



# Ball and Plug Valves

Catalog 4121-BV

January 2019

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



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## Introduction

Parker 70, 80 and 90 Series Electric Actuators are designed for electric actuation of Parker's B Series, MB Series, HB Series, and SWB Series Ball Valves. They provide reliable, cost effective, remote valve actuation. The simplicity of design provides accessible and easy wiring installation. The convenience and accuracy of advanced modular electronics gives the user the ability to wire in accessories without all the hard wiring hassles. The master PC ("mother") board accepts plug-in modular ("daughter") boards to allow for a variety of accessory functions. Other than connecting a power source, there is no internal wiring to tangle with, ever. With a variety of accessories as well as superior actuator design, Parker's Ball Valves with the 70, 80 or 90 Series actuators are the obvious choice.

## 70 Series

### Specifications

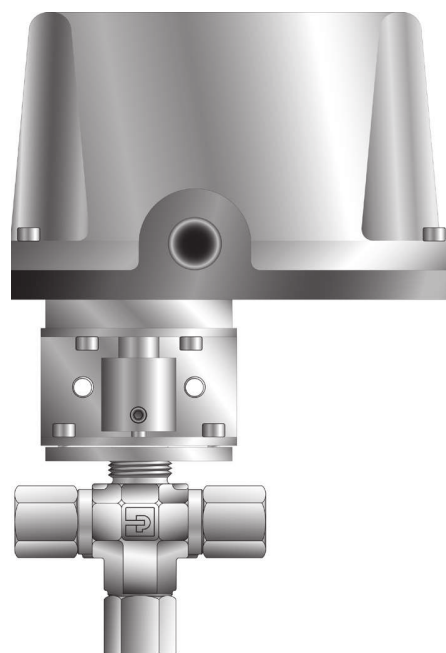
- ▶ Voltage: 24, 115 or 230 VAC (50/60 Hz); 12 or 24 VDC
- ▶ Torque: 150, 300, 600 in lb (17, 34, 68 N m)
- ▶ Enclosure: PVC composite
- ▶ Duty cycle: 25% (VAC models); 100% (VDC models)
- ▶ Actuator bolt pattern: ISO standard (5211)
- ▶ Conduit connection: 1/2" NPT
- ▶ Output shaft: Male, zinc plated steel
- ▶ Temperature limits (all models): 32°F to 150°F (0°C to 66°C); (-40°F [-40°C] minimum with heater and thermostat)

### Features

- ▶ Single direction actuation
- ▶ PVC cover resists damage/UV radiation
- ▶ NEMA 4 (weatherproof), 4X (weatherproof with corrosion resistance)
- ▶ Hardened steel spur gear drive train provides consistent, long life performance
- ▶ Permanently lubricated gear train and bearings
- ▶ Low profile design/direct drive male output permit limited space installation
- ▶ Available for the B Series, MB Series, HB Series and SWB Series ball valves
- ▶ Available for two-way (90°) and three-way (180°) configurations
- ▶ Approximate weight: 6 lb (2.7 kg)
- ▶ Two Limit Switches: Single pole, double throw, rated for 1/3 HP, 10 amps @ 125/230 VAC, CSA certified

### Options

- ▶ Additional limit switches and cams (specify up to 2)
- ▶ Heater and thermostat (For operation to -40°F [-40°C])



**Model Shown:**  
**4F-B6XJ-SS-71XA**

## 70R Series

### Specifications

- ▶ Same as 70 series

### Features

- ▶ Bi-directional (reversing) actuation
- ▶ Position indicator

### Options

- ▶ Same as 70 Series

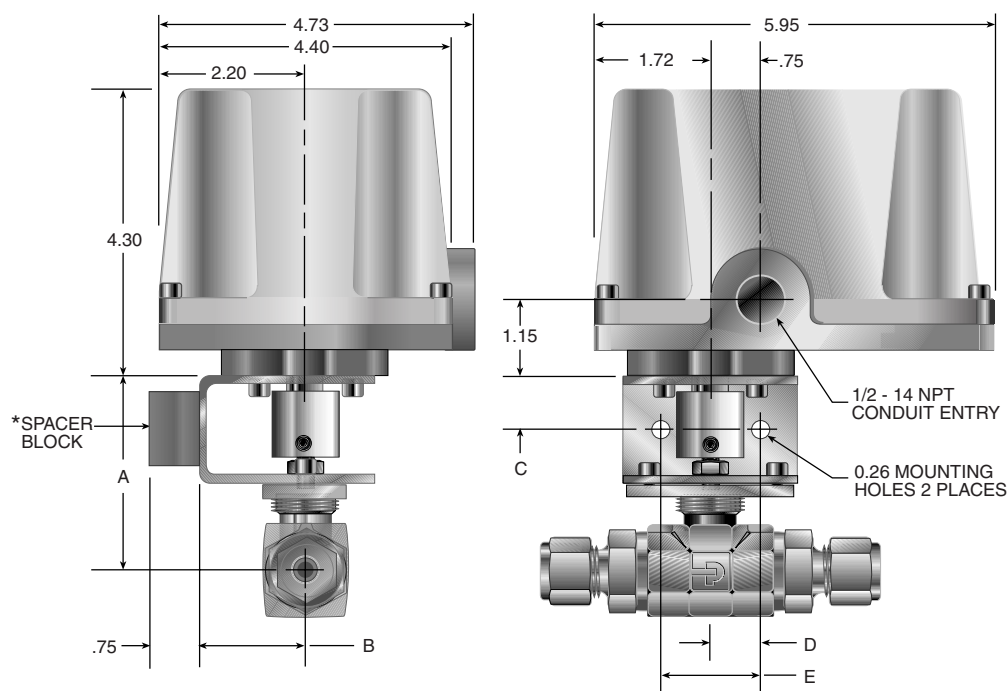
### Additional Options

- ▶ Additional limit switches and cams (specify up to 2)
- ▶ Valve position indication

## Materials of Construction

Part	Material
Cover	Composite, PVC
Base	Diecast zinc alloy
Gear Train	Hardened steel
Output Shaft	Zinc plated steel
Finish	Powder coated epoxy

## 70 Series Dimensional Data



Valve Type	A		B		C		D		E	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
B2	2.23	56.6								
B6	2.49	63.2								
B8	2.91	73.9								
MB2	2.33	59.2	1.61	40.9	0.80	20.3				
MB4	2.33	59.2								
MB6	2.48	63.0								
HB4	2.70	68.6								
SWB4	2.57	64.3								
SWB8	2.79	70.9	1.25	31.7	0.82	20.8				
SWB12	2.95	74.9								
SWB16	3.14	79.8								

\*Spacer block ordered separately, see page 48

Dimensions in inches/millimeters are for reference only, subject to change.

Actuator Model	Breakaway Torque in lb (N m)	Voltage	Duty Cycle	Cycle Time (sec)	Amps at Stall (Nominal)			Weight lb (kg)
					24 VAC	115 VAC	230 VAC	
71	150 (17.0)	24 VAC,	25%	5	5.2	1.3	0.7	6 (2.7)
72	300 (34.0)	115 VAC or		9	7.2	1.8	0.9	
73	600 (67.8)	230 VAC		16	7.2	1.3	0.7	

Actuator Model	Breakaway Torque in lb (N m)	Voltage	Duty Cycle	Cycle Time (sec)		Amps at Running Torque (Nominal)		Approx. Weight lb (kg)
				12 VDC	24 VDC	12 VDC	24 VDC	
72	300 (34.0)	24 VDC	100%	**	9	**	0.5	6 (2.7)
73	600 (67.8)	12 VDC or 24 VDC		16	16	1.3	0.5	

**Note:** Cycle times reflect 90° rotation. For 180° rotation, double the cycle time.

\*\*12 VDC not available with this model.

## 80 Series

### Specifications

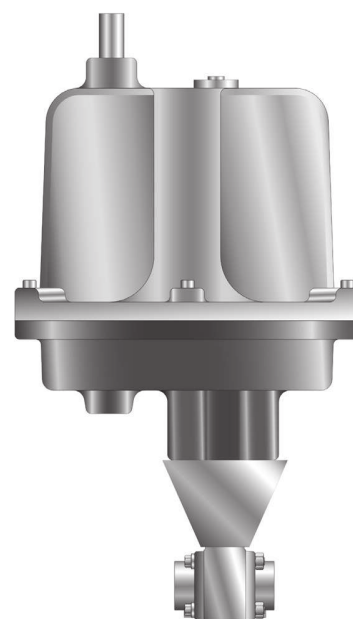
- ▶ Voltage: 115 or 230 VAC (50/60 Hz)
- ▶ Torque: 150, 300, 600 in lb (17, 34, 68 Nm)
- ▶ Enclosure: Epoxy coated cast aluminum
- ▶ Duty cycle: 75%
- ▶ Actuator bolt pattern: ISO standard (5211)
- ▶ Conduit connection: 1/2" NPT (2 places)
- ▶ Output drive: ISO compatible female drive output
- ▶ Temperature limits (all models): 32°F to 150°F (0°C to 66°C); (-40°F [-40°C] minimum with heater and thermostat)

### Features

- ▶ Bi-directional actuation
- ▶ Mother/daughter board, modular electronics technology
- ▶ Circuit board readily accepts plug-in connectors
- ▶ Variety of plug-in accessory boards are available
- ▶ Easy installation, no hard-wiring required
- ▶ NEMA 4 (weatherproof), 4X (weatherproof with corrosion resistance), NEMA 7 (explosion proof, gases) & 9 (explosion proof, dust) – Class I, Div. I, Groups C & D; Class II, Div. I, Groups E, F, and G; Class III
- ▶ Highly efficient spur gear power train
- ▶ Lubrication: Permanently lubricated gear train and bearings
- ▶ Manual override
- ▶ Visual position indicator
- ▶ Available for the B Series, MB Series, HB Series and SWB Series ball valves
- ▶ Available for two-way (90°) and three-way (180°) configurations
- ▶ Approximate weight: 17 lb (7.7 kg)
- ▶ CSA certified (Standard)
- ▶ Two Limit Switches: Single pole, double throw, rated for 1/3 HP, 10 amps @ 125/230 VAC, CSA certified

### Options

- ▶ Additional limit switches and cams (specify up to 2)
- ▶ Heater and thermostat (For operation to -40°F [-40°C])
- ▶ CSA Certified



**Model Shown:**  
**8W-SWB8L-RT-V-SS-81CS2**

### Materials of Construction

Part	Material
Cover	Diecast aluminum alloy
Base	Diecast aluminum alloy
Gear Train	Hardened steel
Output Shaft	N/A
Finish	Powder coated epoxy

### Testing

#### Actuator

All 70 and 80 Series Electric Actuators are factory tested for accurate cycle times and correct output signals at all applicable positions.

#### Valve

All valves are factory tested for internal and external leakage as described in their respective catalogs.

#### Valve / Actuator Assemblies

All valve/actuator assemblies are factory tested for proper valve actuation.

## 90 Series

### Specifications

- ▶ Voltage: Universal Power Board (230, 115, 24 VAC (50/60 Hz); 12 or 24 VDC)
- ▶ Torque: 150, 300, 600 in-lb (17, 34, 68 Nm)
- ▶ Enclosure: Epoxy coated cast aluminum
- ▶ Duty cycle: Continuous (After 1 hour duty cycle is reduced to 80%)
- ▶ Actuator bolt pattern: ISO standard (5211)
- ▶ Conduit connection: 3/4" NPT (3/4" to 1/2" reducing bushings included)
- ▶ Output drive: Square female drive output
- ▶ Temperature limits (all models): (-40°F [-40°C] minimum with heater and thermostat)

### Features

- ▶ Bi-directional actuation
- ▶ Mother/daughter board, modular electronics technology
- ▶ Circuit board readily accepts plug-in connectors
- ▶ Variety of plug-in accessory boards built in
- ▶ Easy installation, no hard-wiring required
- ▶ Designed to meet NEMA 4 (weatherproof), 4X (weatherproof with corrosion resistance), NEMA 7 (explosion proof, gases) & 9 (explosion proof, dust) – Class I, Div. I, Group C&D; Class II, Div. I, Group E, F, & G; Class III
- ▶ Highly efficient spur gear power train
- ▶ Lubrication: Permanently lubricated gear train and bearings
- ▶ Position feedback and holding brake to prevent back-driving all models
- ▶ Visual position indicator
- ▶ Available for the B Series, MB Series, HB Series, and SWB Series ball valves
- ▶ Available for 2-way (90°) and 3-way (180°) configurations
- ▶ Approximate weight: 17 lb (7.7 kg); Model 94 weighs 31 lb (14.1 kg)
- ▶ CSA certified (Standard)
- ▶ Two limit switches: Single pole, double throw, rated for 1/2 HP, 15 amps @ 125 VAC, CSA certified
- ▶ Heater and thermostat (For operation to -40° F [-40° C])
- ▶ Back-up powered control Board

### Materials of Construction

Part	Material
Cover	Diecast aluminum alloy
Base	Diecast aluminum alloy
Gear Train	Hardened steel
Output Shaft	N/A
Finish	Powder coated epoxy

### Testing

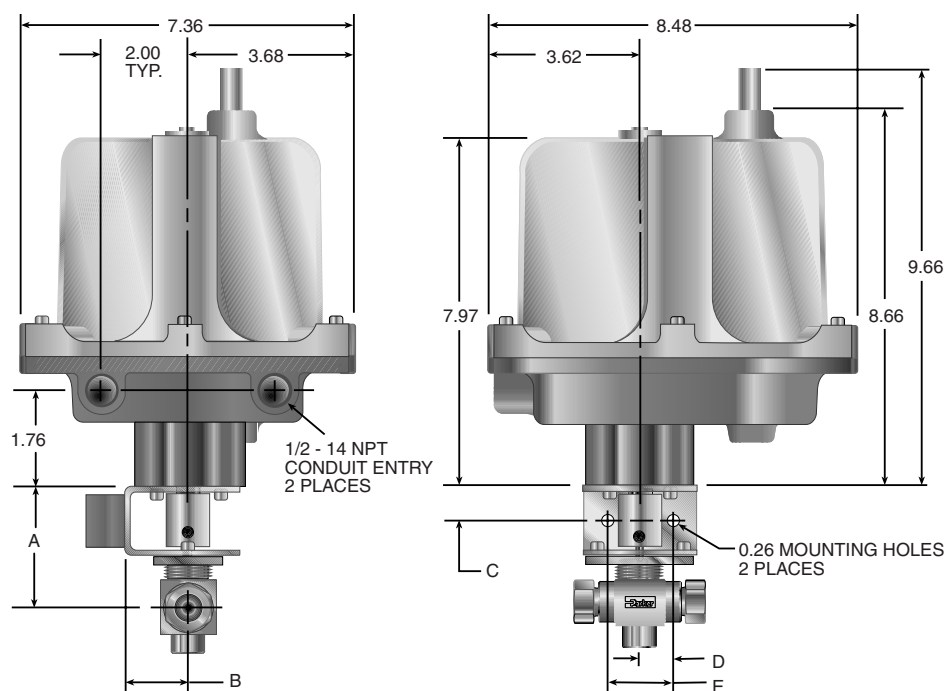
#### Valve

All valves are factory tested for internal and external leakage as described in their respective catalogs.

#### Valve / Actuator Assemblies

All valve/actuator assemblies are factory tested for proper valve actuation.

## 80 and 90 Series Dimensional Data



Valve Type	A		B		C		D		E	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
B2	2.23	56.6	1.61	40.9	0.80	20.3	0.75	19.1	1.50	38.1
B6	2.49	63.2								
B8	2.91	73.9								
MB2	2.33	59.2								
MB4	2.33	59.2								
MB6	2.48	63.0								
HB4	2.70	68.6								
SWB4	2.57	64.3	1.25	31.7	0.82	20.8				
SWB8	2.79	70.9								
SWB12	2.95	74.9								
SWB16	3.14	79.8								

Dimensions in inches/millimeters are for reference only, subject to change.

Actuator Model	Breakaway Torque in lb (Nm)	115 or 230 VAC			Actuator Model	Breakaway Torque in lb (Nm)	24 VAC		
		Cycle Time (sec)	Duty Cycle	Amp** Draw (@115 VAC)			Cycle Time (sec)	Duty Cycle	Amp** Draw (@115 VAC)
81	150 (17.0)	10	75%	0.3	91	150 (17.0)	5	100%	1.5
82	300 (34.0)	15			92	300 (34.0)	10		
83	600 (67.8)	30			93	600 (67.8)	15		

Actuator Model	Breakaway Torque in lb (Nm)	12 VDC			Actuator Model	Breakaway Torque in lb (Nm)	24 VDC†		
		Cycle Time (sec)	Duty Cycle	Amp** Draw (@115 VAC)			Cycle Time (sec)	Duty Cycle	Amp** Draw (@115 VAC)
91	150 (17.0)	5	100%	1.9	91	150 (17.0)	3	100%	2.4
92	300 (34.0)	10			92	300 (34.0)	5		
93	600 (67.8)	15			93	600 (67.8)	8		

**Note:** Cycle times reflect 90° rotation. For 180° rotation, double the cycle time.

\*\*Amps rated at full running torque. Amp draws shown are for 115 VAC and 12VDC only. For other voltages, consult the factory.

†24 VDC cycle time and amp draw are half of 12 VDC.

**Duty Cycle:** The percentage of time an electric actuator may operate in relation to the time it must rest. It equals "on time" divided by total elapsed time, multiplied by 100. For example, an actuator with a duty cycle of 25% and a cycle time of five seconds must rest for 15 seconds before operating again.



## Actuator Selection Tables

Valve Series	Flow Pattern	Seat Mate- rial	Suggested Actuator									
			70 Series					80 Series		90 Series		
			115 VAC	230 VAC	24 VAC	12 VDC	24 VDC	115 VAC	230 VAC	24 VAC	12 VDC	24 VDC
B Series	2-Way	All	71	71	71	73	72	81	81	91	91	91
B Series	3-Way	All	71X	71X	71X	73X	72X	81X	81X	91X	91X	91X
MB Series	2-Way	All	71	71	71	73	72	81	81	91	91	91
MB Series	3-Way	All	71X	71X	71X	73X	72X	81X	81X	91X	91X	91X
HB Series	2-Way	All	71	71	71	73	72	81	81	91	91	91
HB Series	3-Way	All	71X	71X	71X	73X	72X	81X	81X	91X	91X	91X
SWB4	2-Way	All	71	71	71	73	72	81	81	91	91	91
SWB8	2-Way	RT	71	71	71	73	72	81	81	91	91	91
SWB12	2-Way	RT	71	71	71	73	72	81	81	91	91	91
SWB16	2-Way	RT	71	71	71	73	72	81	81	91	91	91

## How To Order Mounting Bracket Kits

Valve Series	Mounting Bracket Kit Part Numbers		
	70 Series	80 Series	90 Series
B2L	MK-B2L-70	MK-B2L-80	MK-B2L-90
B2X	MK-B2X-70	MK-B2X-80	MK-B2X-90
B6L	MK-B6L-70	MK-B6L-80	MK-B6L-90
B6X	MK-B6X-70	MK-B6X-80	MK-B6X-90
B8L	MK-B8L-70	MK-B8L-80	MK-B8L-90
B8X	MK-B8X-70	MK-B8X-80	MK-B8X-90
MB2L	MK-MB4L-70	MK-MB4L-80	MK-MB4L-90
MB2A	MK-MB4L-70	MK-MB4L-80	MK-MB4L-90
MB2X	MK-MB4X-70	MK-MB4X-80	MK-MB4X-90
MB4L	MK-MB4L-70	MK-MB4L-80	MK-MB4L-90
MB4A	MK-MB4L-70	MK-MB4L-80	MK-MB4L-90
MB4X	MK-MB4X-70	MK-MB4X-80	MK-MB4X-90
MB6L	MK-MB6L-70	MK-MB6L-80	MK-MB6L-90
MB6A	MK-MB6L-70	MK-MB6L-80	MK-MB6L-90
MB6X	MK-MB6X-70	MK-MB6X-80	MK-MB6X-90
HB4L	MK-HB4-70	MK-HB4-80	MK-HB4-90
HB4X	MK-HB4-70	MK-HB4-80	MK-HB4-90
SWB4L	MK-SWB4-70	MK-SWB4-80	MK-SWB4-90
SWB8L	MK-SWB8-70	MK-SWB8-80	MK-SWB8-90
SWB12L	MK-SWB12-70	MK-SWB12-80	MK-SWB12-90
SWB16L	MK-SWB16-70	MK-SWB16-80	MK-SWB16-90

**Note:** Mounting bracket kits include one mounting bracket, one nut plate, one coupling, six socket head cap screws, and two set screws.

If the bracket spacer block is required, order separately using the following nomenclature:

SPACER-ACT-.75

### How To Order Actuators With Mounting Brackets:

Specify the ball valve series and seat material followed by the actuator.

**Examples:** B6LJ-71C  
MB6XPFA-71RX,  
SWB12LRT-73CS1

**Note:** For the SWB Series, actuators can be down sized to fit the application. The actuator selection tables utilize valve combinations at full operating pressures.

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## How To Order Kits For Field Assembly

Kit Description	70 Series Part Number	80 Series Part Number	90 Series Part Number
Limit Switch (Two-Way Valve)	KIT-LSW-70-2WAY	KIT-LSW-80	KIT-LSW-90
Limit Switch (Three-Way Valve)	KIT-LSW-70-3WAY	KIT-LSW-80	KIT-LSW-90
Heater & Thermostat (115 VAC)*	KIT-HTR-70-115AC	KIT-HTR-80-115AC	KIT-HTR-90-115AC
Heater & Thermostat (230 VAC)*	KIT-HTR-70-230AC	KIT-HTR-80-230AC	KIT-HTR-90-230AC
Heater & Thermostat (24 VAC)*	KIT-HTR-70-24AC	KIT-HTR-80-24AC	KIT-HTR-90-24AC
Positioner (4-20mA, 115 VAC)	Not Available	KIT-POSITIONER-420-115AC	KIT-POSITIONER-420-115AC
Positioner (0-10 VDC, 115 VAC)	Not Available	KIT-POSITIONER-010-115AC	KIT-POSITIONER-010-115AC

\*Heater and thermostat for DC voltages are factory installed only.

## How to Order

### Electric Actuators for Field Assembly

The correct part number is easily derived from the following example and ordering chart. The four product characteristics required are coded as shown in the chart.

Example 1, below, describes a Model 71, two-way electric actuator unit with a NEMA 4 and 4X rating, a 115 VAC motor with optional heater and thermostat.

**Example 1:**

71			-	T
			-	
Actuator Model	Flow Pattern	Voltage	Options	
Actuator Model	Flow Pattern	Voltage	Options	
71	Blank 2-Way	Blank 115 VAC	T	Heater and Thermostat
72	X 3-Way	A 230 VAC	S#	Additional Limit Switch;
73		B 24 VAC		# = number of limit switches required
71R		C 12 VDC		
72R		D 24 VDC		
73R				
81		Blank 115 VAC		
82		A 230 VAC		
83				

**NOTE:** Mounting bracket kits are required when ordering actuators for field assembly.

Example 2, below, describes a Model 91, two-way electric actuator unit with universal power supply.

**Example 2:**

91UP				
Actuator Model	Torque in-lb (Nm)	Flow Pattern	Voltage	
Actuator Model	Torque in-lb (Nm)	Flow Pattern	Voltage	
91	150 (17.0)	Blank 2-Way	UP	Universal
92	300 (34.0)	X 3-Way		Power
93	600 (67.8)			Supply

**NOTE:** Mounting bracket kits are required when ordering actuators for field assembly.



## How to Order (Continued)

### Electric Actuators for Factory Assembly

The correct part number is easily derived from the following example and ordering chart. The five product characteristics required are coded as shown in the chart.

The example below describes a Model 81, three-way electric actuator unit with a NEMA 4, 4X, 7 and 9 rating, a 230 VAC motor and no options, mounted on a MB Series ball valve.

**Example:** 4Z-MB6XPFA-SS - 81XA -

Valve Part Number	Actuator Model	Flow Pattern	Voltage	Options
See the "How to Order" section in the applicable valve series	71 72 73 71R 72R 73R 81 82 83	Blank 2-Way X 3-Way	Blank 115 VAC A 230 VAC B 24 VAC C 12 VDC D 24 VDC Blank 115 VAC A 230 VAC	T Heater and Thermostat S# Additional Limit Switch; # = number of limit switches required

**NOTE:** Parker electrically actuated, B Series Ball Valves should be ordered with elastomeric stem packing and seals or the optional live-loaded PTFE packing. This reduces the need for any further packing adjustment after receipt from the factory.

Valve Part Number	Actuator Model	Torque in-lb (Nm)	Flow Pattern	Voltage
See the "How to Order" section in the applicable valve series	91 92 93	150 (17.0) 300 (34.0) 600 (67.8)	Blank 2-Way X 3-Way	UP Universal Power Supply

**NOTE:** Mounting bracket kits are required when ordering actuators for field assembly.

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