

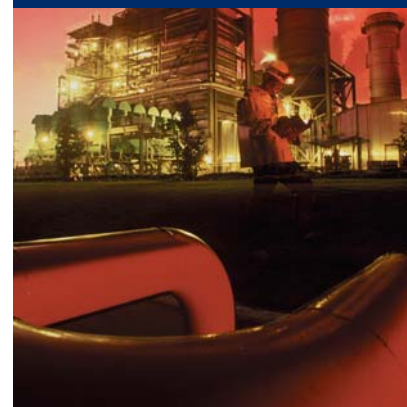
Motorized Control Valves

VAC control systems

industrial boilers

water and purification technology

chemical processing



Precise control over critical applications



Linear Motor Actuator Features

Key Features

- Self-calibrating
- Spring return fail safe option available

Cover made of impact resistant plastic

IP 65 rating with rubberized sealing gasket & seals

Aluminum die-cast metallic motor housing & yoke assembly

Automatic coupling of valve stem to motor actuator spindle

Rotatable motor housing

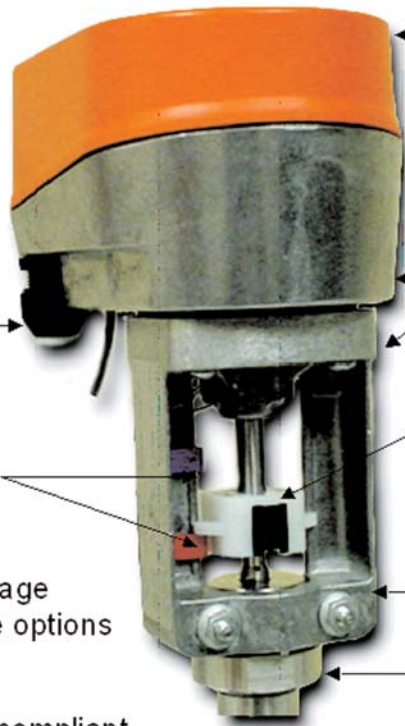
Fully coupled to angle valve body

Multiple wiring knockouts

Standard Optical Indicator

On-off & linear & equal percentage control plug characteristic valve options

CE compliant



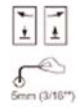
Motor Actuator Electronics

Microprocessor controlled linear actuator

Electrical terminal blocks for voltage and control switching signals (depending on model)

LED indication of limit switch adjustments (reference operating instructions for color and flashing signals)

Manual operation for start-up and emergency situations



Limit switch adjustment potentiometers

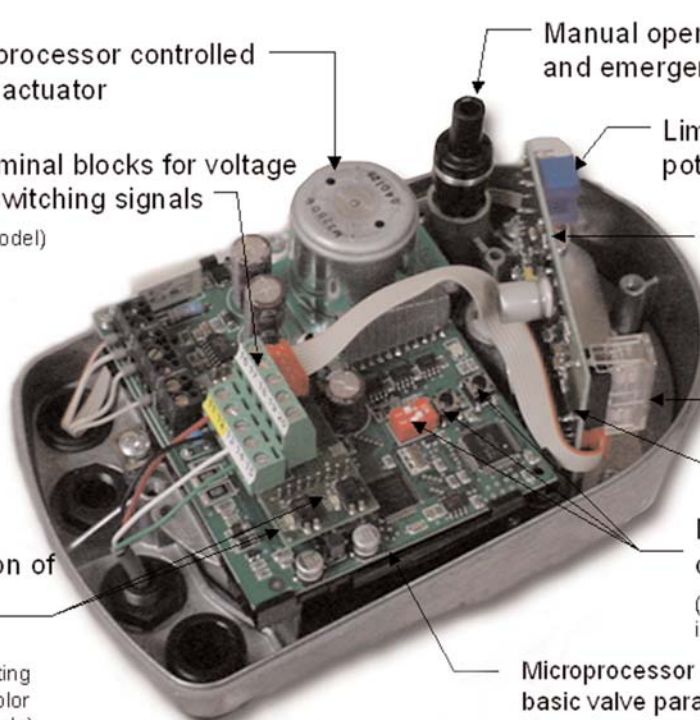
Multiple linear control actuators for AC and DC voltages (On-off valves do not contain this control board)

Safety fuse

Unique IOS Module board

Multi-functional operating control switches (reference operating and installation instructions)

Microprocessor control board controlling basic valve parameters such as running time, signal and feedback status, etc.



Series 830 & 835

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WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or systems options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at anytime without notice.

Key Market Segments

- Food & Beverage Processing
- Water Technology
 - Wastewater treatment
 - Semi-conductors
- Chemical Processing Technology
- Skid “Systems”
- Power Plants
- HVAC Building Control Systems
- Marine Environmental Control
- Boilers
- Blow down requirements
- General industrial applications of aggressive fluids with stainless steel

Ordering Information

1. Series	2. Configuration	3. Body Material	4. Connection Type	5. Port / Orifice Inches / DN	6. Seal Material	7. Pilot Function
830 835	V Valve Assembly A Actuator Unit less Body R Repair Kit	B Bronze S Stainless steel 316L	N NPT-thread G BSP- ISO E Tube ends	08 1/2" DN15 12 3/4" DN20 16 1" DN25 20 1-1/4" DN32 24 1-1/2" DN40 32 2" DN50	T PTFE Consult factory for other seal materials	For 830 Valve Series 3 NC (closing against flow - under seat) For 835 Valve Series 3 Distributing Function 4 Mixing Function 5 Normally Closed 6 Normally Open

8. Linear Actuators	9. Characteristics & Flow Values	10. Linear Actuator Head	11. Temperature Version	12. Packing	13. Safety Position	14. Stroking Times
1 See Table Below	0 On-Off	M Motorized	H High temperature standard (392°F / 200°C) (bronze, stainless steel)	0 Standard - PTFE Graphite Filled	0 Safety Position	0 Standard (70s/0.80 inch for control actuators - 190s/inch for on-off actuators)
2	A Linear - Full flow		U Ultra High temperature (430°F stainless steel only)	2 Inverted packing for Vacuum Service only	1 Spring to close	L 114s/inch (on-off actuators)
3	B Linear - reduced 40% flow		L Low Temperature (-40°F / -40°C)			1 35s/0.80 inch (control actuators only)
4	C Linear - reduced 25% flow					2 140s/0.80 inch (control actuators only)
5	E Equal percentage - Full flow					3 280s/0.80 inch (control actuators only)
6	F Equal percentage - reduced 40% flow					
7	G Equal percentage - reduced 25% flow					

LINEAR ACTUATOR TABLE

Actuator Type	Linear Actuator	Voltage	Position Control	Feedback Control	Limit Switches
1 On-Off Actuator	BM24	24V AC/DC	None	None	None
2 On-Off Actuator	BM230	230V AC	None	None	None
3 Control Actuator	BM24C	24V AC/DC	2 - 10 VDC	2 - 10 VDC	None
4 Control Actuator	BM24C/I	24V AC/DC	4 - 20 mA	2 - 10 VDC	None
5 Control Actuator	BM24C/IOS	24V AC/DC	4 - 20 mA	4 - 20 mA	2 switches
6 Control Actuator	BM115C/IOS	115V AC	4 - 20 mA	4 - 20 mA	2 switches
7 Control Actuator	BM230C/IOS	230V AC	4 - 20 mA	4 - 20 mA	2 switches

Series 830: 2 Way Motorized Valves: 1/2" to 2" NPT



FEATURES

On-Off & Modulating motorized valves for proportional control, with integrated Linear Actuators for neutral through aggressive fluids.

- Operates independent of supply pressure variations
- Compact design
- Self Calibrating
- Not sensitive to vibration
- Temperatures from -22°F to 392°F
- Versatile actuator options
- Available with spring return

Technical Specifications

Body Material	Bronze Rg5 ⁽¹⁾	AISI ⁽²⁾ 316L
Function	2/2 NC, NO	2/2 NC, NO
Nominal sizes	1/2" - 2"	1/2" - 2"
Connections: NPT thread standard BSP thread (ISO228/1) Tri clamp (stainless only) Tube ends (stainless only)	1/2" - 2"	1/2" - 2"
Nominal Pressure	232 psi (16 bar)	580 psi (40 bar)
Differential Pressure	See Specifications tables	
Max. fluid temperature	-22°F (-30°C) up to 392°F (200°C) # to -40°F (-40°C)	-22°F (-30°C) up to 392°F (200°C) (200°C) # to -40°F (-40°C) * Up to +430°F (221°C)
Seal Material	PTFE	
Packing Gland	PTFE / Graphite	
Viscosity of the fluid ⁽³⁾	maximum 600 mm ² /s (600cSt, 80°E, 2700 SSU)	
Vacuum	maximum 0.0295 inches mercury (Hg)	
Working pressure for inverted packing for vacuum service	maximum 175 psi	
Leakage	ANSI Class VI shutoff ⁽⁴⁾	
Installation	Any orientation	
Ingress	IP 65	
Characterization	Linear & Equal Percentage	
Optical Position Indicator	Standard all sizes	
Fluids	Inert gases, hot water, oils, steam	Aggressive & corrosive fluids

(1) Rg5 – (ASTM B-139) Bronze material commonly used for valve bodies. Exhibits good corrosion resistance, technical characteristics including tensile strength and has a Rockwell hardness of B80.

(2) AISI – American Iron and Steel Institute – North American organization dedicated to the advancement of technological innovation in steel production and its applications.

(3) Viscosity terms including: cSt Centistokes – a measure of Kinematic viscosity at a specific temperature rating, usually 40°C. 1 cSt = 1 mm²/s

SSU Saybolt Universal Seconds – unit of viscosity measurement used in the United States but not on an international basis. Centistokes unit is the generally accepted international viscosity measurement.

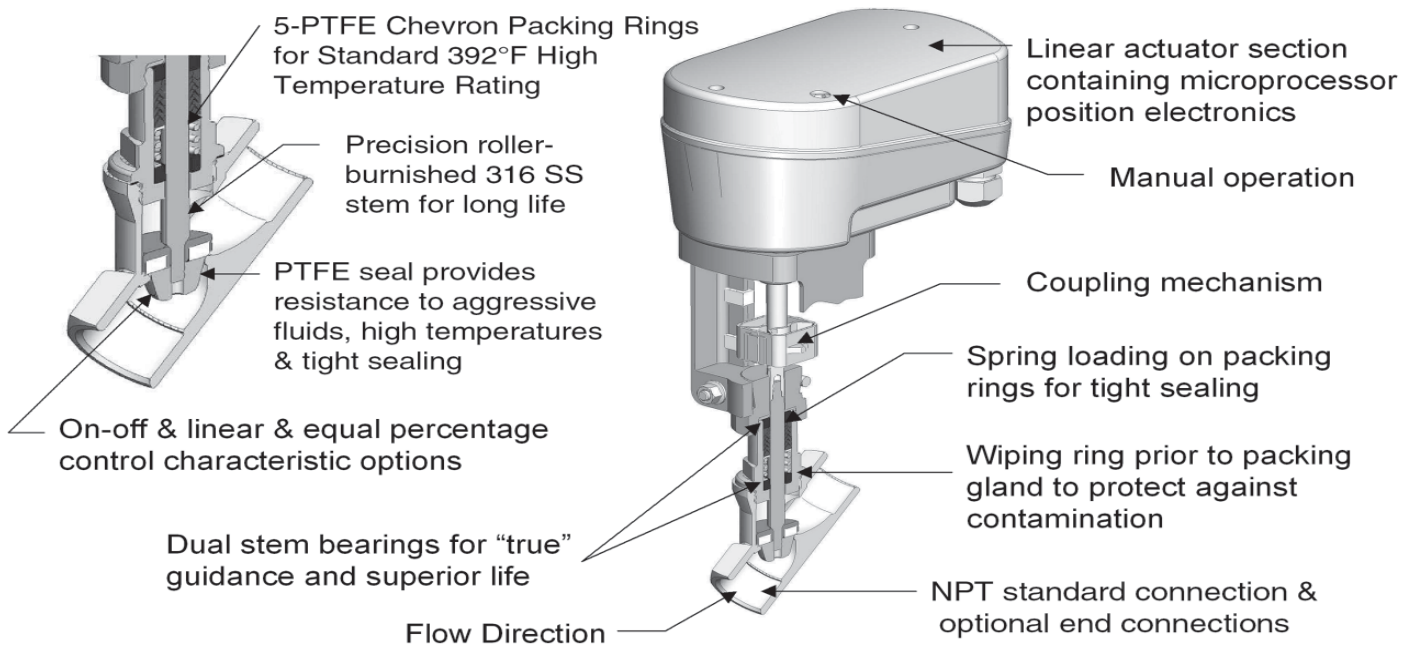
(4) ANSI Class VI shutoff – ISA leakage classification per ISA RP39.6 standard defining maximum allowable leakage. For Teflon™ soft seal, leakage rate is bubbletight.

Series 830: 2 Way Motorized Valves: 1/2" to 2" NPT

Linear Actuator Technical Specifications

Type of Motor	BM24C	BM24C/I	BM24C/IOS	BM115C/IOS	BM230C/IOS	BM24	BM230
Function	Control	Control	Control	Control	Control	ON-Off	ON-Off
Nominal Voltage	24 V AC/DC	24 V AC/DC	24 V AC/DC	115 V AC	230 V AC	24 V AC/DC	230 V AC
Set Point Control	2 - 10 V	4 - 20 mA	4 - 20 mA	4 - 20 mA	4 - 20 mA	3 - step	3 - step
Load	100 k Ohm	500 Ohm	500 Ohm	500 Ohm	500 Ohm	-	-
Position Feedback	2 - 10 V	2 - 10 V	4 - 20 mA	4 - 20 mA	4 - 20 mA	-	-
External Load	-	-	< 700 Ohm	< 700 Ohm	< 700 Ohm	-	-
Limit Switches	-	-	2 x	2 x	2 x	-	-
Max. Switching Load	-	-	230V/130mA	230V/130mA	230V/130mA	-	-
Power Consumption	3 W	3 W	3 W	4 W	4 W	3 W	6 W
Stroking Time (standard)	70s / 0.8 inch	70s / 0.8 inch	70s / 0.8 inch	70s / 0.8 inch	70s / 0.8 inch	190s / inch	190s / inch
Thrust (1)	180 lbs (800 N)						
Class of Protection	IP65						
Ambient Temperature	14°F up to 140°F (-10°C up to 60°C)						

(1) Electrical closing force



Stroke Times

Code	Motor Speed	Rate	Actuator Type
0	Standard	70 sec / 0.80 inch	Control
0	Standard	190 sec / 1.00 inch	On-Off
1	2X Standard	35 sec / 0.80 inch	Control
2	0.5X Standard	140 sec / 0.80 inch	Control
3	0.25x Standard	280 sec / 0.80 inch	Control



Series 830: 2 Way Motorized On Off Valves: 1/2" to 2" NPT

Operating Data

ON-OFF CONTROL ACTUATOR BRONZE VALVES

CONTROL PARAMETERS 24V AC/DC

Port Size	Orifice Size		Flow Coeff		Operating			Pressure			Valve Number Bronze	Weight		
	DN		Cv	Kv	Min	psi	bar	psi	bar	psi		bar	lbs	Kg
	inch	mm				(m ³ /h)	air, gases	water, liquids	steam					
1/2	0.59	15	4.1	3.6	0	232	16.0	232	16.0	210	14.5	830VBN08T360MH000	4.4	2.0
3/4	0.78	20	10.4	9.0	0	232	16.0	232	16.0	210	14.5	830VBN12T360MH000	4.8	2.2
1	1.00	25	19.7	17.1	0	175	12.1	175	12.1	175	12.1	830VBN16T360MH000	5.3	2.4
1-1/4	1.25	32	32.5	28.3	0	100	6.9	100	6.9	100	6.9	830VBN20T360MH000	6.2	2.8
1-1/2	1.56	40	40.6	35.3	0	70	4.8	70	4.8	70	4.8	830VBN24T360MH000	6.8	3.1
2	2.00	50	52.2	45.4	0	40	2.8	40	2.8	40	2.8	830VBN32T360MH000	8.1	3.7

ON-OFF CONTROL ACTUATOR 316L STAINLESS STEEL VALVES

CONTROL PARAMETERS 24V AC/DC

Port Size	Orifice Size		Flow Coeff		Operating			Pressure			Valve Number Stainless	Weight		
	DN		Cv	Kv	Min	psi	bar	psi	bar	psi		bar	lbs	Kg
	inch	mm				(m ³ /h)	air, gases	water, liquids	steam					
1/2	0.59	15	4.1	3.6	0	580	40.0	580	40.0	210	14.5	830VSN08T360MH000	4.4	2.0
3/4	0.78	20	10.4	9.0	0	290	20.0	290	20.0	210	14.5	830VSN12T360MH000	4.8	2.2
1	1.00	25	19.7	17.1	0	175	12.1	175	12.1	175	12.1	830VSN16T360MH000	5.3	2.4
1-1/4	1.25	32	32.5	28.3	0	100	6.9	100	6.9	100	6.9	830VSN20T360MH000	6.2	2.8
1-1/2	1.56	40	40.6	35.3	0	70	4.8	70	4.8	70	4.8	830VSN24T360MH000	6.8	3.1
2	2.00	50	52.2	45.4	0	40	2.8	40	2.8	40	2.8	830VSN32T360MH000	8.1	3.7

ON-OFF CONTROL ACTUATOR BRONZE VALVES

CONTROL PARAMETERS 230V AC

Port Size	Orifice Size		Flow Coeff		Operating			Pressure			Valve Number Bronze	Weight		
	DN		Cv	Kv	Min	psi	bar	psi	bar	psi		bar	lbs	Kg
	inch	mm				(m ³ /h)	air, gases	water, liquids	steam					
1/2	0.59	15	4.1	3.6	0	232	16.0	232	16.0	210	14.5	830VBN08T370MH000	4.4	2.0
3/4	0.78	20	10.4	9.0	0	232	16.0	232	16.0	210	14.5	830VBN12T370MH000	4.8	2.2
1	1.00	25	19.7	17.1	0	175	12.1	175	12.1	175	12.1	830VBN16T370MH000	5.3	2.4
1-1/4	1.25	32	32.5	28.3	0	100	6.9	100	6.9	100	6.9	830VBN20T370MH000	6.2	2.8
1-1/2	1.56	40	40.6	35.3	0	70	4.8	70	4.8	70	4.8	830VBN24T370MH000	6.8	3.1
2	2.00	50	52.2	45.4	0	40	2.8	40	40.0	40	2.8	830VBN32T370MH000	8.1	3.7

ON-OFF CONTROL ACTUATOR 316L STAINLESS STEEL VALVES

CONTROL PARAMETERS 230V AC

Port Size	Orifice Size		Flow Coeff		Operating			Pressure			Valve Number Stainless	Weight		
	DN		Cv	Kv	Min	psi	bar	psi	bar	psi		bar	lbs	Kg
	inch	mm				(m ³ /h)	air, gases	water, liquids	steam					
1/2	0.59	15	4.1	3.6	0	580	40.0	580	40.0	210	14.5	830VSN08T370MH000	4.4	2.0
3/4	0.78	20	10.4	9.0	0	290	20.0	290	20.0	210	14.5	830VSN12T370MH000	4.8	2.2
1	1.00	25	19.7	17.1	0	175	12.1	175	12.1	175	12.1	830VSN16T370MH000	5.3	2.4
1-1/4	1.25	32	32.5	28.3	0	100	6.9	100	6.9	100	6.9	830VSN20T370MH000	6.2	2.8
1-1/2	1.56	40	40.6	35.3	0	70	4.8	70	4.8	70	4.8	830VSN24T370MH000	6.8	3.1
2	2.00	50	52.2	45.4	0	40	2.8	40	2.8	40	2.8	830VSN32T370MH000	8.1	3.7



Series 830: 2 Way Proportional Control Valves: 1/2" to 2" NPT

Operating Data

LINEAR CONTROL MOTOR ACTUATOR - BM24C

CONTROL PARAMETERS 24V AC/DC, SET-POINT 2-10V, FEEDBACK 2-10V

Port Size	Orifice Size		Flow Coeff		Operating Pressure						Valve Number Stainless Linear Flow (1)(2)	Valve Number Stainless Equal Percentage Flow (3)(4)	Weight		
	DN		Cv	Kv	Min	psi	bar	psi	bar	psi			bar	lbs	Kg
	inch	mm	(m ³ /h)	air, gases	water, liquids	steam									
1/2	0.59	15	4.4	3.8	0	580	40.0	580	40.0	210	14.5	830VSN08T31AMH000	830VSN08T31EMH000	4.4	2.0
3/4	0.78	20	10.2	8.9	0	290	20.0	290	20.0	210	14.5	830VSN12T31AMH000	830VSN12T31EMH000	4.8	2.2
1	1.00	25	16.2	14.1	0	175	12.1	175	12.1	175	12.1	830VSN16T31AMH000	830VSN16T31EMH000	5.3	2.4
1-1/4	1.25	32	23.2	20.2	0	100	6.9	100	6.9	100	6.9	830VSN20T31AMH000	830VSN20T31EMH000	6.2	2.8
1-1/2	1.50	40	31.3	27.2	0	70	4.8	70	4.8	70	4.8	830VSN24T31AMH000	830VSN24T31EMH000	6.8	3.1
2	2.00	50	42.9	37.3	0	40	2.8	40	2.8	40	2.8	830VSN32T31AMH000	830VSN32T31EMH000	8.1	3.7

LINEAR CONTROL MOTOR ACTUATOR - BM24C/I

CONTROL PARAMETERS 24V AC/DC, SET-POINT 4-20mA, FEEDBACK 2-10V

Port Size	Orifice Size		Flow Coeff		Operating Pressure						Valve Number Stainless Linear Flow (1)(2)	Valve Number Stainless Equal Percentage Flow (3)(4)	Weight		
	DN		Cv	Kv	Min	psi	bar	psi	bar	psi			bar	lbs	Kg
	inch	mm	(m ³ /h)	air, gases	water, liquids	steam									
1/2	0.59	15	4.4	3.8	0	580	40.0	580	40.0	210	14.5	830VSN08T32AMH000	830VSN08T32EMH000	4.4	2.0
3/4	0.78	20	10.2	8.9	0	290	20.0	290	20.0	210	14.5	830VSN12T32AMH000	830VSN12T32EMH000	4.8	2.2
1	1.00	25	16.2	14.1	0	175	12.1	175	12.1	175	12.1	830VSN16T32AMH000	830VSN16T32EMH000	5.3	2.4
1-1/4	1.25	32	23.2	20.2	0	100	6.9	100	6.9	100	6.9	830VSN20T32AMH000	830VSN20T32EMH000	6.2	2.8
1-1/2	1.50	40	31.3	27.2	0	70	4.8	70	4.8	70	4.8	830VSN24T32AMH000	830VSN24T32EMH000	6.8	3.1
2	2.00	50	42.9	37.3	0	40	2.8	40	2.8	40	2.8	830VSN32T32AMH000	830VSN32T32EMH000	8.1	3.7

LINEAR CONTROL MOTOR ACTUATOR - BM24C/IOS

CONTROL PARAMETERS 24V AC/DC, SET-POINT 4-20mA, FEEDBACK 4-20mA

Port Size	Orifice Size		Flow Coeff		Operating Pressure						Valve Number Stainless Linear Flow (1)(2)	Valve Number Stainless Equal Percentage Flow (3)(4)	Weight		
	DN		Cv	Kv	Min	psi	bar	psi	bar	psi			bar	lbs	Kg
	inch	mm	(m ³ /h)	air, gases	water, liquids	steam									
1/2	0.59	15	4.4	3.8	0	580	40.0	580	40.0	210	14.5	830VSN08T33AMH000	830VSN08T33EMH000	4.4	2.0
3/4	0.78	20	10.2	8.9	0	290	20.0	290	20.0	210	14.5	830VSN12T33AMH000	830VSN12T33EMH000	4.8	2.2
1	1.00	25	16.2	14.1	0	175	12.1	175	12.1	175	12.1	830VSN16T33AMH000	830VSN16T33EMH000	5.3	2.4
1-1/4	1.25	32	23.2	20.2	0	100	6.9	100	6.9	100	6.9	830VSN20T33AMH000	830VSN20T33EMH000	6.2	2.8
1-1/2	1.50	40	31.3	27.2	0	70	4.8	70	4.8	70	4.8	830VSN24T33AMH000	830VSN24T33EMH000	6.8	3.1
2	2.00	50	42.9	37.3	0	40	2.8	40	2.8	40	2.8	830VSN32T33AMH000	830VSN32T33EMH000	8.1	3.7

LINEAR CONTROL MOTOR ACTUATOR - BM115C/IOS

CONTROL PARAMETERS 115V AC, SET-POINT 4-20mA, FEEDBACK 4-20mA

Port Size	Orifice Size		Flow Coeff		Operating Pressure						Valve Number Stainless Linear Flow (1)(2)	Valve Number Stainless Equal Percentage Flow (3)(4)	Weight		
	DN		Cv	Kv	Min	psi	bar	psi	bar	psi			bar	lbs	Kg
	inch	mm	(m ³ /h)	air, gases	water, liquids	steam									
1/2	0.59	15	4.4	3.8	0	580	40.0	580	40.0	210	14.5	830VSN08T34AMH000	830VSN08T34EMH000	4.4	2.0
3/4	0.78	20	10.2	8.9	0	290	20.0	290	20.0	210	14.5	830VSN12T34AMH000	830VSN12T34EMH000	4.8	2.2
1	1.00	25	16.2	14.1	0	175	12.1	175	12.1	175	12.1	830VSN16T34AMH000	830VSN16T34EMH000	5.3	2.4
1-1/4	1.25	32	23.2	20.2	0	100	6.9	100	6.9	100	6.9	830VSN20T34AMH000	830VSN20T34EMH000	6.2	2.8
1-1/2	1.50	40	31.3	27.2	0	70	4.8	70	4.8	70	4.8	830VSN24T34AMH000	830VSN24T34EMH000	6.8	3.1
2	2.00	50	42.9	37.3	0	40	2.8	40	2.8	40	2.8	830VSN32T34AMH000	830VSN32T34EMH000	8.1	3.7

LINEAR CONTROL MOTOR ACTUATOR - BM230C/IOS

CONTROL PARAMETERS 230V AC, SET-POINT 4-20mA, FEEDBACK 4-20mA

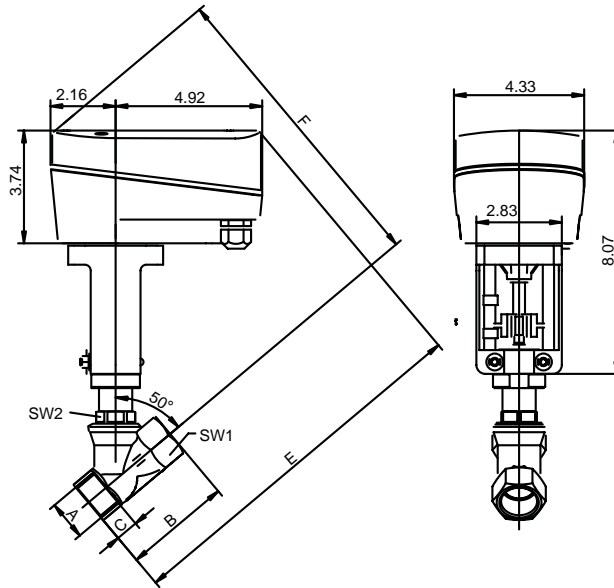
Port Size	Orifice Size		Flow Coeff		Operating Pressure						Valve Number Stainless Linear Flow (1)(2)	Valve Number Stainless Equal Percentage Flow (3)(4)	Weight		
	DN		Cv	Kv	Min	psi	bar	psi	bar	psi			bar	lbs	Kg
	inch	mm	(m ³ /h)	air, gases	water, liquids	steam									
1/2	0.59	15	4.4	3.8	0	580	40.0	580	40.0	210	14.5	830VSN08T35AMH000	830VSN08T35EMH000	4.4	2.0
3/4	0.78	20	10.2	8.9	0	290	20.0	290	20.0	210	14.5	830VSN12T35AMH000	830VSN12T35EMH000	4.8	2.2
1	1.00	25	16.2	14.1	0	175	12.1	175	12.1	175	12.1	830VSN16T35AMH000	830VSN16T35EMH000	5.3	2.4
1-1/4	1.25	32	23.2	20.2	0	100	6.9	100	6.9	100	6.9	830VSN20T35AMH000	830VSN20T35EMH000	6.2	2.8
1-1/2	1.50	40	31.3	27.2	0	70	4.8	70	4.8	70	4.8	830VSN24T35AMH000	830VSN24T35EMH000	6.8	3.1
2	2.00	50	42.9	37.3	0	40	2.8	40	2.8	40	2.8	830VSN32T35AMH000	830VSN32T35EMH000	8.1	3.7

- (1) For 40% linear reduced flow, change 12th position to "B" from A
- (2) For 25% linear reduced flow, change 12th position to "C" from A
- (3) For 40% equal percentage reduced flow, change 12th position to "F" from E
- (4) For 25% equal percentage reduced flow, change 12th position to "G" from E

Series 830: 2 Way Motorized Valves: 1/2" to 2" NPT

Dimensions and Weights

Body with Threaded Ends



A Pipe Size NPT	DN	B	C	E	F	SW1	SW2	Stroke	Weight	
									lbs	Kg
1/2"	15	2.55	0.55	11.80	10.05	1.00	1.20	0.35	4.4	2.0
3/4"	20	2.95	0.60	12.20	10.05	1.20	1.20	0.55	4.8	2.2
1"	25	3.55	0.70	12.40	10.25	1.55	1.20	0.71	5.3	2.4
1-1/4"	32	4.35	0.75	13.40	10.45	1.90	1.20	0.83	6.2	2.8
1-1/2"	40	4.70	0.75	9.65	10.85	2.15	1.20	0.87	6.8	3.1
2"	50	5.90	0.75	14.15	11.40	2.70	1.25	0.87	8.1	3.7

Dimension in inches except as noted

Cv - Values

Size	Linear						Equal Percentage					
	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
100%	4.4	10.2	16.2	23.2	31.3	42.9	3.5	7.0	11.6	18.6	29.0	-
40%	1.7	4.1	6.7	9.3	12.8	-	1.4	2.8	4.6	7.0	11.6	-
25%	1.1	2.6	4.2	-	-	-	0.9	1.7	3.0	-	-	-

On-Off	4.1	10.4	19.7	32.5	40.6	52.2
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Kv - Values

DN	Linear						Equal Percentage					
	15	20	25	32	40	50	15	20	25	32	40	50
100%	3.8	8.8	14.0	20.0	27.0	37.0	3.0	6.0	10.0	16.0	25.0	-
40%	1.5	3.5	5.8	8.0	11.0	-	1.2	2.4	4.0	6.0	10.0	-
25%	0.9	2.2	3.6	-	-	-	0.8	1.5	2.6	-	-	-

On-Off	3.6	9.0	17.1	28.1	35.2	45.5
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Series 835: 3 Way Motorized Valves: 1/2" to 1-1/2" NPT



FEATURES

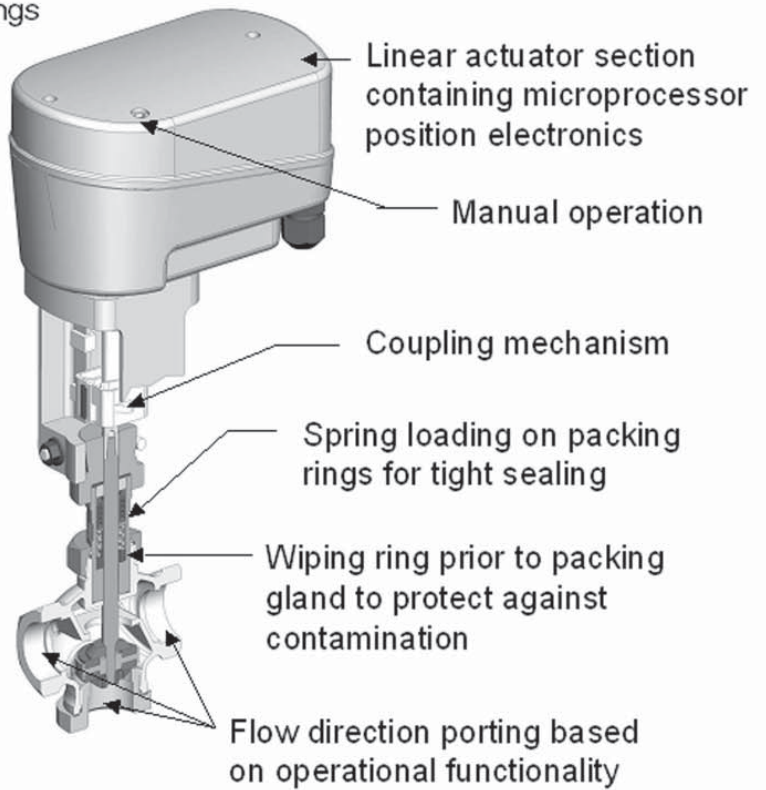
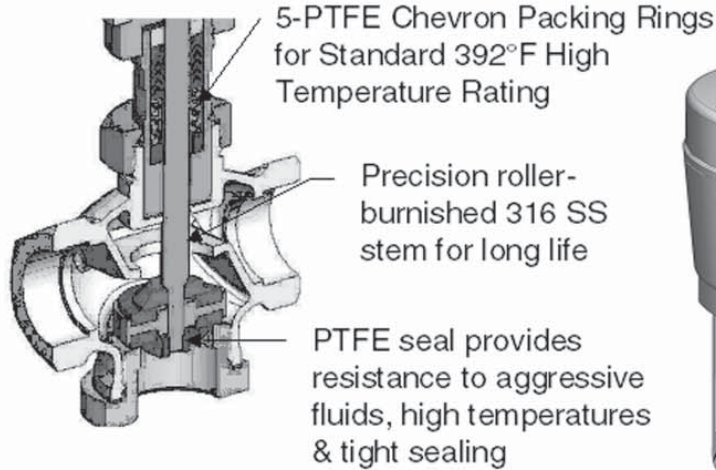
On-Off & Modulating motorized valves with integrated Linear Actuators for neutral through aggressive fluids.

- Operates independent of supply pressure variations
- Compact design
- Self Calibrating
- Not sensitive to vibration
- Temperatures from -22°F to 392°F
- Versatile actuator options
- Available with spring return

Technical Specifications

Body Material	Bronze Rg5
Function	3/2 Distributing Valve, 3/2 Mixing Valve, 3/2 Normally Closed, 3/2 Normally Open
Nominal sizes	1/2" - 1-1/2 "
Connections: NPT thread standard BSP thread (ISO228/1)	1/2" - 1-1/2 "
Nominal Pressure	232 psi (16 bar)
Differential Pressure	See Specifications tables
Max. fluid temperature #Optional	-B29:B32+B622°F (-30°C) up to 392°F (200°C) # to -40°F (-40°C)
Seal Material	PTFE
Packing Gland	PTFE / Graphite
Viscosity of the fluid	max.600 mm ² /s (600cSt, 80°E, 2700SSU)
Vacuum	maximum 0.0295 inches mercury (Hg)
Working pressure for inverted packing for vacuum service	maximum 175 psi
Leakage	ANSI Class VI shutoff
Installation	Any orientation
Ingress	IP65
Optical Position Indicator	Standard all sizes
Fluids	Inert gases, hot water, oils, steam fluids

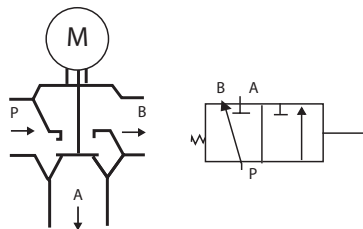
Series 835: 3 Way Motorized Valves: 1/2" to 1-1/2" NPT



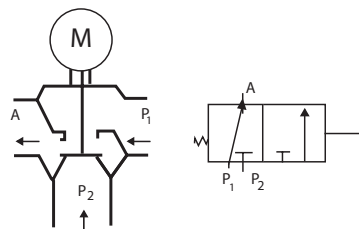
Operational Functions

- Distributing
- Mixing
- Normally Closed
- Normally Open

(reference operating and installation instructions for piping arrangements)



Distributing Function



Mixing Function

Cv - Values - Distributing Valve

Size	P-B	P-A
1/2"	6.4	6.1
3/4"	8.6	10.1
1"	14.3	14.5
1-1/4"	28.3	23.2
1-1/2"	30.9	26.7

Cv - Values - Mixing Valve

Size	P1-A	P2-A
1/2"	6.6	6.1
3/4"	8.5	11.0
1"	14.6	16.2
1-1/4"	29.6	24.4
1-1/2"	35.1	27.0

Kv - Values - Distributing Valve

DN	P-B	P-A
15	5.6	5.3
20	7.5	8.8
25	12.4	12.6
32	24.6	20.2
40	26.9	23.2

Kv - Values - Mixing Valve

DN	P-B	P-A
15	5.7	5.3
20	7.4	9.6
25	12.7	14.1
32	25.8	21.2
40	30.5	23.5



Series 835: 3 Way Motorized Valves: 1/2" to 1-1/2" NPT

Linear Actuator Technical Specifications

Type of Motor	BM24C	BM24C/I	BM24C/IOS	BM115C/IOS	BM230C/IOS	BM24	BM230
Function	Control	Control	Control	Control	Control	ON-Off	ON-Off
Nominal Voltage	24 V AC/DC	24 V AC/DC	24 V AC/DC	115 V AC	230 V AC	24 V AC/DC	230 V AC
Set Point Control	2 - 10 V	4 - 20 mA	4 - 20 mA	4 - 20 mA	4 - 20 mA	3 - step	3 - step
Load	100 k Ohm	500 Ohm	500 Ohm	500 Ohm	500 Ohm	-	-
Position Feedback	2 - 10 V	2 - 10 V	4 - 20 mA	4 - 20 mA	4 - 20 mA	-	-
External Load	-	-	< 700 Ohm	< 700 Ohm	< 700 Ohm	-	-
Limit Switches	-	-	2 x	2 x	2 x	-	-
Max. Switching Load	-	-	230V/130mA	230V/130mA	230V/130mA	-	-
Power Consumption	3 W	3 W	3 W	4 W	4 W	3 W	6 W
Stroking Time (standard)	70s / 0.8 inch	70s / 0.8 inch	70s / 0.8 inch	70s / 0.8 inch	70s / 0.8 inch	190s / inch	190s / inch
Thrust (1)	180 lbs (800 N)						
Class of Protection	IP65						
Ambient Temperature	14°F up to 140°F (-10°C up to 60°C)						

(1) Electrical closing force

Operating Data

DISTRIBUTING AND MIXING VALVES

ON-OFF CONTROL ACTUATOR BRONZE VALVES

CONTROL PARAMETERS 24V AC/DC

Port Size	Orifice Size		Flow Coeff		Flow Coeff		Operating Pressure						Valve Number Bronze		Valve Number Bronze		Weight	
	DN	Cv Kv	Cv Kv	Min	psi bar		psi bar		psi bar		Distributing Valve	Mixing Valve	lbs	Kg				
	inch mm	P-A (m ³ /h)	P-B (m ³ /h)		air, gases	water, liquids	steam											
1/2	0.59 15	6.1 5.3	6.4 5.6	0	220 15.2	220 15.2	210 14.5	835VBN08T360MH000		835VBN08T460MH000		5.5	2.5					
3/4	0.78 20	10.1 8.8	8.6 7.5	0	220 15.2	220 15.2	210 14.5	835VBN12T360MH000		835VBN12T460MH000		5.5	2.5					
1	1.00 25	14.5 12.6	14.3 12.4	0	115 7.9	115 7.9	115 7.9	835VBN16T360MH000		835VBN16T460MH000		6.4	2.9					
1-1/4	1.25 32	23.2 20.2	28.3 24.6	0	45 3.1	45 3.1	45 3.1	835VBN20T360MH000		835VBN20T460MH000		8.4	3.8					
1-1/2	1.56 40	26.7 23.2	30.9 26.9	0	45 3.1	45 3.1	45 3.1	835VBN24T360MH000		835VBN24T460MH000		8.4	3.8					

ON-OFF CONTROL ACTUATOR BRONZE VALVES

CONTROL PARAMETERS 230V AC

Port Size	Orifice Size		Flow Coeff		Flow Coeff		Operating Pressure						Valve Number Bronze		Valve Number Bronze		Weight	
	DN	Cv Kv	Cv Kv	Min	psi bar		psi bar		psi bar		Distributing Valve	Mixing Valve	lbs	Kg				
	inch mm	P-A (m ³ /h)	P-B (m ³ /h)		air, gases	water, liquids	steam											
1/2	0.59 15	6.1 5.3	6.4 5.6	0	220 15.2	220 15.2	210 14.5	835VBN08T370MH000		835VBN08T470MH000		5.5	2.5					
3/4	0.78 20	10.1 8.8	8.6 7.5	0	220 15.2	220 15.2	210 14.5	835VBN12T370MH000		835VBN12T470MH000		5.5	2.5					
1	1.00 25	14.5 12.6	14.3 12.4	0	115 7.9	115 7.9	115 7.9	835VBN16T370MH000		835VBN16T470MH000		6.4	2.9					
1-1/4	1.25 32	23.2 20.2	28.3 24.6	0	45 3.1	45 3.1	45 3.1	835VBN20T370MH000		835VBN20T470MH000		8.4	3.8					
1-1/2	1.56 40	26.7 23.2	30.9 26.9	0	45 3.1	45 3.1	45 3.1	835VBN24T370MH000		835VBN24T470MH000		8.4	3.8					



Series 835: 3 Way Proportional Control Valves: 1/2" to 1 1/2" NPT

Operating Data

LINEAR CONTROL MOTOR ACTUATOR - BM24C

CONTROL PARAMETERS 24V AC/DC, SET-POINT 2-10V, FEEDBACK 2-10V

Port Size	Orifice Size		Flow Coeff		Flow Coeff		Operating Pressure			Valve Number Bronze Distributing Valve	Valve Number Bronze Mixing Valve	Weight					
	DN		Cv	Kv	Cv	Kv	Min	psi	bar			psi	bar	psi	bar	lbs	Kg
	inch	mm	P-A	(m ³ /h)	P-B	(m ³ /h)		air, gases	water, liquids			steam					
1/2	0.59	15	6.1	5.3	6.4	5.6	0	220	15.2	220	15.2	210	14.5	835VBN08T310MH000	835VBN08T410MH000	5.5	2.5
3/4	0.78	20	10.1	8.8	8.6	7.5	0	220	15.2	220	15.2	210	14.5	835VBN12T310MH000	835VBN12T410MH000	5.5	2.5
1	1.00	25	14.5	12.6	14.3	12.4	0	115	7.9	115	7.9	115	7.9	835VBN16T310MH000	835VBN16T410MH000	6.4	2.9
1-1/4	1.25	32	23.2	20.2	28.3	24.6	0	45	3.1	45	3.1	45	3.1	835VBN20T310MH000	835VBN20T410MH000	8.4	3.8
1-1/2	1.56	40	26.7	23.2	30.9	26.9	0	45	3.1	45	3.1	45	3.1	835VBN24T310MH000	835VBN24T410MH000	8.4	3.8

LINEAR CONTROL MOTOR ACTUATOR - BM24C/I

CONTROL PARAMETERS 24V AC/DC, SET-POINT 4-20mA, FEEDBACK 2-10V

Port Size	Orifice Size		Flow Coeff		Flow Coeff		Operating Pressure			Valve Number Bronze Distributing Valve	Valve Number Bronze Mixing Valve	Weight					
	DN		Cv	Kv	Cv	Kv	Min	psi	bar			psi	bar	psi	bar	lbs	Kg
	inch	mm	P-A	(m ³ /h)	P-B	(m ³ /h)		air, gases	water, liquids			steam					
1/2	0.59	15	6.1	5.3	6.4	5.6	0	220	15.2	220	15.2	210	14.5	835VBN08T320MH000	835VBN08T420MH000	5.5	2.5
3/4	0.78	20	10.1	8.8	8.6	7.5	0	220	15.2	220	15.2	210	14.5	835VBN12T320MH000	835VBN12T420MH000	5.5	2.5
1	1.00	25	14.5	12.6	14.3	12.4	0	115	7.9	115	7.9	115	7.9	835VBN16T320MH000	835VBN16T420MH000	6.4	2.9
1-1/4	1.25	32	23.2	20.2	28.3	24.6	0	45	3.1	45	3.1	45	3.1	835VBN20T320MH000	835VBN20T420MH000	8.4	3.8
1-1/2	1.56	40	26.7	23.2	30.9	26.9	0	45	3.1	45	3.1	45	3.1	835VBN24T320MH000	835VBN24T420MH000	8.4	3.8

LINEAR CONTROL MOTOR ACTUATOR - BM24C/IOS

CONTROL PARAMETERS 24V AC/DC, SET-POINT 4-20mA, FEEDBACK 4-20mA

Port Size	Orifice Size		Flow Coeff		Flow Coeff		Operating Pressure			Valve Number Bronze Distributing Valve	Valve Number Bronze Mixing Valve	Weight					
	DN		Cv	Kv	Cv	Kv	Min	psi	bar			psi	bar	psi	bar	lbs	Kg
	inch	mm	P-A	(m ³ /h)	P-B	(m ³ /h)		air, gases	water, liquids			steam					
1/2	0.59	15	6.1	5.3	6.4	5.6	0	220	15.2	220	15.2	210	14.5	835VBN08T330MH000	835VBN08T430MH000	5.5	2.5
3/4	0.78	20	10.1	8.8	8.6	7.5	0	220	15.2	220	15.2	210	14.5	835VBN12T330MH000	835VBN12T430MH000	5.5	2.5
1	1.00	25	14.5	12.6	14.3	12.4	0	115	7.9	115	7.9	115	7.9	835VBN16T330MH000	835VBN16T430MH000	6.4	2.9
1-1/4	1.25	32	23.2	20.2	28.3	24.6	0	45	3.1	45	3.1	45	3.1	835VBN20T330MH000	835VBN20T430MH000	8.4	3.8
1-1/2	1.56	40	26.7	23.2	30.9	26.9	0	45	3.1	45	3.1	45	3.1	835VBN24T330MH000	835VBN24T430MH000	8.4	3.8

LINEAR CONTROL MOTOR ACTUATOR - BM115C/IOS

CONTROL PARAMETERS 115V AC, SET-POINT 4-20mA, FEEDBACK 4-20mA

Port Size	Orifice Size		Flow Coeff		Flow Coeff		Operating Pressure			Valve Number Bronze Distributing Valve	Valve Number Bronze Mixing Valve	Weight					
	DN		Cv	Kv	Cv	Kv	Min	psi	bar			psi	bar	psi	bar	lbs	Kg
	inch	mm	P-A	(m ³ /h)	P-B	(m ³ /h)		air, gases	water, liquids			steam					
1/2	0.59	15	6.1	5.3	6.4	5.6	0	220	15.2	220	15.2	210	14.5	835VBN08T340MH000	835VBN08T440MH000	5.5	2.5
3/4	0.78	20	10.1	8.8	8.6	7.5	0	220	15.2	220	15.2	210	14.5	835VBN12T340MH000	835VBN12T440MH000	5.5	2.5
1	1.00	25	14.5	12.6	14.3	12.4	0	115	7.9	115	7.9	115	7.9	835VBN16T340MH000	835VBN16T440MH000	6.4	2.9
1-1/4	1.25	32	23.2	20.2	28.3	24.6	0	45	3.1	45	3.1	45	3.1	835VBN20T340MH000	835VBN20T440MH000	8.4	3.8
1-1/2	1.56	40	23.2	20.2	30.9	26.9	0	45	3.1	45	3.1	45	3.1	835VBN24T340MH000	835VBN24T440MH000	8.4	3.8

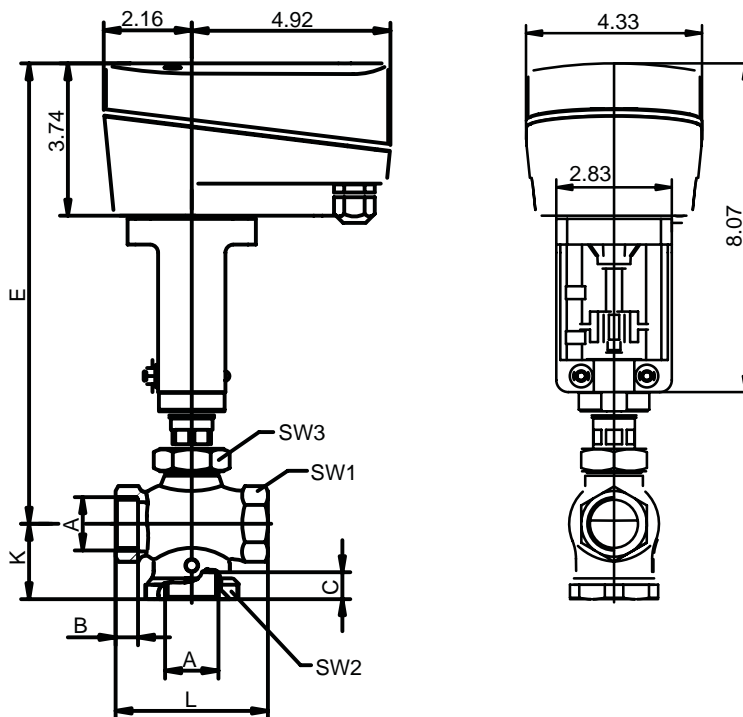
LINEAR CONTROL MOTOR ACTUATOR - BM230C/IOS

CONTROL PARAMETERS 230V AC, SET-POINT 4-20mA, FEEDBACK 4-20mA

Port Size	Orifice Size		Flow Coeff		Flow Coeff		Operating Pressure			Valve Number Bronze Distributing Valve	Valve Number Bronze Mixing Valve	Weight					
	DN		Cv	Kv	Cv	Kv	Min	psi	bar			psi	bar	psi	bar	lbs	Kg
	inch	mm	P-A	(m ³ /h)	P-B	(m ³ /h)		air, gases	water, liquids			steam					
1/2	0.59	15	6.1	5.3	6.4	5.6	0	220	15.2	220	15.2	210	14.5	835VBN08T350MH000	835VBN08T450MH000	5.5	2.5
3/4	0.78	20	10.1	8.8	8.6	7.5	0	220	15.2	220	15.2	210	14.5	835VBN12T350MH000	835VBN12T450MH000	5.5	2.5
1	1.00	25	14.5	12.6	14.3	12.4	0	115	7.9	115	7.9	115	7.9	835VBN16T350MH000	835VBN16T450MH000	6.4	2.9
1-1/4	1.25	32	23.2	20.2	28.3	24.6	0	45	3.1	45	3.1	45	3.1	835VBN20T350MH000	835VBN20T450MH000	8.4	3.8
1-1/2	1.56	40	26.7	23.2	30.9	26.9	0	45	3.1	45	3.1	45	3.1	835VBN24T350MH000	835VBN24T450MH000	8.4	3.8

Series 835: 3 Way Motorized Valves: 1/2" to 1-1/2" NPT

Dimensions and Weights



A Pipe Size NPT	DN	B	C	E	K	L	SW1	SW2	SW3	Stroke	Weight	
											lbs	Kg
1/2"	15	0.50	0.60	11.30	1.55	3.15	1.30	1.60	1.60	0.35	5.5	2.5
3/4"	20	0.50	0.60	11.30	1.65	3.15	1.30	1.60	1.60	0.35	5.5	2.5
1"	25	0.55	0.70	11.30	1.85	3.75	1.60	2.15	1.60	0.43	6.4	2.9
1-1/4"	32	0.70	0.75	11.95	2.40	5.20	2.30	2.95	1.60	0.73	8.4	3.8
1-1/2"	40	0.70	0.75	11.95	2.40	5.20	2.30	2.95	1.60	0.73	8.4	3.8

Dimension in inches except as noted

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- 3. Delivery:** Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery. Shipments are made by common carrier. Any premium freight must be requested and paid for by the Buyer.
- 4. Warranty:** Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 1 year from the date of shipment to Buyer, or 2,000 hours of use, whichever expires first. THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED. NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGNS OR SPECIFICATIONS.
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- 6. Changes, Reschedules and Cancellations:** Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.
- 7. Special Tooling:** A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.
- 8. Buyer's Property:** Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.
- 9. Taxes:** Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.
- 10. Indemnity For Infringement of Intellectual Property Rights:** Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets (hereinafter 'Intellectual Property Rights'). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights. If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.
- 11. Force Majeure:** Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.
- 12. Entire Agreement/Governing Law:** The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.



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