Options/Adders
For Heater/Thermostat kit, add "H" to the actuator part number.
For Battery Back-Up Failsafe Option (BBU) option on 24 VAC actuators, add "-BBU"

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MK Series Butterfly Valves 2-Way with Double Acting Pneumatic Actuators (ANSI 150 & 300)

2-Way, Double Acting Pneumatic - ANSI 150

Actuator Model Details						Series 92 Seat Retainer UPSTREAM	Series 92 Seat Retainer DOWNSTREAM
Valve Model Details	Size		Close-Off PSI	Cv			
	In.	mm		90°	60°	Model #	Model #
MKL2-C025	2.5	65	285	160	78	S92-83	S92-83
MKL2-C030	3	80		185	123	S92-83	S92-83
MKL2-C040	4	100		375	250	S92-83	S92-83
MKL2-C050	5	125		790	360	S92-92	S92-119
MKL2-C060	6	150		1350	510	S92-92	S92-119
MKL2-C080	8	200		2800	1060	S92-119	S92-119
MKL2-C100	10	250		4300	1630	S92-128	S92-160
MKL2-C120	12	300		6650	2530	S92-160	S92-210
MKL2-C140	14	350		7650	2900	S92-210	S92-210
MKL2-C160	16	400		9800	3700	S92-210	S92-255
MKL2-C180	18	450		10500	5100	S92-255	S92-255
MKL2-C200	20	500		13500	6500	S92-255	S92-255

2-Way, Double Acting Pneumatic - ANSI 300

Actuator Model Details						Series 92 Seat Retainer UPSTREAM	Series 92 Seat Retainer DOWNSTREAM
Valve Model Details	Size		Close-Off PSI	Cv			
	In.	mm		90°	60°	Model #	Model #
MKL2-C253	2.5	65	740	160	78	S92-83	S92-83
MKL2-C033	3	80		185	123	S92-83	S92-93
MKL2-C043	4	100		375	250	S92-83	S92-93
MKL2-C053	5	125		790	360	S92-119	S92-128
MKL2-C063	6	150		1000	530	S92-119	S92-160
MKL2-C083	8	200		2000	950	S92-160	S92-160
MKL2-C103	10	250		2650	1200	S92-210	S92-210
MKL2-C123	12	300		4000	1690	S92-210	S92-255
MKL2-C143	14	350		4100	1770	S92-255	S92-255
MKL2-C163	16	400		7800	2970	S92-255	Consult Factory

Options/Adders
* For Manual Override, add "-5" to the end of the part number.
* Manual overrides sized for seat retainer upstream. For seat retainer downstream, consult factory.

Note
The actuator sizes shown here are based on maximum valve pressure rating.
Use "Seat Retainer Upstream for Unidirectional Close off; Use Downstream for Bi-Directional Close Off
For applications at lower pressure requirements, consult factory for smaller actuator choices.

MK Series Butterfly Valves 2-Way with Spring Return Pneumatic Actuators (ANSI 150 & 300)

2-Way, Spring Return - ANSI 150

Actuator Model Details						Series 92 Seat Retainer UP-STREAM		Series 92 Seat Retainer DOWNSTREAM	
Valve Model Details	Size		Close-Off PSI	Cv		Normally Open (N.O.)	Normally Closed (N.C.)	Normally Open (N.O.)	Normally Closed (N.C.)
	In.	mm		90°	60°	Model #	Model #	Model #	Model #
MKL2-C025	2.5	65	285	160	78	93-833	93-834	93-834	93-835
MKL2-C030	3	80		185	123	93-833	93-834	93-834	93-836
MKL2-C040	4	100		375	250	93-834	92-836	93-934	93-936
MKL2-C050	5	125		790	360	93-1193	93-1194	93-1283	93-1196
MKL2-C060	6	150		1350	510	93-1193	93-1195	93-1283	93-1285
MKL2-C080	8	200		2800	1060	93-1602	93-1604	93-1603	93-1605
MKL2-C100	10	250		4300	1630	93-2102	93-2103	93-2103	93-2105
MKL2-C120	12	300		6650	2530	93-2103	93-2105	93-2552	93-2553
MKL2-C140	14	350		7650	2900	93-2552	93-2553	93-2553	93-2555
MKL2-C160	16	400		9800	3700	93-2553	93-2555	Consult Factory	

2-Way, Spring Return - ANSI 300

Actuator Model Details						Series 92 Seat Retainer UP-STREAM		Series 92 Seat Retainer DOWNSTREAM	
Valve Model Details	Size		Close-Off PSI	Cv		Normally Open (N.O.)	Normally Closed (N.C.)	Normally Open (N.O.)	Normally Closed (N.C.)
	In.	mm		90°	60°	Model #	Model #	Model #	Model #
MKL2-C253	2.5	65	740	160	78	93-934	93-1193	93-1193	93-1194
MKL2-C033	3	80		185	123	93-934	93-1193	93-1193	93-1194
MKL2-C043	4	100		375	250	93-1193	93-1194	93-1283	93-1196
MKL2-C053	5	125		790	360	93-1603	93-1604	93-1604	93-1606
MKL2-C063	6	150		1000	530	93-1603	93-1605	93-2102	93-2104
MKL2-C083	8	200		2000	950	93-2103	93-2104	93-2104	93-2106
MKL2-C103	10	250		2650	1200	93-2552	93-2553	93-2553	93-2555
MKL2-C123	12	300		4000	1690	93-2553	93-2555	Consult Factory	

Options/Adders
* For Manual Override, add "-5" to the end of the part number.
* Manual overrides sized for seat retainer upstream. For seat retainer downstream, consult factory.

For Spring Return Units:
N = Normally Open
C = Normally Closed - Factory default

Note
The actuator sizes shown here are based on maximum valve pressure rating.
Use "Seat Retainer Upstream for Unidirectional Close off; Use Downstream for Bi-Directional Close off
For applications at lower pressure requirements, consult factory for smaller actuator choices.

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MK Series Butterfly Valves 3-Way with Double Acting & Spring Return Pneumatic Actuators (ANSI 150)

3-Way, Double Acting Pneumatic - ANSI 150						
Actuator Model Details						Series 92 Double Acting
Valve Model Details	Size		Close-Off PSI	Cv		Model #
	In.	mm		90°	60°	
MKL3-x025	2.5	65	250	160	78	S92-083
MKL3-x030	3	80		185	123	S92-083
MKL3-x040	4	100		375	250	S92-083
MKL3-x050	5	125		790	360	S92-119
MKL3-x060	6	150		1350	510	S92-119
MKL3-x080	8	200		2800	1060	S92-128
MKL3-x100	10	250		4300	1630	S92-160
MKL3-x120	12	300		6650	2530	S92-210
MKL3-x140	14	350		7650	2900	S92-210
MKL3-x160	16	400		9800	3700	S92-255
MKL3-x180	18	450		10500	5100	S92-255
MKL3-x200	20	500		13500	6500	S92-255

3-Way, Spring Return Pneumatic - ANSI 150						
Actuator Model Details						Series 92 Spring Return
Valve Model Details	Size		Close-Off PSI	Cv		Model #
	In.	mm		90°	60°	
MKL3-x025	2.5	65	250	160	78	S93-924
MKL3-x030	3	80		185	123	S93-924
MKL3-x040	4	100		375	250	S93-1193
MKL3-x050	5	125		790	360	S93-1284
MKL3-x060	6	150		1350	510	S93-1603
MKL3-x080	8	200		2800	1060	S93-2103
MKL3-x100	10	250		4300	1630	S93-2552
MKL3-x120	12	300		6650	2530	S93-2553
MKL3-x140	14	350		7650	2900	S93-2553
MKL3-x160	16	400		9800	3700	Consult Factory
MKL3-x180	18	450		10500	5100	Consult Factory
MKL3-x200	20	500		13500	6500	Consult Factory

Options/Adders
X = 3-Way Assemblies (Refer to Configuration Chart, Page 22)
* For Manual Override, add "-5" to the end of the part number.
* Manual overrides sized for seat retainer upstream. For seat retainer downstream, consult factory.

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Bray COMMERCIAL

GA(S) Series - Linear Valve Actuators

- **Non-Spring Return - GA24-562**
- **Spring Return - GASRE24-450**
- **Spring Return - GASEX24-450**

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Application

The GA(S) Series is a direct mount line of linear motor actuators to be used primarily on PIC and Globe Valves. The patented drive-valve coupling allows the drive to be connected to the valve automatically as soon as the power is applied to the actuator. An external crank handle enables the desired position to be set manually as well. Microprocessor technology enables the actuator to identify the functions required and to adapt itself automatically to the control valve properties.

These actuators operate on 24V AC or DC power supply. The control signal operates on 0-10VDC, 4-20mA, On/Off (2-point), or Floating (3-point). The position feedback signal operates on 0-10VDC.

These actuators operate both 2 and 3-Way valves and are available in non-spring return and spring return versions. The GA(S) series is bi-directional, selectable via screw terminals.



Features and Benefits

- **Easy Assembly with Valve**

  Stem connection takes place automatically after application of control voltage

- **Works with Bray Simple Set Max and Most Globe Valve Brands**

  Multiple adaptors allow assembly on third-party valves
  Spring return versions allow for fail-open or fail-closed configurations

- **Automatic Adaptation to Valve Stroke**

  Built-in intelligence matches the actuator to the valve stroke.

- **Easy Configurability**

  Meets the requirements of virtually any heat exchanger control application.

- **Spring Return Models**

  Available "fail up/retracted" and "fail down/extended"

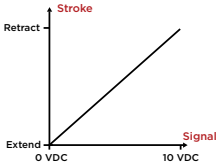
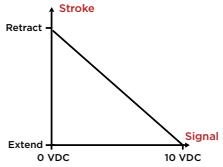
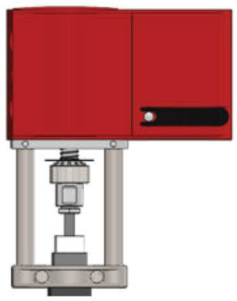
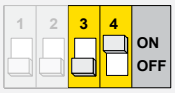
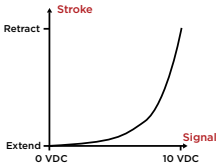
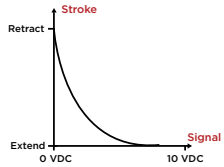
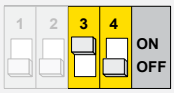
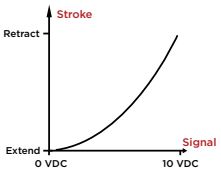
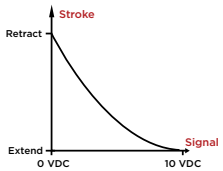
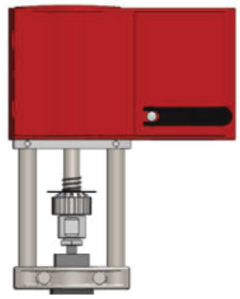
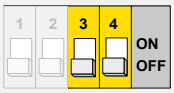
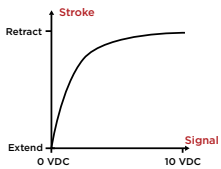
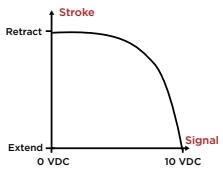
Technical Specifications - Actuator		
Non-Spring Return	**GA24-562**	On/Off, Floating and Modulating
Spring Return	**GASRE24-450**	On/Off, Floating and Modulating, Shaft Normally Retracted
	GASEX24-450	On/Off, Floating and Modulating, Shaft Normally Extended
Power Requirements	**On/Off, Floating and Modulating**	24 VAC (±20%) at 50/60 Hz or 24 VDC (±15%)
Positioner[1]	**Control Signal 1**	0 to 10 V, Ri> 100 kΩ
	Control Signal 2	4 to 20 mA, Ri = 50Ω
	Position Feedback Signal	0 to 10 V, Load >10 kΩ
Action	Direct or Reverse Acting	
Switching Range	300 mv	
Power Consumption[2]	**Non-Spring Return**	10W, 18VA
	Spring Return	7.5W, 20VA
Force	**Non-Spring Return**	562 lbf (2,500 N)
	Spring Return	450 lbf (2,000 N) Power Stroke and Spring Stroke
Stroke	0″ to 1.93″ (0-49mm)	
Max. Temperature of Media[3]	248˚F (120˚C)	
Ambient Conditions	**Temperature**	14˚F to 131˚F (-10˚ to 55˚C)
	Humidity	0 to 95% RH without condensation
	Storage Temperature	-4˚F to 158˚F (-20° to 70°C)
Level of Protection	IP 66. Not intended for outdoor use without additional protection.	
Enclosure	Self-extinguishing plastic	
Gear Materials	**Gears & Gearbox**	Steel
	Mounting Column	Stainless Steel
	Mounting Bracket	Cast Light Alloy
Electrical Connection	13 AWG (2.5 mm²) with screw terminals. Three knock-out cable entries for M20×1.5 (2×) and M16×1.5	
Motor Run Time sec. per in. (mm)	51 (2), 102 (4), 153 (6), DIP Switch Adjustable	
Spring Run Time[4]	15... 30 seconds	
Number of Spring Returns	> 40,000	
Response Time - 3-Point	200 ms	
Weights	**Non-Spring Return**	9.1 lbs. (4.1 kg)
	Spring Return	12.3 lbs. (5.6 kg)
Agency Certifications	CE, UL Listed - Temperature-Indicating and Regulating Equipment, XAPX, XAPX7. File E366456	
Warranty	5 Years limited from time of shipment.	

[1] Also for On/Off (2-point) or Floating (3 point) depending on the connection for 24V-
[2] Design the transformers for this value, otherwise functional faults may occur.
[3] An intermediate piece is required for media temperatures between 248˚F (120˚C) and 464˚F (240˚C)
[4] The return time corresponds to a stroke of 0.55 in. (14 mm) to 1.58 in. (40 mm) and does not depend on the set run time.

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards.
For application at conditions beyond these specifications consult the local Bray office.
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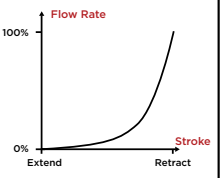
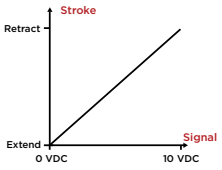
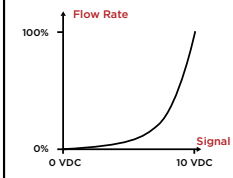
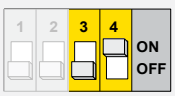
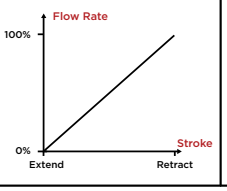
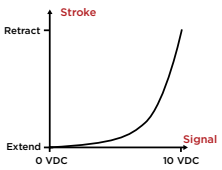
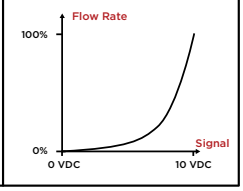
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GA(S) - Curve Characteristic Switch Settings

DIP Switch Position	Characteristic Curve for Actuator Drive		Retract/ Extend Position
	Wired to Terminal 2b	Wired to Terminal 2a	
			RETRACTED 
			
			EXTENDED 
			

Note: When using a 4-20 mA control signal, the actuator drive's characteristic curves remain unchanged. When wired for 4-20 mA control...
- 4 mA command results in the same dnive response as 0 VDC
-20 mA command results in the same drive response as 10 VDC

GA(S) - Default Assembly Settings

Valve	Desired Characteristic Curve	Switch Coding	Characteristic Curve for Valve	Characteristic Curve for Drive	Effect on Valve
Globe Valve	Equal Percentage				
PIC Valve	Equal Percentage				

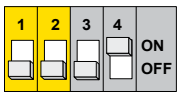
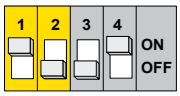
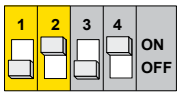
Note: the graphs shown for the default assembly settings apply only to the valves that close in the down (extended) position and open in the up (retracted) position.

Model Number Selection Chart

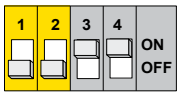
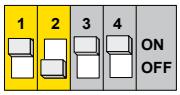
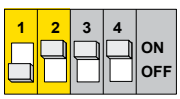
Model Number	Force in. lbf	Voltage	Control Signal	Auxiliary Switches	High Temperature Kit
GA24-562	562	24 VAC	On/Off Floating Modulating	-A	-HT

GA(S) - Strok Times

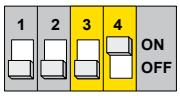
SSM Valve Stroke Times GA(S) Total Stroke = 1.93" (49mm)

Valve Stroke		Non-Spring Return or Spring Return Switch Coding / Size	GA & GAS 2.5" & 3" .79" (20mm)	GA & GAS 4" & 5" 1.58" (40mm)	GA & GAS 6" & 8" 1.69" (43mm)	GA Only 10" & 12" 1.89" (48mm)
GA(S) Stroke Time	51 s/in. (2s/mm)	 Default Setting for Simple Set Max 2-1/2 thru 8"	40 Sec.	80 Sec.	86 Sec.	96 Sec.
	102 s/in. (4s/mm)	 Optional Setting	80 Sec.	160 Sec.	172 Sec.	192 Sec.
	153 s/in. (6s/mm)	 Default Setting for 10" and 12"	120 Sec.	240 Sec.	258 Sec.	288 Sec.

DG Valve Stroke Times GA(S) Total Stroke = 1.93" (49mm)

Valve Stroke		Non-Spring Return or Spring Return Switch Coding / Size	GA & GAS 2.5" & 3" .75" (19mm)	GA & GAS 4" & 6" 1.5" (38mm)
GA(S) Stroke Time	51 s/in. (2s/mm)	 Default Setting for Globe Valves	38 Sec.	76 Sec.
	102 s/in. (4s/mm)	 Optional Setting	76 Sec.	152 Sec.
	153 s/in. (6s/mm)	 Optional Setting	114 Sec.	228 Sec.

Stand Alone Actuator Stroke Times GA(S) Total Stroke = 1.93" (49mm)

Valve Stroke		Non-Spring Return or Spring Return Switch Coding
GA(S) Stroke Time	153 s/in. (6s/mm)	 = Default Setting for Stand Alone GA Actuator

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LED Display - The display consists of two dual-color LEDs (red/green).	
Both LEDs flashing red	Calibration procedure
Upper LED lit red	Upper limit stop or shaft is fully retracted
Lower LED lit red	Lower limit stop or shaft is fully extended
Upper LED flashing green	Drive running, moving towards shaft retracted
Upper LED lit green	Drive stationary, last direction of running was shaft was retracting
Lower LED flashing green	Drive running, moving towards shaft extended
Lower LED lit green	Drive stationary, last direction of running shaft extending
Both LEDs lit green	Waiting time after switching on or after Spring Return-Spring Return Only
No LED lit	No power supply (GAS Spring Return models, terminal 21 (GA Non-Spring return models, terminals 2a or 2b)
Both LEDs are flashing red and green	Drive is in manual mode

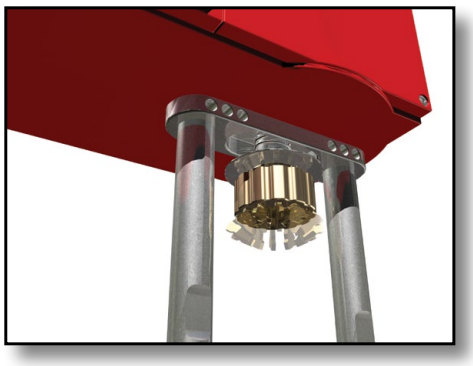
Convenience Features

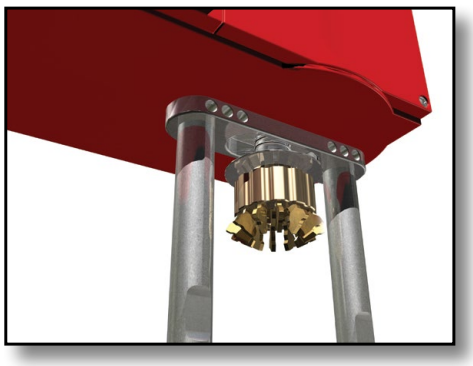
This Bray series of actuators is the most convenient retrofit actuator you can buy. This actuator calibrates itself automatically. As soon as voltage is applied to the drive for the first time, it moves to the lower limit stop on the valve, thus enabling automatic connection with the valve stem. Then it moves to the upper limit stop and the value is recorded and saved with the help of a path measurement system. The control signal and feedback signal are adjusted to this effective stroke. There is no re-calibration if the voltage is interrupted or the voltage supply is removed. The values remain saved.

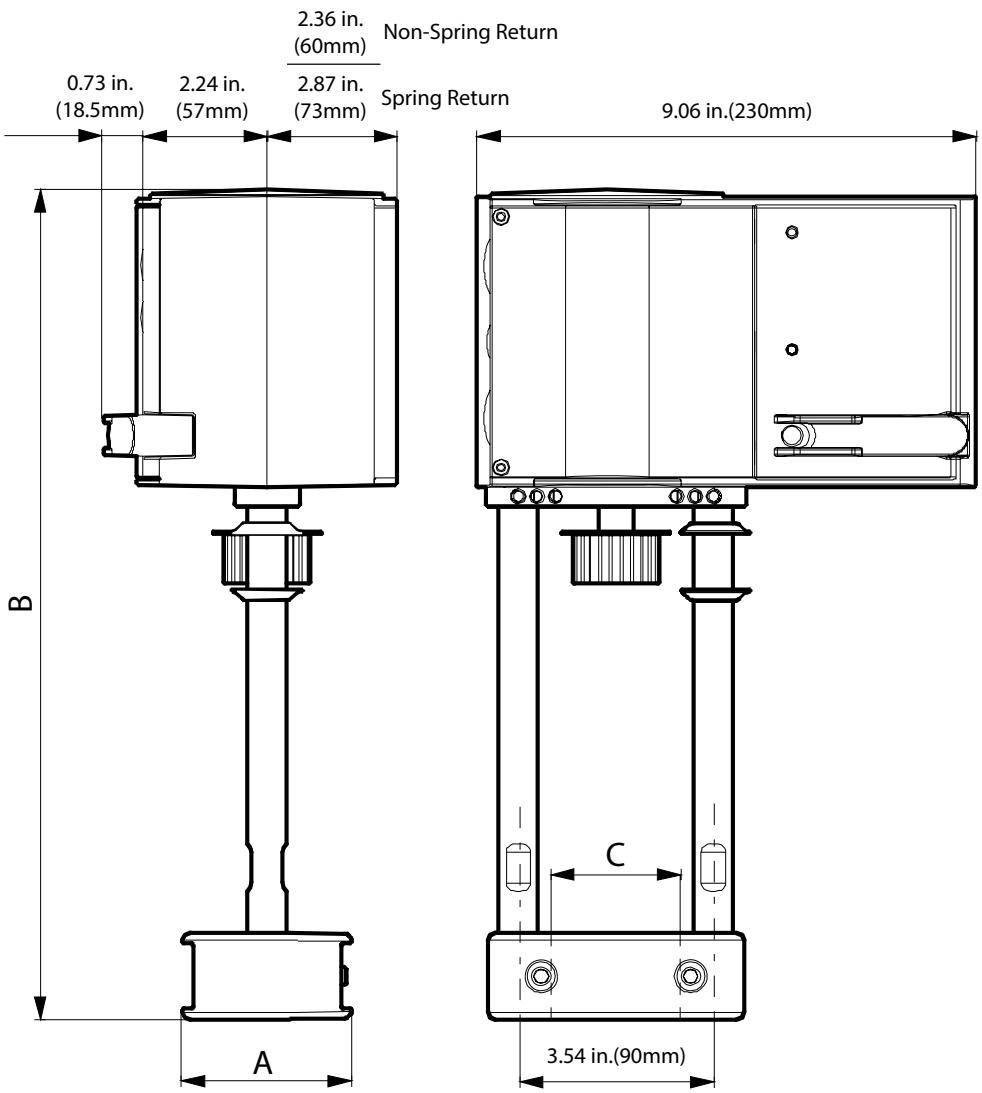
The patented drive-valve coupling automatically attaches to valve spindle and easily detaches when you simply grasp the coupling and push up. There are adapters available for assembly to most globe valve manufacturers.

Furthermore, these actuators can be replaced while keeping the valve in-line for non-spring return and spring return version for both fail open and failed closed configurations.



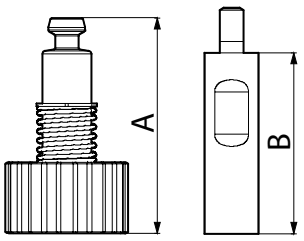






Description	A	B	C
GA(S) Series	2.52 in. (64mm)	11.38 in. (289mm)	1.73 in. (44mm)

Adaptor for media temperatures between
266˚F (130˚C) and 464˚F (240˚C)



Part Number	A	B
0372336 240	4.31 in. (109.4mm)	3.94 in. (100mm)

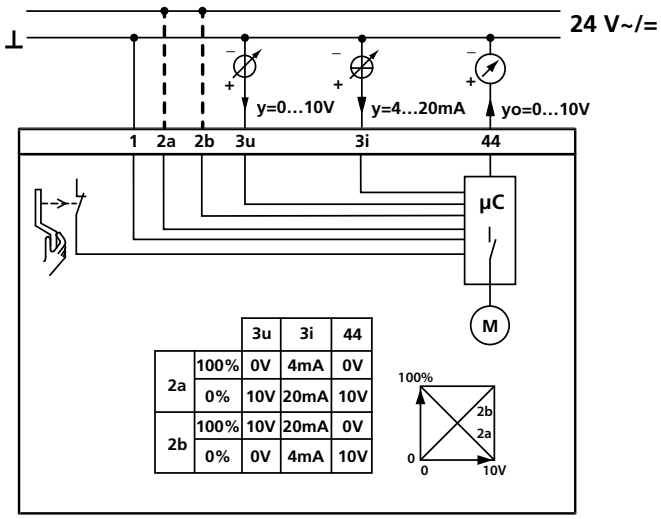
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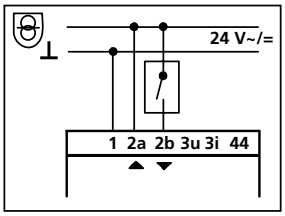
Non-Spring Return

Modulating

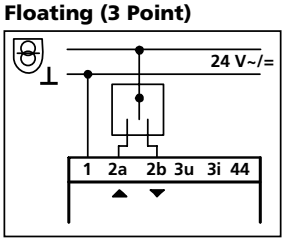


		3u	3i	44
2a	100%	0V	4mA	0V
	0%	10V	20mA	10V
2b	100%	10V	20mA	0V
	0%	0V	4mA	10V

On/Off (2 Point)



Floating (3 Point)

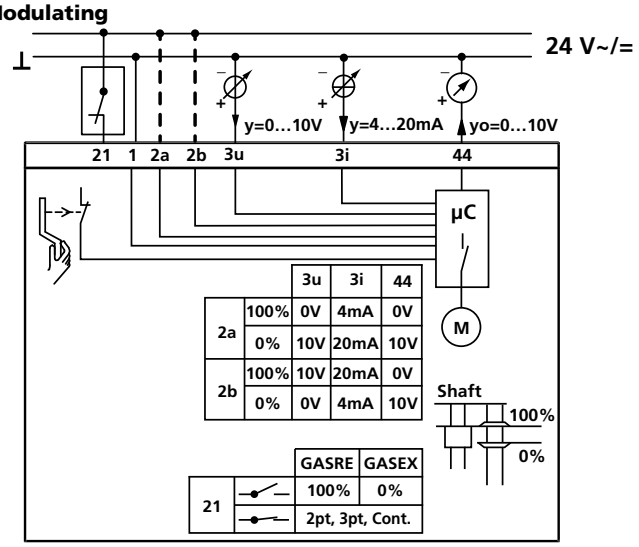


= Extra Low Voltage

Y = modulating signal
1= Neutral/Common for power and signal
2a/2b- These terminals determine forward acting/reverse acting. Only one should be powered with 24V.
Reverse Acting 2a = Extends. 0 volts = 100% retracted. 10V = 0% retracted.
Forward Acting 2b = Retracts. 0 volts = 0% retracted. 10V = 100% retracted.
3u = 0 .. 10 V, in case of control by voltage
3i = 4 .. 20 mA, in case of control by current
44 = 0 .. 10 V Feedback, independent from the use of 3u or 3i

Spring Return

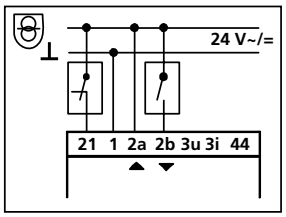
Modulating



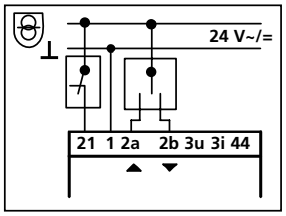
		3u	3i	44
2a	100%	0V	4mA	0V
	0%	10V	20mA	10V
2b	100%	10V	20mA	0V
	0%	0V	4mA	10V

		GASRE	GASEX
21		100%	0%
		2pt, 3pt, Cont.	

On/Off (2 Point)



Floating (3 Point)

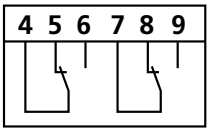


= Extra Low Voltage

Y = modulating signal
1= Neutral/Common for power and signal
2a/2b- These terminals determine forward acting/reverse acting. Only one should be powered with 24V.
Reverse Acting 2a = Extends. 0 volts = 100% retracted. 10V = 0% retracted.
Forward Acting 2b = Retracts. 0 volts = 0% retracted. 10V = 100% retracted.
3u = 0 .. 10 V, in case of control by voltage
3i = 4 .. 20 mA, in case of control by current
44 = 0 .. 10 V Feedback, independent from the use of 3u or 3i

Options

0372333 001
0372333 002
(Auxillary Switches)



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Bray Commercial provides automated Butterfly, Ball, Globe and Pressure Independent Control Valves to the commercial building HVAC market throughout the world Whereever valve performance is required to maintain climate controlled environments, Bray can provide the required automated valves to meet the demanding flow applications of chiller/boiler isolation, air handlers and terminal units for new construction, retrofit and/or LEED certification applications in buildings.

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PA Series

PA(M) Series Pressure Independent Control Valve Actuators

Starting at 27 lb-force and up to 112 lb-force

CONTENTS

DOCUMENT
Features
Valve Specs
Sizing/Install Tips
Piping Geometry
Dimensions
Close-Off's

LOOKING FOR MORE

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07/28/26

Application

The PA(M) Series is a line of linear motor actuators to be used primarily on Bray PIC Valves utilized in Building Automation Systems. These actuators are available with a multitude of options for On/Off/ Floating or Modulating with or without electronic Failsafe.

These actuators automatically calibrate to the stroke of the valve as soon as power is applied and are field selectable direct or reverse acting.

A simple, reliable, versatile solution for your Bray Commercial Simple Set pressure Independent control valves!



PA Series Actuators - Specifications

Technical Specifications - Actuators						
Actuator Models	For Valves Sizes 1/2" to 1 -1/4"				For Valves Sizes 1.5" to 2"	
	PA24-27	PA24-27-FS	PAM24-27	PAM24-27-FS	PAM24-100	PAM24-100-FS
	On/Off & Floating		Modulating		On/Off, Floating & Modulating	
	Non-Fail Safe	Fail Safe	Non-Fail Safe	Fail Safe	Non-Fail Safe	Fail Safe
Supply Voltage	22 to 26 AC/DC				22 to 26 VAC or 23 to 32 VDC	
Power Consumption	5VA	10VA	5VA	10VA	6VA	6VA, 20VA Start Up
Control Signal	2 Position On/Off or 3-Point Floating		Analog, 0-10VDC or 2-10VDC; 4-20mA with external 500Ω resistor		2 Position On/Off (Digital-Pulse Width Modulation), 3 Point Floating, Modulating (Analog), 2-10VDC; 4-20mA	
Input Impedance	4.7 K		10.0 K	100.0 K	100.0 K	
Feedback Signal	No		0-10VDC or 2-10VDC		4 to 20 mA or 2 to 10VDC adjustable	
Failsafe Function	No	Yes (60 Sec. Runtime)	No	Yes (60 Sec. Runtime)	No	Yes (60 Sec. Runtime)
Anti-Stick	No		Optional[1]		Yes	
Operation Time	120 Seconds				90 Seconds	
Enclosure Rating	NEMA type 3R (Equivalent to IP54)					
Ambient Temperature	36°F to 122°F (2°C to 50°C)				0°F to 122° (-18°C to 50°C)	
Humidity Rating	5 to 95% RH Non Condensing					
Connection	3 wires 18 AWG halogen free cable, 3.2 ft.	4 wires 18 AWG halogen free cable, 3.2 ft.			Terminal Connection. Use 18 AWG Minimum	
Noise Rating	>35dBA					
Dimensions	(L) 4.09" x (W) 2.08" x (H) 3.62"			(L) 4.09" x (W) 2.08" x (H) 4.18"	(L) 4.80" x (W) 3.60" x (H) 6.93"	
Weight	0.9 lb. (0.4 kg)				2.0 lb. (0.9 kg)	
Warranty	5 Years limited from time of shipment					
Agency Listing	UL, C €					

[1]**Anti-Stick Option**
With the anti-stick option activated, the actuator will make one full cycle every 24 hours, if the actuator constantly has been in fully open or fully closed position during the previous 24 hours. This operation will clear up any possible impurities accumulated in the valve, and re-calculate the end positions.

PA Series Actuators - Model Number Matrix

PA24-27	24V On/Off & Floating - Non-Fail Safe
PA24-27-FS	24V On/Off & Floating - Fail Safe
PAM24-27	24V Modulating - Non-Fail Safe
PAM24-27-FS	24V Modulating - Fail Safe
PAM24-100	24V On/Off, Floating & Modulating - Non-Fail Safe
PAM24-100-FS	24V On/Off, Floating & Modulating - Fail Safe
PAM24-112	24V On/Off, Floating & Modulating - Non-Fail Safe

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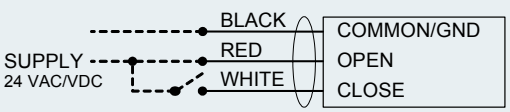


PA Series Actuators - PA24-27

Technical Specifications - PA24-27 Actuator			
Electrical	Actuator Model	PA24-27	For Simple Set PIC Valve sizes 1/2" to 1-1/4"
	Type	On/Off and Floating	
	Force	27 lb-force	
	Operating Voltage	22 to 26 AC/DC	
	Power Consumption	5 VA	
	Input Signal	Digital, 2 positions or 3 point floating	
	Input Impedance	4.7 K	
	Electrical Connection	3-wire halogen free cable 18 AWG (0.8 mm2), 3.2 feet (1M) long)	
Operation	Fail Safe	No	
	Stall Protection	Auto Shutoff for end of travel and jammed/stuck	
	Runtime	120 Seconds	
	Direction	Reversible. Default - Up to Open	
	Cycle Life	30,000	
	Manual Override	Yes	
Environmental	Enclosure Rating	IP54 (Equivalent to NEMA 3R) - Not intended for outdoor use without additional protection.	
	Ambient Conditions	**Operating —** 36°F to 122°F (2°C to 50°C) **Media Temp. —** 36°F to 248°F (2°C to 120°C) **Storage —** -22 to 122°F (-30 to 50°C) **Humidity Rating —** 5 to 95% RH Non Condensing	
	Audible Noise Rating	>35 dBA	
	Dimensions	(L) 4.09"x (W) 2.08"x (H) 3.62"	
	Weight	0.9 lb. (0.4 kg)	
Misc	Agency Certifications	UL, CE	
	Warranty	5 Years limited from time of shipment.	

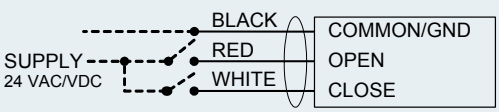
WIRING - (CABLE)

PA24-27 (27 lb force)
ON/OFF, NON-FAILSAFE

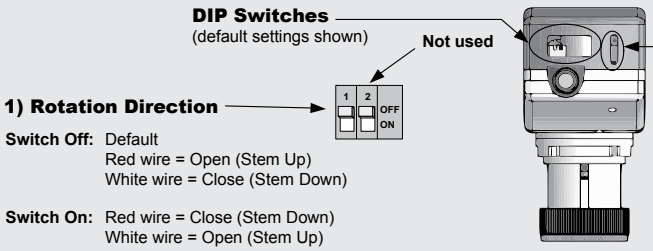




PA24-27 (27 lb force)
FLOATING, NON-FAILSAFE



DIP SWITCHES



NOTE: For additional operating information consult PA24-27 IOM Manual.The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

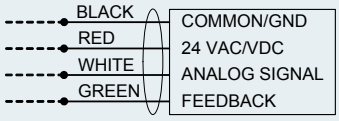


Technical Specifications - PAM24-27 Actuator			
Electrical	Actuator Model	PAM24-27	For Simple Set PIC Valve sizes 1/2" to 1-1/4"
	Type	Modulating	
	Force	27 lb-force	
	Operating Voltage	22 to 26 AC/DC	
	Power Consumption	5 VA	
	Input Signal	Analog, 0-10VDC or 2-10VDC; 4-20mA with external 500Ω resistor	
	Feedback Signal	0-10VDC or 2-10VDC	
	Input Impedance	10.0 K	
	Electrical Connection	4-wire halogen free cable 18 AWG (0.8 mm2), 3.2 feet (1M) long)	
Operation	Fail Safe	No	
	Stall Protection	Auto Shutoff for end of travel and jammed/stuck	
	Runtime	120 Seconds	
	Direction	Reversible. Default - Up to Open	
	Auto Stroke	Yes	
	Cycle Life	30,000	
	Manual Override	Yes	
Environmental	Enclosure Rating	IP54 (Equivalent to NEMA 3R) - Not intended for outdoor use without additional protection.	
	Ambient Conditions	**Operating —** 36°F to 122°F (2°C to 50°C) **Media Temp. —** 36°F to 248°F (2°C to 120°C) **Storage —** -22 to 122°F (-30 to 50°C) **Humidity Rating —** 5 to 95% RH Non Condensing	
	Audible Noise Rating	>35 dBA	
	Dimensions	(L) 4.09"x (W) 2.08"x (H) 3.62"	
	Weight	0.9 lb. (0.4 kg)	
Misc	Agency Certifications	UL, CE	
	Warranty	5 Years limited from time of shipment.	

WIRING - (CABLE)

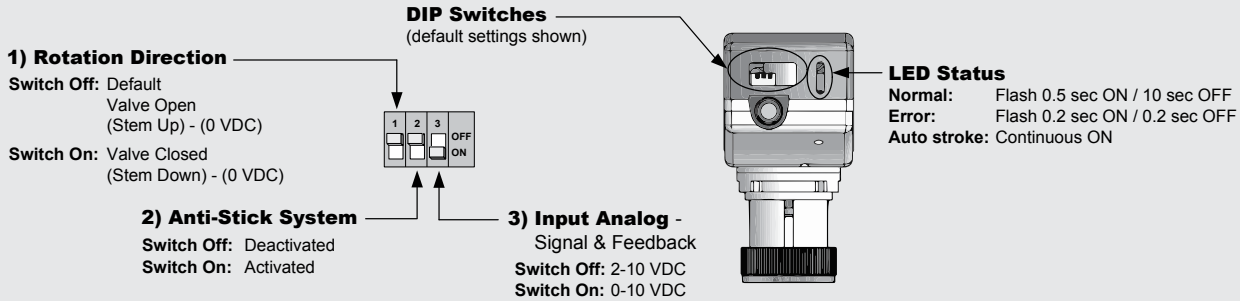
PAM24-27 (27 lb force)

MODULATING (ANALOG), NON-FAILSAFE





DIP SWITCHES



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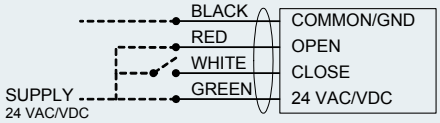
PA Series Actuators - PA24-27-FS

Technical Specifications - PA24-27-FS Actuator			
Electrical	Actuator Model	PA24-27-FS	For Simple Set PIC Valve sizes 1/2" to 1-1/4"
	Type	On/Off and Floating	
	Force	27 lb-force	
	Operating Voltage	22 to 26 AC/DC	
	Power Consumption	10 VA	
	Input Signal	Digital, 2 positions or 3 point floating	
	Input Impedance	4.7 K	
	Electrical Connection	4-wire halogen free cable 18 AWG (0.8 mm2), 3.2 feet (1M) long)	
Operation	Fail Safe	Yes - 60 Seconds Runtime	
	Fail Safe Function	Electronic - Enerdrive[1]	
	Stall Protection	Auto Shutoff for end of travel and jammed/stuck	
	Runtime	120 Seconds	
	Direction	Reversible. Default - Up to Open	
	Cycle Life	30,000	
	Manual Override	Yes	
Environmental	Enclosure Rating	IP54 (Equivalent to NEMA 3R) - Not intended for outdoor use without additional protection.	
	Ambient Conditions	**Operating —** 36°F to 122°F (2°C to 50°C) **Media Temp. —** 36°F to 248°F (2°C to 120°C) **Storage —** -22 to 122°F (-30 to 50°C) **Humidity Rating —** 5 to 95% RH Non Condensing	
	Audible Noise Rating	>35 dBA	
	Dimensions	(L) 4.09"x (W) 2.08"x (H) 3.62"	
	Weight	0.9 lb. (0.4 kg)	
Misc	Agency Certifications	UL, CE	
	Warranty	5 Years limited from time of shipment.	

Note[1]: The Enerdrive system is a patented method of storing energy (using super capacitors) that is later used to drive the actuator to it failsafe position during a power failure. For additional operating information consult PA24-27-FS IOM Manual. The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

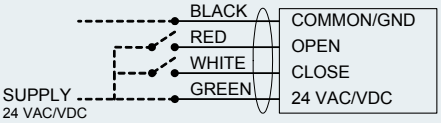
WIRING - (CABLE)

PA24-27-FS (27 lb force)
ON/OFF, FAILSAFE

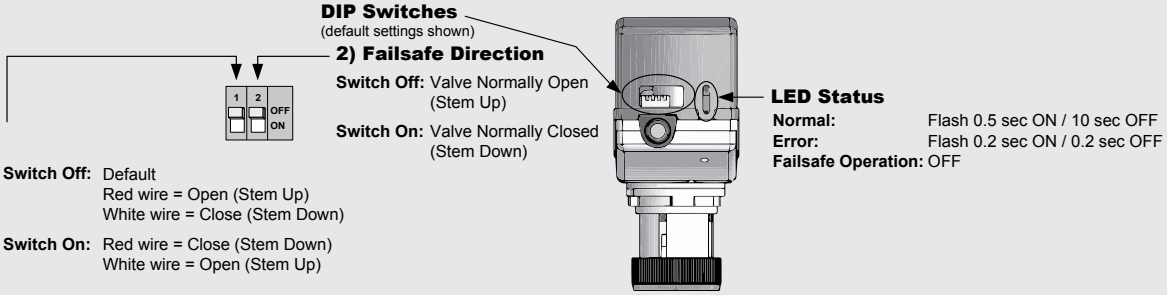




PA24-27-FS (27 lb force)
FLOATING, FAILSAFE



DIP SWITCHES



NOTE: The Enerdrive system is a patented method of storing energy (using super capacitors) that is later used to drive the actuator to it failsafe position during a power failure. For additional operating information consult PA24-27 IOM Manual.The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

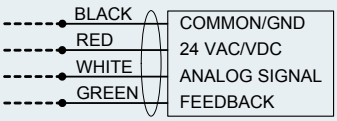


Technical Specifications - PAM24-27-FS Actuator			
Electrical	Actuator Model	PAM24-27-FS	For Simple Set PIC Valve sizes 1/2" to 1-1/4"
	Type	Modulating	
	Force	27 lb-force	
	Operating Voltage	22 to 26 AC/DC	
	Power Consumption	10 VA	
	Input Signal	Analog, 0-10VDC or 2-10VDC; 4-20mA with external 500Ω resistor	
	Feedback Signal	0-10VDC or 2-10VDC	
	Input Impedance	100 K	
	Electrical Connection	4-wire halogen free cable 18 AWG (0.8 mm2), 3.2 feet (1M) long)	
Operation	Fail Safe	Yes - 60 Seconds Runtime	
	Fail Safe Function	Electronic - Enerdrive[1]	
	Stall Protection	Auto Shutoff for end of travel and jammed/stuck	
	Runtime	120 Seconds	
	Direction	Reversible. Default - Up to Open	
	Auto Stroke	Yes	
	Cycle Life	30,000	
	Manual Override	Yes	
Environmental	Enclosure Rating	IP54 (Equivalent to NEMA 3R) - Not intended for outdoor use without additional protection.	
	Ambient Conditions	**Operating —** 36°F to 122°F (2°C to 50°C) **Media Temp. —** 36°F to 248°F (2°C to 120°C) **Storage —** -22 to 122°F (-30 to 50°C) **Humidity Rating —** 5 to 95% RH Non Condensing	
	Audible Noise Rating	>35 dBA	
	Dimensions	(L) 4.09"x (W) 2.08"x (H) 3.62"	
	Weight	0.9 lb. (0.4 kg)	
Misc	Agency Certifications	UL, CE	
	Warranty	5 Years limited from time of shipment.	

Note[1]: The Enerdrive system is a patented method of storing energy (using super capacitors) that is later used to drive the actuator to it failsafe position during a power failure. For additional operating information consult PAM24-27-FS IOM Manual. The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

WIRING - (CABLE)

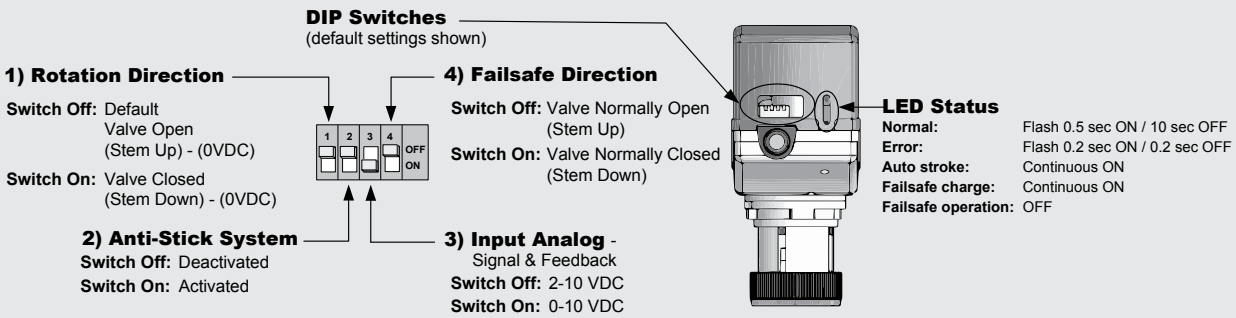
PAM24-27-FS (27 lb force)
MODULATING (ANALOG), FAILSAFE



FAILSAFE CONTROLLED BY DIP SWITCHES



DIP SWITCHES



NOTE: The Enerdrive system is a patented method of storing energy (using super capacitors) that is later used to drive the actuator to it failsafe position during a power failure. For additional operating information consult PAM24-27 IOM Manual.The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

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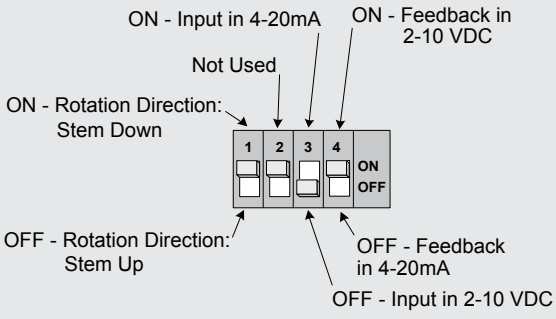
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Technical Specifications - PAM24-100 Actuator			
Electrical	Actuator Model	PAM24-100	For Simple Set PIC Valve sizes 1-1/2" to 2"
	Type	On/Off, Floating and Modulating	
	Force	100 lb-force	
	Operating Voltage	22 to 26 VAC / 23 to 32 VDC	
	Power Consumption	6 VA	
	Input Signal	2 Position On/Off (Digital-Pulse Width Modulation), 3 Point Floating, Modulating (Analog), 2-10VDC; 4-20mA	
	Feedback Signal	4 to 20 mA or 2 to 10 VDC adjustable (factory set 2-10 VDC)	
	Input Impedance	100 K	
	Electrical Connection	4-wire halogen free cable 18 AWG (0.8 mm2), 3.2 feet (1M) long) Terminal Connection. Use 18AWG [0.8mm2] minimum	
Operation	Fail Safe	No	
	Stall Protection	Auto Shutoff for end of travel and jammed/stuck	
	Runtime	90 Seconds	
	Direction	Reversible. Default - Up to Open	
	Auto Stroke	Yes	
	Cycle Life	60,000	
	Manual Override	Yes	
Environmental	Enclosure Rating	NEMA Type 2 - Not intended for outdoor use without additional protection.	
	Ambient Conditions	**Operating —** 0°F to 122°F (-18°C to 50°C) **Storage —** -22 to 122°F (-30 to 50°C) **Humidity Rating —** 5 to 95% RH Non Condensing	
	Audible Noise Rating	>35 dBA	
	Dimensions	(L) 4.80"x (W) 3.60"x (H) 6.93"	
	Weight	2.0 lb. (0.9 kg)	
Misc	Agency Certifications	UL, CE	
	Warranty	5 Years limited from time of shipment.	

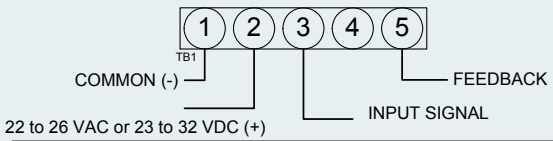
DIP SWITCHES - DIGITAL SIGNAL



WIRING - (TERMINAL)

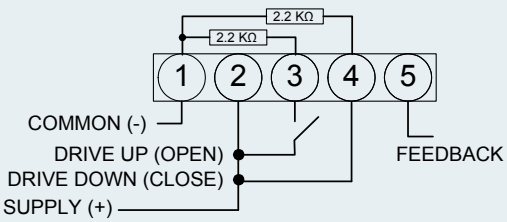
PAM24-100 (100 lb force)

ON/OFF, FLOATING & MODULATING (ANALOG), NON-FAILSAFE

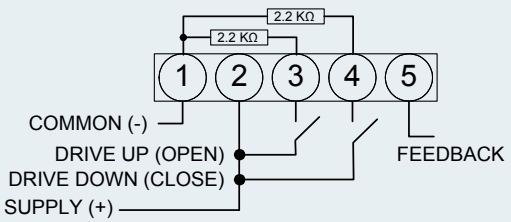


DIGITAL SIGNAL

3 WIRE / 2 POSITION ON/OFF



4 WIRE / 3 POINT FLOATING



Special Consideration for Digital Control

In this mode, the actuator is sensitive to induced electrical voltages **from external sources**. To prevent such interference, if the signal on pins 4 and 3 on TB1 are from an **external 24VAC source**, install a resistor 2.2kohm, 0.5W between pins 4 and 1 and another of 2.2k ohms, 0.5W between pins 3 and 1 of TB1. These resistors are included.

NOTE: For additional operating information consult PAM24-100 IOM Manual.The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

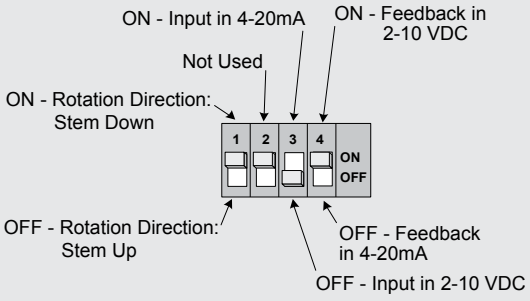


Technical Specifications - PAM24-100-FS Actuator

Electrical	Actuator Model	PAM24-100-FS	For Simple Set PIC Valve sizes 1-1/2" to 2"
	Type	On/Off, Floating and Modulating	
	Force	100 lb-force	
	Operating Voltage	22 to 26 VAC / 23 to 32 VDC	
	Power Consumption	6 VA, 20VA Start Up	
	Input Signal	2 Position On/Off (Digital-Pulse Width Modulation), 3 Point Floating, Modulating (Analog), 2-10VDC; 4-20mA	
	Feedback Signal	4 to 20 mA or 2 to 10 VDC adjustable (factory set 2-10 VDC)	
	Input Impedance	100 K	
	Electrical Connection	4-wire halogen free cable 18 AWG (0.8 mm2), 3.2 feet (1M) long) Terminal Connection. Use 18AWG [0.8mm2] minimum	
Operation	Fail Safe	Yes	
	Fail Safe Function	Electronic - Enerdrive[1]	
	Stall Protection	Auto Shutoff for end of travel and jammed/stuck	
	Runtime	90 Seconds	
	Direction	Reversible. Default - Up to Open	
	Auto Stroke	Yes	
	Cycle Life	60,000	
Environmental	Enclosure Rating	NEMA Type 2 - Not intended for outdoor use without additional protection.	
	Ambient Conditions	**Operating —** 0°F to 122°F (-18°C to 50°C) **Storage —** -22 to 122°F (-30 to 50°C) **Humidity Rating —** 5 to 95% RH Non Condensing	
	Audible Noise Rating	>35 dBA	
	Dimensions	(L) 4.80"x (W) 3.60"x (H) 6.93"	
	Weight	2.0 lb. (0.9 kg)	
Misc	Agency Certifications	UL, CE	
	Warranty	5 Years limited from time of shipment.	

Note[1]: The Enerdrive system is a patented method of storing energy (using super capacitors) that is later used to drive the actuator to it failsafe position during a power failure. For additional operating information consult PAM24-100-FS IOM Manual. The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

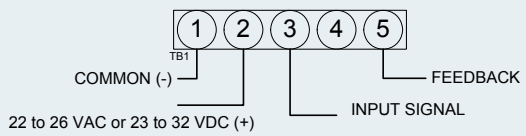
DIP SWITCHES - DIGITAL SIGNAL



WIRING - (TERMINAL)

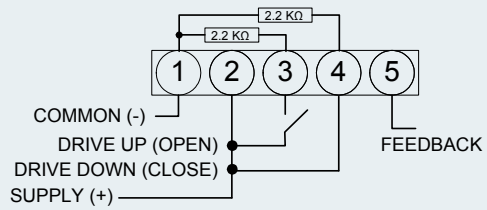
PAM24-100-FS (100 lb force)

ON/OFF, FLOATING & MODULATING (ANALOG), FAILSAFE

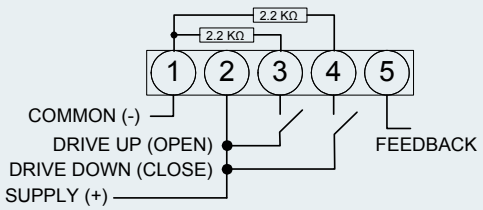


DIGITAL SIGNAL

3 WIRE / 2 POSITION ON/OFF



4 WIRE / 3 POINT FLOATING



Special Consideration for Digital Control

In this mode, the actuator is sensitive to induced electrical voltages **from external sources**. To prevent such interference, if the signal on pins 4 and 3 on TB1 are from an **external 24VAC source**, install a resistor 2.2kohm, 0.5W between pins 4 and 1 and another of 2.2k ohms, 0.5W between pins 3 and 1 of TB1. These resistors are included.

NOTE: For additional operating information consult PAM24-100-FS IOM Manual.The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

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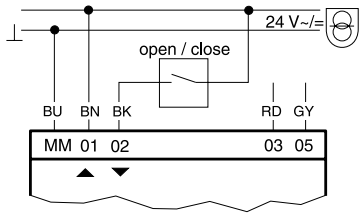


Technical Specifications - PAM24-112 Actuator			
Electrical	Actuator Model	PAM24-112	For Simple Set 2" High Flow Valves & Simple Set Max PIC Valve sizes 2-1/2" to 3"
	Type	On/Off, Floating and Modulating	
	Force	112 lb-force	
	Operating Voltage	24 VAC (+/-20%) at 50/60 Hz or 24 VDC (+20%, -10%)	
	Power Consumption	3.5 W, 6.6 VA	
	Input Signal	On/Off, Floating and Modulating - 0 to 10 V, Ri> 100kΩ	
	Feedback Signal	0 to 10 V, Load> 10 kΩ **Starting Point U_0** 0 or 10 V **Control Span ΔU** 10 V **Switching Range Xsh** 200 mV	
	Electrical Connection	5 x 20 AWG (0.20 mm^2)	
Operation	Fail Safe	No	
	Action	Direct or Reverse Acting	
	Stall Protection	Auto Shutoff for end of travel and jammed/stuck	
	Runtime	150 Seconds default (DIP switch adjustable) at full stroke for Simple Set Max 2-1/2" & 3"	
	Response Time	200 ms	
	Stroke	0.31 to .78 inches (8 to 20mm	
	Cycle Life	80,000	
	Manual Override	Yes	
Environmental	Enclosure Rating	IP54 (NEMA 3S Equivalent); Flame Retardent Plastic - Not intended for outdoor use without additional protection.	
	Ambient Conditions	**Ambient Temperature —** 14˚to 131˚F (-10˚ to 55˚C) **Max. Media Temperature —** 212˚F (100˚C) **Humidity Rating —** 5 to 85% RH Non Condensing	
	Dimensions	(L) 6.40"x (W) 2.80"x (H) 7.90"	
	Weight	2.1 lb. (1 kg)	
Misc	Agency Certifications	CE	
	Warranty	5 Years limited from time of shipment.	

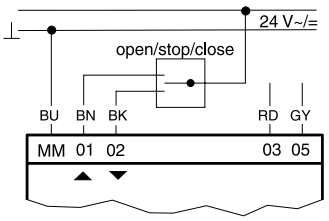
Note: For additional operating information consult PAM24-112 IOM Manual. The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

Wiring

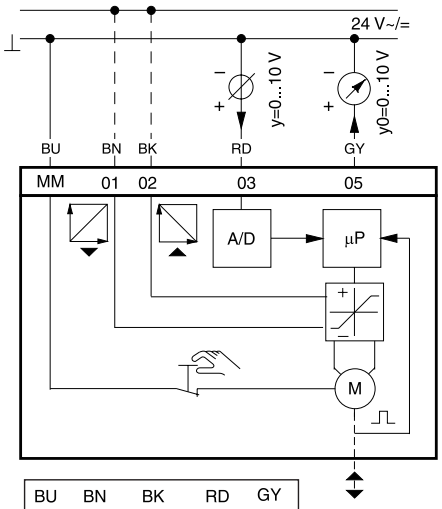
PA24-112 (112 lb force)
ON/OFF (2PT), NON FAILSAFE



PA24-112 (3PT) (112 lb force)
FLOATING, NON FAILSAFE



PA24-112 (112 lb force)
MODULATING, NON FAILSAFE



DIP SWITCHES

Running Time per mm	Swith Coding	Running Time for 8 mm of Stroke	Running Time for 20 mm of Stroke
7.5 s Default Setting for SS PIC Valve	1 2 3 ON OFF Run Time - Switch (1) Characteristic - Switches (2) & (3)	60 s ± 2	150 s ±5
15 s	1 2 3 ON OFF Run Time - Switch (1) Characteristic - Switches (2) & (3)	120 s ± 4	300 s ±10

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Bray Commercial provides automated Butterfly, Ball, Globe and Pressure Independent Control Valves to the commercial building HVAC market throughout the world Whereever valve performance is required to maintain climate controlled environments, Bray can provide the required automated valves to meet the demanding flow applications of chiller/boiler isolation, air handlers and terminal units for new construction, retrofit and/or LEED certification applications in buildings.

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Bray COMMERCIAL

Retrofit Kits
Butterfly Valves

DOCUMENT
Features
Retrofit Library
Retrofit Kit Forms
Exploded View
Dimensions
CONTENTS
LOOKING FOR MORE

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01/12/23

Application
Pneumatic valves and systems have been used for controls in the HVAC market for the past several decades. In the early days of building automation systems, before the advent of control networks, control systems consisted of pneumatic controls or wire bundles connected to relays, switches, potentiometers, and actuators.

Cabling was installed in a point-to-point fashion between electrical panels, the sensor inputs and actuator outputs. The functionality of these control systems are relatively rudimentary and inflexible. With the dawn of electronic actuation coupled with newly advanced building automation systems, it only follows that many pneumatically controlled valves are now being partially or completely replaced with electronic valve assemblies.

The advent of solid state technology offers a means of using logic circuits to replace wire and relays. Pneumatic controls and electrical panels have given way to direct digital controllers, which are programmed or configured.

Our Retrofit Kits make the transition from Pneumatic to DDC easier. In those instances when an existing globe and butterfly valve needs to be fitted with the proper electronic actuator, Bray has a quick, easy, and cost effective solution.



Features and Benefits - Butterfly

Assembly
- Butterfly Valves up to 20", 2-Way or 3-Way
- Electronic Actuation
- On/Off, Floating, & Modulating
- Convenient Electronic Forms
- Easy Installation

Features and Benefits - Butterfly

Acuation
- Manual Override
- 24 VAC, 120 VAC
- 2-Position or Floating
- Modulating 0(2)-10VDC or 0(4)-20mA
- Non-Spring Return or Spring Return
- Positive Position Feedback
- Weather Proof Enclosure Optional

Butterfly Retrofit Library 2" to 4"

Exisitng Valve Manufacturer	Exisitng Valve Model #	Existing Valve Size			
		2"	2-1/2"	3"	4"
Centerline	Series 200 (A/LT, WA, WL, AF)	...CE1	...CE1	...CE1	...CE2
	Series 205 (NAT, NLT)	...CE1	...CE1	...CE1	...CE2
	Series 225 (B-285)	...CE1	...CE1	...CE1	...CE2
	Series 400 (ADV)	...CE1	...CE1	...CE1	...CE2
Challenger	CVM	...CR1	...CR1	...CR1	...CR2
Keystone	AR1 / AR2	...KE1	...KE1	...KE1	...KE2
	221 / 222	...KE1	...KE1	...KE1	...KE2
	F310 / F312	...KE6	...KE7	...KE7	...KE7
Nibco	LD / WD 2000 Series	...NO1	...NO2	...NO2	...NO3
	LD / WD 3000 Series	...NO1	...NO2	...NO2	...NO3
Watts	BF-03 / BF-04	...WS1	...WS1	...WS1	...WS2

Butterfly Retrofit Library 5" to 12"

Exisitng Valve Manufacturer	Exisitng Valve Model #	Existing Valve Size				
		5"	6"	8"	10"	12"
Centerline	Series 200 (A/LT, WA, WL, AF)	...CE3	...CE3	...CE4	...CE5	...CE6
	Series 205 (NAT, NLT)	...CE3	...CE3	...CE4	...CE5	...CE6
	Series 225 (B-285)	...CE3	...CE3	...CE4	...CE5	...CE6
	Series 400 (ADV)	...CE3	...CE3	...CE4	...CE5	...CE6
Challenger	CVM	...CR2	...CR3	...CR4	...CR5	...CR5
Keystone	AR1 / AR2	...KE3	...KE3	...KE4	...KE5	...KE5
	221 / 222	...KE3	...KE3	...KE4	...KE5	...KE5
	F310 / F312	...KE8	...KE8	...KE9	...KE10	...KE10
Nibco	LD / WD 2000 Series	...NO4	...NO4	...NO5	...NO6	...NO7
	LD / WD 3000 Series	...NO4	...NO4	...NO5	...NO6	...NO7
Watts	BF-03 / BF-04	...WS2	...WS2	...WS3	...WS4	...WS5

Please fill out the Butterfly Valve Retrofit form (Form BFV-01).
When ordering please use the following model numbering system:
DR (Valve Size) B (2 or 3-way) - Kit Number from Above / Actuator,
ex. Nibco 6" 2-way LD/WD 2000 = DR6B2-NO4/Actuator





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Retrofit Kits - Butterfly Valves Retrofit Form

SECTION - 1

Quantity_____

Nominal Valve Size_____

Valve Manufacturer (if known) _____

Model No. (if known) _____

Valve Style: _____

☐ 2-Way or ☐ 3-Way

SECTION - 2

Mounting Style (A2, B2, or C2 below)

Dimensions: A = _____ (in.)

B = _____ (in.)

C = _____ (in.)

Are Mounting Holes Drilled and Tapped:

☐ No, Hole Diameter

☐ Yes, Bolt Size_____Threads/inch

SECTION - 3

Shaft Style (A3, B3, C3, or E3 below):

Dimensions: D = _____ (in.)

E = _____ (in.)

F = _____ (in.)

G = _____ (in.)

H = _____ (in.)

Note: Dimension F (for keywayed, flatted, or pinned) is it ☐ perpendicular or ☐ parallel to disc.

ACTUATION: (Check all that apply)

☐ On/Off ☐ Tri-State ☐ Modulating

☐ Spring Return

☐ 24VAC ☐ 120VAC

☐ Weather Proof Enclosure

Approximate Torque Required_____(in-lbs.)

ADDITIONAL COMMENTS

_____

_____

_____

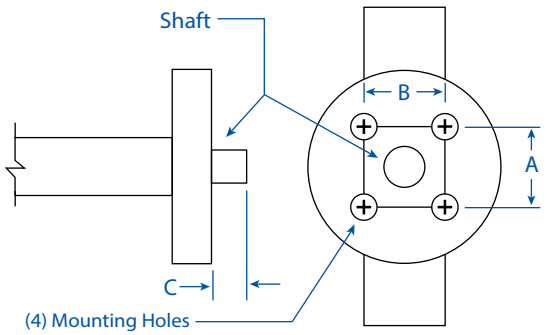
_____

Please fill in the following dimensions. A model number will be assigned by Bray after receiving this form.

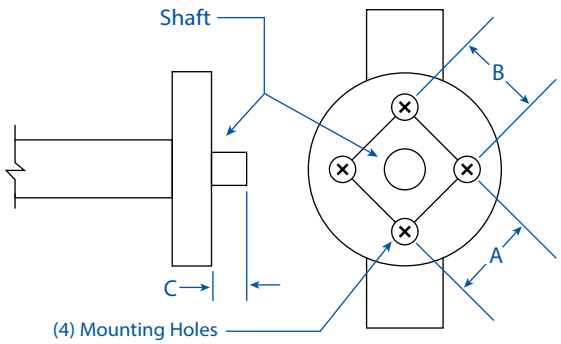
Dimensions should be measured to closest 0.001 inch. All dimensions should be measured in inches.

MOUNTING AND SHAFT STYLES

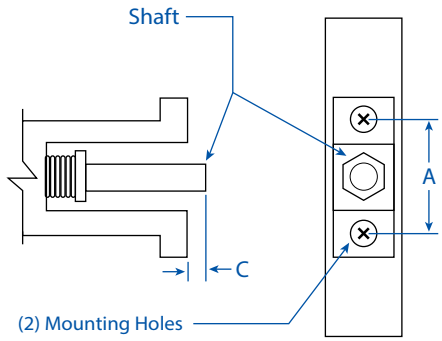
Mounting Style - A2



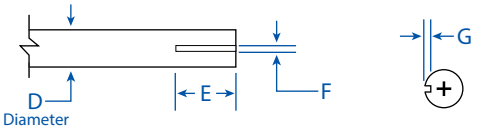
Mounting Style - B2



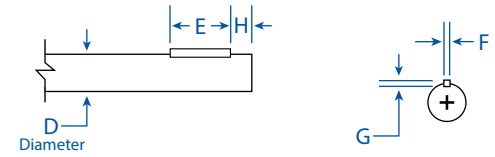
Mounting Style - C2



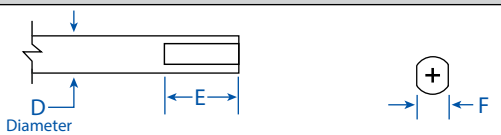
Shaft Style - A3 / Keywayed



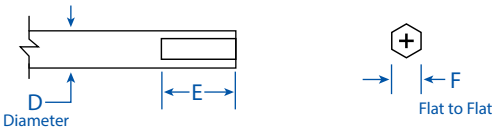
Shaft Style - B3 / Wooddruff Key



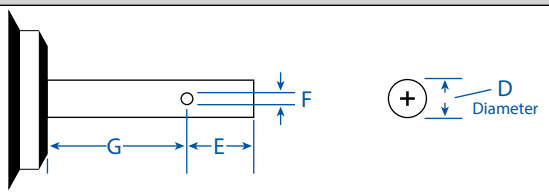
Shaft Style - C3 / Double D



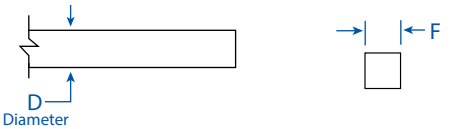
Shaft Style - D3 / Hexed



Shaft Style - E3 / Pinned



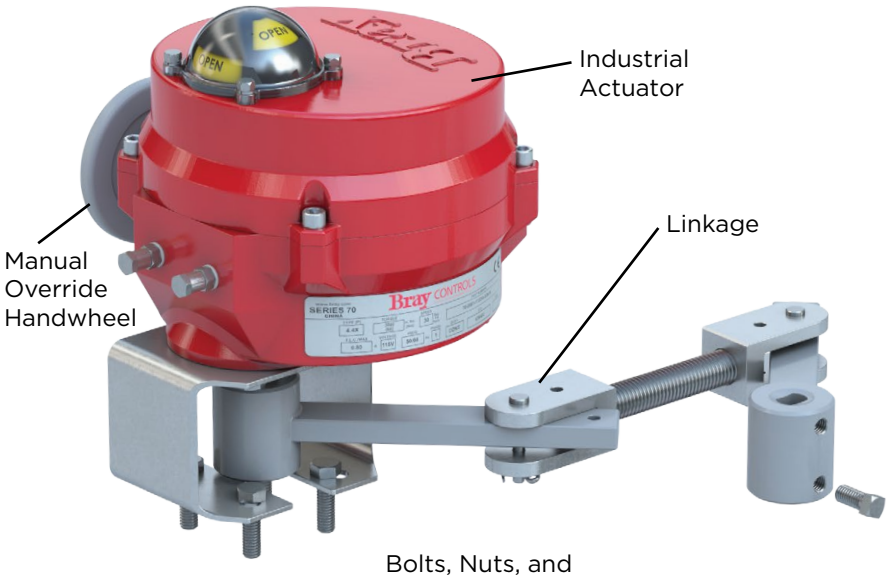
Shaft Style - Square

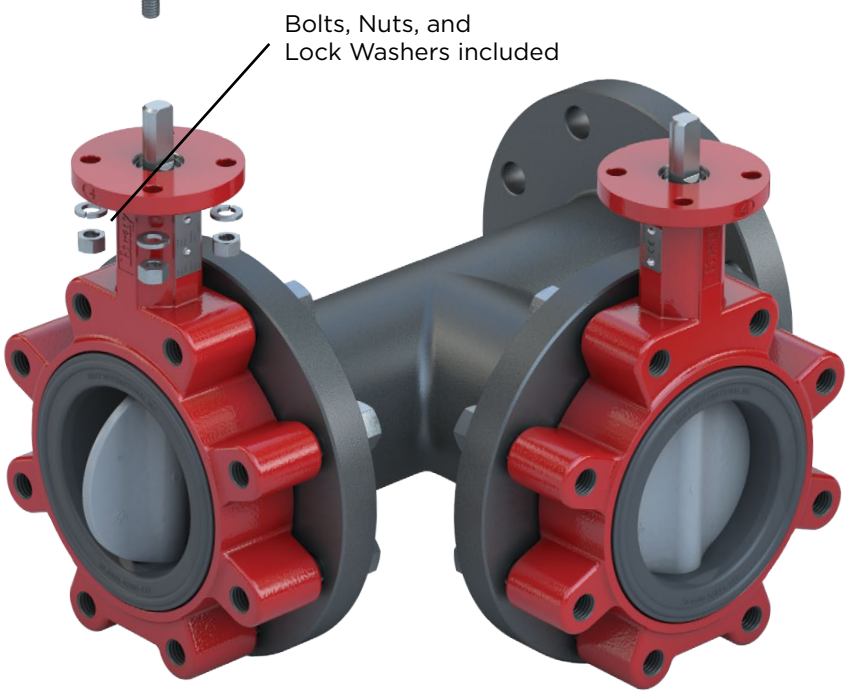


Please fill in the following dimensions. A model number will be assigned by Bray after receiving this form.
Dimensions should be measured to closest 0.001 inch. All dimensions should be measured in inches.

Features of the Bray Butterfly Valve Retrofit Linkage:

- May be used in high-stress applications
- May be used in high-temperature applications
- Makes pneumatic to electronic conversion simple
- A wide range of control systems can be used
- High close-off pressures available for most applications
- May use tandem actuators for higher close-off pressures
- Easy retrofit on non-standard valves
- Available actuators include: D-140/210/280, DC-310, DS-180 Series and Bray's Industrial Series Actuator where applicable.

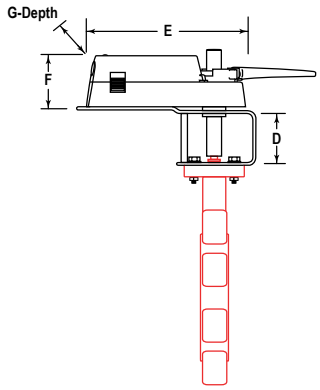


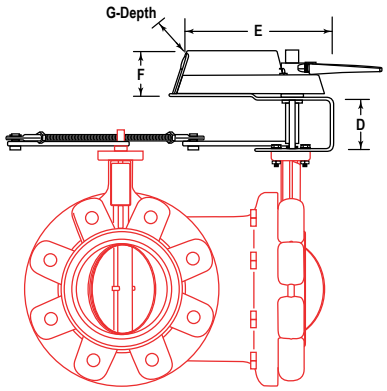


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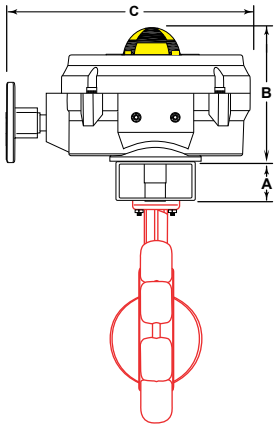


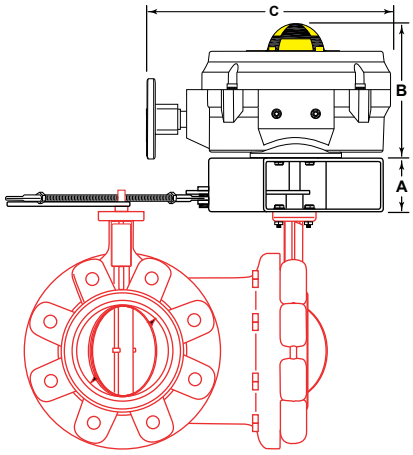


DIMENSIONS - 2 " - 6 " with D/DC Series Actuators

Butterfly Valve Retrofit Linkage Model # Prefix	Connection		Please reference illustration above							
			D		E		F		G	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
DR2B(2 or 3)…	2	50	3.3	84	9.8	249	3.5	89	4.6	117
DR250B(2 or 3)…	2.5	65	3.3	84	9.8	249	3.5	89	4.6	117
DR3B(2 or 3)…	3	80	3.3	84	11.0	279	3.5	89	4.6	117
DR4B(2 or 3)…	4	100	3.3	84	11.0	279	3.5	89	4.6	117
DR5B(2 or 3)…	5	125	3.3	84	11.0	279	7.1**	180**	4.6**	117**
DR6B(2 or 3)…	6	150	3.3	84	11.0	279	5.9**	150**	4.0	102

** *Indicates tandem mounted actuators.*
Dimensions listed are approximate. In some cases custom brackets and pins are required.
Largest actuator(s) dimension shown





2-Way
DIMENSIONS, 2 " - 16 " with Industrial Series Actuators

Butterfly Valve Retrofit Linkage Model # Prefix	Connection		Please reference illustration above					
			A		B		C	
	in.	mm	in.	mm	in.	mm	in.	mm
DR2B…	2	50	4.0	102	6.96	177	9.29	236
DR250B…	2.5	65	4.0	102	6.96	177	9.29	236
DR3B…	3	80	4.0	102	6.96	177	9.29	236
DR4B…	4	100	4.0	102	6.96	177	9.29	236
DR5B…	5	125	4.0	102	6.96	177	9.29	236
DR6B…	6	150	4.0	102	6.96	177	9.29	236
DR8B…	8	200	4.0	102	7.96	202	12.12	308
DR10B…	10	250	4.0	102	8.56	217	13.09	333
DR12B…	12	300	4.0	102	8.56	217	13.09	333
DR14B…	14	350	4.0	102	8.56	217	13.09	333
DR16B…	16	400	4.0	102	8.56	217	13.09	333

3-Way
DIMENSIONS, 2 " - 16 " with Industrial Series Actuators

Butterfly Valve Retrofit Linkage Model # Prefix	Connection		Please reference illustration above					
			A		B		C	
	in.	mm	in.	mm	in.	mm	in.	mm
DR2B…	2	50	4.0	102	6.96	177	9.29	236
DR250B…	2.5	65	4.0	102	6.96	177	9.29	236
DR3B…	3	80	4.0	102	6.96	177	9.29	236
DR4B…	4	100	4.0	102	6.96	177	9.29	236
DR5B…	5	125	4.0	102	6.96	177	9.29	236
DR6B…	6	150	4.0	102	7.96	202	12.12	308
DR8B…	8	200	4.0	102	7.96	202	12.12	308
DR10B…	10	250	4.0	102	7.96	202	12.12	308
DR12B…	12	300	4.0	102	8.56	217	13.09	333
DR14B…	14	350	4.0	102	8.56	217	13.09	333
DR16B…	16	400	4.0	102	8.56	217	13.09	333

Dimensions listed are approximate. In some cases custom brackets and pins are required.
Largest actuator(s) dimension shown

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03/21/24

Retrofit Kits
Globe Valves

Application

Pneumatic valves and systems have been used for controls in the HVAC market for the past several decades. In the early days of building automation systems, before the advent of control networks, control systems consisted of pneumatic controls or wire bundles connected to relays, switches, potentiometers, and actuators.

Cabling was installed in a point-to-point fashion between electrical panels, the sensor inputs and actuator outputs. The functionality of these control systems are relatively rudimentary and inflexible. With the dawn of electronic actuation coupled with newly advanced building automation systems, it only follows that many pneumatically controlled valves are now being partially or completely replaced with electronic valve assemblies.

The advent of solid state technology offers a means of using logic circuits to replace wire and relays. Pneumatic controls and electrical panels have given way to direct digital controllers, which are programmed or configured.

Our Retrofit Kits make the transition from Pneumatic to DDC easier. In those instances when an existing globe and butterfly valve needs to be fitted with the proper electronic actuator, Bray has a quick, easy, and cost effective solution.



Features and Benefits - Globe

Assembly

- Globe Valves up to 6", 2-Way or 3-Way
- Electronic & Pneumatic Actuation
- Easy Installation - Stem connection takes place automatically after application of control voltage.
- Convenient Electronic Forms

Features and Benefits - Globe

Acuation

- Manual Override
- 24 VAC, 120 VAC
- One model for On/Off, Floating or Modulating 0(2)-10VDC or 0(4)-20mA
- NEMA 4 Equivalent
- Non-Spring Return or Spring Return
- Positive Position Feedback
- Easy flow curve configurability

Retrofit Kits - Globe Valves Selection Chart

Retrofit Linkage Kits

Existing Valve Manufacturer		2 1/2"	3"	4"	5"	6"
Bray DG Series		GRK-BRA-1		GRK-BR-2		
Siemens/Landis/Staefa 599 Series		GRK-BRA-1		GRK-BR-2		
Honeywell	V5011, 2W	GRK-HON-1		GRK-HON-2		
Honeywell	V5013, 3W					
Johnson Controls	VG2000	GRK-JCI				
Schneider/Barber Coleman/Siebe	VB-8000	GRK-SCH-2				
Schneider/Barber Coleman/Siebe	VB-92x3					

Consult factory for other makes and models

Available Actuators

Non-Spring Return	
GA24-562	On/Off, Floating and Modulating
Spring Return	
GASRE24-450	On/Off, Floating and Modulating- Normally Retracted
GASEX24-450	On/Off, Floating and Modulating- Normally Extended

Retrofit Kits - Globe Valves Close-Off Chart

2-Way Retrofit Kit Close-Off (PSI)

Existing Valve Manufacturer		2-1/2"		3"		4"		5"		6"	
		NSR	SR	NSR	SR	NSR	SR	NSR	SR	NSR	SR
Bray DG Series		85	68	56	44	34	27	22	18	15	12
Siemens 599 Series		85	68	56	44	34	27	22	18	15	12
Landis/Staefa 599 Series		85	68	56	44	34	27	22	18	15	12
Honeywell	V5011, 2W	90	84	70	56	38	30	24	18	15	12
Johnson Controls	VG2000	95	75	64	50	37	29	22	18	16	12
Schneider/Barber Coleman/Siebe	VB-8000	70	58	50	38	25	22	12	10	8	6
	VB-92x3	70	58	50	38	25	22	12	10	8	6

3-Way Retrofit Kit Close-Off (PSI)

Existing Valve Manufacturer		2-1/2"		3"		4"		5"		6"	
		NSR	SR	NSR	SR	NSR	SR	NSR	SR	NSR	SR
Bray DG Series		85	68	56	44	34	27	22	18	15	12
Siemens 599 Series		85	68	56	44	34	27	22	18	15	12
Landis/Staefa 599 Series		85	68	56	44	34	27	22	18	15	12
Honeywell	V5013	90	84	70	56	38	30	24	18	15	12
Johnson Controls	VG2000	95	75	64	50	37	29	22	18	16	12
Schneider/Barber Coleman/Siebe	VB-8000	70	58	50	38	25	22	12	10	8	6
	VB-9313	70	58	50	38	25	22	12	10	8	6

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Retrofit Kits - Globe Valves Retrofit Form

This form is to be used if your existing valve is not listed in Retrofit Library. Make photocopies of this form, downloaded from our website, (or contact Bray for additional copies) and fax completed forms to Bray Controls to ensure proper linkage compatibility. A separate form should be used for each valve when information is different for valve size or manufacturer. Please fill out form completely. Draw your own diagram using the space in Figure 4 below if necessary.

EXISTING GLOBE VALVE BODY INFORMATION

Quantity _____

Figure No. (choose 1, 2, or 3 below) _____

Manufacturer (if known) _____

Model No. (if known) _____

Valve Size _____

☐ 2-Way or ☐ 3-Way

ACTUATION (Check all that apply)

☐ On/Off ☐ Tri-State ☐ Modulating

☐ Spring Return

☐ 24VAC ☐ 120VAC

☐ Weather Proof Enclosure

Approximate Close-Off Required _____ (PSI)

Please specify upon ordering if the valve stem is threaded or grooved.

EXISTING GLOBE VALVE BODY DIMENSIONS

A = Height with stem down _____(in.)

B = Length of the neck _____(in.)

C = Stem diameter and threads/inch _____(in.) _____(th/in.)

D = Major diameter and threads/inch _____(in.) _____(th/in.)

E = Lift (Stroke Length) _____(in.)

F = Neck Dimensions _____(in.)

G = Neck Dimensions _____(in.)

H = Neck Dimensions _____(in.)

I = Neck Dimensions _____(in.)

ADDITIONAL COMMENTS

_____

_____

_____

_____

POSSIBLE EXISTING GLOBE VALVE TYPES

Figure No.1

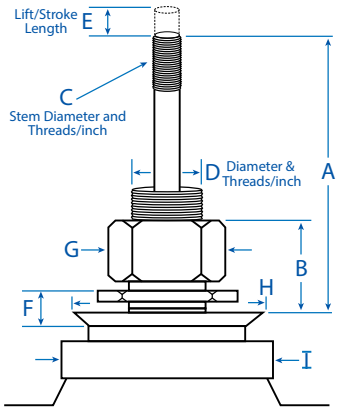


Figure No.2

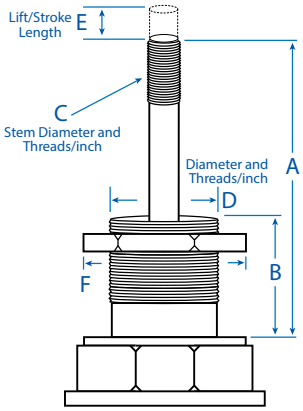


Figure No.3

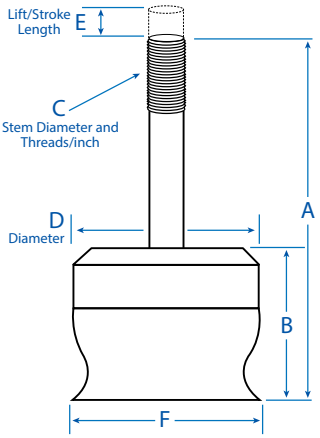


Figure No.4

If Fig. 1, 2, 3, do not match valve, please sketch below.)

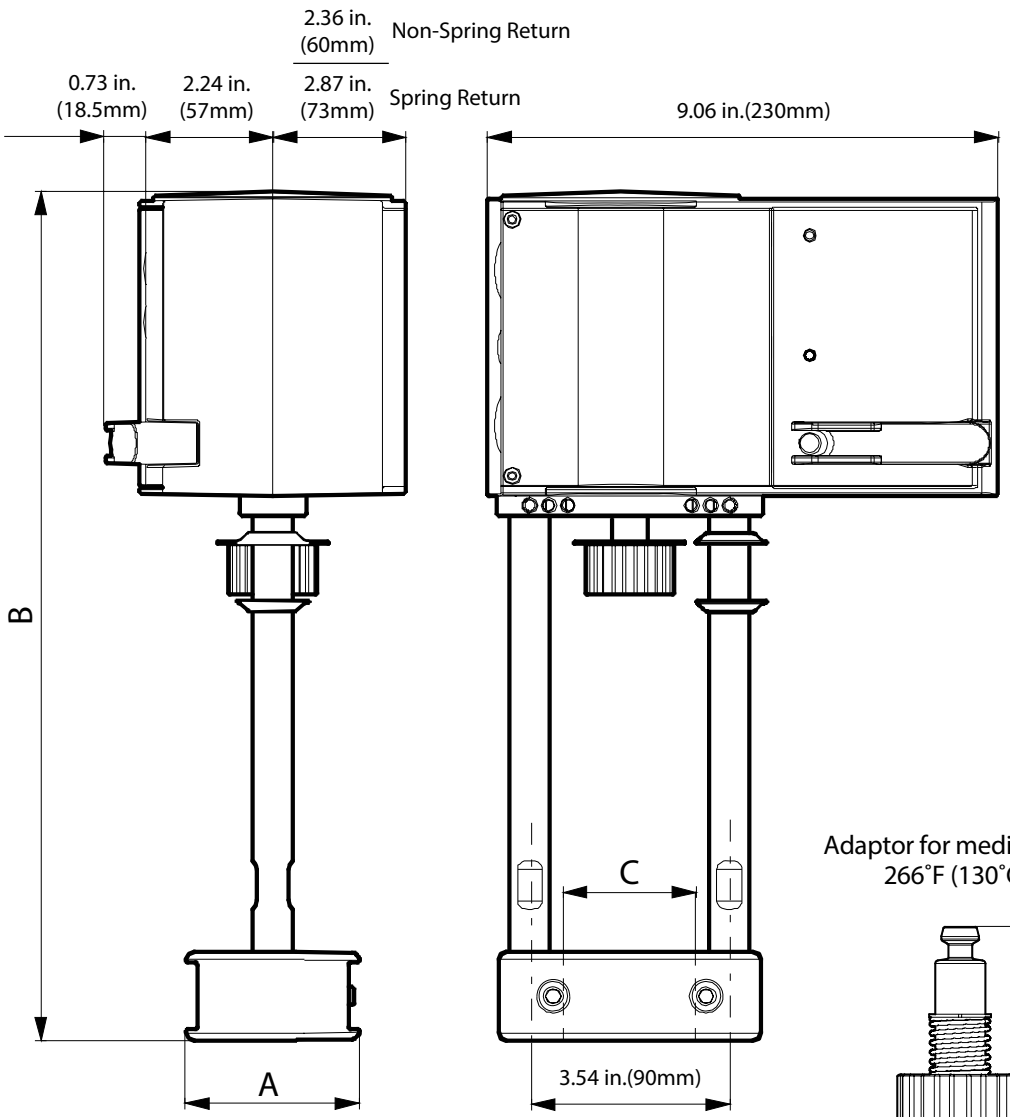
DRAW YOUR OWN

Please fill in the following dimensions. A model number will be assigned by Bray after receiving this fax form.
Dimensions should be measured to closest 0.001 inch. All dimensions should be measured in inches.

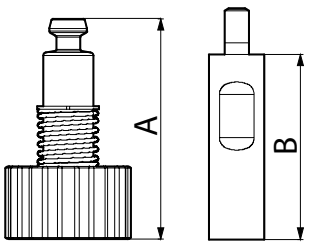
Application

The GRK Series Retrofit Linkage is available for many types of globe valves ranging in sizes from 1/2" to 6". The valve linkage is constructed of sturdy extruded aluminum which prevents twisting and distorting. This linkage assembly may be used to control many types of fluids including steam applications.

The supplied actuator is mounted to the linkage body with a single screw. The rotary motion of the actuator is transmitted through a shaft, running in bronze bearings, impregnated with oil for long life, to a self-adjusting, floating rack and pinion, to the valve operating rod. A specially designed spring mechanism, built into the valve operating rod, maintains constant force on the valve seat without power to the actuator. This feature ensures tight shut-off of the valve even with temperature variations. All mounting hardware and the selected actuator is supplied with the GRK series linkage kit for such manufacturers as SIEBE, Siemens, Honeywell, Landis & Staefa, Schneider and Johnson. For odd valves please fill in the information on Fax Form on page GKR-3 to ensure a proper fit.



Adaptor for media temperatures between 266˚F (130˚C) and 464˚F (240˚C)



Description	A	B	C
GA(S) Series	2.52 in. (64mm)	11.38 in. (289mm)	1.73 in. (44mm)

Part Number	A	B
0372336 240	4.31 in. (109.4mm)	3.94 in. (100mm)

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Bray Commercial provides automated Butterfly, Ball, Globe and Pressure Independent Control Valves to the commercial building HVAC market throughout the world Whereever valve performance is required to maintain climate controlled environments, Bray can provide the required automated valves to meet the demanding flow applications of chiller/boiler isolation, air handlers and terminal units for new construction, retrofit and/or LEED certification applications in buildings.

Building Types

- Healthcare
- Data Centers
- Government and Municipal
- Sports/Entertainment/ Convention Centers
- K-12 and University Education
- Transportation
- Hotels
- Office Buildings
- Retail

SINCE 1986, BRAY HAS PROVIDED FLOW CONTROL SOLUTIONS FOR A VARIETY OF INDUSTRIES AROUND THE WORLD.

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Bray COMMERCIAL

Series 70 Actuators

24 VAC/DC and 120 VAC

800 to 18,000 lb.-in.

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01/05/26

Application

Bray's years of proven success in quarter turn electric actuation, combined with innovative engineering, has produced the modern Series 70. The Series 70 has become the industry standard in the Commercial HVAC industry due to it's compact, reliable design that mounts directly to Bray's industry leading butterfly and industrial ball valves without the need for brackets and linkages. Available in torque outputs from 800 to 18,000 lb.-in. (90 to 2033 NM), 24 VAC/DC and 120 VAC, On/Off and Modulating units all in NEMA 4x and IP65 rated housings.

These actuators are ideal for use on valves for Chillers, Cooling Towers, Boilers, Heat Exchangers and other outdoor applications. Furthermore, its advanced electronics assure reliable compatibility with virtually any analog control signal used in today's building automation and temperature control system.

There is no better choice for building automation!



System Types

Air Handling Units
Heat Exchangers
Computer Rooms
and more.

Features and Benefits

- **Compact Design and Direct Mounting**
  Assists in field operation
- **High Visibility Beacon Position Indicator**
  Reduces pump head requirements for added energy efficiency
- **Manual Declutchable Override Handwheel**
  Manual positioning without disconnecting power
- **Servo NXT Option for Modulating Control**
  One Touch Menu driven pushbutton selection of all settings
- **Available with Battery Backup on 24 VAC/DC Models**
  Assures return to a predetermined position upon loss of power supply

Series 70 - Specifications

Construction		
Housing	ASTM B85 Pressure Die Cast Aluminum - Polyester Powder Coated	
Motor	**120 VAC** **24 VAC/DC**	Single Phase, Reversible, Permanent Split Capacitor Induction Motor Permanent Magnet-Brush D.C. Motor
Heater	5 Watt PTC style (Heater operation required for humid environments)	
Terminal Strip	**Switch Plate** **Servo**	12 - 22 AWG (2.0 - 0.65mm) 14 - 24 AWG (1.63 - 0.51mm)
Torque Limiting	Optional, Open and Closed preset at factory - Standard on 13,000 & 18,000 lb.-in.	
Auxiliary/Limit Switches: SPDT	**120 VAC**	10A- 1/3 HP
	220 VAC	10A-1/2 HP
	250 VDC	1/4A
	12 VDC	2A
Exposed Fasteners	Stainless Steel	
Travel Stops	Externally adjustable at both 0 and 90 degrees	
Conduit Entries	**800 lb.-in.**	Two 1/2" NPT
	1200 lb.-in. and Higher	Two 3/4" NPT
Weight	See Dimensions	
Enclosure	Designed to meet NEMA Type 4, 4x and IP65 specifications	
Warranty	3 Years	
Certifications	UL/CSA 120V. CE 24 & 120V	

Operating Conditions		
Motor Insulation	120 VAC: 24 VAC/DC:	Class F, 311°F (155°C) thermal trip at 275°F (135°C) Class B, Fast Blow Fuse 5A 250VAC
Ambient Temperature	-20° to 150°F (-29° to 65°C)	
Continuous Duty	Will operate continuously at a maximum ambient temperature of 104°F (40°C)	
Manual Operation	Pull to Engage, Push to Disengage - 30:1 drive ratio, 13 & 18K lb.-in. models are 90:1	

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

Torque and Motor Data						
24 V Models	**Voltage 50/60 Hz**	**(lb.in)**	**(NM)**	**Stroke Time***	**Full Load Amps**	**Power Consumption VA**
70-24-0081H & 70-24-0081SVH	24 VAC/DC	800	90	60 Sec.	2.90	70
70-24-0201H & 70-24-0201SVH	24 VAC/DC	2000	226	80 Sec.	3.50	84
70-24-0501H	24 VAC	5000	565	90 Sec	4.00	96
70-24-0501SVH	24 VAC/DC	5000	565	90 Sec.	4.00	96

All 24V current ratings include heaters and servos
- 24V heater = 208 mA
- 24V modulating servo current draw = 0.3 A

Torque and Motor Data						
120 VAC Models	**Voltage 50/60 Hz**	**(lb.in)**	**(NM)**	**Stroke Time***	**Full Load Amps**	**Locked Rotor Amps**
70-0081H & 70-0081SVH	120 VAC	800	90	30 Sec	0.80	1.00
70-0121H & 70-0121SVH	120 VAC	1,200	135	30 Sec	0.75	2.10
70-0201H & 70-0201SVH	120 VAC	2,000	226	30 Sec	0.85	2.10
70-E301H & 70-E301SVH	120 VAC	3,000	339	30 Sec	1.00	2.10
70-0501H & 70-0501SVH	120 VAC	5,000	565	30 Sec	1.60	3.00
70-0651H & 70-0651SVH	120 VAC	6,500	734	30 Sec	2.30	3.10
70-1300H & 70-1300SVH	120 VAC	13,000	1,470	110 Sec	2.30	3.10
70-1800H & 70-1800SVH	120 VAC	18,000	2,034	110 Sec	2.50	3.10

For 120V models, heater and servo current draws are additive
- 120V Heater + 42 mA
- 120V servo + 0.3 A

*Stroke Times shown are with 60 Hz power.
Actuators with 50 Hz power supply will be 20% slower.

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Specifications - Servo NXT		
Power Requirements	120 VAC	+/- 10% (50/60Hz)
	24 VAC	+/- 10% (50/60Hz)
	24 VDC	-10%, + 30%
	5 VA	For NXT electronic module alone (see S70 Power Consumption for full power requirements)
	Fuse	5A Fast Blow 5mm x 20mm
Input Signal	Control Signal	4-20mA, 0-10VDC, 0-5 VDC, 2-10VDC
	Input Impedance	>100 Meg Ohms (0-10V, 2-10V, 0-5V) and 200 Ohms (4-20mA)
Output Signal	Operating Modes	4-20mA, 0-10VDC, 0-5 VDC
	Required Control Panel Impedance	≤ 400 Ohms (4-20mA Output Mode)
		≥ 1,000 Ohms (0-10VDC Output, 0-5VDC Output)
	NXT Loop Power	12 VDC Max, Do not supply external power (4-20mA Output)
		24mA Max, Do not supply external power (0-10, 0-5VDC Output)
Resolution	Absolute Position Accuracy	< 1%
	Dead Band Adjustment	1% (+/- 0.5%) to 6% (+/- 3%) (3% default) 1% minimum increment
Speed Control	Open/Close Speed	0% - 100% (default). Step size: 20%. Actuator open/close speed referenced below
Operating Mode	Normal Mode	Modulating - Follow Setpoint
	Loss of Signal	Settable to Open, Close, or Last
	Reverse Acting Modes	Flashing "ON" LED = Reversed input and output signal Solid "ON" LED = Reversed input and normal output signal
	Auto Calibration	Automation of storing calibration settings
	Manual Operation	Keypad electrical manual operation of actuator (Open, Stop, Close)
	Control Box Operation	Optional inputs available
Torque Protection	Stall Detection	Motor detected stationary > 2 Seconds (800 to 6500 lb.-in. units only)
	Torque Limit	Optional connected Open/Close Torque Limit switch
Environmental	Ambient Temperature	-22°F (-30°C) to 150°F (65°C), Non condensing humidity

The Servo NXT offers precise modulating service for accurate position control.

- One touch automatic calibration
- User-friendly interface
- Advanced control of proportional band and dead band
- Automatic pulsing mode for precise positioning
- Self diagnostics
- Action on loss of command signal
- Go to position commands



Actuator Open/Close Speed Chart

Speed Setting	24 VAC/DC	120 VAC	120 VAC 13k/18k
Percentage	Seconds (at x %)		
100	60	30	110
80	119	59	219
60	178	88	328
40	237	117	437
20	296	146	546
0	355	175	655

24 V Actuators

800 lb.in Model Number	24 VAC/DC	24 VAC/ 30 VDC	On/ Off	Modulating	Heater	AUX. Switches	Battery Backup
70-24-0081H	●		●		●	●	
70-24-0081SVH	●			●	●	●	
70-24-0081H-BBU		●	●		●	●	●
70-24-0081SVH-BBU		●		●	●	●	●

2000 lb.in Model Number	24 VAC/DC	24 VAC/ 30 VDC	On/ Off	Modulating	Heater	AUX. Switches	Battery Backup
70-24-0201H	●		●		●	●	
70-24-0201SVH	●			●	●	●	
70-24-0201H-BBU		●	●		●	●	●
70-24-0201SVH-BBU		●		●	●	●	●

5000 lb.in Model Number	24 VAC/DC	24 VAC	24 VAC/ 30 VDC	On/ Off	Modulating	Heater	AUX. Switches	Battery Backup
70-24-0501H		●		●		●	●	
70-24-0501SVH	●				●	●	●	
70-24-0501H-BBU			●	●		●	●	●
70-24-0501SVH-BBU			●		●	●	●	●

120 VAC Actuators

800 lb.in Model Number	120 VAC	On/ Off	Modulating	Heater	AUX. Switches
70-0081H	●	●		●	●
70-0081SVH	●		●	●	●

1200 lb.in Model Number	120 VAC	On/ Off	Modulating	Heater	AUX. Switches
70-0121H	●	●		●	●
70-0121SVH	●		●	●	●

2000 lb.in Model Number	120 VAC	On/ Off	Modulating	Heater	AUX. Switches
70-0201H	●	●		●	●
70-0201SVH	●		●	●	●

3000 lb.in Model Number	120 VAC	On/ Off	Modulating	Heater	AUX. Switches
70-E301H	●	●		●	●
70-E301SVH	●		●	●	●

5000 lb.in Model Number	120 VAC	On/ Off	Modulating	Heater	AUX. Switches
70-0501H	●	●		●	●
70-0501SVH	●		●	●	●

6500 lb.in Model Number	120 VAC	On/ Off	Modulating	Heater	AUX. Switches
70-0651H	●	●		●	●
70-0651SVH	●		●	●	●

13000 lb.in Model Number	120 VAC	On/ Off	Modulating	Heater	AUX. Switches
70-1300H	●	●		●	●
70-1300SVH	●		●	●	●

18000 lb.in Model Number	120 VAC	On/ Off	Modulating	Heater	AUX. Switches
70-1800H	●	●		●	●
70-1800SVH	●		●	●	●

Application Note:
Use Series 70 actuators only to control equipment under normal operating conditions. Where failure or malfunction of the electric actuator could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the electric actuator.

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High-Visibility Position Indicator
Prominently labeled and color coded
High impact, heat and chemical resistant
O-Ring weather seal for dome cover
No protrusion through enclosure

Captive Cover Bolts
placed outside sealing area

O-Ring Seal
To ensure a weather proof enclosure- NEMA 4, 4X, IP65



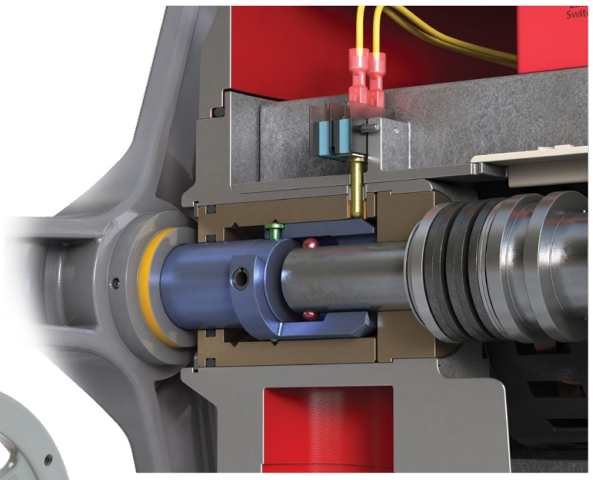
Mechanical Travel Stop Bolts
Lock-nut to prevent loosening
Sealed to prevent moisture ingress
Designed to prevent over-travel while operating the actuator manually
Prevents adjustment of travel stops below 90° limit switch adjustment
Permits up to 5˚ over travel

Extremely Low Profile Actuator
Direct mounting to Bray valves

Die-Cast Aluminum Housing
High quality polyester powder coating
Easy to remove and re-install cover



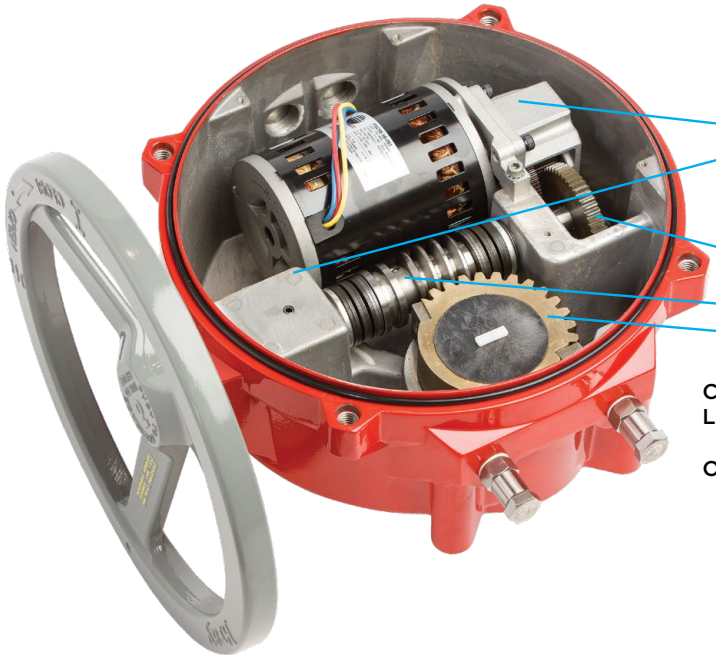
Conduit Entries
The Series 70 features two conduit connections one for power, one for control wiring.



Handwheel Manual Override
Pull Out Handwheel to engage override/ push-in to disengage

Yellow stripe around handwheel shaft notes override is engaged

Electrical switch interrupts power to the motor



Power Center

BEARINGS
Motor Gear - Permanently sealed ball bearing
Worm Shaft - Sintered Bronze bushing with heavy duty thrust bearing

GEARING
Spur Gearing - AGMA Class 9, Alloy Steel, Nitride Hardened
Worm - Chromoly
Worm Gear - Aluminum Bronze

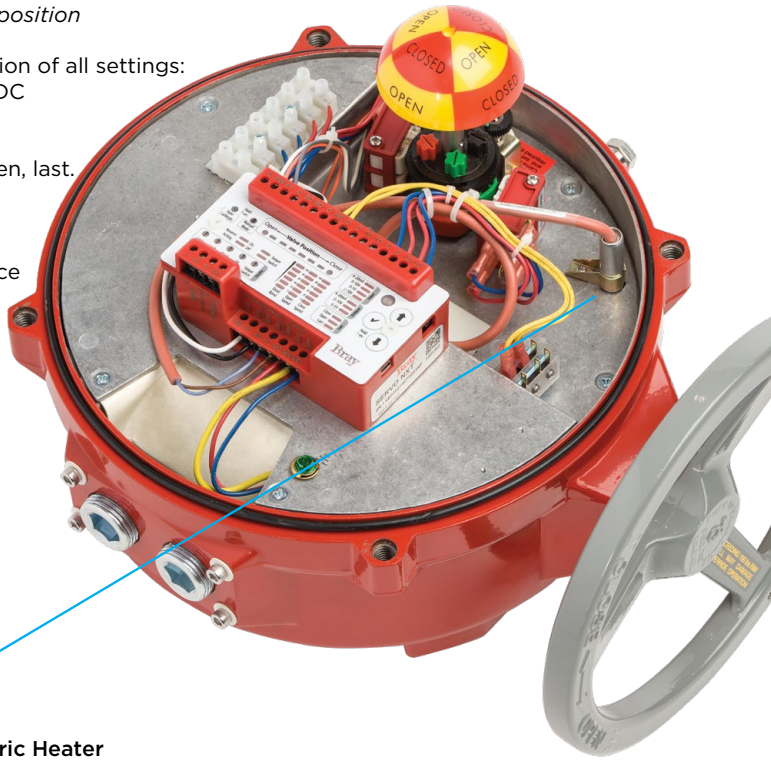
Capacitor (120V Only) - Metalized Polyester
Lubrication - High Temperature Synthetic Grease
Override Wheel - 17-4PH Stainless Steel Hardened to H 900

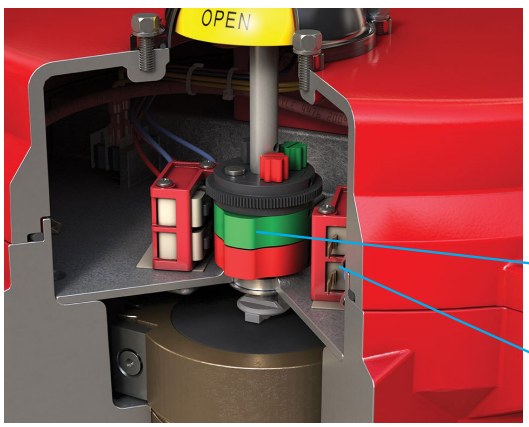
Control Center

SERVO NXT - *Provides precise modulating control of valve position*
One Touch Programing
Menu driven, pushbutton-programming with LED confirmation of all settings:
- Configurable Input Control - 4-20 mA, 0-10, 0-5 or 2-10 VDC
- Position Feedback - 4-20 mA, 0-10 or 0-5 VDC
- Auto Calibrating sequence for travel limits
- Fail Position (loss of input signal) - Configurable close, open, last.
- Speed Control - Independent for open & close direction

Including:
- Manual Mode - Local operation via Servo NXT user interface
- Fault display - Simplifies troubleshooting
- Stall detection - Eliminates mechanical damage in case of obstruction or bad switch settings

Optical Independent isolation of all inputs/outputs
- Provides interoperability with all controllers
- Earth ground tolerant
- Allows for parallel operation





Electric Heater
- Self-regulating temperature controlled

Patented Travel Limit Switch Cams
- Green Open/Red Closed
- Infinitely Adjustable

2 SPDT Auxiliary Switches
- Indicate travel position to remote customer control systems

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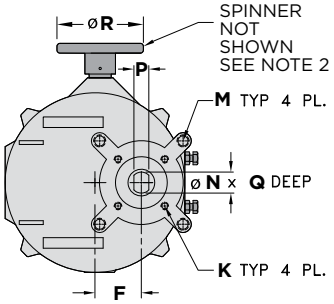
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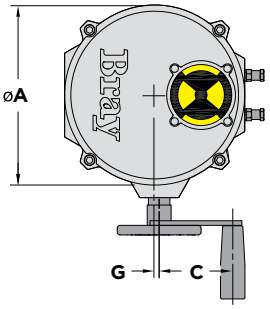
70-0081 TO 70-0651

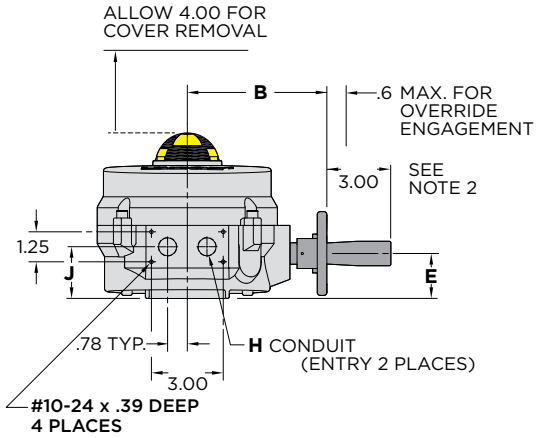
Series 70 Actuator - DIMENSIONS In./(mm)

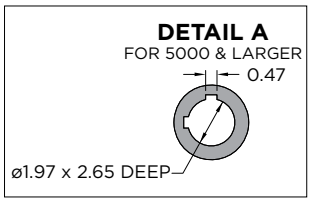
Actuator Model Number	øA	B	C	D	E	F	G	H	J	K (UNC) x B.C. (K x B.C.)	M (UNC) x B.C. (M x B.C.)	N	P	Q	øR	Weight lbs. (kg)
S70-0081	7.5 (191)	5.8 (147)	3.0 (76)	5.6 (141)	1.9 (48)	1.94 (49.2)	.19 (4.7)	1/2 NPT (M20 x 1.5)	2.2 (55)	5/16-18 x ø2.76 (M8 x 1.25 x ø70)	—	.75 (19.0)	.51 (13.0)	1.75 (44.5)	3.5 (89)	13 (6)
S70-0121 S70-0201 S70-E301	10.1 (256)	7.8 (198)	3.7 (93)	6.6 (168)	2.4 (62)	2.69 (68.3)	.56 (14.3)	3/4 NPT (M25 x 1.5)	2.6 (66)	5/16-18 x ø2.76 (M8 x 1.25 x ø70)	1/2-13 x ø4.92 (M12 x 1.75 x ø125)	1.18 (30.0)	.87 (22.0)	2.22 (56.3)	8.0 (203)	28 (13)
S70-0501 S70-0651	12.1 (308)	9.5 (241)	5.5 (139)	7.2 (183)	2.9 (73)	3.19 (80.9)	.56 (14.3)	3/4 NPT (M25 x 1.5)	3.1 (78)	1/2-13 x ø4.92 (M12 x 1.75 x ø125)	3/4-10 x ø6.50 (M20 x 2.5 x ø165)	See Detail A			12.0 (305)	48 (22)

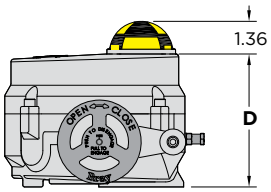
Note: Products are sold in **imperial units**; metric dimensions are listed for **reference only**. Items with metric dimensions are different products with different PNs—please contact **BCD Sales** for details.









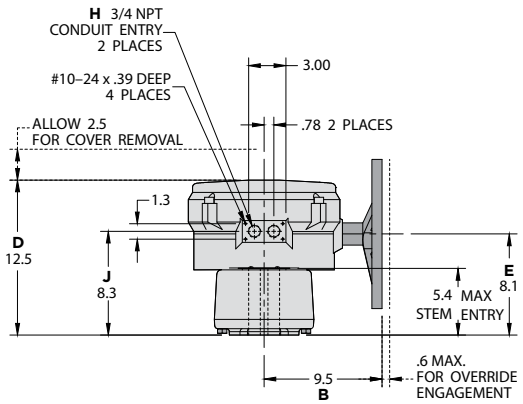


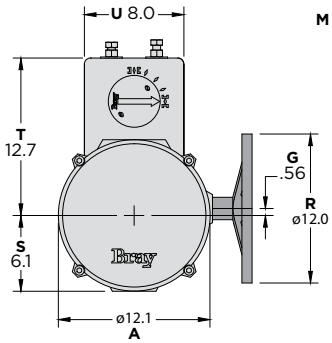
70-1300 TO 70-1800

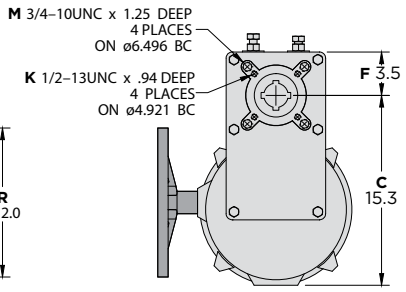
Series 70 Actuator - DIMENSIONS In./(mm)

Actuator Model Number	øA	B	C	D	E	F	G	H	J	K (UNC) x B.C. ((MM) x B.C.)	M (UNC) x B.C. ((MM) x B.C.)	N	P	Q	øR	S	T	U	Weight lbs. (kg)
S70-1300 S70-1800	12.1 (308)	9.5 (241)	15.3 (389)	12.5 (316)	8.1 (206)	3.5 (89)	.56 (14.3)	3/4 NPT (M25 x 1.5)	8.3 (211)	1/2-13 x ø4.921 F12 (12 x 125 BC x 23.9)	3/4-10 x ø6.496 F16 (20 x 165 BC x 31.8)	See Stem Bore Detail			12.0 (305)	6.1 (155)	12.7 (322)	8.0 (203)	118 (54)

Note: Products are sold in **imperial units**; metric dimensions are listed for **reference only**. Items with metric dimensions are different products with different PNs—please contact **BCD Sales** for details.

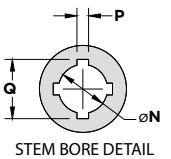






STEM BORE DETAIL In./(mm)

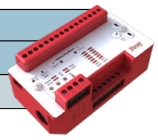
Size	N	P	Q
70-1306 70-1806	2.51 (63.6)	0.63 (15.9)	3.05 (77.5)
70-1316 70-1816	1.97 (50.0)	0.47 (12.0)	2.38 (60.6)

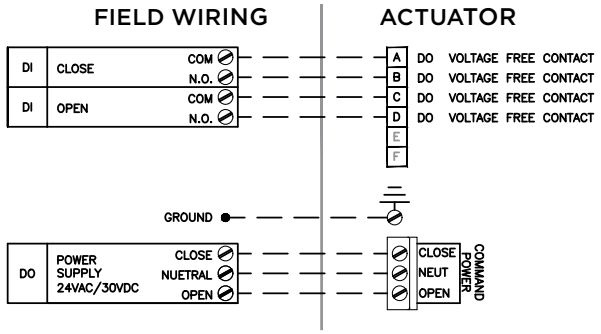


STEM BORE DETAIL

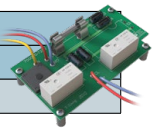
Series 70 - Wiring - On/Off

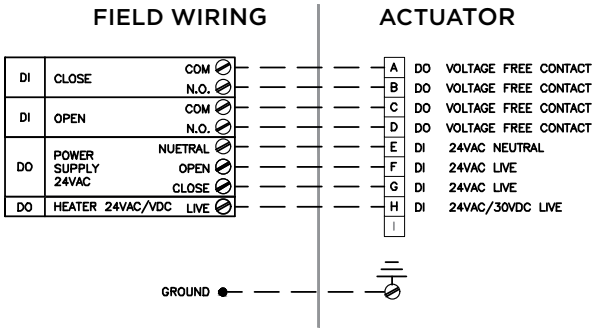
70-24-0081H / 70-24-0201H
24VAC/30VDC ON/OFF NXT
REFERENCE WIRING DIAGRAM: WD-000528



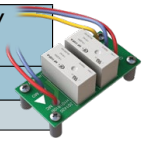


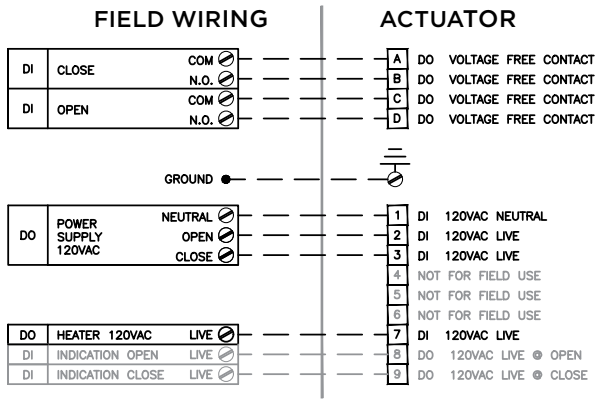
70-24-0501H
24VAC ON/OFF PCB
REFERENCE WIRING DIAGRAM: WD-000111





70-0081H / 70-0121H / 70-0201H / 70-E301H /
70-0501H / 70-0651H / 70-1300H / 70-1800H
120VAC ON/OFF IRB
REFERENCE WIRING DIAGRAM: WD-000045





CALIBRATION SEQUENCE:
PLEASE VISIT THE S70 INDUSTRIAL ELECTRIC ACTUATOR SECTION OF OUR WEBSITE AND REFER TO THE QUICK START GUIDE AND VIDEO TUTORIAL LINK IN THE DOCUMENTS SECTION.

TERMINAL STRIP:
14-24 AWG FOR CONTROLLER & BBU, MAX TIGHTENING TORQUE 3.5 IN-LBS
14-22 AWG FOR OTHER, MAX TIGHTENING TORQUE 8 IN-LBS
105 °C, 300V MIN RATED WIRE

NOTES:
1. HEATER (REQUIRED FOR HUMID ENVIRONMENTS).
2. SWITCHES ARE SPDT (FORM C).
3. DO NOT INSTALL OR USE THE SERIES 70 ELECTRIC ACTUATOR IN OR NEAR ENVIRONMENTS WHERE CORROSIVE SUBSTANCES OR VAPORS COULD BE PRESENT. EXPOSURE OF THE ELECTRIC ACTUATOR TO CORROSIVE ENVIRONMENTS MAY DAMAGE THE INTERNAL COMPONENTS OF THE DEVICE, AND WILL VOID THE WARRANTY.

LEGEND:
TERMINAL SYMBOLS
FIELD WIRING
FACTORY WIRING
GROUND

FUSE:
FAST BLOW 250V 5A 5x20MM

LIMIT SWITCH:
125/250 VAC, 10A, 1/2 HP
125/250 VDC, 0.25A INDUCTIVE
125/250 VDC, 0.5A RESISTIVE

Wiring Distance (only applicable to 24V actuators)

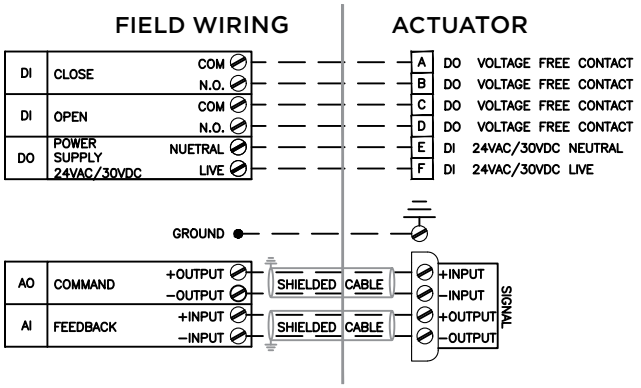
Conduit Entries (2) - 3/4" NPT Terminal Block - 14 to 24 AWG.
Size wires per NEC guidelines with respect to distance and current draw.

	Max Distance Between Actuator and Supply - ft		
Torque (in-lbs)	800	2000	5000
I_{load} (Amps)	2.90	3.50	4.00
8 GA	3025	741	370
10 GA	1899	465	233
12 GA	1195	293	146
14 GA	752	184	92
16 GA	463	113	57
18 GA	290	71	36

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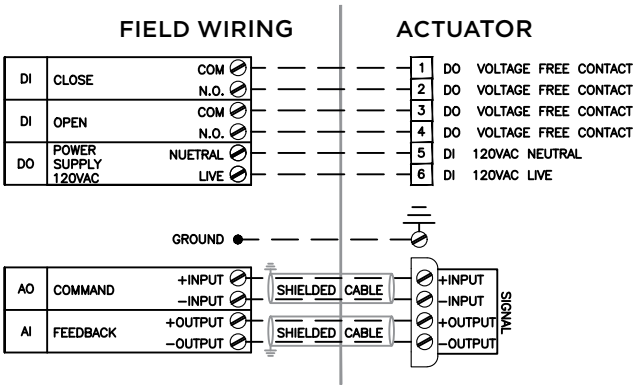
70-24-0081SVH / 70-24-0201SVH / 70-24-0501SVH
24VAC/30VDC SERVO NXT
REFERENCE WIRING DIAGRAMS: WD-000347 AND WD-000554





70-0081SVH / 70-0121SVH / 70-0201SVH /
70-E301SVH / 70-0501SVH / 70-0651SVH /
70-1300SVH / 70-1800SVH
120VAC SERVO NXT
REFERENCE WIRING DIAGRAM: WD-000339





CALIBRATION SEQUENCE:
PLEASE VISIT THE S70 INDUSTRIAL ELECTRIC ACTUATOR SECTION OF OUR WEBSITE AND REFER TO THE QUICK START GUIDE AND VIDEO TUTORIAL LINK IN THE DOCUMENTS SECTION.

TERMINAL STRIP:
14-24 AWG FOR CONTROLLER & BBU, MAX TIGHTENING TORQUE 3.5 IN-LBS
14-22 AWG FOR OTHER, MAX TIGHTENING TORQUE 8 IN-LBS
105 °C, 300V MIN RATED WIRE

NOTES:
1. HEATER (REQUIRED FOR HUMID ENVIRONMENTS)
2. SWITCHES ARE SPDT (FORM C).
3. WHEN USING 0-10VDC, 0-5 VDC & 2-10VDC, THE COMMON OF THE COMMAND SIGNAL SHOULD NOT BE GROUND/EARTH REFERENCED.
4. COMMAND SIGNAL AND FEEDBACK SIGNAL MUST BE ISOLATED FROM EACH OTHER AND ANY OTHER CIRCUITS.
5. COMMAND SIGNAL & FEEDBACK SIGNAL WIRES SHOULD BE SHIELDED PROPERLY & SHIELD SHOULD BE GROUNDED/EARTHED ON ONE END ONLY, PREFERABLY THE CONTROLLER END.
6. FEEDBACK LOOP IS POWERED BY THE SERVO, DO NOT SUPPLY EXTERNAL POWER.
7. FEEDBACK LOAD DEVICE NOT TO EXCEED 400 OHMS (4-20mA CONFIGURATION).
8. DO NOT INSTALL OR USE THE SERIES 70 ELECTRIC ACTUATOR IN OR NEAR ENVIRONMENTS WHERE CORROSIVE SUBSTANCES OR VAPORS COULD BE PRESENT. EXPOSURE OF THE ELECTRIC ACTUATOR TO CORROSIVE ENVIRONMENTS MAY DAMAGE THE INTERNAL COMPONENTS OF THE DEVICE, AND WILL VOID THE WARRANTY.

LEGEND:
TERMINAL SYMBOLS ☒ ⊘ •
FIELD WIRING — — —
FACTORY WIRING ———
GROUND ⏚

FUSE:
FAST BLOW 250V 5A 5x20MM

LIMIT SWITCH:
125/250VAC, 10A, 1/2 HP
125/250VDC, 0.25A INDUCTIVE
125/250VDC, 0.5A RESISTIVE

Wiring Distance (only applicable to 24V actuators)			
Conduit Entries (2) - 3/4" NPT Terminal Block - 14 to 24 AWG. Size wires per NEC guidelines with respect to distance and current draw.			
	Max Distance Between Actuator and Supply - ft		
Torque (in-lbs)	800	2000	5000
I_{load} (Amps)	2.90	3.50	4.00
8 GA	3025	741	370
10 GA	1899	465	233
12 GA	1195	293	146
14 GA	752	184	92
16 GA	463	113	57
18 GA	290	71	36

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Bray Commercial provides automated Butterfly, Ball, Globe and Pressure Independent Control Valves to the commercial building HVAC market throughout the world Whereever valve performance is required to maintain climate controlled environments, Bray can provide the required automated valves to meet the demanding flow applications of chiller/boiler isolation, air handlers and terminal units for new construction, retrofit and/or LEED certification applications in buildings.

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- Government and Municipal
- Sports/Entertainment/ Convention Centers
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- Transportation
- Hotels
- Office Buildings
- Retail

SINCE 1986, BRAY HAS PROVIDED FLOW CONTROL SOLUTIONS FOR A VARIETY OF INDUSTRIES AROUND THE WORLD.

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Houston, Texas 77041
1-281-894-5454

DIVISION HEADQUARTERS

Bray Commercial
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Houston, Texas 77041
1-888-412-Bray (2729)

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Bray COMMERCIAL

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Specifications
Cv Tables
Cut-Away View
Dimensions
Close-Off Charts
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07/01/26

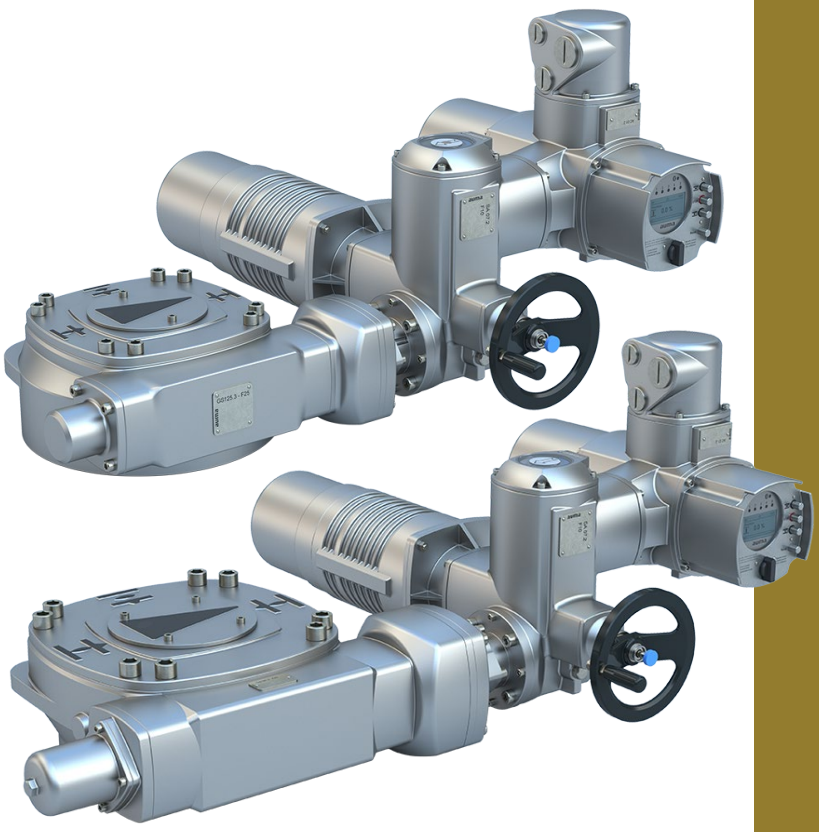
AU Series
Industrial Electric Actuators
21,300 in-lb to 70,800 in-lb

Application

AU Series Electric actuators provide precise, durable control of quarter turn valves including rubber seated butterfly valves, high performance butterfly valves and industrial ball valves. The compact industrial housing is rated to NEMA 4X (IP 67) standards for outdoor use. All models include integrated controls and a manual override handwheel.

The standard AU models are 120V single phase. Three phase units are available as an option. All AU series actuators include two auxiliary switches, torque switches, a position indicator and a heater. Modulating units provide position feedback as standard.

AU series actuators mount directly to Bray butterfly valves and ball valves without the need for adapter bracket. Thermal overload protection is provided by means of PTC thermistors connected directly to the motor windings.



Features and Benefits

- **Heavy Duty Design**
  Rated for 15K full stroke cycles, 2.5M repositions
- **Manual Declutchable Override Handwheel**
  Manual positioning without disconnecting power
- **Position and Motion Indicator Lights**
  For operation feedback
- **Integrated Digital Display Controls**
  Local menu driven actuator operation without DIP switches

Model Number Selection Chart

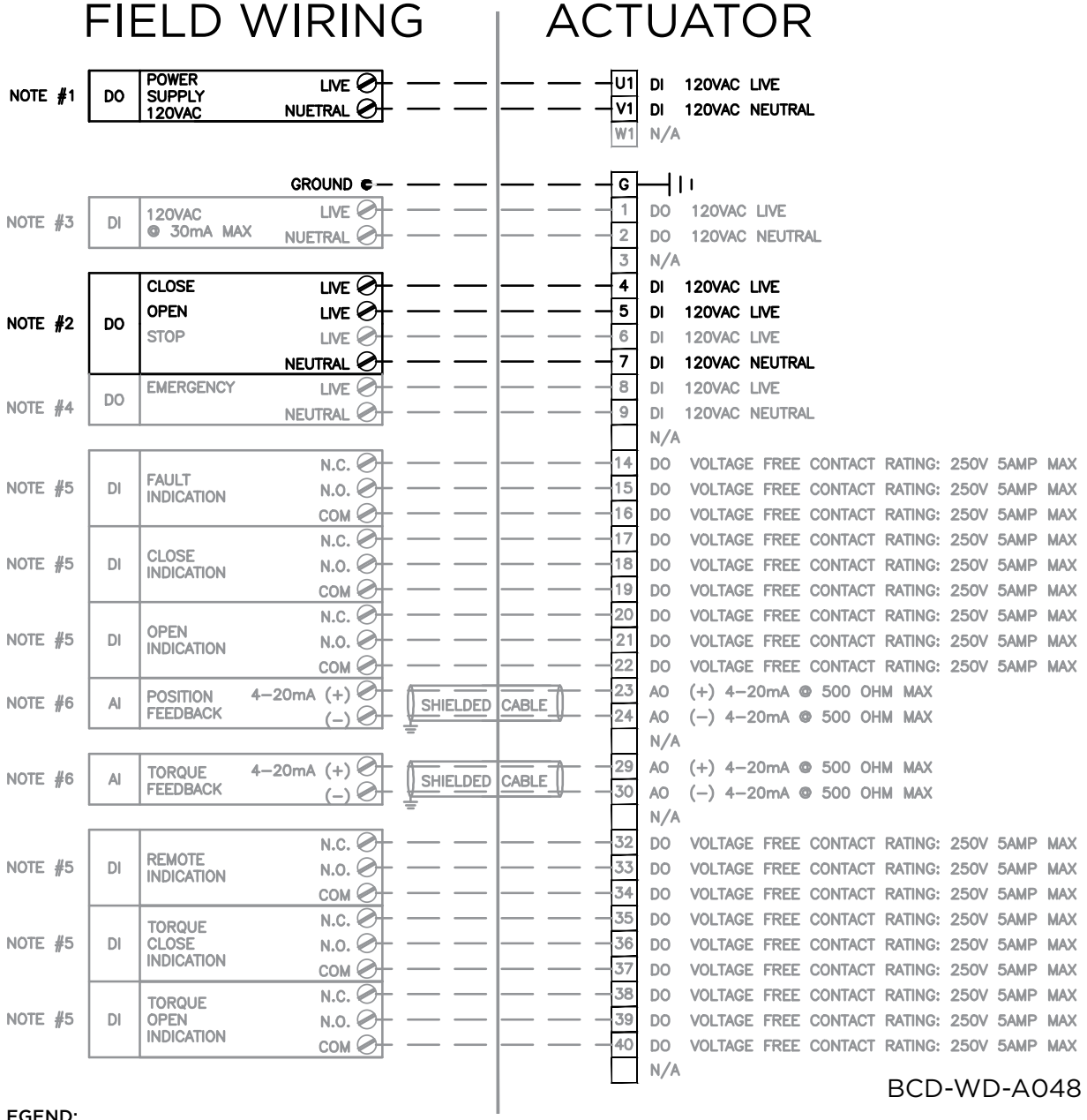
Model Number	Torque in.lbs.	On/ Off	Modulating
7AU-2130	21,300	●	
AU-2130SV			●
AU-4068	40,680	●	
AU-4068SV			●
AU-7080	70,800	●	
AU-7080SV			●

Note - Heaters and Auxiliary Switches are standard with all models.

Technical Specifications - Actuator		
Control Type	**AU-xxxx**	On/Off or Floating
	AU-xxxxSV	Modulating
Power Supply	120 VAC, 60 Hz, +/- 10%, Single-Phase, Reversible, Permanent Split Capacitor Induction Motor	
Current Draw	**Full Load**	**AU-2130** 5.9 A
		AU-4068 & AU-7080 6.4 A
	Locked Rotor	14 A
Motor Protection	1 Ph-1 thermal switch 284°F (140°C) Class F insulation, tropicalized winding	
Control Module Voltage	**On/Off, Floating**	110 – 120 VAC
	Modulating	24 VDC
Output Aux. Voltage	**On/Off, Floating**	115 VAC – 30 mA
	Modulating	24 VDC – 100 mA
Feedback Signal	4 to 20 mA	
Torque	21,300 in-lb to 70,800 in-lb (2,407 Nm to 8,000 Nm)	
Control Input Signal	**Modulating**	4 to 20 mA
Output Contacts	6 Output contacts: 6 NO/NC without common 5A	
Output Signals	Default Setting - Fault, End pos. CLOSED End pos. OPEN, Selector sw. REMOTE, Torque fault CLOSE, Torque fault OPEN	
Terminal Strip	**Power Terminals**	8 to 10 AWG (6 to 10 mm^2)
	Controls Contacts	14 AWG (2.5 mm^2)
Enclosure	NEMA types 6P (IP68) Corrosion Protection: KS	
Heater	**On/Off, Floating**	120 V internal (12.5 W)
	Modulating	24 V internal (12.5 W)
Conduit Entries	Plug/socket 100 mm, 2 × 3/4" NPT; 1 × 1-1/4" NPT	
Operating Time	60 Seconds	
Angle of Rotation	92° maximum	
Manual Operation	**Declutchable Override Handwheel**	To close the valve, turn handwheel clockwise. Drive shaft (valve) turns clockwise in close direction.
Dimensions	See Page 4	
Weights	**AU-2130**	158 lbs. (72 kg)
	AU-4068	181 lbs. (82 kg)
	AU-7080	278 lbs. (127 kg)
Ambient Temperature	-13°F to 158°F (-25°C to 70°C)	
Fail Position	Loss of supply power - Fail-in-place	
Duty Cycle	**On/Off, Floating**	S2 -15 min continuous, max. six starts/minute
	Modulating	S4 – 25% Intermittent duty
Life Cycle	15,000 Full Stroke Cycles; 2,500,000 Repositions at Rated Running Torque	
Certifications	CE	
Warranty	3 Years limited from time of shipment.	

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

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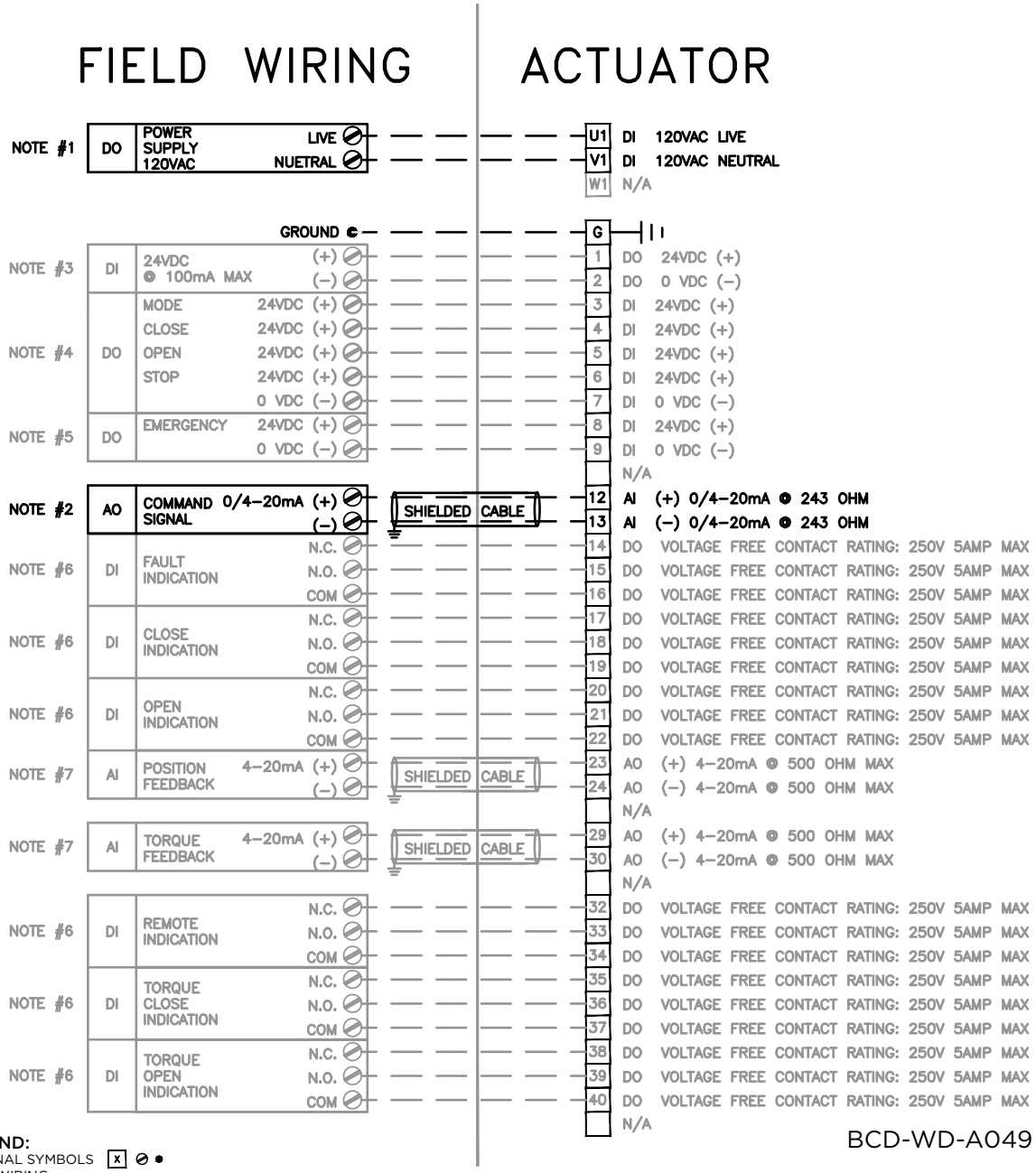
TERMINAL SYMBOLS
FIELD WIRING
FCTORY WIRING
GROUND

CALIBRATION SEQUENCE:

ACTUATOR THAT WAS FACTORY MOUNTED TO VALVE WAS CALIBRATED BY THE FACTORY IN ACCORDANCE WITH THE APPLICABLE AUMA OPERATION MANUAL.

NOTES:

1. POWER INPUT FROM FIELD CONTROL PANEL TO ACTUATOR
2. 120VAC COMMAND SIGNAL INPUT FROM FIELD CONTROL PANEL TO ACTUATOR (LIVE AND NEUTRAL BOTH REQUIRED FOR OPERATION)
3. OPTIONAL: POWER OUTPUT FROM ACTUATOR TO BE USED BY FIELD CONTROL PANEL CONTACTS FOR ACTUATOR INPUTS
4. OPTIONAL: 120VAC COMMAND SIGNAL INPUT FROM FIELD CONTROL PANEL TO ACTUATOR (LIVE AND NEUTRAL BOTH REQUIRED FOR OPERATION). FUNCTIONAL PURPOSE IS DETERMINED BY PROGRAMMING SELECTION
5. OPTIONAL: DIGITAL OUTPUT FROM ACTUATOR, VOLTAGE FREE CONTACT. RATING: 250V 5AMP
6. OPTIONAL: ANALOG OUTPUT FROM ACTUATOR TO BE USED BY FIELD PLC FROM MONITORING. 4-20mA @ 500 OHM MAX



LEGEND:

TERMINAL SYMBOLS
FIELD WIRING
FCTORY WIRING
GROUND

CALIBRATION SEQUENCE:

ACTUATOR THAT WAS FACTORY MOUNTED TO VALVE WAS CALIBRATED BY THE FACTORY IN ACCORDANCE WITH THE APPLICABLE AUMA OPERATION MANUAL.

NOTES:

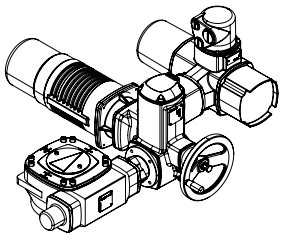
1. POWER INPUT FROM FIELD CONTROL PANEL TO ACTUATOR
2. 0/4-20mA COMMAND SIGNAL INPUT FROM FIELD CONTROL PANEL TO ACTUATOR
3. OPTIONAL: POWER OUTPUT FROM ACTUATOR TO BE USED BY FIELD CONTROL PANEL CONTACTS FOR ACTUATOR INPUTS
4. OPTIONAL: 24VDC COMMAND SIGNAL INPUT FROM FIELD CONTROL PANEL TO ACTUATOR (POSITIVE (+) AND NEGATIVE (-) BOTH REQUIRED FOR OPERATION) MODE MUST BE ACTIVATED TO UTILIZE CLOSE/OPEN/STOP, ADJUSTABLE THROUGH M0123/CODING DIM 1. DEFAULT CLOSE/OPEN FUNCTIONALITY IS MOMENTARY, ADUUSTABLE THROUGH M0100/SELF-RETANING REMOTE.
5. OPTIONAL: 120VAC COMMAND SIGNAL INPUT FROM FIELD CONTROL PANEL TO ACTUATOR (LIVE AND NEUTRAL BOTH REQUIRED FOR OPERATION). FUNCTIONAL PURPOSE IS DETERMINED BY PROGRAMMING SELECTION
6. OPTIONAL: DIGITAL OUTPUT FROM ACTUATOR, VOLTAGE FREE CONTACT. RATING: 250V 5AMP
7. OPTIONAL: ANALOG OUTPUT FROM ACTUATOR TO BE USED BY FIELD PLC FROM MONITORING. 4-20mA @ 500 OHM MAX

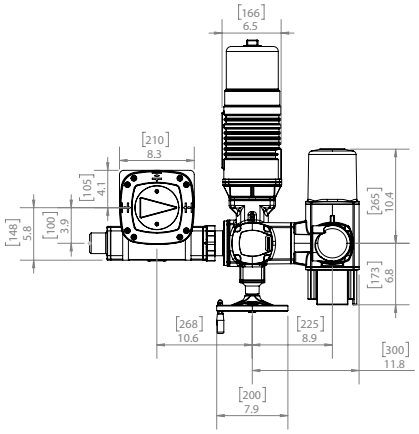
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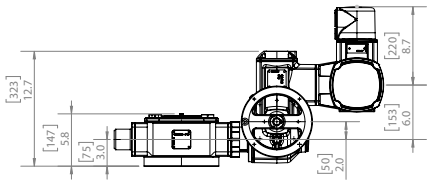
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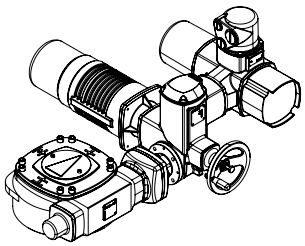
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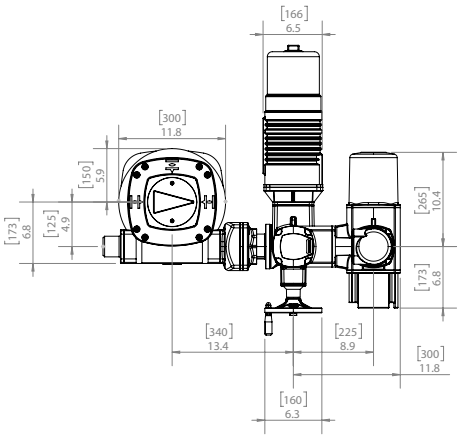


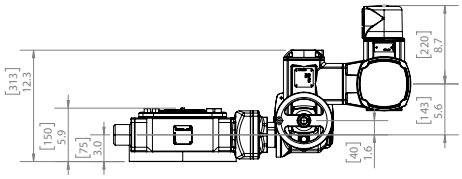




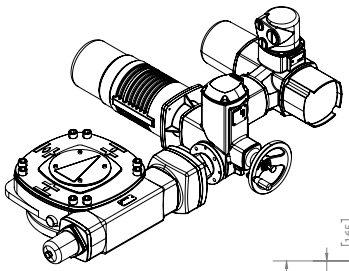
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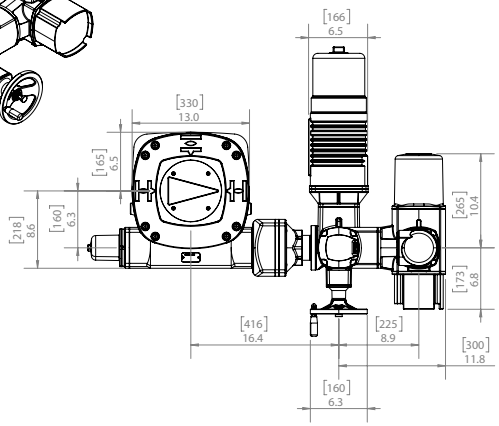


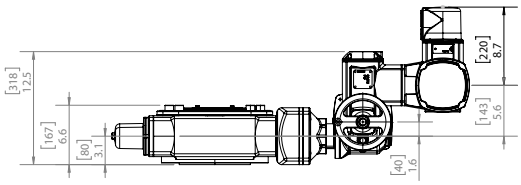




AU-7080







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Bray COMMERCIAL

VAL Series

Globe Valve Actuators

Spring Return • For use on 2-1/2"- 6" Globe Valves

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11/07/24

Application

The VAL-SRS07 and VAL-SRS15P Spring Return Electro Hydraulic Actuators provide precise modulating control of Bray DG Series Globe Valves.

These actuators use electro hydraulic force to achieve superior close-off pressure ratings. The stroke of these actuators is up at the low input signal condition, and down in the high signal input condition.

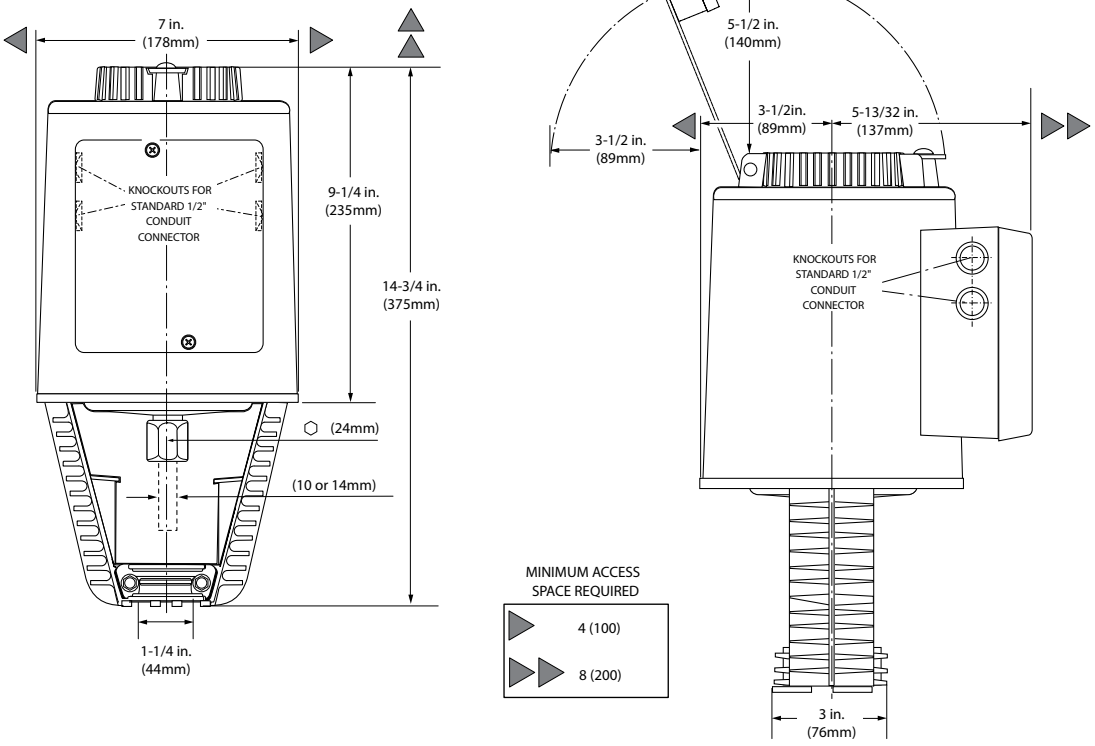
A weather shield is available to offer a degree of protection against rain, sleet and damage from external ice formation.



Features and Benefits

- **High Output Force**
  Provides high close-off pressure ratings
- **Direct Mount to Bray DG Series Globe Valves**
  Eases installation and minimizes space requirements
- **Spring Return Operation**
  Returns valve to the open position upon loss of power
- **User-Selectable Input Signals**
  Accepts current or voltage inputs
- **Visual and Electronic Position Indication**
  Provides position feedback and provides for remote monitoring

VAL Series - Dimensions



Technical Specifications - Actuator			
Model Number		**VAL-SRS07P**	**VAL-SRS15P**
		2-1/2″ to 3″ valves	4″ to 6″ valves
Power Requirements	24 VAC (±20%), 50/60 Hz	18 VA Nominal	28 VA Nominal
Control Input Signal	Input Y	0 to 10 VDC	
	Input R	4 to 20 mA	
Input Impedance	Current	100,000 Ω	
	Voltage	250 Ω	
Feedback Signal	Current	0 to 10 VDC	
	Voltage	4 to 20 mA	
Mechanical Output	Stem Up	640 lbs. (2800 N) (Spring return stroke)	
	Stem Down	1000 lbs. (4400 N) (Power stroke)	
Stroke Range		3/4″ (20 mm)	1-1/2″ (40 mm)
Nominal Stroke Timing	Power Stroke	120 seconds	
	Return Stroke	15 seconds	20 seconds
Ambient Operating Conditions	5 to 130°F (-15 to 55°C), 10 to 90% RH, non-condensing, 86°F (30°C) maximum dew point		
Enclosure Rating	NEMA 1, Weather shield available		
Shipping Weight		18.5 lb. (8.4 kg)	21.4 lb. (9.7 kg)
Agency Compliance	UL 873 Listed, C-UL C22.2 No. 24-93		
Warranty	5 Years limited from time of shipment.		

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray Controls shall not be liable for damages resulting from misapplication or misuse of its products.

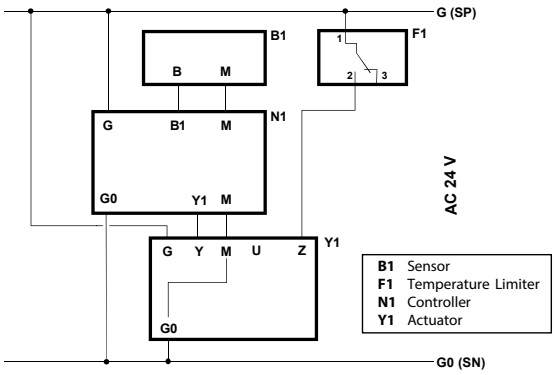
VAL Series - Wiring

Actuator	Power Consumption	Actuators per Class 2 Supply Circuit* (80% of transformer VA)
VAL-SRS07P	17 VA	4
VAL-SRS015P	28 VA	2

** Operating more actuators requires additional transformers or separate 100 VA power supplies.*

Do not use autotransformers. Use earth ground isolating step-down Class 2 transformers.

Determine supply transformer rating by summing total VA of all actuators used. The maximum rating for Class 2 step-down transformer is 100 VA.



24 VAC Actuator - Connecting Terminals	
G	System potential (SP)
G0	System neutral (SN)
Y	Control input 0 to 10 Vdc or 4 to 20 mA (DIP switch selectable)
Z	Override control
M	Measuring neutral
U	Output for 0 to 10 Vdc or 4 to 20 mA measuring voltage. (see above)

Actuator Output Signal		
Actuator Input Signal	**Receiving Impedance**	
	Low (<500 Ohm)	**High (>10 Ohm)**
0 to 10 VDC	0 to 20 mA	0 to 10 VDC
4 to 20 mA	4 to 20 mA	2 to 10 VDC

The position output signal U will switch from 0 to 10 VDC to 4 to 20 mA when a 4 to 20 mA input signal is selected and used on the Y terminal.

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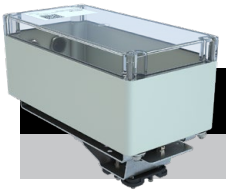
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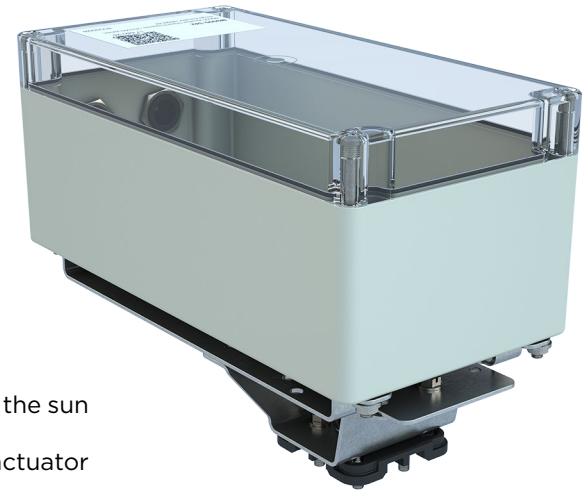
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Small Weather Shield — Submittal/Technical Data

For ST2 Ball Valves with VA Series Actuators



Description

The Bray Small Weather Shield is an industrial grade, convenient, and cost-effective method of protecting actuators from the harsh elements and washdowns, not just weather.

Features

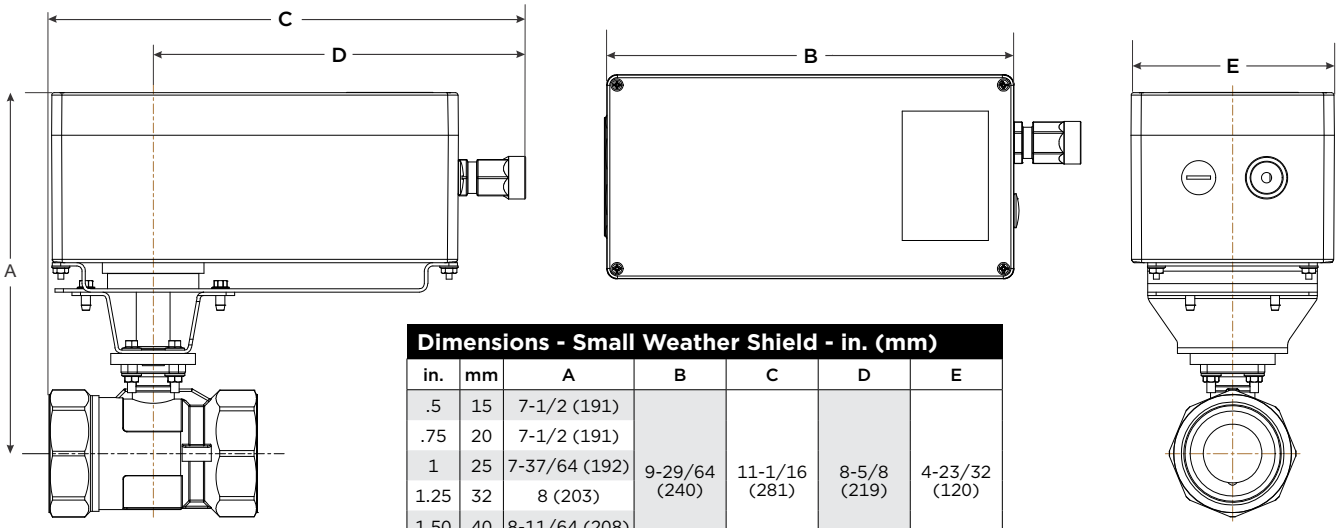
- Enclosure - constructed of impact-grade plastic that provides excellent impact resistance.
- Fully Enclosed Design - Protects the electric actuator from corrosion, rain, freezing rain, sleet, and snow.
- Strain Relief Conduit Fittings - Protect the electric actuator from damage by preventing tension on the electrical connection.

Benefits

- UV inhibitors prevent cover from becoming brittle or damaged by the sun or other environmental elements.
- Translucent Cover provides an unobstructed view of the electric actuator without having to disassemble the enclosure.

Specifications	
Top Cover	Transparent UV resistant polycarbonate plastic
Enclosure Seal	Nitrile
Body	UV resistant polycarbonate plastic
Cover Gasket	Polyurethane
Electrical Connections	Strain relief conduit fittings with 1/2 in. (13 mm) National Pipe Straight Mechanical (NPSM) exit
Ambient Temp. Limits	-40 to 176°F (-40 to 80°C)
Dimensions	See Below
Protection Rating	NEMA 4X, IP66
Weight	4.2 lb (1.9 kg)
Warranty	5 Years limited from time of shipment

Model Number	Description - Actuators Covered
M9000-342	ST2 Direct Mount (VA Series) Actuators



Dimensions - Small Weather Shield - in. (mm)						
in.	mm	A	B	C	D	E
.5	15	7-1/2 (191)	9-29/64 (240)	11-1/16 (281)	8-5/8 (219)	4-23/32 (120)
.75	20	7-1/2 (191)				
1	25	7-37/64 (192)				
1.25	32	8 (203)				
1.50	40	8-11/64 (208)				
2	50	8-11/32 (212)				

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Weather Cover — Submittal/Technical Data

For PIC and Globe Valve Actuators

Description
The Bray Weather Cover is an industrial grade, convenient, and cost-effective method of protecting GA/PA Series actuators from the harsh elements and washdowns, not just weather.

Application
The Bray Weather Cover comes in a variety of standard sizes for all PA models that might be in an environment that exceeds their NEMA Type 2/3R ratings or for added protection to GA series actuators, namely UV exposure.

Features
- Industrial grade backed by a 5-year warranty waterproof cloth
- Chemical, mold, mildew, salt, oil and dust resistant
- Flame retardant
- Unaffected by UV light (no plastic components)
- Grey color minimizes solar gains
- Installed and removed in seconds

Benefits
- Reduced operation and maintenance costs
- Extended life of components



Model Number	Description - Actuators Covered
WS-PA27	PA27
WS-PA100	PA100/PA112
WS-GA450/562	GA450/562

Specifications	
Temperature	-20° to 500° F (260° C)
Cover Material	17oz fiberglass cloth, both sides silicone impregnated
Thread	Kevlar 92 Aramid
Fasteners	Stainless Steel D-Rings with heavy-duty 1" Nylon strap Velcro seal flaps on some models
Warranty	5 Years limited from time of shipment



WS-GA450/562

WS-PA27

WS-PA100

Bray COMMERCIAL

Series 92/93 & 98

Pneumatic Actuators

• Non-Spring Return - Series 92 • Spring Return - Series 93

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04/19/25

Application

The Bray Series 92/93 high pressure pneumatic actuators are ideally suited to a wide range of quarter turn applications including butterfly valves, ball valves and dampers. These rack and pinion actuators are available in Series 92 double acting (air to open, air to close) and Series 93 single acting (spring return) models.

The compact and robust design of the Series 92/93 actuators feature an extruded aluminum housing, polyester-coated die cast aluminum end caps, die cast aluminum opposed pistons, and a carbon steel zinc plated output pinion. Conforming to the ISO 5211 top flange standard, all Series 92/93 actuators are directly mounted to the valve top plate or saddle without the need for adapters or brackets.

Series 92/93 actuators are available with a wide range of factory mounted Bray line accessories including pneumatic positioners, electro pneumatic positioners, solenoid valves, position indicators and manual declutchable gear override assemblies.

Series 98 scotch-yoke actuators features a modular design with a wide range of modules to suit the required process application. The heart of the Series 98 is the yoke, available in symmetrically or canted, that converts linear motion into rotational motion.



Features and Benefits (Series 92/93)

- **Bi-Directional Travel Stops**

  Allows for precise open/close points.

- **IP 65 Enclosure**

  Suitable for outdoor use, subject to ambient temperature limits.

- **Optional Spring Cartridges**

  Provides easy conversion from double-acting to spring return.

- **Direct-Mount Design**

  No special hardware or mounting kits required.

- **Varied Control Options**

  On/Off, 3 - 15 psi pneumatic, and 4 - 20 mA electro-pneumatic.

Technical Specifications - Series 92/93 Pneumatic Actuators			
Model Number		**Series 92**	**Series 93**
Media	Dry Compressed Air/Inert Gas		
Torque	**Double Acting**	Up to 44,130 lb-in (4,986 Nm)	N/A
	Spring Return	N/A	Up to 14,169 lb-in (1,601 Nm)
Pressure Range	40 - 140 psi (2.8 - 10 bar)		
Spring Return Rotation		N/A	90°
Double Acting Rotation		90°, 135°, 180°	N/A
Travel Stop	Two independently adjustable, 90° +/- 5°		
Mounting	EN ISO 5211, VDI/ VDE 3845 (NAMUR)		
Ambient Operating Temperature Range	**Standard**	-4°F to 200°F (-20°C to 93°C)	
	Low	-40°F to 176°F (-40°C to 80°C)	
	High	0°F to 300°F (-18°C to 149°C)	
	Extreme	Up to 482°F (250°C)	
Materials of Construction	**Body**	Anodized 316 Stainless Steel, Electroless Nickel Plated Body Exterior, Extruded Aluminum Alloy, Hard Anodized Body Exterior, SEACORR® Coated Body Exterior	
	End Caps	Die cast aluminum alloy with corrosion resistant polyester coating	
	Pistons	Die cast aluminum alloy	
	Output Shaft/ Pinion	Carbon Steel, zinc plated	
	Travel Stop	Alloy Steel	
	Shaft Bearings	Acetal	
	Piston Guides	Acetal	
	Fasteners	Stainless Steel	
	Springs	Spring Steel, protective coating	
	O-Ring Seals	Buna-N	
	Options	Polyester coated body exterior, Electroless Nickel plated body exterior. Hard Anodized body exterior, Stainless Steel pinion	
Approvals & Certifications	PED (2014/68/EU), ATEX (2014/34/EC), SIL 3, Bureau Veritas, ABS, EAC		
Warranty	3 Years limited from time of shipment.		

Technical Specifications - Series 98 Pneumatic Actuators		
Media	Dry Compressed Air/Inert Gas/Natural Gas	
Torque Output	Ranging from 2,038 to 885,100 lb-in (250 to 100,000 Nm)	
Pressure Range	40 - 150 psi (2.8 - 10.3 bar)	
Travel Stop	90° up to +/- 5°	
Mounting	Base: EN ISO 5211, Accessories: VDI/ VDE 3845	
Ambient Operating Temperature Range	**Standard**	-20°F to 200°F (-29°C to 93°C)
	Low	Down to -50°F (-46°C)
	High	Up to 300°F (149°C)
Materials of Construction	**Yoke & Housing**	Ductile Iron
	Guide Rod	Alloy Steel
	Piston	Ductile Iron
	Barrel	Carbon Steel
	Accessory Drive	Stainless Steel
	Springs	Carbon Steel
	O-Ring (Yoke)	Buna-N
	Coating	Premium epoxy/polyurethane coating as standard
Approvals & Certifications	PED (2014/68/EU), ATEX, SIL 3, ABS, EAC	
Warranty	3 Years limited from time of shipment.	

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Actuator Torque Data (IN-LB) Spring Return

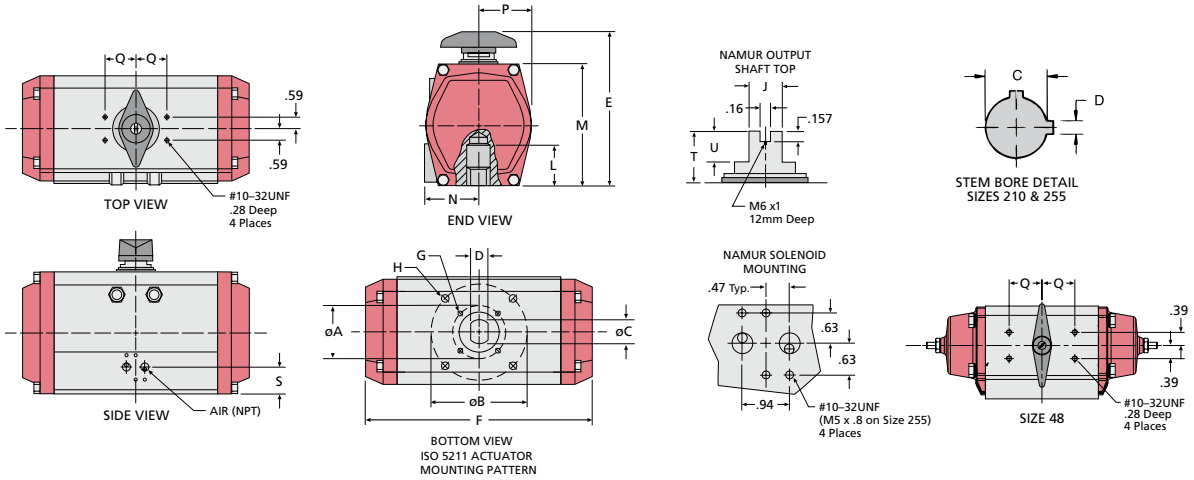
Model Number	Springs (Pairs)	Air Supply (psi)										Spring	
		40		60		80		100		120			
		Start	End	Start	End	Start	End	Start	End	Start	End	Spring Start	Stroke End
93-632	2	91	65	167	141	243	217	319	293	395	369	80	54
93-633	3	64	27	140	103	216	179	292	255	368	331	118	81
93-634	4			113	65	189	141	265	217	341	293	156	108
93-635	5			86	27	162	103	238	179	314	255	194	135
93-636	6					135	65	211	141	287	217	232	162
93-632	2	210	167	395	352	580	537	765	722	950	907	184	141
93-833	3	156	76	341	261	526	446	711	631	896	816	275	195
93-834	4			281	176	466	361	651	546	836	731	360	255
93-835	5			220	97	405	282	590	467	775	652	439	316
93-836	6					369	185	554	370	739	555	536	352
93-932	2	310	232	570	492	830	752	1089	1011	1349	1271	261	183
93-933	3	218	101	478	361	738	621	997	880	1257	1140	392	275
93-934	4			386	231	646	491	905	750	1165	1010	522	367
93-935	5			294	94	554	354	813	613	1073	873	659	459
93-936	6					462	229	721	488	981	748	784	551
93-1192	2	692	469	1249	1026	1805	1582	2362	2139	2919	2696	589	366
93-1193	3	509	174	1066	731	1622	1287	2179	1844	2736	2401	884	549
93-1194	4			883	437	1439	993	1996	1550	2553	2107	1178	732
93-1195	5			700	142	1256	698	1813	1255	2370	1812	1473	915
93-1196	6					1073	404	1630	961	2187	1518	1767	1098
93-1282	2	880	465	1622	1207	2364	1949	3106	2691	3848	3433	945	530
93-1283	3			1357	733	2099	1475	2841	2217	3583	2959	1419	795
93-1284	4			1094	261	1836	1003	2578	1745	3320	2487	1891	1058
93-1285	5					1568	529	2310	1271	3052	2013	2365	1326
93-1286	6					1302	57	2044	799	2786	1541	2837	1592
93-1602	2	1819	1118	3292	2591	4764	4063	6236	5535	7709	7008	1679	978
93-1603	3	1399	349	2872	1822	4344	3294	5816	4766	7289	6239	2448	1398
93-1604	4			2452	1123	3924	2595	5396	4067	6869	5540	3147	1818
93-1605	5			2030	353	3502	1825	4974	3297	6447	4770	3917	2240
93-1606	6					3154	1196	4626	2668	6099	4141	4546	2588
93-2102	2	3833	2508	6876	5551	9920	8595	12964	11639	16007	14682	3275	1950
93-2103	3	2859	868	5902	3911	8946	6955	11990	9999	15033	13042	4915	2924
93-2104	4			4930	2275	7974	5319	11018	8363	14061	11406	6551	3896
93-2105	5			3949	638	6993	3682	10037	6726	13080	9769	8188	4877
93-2106	6					6022	2031	9066	5075	12109	8118	9839	5848
93-2552	2	9487	6747	16967	14227	24447	21707	31926	29186	39406	36666	7464	4724
93-2553	3	7125	3015	14605	10495	22085	17975	29564	25454	37044	32934	11196	7086
93-2554	4			12243	6762	19723	14242	27202	21721	34682	29201	14929	9448
93-2555	5			9880	3030	17360	10510	24839	17989	32319	25469	18661	11811
93-2556	6					14998	6778	22477	14257	29957	21737	22393	14173

Actuator Torque Data (IN-LB) Double Acting

Model Number	Air Supply (psi)				
	40	60	80	100	120
92-63	145	221	297	373	449
92-83	351	536	721	906	1091
92-93	493	753	1013	1272	1532
92-119	1058	1615	2171	2728	3285
92-128	1410	2152	2894	3636	4378
92-160	2797	4270	5742	7214	8687
92-210	5783	8826	11870	14914	17957
93-255	14211	21691	29171	36650	44130

Note: Assemblies are sized at 80 psi.

Series 92/93 Pneumatic Actuators - Dimensions



SERIES 92/93 DIMENSIONS in.								
SIZE	**63**	**83**	**93**	**119**	**128**	**160***	**210**	**255‡**
Air NPT	1/4"							
A ISO "F"†	1.97-F 05	1.97 - F 05	1.97 - F 05	2.76 - F 07	2.76 - F 07	—	4.92 - F 12	6.50 - F 16
B ISO "F"†	2.76 - F 07	2.76 - F 07	2.76 - F 07	4.92 - F 12	4.92 - F 12	4.92 - F 12	6.50 - F 16	7.87 x 4.72 Rect.
C	0.55	0.75	0.75	1.18	1.18	1.18	1.97	2.50
D	0.40	0.51	0.51	0.87	0.87	0.87	0.47	0.62
E	4.53	5.43	5.78	7.28	8.09	9.36	11.62	13.49
F	5.58	7.40	8.59	12.40	12.31	15.54	19.57	28.78
G (UNC)	1/4-20 x .32	1/4-20 x .32	1/4-20 x .32	5/16-18 x .46	5/16-18 x .46	—	1/2-13 x .78	M20 x 2.5 x 30mm
H (UNC)	5/16-18 x .40	5/16-18 x .40	5/16-18 x .40	1/2-13 x .69	1/2-13 x .69	1/2-13 x .75	5/8-11 x 1.11	M20 x 2.5 x 30mm
J	0.38	0.50	0.50	1.12	1.12	1.12	1.12	1.12
L	1.38	1.46	1.46	2.20	2.20	2.20	4.72	6.50
M	3.46	4.27	4.61	5.52	6.32	7.80	10.16	12.06
N	1.72	2.28	2.47	2.78	2.88	3.78	4.56	5.40
P	1.38	1.79	1.97	2.37	2.70	3.39	4.41	5.39
Q	1.58	1.58	1.58	1.58	1.58	2.56	2.56	2.56
R	0.89	1.26	1.32	1.64	1.64	2.26	2.45	2.48
S	0.79	0.79	0.79	0.79	0.79	1.18	1.18	1.18
U	0.47	0.47	0.47	0.47	0.47	0.75	0.75	0.75

NOTE:
Double Acting and Spring Return actuators have the same overall dimensions.
The double acting unit of the size 48 actuator is optionally available with flat end caps with an F dimension of 4.00
† ISO "F" means mounting flange-drilling pattern.
* Dimensions for Size 160A in table. Size 160B (keyed stem version) has C dimension of 1.38 and D dimension of .39
‡ Dimensions for Size 255A in table. Size 255B actuator has a C dimension of 3.00 and D dimension of .75
** Size 48 has a T dimension of .79 with use of NAMUR top plate.

SERIES 92/93 Weights - lbs.								
SIZE	**63**	**83**	**93**	**119**	**128**	**160**	**210**	**255**
Double Acting	3.4	6.3	8.5	16.9	21.0	38.8	77.8	167.0
Spring Return	4.1	8.1	10.8	22.3	27.6	53.2	109.6	210.8

SERIES 92/93 Actuator Speeds								
SIZE	**63**	**83**	**93**	**119**	**128**	**160**	**210**	**255**
Double Acting	1/4	1/4	1/4	1/2	1/2	1	2	2-3/4

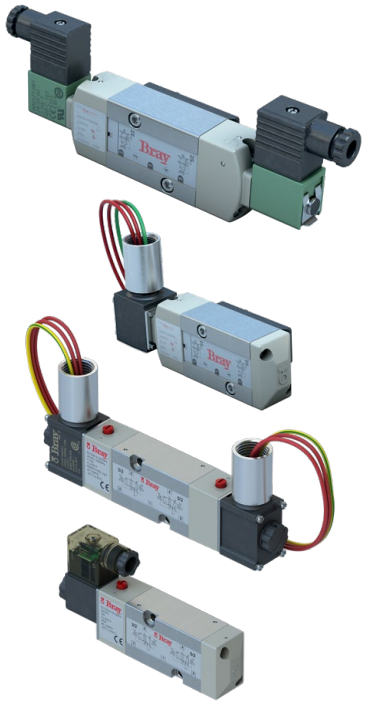
NOTE:
Times shown are in seconds at 80 PSIG supply pressure with 6ft. tubing having an internal diameter of approximately 1/4". Bray S92/93 actuation times are very dependent on the flow capacity of their air supply. The use of smaller port solenoids, solenoid manifolds, smaller I.D. air supply tubing and/or extended lengths of tubing can significantly reduce the actuation time and/or initial response to the command signal.

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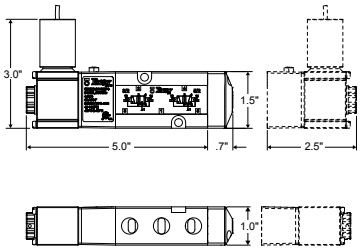
Series 63 - Pneumatic Solenoid



FEATURES	
• Compact and modular design	• Convertible from 3-way (3/2) to 4-way (5/2)
• Pilot operated spool control valve	• Mechanical manual override

TECHNICAL DATA		
Materials of Construction		
Body	Anodized Aluminum	
Spring	Phosphate treated black steel	
Shading Coil	Copper	
Seals	NBR + PUR	
Core / Tube	Stainless / Brass	
End Covers & Plate	6/6 glass filled polyamide (PA/FV)	
Spool	Aluminum	
Internal Parts	Zamak, Steel, Acetal	
General Specifications		
Mounting	NAMUR VDI/VDE 3845, hardware included	
Pneumatic Ports	1/4" NPT	
Media	Filtered Air or Inert Gas	
Connections	NPT flying leads, available with single and dual coils	
Electrical Connections	NEMA Housings: 1/2" NPT connection and flying leads	
Coil Temperature Rating	Insulation Class "F", Max. 311°F [155°C]	
General Purpose (watertight)	NEMA 4, 4X (Flying Leads)	
Model Specifications	High-flow	UL-Recognized
Hazardous Locations (Optional)	--	NEMA 7, 9 Class I, Division 1 (Groups A-D) Class II, Division 1 (Groups E-G)
Temperature Range	-13°F to +140°F [-25°C to +60°C]	AC: -13°F to +140°F [-25°C to +60°C] DC: -13°F to +77°F [-25°C to +25°C]
Coil Voltage	Flying Leads & DIN 24, 110, 220 VAC, 50-60 HZ; 12, 24 VDC	Flying Leads: 24, 120, 220 VAC, 50-60 HZ; 12, 24 VDC
Nominal Power	4.5VA (24VAC); 6VA (110VAC); 7.5VA (220VAC); 4.5W (12 VDC); 3W (24VDC)	Flying Leads: 7VA (AC); 6.9W (DC)
Flow Coefficient (1/4" pipe)	Cv=1.4	Cv=0.7
Operating Pressure	Min. 22 psi [1.5 bar] Max. 130 psi [9 bar]	Min. 30 psi [2 bar] Max. 130 psi [9 bar]
Operating Speed	5 cycles per minute	10 cycles per minute
Certifications	cCSAus (Flying Leads), CE (DIN coil)	UL, CSA, CE (DIN coil)
Warranty	3 Years limited from time of shipment.	

DIMENSIONS



Pneumatic Solenoid - Series 63	
Model Number	**Description**
63125A-214105P4	S63 Single coil solenoid, 24 VAC for electric On/Off control of S92/93 actuators
63125A-214115P4	S63 Single coil solenoid, 110 VAC for electric On/Off control of S92/93 actuators
63125A-214205P4	S63 Double coil solenoid, 24 VAC for electric On/Off control of S92/93 actuators
63125A-214215P4	S63 Double coil solenoid, 110 VAC for electric On/Off control of S92/93 actuators

V200P - Pneumatic Positioner



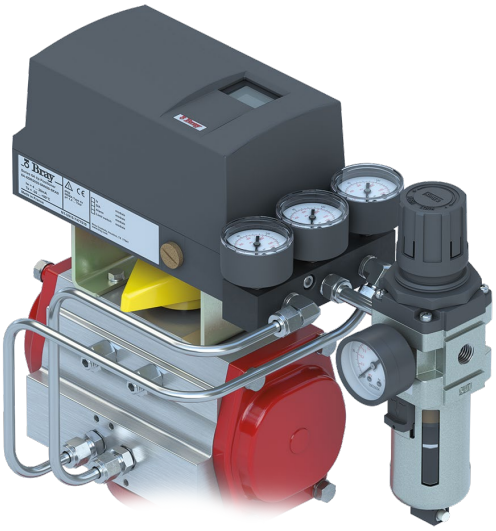
Pneumatic Positioner - V200P	
Model Number	**Description**
V200P	Pneumatic Positioner, Double or Single Acting
V200M	Mech Aux Switch for V200P
V200R	Reed Aux Switch for V200P
V200MA	4 to 20 mA feedback module for V200P
V200MMA	Mech switch aux switch and 4 to 20 mA feedback for V200P
V200RMA	Reed Aux Switch and 4-20 mA feedback for V200P
V200B	Beacon Indicator for V200P

Series 6A - Electro-Pneumatic Positioner

Bray's Series 6A Intelligent Electro-Pneumatic Positioners offer precise flow control, advanced communication and enhanced diagnostics. Utilizing proven technology, the Series 6A features rugged reliability, high quality components and outstanding performance.

Series 6A positioners are microprocessor controlled, delivering all the benefits of digital electronics. The microprocessor constantly compares the command signal to the actual valve position and makes precise, on-line adjustments until the two measurements match. The use of the piezoelectric control element results in near zero air consumption, ultra high resolution and extremely low hysteresis.

Series 6A positioners were designed with ease of installation, simple calibration, efficiency and economy in mind. The modular product line is easily customized for specific applications. Additional positioner functions may be obtained by installing optional circuit boards.



Shown with optional gauges.

Technical Specifications - Series 6A		
Supply Pressure	20 - 102 psi (1.4 -7 Bar)	
Air Consumption	<0.00035 scfm	
Input Signal	**Analog**	4 -20 mADC
	Bus	HART, Foundation Fieldbus, Profibus PA Connections
	Supply	1/4" NPT (G 1/4")
	Signal (2 conduit entries)	1/2" NPT (M20x1.5)
Resolution	<0.05%	
Repeatability	0.32%	
Hysteresis	<0.2%	
Temperature Range	-22°F(-30°C) to +176°F(+80°C)	
Weight	2.0 lbs. (0.9 kg)	
Control Element Type	Piezoelectric	
EMC Requirements	EN 61326/A1 Appendix A.1, NAMUR NE21 August 98	
Protection Class	NEMA 4,4x and IP66	
Materials	Fiberglass Reinforced Polymer with Metalized Coated interior for EMC protection	
	Housing Fasteners	Stainless Steel
	Position Indicator	ABS polymer
Positioner Mounting	VDI/VDE 3845 (NAMUR)	
Approvals & Certifications	FM, CSA, CE, ATEX	
Warranty	3 Years limited from time of shipment.	

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

Series 6A Model Numbers	
Model Number	**Description**
6A6DR5-0200NN005KA0	S6A Double-Acting Electro-pneumatic positioner 4-20 mA
6A6DR5-0100NN005KA0	S6A Single-Acting Electro-pneumatic positioner, 4-20 mA
6A6DR4-0046K	S6A Optional mechanical switch
6A6DR4-0046J	S6A Optional position feedback module
6A0250-22701536	S6A Single-Acting Optional gauge block assembly
6A0250-22702536	S6A Double-Acting Optional gauge block assembly
6A0630-24610536	S6A Mounting kit, S92/93 sizes 63-128
6A1600-24610536	S6A Mounting kit, S92/93 sizes 160-255

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Series 5A - Status Monitor

The Bray Series 5A Valve Status Monitors (VSM) provide visual and electrical indication of position on any VDI/VDE 3845 compliant quarter-turn device. Our solutions enable end users to better monitor their process no matter the conditions.



Series 5A & (5B Mounting Hardware) Model Numbers	
Model Number	**Description**
5A0000-126A2536	5A Status Monitor (Mounting Kit Not Included)
5B0000-22600534	5A Mounting Kit- Non-Adjustable For S98 & S92/93 Actuators - Sizes 063 - 128
5B0000-22601534	5A Mounting Kit- Adjustable For S98 & S92, 93 Actuators - Sizes 063 - 255

Features and Benefits

- Low Profile, Weatherproof Enclosure
  Die-cast aluminum with a polyester powder coat for exceptional corrosion, wear, impact and ultraviolet resistance.
- High Visibility Position Indicator
  Impact resistant.
  Flexible Mounting Options - Can be mounted both perpendicular and parallel to the actuator. The visual indication can also be inverted without removing the cover.
- Captive Cover Bolts with Protective Washers - Stainless Steel bolts with clear, nonmetallic corrosion resistant washers are used to ensure coating integrity.
- Adjustable Sensor Cams - No tools Required
- Limit Switches - Multiple Switch options and configurations to meet connectivity requirements.
- Terminals- Clearly Marked and Easily Accessed.
- Conduit Entries - Two available in either imperial or metric threads.
- Grounding- Green color-coded, easy access grounding bolt

Certifications

NEMA Type 4X
IP66/67
cULus
CE
UL50E Salt Spray

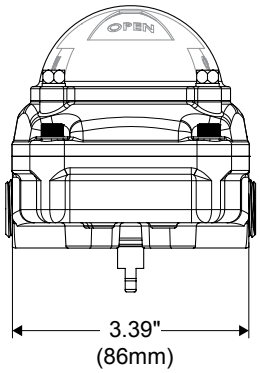
Flexible Mounting Options

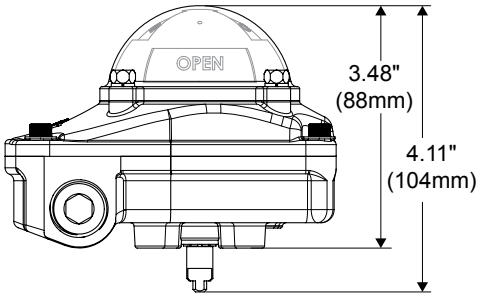
Users have the ability to mount the VSM's in both perpendicular and parallel orientations without changing brackets. The visual indication can also be inverted without removing the cover. This is done by roating the indicator dome 90 degrees.

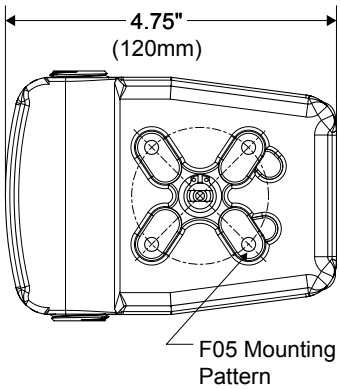




Series 5A - Dimensions

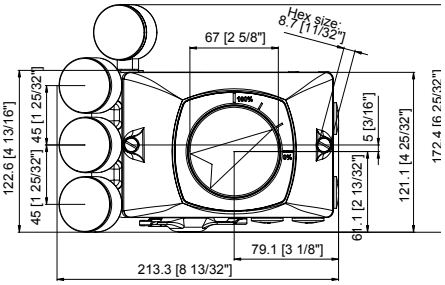


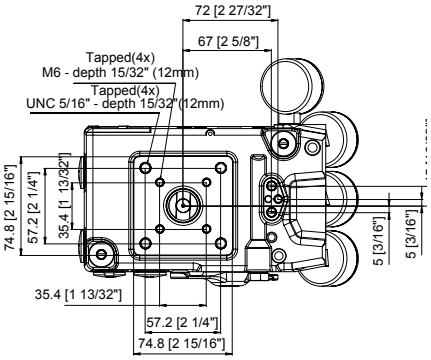


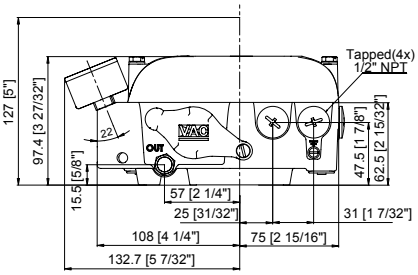


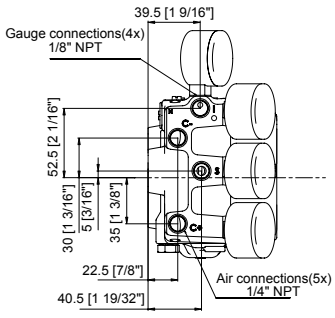
V200 & 6A - Positioner Dimensions

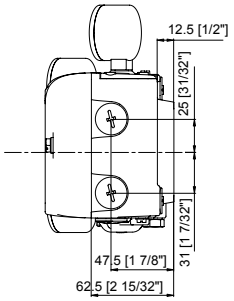
V200



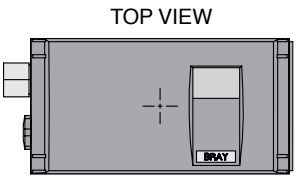


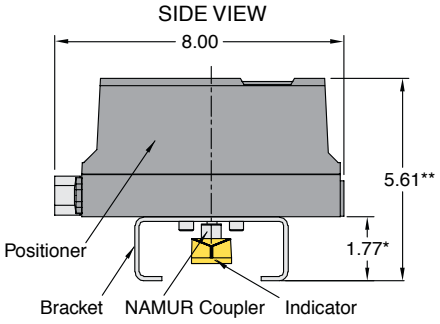


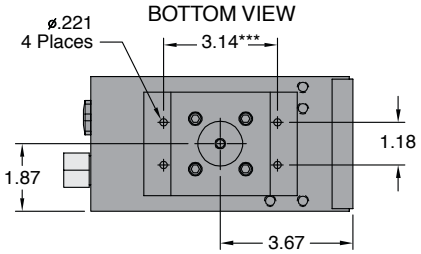


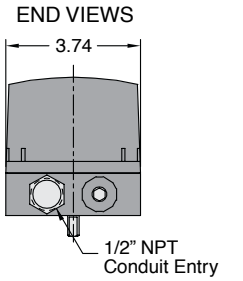


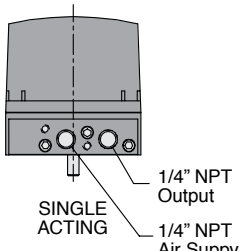
6A

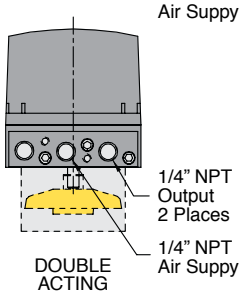












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Series 05 - Manual Overrides

Available for 2"-36" (50mm-900mm) valves. This operator is excellent for the safe handling of spring return actuators. During pneumatic operation, the worm of the gear unit is disengaged. Should the valve require opening or closing in the event of power loss, manual rotation of the declutch lever will provide a camming action and engage the worm to the segmented worm gear, allowing rotation of the valve using the handwheel. The Series 5 can be installed in the field with existing Bray pneumatic actuators.

3L VALVE BODY & SERIES 05 MANUAL OVERRIDE DIMENSIONS in.

SIZE 20:1 (2,000 lb.in)							ACTUATOR SIZE																	
Valve Body							63			83			92			118			127			H	I	J
Valve Model Number	Size in.	A	B	C	D	E	F	G	H	E	F	G	E	F	G	E	F	G	E	F	G			
3L_E-02S**	2	3.7	1.7	2.0	5.5	2.3																1.92	8.88	8.00
3L_E-25S**	2.5	4.3	1.8	2.5	6.0	2.6	2.79	5.88	1.72															
3L_E-03S**	3	4.9	1.8	3.0	6.3	2.8				3.70	6.78	2.28	4.30	7.13	2.47									
3L_E-04x**	4	6.1	2.1	4.1	7.0	4.1																		
3L_E-05x**	5	7.1	2.2	5.0	7.5	4.6										5.95	8.63	2.78	6.16	9.44	2.88			
3L_E-06x**	6	8.1	2.2	5.8	8.0	5.1																		

3L VALVE BODY & SERIES 05 MANUAL OVERRIDE DIMENSIONS in.

SIZE 30:1 (8,000 lb.in)							ACTUATOR SIZE														
Valve Body							118			127			160			210			H	I	J
Valve Model Number	Size in.	A	B	C	D	E	F	G	H	E	F	G	E	F	G	E	F	G			
3L_E-05x**	5	7.1	2.2	5.0	7.5	4.6													3.05	9.43	12.00
3L_E-06x**	6	8.1	2.2	5.8	8.0	5.1															
3L_E-08x**	8	10.5	2.4	7.8	9.5	6.1	5.95	8.97	2.78	**6.16**	**9.78**	**2.88**	**7.77**	**11.05**	**3.78**	**9.78**	**13.31**	**4.56**			
3L_E-10x**	10	12.6	2.7	9.8	10.8	7.7															
3L_E-12x**	12	14.9	3.1	11.8	12.3	9.0															

3L VALVE BODY & SERIES 05 MANUAL OVERRIDE DIMENSIONS in.

SIZE 50:1 (13,000 lb.in)							ACTUATOR SIZE											
Valve Body							160			210			255			H	I	J
Valve Model Number	Size in.	A	B	C	D	E	F	G	H	E	F	G	E	F	G			
3L_E-10x**	10	12.6	2.7	9.8	10.8	7.7										3.34	11.81	12.00
3L_E-12x**	12	14.9	3.1	11.8	12.3	9.0	7.77	13.74	3.78	9.78	16.00	4.56						
3L_E-14x**	14	17.1	3.1	13.3	13.6	9.9							14.39	18.99	5.40			
3L_E-16x**	16	19.2	4.0	15.3	14.8	11.3												

3L VALVE BODY & SERIES 05 MANUAL OVERRIDE DIMENSIONS in.

SIZE 80:1 (24,000 lb.in)							ACTUATOR SIZE											
Valve Body							160			210			255			H	I	J
Valve Model Number	Size in.	A	B	C	D	E	F	G	H	E	F	G	E	F	G			
3L_E-14x**	14	17.1	3.1	13.3	13.6	9.9										4.78	14.88	18.00
3L_E-16x**	16	19.2	4.0	15.3	14.8	11.3	7.77	15.61	3.78	9.78	17.12	4.56						
3L_E-18x**	18	21.1	4.5	17.3	16.0	12.2							14.39	18.99	5.40			
3L_E-20x**	20	23.3	5.0	19.3	17.3	14.0												
3L_E-24S**	24	28.2	6.1	23.3	19.5	17.6												

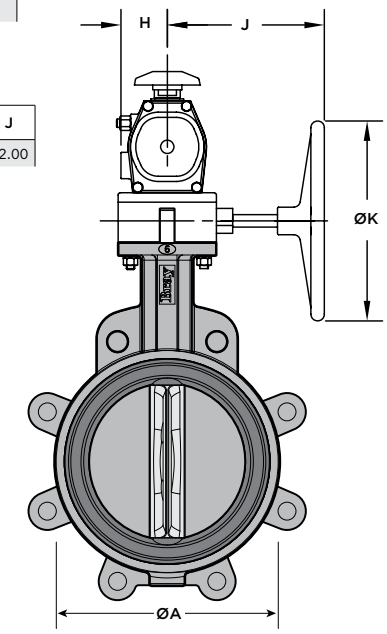
3L VALVE BODY & SERIES 05 MANUAL OVERRIDE DIMENSIONS in.

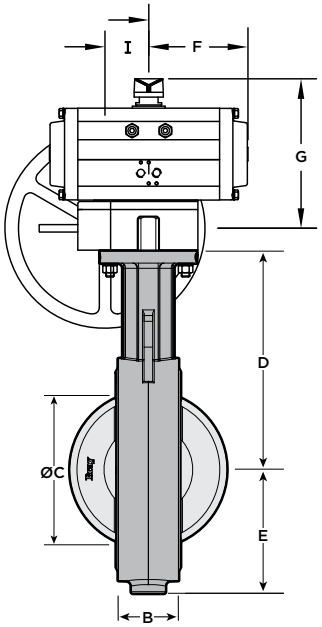
SIZE 64:1 (36,000 lb.in)							ACTUATOR SIZE					
Valve Body							255			H	I	J
Valve Model Number	Size in.	A	B	C	D	E	E	F	G			
3L_E-14x**	14	17.1	3.1	13.3	13.6	9.9				4.94	14.56	24.00
3L_E-16x**	16	19.2	4.0	15.3	14.8	11.3						
3L_E-18x**	18	21.1	4.5	17.3	16.0	12.2	14.39	19.99	5.40			
3L_E-20x**	20	23.3	5.0	19.3	17.3	14.0						
3L_E-24S**	24	28.2	6.1	23.3	19.5	17.6						

** = (2C) 2-Way - Normally Closed
(2N) 2-Way - Normally Open
(3) 3-Way + Configuration Number

X or S = (L) Low Pressure or (S) Standard Pressure

_ = (N) Nylon Coated Disc or (S) Stainless Steel Disc





Bray COMMERCIAL

Bray Commercial provides automated Butterfly, Ball, Globe and Pressure Independent Control Valves to the commercial building HVAC market throughout the world Whereever valve performance is required to maintain climate controlled environments, Bray can provide the required automated valves to meet the demanding flow applications of chiller/boiler isolation, air handlers and terminal units for new construction, retrofit and/or LEED certification applications in buildings.

Building Types

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Bray COMMERCIAL

LOOKING FOR MORE

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Damper Actuators

Non-Spring Return & Spring Return

On/Off • Floating • Modulating



Application

Bray's wide variety of damper electric actuator choices increases flexibility when choosing peripheral products for Building Automation Systems.

We offer many different torque outputs and optional features to ensure you have the best actuator for the application. Jumper or DIP switch selectable features allow versatility in the field. The actuators are maintenance-free, which means fewer call backs after installation and start-up. In addition, our actuators are manufactured to ISO 9001 and Six Sigma Standards making them the highest quality on the market today.

All of our damper electric actuators are linkage free when applied to dampers ranging for small VAV box dampers all the way up to large outdoor air and return air dampers.

Options include:

- Non-Spring Return or Spring Return operation
- Auxiliary Switches (optional)
- Weather Shields for outdoor use
- 24V and line voltage models
- On/Off, Floating, or Modulating operation
- Analog feedback on all modulating models
- UL, CSA and CE listings
- 5-Year Warranty on selected models
- Flying lead or terminal strip electrical connections

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Non-Spring Return

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DM24-310 Series 17

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D(M)S-27 Series 23
DC(M)S-62 Series 27
D(M)S-70 Series 29
DC(M)S-140 Series 31
D(M)S-180 Series 33

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D(M)24-35 Series — Submittal/Technical Data

Commercial Electric Actuators — 35 in-lbs (4Nm)

Technical Specifications - D(M)24-35 Series Actuator					
Type	Actuator Models	D24-35-TP	D24-35-T-TS	DM24-35	DM24-35-TS
		Non-Spring Return - Floating & On/Off (relay required)		Non-Spring Return - Modulating	
	Torque	35 lb-in. (4 Nm)			
Electrical	Operating Voltage	24 VAC +25%/-20% at 50/60 Hz			
	Power Consumption	2.1 VA		2.9 VA	
	Input Signal	24 VAC +25%/-20% at 50/60 Hz		0(2) to 10 VDC or 0(4) to 20 mA with field-furnished 500 ohm resistor	
	Input Impedance	N/A		200k Ohms	
	Equipment Rating	Class 2 or Safety Extra-Low Voltage (SELV)			
	Feedback Signal	N/A		0 to 10 VDC or 2 to 10 VDC for 90° (10 VDC at 1 mA), Corresponds to input signal span selection	
	Electrical Connection	36 in. (0.9 m) UL 444 Type CMP Plenum Rated cable with 19 AWG (0.75 mm2) conductors and 1/4 in. (6 mm) ferrule ends	Exposed Terminal Block - M3 Terminal Screws	36 in. (0.9 m) UL 444 Type CMP Plenum Rated cable with 19 AWG (0.75 mm2) conductors and 1/4 in. (6 mm) ferrule ends	Exposed Terminal Block - M3 Terminal Screws
Operation	Manual Override	External Push Button			
	Runtime for 90° of Rotation	60 Seconds at 60 Hz / 72 Seconds at 50 Hz for 90° rotation			
	Rotation Range	93° ±3°, CW or CCW			
	Cycle Life	100,000 Full Stroke Cycles; 2,500,000 repositions at rated running torque			
	Mechanical Connections	**Round Shafts** - Up to 1/2 in. (13 mm) **Square Shafts** - Up to 3/8 in. (10 mm)			
Environmental	Enclosure	NEMA 2 (IP42)	NEMA 2 (IP40)	NEMA 2 (IP42)	NEMA 2 (IP40)
	Ambient Conditions (Non-Condensing)	**Operating —** -4 to 140°F (-20 to 60°C); 90% RH Max. **Storage —** -20 to 150°F (-29 to 66°C); 90% RH Max.			
	Audible Noise Rating	35 dBA Nominal at 39-13/32 in. (1 meter)			
	Dimensions	5.16 x 2.81 x 2.06 in. (131 x 71 x 52 mm)			
	Weight	1.0 lb (0.5 kg)			
Conditions	Agency Certifications	**United States/Canada –** United States UL Listed, File E27734, CCN XAPX (United States) and XAPX7 (Canada) Actuator Housing is Plenum Rated per CSA C22.2 No. 236/UL 1995, Heating and Cooling Equipment			
		Europe – CE Mark - Product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC and the Low Voltage Directive 2006/95/EC			
		Australia/New Zealand – C-Tick Mark Australia/NZ Emissions Compliant			
	Warranty	5 Years limited from time of shipment.			

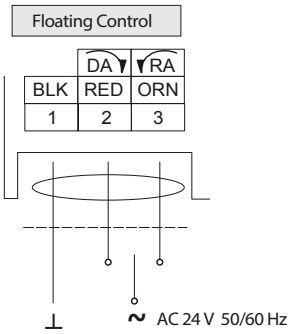
Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

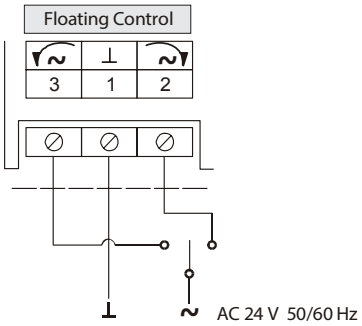
Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

Wiring

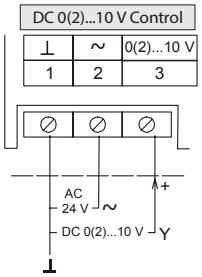
D24-35-TP
PLENUM CABLE

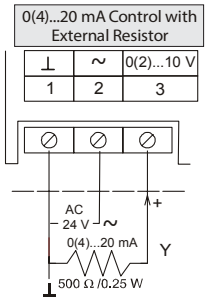


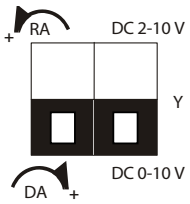
D24-35-T-TS
TERMINAL BLOCK



DM24-35
PLENUM CABLE

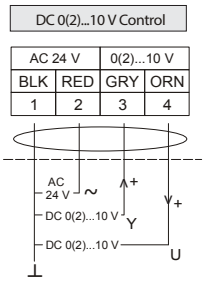


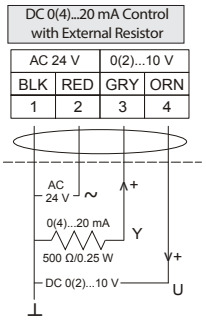


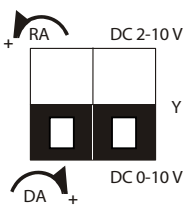


D-35 Actuators are factory set for Direct Acting (DA) mode and for a 0 to 10 VDC input control signal.

DM24-35-TS
TERMINAL BLOCK





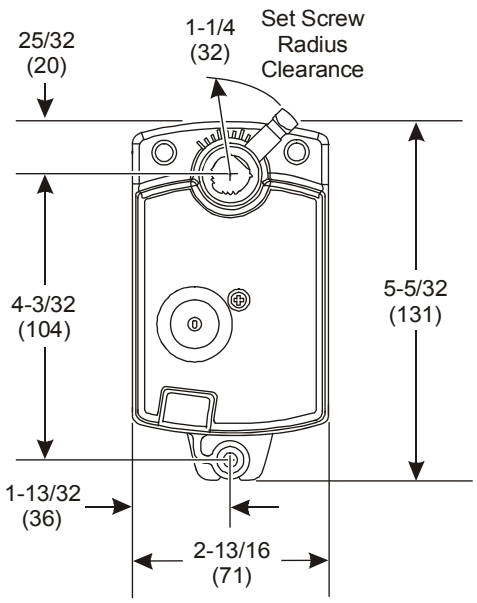


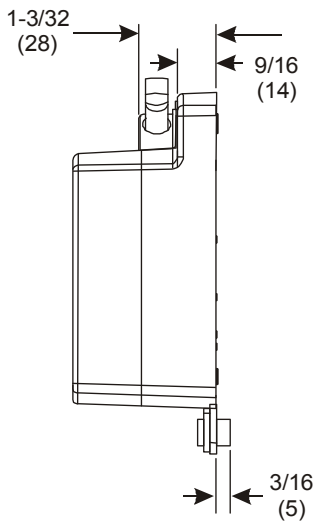
D-35 Actuators are factory set for Direct Acting (DA) mode and for a 0 to 10 VDC input control signal.

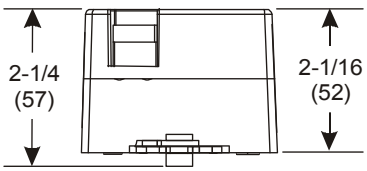
NOTE - To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

Dimensions







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DC(M)24-44 Series — Submittal/Technical Data

24 VAC – Non-Spring Return – 2-Position, Floating & Modulating

Technical Specifications - DC(M)-44 Series Actuator						
Type	Actuator Models	DC24-44-TP	DC24-44-TAP	DC24-44-TPTO	DCM24-44-P	DCM24-44-AP
		Non-Spring Return Floating* Plenum Cable	Non-Spring Return Floating* Plenum Cable Auxiliary Switches	Non-Spring Return 2-Position/Floating Plenum Cable	Non-Spring Return Modulating Plenum Cable	Non-Spring Return Modulating Plenum Cable Auxiliary Switches
	Torque	44 lb-in. (5 Nm)				
Electrical	Operating Voltage	24 VAC +20%, -15% at 50/60 Hz		24 VAC/DC +-20%		
	Power Consumption	2.3 VA		1.1 VA, 0.7W	1.3 VA, 0.9W	
	Operational Protection	N/A		Timeout/Overload Protection		
	Control Signal	Floating		2-Position/Floating	0(2)-10V	
	Input Impedance	N/A			>100k Ohms	
	Feedback Signal	N/A			0(2)-10V (Maximum Output Current DC 1mA)	
	Auxiliary Switch Rating	N/A	4A Resistive, 2A Inductive	N/A	N/A	4A Resistive, 2A Inductive
	Switch Range (Switch A)	N/A	0 to 90° with 5° Intervals (Recommended Range Usage 0 to 45°) Factory Setting 5°	N/A	N/A	0 to 90° with 5° Intervals (Recommended Range Usage 0 to 45°) Factory Setting 5°
	Switch Range (Switch B)	N/A	0 to 90° with 5° Intervals (Recommended Rang Usage 45 to 90°) Factory Setting 85°	N/A	N/A	0 to 90° with 5° Intervals (Recommended Rang Usage 45 to 90°) Factory Setting 85°
	Switching Hysteresis	N/A	2°	N/A		2°
	Equipment Rating	Class 2 per UL/CSA,Class III per EN60730		Class 2 according to UL, cUL; Class III per EN60730		
	Electrical Connection	3 ft. (0.9 m) Pre-cabled - AWG 18 - Plenum Rated Cable				
Operation	Manual Override	Manual Operation by Selecting Override Knob when Power is off				
	Runtime for 90° of Rotation	90 sec. at 60 Hz (108 sec. at 50 Hz)		90 sec.		
	Rotation Range	Nominal Angle of Rotation 90°, mechanically limited to 95°				
	Cycle Life	60,000 full strokes/ 1.5 million repositions		100,000 full strokes/ 5 million repositions		
	Mechanical Connections	**Round Shafts** - 3/8 to 5/8 in. (8 to 16 mm) diameter **Square Shafts** - 1/4 to 1/2 in. (6 to 12.7 mm) **Hex Shafts** - 9/16 in. (15 mm) **Minimum Shaft Length** - 3/4 in. (20 mm)				
Environmental	Enclosure	NEMA 2, IP54 according to EN60529				
	Ambient Conditions (Non-Condensing)	**Operating —** -25 to 130°F (-32 to 55°C); 0 to 95% RH, non-condensing **Storage —** -40 to 158°F (-40 to 70°C); 0 to 95% RH, non-condensing				
	Audible Noise Rating	35 dBA at 1 m				
	Dimensions	5.4" L × 2.8" W x 2.4" D (137mm L × 70mm W × 60mm D)				
	Weight	1.06 lb (0.48 kg)		1.35 lb (0.61 kg)		
Conditions	Agency Certifications	UL listed to UL873-cUL certified to Canadian Standard C22.2 No. 24-93, CE In accordance with the directive set forth by the European Union for Electromagnetic Compatibility (EMC) 2004/108/EC Emissions Standards EN61000-6-3 Immunity Standards EN61000-6-2		UL listed to UL60730-cUL certified to Canadian Standard C22.2 No. 24-93, These devices were approved for installation in plenum areas by Underwriters Laboratories, Inc., per UL 1995 CE listed with EN60730-1, EN60730-2-14		
	Warranty	5 Years limited from time of shipment.				

* Not eligible for SPST control

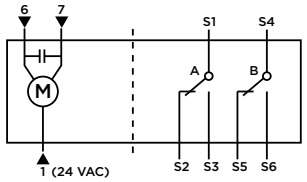
Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

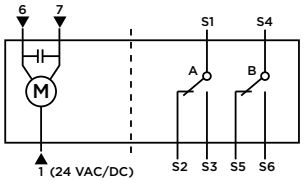
Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

Wiring

DC24-44-TP
DC24-44-TAP
PLENUM CABLE
Floating Control



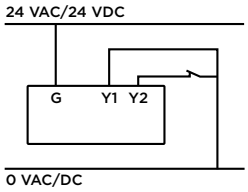
DC24-44-TPTO
PLENUM CABLE
2-Position/Floating Control



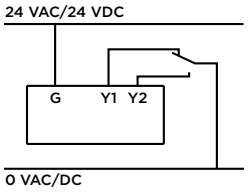
2-POSITION/FLOATING CONTROL

Standard Symbol	Function	Terminal Designation	Color
1	Supply (SP)	G	Red
6	Control Signal clockwise	Y1	Violet
7	Control Signal Counterclockwise	Y2	Orange
Factory-Installed Options			
S1	Switch A Common	Q11	Gray/Red
S2	Switch A N.C.	Q12	Gray/Blue
S3	Switch A N.O.	Q14	Gray/Pink
S4	Switch B Common	Q21	Black/Red
S5	Switch B N.C.	Q22	Black/Blue
S6	Switch B N.O.	Q24	Black/Pink

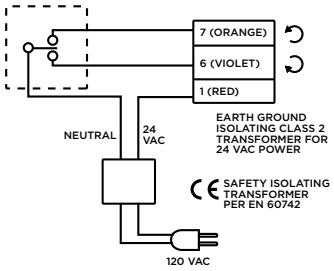
CONTROL METHOD



2-Position, SPST
(Single-Pole, Single-Throw)

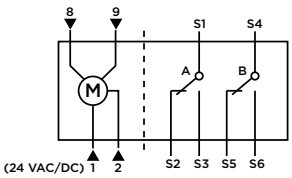


2-Position, SPDT
(Single-Pole, Double-Throw)



Floating Control
24 VAC/DC

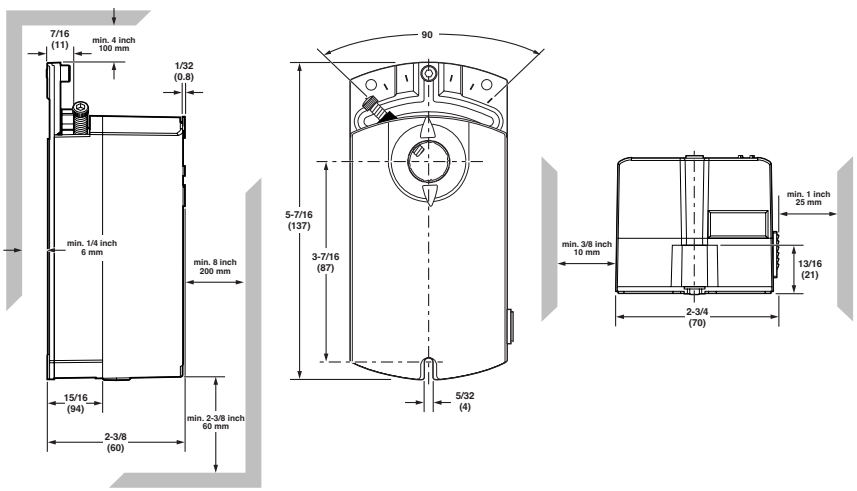
DCM24-44-(A)P
PLENUM CABLE
Modulating



MODULATING CONTROL

Standard Symbol	Function	Terminal Designation	Color
1	Supply (SP)	G	Red
2	Neutral (SN)	G0	Black
8	0(2) to 10V input signal	Y	Gray
9	Output for 0(2)-10V position indication	U	Pink
Factory-Installed Options			
S1	Switch A – Common	Q11	Gray/Red
S2	Switch A – N.C.	Q12	Gray/Blue
S3	Switch A – N.O.	Q14	Gray/Pink
S4	Switch B – Common	Q21	Black/Red
S5	Switch B – N.C.	Q22	Black/Blue
S6	Switch B – N.O.	Q24	Black/Pink

Dimensions - in.(mm)



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DC(M)24-88 Series — Submittal/Technical Data

24 VAC – Non-Spring Return – 2-Position, Floating & Modulating

Technical Specifications - DC(M)-88 Series Actuator					
Type	Actuator Models	DC24-88-TP	DC24-88-TAP	DCM24-88-P	DCM24-88-AP
		Non-Spring Return Floating Plenum Cable	Non-Spring Return 2-Position/Floating Plenum Cable Auxiliary Switches	Non-Spring Return Modulating Plenum Cable	Non-Spring Return Modulating Plenum Cable Auxiliary Switches
	Torque	88 lb-in. (10 Nm)			
Electrical	Operating Voltage	24 VAC +-20%	24 VAC/DC +-20%		
	Power Consumption	1.3 VA, 0.8W		1.5 VA, 1W	
	Operational Protection	N/A	Timeout/Overload Protection		
	Control Signal	Floating	2-Position/Floating	0(2)-10V	
	Input Impedance	N/A		>100k Ohms	
	Feedback Signal	N/A		0(2)-10V (Maximum Output Current DC 1mA)	
	Auxiliary Switch Rating	N/A	4A Resistive, 2A Inductive	N/A	4A Resistive, 2A Inductive
	Switch Range (Switch A)	N/A	0 to 90° with 5° Intervals (Recommended Range Usage 0 to 45°) Factory Setting 5°	N/A	0 to 90° with 5° Intervals (Recommended Range Usage 0 to 45°) Factory Setting 5°
	Switch Range (Switch B)	N/A	0 to 90° with 5° Intervals (Recommended Rang Usage 45 to 90°) Factory Setting 85°	N/A	0 to 90° with 5° Intervals (Recommended Rang Usage 45 to 90°) Factory Setting 85°
	Switching Hysteresis	N/A	2°	N/A	2°
	Equipment Rating	Class 2 per UL/CSA	Class 2 per UL/CSA,Class III per EN60730		
	Electrical Connection	3 ft. (0.9 m) Pre-cabled - AWG 18 - Plenum Rated Cable			
Operation	Manual Override	Manual Operation by Selecting Override Knob when Power is off			
	Runtime for 90° of Rotation	125 seconds	150 seconds		
	Rotation Range	Nominal Angle of Rotation 90°, mechanically limited to 95°			
	Cycle Life	60,000 cycles at rated load	100,000 full strokes/ 5 million repositions		
	Mechanical Connections	**Round Shafts** - 3/8 to 5/8 in. (8 to 16 mm) diameter **Square Shafts** - 1/4 to 1/2 in. (6 to 12.7 mm) **Hex Shafts** - 9/16 in. (15 mm) **Minimum Shaft Length** - 3/4 in. (20 mm)			
Environmental	Enclosure	NEMA 2, IP54 according to EN60529			
	Ambient Conditions (Non-Condensing)	**Operating —** -25 to 130°F (-32 to 55°C); 0 to 95% RH, non-condensing **Storage —** -40 to 158°F (-40 to 70°C); 0 to 95% RH, non-condensing			
	Audible Noise Rating	35 dBA at 1 m			
	Dimensions	6.6" L × 2.8" W × 2.4" D (166.7mm L × 71mm W × 61mm D)			
	Weight	1.35 lb (0.61 kg)			
Conditions	Agency Certifications	UL listed to UL873-cUL certified to Canadian Standard C22.2 No. 24-93, CE In accordance with the directive set forth by the European Union for Electromagnetic Compatibility (EMC) 2004/108/EC - Emissions Standards EN61000-6-3 – Immunity Standards EN61000-6-2 For DC24-88-TP	UL listed to UL60730-cUL certified to Canadian Standard C22.2 No. 24-93, These devices were approved for installation in plenum areas by Underwriters Laboratories, Inc., per UL 1995 CE listed with EN60730-1, EN60730-2-14		
	Warranty	5 Years limited from time of shipment.			

Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

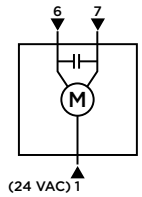
To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

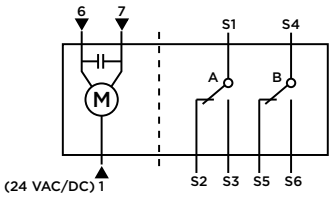
Mixed switch operation is not permitted. To the switching outputs of both auxiliary switches (A and B), only apply: UL/CSA: Class 2 voltage.

Wiring

DC24-88-TP
PLENUM CABLE
Floating Control



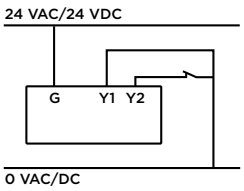
DC24-88-TAP
PLENUM CABLE
2-Position/Floating Control



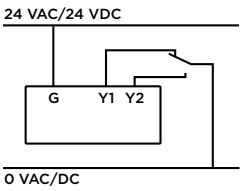
2-POSITION/FLOATING CONTROL

Standard Symbol	Function	Terminal Designation	Color
1	Supply (SP)	G	Red
6	Control Signal clockwise	Y1	Violet
7	Control Signal Counterclockwise	Y2	Orange
Factory-Installed Options			
S1	Switch A Common	Q11	Gray/Red
S2	Switch A N.C.	Q12	Gray/Blue
S3	Switch A N.O.	Q14	Gray/Pink
S4	Switch B Common	Q21	Black/Red
S5	Switch B N.C.	Q22	Black/Blue
S6	Switch B N.O.	Q24	Black/Pink

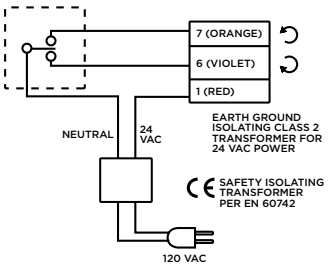
CONTROL METHOD



2-Position, SPST
(Single-Pole, Single-Throw)

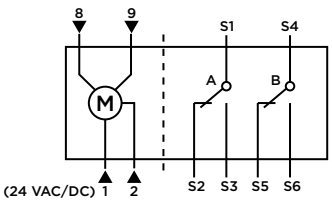


2-Position, SPDT
(Single-Pole, Double-Throw)



Floating Control
24 VAC/DC

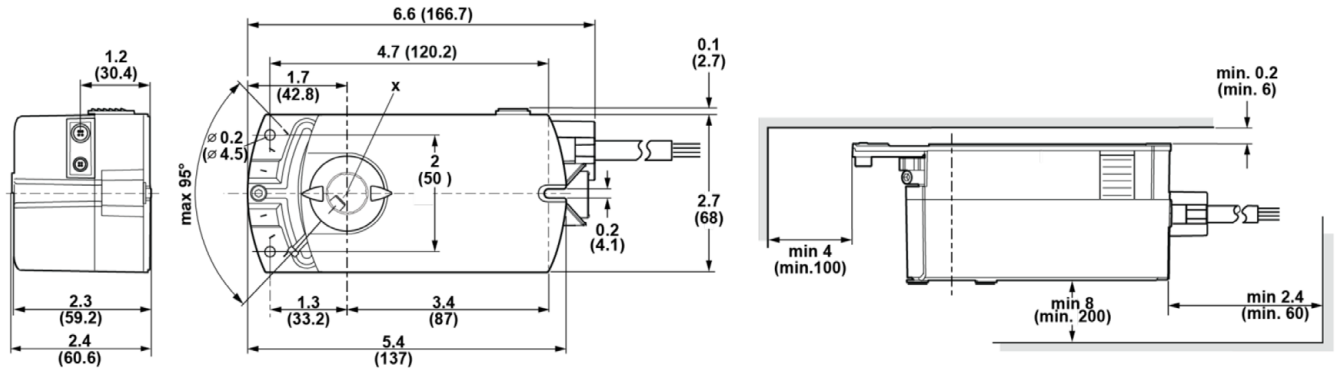
DCM24-88-(A)P
PLENUM CABLE
Modulating



MODULATING CONTROL

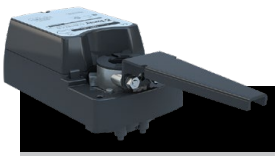
Standard Symbol	Function	Terminal Designation	Color
1	Supply (SP)	G	Red
2	Neutral (SN)	G0	Black
8	0(2) to 10V input signal	Y	Gray
9	Output for 0(2)-10V position indication	U	Pink
Factory-Installed Options			
S1	Switch A – Common	Q11	Gray/Red
S2	Switch A – N.C.	Q12	Gray/Blue
S3	Switch A – N.O.	Q14	Gray/Pink
S4	Switch B – Common	Q21	Black/Red
S5	Switch B – N.C.	Q22	Black/Blue
S6	Switch B – N.O.	Q24	Black/Pink

Dimensions - in.(mm)



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D24-70-280 Series — Submittal/Technical Data

70, 140, 210, 280 lb-in. — Non-Spring Return — On/Off or Floating — Auxiliary Switches

Technical Specifications - D24-70, 140, 210, 280 Series Actuator					
Type	Actuator Models	D24-70-(A)	D24-140-(A)	D24-210-(A)	D24-280-(A)
		Non-Spring Return - On/Off or Floating with optional Auxiliary Switches (-A)			
	Torque	70 lb-in. (8 Nm)	140 lb-in. (16 Nm)	210 lb-in. (24 Nm)	280 lb-in. (32 Nm)
Electrical	Operating Voltage	24 VAC (20 to 30 V) at 50/60 Hz or VDC 24 V ±10%;		24 VAC (20 to 30 V) at 50/60 Hz or VDC 24 V ±10%;	
	Power Consumption	6.5 VA supply minimum		7.5 VA supply minimum	
	Input Signal	**Auxiliary Switches (-A)** - 24 VAC +25%/-20% at 50/60 Hz, or DC 24 V			
	Input Signal Adjustments	**Auxiliary Switches (-A)** - Factory Setting, Terminals 1 and 2, CW rotation; Terminals 1 and 3, CCW rotation			
	Auxiliary Switch Rating	**Auxiliary Switches (-A) -** Two Single-Pole, Double-Throw (SPDT) switches rated at 24 VAC 1.5 A inductive, 3.0 A resistive, 35 VA maximum per switch, Class 2			
	Equipment Rating	Class 2 or Safety Extra-Low Voltage (SELV)			
	Electrical Connection	Screw terminals for 22 to 14 AWG; maximum of two 18, 20, or 22 AWG per terminal		1/4 in. spade terminals with pluggable 3-terminal blocks	
Operation	Manual Override	External Push Button			
	Time Out Feature	Electronic stall detection ensures higher reliability by deactivating the actuator motor when a stall condition is detected			
	Runtime for 90° of Rotation	30 seconds at 50% rated load, 25 to 50 seconds for 0 to 70 lb·in (0 to 8 N·m)	80 seconds at 50% rated load, 70 to 115 seconds for 0 to 140 lb·in (0 to 16 N·m)	130 seconds at 50% rated load, 115 to 175 seconds for 0 to 210 lb·in (0 to 24 N·m)	140 seconds at 50% rated load, 115 to 205 seconds for 0 to 280 lb·in (0 to 32 N·m)
	Rotation Range	0 to 90° in 5-degree increments, mechanically limited to 93° Rotation range is adjusted by repositioning the output hub			
	Cycle Life	60,000 cycles at rated load			30,000 cycles at rated load
	Mechanical Connections	**Round Shafts** - 3/8 to 3/4 in. (10 to 20 mm) diameter **Square Shafts** - 3/8 to 5/8 in. (10 to 16 mm), 1 in. (25.4 mm) diameter jackshaft with M9000-154 coupler			
Environmental	Enclosure	NEMA 2 (IP42)			
	Ambient Conditions (Non-Condensing)	**Operating —** -4 to 122°F (-20 to 50°C); 95% RH Max. **Storage —** -20 to 186°F (-29 to 86°C); 95% RH Max.			
	Audible Noise Rating	45 dBA at 39-13/32 in. (1 meter)			
	Dimensions	7.09 x 3.94 x 2.54 in. (180 x 100 x 64.5 mm)			
	Weight	2.9 lb (1.3 kg)			
Conditions	Agency Certifications	**United States/Canada –** UL 873 Listed, File E27734, CCN XAPX			
		Canada – CSA C22.2 No. 139 Certified, File LR85083, Class 3221 02 **Europe –** CE Mark -Declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC. **Australia/New Zealand –** C-Tick Mark Australia/NZ Emissions Compliant			
	Warranty	5 Years limited from time of shipment.			

Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

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DM24-70-280 Series — Submittal/Technical Data

70, 140, 210, 280 lb-in. — Non-Spring Return — Modulating — Auxiliary Switches

Technical Specifications - DM24-70, 140, 210, 280 Series Actuator					
Type	Actuator Models	DM24-70-(A)	DM24-140-(A)	DM24-210-(A)	DM24-280-(A)
		Non-Spring Return - Modulating with optional Auxiliary Switches (-A)			
	Torque	70 lb-in. (8 Nm)	140 lb-in. (16 Nm)	210 lb-in. (24 Nm)	280 lb-in. (32 Nm)
Electrical	Operating Voltage	24 VAC (20 to 30 V) at 50/60 Hz or VDC 24 V ±10%;		24 VAC (20 to 30 V) at 50/60 Hz or VDC 24 V ±10%;	
	Power Consumption	6.5 VA supply minimum		7.5 VA supply minimum	
	Input Signal	**Auxiliary Switches (-A) -** DC 0 (2) to 10 V, DC 0 (4) to 20 V, or DC 0 (4) to 20 mA			
	Input Signal Adjustments	**Factory Setting -** 0 to 10 VDC, 0 to 20 mA, CW rotation with signal increase			
		Jumper Selectable - 0 (2) to 10 VDC, 0 (4) to 20 VDC, or 0 (4) to 20 mA Action is jumper selectable Direct (CW) or Reverse (CCW) with signal increase.			
	Input Impedance	**Voltage Input -** 205,000 ohms for 0 (2) to 10 V and 410,000 ohms for 0 (4) to 20 V **Current Input -** 500 Ohms			
	Feedback Signal	0 to 10 VDC or 2 to 10 VDC for 90° (10 VDC at 1 mA) Corresponds to input signal span selection.			
	Auxiliary Switch Rating	**Auxiliary Switches (-A) -** Two Single-Pole, Double-Throw (SPDT) switches rated at 24 VAC 1.5 A inductive, 3.0 A resistive, 35 VA maximum per switch, Class 2			
	Equipment Rating	Class 2 or Safety Extra-Low Voltage (SELV)			
	Electrical Connection	Screw terminals for 22 to 14 AWG; maximum of two 18, 20, or 22 AWG per terminal		1/4 in. spade terminals with pluggable 3-terminal blocks	
Operation	Manual Override	External Push Button			
	Time Out Feature	Electronic stall detection ensures higher reliability by deactivating the actuator motor when a stall condition is detected			
	Runtime for 90° of Rotation	30 seconds at 50% rated load, 25 to 50 seconds for 0 to 70 lb·in (0 to 8 N·m)	80 seconds at 50% rated load, 70 to 115 seconds for 0 to 140 lb·in (0 to 16 N·m)	130 seconds at 50% rated load, 115 to 175 seconds for 0 to 210 lb·in (0 to 24 N·m)	140 seconds at 50% rated load, 115 to 205 seconds for 0 to 280 lb·in (0 to 32 N·m)
	Rotation Range	0 to 90° in 5-degree increments, mechanically limited to 93° Rotation range is adjusted by repositioning the output hub			
	Cycle Life	60,000 cycles at rated load			30,000 cycles at rated load
	Mechanical Connections	**Round Shafts** - 3/8 to 3/4 in. (10 to 20 mm) diameter **Square Shafts** - 3/8 to 5/8 in. (10 to 16 mm), 1 in. (25.4 mm) diameter jackshaft with M9000-154 coupler			
Environmental	Enclosure	NEMA 2 (IP42)			
	Ambient Conditions (Non-Condensing)	**Operating —** -4 to 122°F (-20 to 50°C); 95% RH Max. **Storage —** -20 to 186°F (-29 to 86°C); 95% RH Max.			
	Audible Noise Rating	45 dBA at 39-13/32 in. (1 meter)			
	Dimensions	7.09 x 3.94 x 2.54 in. (180 x 100 x 64.5 mm)			
	Weight	2.9 lb (1.3 kg)			
Conditions	Agency Certifications	**United States/Canada –** UL 873 Listed, File E27734, CCN XAPX **Canada –** CSA C22.2 No. 139 Certified, File LR85083, Class 3221 02 **Europe –** CE Mark -Declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC.			
	Warranty	5 Years limited from time of shipment.			

Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

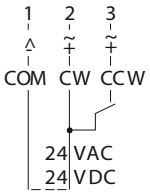
Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

Wiring

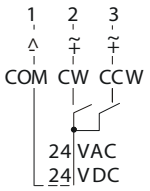
D24-70, 140, 210, 280

TERMINAL BLOCK

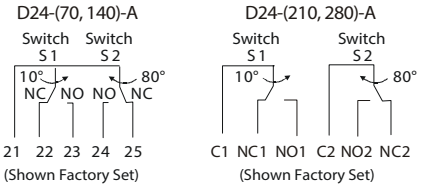
On/Off



Floating Control



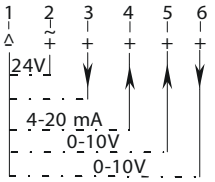
Auxiliary Switches



DM24-70, 140, 210, 280

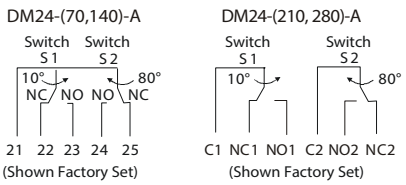
TERMINAL BLOCK

Modulating



1= Common
2= Power
3= Not Used
4= Current Input
5= Voltage Input
6= Feedback Output

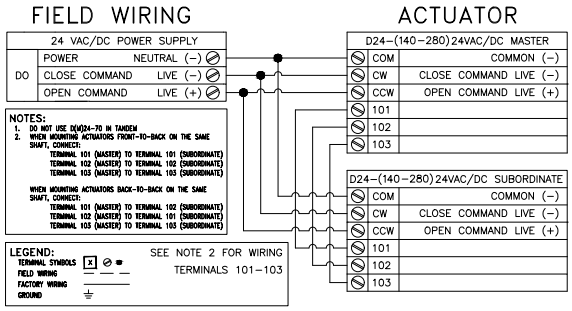
Auxiliary Switches



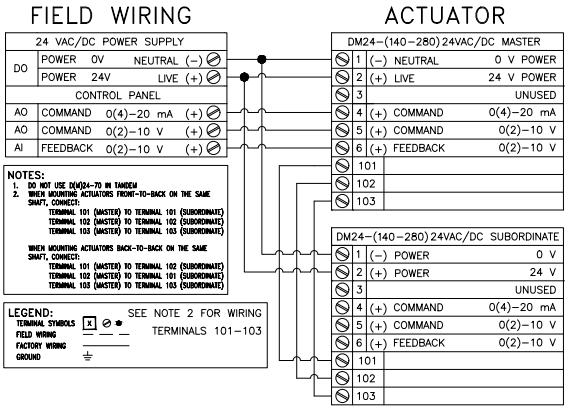
D(M)24-140, 210, 280

TANDEM WIRING - TERMINAL BLOCK

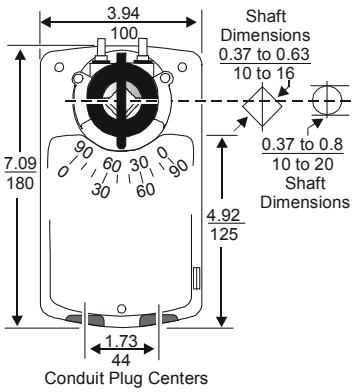
Tandem On/Off

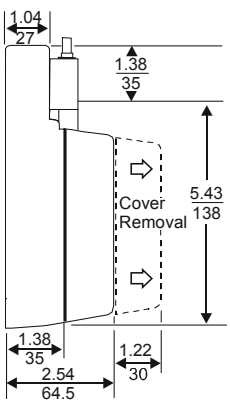


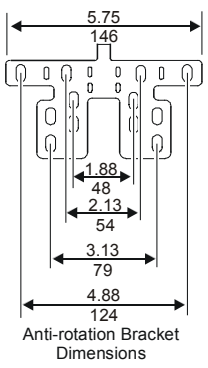
Tandem Modulating



Dimensions







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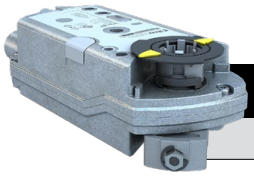
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DC(M)24-180 Series — Submittal/Technical Data

Commercial Electric Actuators — 177 in-lbs (20Nm)

Technical Specifications - DC(M)24-180 Series Actuator

Type	Actuator Models	DC24-180-T Non-Spring Return On/Off & Floating Standard Cable	DC24-180-TA Non-Spring Return On/Off & Floating Auxillary Switches (-A)	DCM24-180 Non-Spring Return Modulating Standard Cable
	Torque	177 lb-in. (20 Nm)		
Electrical	Operating Voltage	24 VAC/DC +-20%		
	Power Consumption	1.7 VA, 1.1W (0.4W/0.7VA Holding)		1.9 VA, 1.2W (0.6W/0.9VA Holding)
	Control Signal	On/Off & Floating		0(2)-10V
	Input Impedance	N/A		>100k Ohms
	Feedback Signal	N/A		0(2)-10V
	Auxillary Switch Rating	N/A	AC 6A resistive, AC 2A general purpose; DC 2A resistive	N/A
	Switch Range (Switch A)	N/A	0 to 90° with 5° Intervals (Recommended Range Usage 0 to 45°) Factory Setting 5°	N/A
	Switch Range (Switch B)	N/A	0 to 90° with 5° Intervals (Recommended Rang Usage 45 to 90°) Factory Setting 85°	N/A
	Switching Hysteresis	N/A	2°	N/A
	Equipment Rating	Class 2, in accordance with UL/CSA — Class III per EN 60730		
	Electrical Connection	3 ft. (0.9 m) Pre-cabledAWG 18 - Standard Cable		
Operation	Manual Override	Manual Operation by pushing down the Override Button when Power is Off		
	Runtime for 90° of Rotation	150 seconds		
	Rotation Range	Nominal Angle of Rotation 90°, Maximum 95° +/- 2°		
	Cycle Life	100,000 full strokes/ 5 million repositions		
	Mechanical Connections	Shaft size 1/4" to 3/4" (6.4 to 20.5 mm) dia. 1/4" to 1/2" (6.4 to 13 mm) square Minimum shaft length 3/4" (20 mm)		
Environmental	Enclosure	NEMA 2, IP54 according to EN60529		
	Ambient Conditions (Non-Condensing)	**Operating** -25 to 130°F (-32 to 55°C); 0 to 95% RH, non-condensing **Storage** -40 to 158°F (-40 to 70°C); 0 to 95% RH, non-condensing		
	Audible Noise Rating	35 dBA at 1 meter		
	Dimensions	7.56" H x 3.23" W x 2.36" D (192mm H x 82mm W x 60mm D)		
	Weight	2.4 lbs. (1 kg) (-A) Model: 2.9 lbs. (1.3 kg)		
Conditions	Agency Certifications	UL listed to UL60730-cUL listed to CAN/CSA E60730, low voltage directive 2006/95/EC, Product safety: Automatic electrical controls for household and similar use EN 60 730-2-14(Type 1), Electromagnetic compatibility (EMC) 2004/108/EC, Emissions for all models EN61000-6-3		
	Warranty	5 Years limited from time of shipment.		

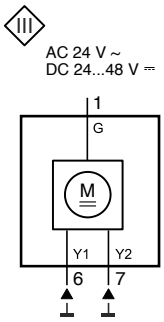
Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

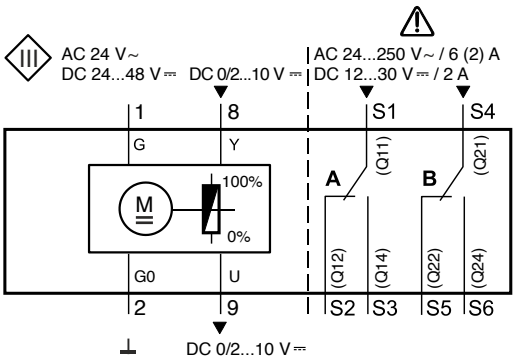
Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

Wiring

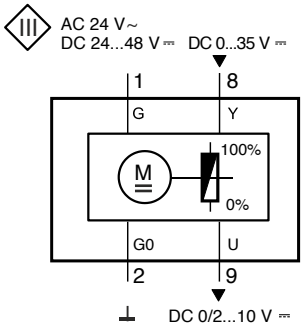
DC24-180-T
STANDARD CABLE
2-Position/Floating Control



DC24-180-TA
STANDARD CABLE
2-Position/Floating Control with Auxiliary Switches

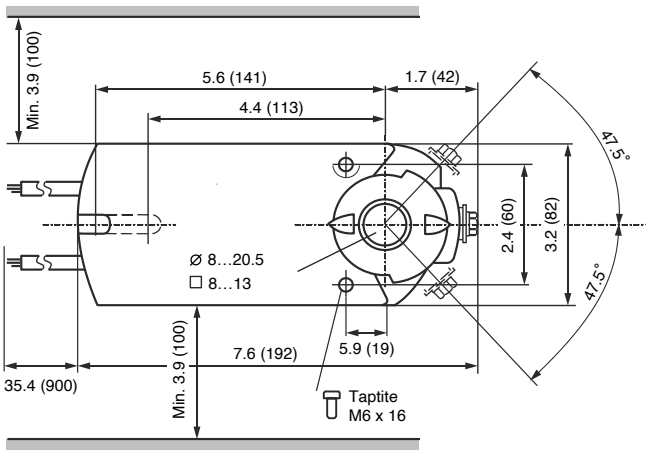


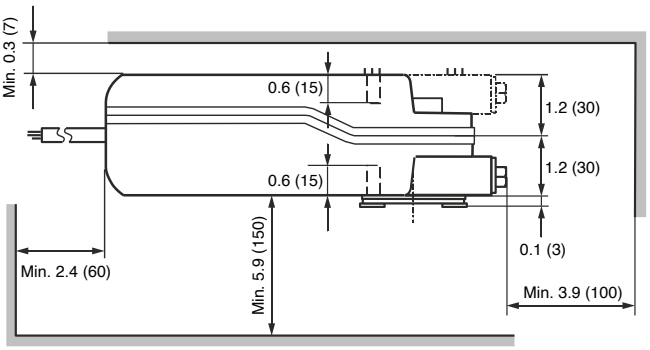
DCM24-180
STANDARD CABLE
Modulating Control



Actuator	Code	No.	Color	Abbreviation	Meaning
24 VAC Power Supply	G	1	red	RD	System potential AC 24 V ~ / DC 24...48 V ⎓
	G0	2	black	BK	System zero
	Y1	6	violet	VT	Positioning signal AC/DC 0 V, clockwise (DC24-180-T)
	Y2	7	orange	OG	Positioning signal AC/DC 0 V, counterclockwise (DC24-180-T)
	Y	8	gray	GY	Signal input (DCM24-180)
	U	9	pink	PC	Signal output (DCM24-180)
Auxiliary Switches	Q11	S1	gray/red	GY RD	Switch A input
	Q12	S2	gray/blue	GY BU	Switch A NC contact
	Q14	S3	gray/pink	GY PK	Switch A NO contact
	Q21	S4	black/red	BK RD	Switch B input
	Q22	S5	black/blue	BK BU	Switch B Normally closed contact
	Q24	S6	black/pink	BK PK	Switch B NO contact

Dimensions in. (mm)





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DM24-180 Series — Submittal/Technical Data

180 lb-in. — Non-Spring Return —On/Off, Floating & Modulating — Auxiliary Switches

Technical Specifications - DM24-180 Series Actuator			
Type	Actuator Models	DM24-180(-A)	
		Non-Spring Return On/Off, Floating Mode	Non-Spring Return Modulating Mode
	Auxiliary Switches	Optional with External Auxiliary Switch Kit (-A)	
	Torque	180 lb-in. (20 Nm)	
Electrical	Operating Voltage	AC 24 V (AC 19.2 to 28.8 V) at 50/60 Hz, 5.7 VA running 2.1 W running	
	Transformer Sizing Requirements	≥7 VA	
	Input Signal Adjustments	AC 19.2 to 28.8 V at 50/60 Hz or DC 24 V ±10%	DC 0 (2) to 10 V or 0 (4) to 20 mA with field furnished 500 ohm 1/4 W resistor Offset: DC 0 to 10 V Span: DC 2 to 10 V
	Control Impedance	4.7k Ohm	100k Ohm
	Equipment Rating	Class 2 (North America) or SELV (Europe)	
	Feedback Signal	N/A	DC 0 (2) to 10 V
	Electrical Connection	48 in. (1.2 m) halogen-free cable with 18 AWG (0.82 mm2) conductors and 1/4 in. (6 mm) ferrule ends	
	Conduit Connection	Optional 1/2 in. NPSM (13 mm) threaded conduit connectors are available with the M9300-100 Conduit Connector (purchased separately)	
Operation	Manual Override	External Push Button	
	Runtime for 90° of Rotation	90 seconds; constant for all Operating Conditions	
	Auto-Calibration	35 seconds, Runtime	
	Rotation Range	Mechanically limited 35° to 95° (±3°) in 5° increments	
	Cycle Life	100,000 Full Stroke Cycles; 2,500,000 repositions at rated running torque	
	Mechanical Connections	**Round:** 3/4 to 1-1/16 in. (19 to 27 mm) **Square:** 5/8 to 3/4 in. (16 to 19 mm)	
Environmental	Enclosure	NEMA 5/IP54	
	Ambient Conditions (Non-Condensing)	**Operating** -22 to 140°F (-30 to 60°C); 95% RH Max. **Storage** -40 to 185°F (-40 to 85°C); 95% RH Max.	
	Audible Noise Rating	<45 dBA at maximum load, at a distance of 39-13/32 in. (1 m)	
	Weight	3 lb (1.36 kg)	
Conditions	Agency Certifications	**United States –** UL Listed, CCN XAPX, File E27734; to UL 60730-1: Automatic Electrical Controls for Household and Similar Use, Part 1; and UL 60730-2-14: Part 2, Particular Requirements for Electric Actuators. **Canada –** UL Listed, CCN XAPX7, File E27734; to CAN/CSA E60730-1:02: Automatic Electrical Controls for Household and Similar Use, Part 1; and CAN/CSA-E60730-2-14, Particular Requirements for Electric Actuators. **Europe –** CE Mark—Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive and the Low Voltage Directive. IEC 60730-1: Automatic Electrical Controls for Household and Similar Use, Part 1: General Requirements and IEC 60730-2-14, Automatic Electrical Controls for Household and Similar Use; Part 2—Particular Requirements for Electric Actuators **Australia/New Zealand –** RCM Mark, Australia/NZ Emissions Compliant	
	Warranty	5 Years limited from time of shipment.	

Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

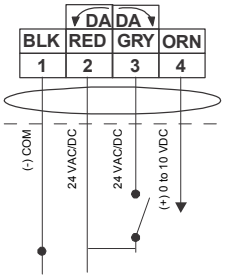
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Wiring

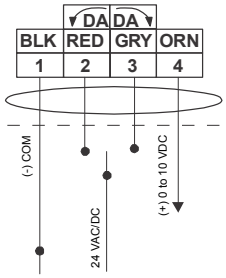
DM24-180(-A)

STANDARD CABLE

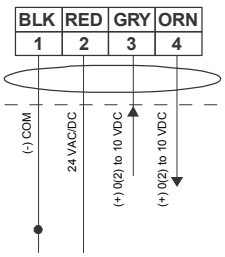
On/Off



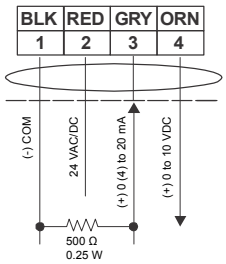
Floating



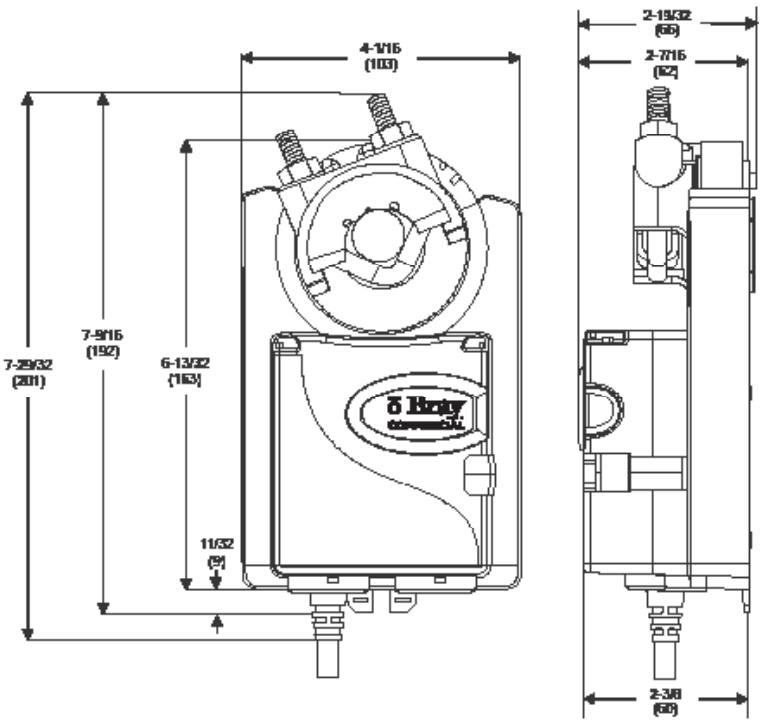
Modulating



Modulating w/ 0(4) 20mA External Resistor



Dimensions



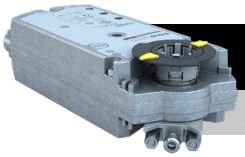
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DC(M)-310 Series — Submittal/Technical Data

310 lb-in. — Non-Spring Return —On/Off, Floating & Modulating — Auxiliary Switches

Technical Specifications - DC(M)24-310 Series Actuator			
Type	Actuator Models	**DC24-310-T(-A)**	**DCM24-310(-A)**
		Non-Spring Return - Floating, Time Out Features with optional Auxiliary Switches (-A)	Non-Spring Return - Modulating with optional Auxiliary Switches (-A)
	Torque	310 lb-in. (35 Nm)	
Electrical	**Operating Voltage**	24 VAC/DC ±20% at 50/60 Hz	
	Power Consumption	7 VA, 7W	8 VA, 8W
	Control Signal	N/A	0 to 10 VDC
	Control Impedance	N/A	100k Ohm
	Input Signal	N/A	**Y (wires 8-2)** DC 0...10 V (Max. permissible input voltage DC 35 V)
	Feedback	Contact Bray	0 to 10 VDC
	Positioning Signal	N/A	DC 0...35 V at Offset Uo = 0...5 V and Span ΔU = 2...30 V
	Feedback Signal	N/A	DC 0 to 10 VDC
	Dual Auxiliary Switch	**Standard Cable -** AC, 6 A Resistive, AC 2 A General Purpose	
	Voltage	**Standard Cable -** 24 to 250 VAC	
	Switch Range	**Switch A -** 0 to 90° with 5° Intervals (Recommended Range Usage 0 to 45°) Factory Setting 5°	
		Switch B - 0 to 90° with 5° Intervals (Recommended Range Usage 45 to 90°) Factory Setting 85°	
	Stall Protection	Yes	
	Electrical Connection	3 ft. (0.9 m) Pre-cabled - AWG 18	
	Equipment Rating	Class 2 According to UL, CSA - Class III per EN60730	
Operation	**Manual Override**	External Push Button	
	Runtime for 90° of Rotation	150 sec., constant for all operating conditions	
	Rotation Range	Nominal Angle of Rotation 90°, mechanically limited to 95° ± 2°	
	Cycle Life	Designed for 60,000 full stroke cycles	
	Mechanical Connections	**Round Shafts** - 3/8 to 1 in. (9.5 to 25.4 mm) diameter **Square Shafts** - 1/4 to 5/8 in. (6 to 18 mm) **Minimum Shaft Length** - 3/4 (20 mm)	
Environmental	**Enclosure**	IP54 as per EN 60 529	
	Ambient Conditions (Non-Condensing)	**Operating —** -25 to 130°F (-32 to 55°C); 0 to 95% RH, non-condensing **Storage —** -40 to 158°F (-40 to 70°C); 0 to 95% RH, non-condensing	
	Audible Noise Rating	<45 dBA at 1 m	
	Dimensions	(L) 11.8 x (W) 3.9 x (H) 2.9 in. (300 x 100 x 67.5 mm)	
	Weight	4.4 lb (2 kg)	
Conditions	**Agency Certifications**	UL listed to UL873-cUL certified to Canadian Standard C22.2 No. 24-93 CE conformity: Electromagnetic compatibility 2004/108/EC-Low-voltage directive 2006/95/EC	
	Warranty	5 Years limited from time of shipment.	

Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

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Wiring

KEY

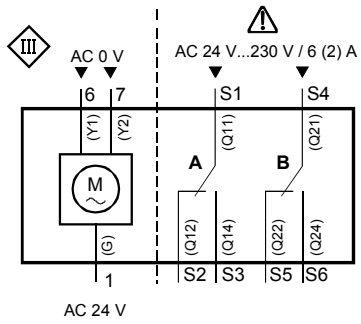
Cable			Function
No.	Code	Color	
1	G	Red (RD)	AC 24 V Supply (SP)
2	G0	Black (BK)	Neutral (SN)
6	Y1	Violet (VT)	Control Signal Clockwise
7	Y2	Orange (OG)	Control Signal Counterclockwise
8	Y	Gray (GY)	0 to 10 VDC Input Signal
9	U	Pink (PK)	Output for 0 to 10 VDC Position Indication
P1	a	White/Red (WH RD)	Feedback 0 to 100% P1 – P2
P2	b	White/Blue (WH BU)	Feedback Common
P3	c	White/Pink (WH PK)	Feedback 100 to 0% P3 – P2

Auxiliary Switch - Factory Installed			
S1	Q11	Gray/Red (GY RD)	Switch A Common
S2	Q12	Gray/Blue (GY BU)	Switch A - N.C.
S3	Q14	Gray/Pink (GY PK)	Switch A - N.O.
S4	Q21	Black/Red (BK RD)	Switch B Common
S5	Q22	Black/Blue (BK BU)	Switch B - N.C.
S6	Q24	Black/Pink (BK PK)	Switch B - N.O.

DC24-310-T(-A)

STANDARD CABLE

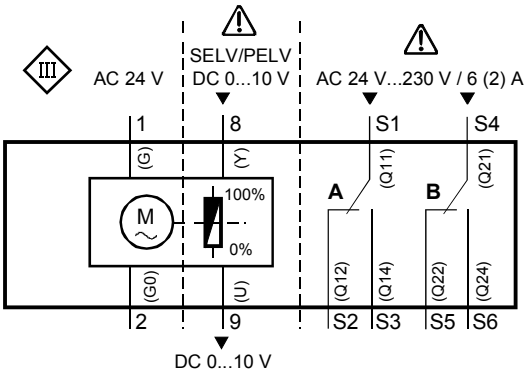
Floating Control



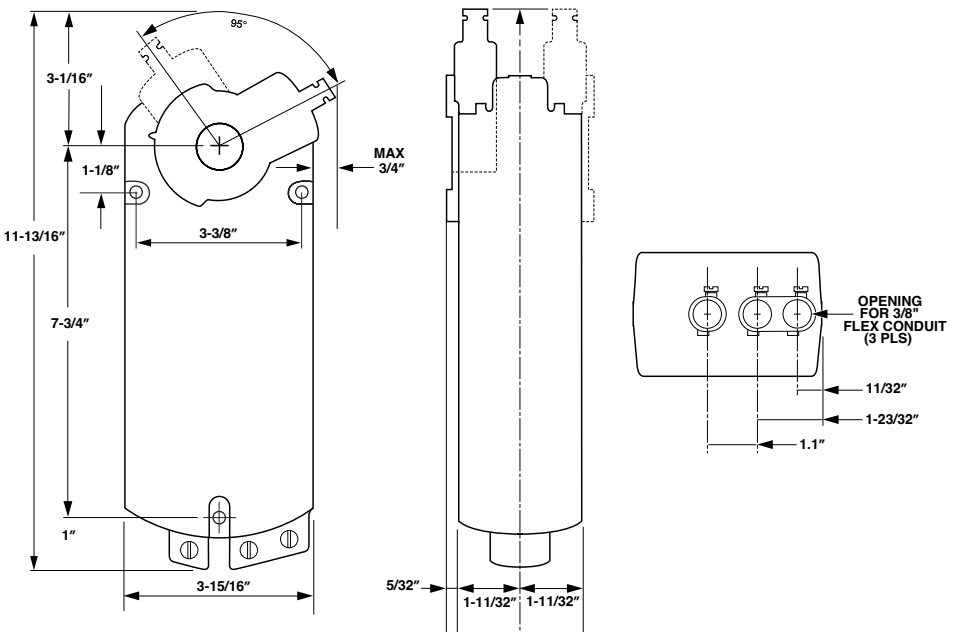
DCM24-310(-A)

STANDARD CABLE

Modulating Control



Dimensions



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DM24-310 Series — Submittal/Technical Data

310 lb-in. — Non-Spring Return —On/Off, Floating & Modulating — Auxiliary Switches

Technical Specifications - DM24-310 Series Actuator			
Type	Actuator Models	DM24-310(-A)	
		Non-Spring Return On/Off, Floating Mode	Non-Spring Return Modulating Mode
	Auxiliary Switches	Optional with External Auxiliary Switch Kit (-A)	
	Torque	310 lb-in. (35 Nm)	
Electrical	Operating Voltage	AC 24 V (AC 19.2 to 28.8 V) at 50/60 Hz, 6.1 VA running 2.1 W running	
	Transformer Sizing Requirements	≥7 VA	
	Input Signal Adjustments	AC 19.2 to 28.8 V at 50/60 Hz or DC 24 V ±10%	DC 0 (2) to 10 V or 0 (4) to 20 mA with field furnished 500 ohm 1/4 W resistor Offset: DC 0 to 10 V Span: DC 2 to 10 V
	Control Impedance	4.7k Ohm	100k Ohm
	Equipment Rating	Class 2 (North America) or SELV (Europe)	
	Feedback Signal	N/A	DC 0 (2) to 10 V
	Electrical Connection	48 in. (1.2 m) halogen-free cable with 18 AWG (0.82 mm2) conductors and 1/4 in. (6 mm) ferrule ends	
	Conduit Connection	Optional 1/2 in. NPSM (13 mm) threaded conduit connectors are available with the M9300-100 Conduit Connector (purchased separately)	
Operation	Manual Override	External Push Button	
	Runtime for 90° of Rotation	150 seconds; constant for all Operating Conditions	
	Auto-Calibration	75 seconds, Runtime	
	Rotation Range	Mechanically limited 35° to 95° (±3°) in 5° increments	
	Cycle Life	30,000 Full Stroke Cycles; 750,000 repositions at rated running torque	
	Mechanical Connections	**Round:** 3/4 to 1-1/16 in. (19 to 27 mm) **Square:** 5/8 to 3/4 in. (16 to 19 mm)	
Environmental	Enclosure	NEMA 5/IP54	
	Ambient Conditions (Non-Condensing)	**Operating** -22 to 140°F (-30 to 60°C); 95% RH Max. **Storage** -40 to 185°F (-40 to 85°C); 95% RH Max.	
	Audible Noise Rating	<45 dBA at maximum load, at a distance of 39-13/32 in. (1 m)	
	Weight	3 lb (1.36 kg)	
Conditions	Agency Certifications	**United States –** UL Listed, CCN XAPX, File E27734; to UL 60730-1: Automatic Electrical Controls for Household and Similar Use, Part 1; and UL 60730-2-14: Part 2, Particular Requirements for Electric Actuators. **Canada –** UL Listed, CCN XAPX7, File E27734; to CAN/CSA E60730-1:02: Automatic Electrical Controls for Household and Similar Use, Part 1; and CAN/CSA-E60730-2-14, Particular Requirements for Electric Actuators. **Europe –** CE Mark—Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive and the Low Voltage Directive. IEC 60730-1: Automatic Electrical Controls for Household and Similar Use, Part 1: General Requirements and IEC 60730-2-14, Automatic Electrical Controls for Household and Similar Use; Part 2—Particular Requirements for Electric Actuators **Australia/New Zealand –** RCM Mark, Australia/NZ Emissions Compliant	
	Warranty	5 Years limited from time of shipment.	

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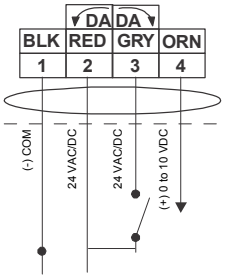
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Wiring

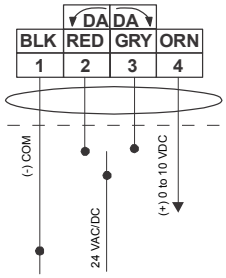
DM24-310(-A)

STANDARD CABLE

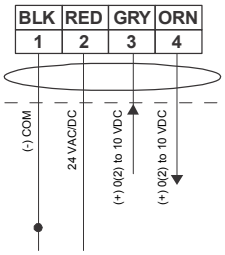
On/Off



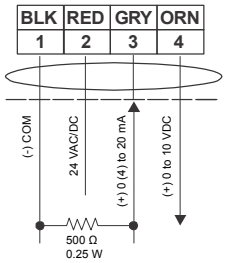
Floating



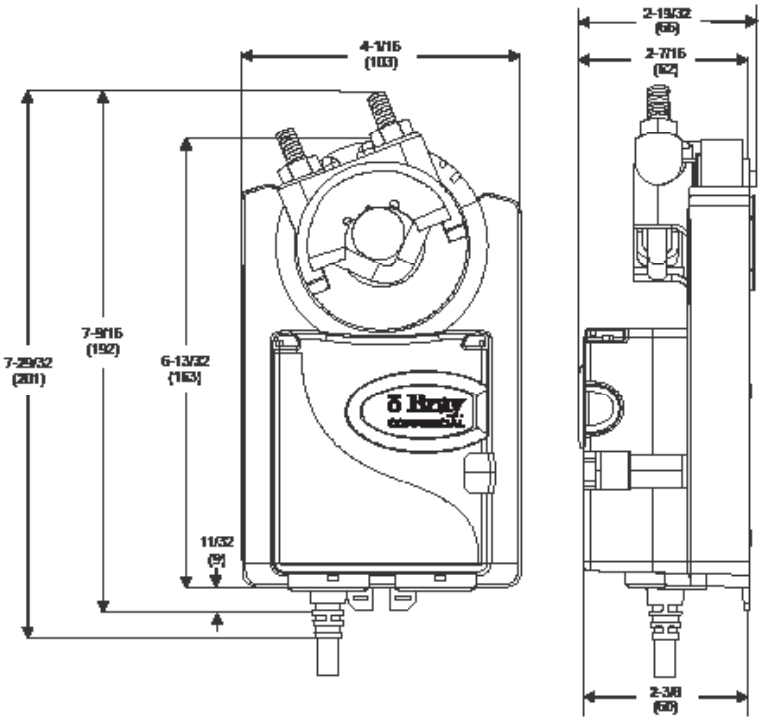
Modulating



Modulating w/ 0(4) 20mA External Resistor



Dimensions



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DC(M)S-20 Series — Submittal/Technical Data

20 lb-in. — Spring Return —On/Off & Modulating — Auxiliary Switches

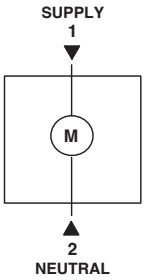
Technical Specifications - DC(M)S-20 Series Actuator							
Type	Actuator Models	DCS24-20-P	DCS24-20-AP	DCMS24-20-P	DCMS24-20-AP	DCS120-20	DCS120-20-A
		Spring Return On/Off	Spring Return On/Off w/Auxiliary Switches (-A)	Spring Return Modulating	Spring Return Modulating w/Auxiliary Switches (-A)	Spring Return On/Off	Spring Return On/Off w/Auxiliary Switches (-A)
	Torque	20 lb-in. (2 Nm)					
Electrical	Operating Voltage	24 VAC ±20%; 24 VDC ±15%				120 Vac ±15%	
	Frequency	50/60 Hz					
	Power Consumption	6.5 VA (4.5W) Running, 4 VA (2.5W) Holding		4.5 VA (3W) Running, 3.5 VA (2W) Holding		10 VA Running 7 VA Running	
	Control Input Signal	N/A	N/A	2 to 10 VDC/Inverse Acting 10 to 2 VDC		N/A	N/A
	Input Impedance	N/A	N/A	>100K ohms		N/A	N/A
	Feedback Signal	N/A	N/A	Position output signal (wires 9–2) voltage output signal 2 to 10 VDC/ Inverse Acting 10 to 2 VDC maximum output current +1 mA, -0.5 mA		N/A	N/A
	Auxiliary Switch Rating	N/A	24 to 250 VAC/24 VDC 6A resistive/2 FLA/12 LRA Fixed dual end switches AC rating	N/A	24 to 250 VAC/24 VDC 6A resistive/2 FLA/12 LRA Fixed dual end switches AC rating	N/A	24 to 250 VAC/24 VDC 6A resistive/2 FLA/12 LRA Fixed dual end switches AC rating
	Equipment Rating	Class 2, in accordance with UL/CSA Class III per IEC 60536				Double Insulation	
	Electrical Connection	Plenum Rated 18 AWG (0.75 mm²), Cable length: 3 feet (0.9 m) length				Appliance Cable	
Operation	Runtime for 90° of Rotation	Operating with motor 30 seconds Closing (on power loss) with spring return 15 seconds typical					
	Mounting	Nominal angle of rotation 90˚ and maximum angular rotation 95˚					
	Cycle Life	Designed for minimum of 60,000 full stroke cycles and a minimum of 1.5 million repositions at rated torque and temperature					
	Mechanical Connections	**Round Shafts** - 3/8 to 1/2-inch (8 to 13 mm) diameter **Square Shafts** - 1/4 to 7/16-inch (6 to 11 mm) **Minimum shaft length** - 3/4-inch (20 mm)					
Environmental	Enclosure	NEMA 1 (IP40)					
	Material	Plenum-rated rugged plastic					
	Gear Lubrication	Silicone-free					
	Ambient Conditions (Non-Condensing)	**Operating —** -25°F to 130°F (-32°C to 55°C). **Storage —** -40°F to 158°F (-40°C to 70°C), 95% RH Max.					
	Audible Noise Rating	45 dBA at 39-13/32 in. (1 meter)					
	Dimensions	4-23/32" L × 2-22/32" W × 2-15/32" D (120 mm L × 69 mm W × 63 mm D)				5-1/2" L × 2-22/32" W × 2-15/32" D (138.5 mm L × 69 mm W × 63 mm D)	
	Weight	1.06 lbs (0.48 kg)					
Conditions	Agency Certifications	UL listed per UL873 cUL to CSA C22.2 No. 24-93 C-Tick conformity per AS/NZS3548 NOTE: These devices were approved for installation in plenum areas by Underwriters Laboratories, Inc. (UL) per UL 1995.				EMC and Low Voltage Directives	
	Warranty	5 Years limited from time of shipment.					

Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

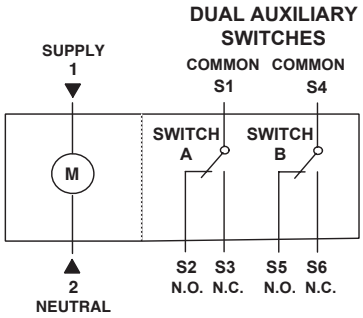
To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

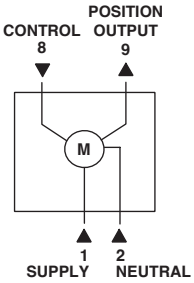
Wiring



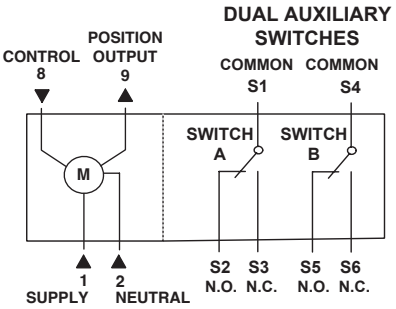
DCS24-20-P (24VAC/DC)
PLENUM CABLE
ON/OFF



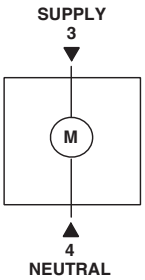
DCS24-20-AP (24VAC/DC)
PLENUM CABLE
ON/OFF W/AUX. SWITCHES



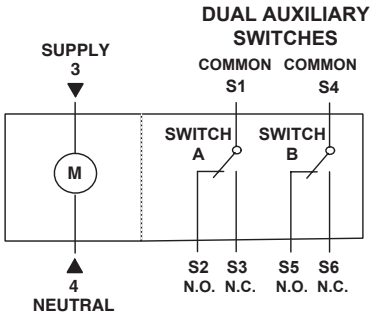
DCMS24-20-P (24VAC/DC)
PLENUM CABLE
MODULATING



DCMS24-20-AP (24VAC/DC)
PLENUM CABLE
MODULATING W/AUX. SWITCHES

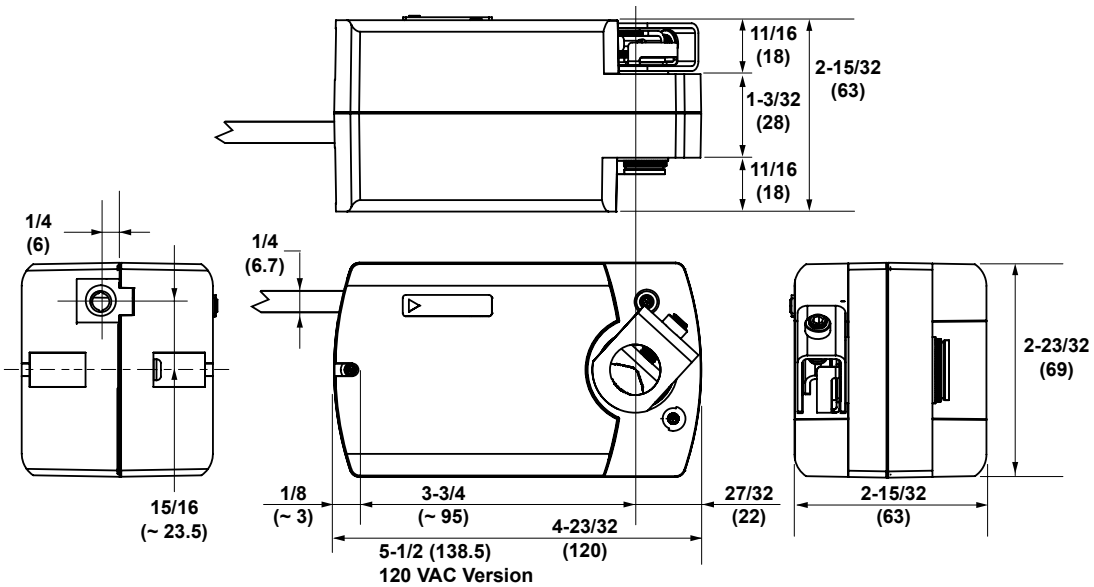


DCS120-20 (120VA)
STANDARD CABLE
ON/OFF



DCS120-20 (120VA)
STANDARD CABLE
ON/OFF W/AUX. SWITCHES

Dimensions



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D(M)S-27 Series — Submittal/Technical Data

27 lb-in. — Spring Return —On/Off, Floating & Modulating — Auxiliary Switches

Technical Specifications - D(M)S-27 Series Actuator					
Type	Actuator Models	**DS24-27-(A)**	**DS24-27-T**	**DMS24-27-(A)**	**DSU20-27-(A)**
		Spring Return On/Off with optional Auxiliary Switches (-A)	Spring Return On/Off & Floating	Spring Return Modulating with optional Auxiliary Switches (-A)	Spring Return On/Off with optional Auxiliary Switches (-A)
	Torque	27 lb-in. (3 Nm)			
Electrical	Operating Voltage	24 VAC 19.2 to 28.8 V) at 50/60 Hz 24 VDC (21.6 to 28.8 V)			AC 100 to 240 V (85 to 264 V) at 50/60 Hz:
	Power Consumption	VAC - 5 VA Running, 1.6 VA Holding	VAC - 4.7 VA Running, 2.7 VA Holding		0.06 A Running, 0.02 A Holding
		VDC - 2.8 W Running, 0.8 W Holding	VDC - 1.8 W Running, 1 W Holding		
	Min. Transformer Size	6 VA per actuator			N/A
	Input Signal Adjustments	N/A	AC 19.2 to 28.8 V at 50/60 Hz or DC 24 V +20%/-10% Class 2 or SELV. Minimum Pulse Width: 500 m sec.	**Factory Setting -** DC 0 to 10 V, CW Rotation with Signal Increase Selectable DC 0 (2) to 10 V or 0 (4) to 20 mA with Field-Furnished 500 ohm 0.25 W Min. Resistor **Switch Selectable -** Direct or Reverse Action with Signal Increase	N/A
	Control Input Impedance	N/A	4,700 Ohms	100k Ohms, Current Input: 500 Ohms with Field Furnished 500 Ohm Resistor	N/A
	Feedback Signal	N/A		DC 0 (2) to 10 V for Desired Rotation Range up to 95°. Corresponds to Rotation Limits, 0.5 mA at 10 V Maximum	N/A
	Auxiliary Switch Rating	(-A) Models) One Single -Pole, Double-Throw (SPDT), double-insulated switch with silver contacts: AC 24 V, 50 VA pilot duty AC 120 V, 5.8 A Resistive, 1/4 hp, 275 VA pilot duty AC 240 V, 5.0 A Resistive, 1/4 hp, 275 VA pilot duty	N/A	(-A) Models) One Single -Pole, Double-Throw (SPDT), double-insulated switch with silver contacts: AC 24 V, 50 VA pilot duty AC 120 V, 5.8 A Resistive, 1/4 hp, 275 VA pilot duty AC 240 V, 5.0 A Resistive, 1/4 hp, 275 VA pilot duty	(-A) Models) One Single -Pole, Double-Throw (SPDT), Double-Insulated Switch with Silver Contacts: AC 24 V, 50 VA Pilot Duty AC 120 V, 5.8 A Resistive, 1/4 hp, 275 VA Pilot Duty AC 240 V, 5.0 A Resistive, 1/4 hp, 275 VA Pilot Duty
	Equipment Rating	Class 2 or Safety Extra-Low Voltage (SELV)			N/A
	Electrical Connection	48 in. UL 758 Type AWM Halogen-Free Cable with 18 AWG (0.85 mm²) Conductors & 0.25 in. (6 mm) Ferrule Ends	**Without Aux Switches** 120 in. UL 444 Type CMP Plenum Rated Cable w/ 19 AWG (0.75 mm²) Conductors & 0.25 in. (6 mm) Ferrule Ends **With Aux Switches** 48 in. UL 758 Type AWM Halogen-Free Cable w/ 18 AWG (0.85 mm²) Conductors & 0.25 in. (6 mm) Ferrule Ends		48 in. UL 758 Type AWM Halogen-Free Cable with 18 AWG (0.85 mm²) Conductors & 0.25 in. (6 mm) Ferrule Ends
	Conduit Connections	Integral 1/2 in. (13 mm) Threaded Conduit Connector(s)			

Technical Specifications - D(M)S-27 Series Actuator - Continued					
Type	Actuator Models	DS24-27-(A)	DS24-27-T	DMS24-27-(A)	DSU20-27-(A)
		Spring Return On/Off with optional Auxiliary Switches (-A)	Spring Return On/Off & Floating	Spring Return Modulating with optional Auxiliary Switches (-A)	Spring Return On/Off with optional Auxiliary Switches (-A)
Operation	Spring Return	Direction is Selectable with Mounting Position of Actuator: Actuator Side A is away from damper or valve: CCW Spring Return Actuator Side B is away from damper or valve: CW Spring Return			
	Rotation Range	Maximum Full Stroke: 95° - (Adjustable Stop: 35 to 95° Maximum Position (Modulating Only))			
	Electric Stall Detection	Protects from overload at all angles of rotation			
	Runtime for 90° of Rotation	Power On (Running) 53 to 71 Seconds for 0 to 27 lb·in. (3 N·m) Load, at Room Temperature 60 Seconds Nominal at Full Rated Load (0.25 rpm) Power Off (Returning) 19 to 23 Seconds for 0 to 27 lb·in. (3 N·m) Load, at Room Temperature 22 Seconds Nominal at Full Rated Load 28 Seconds Maximum with 27 lb·in. (3 N·m) Load at -22°F (-30°C))	Power On (Running) 150 Seconds Constant for 0 to 27 lb·in. (3 N·m) Load, at All Operating Conditions Power Off (Returning) 12 to 17 Seconds for 0 to 27 lb·in. (3 N·m) Load, at Room Temperature 16 Seconds Nominal at Full Rated Load 22 Seconds Maximum with 27 lb·in. (3 N·m) Load at -22°F (-30°C)		Power On (Running) 24 to 28 Seconds for 0 to 27 lb·in. (3 N·m) Load, at Room Temperature 27 Seconds Nominal at Full Rated Load (0.5 rpm) Power Off (Returning) 19 to 23 Seconds for 0 to 27 lb·in. (3 N·m) Load, at Room Temperature 22 Seconds Nominal at Full Rated Load 28 Seconds Maximum with 27 lb·in. (3 N·m) Load at -22°F (-30°C)
	Cycle Life	60,000 Full Stroke Cycles with 27 lb·in. (3 N·m) Load, 1,500,000 Repositions with 27 lb·in. (3 N·m) Load			
	Mechanical Connections	**Round Shafts** - 1/4 in. to 1/2 in. (6 to 12 mm) **Square Shafts** - 1/4 in. to 5/16 in. (6 to 8 mm)			
Environmental	Enclosure	NEMA 2 (IP54) for all mounting orientations			
	Ambient Conditions (Non-Condensing)	**Operating —** -22 to 140°F (-30 to 60°C); 90% RH Maximum, Noncondensing **Storage —** -40 to 185°F (-40 to 85°C); 95% RH Maximum, Noncondensing			
	Audible Noise Rating	**Running —** <36 dBA at 27 lb·in. (3 N·m) Load, at a Distance of 39-13/32 in. (1 m) **Holding —** <20 dBA at a Distance of 39-13/32 in. (1 m) **Returning —** <51 dBA at 27 lb·in. (3 N·m) Load, at a Distance of 39-13/32 in. (1 m)	**Running —** <28 dBA at 27 lb·in. (3 N·m) Load, at a Distance of 39-13/32 in. (1 m) **Holding —** <20 dBA at a Distance of 39-13/32 in. (1 m) **Returning —** <56 dBA at 27 lb·in. (3 N·m) Load, at a Distance of 39-13/32 in. (1 m)		**Running —** <45 dBA at 27 lb·in. (3 N·m) Load, at a Distance of 39-13/32 in. (1 m) **Holding —** <20 dBA at a Distance of 39-13/32 in. (1 m) **Returning —** <51 dBA at 27 lb·in. (3 N·m) Load, at a Distance of 39-13/32 in. (1 m)
	Dimensions	6.38 in. x 3.23 in. x 2.26 in. (162 mm x 82 mm x 57.5 mm)			
	Weight	2.0 lb. (2.4 lb w/ Aux. Switches)			
Conditions	Agency Certifications	UL Listed, CCN XAPX, File E27734; to UL 60730-1A: 2003-08, Ed. 3.1, Automatic Electrical Controls for Household and Similar Use; and UL 60730-2-14: Ed. 1, Part 2, Particular Requirements for Electric Actuators. UL Listed, CCN XAPX7, File E27734; to UL 60730-1:02-CAN/CSA: July 2002, 3rd Ed., Automatic Electrical Controls for Household and Similar Use; and CSA C22.2 No. 24-93 Temperature Indicating and Regulating Equipment CE Mark – This product is in compliance with the essential requirements and other rele nt provisions of the EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC. C-Tick Mark, Australia/NZ Emissions Compliant			
	Warranty	5 Years limited from time of shipment.			

Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

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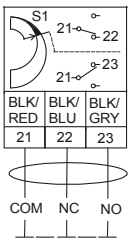
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Wiring

-(A)

AUXILIARY SWITCH WIRING

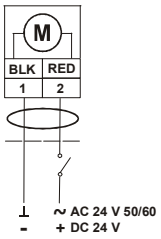
(-A) Auxiliary Switches



DS24-27-(A)

CABLE

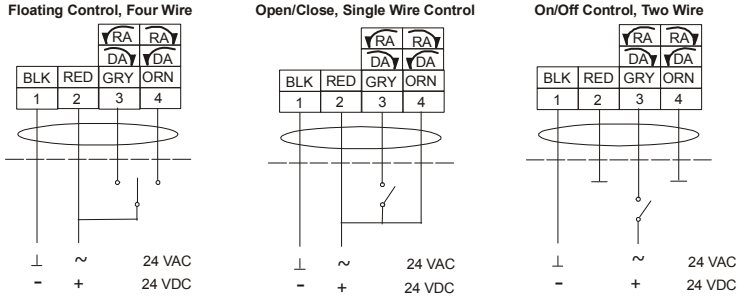
On/Off



DS24-27-T

CABLE

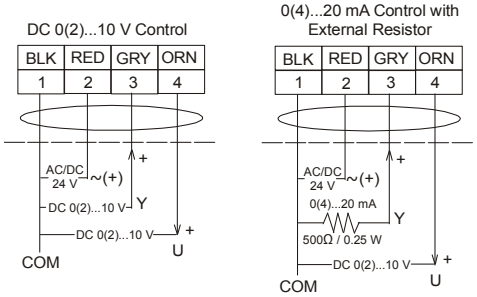
On/Off and Floating



DMS24-27-(A)

CABLE

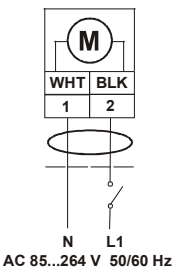
Modulating



DSU20-27-(A)

CABLE

On/Off



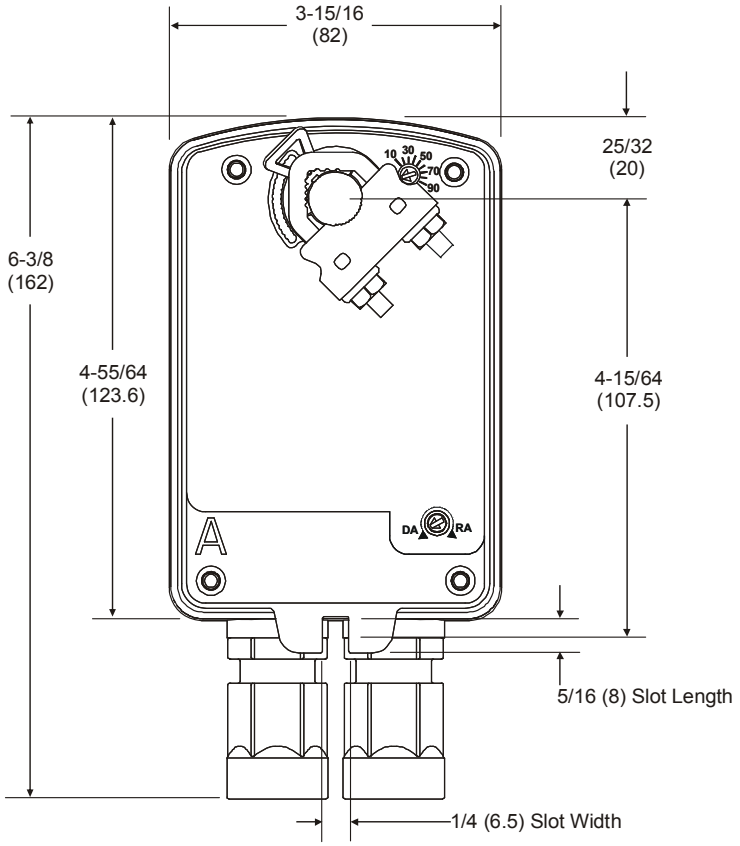
Important - Do not install multiple DS-27 Series actuators connected to the same mechanical load. Master-Slave application of DS-27 Series Actuators requires that each actuator be connected to independent loads.

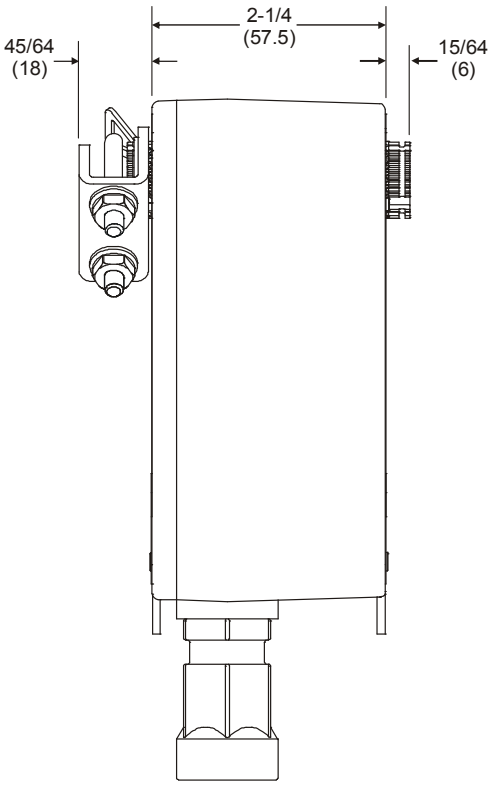
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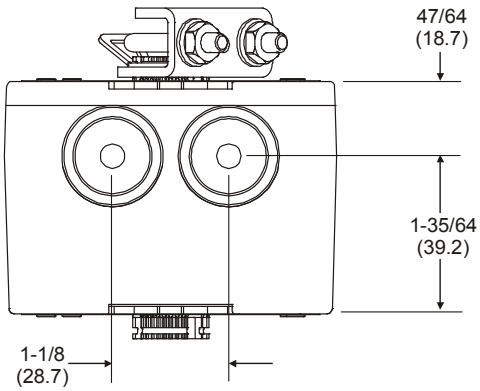
To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

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Dimensions



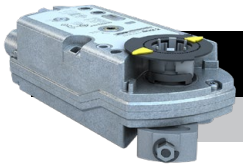




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DC(M)S-62 Series — Submittal/Technical Data

62 lb-in. — Spring Return — On/Off & Modulating — Auxiliary Switches

Technical Specifications - DC(M)S-62 Series Actuator				
Type	Actuator Models	**DCS24-62-P** **DCS24-62-AP**	**DCMS24-62-P** **DCMS24-62-A**	**DCS120-62** **DCS120-62-A**
		Spring Return On/Off Plenum Cable **(-P)** Plenum Cable & Auxiliary Switches **(-AP)**	Spring Return Modulating Plenum Cable **(-P)** Auxiliary Switches **(-A)**	Spring Return On/Off Standard Cable Only Auxiliary Switches **(-A)**
	Torque	62 lb-in. (7 Nm)		
Electrical	Operating Voltage	24 VAC ±20% 24 VDC ±15% at 50/60 Hz		120 VAC ±10% at 50/60 Hz
	Power Consumption	VAC - 5 VA Running, 3.5 VA Holding VDC - 4 W Running, 3 W Holding		≤7 VA/5W
	Control Input Signal	N/A	0 to 10 VDC (max. 35 VDC)	N/A
	Control Input Impedance	N/A	>100k Ohms	N/A
	Feedback Signal	N/A	Voltage output signal 0 to 10 VDC; Maximum output current +1 mA, -0.5 mA	N/A
	Auxiliary Switch Rating (-A Models Only)	**(-A) Models Only** Control signal adjustment - Offset (start point) Between 0 to 5 VDC; Span Between 2 to 30 VDC AC Rating (standard cable) 24 to 250 VAC, AC 6A resistive, AC 2A general purpose DC Rating (Standard/Plenum cable) 12 to 30 VDC, DC 2A		
	Switch Range (-A Models Only)	**(-A) Models Only** **Switch A -** 0° to 90° with 5° intervals; Recommended range usage 0° to 45°; Factory setting 5° **Switch B -** 0° to 90° with 5° intervals; Recommended range usage 45° to 90°; Factory setting 85°		
	Switching Hysteresis (-A Models Only)	**(-A) Models Only** 2°		
	Equipment Rating	Class 2, in accordance with UL/CSA, Class III per EN 60730		N/A
	Electrical Connection	**(-P or -AP) Models Only -** 36 in. (.9 m) Plenum Cable with 18 AWG (0.75 mm2) Wire Leads **(-A) Models Only -** 36 in. (.9 m) Standard Cable with 18 AWG (0.75 mm2) Wire Leads		
	Conduit Connections	Integral Connectors for 1/2 in. NPT		
Operation	Manual Override	3mm Hex Wrench		
	Spring Return	Direction is Selectable with Mounting Position of Actuator		
	Rotation Range	Nominal angle of rotation 90°; Maximum angular rotation 95°		
	Runtime for 90° of Rotation	Power On (Running) 90 Seconds for 62 lb-in (7 Nm) at (60 seconds max. at -25°F (-32°C)) Power Off (Returning) 15 Seconds Typical for 62 lb-in (7 Nm) at (60 seconds max. at -25°F (-32°C))		
	Cycle Life	60,000 Full stroke cycles (1,500,000 repositions)		
	Mechanical Connections	**Round Shafts** - 1/4 to 3/4-inch (6.4 to 20.5 mm) **Square Shafts** - 1/4 to 1/2-inch (6.4 to 13 mm)		
Environmental	Enclosure	NEMA 1 (IP54) limited mounting orientations		
	Ambient Conditions (Non-Condensing)	**Operating —** -25°F to 130°F (-32°C to 55°C); 95% RH Maximum, Noncondensing **Storage —** -40°F to 158°F (-40°C to 70°C); 95% RH Maximum, Noncondensing		
	Audible Noise Rating	40 dBA		
	Dimensions	8-3/8" (L) x 3-1/4" (W) x 2-2/3" (H)		
	Weight	2.9 lb (1.3 kg)		
Conditions	Agency Certifications	UL listed to UL60730 (to replace UL873) cUL certified to Canadian Standard C22.2 No. 24-93 Low voltage directive (LVD) 2006/95/EC - EN 60 730-2-14 (Type 1)		UL listed to UL60730 (to replace UL873) cUL certified to Canadian Standard C22.2 No. 24-93
	Warranty	5 Years limited from time of shipment.		

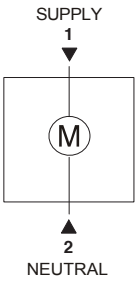
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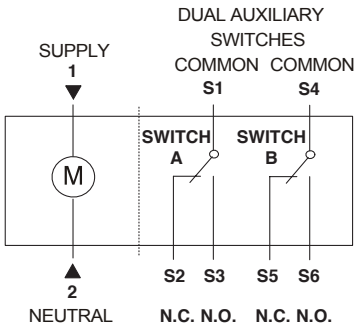
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Wiring

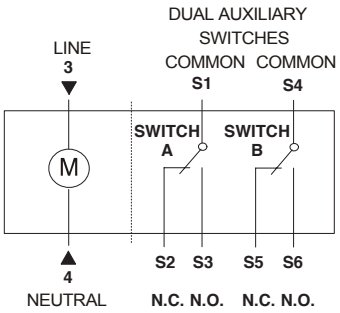
DCS24-62-(P)
CABLE
On/Off



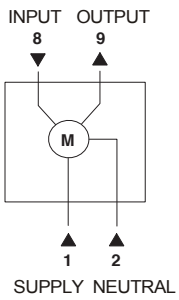
DCS24-62-(AP)
CABLE
On/Off with AUX Switches



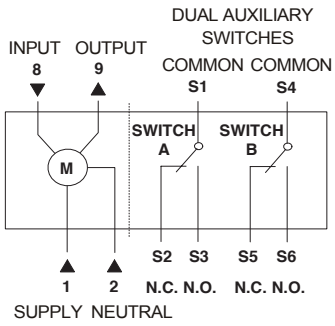
DCS120-62-(A)
CABLE
120 V On/Off with AUX Switches



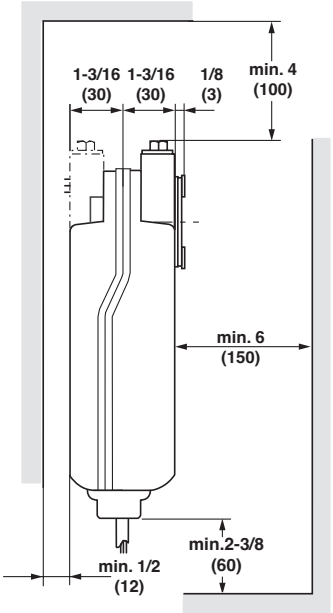
DCMS24-62-(P)
CABLE
Modulating

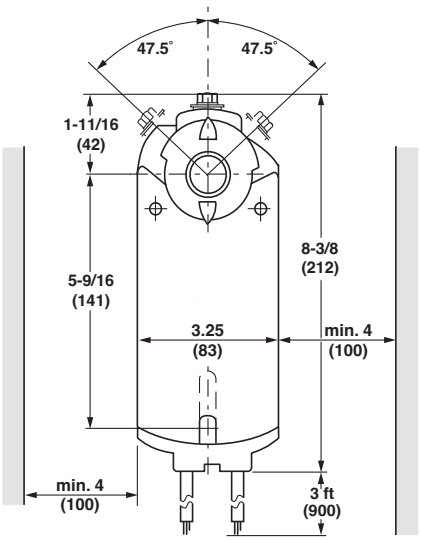


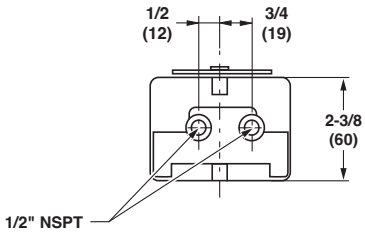
DCMS24-62-(A)
CABLE
Modulating with AUX Switches



Dimensions







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D(M)S-70 Series — Submittal/Technical Data

70 lb-in. — Spring Return —On/Off, Floating & Modulating — Auxiliary Switches

Technical Specifications - D(M)S-70 Series Actuator					
Type	Actuator Models	DS24-70-(A)	DS24-70-T-(A)	DMS24-70-(A)	DS120-70-(A)
		Spring Return On/Off with optional Auxiliary Switches (-A)	Spring Return On/Off & Floating with optional Auxiliary Switches (-A)	Spring Return Modulating with optional Auxiliary Switches (-A)	Spring Return On/Off with optional Auxiliary Switches (-A)
	Torque	70 lb-in. (8 Nm)			
Electrical	Operating Voltage	24 VAC (18 to 30 V) at 50/60 Hz 24 VDC (21.6 to 28.8 V)	24 VAC (19.2 to 28.8 V) at 50/60 Hz 24 VDC (21.6 to 28.8 V)		AC 120 V (102 to 132 V) at 60 Hz
	Power Consumption	VAC - 6.1 VA Running, 1.2 VA Holding	VAC - 7.9 VA Running, 5.5 VA Holding		0.05 A Running, 0.03 A Holding
		VDC - 3.5 W Running, 0.5 W Holding	VDC - 3.5 W Running, 1.9 W Holding		
	Input Signal	N/A	N/A	0(2) to 10 VDC 0(4) to 20 mA (with 500-ohm Resistor)	N/A
	Min. Transformer Size	7 VA per Actuator	8 VA per Actuator		N/A
	Control Input Impedance	N/A	3000 Ohms	100k Ohms, Current Input: 500 Ohms with Field Furnished 500 Ohm Resistor	N/A
	Feedback Signal	N/A		DC 0 (2) to 10 V for Desired Rotation Range up to 95°. Corresponds to Rotation Limits, 0.5 mA at 10 V Maximum	N/A
	Auxiliary Switch Rating	(-A) Models) Two Single-Pole, Double-Throw (SPDT), Double-Insulated Switches with Gold over Silver Contacts: AC 24 V, 50 VA Pilot Duty			(-A) Models) Two Single-Pole, Double-Throw (SPDT), Double-Insulated Switches with Gold over Silver Contacts: AC 120 V, 5.8 A Resistive, 1/4 hp, 275 VA Pilot Duty
	Equipment Rating	Class 2 or Safety Extra-Low Voltage (SELV)			N/A
	Electrical Connection	48 in. UL 758 Type AWM Halogen-Free Cable w/ 18 AWG (0.85 mm²) Conductors & 0.25 in. (6 mm) Ferrule Ends			
	Conduit Connections	Integral Connectors for 3/8 in. (10 mm) Flexible Metal Conduit			
Operation	Manual Override	Manual Override Crank			
	Spring Return	Direction is Selectable with Mounting Position of Actuator: Actuator Side A is away from damper or valve: CCW Spring Return Actuator Side B is away from damper or valve: CW Spring Return			
	Rotation Range	Maximum Full Stroke: 95° - (Adjustable Stop: 35 to 95° Maximum Position (Modulating Only))			
	Electric Stall Detection	Protects from overload at all angles of rotation			

Technical Specifications - D(M)S-70 Series Actuator - Continued					
Type	Actuator Models	DS24-70-(A)	DS24-70-T-(A)	DMS24-70-(A)	DS120-70-(A)
		Spring Return On/Off with optional Auxiliary Switches (-A)	Spring Return On/Off & Floating with optional Auxiliary Switches (-A)	Spring Return Modulating with optional Auxiliary Switches (-A)	Spring Return On/Off with optional Auxiliary Switches (-A)
Operation	Runtime for 90° of Rotation	Power On (Running) 55 to 71 Seconds for 0 to 70 lb·in (8 N·m) Load, at All Operating Conditions 60 Seconds Nominal at Full Rated Load (0.25 rpm) Power Off (Spring Returning) 13 to 26 Seconds for 0 to 70 lb·in (8 N·m) Load, at Room Temperature 21 Seconds Nominal at Full Rated Load, 39 Seconds Maximum with 70 lb·in (8 N·m) Load at -4°F (-20°C) 108 Seconds Maximum with 53 lb·in (6 N·m) Load at -40°F (-40°C)	Power On (Running) 150 Seconds Constant for 0 to 70 lb·in (8 N·m) Load, At All Operating Conditions Power Off (Spring Running) 17 to 25 Seconds for 0 to 70 lb·in (8 N·m) Load, at Room Temperature 22 Seconds Nominal at Full Rated Load, 94 Seconds Maximum with 70 lb·in (8 N·m) Load, at -40°F (-40°C)		Power On (Running) 55 to 71 Seconds for 0 to 70 lb·in (8 N·m) Load, at All Operating Conditions 60 Seconds Nominal at Full Rated Load (0.25 rpm) Power Off (Spring Returning) 13 to 26 Seconds for 0 to 70 lb·in (8 N·m) Load, at Room Temperature 21 Seconds Nominal at Full Rated Load, 39 Seconds Maximum with 70 lb·in (8 N·m) Load at -4°F (-20°C) 108 Seconds Maximum with 53 lb·in (6 N·m) Load at -40°F (-40°C)
	Cycle Life	60,000 Full Stroke Cycles with 70 lb·in. (8 N·m) Load, 1,500,000 Repositions with 70 lb·in. (8 N·m) Load			
	Mechanical Connections	**Round Shafts** - 5/16 to 5/8 in. (8 to 16 mm) **Square Shafts** - 1/4 to 1/2 in. (6 to 12 mm)			
Environmental	Enclosure	NEMA 2 (IP54) for all mounting orientations			N/A
	Ambient Conditions (Non-Condensing)	**Operating —** -40° to 140°F (-40° to 60°C); 90% RH Maximum, Non-condensing **Storage —** -40° to 185°F (-40° to 85°C); 95% RH Maximum, Non-condensing			
	Audible Noise Rating	**Running —** < 47 dBA at 70 lb·in (8 N·m) Load, at a Distance of 39-13/32 in. (1 m) **Holding —** < 20 dBA at a Distance of 39-13/32 in. (1 m) **Returning —** <52 dBA at 70 lb·in. (8 N·m) Load - (All at a Distance of 39-13/32 in. (1 m))	**Running —** 35 dBA at 70 lb·in (8 N·m) Load, at a Distance of 39-13/32 in. (1 m) **Holding —** < 20 dBA at a Distance of 39-13/32 in. (1 m) **Returning —** <52 dBA at 70 lb·in. (8 N·m) Load - (All at a Distance of 39-13/32 in. (1 m))		**Running —** < 47 dBA at 70 lb·in (8 N·m) Load, at a Distance of 39-13/32 in. (1 m) **Holding —** < 20 dBA at a Distance of 39-13/32 in. (1 m) **Returning —** <52 dBA at 70 lb·in. (8 N·m) Load - (All at a Distance of 39-13/32 in. (1 m))
	Dimensions	6.33" (L) x 3.90" (W) x 2.26" (H)			
	Weight	3.5 lb. (3.9 lb w/ Aux. Switches)			4.2 lb.
Conditions	Agency Certifications	UL Listed, CCN XAPX, File E27734; to UL 60730-1A: 2003-08, Ed. 3.1, Automatic Electrical Controls for Household and Similar Use; and UL 60730-2-14: Ed. 1, Part 2, Particular Requirements for Electric Actuators. UL Listed, CCN XAPX7, File E27734; to UL 60730-1:02-CAN/CSA: July 2002, 3rd Ed., Automatic Electrical Controls for Household and Similar Use; and CSA C22.2 No. 24-93 Temperature Indicating and Regulating Equipment CE Mark – This product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC. RCM Mark, Australia/NZ Emissions Compliant.			
	Warranty	5 Years limited from time of shipment.			

IMPORTANT: Do not install multiple DMS series actuators connected to the same mechanical load. Master-slave application of DMS or VAMS series actuators requires that each actuator be connected to independent loads.

Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

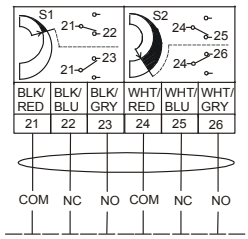
Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

Wiring

-(A)

AUXILIARY SWITCH WIRING

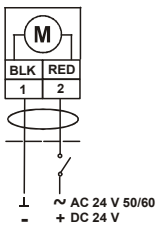
(-A) Auxiliary Switches



DS24-70-(A)

STANDARD CABLE

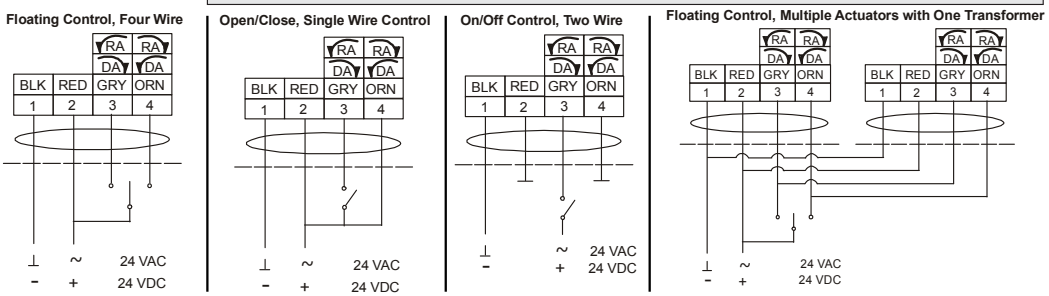
On/Off



DS24-70-T(A)

STANDARD CABLE

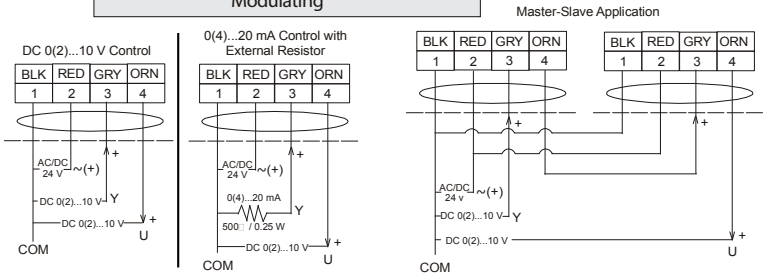
On/Off and Floating



DMS24-70-(A)

STANDARD CABLE

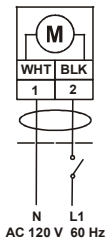
Modulating



DS120-70-(A)

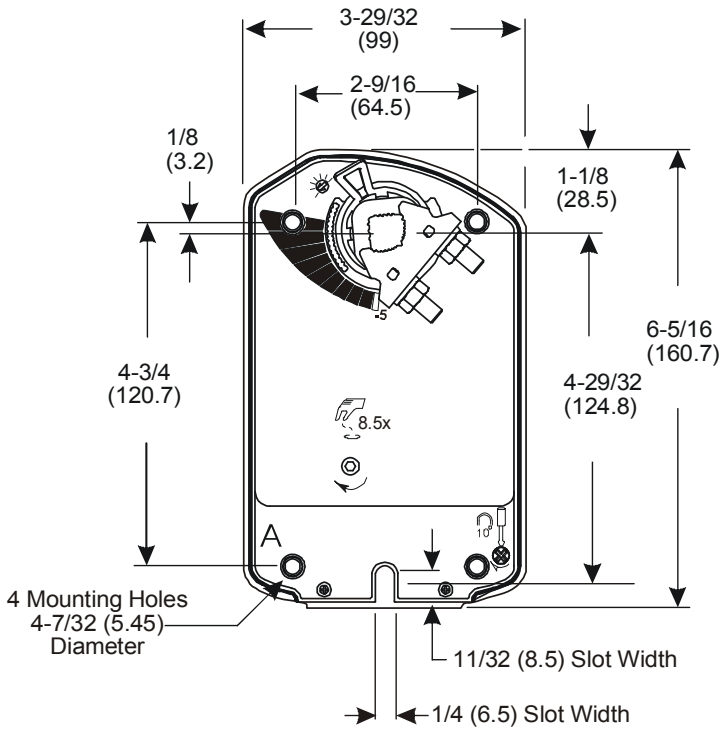
STANDARD CABLE

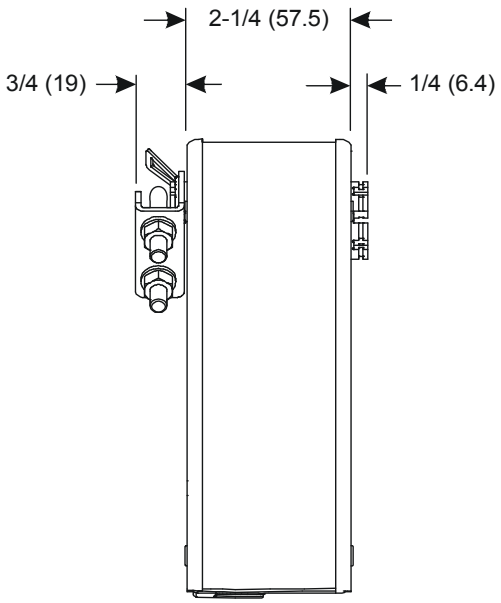
On/Off

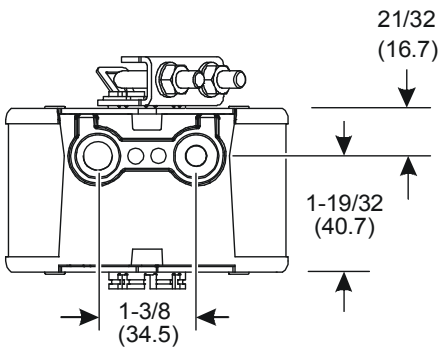


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Dimensions


3-29/32
(99)
2-9/16
(64.5)
1/8
(3.2)
1-1/8
(28.5)
6-5/16
(160.7)
4-3/4
(120.7)
4-29/32
(124.8)
8.5x
A
4 Mounting Holes
4-7/32 (5.45)
Diameter
11/32 (8.5) Slot Width
1/4 (6.5) Slot Width


2-1/4 (57.5)
3/4 (19)
1/4 (6.4)


21/32
(16.7)
1-19/32
(40.7)
1-3/8
(34.5)

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DC(M)S-140 Series — Submittal/Technical Data

160 lb-in. — Spring Return —On/Off, Floating & Modulating — Auxiliary Switches

Technical Specifications - DC(M)S-140 Series Actuator				
Type	Actuator Models	DCS24-140-(A)	DCMS24-140-(A)	DCS120-140-(A)
		Spring Return On/Off Opt. Auxiliary Switches **(-A)**	Spring Return Modulating Opt. Auxiliary Switches **(-A)**	Spring Return On/Off Opt. Auxiliary Switches **(-A)**
	Torque	160 lb-in. (18 Nm)		
Electrical	Operating Voltage	24 VAC ±20%; 24...48 24 VDC ±10% at 50/60 Hz		120 VAC ±10% at 50/60 Hz
	Power Consumption	Running: 7 VA/5W Holding: 5 VA/3W		Running: 8 VA Holding: 6 VA
	Control Input Signal	N/A	0 to 10 VDC or 2 to 10 VDC (max. 35 VDC)	N/A
	Control Input Impedance	N/A	>100K Ohms	N/A
	Feedback Signal	N/A	0 to 10 VDC Max. output current +1 mA, -.5 mA	N/A
	Auxiliary Switch Rating (-A Models Only)	**AC Rating** 24 VAC to 250 VAC; AC 6 A Resistive, AC 2A FLA, 12 LRA **DC Rating** 12 VDC to 30 VDC: DC 2A		**AC Rating** AC 6 A Resistive, AC 2A FLA, 12 LRA
	Switching Hysteresis (-A Models Only)	2°		
	Equipment Rating	Class 2 per UL/CSA		N/A
	Electrical Connection	36 in. (.9 m) Standard Cable with 18 AWG (0.75 mm2) Wire Leads		
	Conduit Connections	Integral Connectors for 3/8 in. Flex		
Operation	Manual Override	Hex Head Screw		
	Spring Return	Direction is Selectable with Mounting Position of Actuator		
	Rotation Range	Nominal angle of rotation 90°; Maximum angular rotation 95°		
	Runtime for 90° of Rotation	Power On (Running) 90 Seconds Power Off (Returning) 15 Seconds		
	Cycle Life	60,000 Full stroke cycles (1,500,000 repositions)		
	Mechanical Connections	**Round Shafts** - 3/8-in to 1-in (8 to 25.6 mm) **Square Shafts** - 1/4-in to 3/4-in (6 to 18 mm)		
Environmental	Enclosure	NEMA 2, IP54 per EN 60 529 - in vertical to horizontal 90°		
	Ambient Conditions (Non-Condensing)	**Operating —** -25°F to 130°F (-32°C to 55°C); 95% RH Maximum, Noncondensing **Storage —** -40°F to 158°F (-40°C to 70°C); 95% RH Maximum, Noncondensing		
	Audible Noise Rating	45 dBA		
	Dimensions	11-13/16" (L) x 4-3/4" (W) x 2-7/8" (H)		
	Weight	4.85 lb (2.2 kg)		
Conditions	Agency Certifications	UL listed to UL60730 (to replace UL873) cUL certified to Canadian Standard C22.2 No. 24-93		
	Warranty	5 Years limited from time of shipment.		

Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

Wiring

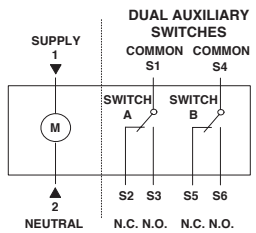
KEY

Cable		Function
No.	Color	
1	Red (RD)	System potential AC 24 V / DC 24...48 V
2	Black (BK)	System neutral
6	Violet (VT)	Pos. signal AC 0 V / AC 24 V / DC 24...48 V, "open"
7	Orange (OG)	Pos. signal AC 0 V / AC 24 V / DC 24...48 V, "close"
8	Gray (GY)	Pos. signal DC 0...10 V, 0...35 V
9	Pink (PK)	Position indication DC 0...10 V
3	Brown (BN)	Phase AC 120/230 V
4	Blue (BU)	Neutral conductor

Auxiliary Switch - Factory Installed			
S1	S1	Gray/Red (GY RD)	Switch A Input
S2	S2	Gray/Blue (GY BU)	Switch A - N.C.
S3	S3	Gray/Pink (GY PK)	Switch A - N.O.
S4	S4	Black/Red (BK RD)	Switch B Input
S5	S5	Black/Blue (BK BU)	Switch B - N.C.
S6	S6	Black/Pink (BK PK)	Switch B - N.O.

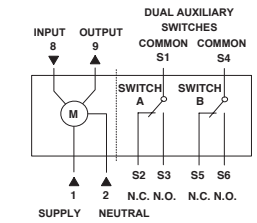
DCS24-140-(A)
STANDARD CABLE

On/Off with Optional AUX Switches



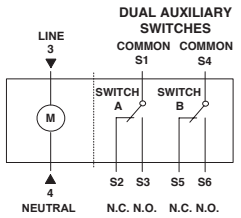
DCMS24-140-(A)
STANDARD CABLE

Modulating with Optional AUX Switches

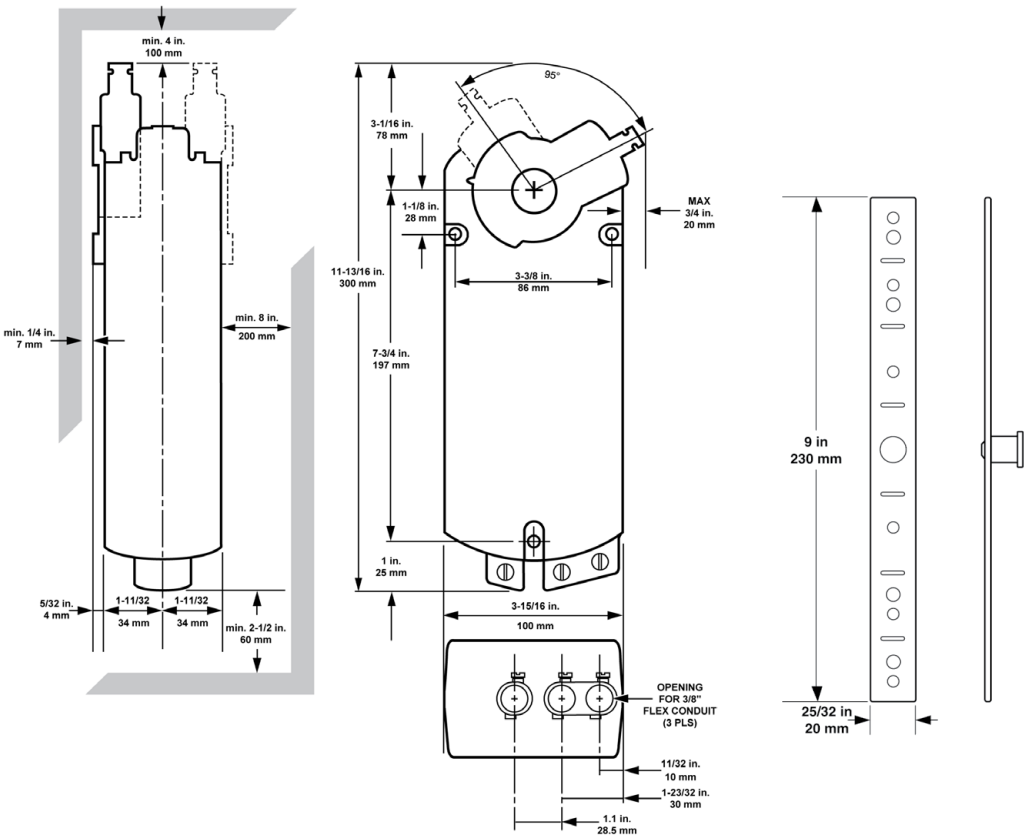


DCS120-140-(A)
STANDARD CABLE

120 V On/Off with Optional AUX Switches



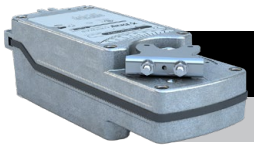
Dimensions



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D(M)S-180 Series — Submittal/Technical Data

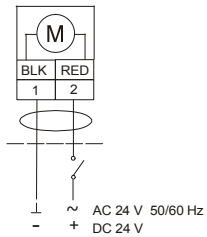
177 lb-in. — Spring Return —On/Off, Floating & Modulating — Auxiliary Switches

Technical Specifications - D(M)S-180 Series Actuator					
Type	Actuator Models	**DS24-180-(A)**	**DS24-180-T-(A)**	**DMS24-180-(A)**	**DS120-180-(A)**
		Spring Return On/Off Opt. Auxiliary Switches **(-A)**	Spring Return On/Off & Floating Opt. Auxiliary Switches **(-A)**	Spring Return Modulating Opt. Auxiliary Switches **(-A)**	Spring Return On/Off Opt. Auxiliary Switches **(-A)**
	Torque	177 lb-in. (20 Nm)			
Electrical	Operating Voltage	24 VAC (19.2 to 30 V) at 50/60 Hz 24 VDC (21.6 to 26.4 V)			AC 120 V (102 to 132 V) at 60 Hz
	Power Consumption	AC 24 V (19.2 to 30 V) at 50/60 Hz: Class 2, 24.6 VA running, 7.7 VA holding position; DC 24 V (21.6 to 26.4 V): Class 2, 17.6 W running, 2.8 W holding position	AC 24 V (19.2 to 30 V) at 50/60 Hz: Class 2, 15.5 VA running, 7.7 VA holding position; DC 24 V (21.6 to 26.4 V): Class 2, 6.7 W Running, 2.9 W holding position		AC 120 V (AC 102 to 132 V) at 60 Hz: 0.25 A running, 0.13 A holding position
	Input Signal Adjustments	N/A	AC 19.2 to 30 V at 50/60 Hz or DC 24 V ±10%, Class 2; Switch selectable direct or reverse action with signal increase	Factory Set DC 0 to 10 V, CW Rotation with signal increase; Selectable DC 0 (2) to 10 V or 0 (4) to 20 mA with field furnished 500 Ohm, 0.25 W minimum resistor; switch selectable direct or reverse action with signal increase	N/A
	Min. Transformer Size	25 VA per Actuator	20 VA per Actuator		N/A
	Control Input Impedance	N/A		Voltage Input: 100,000 Ohms; Current Input: 500 Ohms with field furnished 500 ohm resistor	N/A
	Feedback Signal	N/A		0 (2) to 10 VDC for desired rotation range up to 90°; Corresponds to rotation limits, 1 mA maximum	N/A
	Auxiliary Switch Rating (-A Models Only)	Two Single-Pole, Double-Throw (SPDT), Double-Insulated Switches with Gold Flash Contacts:			
		AC 24 V, 50 VA Pilot Duty			AC 120 V, 5.8 A Resistive, 1/4 hp, 275 VA Pilot Duty
	Equipment Rating	Class 2			N/A
	Transformer Sizing	25 VA Minimum per Actuator	20 VA Minimum per Actuator		25 VA Minimum per Actuator
	Electrical Connection	48 in. (1.2 m) Halogen-Free Cable with 18 AWG (0.75 mm2) Wire Leads			
	Conduit Connections	Integral Connectors for 3/8 in. Flexible Metal Conduit			
Operation	Manual Override	Manual override crank			
	Spring Return	Direction is Selectable with Mounting Position of Actuator Side A - Actuator Face Away for CCW Spring Return Side B - Actuator Face Away for CW Spring Return			
	Rotation Range	Adjustable from 30 to 90° CW or CCW with Optional Adjustable Stop Kit; Mechanically Limited to 90°			
	Runtime for 90° of Rotation	**Power On (Running)** 24 to 57 Sec. for 0 to 177 lb·in (0 to 20 N·m) at All Operating Conditions; 35 Sec. Nominal at Full Rated Load **Power Off (Returning)** 11 to 15 Sec. for 0 to 177 lb·in (0 to 20 N·m) at Room Temperature; 35 Sec. Maximum for 0 to 177 lb·in (0 to 20 N·m) at -22°F (-30°C) 130 Seconds Maximum for 0 to 177 lb·in (0 to 20 N·m) at -40°F (-40°C)	**Power On (Running)** 150 Sec. for 0 to 177 lb·in (0 to 20 N·m) at All Operating Conditions; Independent of Load **Power Off (Returning)** 20 Sec. for 0 to 177 lb·in (0 to 20 N·m) at Room Temperature		**Power On (Running)** 24 to 57 Sec. for 0 to 177 lb·in (0 to 20 N·m) at All Operating Conditions; 35 Sec. Nominal at Full Rated Load **Power Off (Returning)** 11 to 15 Sec. for 0 to 177 lb·in (0 to 20 N·m) at Room Temperature; 35 Sec. Maximum for 0 to 177 lb·in (0 to 20 N·m) at -22°F (-30°C) 130 Sec. Maximum for 0 to 177 lb·in (0 to 20 N·m) at -40°F (-40°C)
	Electric Stall Detection	Protects from overload at all angles of rotation			
	Cycle Life	60,000 Full stroke cycles (1,500,000 repositions)			
	Mechanical Connections	**Round Shafts** - 1/2 to 3/4 in. or 12 to 19 mm **Square Shafts** - 3/8 and 1/2 in. or 10, 12, and 14 mm			
Environmental	Ambient Conditions (Non-Condensing)	**Operating —** 40 to 131°F (-40 to 55°C); 90% RH Maximum, Noncondensing **Storage —** -85 to 185°F (-65 to 85°C); 95% RH Maximum, Noncondensing			
	Audible Noise Rating	**Running** < 66 dBA at 39-13/32 in. (1 m) **Holding** < 18 dBA at 39-13/32 in. (1 m) **Returning** < 66 dBA at 39-13/32 in. (1 m)	**Running** < 40 dBA at 39-13/32 in. (1 m) **Holding** < 20 dBA at 39-13/32 in. (1 m) **Returning** < 55 dBA at 39-13/32 in. (1 m)		**Running** < 66 dBA at 39-13/32 in. (1 m) **Holding** < 18 dBA at 39-13/32 in. (1 m) **Returning** < 66 dBA at 39-13/32 in. (1 m)
	Dimensions	10" (L) x 4" (W) x 3-3/16" (H)			
	Weight	6.4 lb (2.9 kg)			7.6 lb (3.5 kg)
Conditions	Agency Certifications	UL Listed, CCN XAPX, File E27734; to UL 60730-1, Automatic Controls for Household and Similar Use; and UL 60730-2-14 Part 2, Particular Requirements for Electric Actuators. UL Listed, CCN XAPX7, File E27734; to CAN/CSA E60730-1, Automatic Controls for Household and Similar Use; and CAN/CSA E60730-2-14 Part 2, Particular Requirements for Electric Actuators CE Mark - Johnson Controls, Inc. declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive and Low Voltage Directive. RCM Mark, Australia/NZ Emissions Compliant			
	Warranty	5 Years limited from time of shipment.			

Wiring

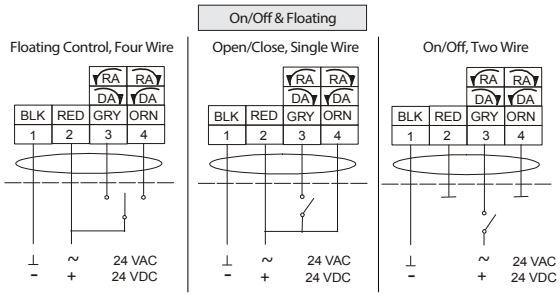
DS24-180-(A)
STANDARD CABLE

On/Off



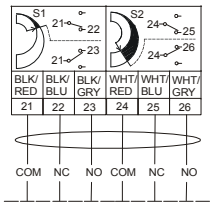
DS24-180-T(A)
STANDARD CABLE

On/Off & Floating



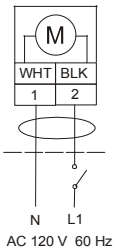
-(A)
AUXILIARY SWITCH WIRING

(-A) Auxiliary Switches



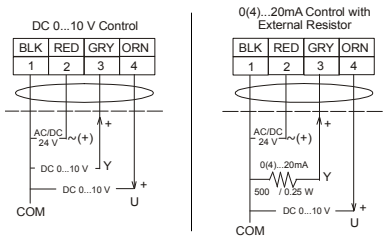
DS120-180-(A)
STANDARD CABLE

On/Off



DMS24-180-(A)
STANDARD CABLE

Modulating

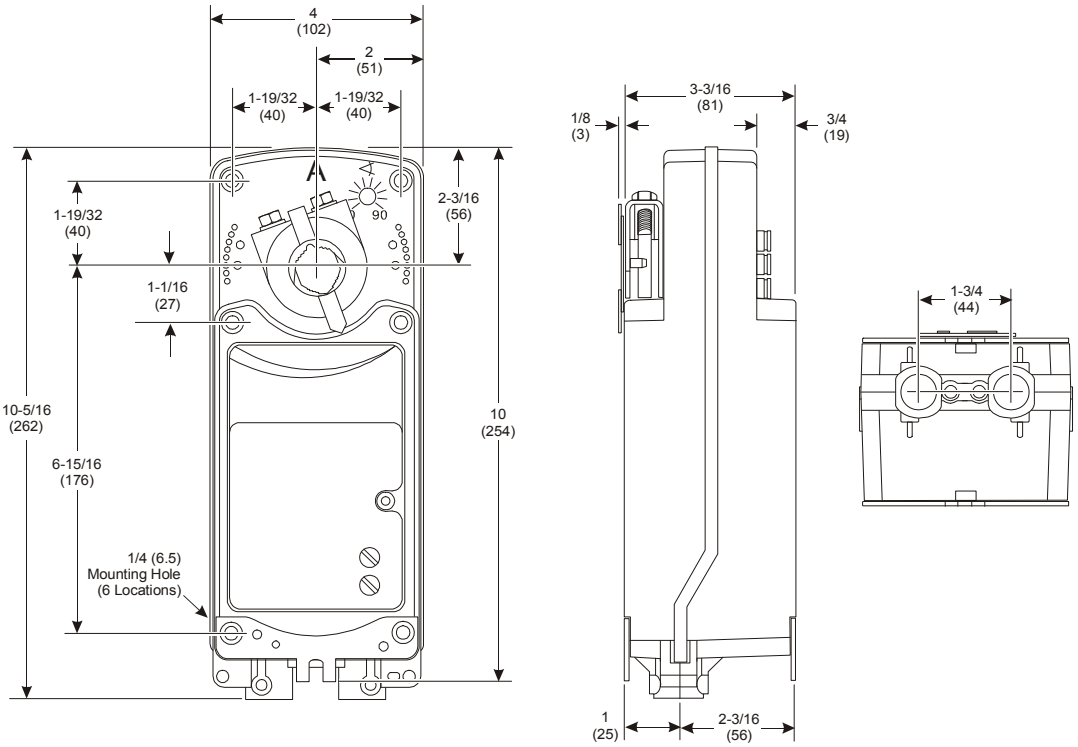


Warning - These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

Disclaimer - The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

Dimensions



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