

**UTILITY IRON BODY SERIES**

**DESCRIPTION**

Power's rugged Utility Iron Body Series can be used for steam and water modulation, with moderate pressure drops, or large capacity applications. The Iron Body maintains a cost effective approach for large distribution or mixing (tempering) applications. The valves are particularly well suited to commercial storage, water heaters and industrial utility applications.

**GROUP VALVES**

- **SI** Single Seat, unbalanced, 2 1/2"-6" flanged, moderate drop
- **DI** Double Seat, balanced, 2 1/2"-8" flanged, high capacity, low drop
- **MI** 3-way mixing or bypass, 2 1/2"-6" flanged

**SPECIFICATIONS**

	SI	DI	MI
<b>Body Size</b>	2 1/2" to 6"	2 1/2" to 8"	2 1/2" to 6"
<b>End Connectors:</b>	Flanged 125 or 250 ANSI		
<b>Rating:</b>	ANSI Class III (0.1%)	ANSI Class II (0.5%)	ANSI Class III (0.1%)
<b>Cy Range:</b>	65-360	70-680	70-305
<b>Trim:</b>	Iron, with Bronze or Stainless Steel		
<b>Characteristics:</b>	Equal Percent		Linear
<b>Actuation:</b>	46", 84", 115" Pneumatic (Reversal) or Electric Versions		
<b>Max. Steam Flow:</b>	~98,000 lb/hr	~182,000 lb/hr	~100,000 lb/hr
<b>Packing:</b>	Spring Loaded, Teflon V-ring, or split ring graphite		
<b>Hardware:</b>	All Stainless Steel		

Sizes	Actuators Available
2 1/2"	46" and 84" Diaphragm, S series Electrics
3"	46" and 84" Diaphragm, S series Electrics
4"	46" and 84" Diaphragm, S series Electrics
5"	84" and 115" Diaphragm, S series Electrics
6"	84" and 115" Diaphragm, S series Electrics
8"	84" and 115" Diaphragm, S series Electrics

<b>Coatings:</b>	Powder Deposition Internal/External Epoxy
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**DI**



**MI**

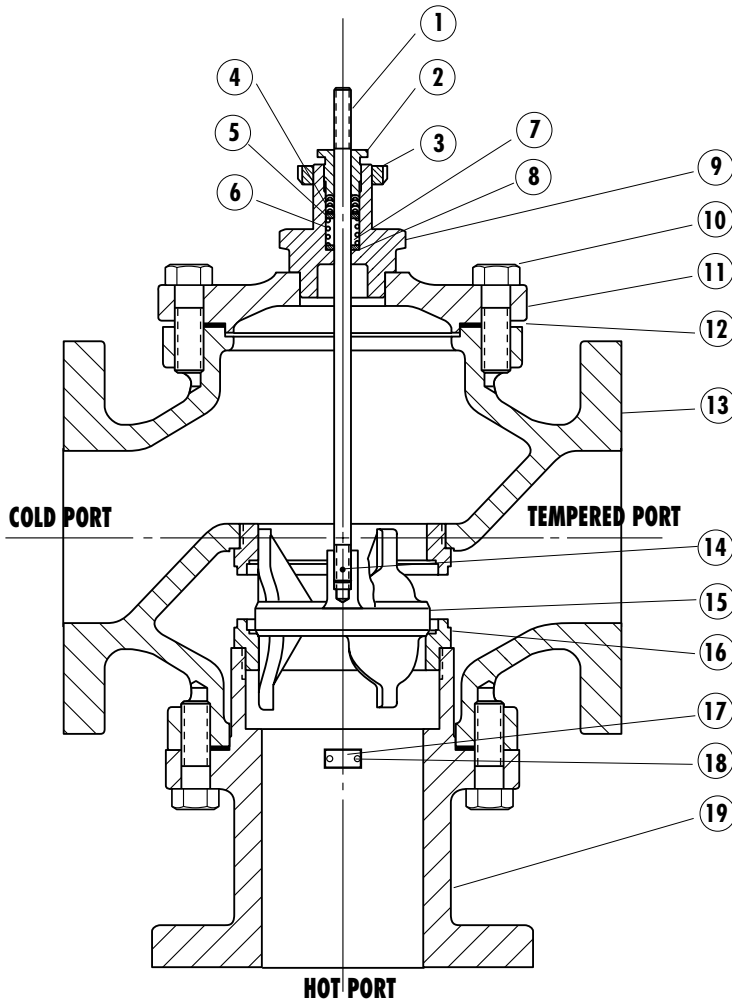


**SI**

**TABLE OF CONTENTS**

Description..... 1  
.....  
Specifications..... 1  
.....  
SI Single Seat Valve  
Construction..... 2  
DI Double Seat High Capacity Valve  
Construction..... 3  
MI Mixing or Bypass Application Valve Construction..... 4

## MI MIXING OR BYPASS APPLICATION VALVE CONSTRUCTION



Item	Description	Material
1	Valve Stem	316 Stainless Steel
2	Packing Retainer	Brass
3	Yoke Locknut	Steel Plated
4	V-Ring Packing	Teflon
5	Male Adapter	Brass
6	Packing Spring	306 Stainless Steel
7	O-Ring	Teflon
8	O-Ring Retainer	Brass
9	Bonnet	Brass
10	Hex Head Capscrew	Steel Plated
11	Top Cover	Iron
12	Gasket	Composition
13	Valve Body	Iron
14	Groove Pin	303 Stainless Steel
15	Plug	Bronze or Stainless
16	Seat Ring	Bronze or Stainless
17	Flow Arrow Plate	Aluminum
18	Drive Screw	18-8 Stainless Steel
19	Bottom Port	Iron

### Repair Kits

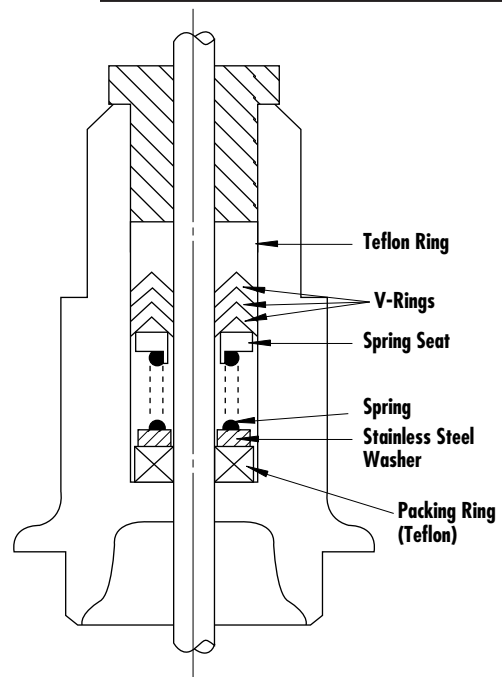
Repacking	4, 5, 6, 7, 8
Packing & Inspection	4, 5, 6, 7, 8, 12
Rebuild	1, 2, 4, 5, 6, 7, 8, 12, 14, 15, 16, 3, 9

### REPLACEMENT PACKING SETS (Valves dated 4/1/00 or earlier)

Material	Order Code	Part No.
Teflon V-Ring (Spring Loaded)	S	591-928
EP V-Ring (Spring Loaded)	W	594-221

### PACKING REPLACEMENT

- Using stem and nut piece, push down firmly onto packing from top of valve. This action compresses the packing into a more firm piece for smoother removal.
- Using the valve stem, push up packing from bottom of valve, or use an O-ring-type tool or any type of small pick to dislodge the packing from the bottom of the bonnet.
- Remove all traces of the old packing and replace with new packing.



### V-RING PACKING LAYOUT

All items included in set

## VALVE REPAIR KITS

### Valve Repair Kits

Three different types of valve repair kits are available across all of our valves:

Kit Type	Kit Contents
Repack kit	Packing material
Repack & inspection kit	Packing and bonnet gasket
Rebuild kit	Packing, bonnet gasket, and trim (stem included)

To order repair kits, utilize the first 12 digits of the valve part number, which would clearly indicate the valve type, trim, connection, inner trim, action, and packing. The remaining 4 digits, which are not needed to source a valve kit, would then be available to indicate the type of kit. Since the same kit applications are available for all valves, the last four digits would use the following nomenclature for kit identification and ordering:

Kit Type (All Except 115" Actuator)	Nomenclature
Repack	KIT1
Repack & inspection	KIT2
Rebuild	KIT3

Kit Type (For use w/ 115" Actuator, Fail Open)	Nomenclature
Repack	KIT7
Repack & inspection	KIT8
Rebuild	KIT9
Kit Type (For use w/ 115" Actuator, Fail Closed)	Nomenclature
Repack	KIT4
Repack & inspection	KIT5
Rebuild	KIT6

For example, the part number to order a rebuild kit for a Flowrite II with iron body and single seat bronze trim that is three inches (300), flanged (125#), bronze, Fail closed, and has Teflon packing is: **593-SI300FBCTKIT3**.

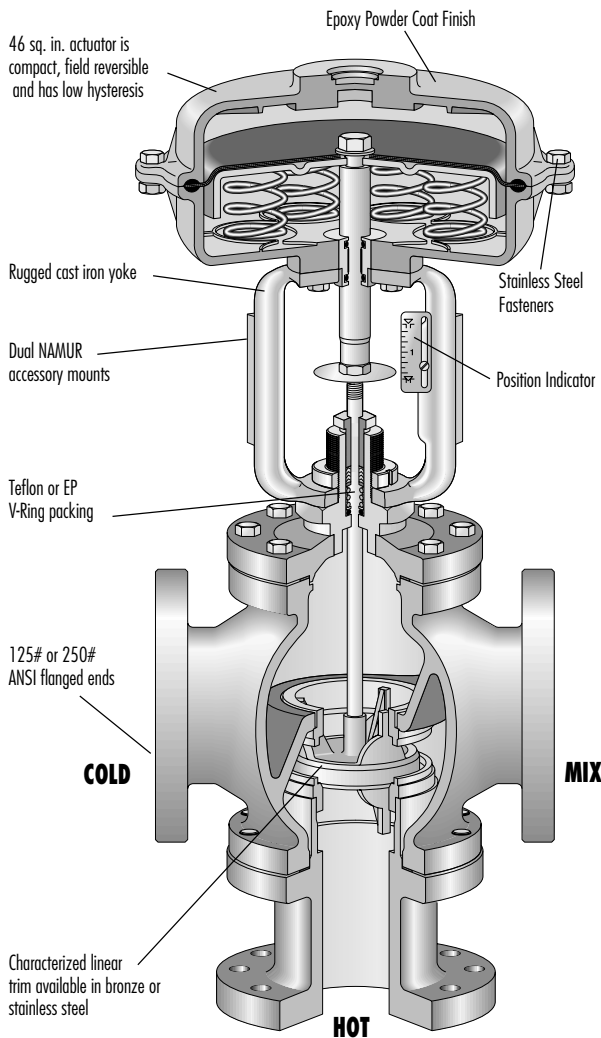
These kits are not in a "Stock on the Shelf" form. They are built and priced to order. Contact Powers Technical Support (Phone 1-800-669-5430, Fax 1-847-673-9044) and request price and delivery for your chosen kit. Powers will respond within one business day for this request.

## ACTUATION

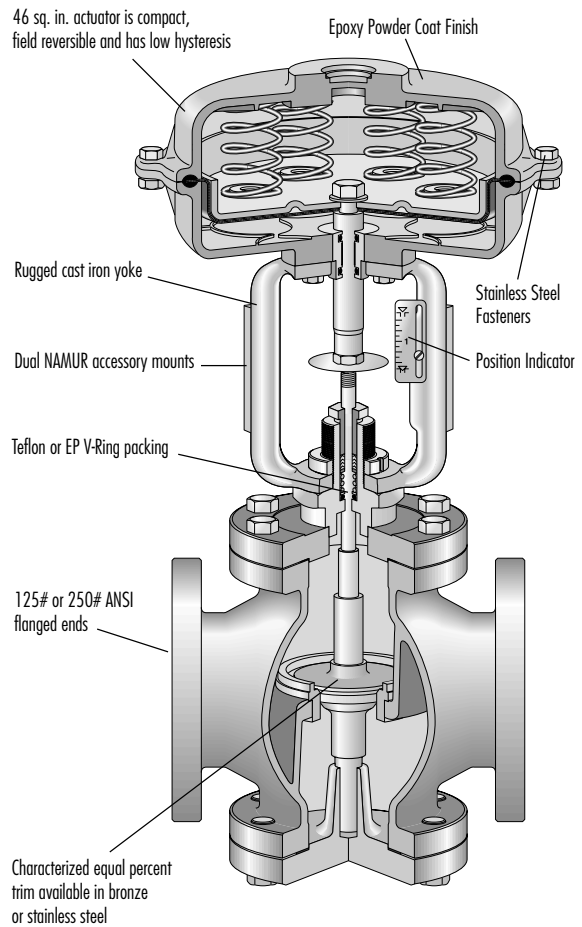
Proper control is the primary function of a control valve. Safety considerations have always reinforced the need for isolation or block valves in order to completely shut down the flow of a controlled medium. In cases where the control valve is also relied upon for this function due to economic decisions, it is imperative that proper "Fail Safe" mode—such as "Normally Closed-air to open" for heating applications, and "Normally Open-air to close" for cooling applications, and "Normally Open-air to close" for cooling use be properly selected for a valve and actuator combination. In addition, the actuator must be capable of shutting off and holding against the pressure differential.

Powers Process Controls offers pneumatic diaphragm (rolling), in three sizes—46 sq.in., 84 sq.in., and 115 sq.in.. Electric actuators including a variety of fail open, fail closed, and fail in place as well as accessories such as hand wheels and limit switches. The following diagrams illustrate the valve of interest, with the multi-spring 46in<sup>2</sup> actuator only. Please refer to the Technical Instructions for Actuators for more detailed explanations of mounting, preload adjustments, and maintenance.

### MI MIXING/BYPASS

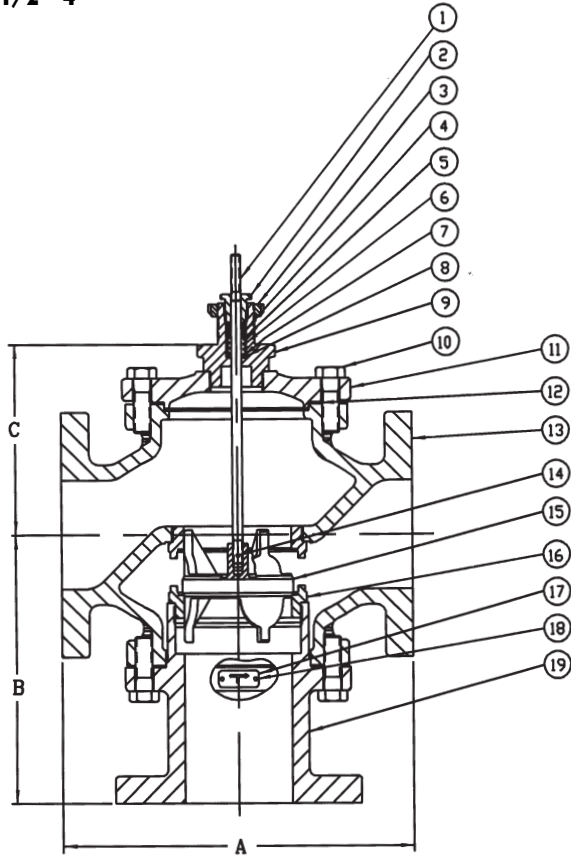


### SI SINGLE SEAT



## MI DIMENSIONS

### MI MIXING/BYPASS IRON BODY 2 1/2"-4"

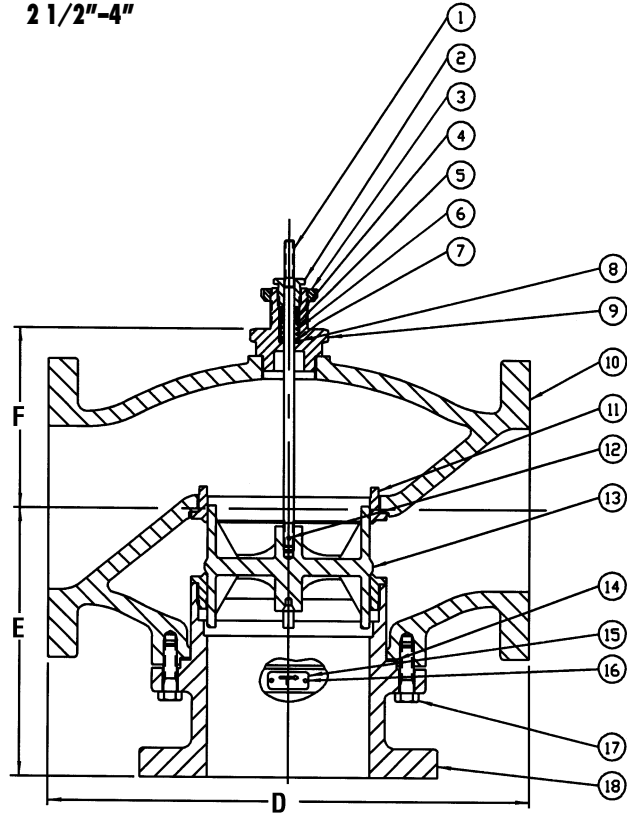


**PUSH TO CLOSE BOTTOM PORT**

Item	Description	Item	Description
1	Valve Stem	11	Top Cover
2	Packing Retainer	12	Gasket
3	Yoke Locknut	13	Valve Body
4	V-Ring Packing	14	Groove Pin
5	Male Adapter	15	Plug
6	Packing Spring	16	Seat Ring
7	O-Ring	17	Flow Arrow Plate
8	O-Ring Retainer	18	Drive Screw
9	Bonnet	19	Bottom Port
10	Hex Head Capscrew		

Valve Size	Fig. Rating	A	B	C
2 1/2"	125#	9	7 1/16	5 3/8
	250#	9 5/8	7 3/8	5 3/8
3"	125#	10 1/16	7 15/16	5 15/16
	250#	10 3/4	8 5/16	5 15/16
4"	125#	13	9 7/8	7
	250#	13 5/8	10 3/16	7

### MI MIXING/BYPASS IRON BODY 2 1/2"-4"



**PULL TO CLOSE SIDE INLET PORT**

Item	Description	Item	Description
1	Valve Stem	11	Seat Ring
2	Packing Retainer	12	Groove Pin
3	Yoke Locknut	13	Plug
4	V-Ring Packing	14	Gasket
5	Male Adapter	15	Flow Arrow Plate
6	Packing Spring	16	Drive Screw
7	O-Ring	17	Hex Head Capscrew
8	O-Ring Retainer	18	Bottom Port
9	Bonnet		
10	Valve Body		

Valve Size	Fig. Rating	D	E	F
5"	125#	15 3/4	9 1/4	5 7/8
	250#	16 5/8	10 3/8	5 7/8
6"	125#	17 3/4	9 7/8	6 5/8
	250#	18 5/8	11	6 5/8

## INSTALLATION

Standard practices are required to protect the integrity of the valve with the specific pressure and temperature limits associated.

Unless extenuating circumstances indicate, always install the single port (inlet) versions with the arrow cast into the body pointing down stream. It is considered good practice to install the unit with a vertical orientation—actuator on top. It is acceptable to mount it upside down, but generally not suggested to mount the unit in the horizontal position. This can, in some cases, produce “side loading” at the stem and aggravate wear in the packing area.

The calibration of our standard I/P Transducers are sensitive to position. If valves with I/P's are mounted upside down, recalibration of the I/P's is necessary. For the control of steam, and for maintenance considerations, we strongly suggest using isolation or block valves upstream and/or at least down stream of the control valve. Iron body valves are excellent control/modulation final elements, but not the ultimate choice for shutting off against high pressure differentials.

In the case of the mixing/bypass MI unit, care is required to plumb the hot and cold ingredients into the correct port, for proper fail safe selection, i.e., will the unit fail hot-or

## PIPING/PLUMBING CONSIDERATIONS

