

Due to manufacturer agreements, not all products are available in all geographic areas and markets.

Prices are current at the catalog's publication date, and are subject to change without notice. Some products in this catalog may not be available in all markets or geographic areas.

**Prices Start at**    **See Page**

## Ball Valves

A T Controls Series 22 Direct-Mount Two Piece Ball Valves	\$70.00	322
A T Controls Series 38 General Purpose Multiport Ball Valves	\$124.00	332
A T Controls Series 88 Direct-Mount Three Piece Ball Valves	\$103.00	324
A T Controls Series F91 Firesafe Direct-Mount Flanged Ball Valves	\$138.00	326
A T Controls Series FD9 Firesafe Direct-Mount Split Body Flanged Ball Valves	\$185.00	328
A T Controls FM-Approved Ball Valves for Safety Shutoff Applications	\$1432.00	330
Marwin Two-Piece Manual Ball Valves	\$8.19	320
Marwin Three-Piece Ball Valves	\$238.42	321

## Butterfly Valves

A T Controls Manual and Automated Resilient-Seat Butterfly Valves	\$52.00	310
A T Controls Power Seal High Performance Butterfly Valves	\$500.00	312
Quadax Quadruple Offset Butterfly Valves	Call	314

## Control Valves

Jordan Valve Sliding Gate Control Valves	\$2668.68	303
Jordan Valve Globe-Style Control Valves	\$1522.08	305
Jordan Valve Cage-Guided Control Valves	Call	304
LowFlow Fractional Flow Control Valves	\$1612.80	306
Marwin V-Ball Type Control Valves	\$467.74	308

## Sanitary and Hygienic Valves

SED Aseptic Service Diaphragm Valves	Call	319
Steriflow Hygienic Pressure Regulators	Call	317
Steriflow In-Line Sight Glasses	Call	318
Steriflow Sample Coolers	Call	318
Steriflow Sanitary Check Valves	Call	318
Steriflow MK978 Sanitary Control Valves	Call	317
Steriflow Thermostatic Disc and Steam Traps	Call	318

## Regulators

Jordan Valve Back-Pressure Regulators	\$1566.60	300
Jordan Valve Pressure Regulators	\$913.92	295
Jordan Valve Temperature Regulators	\$1634.64	301
LowFlow High Pressure Regulators	\$477.96	299

## Process Valve Accessories

Marwin Valve Y-Type Line Strainers	Call	307
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## Looking for Process Valve Accessories?

### BESTOBELLSTEAM Steam Trap Technologies



#### Delta Element

- Long-term, trouble-free service. Single blade element, stainless internals, built-in strainer and check valve
- Only 30% to 40% of total pressure drop occurs over seating surface, resulting in long valve life
- Modulating discharge eliminates cyclic discharge problems
- High cold discharge capacities provide fast startup capabilities
- Excellent heat transfer and minimum corrosion by continuous air and CO<sub>2</sub> venting



#### Inverted Bucket

- Unique linkage system provides for maximum flow capacities
- Hardened stainless steel valve and seat increases trap life and minimizes corrosion impact
- Reliable and industry accepted design for applications where cyclic design is desirable



#### Thermodynamic Disc

- High capacities
- Withstands effects of water hammer and vibration
- Single moving part for minimal maintenance and long operating life



#### Capsule

- Small and lightweight, easy to maintain
- Thermostatic design provides good discharge of condensate and non-condensable gases



#### Float and Thermostatic

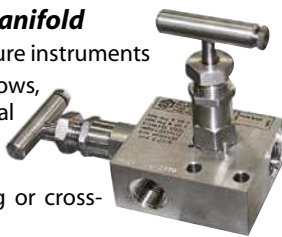
- Enhanced sensitivity to pressure and temperature conditions
- Continuous condensate discharge
- Separate internal air and CO<sub>2</sub> venting provides maximum heat transfer
- Removable flush plug for easy in-line cleaning, inspection, and repair

See pages 354 to 357 for models, specs, and pricing.

### HEXVALVE Instrument Valves

#### HM59 Two-Valve Static Pressure Manifold

- Shutoff and bleed valve for static pressure instruments
- Replace conventional nipples, pipes, elbows, tees, and gate valves for fewer potential leak points
- Non-rotating tip stem provides tight, repeatable shutoff without the galling or cross-scoring of ball-type stems
- Fully backseated bonnets prevent accidental stem removal and blowout, minimizes emissions



#### HG65 Orifice Block Valves

- For compact side-by-side mounting on standard orifice flanges. Ideal for tight installations
- Reduces potential leakage and costs by reducing the number of threaded connections (leak points), and lowers installation costs
- Non-rotating tip stem provides tight repeatable shutoff without galling or cross-scoring
- VOC Emissions Compliance: TFE-Chevron and high-temp Grafoil packing are certified to beat the 100 ppm EPA 1998 emission standards — no special bonnet needed
- Reduced cost and installation time: One HG65 replaces the conventional arrangement of gate valves, nipples, and tees for a lower cost, easy-to-install assembly.



#### HB50/HB51 Block and Bleed Valves

- Compact two-valves-in-one saves space
- HB50 is a fully packed and backseated block valve with a bleed valve, discharge tube, and stem stop
- Can be threaded into a primary block valve (HG46) for secondary block and bleed functions on multiple-instrument installations
- HB51 uses bleed screw instead of bleed valve



#### HM45 Three-Valve Manifold

- Minimum emission flange protects against gasket cold flow and fugitive emissions
- Non-rotating tip stem for tight, repeatable shutoff without the galling or cross-scoring of ball stems
- Exceeds 100 ppm EPA 1998 emission standard
- Fully backseated bonnets prevent accidental stem removal and blowout, minimizes emissions

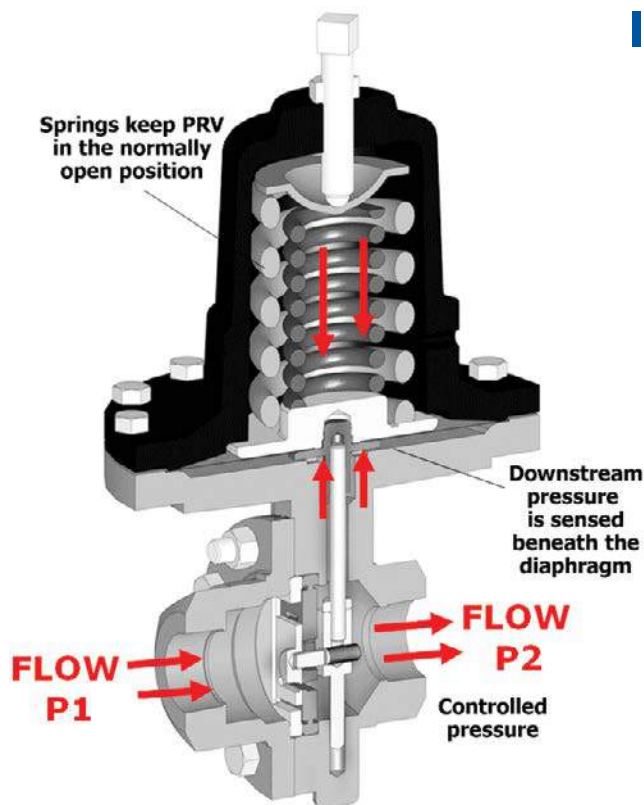


#### HG47 Roddable Orifice Valves

- Roddable hard-seat orifice valve ideal for high temperature, viscous services
- Non-rotating top eliminates seat galling, provides bubble-tight shutoff
- Reduce components and leak points to cut costs
- Compact design uses less space with other valves
- OS&Y bolted bonnet with threaded connections



Direct replacements for PGI or Anderson Greenwood — available in 5 days or sooner! See pages 339 to 348 for models, specs, and pricing.



**Properly utilized, regulators could replace control valves in at least 25% of all control loops.**

— H.D. Baumann, *Control Valve Primer, 2nd Edition*

## Introduction to Process Regulators

### Frequently asked questions about process regulators

#### Q What is a regulator?

A A regulator is a stand-alone self-actuating controller that provides low initial cost, minimal maintenance, fast response, tight shutoff, low noise, and accurate regulation of the process

#### Q Why would I use a regulator?

- A There are several reasons:
- No external power is needed to position the valve
  - No separate measuring elements or feedback controllers needed
  - Designs tend to be simple, providing low cost, high reliability, and easy maintenance
  - Absence of stem packing eliminates external leakage and a source of high friction
  - Regulators are in direct contact with the controlled variable, and offer very fast response

#### Q What do I need to know to select a regulator?

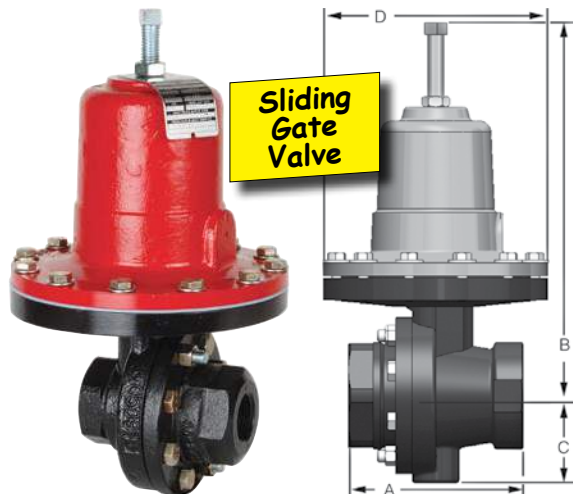
- A A correctly sized regulator is essential for accurate control. You'll need to know the following details about your process:
- Required inlet pressure and outlet pressure
  - Required flow rate
  - Your process medium, and its viscosity and specific gravity
  - Desired minimum, normal, and maximum flow capacity
  - Process temperature

#### Q How do I compare regulator specifications?

- A Three elements determine the accuracy of a regulator:
- The shorter the stroke length, the better.
  - The larger the diaphragm area, the more accurate
  - The lighter the spring, the more sensitive the regulator will be.
- But accuracy comes with a trade-off:
- Pilot-operated regulators have a better accuracy (2–10% droop) and higher rangeability (35:1 or 50:1), but are slower to respond and cost more.
  - Self-operated regulators are less accurate (10–30% droop) and 10:1 rangeability, but respond faster and cost less.

Operation	Size Range	Setpoints	Flow Cv	Shutoff Class	Control Mechanism	Type	Key Feature	Series	See Page
Pressure Reducing	1/4" to 1/2"	5 to 750 PSI	0.012 to 0.2	ANSI Class IV		Self-Operating	High pressure, low flow requirements	JR	299
	1/4" to 4"	2 to 290 PSI	0.21 to 19	ANSI Class IV	Globe Style	Self-Operating		68G	297
	1/4" to 4"	1 to 450 PSI	0.21 to 30	ANSI Class IV	Sliding Gate	Self-Operating	All-around service	60	296
	1/2" to 6"	10 to 200 PSI	2.5 to 50	ANSI Class IV	Sliding Gate	Piloted	1–5% Offset	67	298
	1/2" to 6"	1 to 500 PSI	0.21 to 395	ANSI Class IV	Sliding Gate	Air-Loaded	Connects to DCS	66	298
Back Pressure Reducing	1/2" to 4"	0.5 to 450 PSI		ANSI Class IV	Sliding Gate	Self-Operating	For high viscosity	50	300
Temperature	1/4" to 2"	-20° to 450° F	0.0008 to 30	ANSI Class IV	Sliding Gate	Self-Operating	Accuracy to ±3° F	80	301

# Pressure Regulating Valves



## Mark 60 Self-Operated Pressure Regulator

- Regulates downstream pressure to a predetermined setpoint
- For steam, water, oil, gas, air, and chemical service
- Sliding gate trim for unsurpassed trim life and accuracy
- Straight-through flow eliminates turbulence and won't unbalance seats
- Designed for quiet operation: With disc and plate in constant contact, there's no chatter
- Minimal maintenance: No special tools needed to disassemble sliding gate seats

### Model Selection Guide

Make one selection from each section of the chart. A finished model number will look like this: **60025DI/PTS3A116JLMD**

Description	Size	A	B	C	D	Catalog Number	Price
Self-Operated Pressure Regulator, Threaded End Connections, 303SST Trim and Seat							
Ductile Iron Body	1/4"	4.12"	8.50"	1.69"	5.12"	60025DI/PTS3A	\$ 1155.00
	3/8"	4.12"	8.50"	1.69"	5.12"	60038DI/PTS3A	1155.00
	1/2"	3.62"	8.50"	1.69"	5.12"	60050DI/PTS3A	1155.00
	3/4"	3.62"	8.50"	1.69"	5.12"	60075DI/PTS3A	1155.00
	1"	4.12"	10.0"	2.62"	7.09"	60100DI/PTS3A	1442.00
	1-1/4"	4.12"	10.00"	2.62"	7.09"	60125DI/PTS3A	1528.00
	1-1/2"	4.50"	10.25"	2.31"	7.09"	60150DI/PTS3A	1677.00
2"	4.50"	10.25"	2.75"	7.09"	60200DI/PTS3A	1750.00	
Carbon Steel Body	1/4"	4.12"	8.50"	1.69"	5.12"	60025CS/PTS3A	1535.00
	3/8"	4.12"	8.50"	1.69"	5.12"	60038CS/PTS3A	1535.00
	1/2"	3.62"	8.50"	1.69"	5.12"	60050CS/PTS3A	1535.00
	3/4"	3.62"	8.50"	1.69"	5.12"	60075CS/PTS3A	1535.00
	1"	4.18"	10.75"	2.62"	7.09"	60100CS/PTS3A	2717.00
	1-1/2"	4.81"	11.00"	2.25"	7.09"	60150CS/PTS3A	3172.00
	2"	5.50"	11.00"	2.75"	7.09"	60200CS/PTS3A	3920.00
Flow (Cv)	0.21					1	136.00
	0.42					2	136.00
	0.84					3	136.00
	1.6 (Std. on 1/4" to 3/4" sizes)					4	136.00
	2.5 (Std. on 1/4" to 3/4" sizes)					5	161.00
	4.4 (Std. on 1/4" to 3/4" sizes)					6	161.00
	6.4 (Std. on 1" and 1-1/4" sizes)					7	161.00
	9.5 (Std. on 1" and 1-1/4" sizes)					8	161.00
	15 (Std. on 1-1/2" sizes)					9	161.00
	25 (Std. on 2" sizes)					A	486.00
30 (Std. on 2" sizes)					B	486.00	
Spring Range (1/4" to 3/4" Valves)	2-23 PSI					16	0.00
	10-38 PSI					37	0.00
	20-55 PSI					56	0.00
	30-85 PSI					D8	0.00
	35-160 PSI					81	0.00
95-220 PSI					A6	0.00	
Spring Range (1" to 2" Valves)	1-5 PSI					05	0.00
	3-8 PSI					20	0.00
	5-20 PSI					28	0.00
	10-30 PSI					34	0.00
	20-45 PSI					53	0.00
	30-95 PSI					75	0.00
	60-160 PSI					97	0.00
Diaphragm Material	316 Stainless Steel (Temperatures to 650° F)					S6MD	0.00
	Jorlon (Temperatures to 450° F)					JLMD	0.00

\* Cv at capacity for a given regulator size provided at no charge.

### Specifications

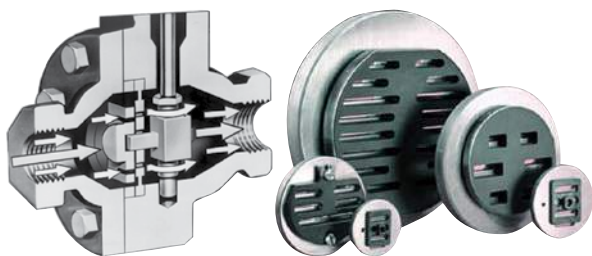
**Available Sizes (Dependent on Model):** 1/4" to 4"

**End Connections:** Threaded (shown), ANSI flange, or DIN flange

**Body Construction:** Ductile iron, carbon steel. Also available in bronze or stainless steel

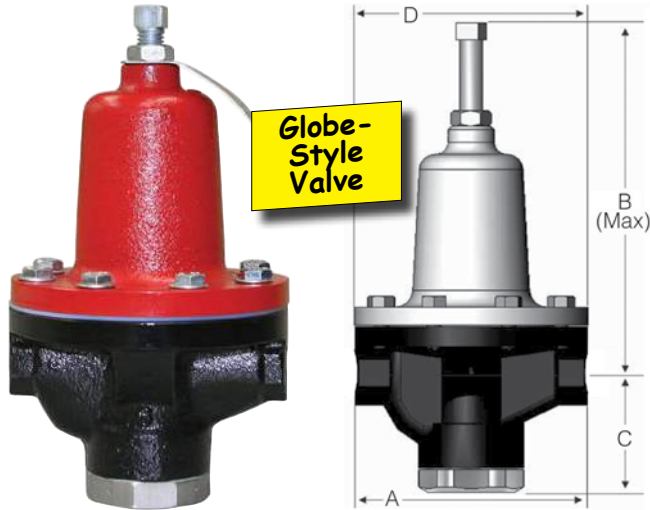
**Shutoff:** ANSI Class IV

**Other Models Available:** High flow (for Cv to 70), quick change (quick-change dome for easy range spring replacement), and large diaphragm (Model MK61)



### Sliding Gate Valve Seat Design

- Made of two parts, a moveable slotted disc and a stationary slotted plate. A disc pin moves the disc across the plate. When throttled open, the slots align to allow the required flow. When closed, the disc and plate form a solid barrier to flow.
- Minimizes the "hunting" commonly found in rising stem globe-style valves.
- By design, the sliding gate stroke is 1/3 that of a globe-style valve, for fast response, reduced droop, longer diaphragm life, and greater sensitivity.
- Disc requires very little travel to move from fully open to fully closed, and quickly corrects pressure or temperature deviations.
- Straight-through flow path reduces velocity and turbulence, leads to quiet operation and less wear.



## Mark 68G Pressure Regulator

- Globe-style pressure reducing valve
- For water, air, oil, gas, steam, and chemical service
- Applications with differential pressures to 300 PSI
- Easy in-line maintenance: Bottom entry to expose plug, stem, and seat, top entry to access diaphragm
- Choice of ANSI Class IV (hard seat) or Class VI bubble-tight (soft seat) shutoff

### Model Selection Guide

Make one selection from each section of the chart. A finished model number will look like this: **60025DI/PTS3A116JLMD**

	Valve Size	Dimensions				Catalog Number	Price
		A	B	C	D		
Self-Operated Pressure Regulator, Threaded End Conn., 303SST Trim, Seat							
Ductile Iron Body	1/4"	5.00"	7.56"	2.56"	5.00"	68G025DI/	\$ 1088.00
	3/8"	5.00"	7.56"	2.56"	5.00"	68G038DI/	1088.00
	1/2"	5.00"	7.56"	2.56"	5.00"	68G050DI/	1088.00
	3/4"	5.00"	9.37"	2.62"	6.87"	68G075DI/	1281.00
	1"	5.00"	9.37"	2.62"	6.87"	68G100DI/	1281.00
	1-1/4"	7.50"	16.75"	3.87"	9.37"	68G125DI/	2510.00
	1-1/2"	7.50"	16.75"	3.87"	9.37"	68G150DI/	2593.00
	2"	7.50"	16.75"	3.87"	9.37"	68G200DI/	2593.00
Flow (Cv)	0.21					PTB1	0.00
	0.42					PTB2	0.00
	0.84					PTB3	0.00
	1.6					PTB4	0.00
	2.2					PTB5	0.00
	2.6					PTB6	0.00
	2.9					PTB7	0.00
	4.4					PTB8	0.00
	5.2					PTB9	0.00
	5.6					PTBB	0.00
	7.0					PTBF	0.00
	7.7					PTBG	0.00
	13.5					PTBM	0.00
	15.5					PTBP	0.00
16.5					PTBQ	0.00	
17.0					PTBS	0.00	
19.0					PTBW	0.00	
Spring Range (1/4" to 3/4" Valves)	2-7 PSI					C4	0.00
	5-15 PSI					27	0.00
	10-55 PSI					CA	0.00
	50-160 PSI					CL	0.00
	150-200 PSI					CV	0.00
Spring Range (3/4" to 1" Valves)	3-10 PSI					C6	0.00
	5-20 PSI					28	0.00
	15-45 PSI					CB	0.00
	35-70 PSI					CF	0.00
	60-105 PSI					CN	0.00
	95-140 PSI					CQ	0.00
	130-180 PSI					CT	0.00
Spring Range (1-1/4" to 2" Valves)	2-16 PSI					12	0.00
	10-25 PSI					32	0.00
	20-65 PSI					60	0.00
	55-100 PSI					CM	0.00
	90-160 PSI					CP	0.00
Diaphragm Material	Buna N					BNMD0000	0.00
	Jorlon					JLMD0000	0.00
	316 Stainless Steel					S6MD0000	0.00
	Viton (for 1/4" to 3/4" Valves)					VIMD0000	248.00
	Viton (for 1" to 2" Valves)					VIMD0000	329.00

### Specifications

**Available Sizes:** 1/4" to 2"

**End Connections:** Threaded (shown), ANSI flange, or DIN flange

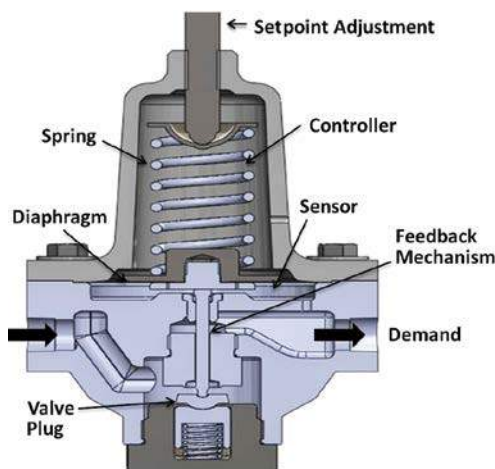
**Body Construction:** Ductile iron. Also available in carbon steel, bronze or stainless steel

**Shutoff:** ANSI Class IV (hard seat), Class VI (soft seat) for bubble-tight shutoff

**Inlet Pressure:** 300 PSI max

**Temperature Range:**

Material	Minimum	Maximum
Buna-N Plug and Diaphragm	-20° F	200° F
Viton Plug, SST Diaphragm	-15° F	425° F
Viton Plug and Diaphragm	0° F	425° F
Metal Seat, SST Diaphragm	-20° F	500° F



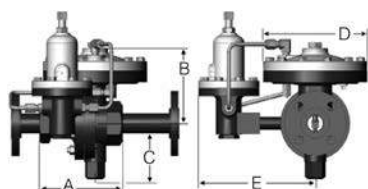
### Regulator Design

- The spring's downward force holds the plug normally open.
- As downstream pressure increases — with the decrease in flow demand — it forces the diaphragm up, closing the valve.
- As the valve closes, the inlet pressure is reduced to the selected setpoint.
- The controlled downstream pressure setpoint can be increased or decreased via the setpoint adjustment screw.

# Pressure Regulating Valves

## Mark 67 Pilot-Operated Pressure Regulator

- For controlling pressure of gaseous oxygen to steel mill furnaces, sealing oil in turbines, and steam mains and distribution lines
- Greater accuracy and low offset in critical pressure-reducing applications
- Combines a sliding gate's short stroke with the action of a pilot valve
- Sliding gate seats for straight-through flow, reduced turbulence, quiet operation, fast response, and tight shutoff
- Standard model features plug-style pilot valve for pressure settings ranging from 10 to 200 PSI



Valve Size	Dimensions					
	A	B	C	D	E	Len
1/2"	5.31"	5.06"	3.50"	7.12"	8.00"	11.50"
3/4"	5.31"	5.06"	3.50"	7.12"	8.00"	11.50"
1"	5.69"	5.25"	3.62"	7.12"	8.00"	11.50"
1-1/4"	5.88"	5.43"	3.75"	7.12"	8.00"	11.50"
1-1/2"	8.18"	7.00"	5.00"	10.62"	9.50"	13.00"
2"	8.18"	7.00"	5.00"	10.62"	9.50"	13.00"

### Specifications

**Line Sizes:** 1/2" to 6" (for sizes >2",  
**End Connections:** Threaded (shown),  
ANSI flange, or DIN flange

**Body Construction:** Ductile iron. Also

available in cast iron, carbon steel, and stainless steel

**Shutoff:** ANSI Class IV

**Gas Specifications:** Meets requirement of GSA Standard Heating Specification PB54-1530 (AM.1), Paragraph 27.4

\* Cv at capacity for a given regulator size provided at no charge.



### Model Selection Guide

Make one selection from each section of the chart. A finished model number will look like this:

**6002SDI/PTS3A116JLMD**

Description		Catalog Number	Price
Pilot-Operated Pressure Regulator, Threaded End Connections, Ductile Iron Body, 303 Stainless Steel Trim, Seat, and Pilot, 316 Stainless Steel Diaphragm/Actuator			
Ductile Iron Body	1/2"	6769H050DI/	\$ 2016.84
	3/4"	6769H075DI/	2151.24
	1"	6769H100DI/	2352.00
	1-1/4"	6769H125DI/	2392.32
	1-1/2"	6769H150DI/	2787.96
	2"	6769H200DI/	3448.20
Pressure Drop	15-25 PSI	PTM1V	0.00
	25-150 PSI	PTM2V	0.00
Flow Cv *	2.5	5	133.00
	4.4	6	133.00
	5.0 (Std. on 1/2")	K	133.00
	6.4	7	133.00
	9.5 (Std. on 3/4")	8	156.00
	15 (Std. on 1")	9	156.00
	25 (Std. on 1-1/4")	A	156.00
	30 (Std. on 1-1/2")	B	156.00
	35	V	156.00
	45	W	156.00
Pressure Range	10-30 PSI	40S6MDS3	0.00
	25-75 PSI	65S6MDS3	0.00
	70-150 PSI	99S6MDS3	0.00
	120-200 PSI	A8S6MDS3	0.00

## Mark 66 Air-Loaded Pressure Regulator

- High accuracy pressure regulator for use at local or remote stations
- Rangeability of approximately 40:1
- Static air signal determines setpoint, no control spring or pilot needed
- No minimum differential pressure requirement
- Not susceptible to dirty service problems
- All metal-to-metal contacts, no gaskets or O-rings to wear out
- Sliding gate seat and straight-through flow



### Specifications

**Service:** Steam, air, gas, liquids, or chemicals

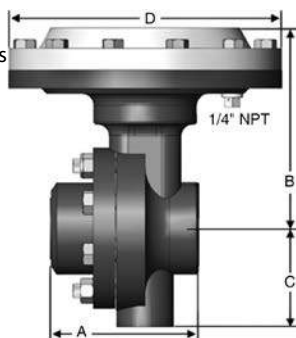
**Line Sizes:** 1/2" to 6"

**Body Material:** Ductile iron

**Trim Material:** 303 or 316 stainless steel

**Shutoff:** ANSI Class IV

Valve Size	Dimensions			
	A	B	C	D
1/2"	3.62"	4.11"	1.69"	7.12"
3/4"	3.62"	4.11"	1.69"	7.12"
1"	4.12"	4.31"	2.62"	7.12"
1-1/4"	4.12"	4.31"	2.62"	7.12"
1-1/2"	4.50"	4.27"	2.31"	7.12"
2"	4.50"	4.49"	2.75"	7.12"



### Model Selection Guide

Make one selection from each section of the chart. A finished model number will look like this: **66050DI/PTS3A600JLMD000**

Description	Size	Catalog Number	Price
Air-Loaded Pressure Regulator, Ductile Iron Body, NPT Threaded End Connections, 303 Stainless Steel Trim and Seats, Jorlon Diaphragm			
Ductile Iron Body	1/2"	66050DI/PTS3A	\$ 1465.80
	3/4"	66075DI/PTS3A	1465.80
	1"	66100DI/PTS3A	1586.76
	1-1/4"	66125DI/PTS3A	2103.36
	1-1/2"	66150DI/PTS3A	2161.32
	2"	66200DI/PTS3A	2672.88
Flow (Cv) *	0.21	100JLMD000	133.00
	0.42	200JLMD000	133.00
	0.84	300JLMD000	133.00
	1.6	400JLMD000	133.00
	2.5 (Std. on 1/2", 3/4" sizes)	500JLMD000	133.00
	4.4 (Std. on 1/2", 3/4" sizes)	600JLMD000	134.00
	6.4 (Std. on 1", 1-1/4" sizes)	700JLMD000	134.00
	9.5 (Std. on 1", 1-1/4" sizes)	800JLMD000	134.00
	15 (Std. on 1-1/2" sizes)	900JLMD000	134.00
	25 (Std. on 2" sizes)	A00JLMD000	134.00
	30 (Std. on 2" sizes)	B00JLMD000	134.00
	55	D00JLMD000	134.00
	85	F00JLMD000	134.00
	115	G00JLMD000	134.00
	130	H00JLMD000	134.00
200	I00JLMD000	134.00	
395	J00JLMD000	134.00	

\* Cv at capacity for a given regulator size provided at no charge.



**LOWFLOW**  
A Division of Jordan Valve



## JR Series High Pressure Regulator

- Designed to handle very high pressures and very low flows
- For general, corrosive, and specialty gas service, and non-cavitating liquids
- Top entry design makes in-line cleaning and maintenance easy
- Barstock construction guarantees material integrity and surface finish
- High flow rate, high rangeability reduces the need for reduced trim sizes
- Fine thread pitch for precision setpoint adjustments

### Model Selection Guide

Description			Catalog Number	Price		
<b>Stainless Steel Pressure-Reducing Valve, Jorlon Diaphragm, Standard Actuator</b>						
Valve	Size	Connection	Dim. A			
	1/4"	NPTF Ends	2.00"	JR-025-6L/A	\$ 477.96	
	3/8"	NPTF Ends	2.00"	JR-038-6L/B		\$ 537.60
	1/2"	NPTF Ends	2.75"	JR-050-6L/C		\$ 600.60
Port Type	A		A	0.00	0.00	0.00
	B		B	18.00	106.00	114.00
	C		C	18.00	106.00	114.00
	D		D	18.00	106.00	114.00
	E		E	34.00	168.00	185.00
Trim and Seat Material	Teflon Seat, 0.012 Cv		1ST1	0.00	0.00	0.00
	Teflon Seat, 0.08 Cv		2ST2	0.00	0.00	0.00
	Teflon Seat, 0.2 Cv		3ST3	0.00	0.00	0.00
Range Spring/Outlet Pressure	5-50 PSI		E1JLSK	0.00	0.00	0.00
	25-100 PSI		E2JLSK	0.00	0.00	0.00
	50-150 PSI		E3JLSK	0.00	0.00	0.00
	75-250 PSI		E4JLSK	0.00	0.00	0.00
	100-475 PSI		E5JLSK	0.00	0.00	0.00
	200-750 PSI		E6JLSK	72.00	72.00	72.00
Inlet Gauge (For Port Types D and E)	None		NN	0.00	0.00	0.00
	0-30 PSIG		AA	139.00	173.00	173.00
	0-60 PSIG/Bar (Dual)		BB	139.00	173.00	173.00
	0-100 PSIG/Bar (Dual)		CC	139.00	173.00	173.00
	0-160 PSIG/Bar (Dual)		DD	139.00	173.00	173.00
	0-200 PSIG/Bar (Dual)		EE	139.00	173.00	173.00
	0-300 PSIG/Bar (Dual)		FF	139.00	173.00	173.00
	0-400 PSIG/Bar (Dual)		GG	139.00	173.00	173.00
	0-600 PSIG/Bar (Dual)		HH	139.00	173.00	173.00
	0-1000 PSIG/Bar (Dual)		JJ	139.00	173.00	173.00
	0-2000 PSIG/Bar (Dual)		KK	139.00	173.00	173.00
	0-3000 PSIG/Bar (Dual)		LL	139.00	173.00	173.00
	0-5000 PSIG/Bar (Dual)		MM	139.00	173.00	173.00
	Outlet Gauge (For Port Types B, C, and E)	None		N00	139.00	173.00
0-30 PSIG			A00	139.00	173.00	173.00
0-60 PSIG/Bar (Dual)			B00	139.00	173.00	173.00
0-100 PSIG/Bar (Dual)			C00	139.00	173.00	173.00
0-160 PSIG/Bar (Dual)			D00	139.00	173.00	173.00
0-200 PSIG/Bar (Dual)			E00	139.00	173.00	173.00
0-300 PSIG/Bar (Dual)			F00	139.00	173.00	173.00
0-400 PSIG/Bar (Dual)			G00	139.00	173.00	173.00
0-600 PSIG/Bar (Dual)			H00	139.00	173.00	173.00
0-1000 PSIG/Bar (Dual)			J00	139.00	173.00	173.00

### Specifications

**Soft Seat Material for ANSI Class VI Shutoff:** Teflon to 225° F standard; Optional PEEK for temperatures to 350° F

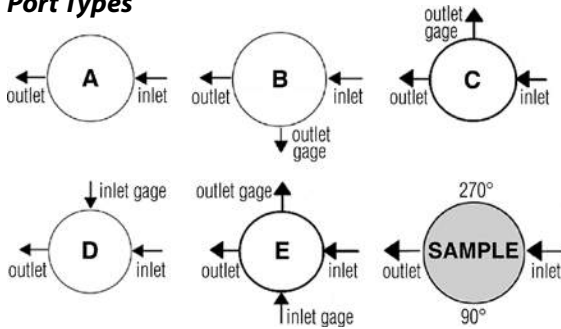
**Inlet Pressure:** 4000 PSIG max @ -20° F

**Pressure at Maximum Temperature:** 3600 PSI @ 150° F with Teflon seat

**Pressure Drop:** 3000 PSI max

**Inlet and Outlet Gauge Ports:** 1/4" NPTF standard

### Port Types



# Regulators

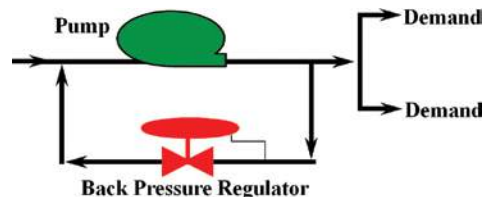


## Mark 50 Self-Operating Back Pressure Regulator

- Self-operating back pressure regulators with sliding gate seats for unsurpassed trim life and accuracy
- Designed to modulate to hold a specific back pressure (NOT a relief valve)
- Monitors and regulates upstream pressure
- Also known as a reverse-acting regulator
- Jorlon diaphragms, good to 450° F and 316 stainless steel diaphragms, good to 650° F, tested without failure to over a million full stroke cycles
- Quiet operation — typically 5–10 dB less than globe-style regulators — no chattering from disc and plate contact
- Straight-through flow cuts turbulence
- No special tools needed for maintenance



A typical back pressure regulator application.

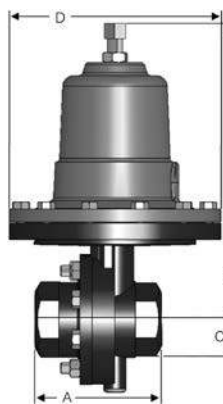


### Model Selection Guide

Make one selection from each section of the chart. A finished model number will look like this: **50025CS/PTS3A14JLMD**

Description	Size	Catalog Number	Price
Self-Operating Back Pressure Regulator, Carbon Steel Body, NPT Threaded End Connections, 303 Stainless Steel Trim and Seat			
Carbon Steel Body	1/4"	50025CS/PTS3A	\$ 1566.60
	3/8"	50038CS/PTS3A	1566.60
	1/2"	50050CS/PTS3A	1566.60
	3/4"	50075CS/PTS3A	1566.60
	1"	50100CS/PTS3A	2269.68
	1-1/2"	50150CS/PTS3A	2882.04
	2"	50200CS/PTS3A	3186.96
Flow (Cv *)	0.21	1	136.00
	0.42	2	136.00
	0.84 (Std. on 1/4", 3/8" sizes)	3	136.00
	1.6 (Std. on 1/4", 3/8" sizes)	4	136.00
	2.5 (Std. on 1/2", 3/4" sizes)	5	136.00
	4.4 (Std. on 1/2", 3/4" sizes)	6	161.00
	6.4 (Std. on 1", 1-1/4" sizes)	7	161.00
	9.5 (Std. on 1", 1-1/4" sizes)	8	161.00
	15 (Std. on 1-1/2" sizes)	9	161.00
	25 (Std. on 2" sizes)	A	161.00
30 (Std. on 2" sizes)	B	161.00	
Spring Range (1/4" to 3/4" Valves)	2-20 PSI	14	0.00
	10-30 PSI	34	0.00
	20-45 PSI	53	0.00
	30-135 PSI	76	0.00
	80-185 PSI	A4	0.00
Spring Range (1" to 2" Valves)	0.5 to 4 PSI	03	0.00
	2-6 PSI	06	0.00
	4-13 PSI	21	0.00
	8-20 PSI	31	0.00
	15-80 PSI	50	0.00
45-150 PSI	95	0.00	
Diaphragm	316 Stainless Steel	S6MD	0.00
	Jorlon	JLMD	0.00

\* Cv at capacity for a given regulator size provided at no charge.



### Specifications

**Service:** Steam, water, oil, gas, air, and chemicals

**Shutoff:** ANSI Class IV

**Line Sizes:** 1/2" to 2"

**Body Material:** Carbon steel (others available)

**Trim Material:** 303 stainless steel standard

Valve Size	Dimensions			
	A	B	C	D
1/2"	3.62"	8.50"	1.69"	5.12"
3/4"	3.62"	8.50"	1.69"	5.12"
1"	4.18"	10.75"	2.63"	7.09"
1-1/2"	4.81"	11.00"	2.25"	7.09"
2"	5.50"	11.00"	2.75"	7.09"

Solids Flow and Motion  
Controllers and Programmers  
Digital Indicators  
Recorders and Data Acquisition  
Combustion Safety and Efficiency  
Process Valves





## Mark 80 Self-Operating Temperature Regulator

- For tank heating, heat exchangers, steam tracing, air drying products, steam drain cooling and regulating cooling fluids
- 10° F span of control, accurate to ±2%
- Sliding gate seats for reduced turbulence, quiet operation, short stroke, fast response, accurate temperature control
- Easy to change Cv as needed
- Requires no external power source
- Standard with Jordan's sliding gate regulator design
- Sealed actuator with stainless steel diaphragm — no bellows needed

### Specifications

**Service:** Steam, water, oil, gas, air, and chemicals

**Shutoff:** ANSI Class IV

**Body Material:** Ductile iron or bronze. Carbon steel and stainless steel also available. Call for pricing.

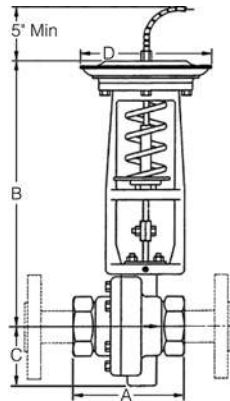
Body Ratings	Material	100° F	450° F
	Ductile Iron	988 PSI	988 PSI
	Bronze	500 PSI	350 PSI
	Carbon Steel	1480 PSI	1235 PSI
	Stainless Steel	1480 PSI	990 PSI

**Trim Material:** 303 stainless steel std.

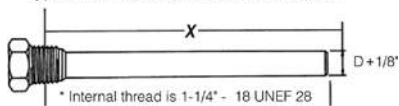
**Overheat Protection:** 100° F above top of control range

**Action:** Direct (temperature increase closes valve) or reverse (temperature increase opens valve)

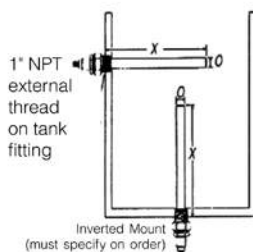
Valve Size	Dimensions			
	A	B	C	D
1/2"	3.62"	12.00"	2.18"	7.00"
3/4"	3.62"	12.00"	2.18"	7.00"
1"	4.12"	12.25"	2.62"	7.00"
1-1/4"	4.12"	12.25"	2.62"	7.00"
1-1/2"	4.50"	12.75"	2.75"	7.00"
2"	4.50"	12.81"	3.00"	7.00"



Type A: standard threaded connection



\* Internal thread is 1-1/4" - 18 UNEF 2B



**Thermal System:** Type SWA actuator, copper capillary (8' standard length, available up to 100'), stainless steel armor with copper bulb, 1" NPT threaded connection standard

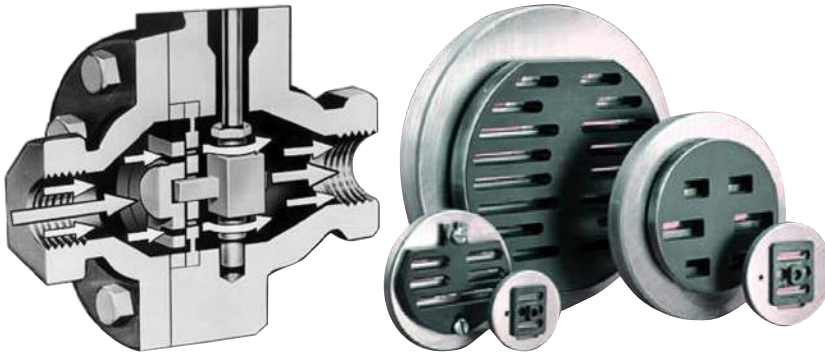
### Model Selection Guide

Make one selection from each section of the chart. A finished model number will look like this: **80050DI/PTT3A449AAN1N1QD**

Description	Size	Ductile Iron		Bronze	
		Catalog No.	Price	Catalog No.	Price
Self-Operating Temperature Regulator, NPT Threaded End Connections, 303SS Trim and Seat, Teflon Packing, and Copper Bulb with 1" NPT Fitting, 8' Standard Copper Capillary and SWA Actuator					
Regulator Size and Material	1/4"	80025DI/PTT3	\$ 1634.64	80025BR/PTT3	\$ 2293.20
	3/8"	80038DI/PTT3	1634.64	80038BR/PTT3	2293.20
	1/2"	80050DI/PTT3	1634.64	80050BR/PTT3	2293.20
	3/4"	80075DI/PTT3	1673.28	80075BR/PTT3	2306.64
	1"	80100DI/PTT3	1864.80	80100BR/PTT3	2523.36
	1-1/4"	80125DI/PTT3	1907.64	80125BR/PTT3	2539.32
	1-1/2"	80150DI/PTT3	2042.88	80150BR/PTT3	2631.72
Seat Material	303 Stainless Steel			A	0.00
	303 Stainless Steel and Jorcote			V	0.00
Flow (Cv) *	0.0008			Y	135.00
	0.0002			E	135.00
	0.004			F	135.00
	0.008			G	135.00
	0.02			H	135.00
	0.04			I	135.00
	0.21			1	135.00
	0.42			2	135.00
	0.84 (Std. on 1/4" sizes)			3	135.00
	1.6 (Std. on 3/8" sizes)			4	135.00
	2.5 (Std. on 1/2" and 3/4" sizes)			5	135.00
	4.4 (Std. on 1/2" and 3/4" sizes)			6	157.00
	6.4 (Std. on 1" and 1-1/4" sizes)			7	157.00
	9.5 (Std. on 1" and 1-1/4" sizes)			8	161.00
	15 (Std. on 1-1/2" sizes)			9	161.00
25 (Std. on 2" sizes)			A	161.00	
30 (Std. on 2" sizes)			B	161.00	
Spring Range  (Call for °C Ranges)	-20° to 20° F			06	0.00
	10° to 55° F			12	0.00
	35° to 90° F			19	0.00
	55° to 115° F			27	0.00
	80° to 140° F			35	0.00
	110° to 165° F			42	0.00
	120° to 185° F			49	0.00
	160° to 225° F			58	0.00
	205° to 260° F			66	0.00
	230° to 290° F			72	0.00
	265° to 325° F			81	0.00
	315° to 400° F			88	0.00
380° to 450° F			93	0.00	
Thermowell	1" x 12" Thermowell Bulb (Diam x Len)			AAN1N1Q	269.00
	1" x 14" Thermowell Bulb (Diam x Len)			ABN2N1Q	269.00
Action	Direct			D	0.00
	Reverse			R	0.00

\* Cv at capacity for a given regulator size provided at no charge.

## Introduction to Process Control Valves



- Minimizes the “hunting” commonly found in rising stem globe-style valves.
- By design, the sliding gate stroke is 1/3 that of a globe-style valve, for fast response, reduced droop, longer diaphragm life, and greater sensitivity.
- Disc requires very little travel to move from fully open to fully closed, and quickly corrects pressure or temperature deviations.
- Straight-through flow path reduces velocity and turbulence, leads to quiet operation and less wear.

### Sliding Gate Control Valve Design... What’s in it for you?

Design Element	What It Gives You
Straight through flow path	Less turbulence, so there’s less wear in the seat sealing area. No flow to open or close design, results in a high turndown ratio with stability at the low end.
Straight through flow path with multi-slot design	Reduced noise — about 5–10 dB quieter than a standard globe valve. Good for low-to-mild flashing and cavitation in standard design.
Metal-to-metal sealing	Handles temperatures up to 650° F in standard configuration. Self-lapping, self-cleaning design — ideal for brine/sea water service.
0.88 mm overlap	Extended seat life.
Disc in constant contact with the plate	No “valve chatter”. Less mechanical damage and noise when operating at near-closed position.
Jorcote seat coating	Extremely hard material is excellent against wear, especially on steam.
Short stroke length	Very fast reaction times for less offset. Longer diaphragm and packing life. Smaller actuator sizes, for less air consumption and lower costs. Excellent for long bellows life in critical services. Dramatically less “droop” or offset in self-operated pressure and temperature regulators.
Operating Cv = Fault Cv	Substantially reduces safety relief valve sizes, saving money on capital projects.

Size Range	Flow Cv	Shutoff Class	Control Mechanism	Type	Key Feature	Series	See Page
1/4" to 3/4"	0.00001 to 4.0	ANSI Class IV	Globe Style	Fractional Flow Control Valve	Ideal for pilot plant installations	708 Series	307
1/2" to 2"	0.05 to 25.0	ANSI Class III or Class IV	Globe Style	Pneumatic Fractional Flow Control Valve	Pressures to 6000 PSIG	8000 Series	306
1/2" to 2"	0.21 to 30	ANSI Class IV	Sliding Gate	Pneumatic Diaphragm Valve	For general service, Cryogenic bonnet available for temperatures to -425° F	Mark 70	304
1/2" to 2"	1.8 to 60	ANSI Class IV	Globe Style	Pneumatic Diaphragm Valve	For corrosive media	Mark 78	305
1/2" to 4"	2.6 to 380	ANSI Class VI	V-Ball	Ball-Type Automated Valve	High capacity	CV3000	308
1" to 6"	9.5 to 600	ANSI Class IV	Sliding Gate	Pneumatic, Wafer-Style	Light weight	Mark 75	303
1-1/2" to 6"	34 to 400	ANSI Class IV	Cage-Guided	Balanced Trim Control Valve	Differential pressures to 1480 PSIG	V1C	304

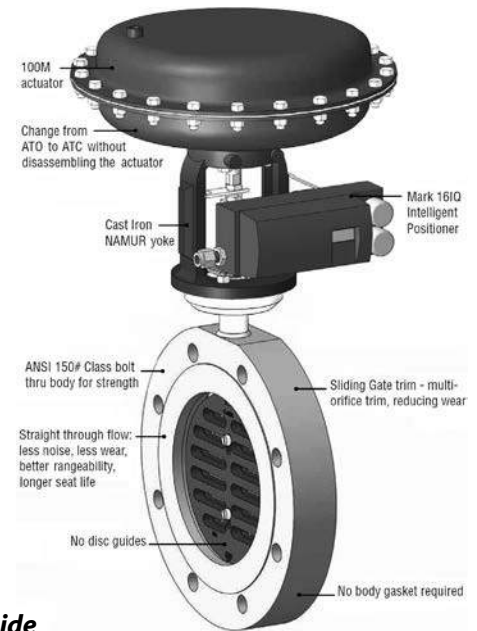


# Control Valves

## Mark 75 Sliding Gate Wafer-Style Pneumatic Control Valves



- Sliding gate design for tighter control and metering accuracy
- Wafer design virtually eliminates body wear issues caused by steam, flashing, and cavitation
- Light weight, compact body
- High capacities — up to 600 Cv linear on 8" valves
- T-slot design connection makes it easy to reverse function — just turn the seat 180°
- Sliding gate offers shorter stroke length than globe or cage designs for faster response to input signal changes
- Turndown ratio capability 100:1
- Straight-through flow reduces turbulence, noise, and erosion
- Side-mount HART® positioner



### Specifications

**Sizes:** 1" to 6" ANSI 150#/300# class wafer-style bolt-around and 8" ANSI 150# class wafer-style bolt-through

**Body and Bonnet Connection Material:** Carbon steel (ASME SA-105) or 316 stainless steel (ASME SA-479)

**Seats:** Jorcote/316 Stainless Steel

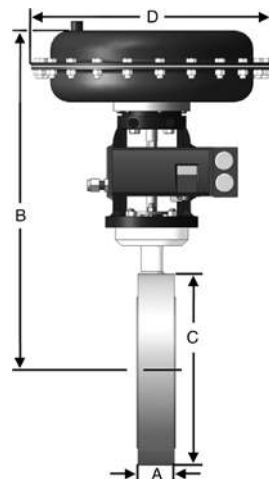
**Yoke:** Ductile iron (1" to 2" valves), NAMUR cast stainless steel (2-1/2" to 8" valves)

**Actuator Case:** Epoxy-coated steel

**Packing Material:** Spring-loaded Teflon V-ring (to 500° F), Grafoil above 500° F

**Shutoff:** ANSI Class IV

Valve Size	Dimensions			
	A	B	C	D
1"	1.24"	10.54"	2.76"	9.50"
1-1/2"	1.36"	10.82"	3.24"	9.50"
2"	1.76"	11.17"	3.98"	9.50"
2-1/2"	1.81"	14.08"	4.36"	12.50"
3"	1.81"	14.86"	5.25"	12.50"
4"	2.06"	17.98"	6.46"	15.00"
6"	2.23"	19.30"	8.62"	15.00"
8"	2.38"	21.91"	13.75"	15.00"



Valve Size	Standard Actuator Size	Flow Characteristic		Max Differential Pressure	
		Linear Cv*	Equal Percentage	Teflon	Jorcote
1"	35M	9.5	6.2	175	200
1-1/2"	35M	31	20	175	200
2"	35M	72	47	175	200
2-1/2"	55M	76	49	250	275
3"	55M	103	67	250	275
4"	85M	180	117	300	325
6"	85M	400	260	200	225
8"	100M	600	375	220	250

25 PSI air supplied for Air-to-Close, 45 PSI air supplied for Air-to-Open.

\* Cv at capacity for a given valve size provided at no charge.

### Model Selection Guide

Make one selection from each section of the chart. A finished model number will look like this: **75SP150CS/13T6WAA3B3A3ARD00G**

Description	Size	Catalog Number	Price
Sliding Gate Pneumatic Wafer-Style Control Valve, Side-Mounted HART® Positioner, ANSI 150#/300# Connections, 316SS Trim, Jorcote Seats, Teflon Packing, Actuator and Air Regulator			
Carbon Steel Body	1"	75SP100CS/13T6W	\$ 2668.68
	1-1/2"	75SP150CS/13T6W	2751.00
	2"	75SP200CS/13T6W	2756.04
	2-1/2"	75SP250CS/13T6W	2835.00
	3"	75SP300CS/13T6W	3359.16
	4"	75SP400CS/13T6W	4768.68
	6"	75SP600CS/13T6W	6156.36
	8"	75SP800CS/13T6W	8991.36
Stainless Steel Body	1"	75SP100S6/13T6W	2757.72
	1-1/2"	75SP150S6/13T6W	2770.32
	2"	75SP200S6/13T6W	3135.72
	2-1/2"	75SP250S6/13T6W	3800.16
	3"	75SP300S6/13T6W	4621.68
	4"	75SP400S6/13T6W	5735.52
	6"	75SP600S6/13T6W	6864.48
	8"	75SP800S6/13T6W	12298.44
Flow (Cv) *	9.5 (Std. on 1" valves)	8	140.00
	33 (Std. on 1-1/2" valves)	A	486.00
	38	B	486.00
	72 (Std. on 2" valves)	E	486.00
	76 (Std. on 2-1/2" valves)	F	544.00
	103 (Std. on 3" valves)	H	544.00
	180 (Std. on 4" valves)	I	544.00
	400 (Std. on 6" valves)	J	544.00
	600 (Std. on 8" valves)	K	544.00
	Range	Direct Acting	A
Reverse Acting		B	0.00
Diaphragm and Air Regulator	For 1" to 2" Valves	3B3A3AR	182.00
	For 2-1/2" to 3" Valves	5B5A5AR	182.00
	For 4" to 6" Valves	8B8A8AR	182.00
	For 8" Valves	9B9A9AR	182.00
Action	Air-to-Close	D00	0.00
	Air-to-Open	R00	0.00
Positioner	Side-Mounted, HART®	G	1938.00

# Control Valves



## Mark 70 Sliding Gate Pneumatic Diaphragm Control Valves



- Linear pneumatic control valve with sliding gate seats and multi-spring actuators
- Sliding gate design for tighter control and metering accuracy
- Totally enclosed multi-spring actuator minimizes deadband — field-reversible with no need for special tools
- Stem packing four times deeper than stem travel for greater protection against leakage

- Available with side-mount HART®-compatible positioner

### Specifications

**Service:** Steam, water, oil, gas, air, and chemicals

**Body Material:** Ductile iron. Also available in carbon steel, stainless steel, and bronze

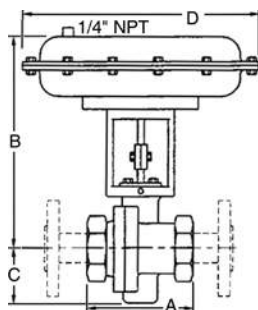
**Stem Packing:** Spring-loaded Teflon, good to 450° F

**Trim Material:** 303 stainless steel standard

**Shutoff:** ANSI Class IV

**Diaphragm:** Buna-N, standard to 200° F

Valve Size	Dimensions			
	A	B	C	D
1/2"	3.62"	9.38"	2.18"	9.50"
3/4"	3.62"	9.38"	2.18"	9.50"
1"	4.12"	9.62"	2.62"	9.50"
1-1/4"	4.12"	9.87"	2.62"	9.50"
1-1/2"	4.50"	9.87"	2.62"	9.50"
2"	4.50"	10.00"	2.62"	9.50"



### Model Selection Guide

Make one selection from each section of the chart. A finished model number will look like this: **70100DI/PTT3A4N3Q3N3ARD**

Description	Size	Catalog Number	Price
Sliding Gate Pneumatic Control Valve, NPT Threaded End Connections, 303 Stainless Steel Trim, Jorcote or Stainless Steel Seat, Teflon Packing, and 35M Actuator and Air Regulator			
Ductile Iron Body	1/2"	70050DI/PTT3	\$ 1565.76
	3/4"	70075DI/PTT3	1640.52
	1"	70100DI/PTT3	1763.16
	1-1/4"	70125DI/PTT3	1776.60
	1-1/2"	70150DI/PTT3	1909.32
	2"	70200DI/PTT3	1972.32
Seat Material	303 Stainless Steel	A	0.00
	303 Stainless Steel/Jorcote	V	0.00
Flow (Cv) *	0.21	1	136.00
	0.42	2	136.00
	0.84	3	136.00
	1.6	4	136.00
	2.5 (Std. on 1/2", 3/4" valves)	5	157.00
	4.4 (Std. on 1/2", 3/4" valves)	6	157.00
	6.4 (Std. on 1", 1-1/4" valves)	7	161.00
	9.5 (Std. on 1", 1-1/4" valves)	8	161.00
	15 (Std. on 1-1/2" valves)	9	161.00
	25 (Std. on 2" valves)	A	161.00
30 (Std. on 2" valves)	B	161.00	
Range	3-15 PSI Direct Acting	N3Q3N3	0.00
	3-15 PSI Reverse Acting	Q3Q3N3	0.00
Action	Air to Close	ARD	182.00
	Air to Open	ARR	182.00

For 1/4" and 3/8" valves, order a 1/2" valve with a reducer.

\* Cv at capacity for a given valve size provided at no charge.

**Need flow rates to 70 Cv? Call for the Mark 701/702 series.**



## V1C Cage-Guided Control Valve

- Balanced trim design for differential pressures to 1480 PSIG, fine proportioning control and high rangeability
- Easy-to-remove yoke and actuator for in-line maintenance and trim changes without removing the body from the service line
- For throttling and on/off control of non-gritty liquids, gases, and steam
- Cavitation control trim cage reduces damage to the valve and attached equipment in cavitating liquid service and less noise in gas service
- Cavitation control cage divides the flow stream into multiple smaller streams with less energy — used as "flow into the cage" on liquid service to dissipate the energy between the cavitating liquid and the metal valve parts; used as "flow out of cage" on gas/steam service to redistribute acoustical energy with resultant noise attenuation
- Carbon steel or stainless steel body, Teflon packing
- With on/off actuator and HART®-compatible positioner

**Call for pricing and availability.**

## Mark 78 Globe-Style Pneumatic Diaphragm Control Valves



- Can be used on viscous/corrosive liquids, process gases, or utility steam in process or utility service
- Top entry cage and lift-out seats for easy in-line maintenance
- Available in line sizes 1/2" to 2"
- Standard units include side-mount HART®-compatible positioner, air regulator, and 4-20 mA/3-15 PSI I/P transducer
- ANSI Class IV Shutoff

### Specifications

**Service:** Air or gas

**Shutoff:** ANSI Class IV. For ANSI Class VI, order a soft seat option.

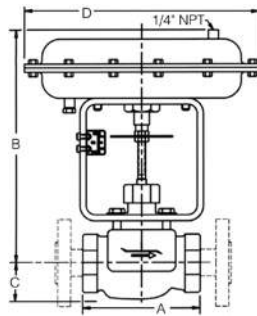
**Body Material:** Bronze or carbon steel. Also available in stainless steel

**Trim Material:** 316 stainless steel

**Pressure/Temperature Limits:** Viton: -20° to 400° F; EPDM: -40° to 350° F

**Actuator:** 35M standard on valves to 1" 55M on valves 1-1/2" to 2"; **Signal range:** 3-15 PSI with actuator pressure 45 PSI max.

Valve Size	Dimensions			
	A	B	C	D
1/2"	4.5"	9.62"	1.31"	9.50"
3/4"	4.5"	9.62"	1.31"	9.50"
1"	4.5"	9.62"	1.31"	9.50"
1-1/2"	6.75"	13.00"	2.18"	12.50"
2"	6.75"	13.00"	2.18"	12.50"



Valve Size	1/2"	3/4"	1"	1-1/2"	2"
<b>Valve Capacity (Cv) by Characteristic</b>					
Equal Percentage	4.4	8.0	11.5	30	45
Linear	4.4	8.0	12.2	30	45
<b>Maximum Allowable Differential Pressure (PSI)*</b>					
Bronze, 35M Air-to-Open	500	450	250	—	—
Bronze, 35M Air-to-Close	500	500	500	—	—
Bronze, 55M Air-to-Open	500	500	450	160	80
Bronze, 55M Air-to-Close	1000	1000	675	240	125
Carbon Steel, 35M Air-to-Open	800	450	250	—	—
Carbon Steel, 35M Air-to-Close	1000	750	450	—	—
Carbon Steel, 55M Air-to-Open	1000	700	450	160	80
Carbon Steel, 55M Air-to-Close	1000	1000	675	240	125

\* With positioner supplying 40 PSI to the actuator.

### Model Selection Guide

Make one selection from each section of the chart. A finished model number will look like this: **78SP100BR/PTTSM3B3S3ARD3EG0**

Description	Size	Catalog Number	Price
Globe Style Pneumatic Control Valve, NPT Threaded Connections, 316 Stainless Steel Trim, Teflon Packing, Hard Seat, Actuator and Air Regulator			
Bronze Body	1/2"	78SP050BR/PTTS	\$ 1522.08
	3/4"	78SP075BR/PTTS	1522.08
	1"	78SP100BR/PTTS	1522.08
	1-1/2"	78SP150BR/PTTS	2404.08
	2"	78SP200BR/PTTS	2404.08
Carbon Steel Body	1/2"	78SP050CS/PTTS	1969.80
	3/4"	78SP075CS/PTTS	1969.80
	1"	78SP100CS/PTTS	1969.80
	1-1/2"	78SP150CS/PTTS	2909.76
	2"	78SP200CS/PTTS	2909.76
Seat Type	Linear Hard	A	0.00
	Equal Percentage Hard	C	0.00
Flow (Cv) *	1.8	4	202.00
	2.5	5	202.00
	4.4 (Std. on 1/2" valve)	6	202.00
	4.6	7	202.00
	8.0 (Std. on 3/4" valve)	8	202.00
	9.0	M	202.00
	11.5 (Std. on 1" valve)	N	202.00
	12.0	P	202.00
	12.2 (Std. on 1" valve)	Q	202.00
	12.7	R	202.00
	15	9	202.00
	30 (Std. on 1-1/2" valve)	B	202.00
	35	V	202.00
	40	U	202.00
	45 (Std. on 2" valve)	W	202.00
	50	C	202.00
	60	1	202.00
Range	Direct Acting	A	0.00
	Reverse Acting	B	0.00
Standard Actuator	For 1/2" to 1" Valves	3B3S3AR	182.00
	For 1-1/2" to 2" Valves	5B5S5AR	182.00
Action	Air-to-Open	D	0.00
	Air-to-Close	R	0.00
I/P 4-20 mA	For 1/2" to 1" Valves	3	533.00
	For 1-1/2" to 2" Valves	5	533.00
O-Ring	EPDM	E	25.00
	Viton	V	48.00
Positioner	Side-Mount, with HART®	G0	1938.00

\* Cv at capacity for a given valve size provided at no charge. See chart at left.

# Fractional Flow Control Valves



## 8000 Series Two-Way Globe-Style Pneumatic Control Valve

- Heavy duty control valves for processes that require full or fractional flow control,
- For high pressure chemicals, steam, air, gas, oil, and water
- Fully enclosed multi-spring actuator to minimize deadband; field-reversible without the use of special tools or extra parts
- Heavy duty barstock construction for pressures to 6000 PSI
- Alloy body with Teflon V-ring standard, 316SS seat and stem, 17-4 pH SS plug, epoxy-coated steel actuator, and Buna-N diaphragm
- In-line maintainable for easy trim repairs
- ANSI shutoff: Class III for Cv <3.5, Class IV for Cv 3.5 or higher
- Temperature range: -20° to 400° F with standard packing



### Model Selection Guide

Make one selection from each section of the chart. A finished model number will look like this: **8000G050CB/PTSTAEA30000AD00**

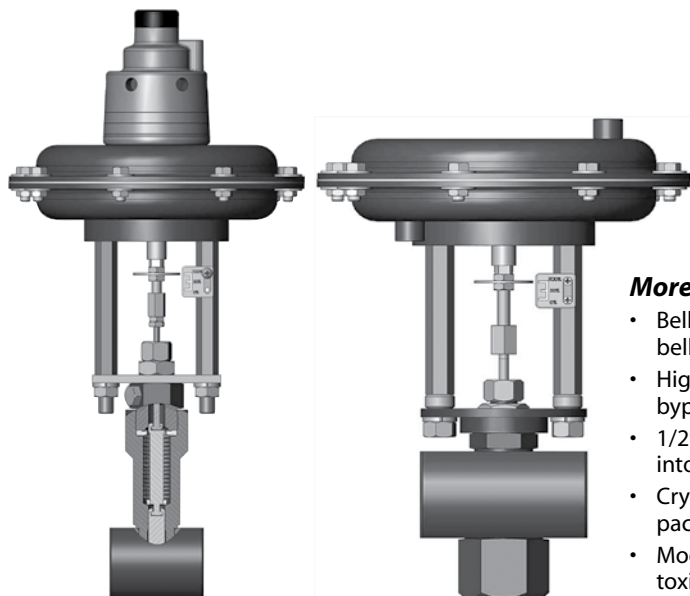
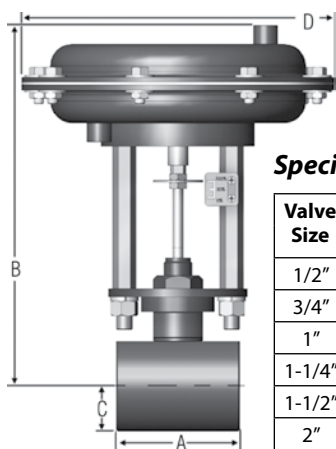
Description	Catalog Number	Price	
Fractional Flow Control Valve, Threaded Ends, Teflon Packing, with Air Regulator			
Model	Two-Way Globe Valve	8000G	
Size and Body Material	1/2" Carbon Steel	050CB/PTST	\$ 1612.80
	1/2" Stainless Steel	050SB/PTST	1869.84
	3/4" Carbon Steel	075CB/PTST	1735.44
	3/4" Stainless Steel	075SB/PTST	2268.00
	1" Carbon Steel	100CB/PTST	1970.64
	1" Stainless Steel	100SB/PTST	2643.48
	1-1/4" Carbon Steel	125CB/PTST	3199.56
	1-1/4" Stainless Steel	125SB/PTST	3531.36
	1-1/2" Carbon Steel	150CB/PTST	3748.92
	1-1/2" Stainless Steel	150SB/PTST	4415.88
	2" Carbon Steel	200CB/PTST	4239.48
2" Stainless Steel	200SB/PTST	4834.20	
Plug and Seat	Standard: Linear Hard	A	0.00
	Standard: =% Hard	B	0.00
Flow Coefficient Cv	0.05	A	0.00
	0.1	B	0.00
	0.2	C	0.00
	0.5	D	0.00
	1.0	E	0.00
	1.5	M	0.00
	1.8	N	0.00
	2.0	F	0.00
	3.0	P	0.00
	3.5	Q	0.00
	4.0	G	0.00
	4.3	R	0.00
	6.5	H	0.00
	7.1	S	0.00
9.0	I	0.00	
12.5	T	0.00	
16.0	J	0.00	
17	U	0.00	
25.0	K	0.00	
Range	3-15 Direct Acting (Valves <1.5")	A30000A	182.00
	3-15 Direct Acting (Valves 1.5" or 2")	A50000A	182.00
	3-15 Reverse Acting (Valves <1.5")	B30000A	182.00
	3-15 Reverse Acting (Valves 1.5" or 2")	B50000A	182.00
Action	Direct Air-to-Close	D00	0.00
	Reverse Air-to-Open	R00	0.00

**Also available with side-mount or top-mount positioner.**

**Cryogenic bonnet available for temperatures to -425° F**

### Specifications

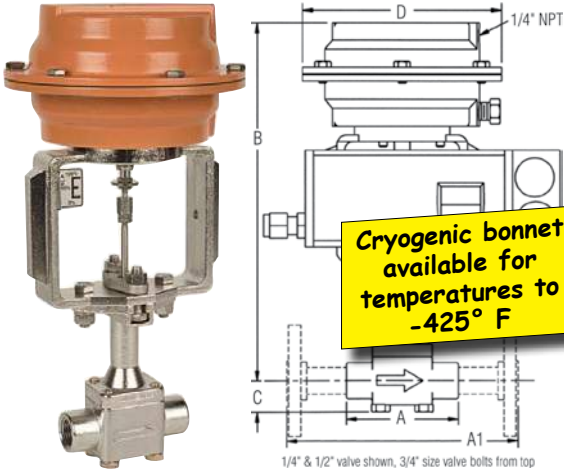
Valve Size	PSIG @ 100° F	Dimensions			
		A	B	C	D
1/2"	6000	3.00"	11.62"	1.25"	9.50"
3/4"	6000	3.00"	11.62"	1.25"	9.50"
1"	6000	3.75"	11.62"	1.50"	9.50"
1-1/4"	4000	5.00"	12.00"	1.65"	9.50"
1-1/2"	4000	4.75"	13.62"	2.00"	9.50"
2"	2500	5.75"	13.87"	2.20"	9.50"



### More options

- Bellows stem seal (far left) for fugitive emissions containment. 316Ti, triple-ply bellows, back-up packing, leak detection port. Requires positioner.
- High pressure three-way body (near left), 1/2" and 1", for mixing, diverting, or bypass applications
- 1/2" or 1" angle body for 90° installations. Flow into bottom standard, flow out into side for lower pressure
- Cryogenic bonnet option extends packing to prevent ice build-up, protects packing from damage caused by ice. Good to -425° F
- Models and materials for applications in chemical injection, cryogenics, corrosives, toxics, ammonia, and chlorine

# 708 Series Fractional Flow Control Valve with Side-Mounted Positioner



- For steam, air, gas, oil, water, and chemical service
- Accurate control for fractional flow services in pilot plant installations, test stands, R&D facilities, or dosing, injection, and venting applications
- Rolling diaphragm design ensures that the effective diaphragm area remains relatively constant, regardless of valve stem position
- Bolted body/bonnet connection simplifies maintenance — Remove and replace trim to change flow rates without removing valve from line
- Spring-loaded Teflon packing maintains a proper compression while minimizing excessive friction, reducing the need for field adjustments
- Extended orifice, plug guiding standard for improved shutoff and accuracy
- Carbon steel or stainless steel body and bonnet, 14M rolling Nylon diaphragm, spring-loaded TFE/ Chevron stem packing (good to 450° F)



## Pressure Ratings (PSI)

Temp °F	1/4" and 1/2"		3/4"	
	SST	CS	SST	CS
100	5000	5000	4000	4000
200	4299	4555	3439	3644
300	3882	4426	3106	3541
400	3569	4278	2855	3422
500	3319	4042	2655	3234
600	3132	3691	2506	2953
650	3083	3623	2466	2898
700	3000	3596	2400	2877
750	2931	3401	2345	2721
800	2882	2780	2306	2224
850	2819	—	2255	—
900	2736	—	2189	—
950	2681	—	2145	—
1000	2528	—	2022	—

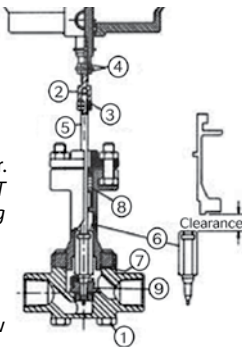
## Valve Body Rating

Pressure rating at maximum temperature based on ASTM 193 Gr. B6 bolting material.

Size	Temperature	Stainless Steel	Carbon Steel
1/4"	200° F Max.	2995 PSI	2995 PSI
1/2"	800° F Max.	2736 PSI	2780 PSI
3/4"	800° F Max.	2917 PSI	2224 PSI

## Easy Trim Removal and Replacement

- Remove four bolts (1) and body.
- Loosen nut (3). Keep connector (2) from rotating.
- DO not loosen nuts (4). That will change the actuator spring adjustment.
- Unthread stem (5) from connector. Push stem through body. Do NOT push stem threads through packing unless the stem is being replaced.
- Slide plug (6) off stem.
- Remove and install new seat (9).
- Install new gasket (7). Install new packing (8) if stem is removed.
- Assemble in reverse order. Note: To maintain stroke adjustment, stem must be threaded into connector until bottomed out.

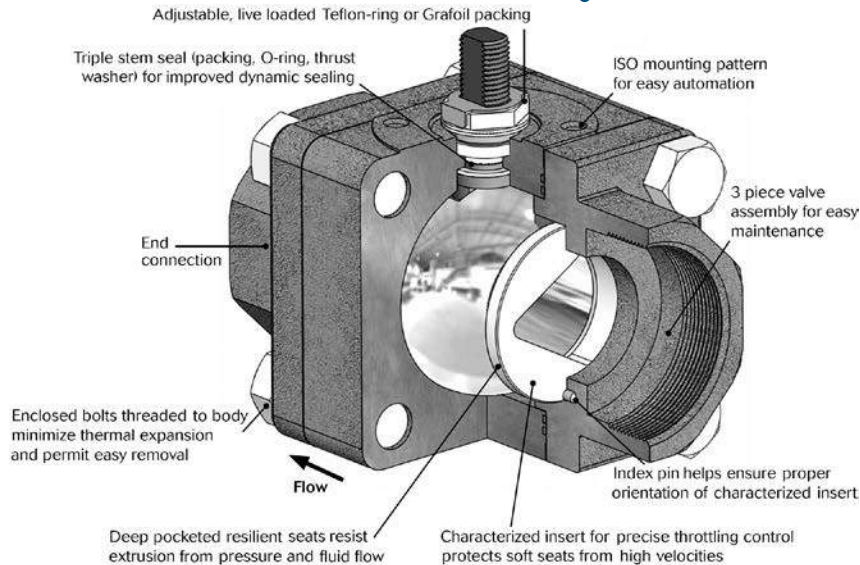


## Model Selection Guide

Make one selection from each section of the chart. A finished model number will look like this: **708SP025CS/PTT6ALA4T4S4A7**

Description		Catalog Number	Price		
Fractional Flow Control Valve with Side Mount HART® Positioner, Threaded Ends, 316SS Trim and Teflon Packing, Nylon/Nitrile Diaphragm, and Air Regulator for 14M Actuator					
Dimensions (Inches)		A	B		
Size and Body Material (For Temps >800° F, Use SST)	1/4" Carbon Steel	11.6	0.9		
	1/4" Stainless Steel	11.6	0.9		
	1/2" Carbon Steel	11.7	1.2		
	1/2" Stainless Steel	11.7	1.2		
	3/4" Carbon Steel	13.5	1.2		
	3/4" Stainless Steel	13.5	1.2		
Plug Seat	Standard: Linear Hard	A	0.00		
	Standard: =% Hard	B	0.00		
Max Allowable DP Rating	A-T-O w/Pos @40 PSI	A-T-C 3-15 @ 20 PSI			
Flow Coefficient Cv	0.00001	5000	5000	A	739.00
	0.00002	5000	5000	B	739.00
	0.00005	5000	5000	C	739.00
	0.0001	5000	5000	D	739.00
	0.0002	5000	5000	E	739.00
	0.0005	5000	5000	F	739.00
	0.001	5000	5000	G	410.00
	0.002	5000	5000	H	410.00
	0.005	5000	5000	I	410.00
	0.01	5000	5000	J	410.00
	0.02	5000	5000	K	410.00
	0.05	5000	5000	L	0.00
	0.1	5000	5000	M	0.00
	0.2	5000	5000	N	0.00
	0.5	5000	5000	P	0.00
	1.0	2350	2065	Q	0.00
2.0	800	650	R	0.00	
3.0	666	541	T	0.00	
4.0	532	432	S	0.00	
Range and Action	3-15 Direct	A4T4S4		0.00	
	3-15 Reverse	B4T4S4		0.00	
Regulator	None	00		0.00	
	Air Regulator for 14M Actuator	A7		182.00	
Action	Air-to-Close	DOG		1938.00	
	Air-to-Open	ROG		1938.00	

# V-Ball-Type Control Valves



## Steps to Building a Complete Marwin Control Valve

- 1 Pick your CV3000 valve model based on size, material, and connection type.
- 2 Choose a spring return (single action) or double action pneumatic actuator that fits your valve. (See page 309)
- 3 Add a valve positioner. (See page 309)

## CV3000 Automated V-Type Control Valve

- Modulating high capacity ball valve
- V-control metal insert behind the upstream seat acts as throttling element, protects the soft seats from high velocities and ensures bubble-tight shutoff when needed
- Soft seats and inserts can be changed in the field
- Metal encapsulated soft seats prevent cold-flowing under adverse temperature, pressure, and modulating service conditions

### Model Selection Guide

Valve Size	Torque (In-Lb)	Max Cv at 100% Travel			NPTF Threaded Connection		150# Flanged Connections	
		30°	60°	90°	Catalog Number	Price	Catalog Number	Price
<b>Three-Piece High Performance Control Valve, Reduced Port, Carbon Steel Body, Teflon Seats</b>								
1/2"	65	2.60	5.90	—	CV-3000R-050-CS/PT	\$ 467.74	CV-3000R-050-CS/F1	\$ 919.10
3/4"	72	3.00	6.70	—	CV-3000R-075-CS/PT	495.04	CV-3000R-075-CS/F1	1015.56
1"	108	7.30	15.50	19.70	CV-3000R-100-CS/PT	513.24	CV-3000R-100-CS/F1	1180.27
1-1/4"	190	13.50	25.00	32.00	CV-3000R-125-CS/PT	589.68	CV-3000R-125-CS/F1	1325.87
1-1/2"	250	16.30	37.50	71.70	CV-3000R-150-CS/PT	643.37	CV-3000R-150-CS/F1	1476.93
2"	350	26.50	61.60	77.00	CV-3000R-200-CS/PT	715.26	CV-3000R-200-CS/F1	1648.01
2-1/2"	570	49.50	89.40	165.00	CV-3000R-250-CS/PT	1139.32	CV-3000R-250-CS/F1	2170.35
3"	973	54.20	124.60	230.00	CV-3000R-300-CS/PT	1558.83	CV-3000R-300-CS/F1	2982.07
4"	1545	90.00	200.00	380.00	CV-3000R-400-CS/PT	2360.54	CV-3000R-400-CS/F1	4161.43
<b>Three-Piece High Performance Control Valve, Reduced Port, Stainless Steel Body, Teflon Seats</b>								
1/2"	65	2.60	5.90	—	CV-3000R-050-S6/PT	496.86	CV-3000R-050-S6/F1	1134.77
3/4"	72	3.00	6.70	—	CV-3000R-075-S6/PT	505.96	CV-3000R-075-S6/F1	1232.14
1"	108	7.30	15.50	19.70	CV-3000R-100-S6/PT	538.72	CV-3000R-100-S6/F1	1441.44
1-1/4"	190	13.50	25.00	32.00	CV-3000R-125-S6/PT	684.32	CV-3000R-125-S6/F1	1665.30
1-1/2"	250	16.30	37.50	71.70	CV-3000R-150-S6/PT	801.71	CV-3000R-150-S6/F1	1880.97
2"	350	26.50	61.60	77.00	CV-3000R-200-S6/PT	873.60	CV-3000R-200-S6/F1	2100.28
2-1/2"	570	49.50	89.40	165.00	CV-3000R-250-S6/PT	1348.62	CV-3000R-250-S6/F1	3448.90
3"	973	54.20	124.60	230.00	CV-3000R-300-S6/PT	2104.83	CV-3000R-300-S6/F1	4853.03
4"	1545	90.00	200.00	380.00	CV-3000R-400-S6/PT	2593.50	CV-3000R-400-S6/F1	5753.93
Characterized Insert and Trim		30° Insert, 316SS Trim 60° Insert, 316SS Trim 90° Insert, 316SS Trim					A1 A2 A3	0.00 0.00 0.00
Internals		PTFE Seat, Seals, Washer, Packing, Viton O-Ring					TFTVNN	0.00



## UT Series Pneumatic Actuators

- Million-cycle normal service life
- 100° rotation (-5° CW to 5° CCW)
- Dual adjustable open, close stops
- Anti-blowout pinion, nickel-plated to protect against corrosion
- Hard-coated anodized aluminum casing, steel shaft
- Long end cap bolts allow spring decompression
- Based on clean lubricating service and 60 PSI air supply
- ANSI B1.20.1 threaded ports, ISO 5211 valve mounting flange, NAMUR mount for air supply ports
- ATEX 94/9/EC and PED 97/23/EC Approvals



### Model Selection Guide

Mounting bracket included.

To Fit Valve	Spring Return Actuator		Double-Acting Actuator	
	Catalog No.	Price	Catalog No.	Price
CV3000R-050	UT-2-SR-03	\$ 582.40	UT-0-DA	\$ 418.60
CV3000R-075	UT-2-SR-03	582.40	UT-0-DA	431.34
CV3000R-100	UT-2.5-SR-03	640.64	UT-1-DA	494.13
CV3000R-125	UT-3-SR-03	737.10	UT-2-DA	572.39
CV3000R-150	UT-3-SR-03	737.10	UT-2-DA	572.39
CV3000R-200	UT-3.5-SR-03	901.81	UT-2.5-DA	596.96
CV3000R-250	UT-4-SR-03	1234.87	UT-3-DA	693.42
CV3000R-300*	UT-6-SR-03	3095.82	UT-4-DA	908.18
CV3000R-400*	UT-6-SR-03	3095.82	UT-4.5-DA	1139.32

\* Maximum 700 PSI differential pressure across valve.



## SIPART PS2 Valve Positioner

- Automatic commissioning at initialization optimizes control by determining zero point, end value, direction of action, positioning speed, minimum pulse time, and dead zone
- Local operation and configuration with three pushbuttons and two-line front-panel display
- IP65 rated enclosure insensitive to environmental influences
- Switch between automatic, manual, and configuration modes at the push of a button

### Model Selection Guide

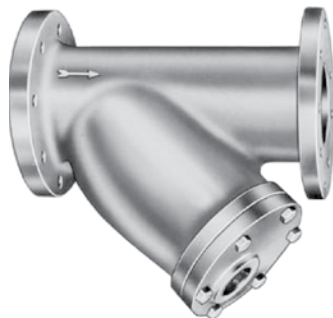
Positioner Description	Catalog Number	Price
Single Acting, HART®, NEMA 4X/IP65, Gauges, No Switches	6DR5210-0EN00-0AA3	\$ 2535.26
Single Acting, HART®, NEMA 4X/IP65 Enclosure, Gauges, 2 SPDT Switches	6DR5210-0EN30-0AA3	2082.08
Double Acting, HART®, NEMA 4X/IP65, Gauges, No Switches	6DR5220-0EN00-0AA4	2800.07
Double Acting, HART®, NEMA 4X/IP65 Enclosure, Gauges, 2 SPDT Switches	6DR5220-0EN30-0AA4	2346.89



For configuration,  
diagnostics, and monitoring

## Y-Type Line Strainers

- For service up to 1480 PSI
- Carbon steel, stainless, steel, bronze, or cast iron bodies
- Threaded or flanged ends
- Machine-tapered seat for perfect fit
- Replaceable blow-off plug and removable strainer screen
- Protect your fluid handling system against damage from dirt, scale, or welding particles flow through the pipeline



Call for pricing  
and delivery.

### Model Selection Guide

Make a selection from each section of the chart. A finished model number will look like this: **Y125CI B10**

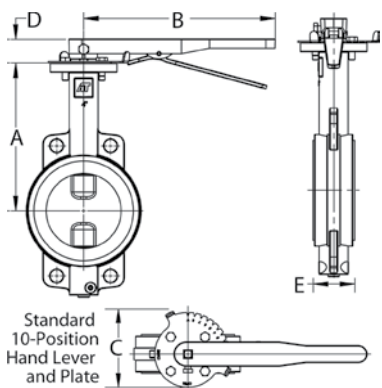
Description	Size	Catalog Number
Y-Strainer Body Material and Pressure Rating	Cast Iron, ANSI 125#	Y125CI
	Cast Iron, ANSI 250#	Y250CI
	Bronze, ANSI 125#	Y125BR
	Bronze, ANSI 150#	Y150BR
	Bronze, ANSI 250#	Y250BR
	Carbon Steel, ANSI 150#	Y150CS
	Carbon Steel, ANSI 300#	Y300CS
	Carbon Steel, ANSI 600#	Y600CS
	Stainless Steel, ANSI 150#	Y150SS
	Stainless Steel, ANSI 300#	Y300SS
Size	2"	7
	2-1/2"	8
	3"	9
	4"	B
	5"	C
	6"	D
Connection	8"	E
	10"	F
	NPT Ends	10
	SWE (CS and SS Only) 150# ANSI Flange	20 30

# Resilient-Seated Butterfly Valves



## Key Specifications

- Available in 2" to 12" sizes
- Manual valves with lever or gear operators; Pneumatic double-acting or spring return actuators; Automated with electric actuators
- Cast ductile iron body, precisely machined and epoxy-coated, Nickel-plated ductile iron disc, EPDM seat, 316SS stem, bronze bushing, and Buna-N stem seal standard— Call for other materials
- Complies with MSS-SP-67 and API-609



### Model Selection Guide — Manual Valve with Handle Operator

Valve Size	Max Cv @ 90°	Dimensions					Catalog Number	Price
		A	B	C	D	E		
<b>Resilient Seated Butterfly Valve, 150# Lug Ductile Iron Body, for Wet Media, 100 PSI Pressure Drop</b>								
2"	155	6.38	10.51	4.45	1.18	1.75	OSB-L1-0200-EDB-HE	\$52.00
2.5"	262	6.88	10.51	4.45	1.18	1.88	OSB-L1-0250-EDB-HE	56.00
3"	417	7.13	10.51	4.45	1.18	1.88	OSB-L1-0300-EDB-HE	63.00
4"	773	7.88	10.51	4.45	1.18	2.13	OSB-L1-0400-EDB-HE	94.00
5"	1267	8.38	10.51	4.45	1.18	2.25	OSB-L1-0500-EDB-HE	119.00
6"	1771	8.88	10.51	4.45	1.18	2.25	OSB-L1-0600-EDB-HE	146.00
8"	3230	10.25	14.13	6.63	1.32	2.50	OSB-L1-0800-EDB-HE	218.00
10"	5327	11.50	14.13	6.63	1.32	2.75	OSB-L1-1000-EDB-HE	258.00
12"	8117	13.25	20.75	6.63	1.44	3.13	OSB-L1-1200-EDB-HE	448.00

### Model Selection Guide — Manual Valve with Gear Wheel Operator

Valve Size	Max Cv @ 90°	Dimensions							Catalog Number	Price
		A	B	C	D	E	F	G		
<b>Resilient Seated Butterfly Valve, 150# Lug Ductile Iron Body, for Wet Media, 100 PSI Pressure Drop</b>										
2"	155	6.38	2.79	6.00	1.48	1.77	5.87	1.75	OSB-L1-0200-EDB-GE	\$88.00
2.5"	262	6.88	2.79	6.00	1.48	1.77	5.87	1.88	OSB-L1-0250-EDB-GE	92.00
3"	417	7.13	2.79	6.00	1.48	1.77	5.87	1.88	OSB-L1-0300-EDB-GE	99.00
4"	773	7.88	2.79	6.00	1.48	1.77	5.87	2.13	OSB-L1-0400-EDB-GE	130.00
5"	1267	8.38	2.79	6.00	1.48	1.77	5.87	2.25	OSB-L1-0500-EDB-GE	155.00
6"	1771	8.88	2.79	6.00	1.48	1.77	5.87	2.25	OSB-L1-0600-EDB-GE	180.00
8"	3230	10.25	3.30	8.75	1.57	2.60	11.62	2.50	OSB-L1-0800-EDB-GE	275.00
10"	5327	11.50	3.30	8.75	1.57	2.60	11.62	2.75	OSB-L1-1000-EDB-GE	315.00
12"	8117	13.25	3.30	8.75	1.57	3.01	11.62	3.13	OSB-L1-1200-EDB-GE	505.00

### Model Selection Guide — Automated Valve with Electric Actuator

Valve Size	Max Cv @ 90°	Dimensions					Catalog Number	Price
		A	B	C	D	E		
<b>Resilient Seated Butterfly Valve, 150# Lug Ductile Iron Body, for Wet Media, 100 PSI Pressure Drop</b>								
2"	155	5.24	11.57	4.98	4.15	1.75	OSB-L1-0200-EDB-XE/WEA1-XX	\$470.00
2.5"	262	5.24	12.12	4.98	4.15	1.88	OSB-L1-0250-EDB-XE/WEA1-XX	474.00
3"	417	5.24	12.36	4.98	4.15	1.88	OSB-L1-0300-EDB-XE/WEA1-XX	481.00
4"	773	5.24	13.11	4.98	4.15	2.13	OSB-L1-0400-EDB-XE/WEA1-XX	512.00
5"	1267	8.66	17.04	6.69	10.16	2.25	OSB-L1-0500-EDB-XE/WEB1-XX	1121.00
6"	1771	10.24	19.13	9.02	13.31	2.25	OSB-L1-0600-EDB-XE/WEC1-XX	1320.00
8"	3230	10.24	20.47	9.02	13.31	2.50	OSB-L1-0800-EDB-XE/WED1-XX	1461.00
10"	5327	11.42	22.91	10.20	14.49	2.75	OSB-L1-1000-EDB-XE/WEE1-XX	1721.00
12"	8117	11.42	24.68	10.20	14.49	3.13	OSB-L1-1200-EDB-XE/WEF1-XX	2175.00

See dimensional drawing for butterfly valves with electric actuators, top of next page.



Solids Flow and Motion

Controllers and Programmers

Digital Indicators

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Combustion Safety and Efficiency

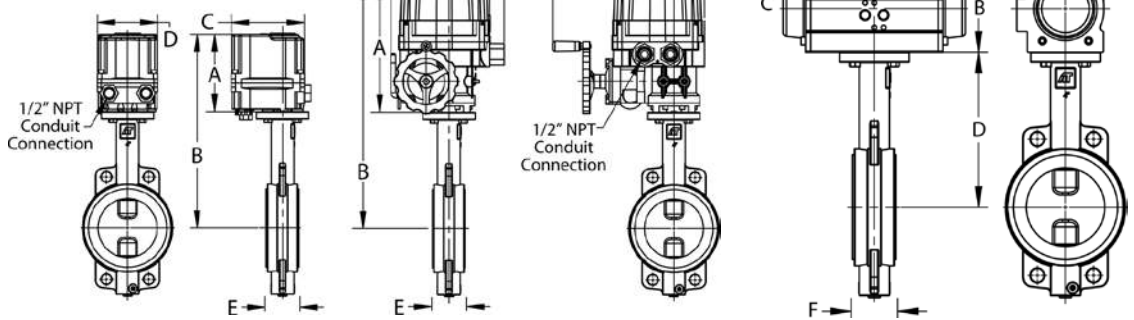
Process Valves

**Dimensions:  
Actuated Butterfly Valves**

**Left:** Electric Actuators  
(See model selection guide on previous page.)

**Right:** Double-Acting or Spring Return Pneumatic Actuators

WE500 Actuator



**Model Selection Guide — Automated Valve with Double-Acting Actuator**

Valve Size	Max Cv @ 90°	Dimensions						Catalog Number	Price
		A	B	C	D	E	F		
<b>Resilient Seated Butterfly Valve, 150# Lug Ductile Iron Body, Double Acting, for Wet Media, 100 PSI Pressure Drop</b>									
2"	155	7.95	3.43	0.79	6.34	3.29	1.75	OSB-L1-0200-EDB-XE/2R2D-XX	\$248.00
2.5"	262	7.95	3.43	0.79	6.89	3.29	1.88	OSB-L1-0250-EDB-XE/2R2D-XX	252.00
3"	417	7.95	3.43	0.79	7.13	3.29	1.88	OSB-L1-0300-EDB-XE/2R2D-XX	259.00
4"	773	9.29	4.49	0.79	7.87	4.41	2.13	OSB-L1-0400-EDB-XE/2R3D-XX	328.00
5"	1267	9.29	4.49	0.79	8.39	4.41	2.25	OSB-L1-0500-EDB-XE/2R3D-XX	356.00
6"	1771	10.87	4.88	0.79	8.90	4.69	2.25	OSB-L1-0600-EDB-XE/2R4D-XX	453.00
8"	3230	13.90	6.18	0.79	10.24	5.91	2.50	OSB-L1-0800-EDB-XE/2R6D-XX	669.00
10"	5327	15.16	6.93	1.18	11.50	6.50	2.75	OSB-L1-1000-EDB-XE/2R7D-XX	855.00
12"	8117	15.16	6.93	1.18	13.27	6.50	3.13	OSB-L1-1200-EDB-XE/2R7D-XX	981.00
Optional Solenoid	None NEMA 4 NAMUR-Mounted Solenoid, 24 VDC/120 VAC NEMA 7 NAMUR-Mounted Solenoid, 24 VDC/120 VAC Intrinsically Safe Solenoid							-X _ -A _ -B _ -C _	0.00 96.00 180.00 387.00
Optional Limit Switches	None Two SPDT NEMA 4 Two SPDT NEMA 7 Intrinsically Safe Limit Switch							- _X - _A - _B - _C	0.00 148.00 340.00 178.00

\*Please specify solenoid voltage at time of order.



**Model Selection Guide — Automated Valve with Spring Return Actuator**

Valve Size	Max Cv @ 90°	Dimensions						Catalog Number	Price
		A	B	C	D	E	F		
<b>Resilient Seated Butterfly Valve, 150# Lug Ductile Iron Body, Spring Return, for Wet Media, 100 PSI Pressure Drop</b>									
2"	155	9.29	4.49	0.79	6.34	4.41	1.75	OSB-L1-0200-EDB-XE/2R3S-XX	\$315.00
2.5"	262	9.29	4.49	0.79	6.89	4.41	1.88	OSB-L1-0250-EDB-XE/2R3S-XX	319.00
3"	417	9.29	4.49	0.79	7.13	4.41	1.88	OSB-L1-0300-EDB-XE/2R3S-XX	325.00
4"	773	10.87	4.88	0.79	7.87	4.69	2.13	OSB-L1-0400-EDB-XE/2R4S-XX	439.00
5"	1267	13.90	6.18	0.79	8.39	5.91	2.25	OSB-L1-0500-EDB-XE/2R6S-XX	680.00
6"	1771	13.90	6.18	0.79	8.90	5.91	2.25	OSB-L1-0600-EDB-XE/2R6S-XX	702.00
8"	3230	15.16	6.93	1.18	10.24	6.50	2.50	OSB-L1-0800-EDB-XE/2R7S-XX	859.00
10"	5327	22.68	9.17	1.18	11.50	7.60	2.75	OSB-L1-1000-EDB-XE/2R9S-XX	2062.00
12"	8117	24.37	10.12	1.18	13.27	8.31	3.13	OSB-L1-1200-EDB-XE/2R0S-XX	2632.00
Optional Solenoid	None NEMA 4 NAMUR-Mounted Solenoid, 24 VDC/120 VAC NEMA 7 NAMUR-Mounted Solenoid, 24 VDC/120 VAC Intrinsically Safe Solenoid							-X _ -A _ -B _ -C _	0.00 96.00 180.00 387.00
Optional Limit Switches	None Two SPDT NEMA 4 Two SPDT NEMA 7 Intrinsically Safe Limit Switch							- _X - _A - _B - _C	0.00 148.00 340.00 178.00

\*Please specify solenoid voltage at time of order.

# High Performance Butterfly Valves




Need an automated butterfly valve? Call for pricing and delivery.

## Key Specifications

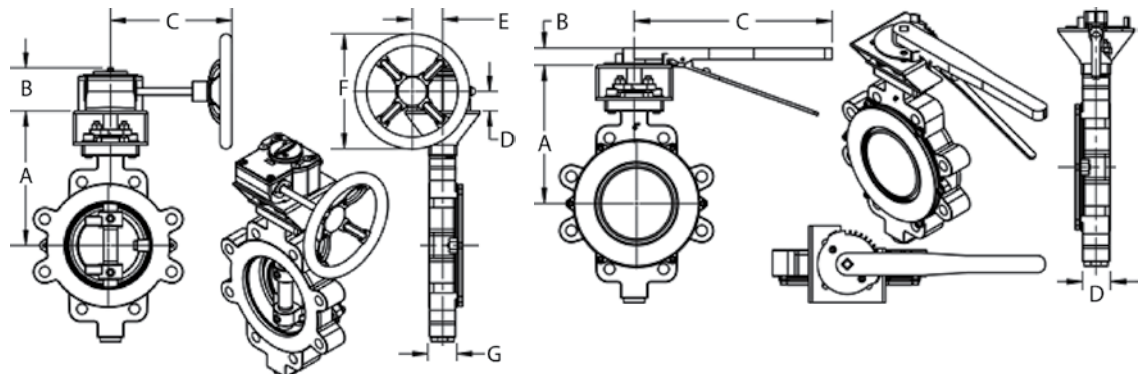
- Available in 2" to 24" sizes (2" to 12" shown here)
- Standard body materials in carbon steel and 316 stainless steel
- ANSI Class 150# lug or wafer bodies: CS or 316SS, RTFE soft seat, 316SS disc, 316SS stem standard
- ANSI Class 300# lug or wafer bodies: CS or 316SS, RTFE soft seat, 316SS disc, XM-19 stem standard
- Bubble-tight shutoff of general purpose applications to 450°F
- Blowout-proof stem design
- Meets industry standards: ANSI-B 16.10, B16.34, API-598, API-607, API-609, ASME-B16.5, BS-6755, FCI 70-2, MS SP-25 and SP-55

## Dimensions: Manual High Performance Butterfly Valves

**Left:** Valve with Gear Operator

**Right:** Valve with Lever Operator

(See model selection guides on next page.)



**Square Stem:** Facilitates mounting of pneumatic and electric actuators or gear operators through 12"

**Live Loaded Packing:** Three sets of Belleville washers are added to each gland stud to maintain a self-adjusting packing load.

**Application-Specific Stem Packing:** Standard packing is graphite. Options include double PTFE V-ring or double PTFE inverted packing.

**Internally Cast Travel Stop:** Prevents over-rotation of the disc in an effort to limit possible seat damage

**Seat Retainer Design:** Designed so fasteners don't interfere with the flange gasket sealing surface.

Need help specifying the valve for your application? Call our factory-trained sales team.

Body Style	Valve Size	Valve CV	Dimensions				Carbon Steel Body		Stainless Steel Body	
			A	B	C	D	Catalog Number	Price	Catalog Number	Price
<b>High Performance Butterfly Valve: Manual Valve with 10-Position Lever/Handle</b>										
150# Lug	2"	103	6.69	1.02	11.00	2.09	PSC-L1-0200-RSR-HXG	\$570.00	PS-L1-0200-RSR-HXG	\$850.00
	3"	210	7.99	1.02	17.00	1.89	PSC-L1-0300-RSR-HXG	690.00	PS-L1-0300-RSR-HXG	1030.00
	4"	418	8.46	1.02	17.00	2.13	PSC-L1-0400-RSR-HXG	807.00	PS-L1-0400-RSR-HXG	1349.00
	6"	1132	9.65	1.14	17.00	2.24	PSC-L1-0600-RSR-HXG	1110.00	PS-L1-0600-RSR-HXG	1867.00
	8"	2268	10.36	1.14	22.00	2.52	PSC-L1-0800-RSR-HXG	1495.00	PS-L1-0800-RSR-HXG	2800.00
300# Lug	2"	97	6.69	1.02	11.00	2.09	PSC-L3-0200-RSR-HBG	630.00	PS-L3-0200-RSR-HBG	950.00
	3"	211	7.99	1.02	17.00	1.89	PSC-L3-0300-RSR-HBG	755.00	PS-L3-0300-RSR-HBG	1110.00
	4"	412	8.46	1.02	17.00	2.13	PSC-L3-0400-RSR-HBG	860.00	PS-L3-0400-RSR-HBG	1385.00
	6"	1054	9.65	1.14	17.00	2.32	PSC-L3-0600-RSR-HBG	1430.00	PS-L3-0600-RSR-HBG	2230.00
	8"	1987	11.02	1.14	22.00	2.87	PSC-L3-0800-RSR-HBG	2140.00	PS-L3-0800-RSR-HBG	3540.00
150# Wafer	2"	103	6.69	1.02	11.00	2.09	PSC-W1-0200-RSR-HXG	500.00	PS-W1-0200-RSR-HXG	705.00
	3"	210	7.99	1.02	17.00	1.89	PSC-W1-0300-RSR-HXG	555.00	PS-W1-0300-RSR-HXG	855.00
	4"	418	8.46	1.02	17.00	2.13	PSC-W1-0400-RSR-HXG	665.00	PS-W1-0400-RSR-HXG	995.00
	6"	1132	9.65	1.14	17.00	2.24	PSC-W1-0600-RSR-HXG	890.00	PS-W1-0600-RSR-HXG	1370.00
	8"	2268	10.36	1.14	22.00	2.52	PSC-W1-0800-RSR-HXG	1250.00	PS-W1-0800-RSR-HXG	2165.00
300# Wafer	2"	97	6.69	1.02	11.00	2.09	PSC-W3-0200-RSR-HBG	510.00	PS-W3-0200-RSR-HBG	720.00
	3"	211	7.99	1.02	17.00	1.89	PSC-W3-0300-RSR-HBG	595.00	PS-W3-0300-RSR-HBG	900.00
	4"	412	8.46	1.02	17.00	2.13	PSC-W3-0400-RSR-HBG	715.00	PS-W3-0400-RSR-HBG	1030.00
	6"	1054	9.65	1.14	17.00	2.32	PSC-W3-0600-RSR-HBG	1130.00	PS-W3-0600-RSR-HBG	1670.00
	8"	1987	11.02	1.14	22.00	2.87	PSC-W3-0800-RSR-HBG	1830.00	PS-W3-0800-RSR-HBG	2565.00

Body Style	Valve Size	Valve CV	Dimensions							Carbon Steel Body		Stainless Steel Body	
			A	B	C	D	E	F	G	Catalog Number	Price	Catalog Number	Price
<b>High Performance Butterfly Valve: Manual Valve with Gear Operator</b>													
150# Lug	2"	103	6.69	2.52	5.16	1.12	1.71	4.00	2.09	PSC-L1-0200-RSR-GXG	\$677.00	PS-L1-0200-RSR-GXG	\$957.00
	3"	210	7.99	2.52	5.16	1.12	1.71	4.00	1.89	PSC-L1-0300-RSR-GXG	787.00	PS-L1-0300-RSR-GXG	1127.00
	4"	418	8.46	2.52	5.16	1.12	1.71	4.00	2.13	PSC-L1-0400-RSR-GXG	904.00	PS-L1-0400-RSR-GXG	1446.00
	6"	1132	9.65	2.94	7.28	1.34	2.07	6.00	2.24	PSC-L1-0600-RSR-GXG	1244.00	PS-L1-0600-RSR-GXG	2001.00
	8"	2268	10.63	3.56	10.24	1.67	2.71	12.00	2.52	PSC-L1-0800-RSR-GXG	1704.00	PS-L1-0800-RSR-GXG	3009.00
	10"	3715	13.58	3.56	10.24	1.67	2.71	12.00	2.80	PSC-L1-1000-RSR-GXG	2399.00	PS-L1-1000-RSR-GXG	4124.00
	12"	5486	14.57	3.56	11.71	1.67	2.71	16.00	3.19	PSC-L1-2200-RSR-GXG	3042.00	PS-L1-2200-RSR-GXG	5447.00
300# Lug	2"	97	6.69	2.52	5.16	1.12	1.71	4.00	2.09	PSC-L3-0200-RSR-GBG	737.00	PS-L3-0200-RSR-GBG	1057.00
	3"	211	7.99	2.52	5.16	1.12	1.71	4.00	1.89	PSC-L3-0300-RSR-GBG	852.00	PS-L3-0300-RSR-GBG	1207.00
	4"	412	8.46	2.52	5.16	1.12	1.71	4.00	2.13	PSC-L3-0400-RSR-GBG	957.00	PS-L3-0400-RSR-GBG	1482.00
	6"	1054	9.65	2.94	7.28	1.34	2.07	6.00	2.32	PSC-L3-0600-RSR-GBG	1564.00	PS-L3-0600-RSR-GBG	2364.00
	8"	1987	11.02	3.56	10.73	1.67	2.71	12.00	2.87	PSC-L3-0800-RSR-GBG	2349.00	PS-L3-0800-RSR-GBG	3749.00
	10"	3184	13.58	3.56	11.71	1.67	2.71	16.00	3.27	PSC-L3-1000-RSR-GBG	3249.00	PS-L3-1000-RSR-GBG	5394.00
	12"	4633	15.35	3.94	12.64	1.97	3.80	16.00	3.62	PSC-L3-2200-RSR-GBG	4467.00	PS-L3-2200-RSR-GBG	7492.00
150# Wafer	2"	103	6.69	2.52	5.16	1.12	1.71	4.00	2.09	PSC-W1-0200-RSR-GXG	607.00	PS-W1-0200-RSR-GXG	812.00
	3"	210	7.99	2.52	5.16	1.12	1.71	4.00	1.89	PSC-W1-0300-RSR-GXG	652.00	PS-W1-0300-RSR-GXG	952.00
	4"	418	8.46	2.52	5.16	1.12	1.71	4.00	2.13	PSC-W1-0400-RSR-GXG	762.00	PS-W1-0400-RSR-GXG	1090.00
	6"	1132	9.65	2.94	7.28	1.34	2.07	6.00	2.24	PSC-W1-0600-RSR-GXG	1024.00	PS-W1-0600-RSR-GXG	1504.00
	8"	2268	10.63	3.56	10.24	1.67	2.71	12.00	2.52	PSC-W1-0800-RSR-GXG	1459.00	PS-W1-0800-RSR-GXG	2374.00
	10"	3715	13.58	3.56	10.24	1.67	2.71	12.00	2.80	PSC-W1-1000-RSR-GXG	2024.00	PS-W1-1000-RSR-GXG	3274.00
	12"	5486	14.57	3.56	11.71	1.67	2.71	16.00	3.19	PSC-W1-2200-RSR-GXG	2687.00	PS-W1-2200-RSR-GXG	4467.00
300# Wafer	2"	97	6.69	2.52	5.16	1.12	1.71	4.00	2.09	PSC-W3-0200-RSR-GBG	617.00	PS-W3-0200-RSR-GBG	827.00
	3"	211	7.99	2.52	5.16	1.12	1.71	4.00	1.89	PSC-W3-0300-RSR-GBG	692.00	PS-W3-0300-RSR-GBG	997.00
	4"	412	8.46	2.52	5.16	1.12	1.71	4.00	2.13	PSC-W3-0400-RSR-GBG	812.00	PS-W3-0400-RSR-GBG	1127.00
	6"	1054	9.65	2.94	7.28	1.34	2.07	6.00	2.32	PSC-W3-0600-RSR-GBG	1264.00	PS-W3-0600-RSR-GBG	1804.00
	8"	1987	11.02	3.56	10.73	1.67	2.71	12.00	2.87	PSC-W3-0800-RSR-GBG	2039.00	PS-W3-0800-RSR-GBG	2774.00
	10"	3184	13.58	3.56	11.71	1.67	2.71	16.00	3.27	PSC-W3-1000-RSR-GBG	2599.00	PS-W3-1000-RSR-GBG	4264.00
	12"	4633	15.35	3.94	12.64	1.97	3.80	16.00	3.62	PSC-W3-2200-RSR-GBG	3542.00	PS-W3-2200-RSR-GBG	5802.00

# Quadruple Offset Butterfly Valves



## Key Specifications

- Available in 3" to 40" sizes
- Standard bodies in carbon steel and 316 stainless steel
- ANSI Class 150# to 1500# available
- Higher Cv with a fully round flow port produces lower pressure drop across the valve and lower fluid velocity through the valve
- 100% friction-free seating completely eliminates wear, for a higher life cycle
- Lower torque than double or triple offset designs
- Fully enclosed disc design means less shaft deflection
- Fully keyed shaft-to-disc connection lets the disc float and self-center as the shaft grows or shrinks as temperature changes
- Suitable for temperatures to 1400°F
- Meets industry standards: ANSI B 16.34; Fire Safe in both directions per API 607, ISP 10497 and BS 6755; TA Luft II; Leak rate 1 per DIN 3230 BA/BO/BN, Leak rate A per DIN EN 12266, Leak rate below BS 6364; Zero leakage per API-6D/API-598 (Resilient)



## Suitable Applications

- LNG and LPG systems
- Chemical, refining and petrochemical processing
- Power generation
- Technical gases
- Seawater applications
- Mining
- Cryogenic service
- Pulp and paper
- Tank farms
- Municipal service
- Heat transfer fluids

## The Fourth Offset

Quadax uses a patented seal design that results in a round sealing surface. The benefits of a round seat are many, offering significant advantages over triple offset valves.

**Offset 1:** The valve shaft is offset from the center line of the valve seat.

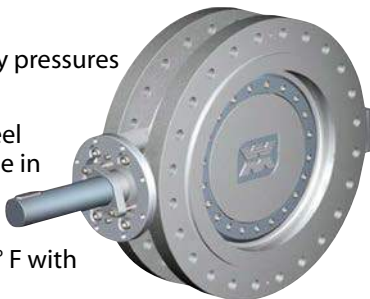
**Offset 2:** The valve shaft is offset from the center line of the pipe.

**Offset 3:** The disc seal shape is manufactured to the shape of a "slice" from a round cone whose axis is offset from the centerline of the pipe. The shape of the slice is an ellipse.

**Offset 4:** The cone shape is stretched to an ellipse. The disc seal made to the shape of a slice from this elliptical cone results in a seal that's perfectly round.

## Short Pattern Double-Flange Butterfly Valve

- Available in 3" to 40" sizes
- ANSI 150, 300, and 600 body pressures
- On/Off or modulating
- Carbon steel or stainless steel body standard, also available in duplex, Inconel, and bronze
- Process temperatures from 14° to 842° F (-454° to 1472° F with special materials)
- API-6D, API-598 resilient, 1 DIN 3230 A DIN EN 12266, and BS 6364 leak rate
- PED, Fire Safe API-607 5th Edition, BAM, TA Luft, ATEX approvals. Call for others.



## Four Reasons Why Four Offsets Are Better

- 1. Less Wear:** Because both the disc and the body seat are perfectly round, the disc doesn't touch the body sealing surface until the valve is completely closed. The disc doesn't drag across the seal, so wearing of the two surfaces is eliminated. Bottom line: The valve lasts longer.
- 2. Lower Torque:** With the elimination of wear, torque is significantly reduced. Lower torque means a smaller actuator, and that saves you money.
- 3. High Cv Values:** Because the pipeline is round, and the seat area flow path is round, there's no dead leg, as seen in triple offset valves. More open area results in higher Cv values.
- 4. More Seal Options:** Replaceable o-ring seals are unique to four offset design, with the round disc and body sealing surfaces.

## Lug Style Butterfly Valve

- Available in 3" to 40" sizes
- ANSI 150, 300, and 600 body pressures
- On/Off or modulating
- Carbon steel or stainless steel body standard, also available in duplex, Inconel, and bronze
- Process temperatures from 14° to 842° F (-454° to 1472° F with special materials)
- API-6D, API-598 resilient, 1 DIN 3230 A DIN EN 12266, and BS 6364 leak rate
- PED, Fire Safe API-607 5th Edition, BAM, TA Luft, ATEX approvals. Call for others.



## Flow Coefficient

Trim	Max dP (PSI)	Cv Value						
		3"	4"	5"	6"	8"	10"	12"
Trim A	290	137	300	486	810	1755	3030	4462
Trim X	754	137	300	486	760	1680	2850	4326
Trim B	1500	117	242	400	670	1458	2469	3698
Trim C	2250	117	242	400	670	1353	2228	3402

## Flow Coefficient

Trim	Max dP (PSI)	Cv Value						
		3"	4"	5"	6"	8"	10"	12"
Trim A	290	137	300	486	810	1755	3030	4462
Trim X	754	137	300	486	760	1680	2850	4326
Trim B	1500	117	242	400	670	1458	2469	3698
Trim C	2250	117	242	400	670	1353	2228	3402

**Butt Weld Style Butterfly Valve**

- Available in 3" to 40" sizes
- ANSI 150, 300, and 600 body pressures
- On/Off or modulating
- Carbon steel or stainless steel body standard, also available in duplex, Inconel, and bronze
- Process temperatures from 14° to 842° F (-454° to 1472° F with special materials)
- API-6D, API-598 resilient, 1 DIN 3230 A DIN EN 12266, and BS 6364 leak rate
- PED, Fire Safe API-607 5th Edition, BAM, TA Luft, ATEX approvals. Call for others.

**Flow Coefficient**

Trim	Max dP (PSI)	Cv Value						
		3"	4"	5"	6"	8"	10"	12"
Trim A	290	137	300	486	810	1755	3030	4462
Trim X	754	137	300	486	760	1680	2850	4326
Trim B	1500	117	242	400	670	1458	2469	3698
Trim C	2250	117	242	400	670	1353	2228	3402

**Gate Valve Replacement**

- Long pattern flanged valve for gate valve replacement
- Available in 3" to 40" sizes
- ANSI 150, 300, and 600 body pressures
- On/Off or modulating
- Carbon steel or stainless steel body standard, also available in duplex, Inconel, and bronze
- Process temperatures from 14° to 842° F (-454° to 1472° F with special materials)
- API-6D, API-598 resilient, 1 DIN 3230 A DIN EN 12266, and BS 6364 leak rate
- PED, Fire Safe API-607 5th Edition, BAM, TA Luft, ATEX approvals. Call for others.

**Flow Coefficient**

Trim	Max dP (PSI)	Cv Value						
		3"	4"	5"	6"	8"	10"	12"
Trim A	290	137	300	486	810	1755	3030	4462
Trim X	754	137	300	486	760	1680	2850	4326
Trim B	1500	117	242	400	670	1458	2469	3698
Trim C	2250	117	242	400	670	1353	2228	3402

**Model Selection Guide**

**Call for pricing!**

Description	Catalog Number
Body Style	Lug Style, API 609 Short Lug Style, DIN 3202-K3 Short Pattern Flanged, 150#/300#, ISO 5752 Short Pattern Flanged, 600#/900#, DIN 3202-F4 Long Pattern Flanged, ANSI B16.10 Butt Weld Ends, DIN3202 F4/S4 Wafer, API/K3 Special BWE Side Entry for Cryo Service
Size	3" 4" 5" 6" 8" 10" 12"
Pressure Class	Class 150# Class 300# Class 600#
Flange Face	RF Ra 3.2-12.5 (Standard) Groove 2512 Groove RTJ DIN Form V13 (2513) DIN Form R13 (2513)
Body	Carbon Steel, GP240GH (ASTM A216 WCB) Carbon Steel P265GH (EN 10028-2 WCB) AISI 316L Stainless Steel
Cover	Carbon Steel, GP240GH (ASTM A216 WCB) Carbon Steel P265GH (EN 10028-2 WCB) AISI 316L Stainless Steel
Packing Gland	Carbon Steel, GP240GH (ASTM A216 WCB) Carbon Steel P265GH (EN 10028-2 WCB) AISI 316L Stainless Steel
Shaft	1.0457 Stainless Steel (Standard) 1.4571 316Ti Stainless Steel
Trim Version	754 PSID Max Long (Standard) 290 PSID Max Long 1500 PSID Max Long 2250 PSID Max Long
Body Seat	Standard Stellite Inconel 625 Monel Hastelloy
Disc Seal	1.4571 316 Ti/Graphite (Standard) 1.4462 F51/Graphite 14571 316Ti/PTFE O-Ring
Cover and Packing Gland Screws	A2-70 Stainless Steel (Standard) A4-70 Stainless Steel 1.4980 Steel 1.4923 Steel
Clamp Ring Screws	A2-70 Stainless Steel (Standard) A4-70 Stainless Steel 1.4980 Steel 1.4923 Steel
Packing/Bearing	Graphite (Standard) PTFE
ISO 5211 Mounting Flange	F10 (Max. torque 4425.36 Lb-In) F03 (Max. torque 283.22 Lb-In) F05 (Max. torque 1106.34 Lb-In) F07 (Max. torque 2212.68 Lb-In) F12 (Max. torque 8850.73 Lb-In)
Options	Call for Special Features/Configurations

# Introduction to Sanitary and Hygienic Systems

## Water for Injection (WFI) Distribution in Manufacturing

### A Sanitary Regulator Application TechTip

Pharmaceutical water distribution systems for medium- to large-scale manufacturing plants are complex, with multiple loops and takeoffs.

Here you see two separate but connected parallel loops: a hot storage vessel with a hot distribution loop, and a cooled end-use loop with reheat. One or more storage tanks may be used.

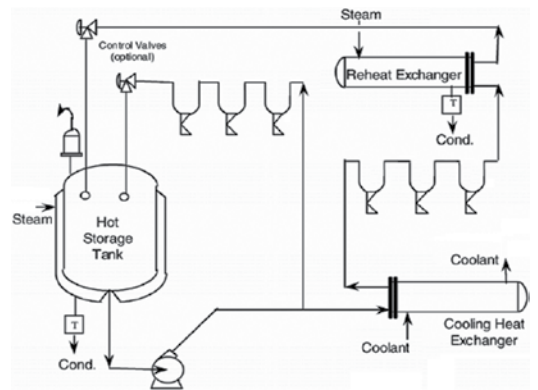
Parallel loops are common, and most advantageous where multiple temperatures are required, or where the area served is so large that a single loop becomes cost-prohibitive or highly impractical.

The major concern is to balance the various loops to maintain proper pressure and flow in each, to ensure Point of Use (POU) pressure and flow, and keep turbulence, pressure, and temperature within ideal limits to minimize microbial contamination.

### The Steriflow Solution

Pressure in each loop is maintained using back pressure control valves (MK95 or MK978) at the end of each loop, to maintain upstream pressure at a value that ensures a positive pressure at even the most remote POU on the loop.

Flow is controlled by using either a single variable speed pump with a manifold and multiple flow control valves (MK978 with positioner and flow transmitter), or multiple variable speed pumps (one for each loop).



Compare a Steriflow Jorlon™ diaphragm to a competitor's comparable design. The difference, even after a clean steam test, is clear.

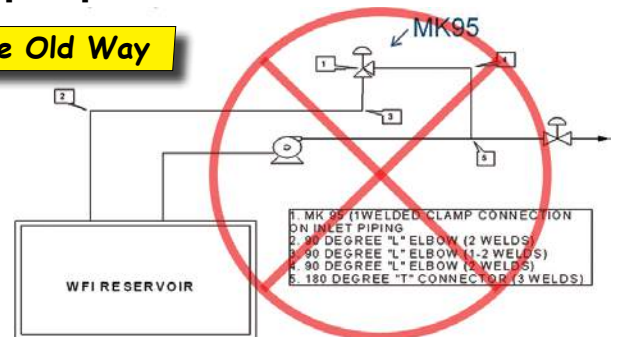
## What makes Steriflow valves unique?

### Rugged field-tested Jorlon™ diaphragms!

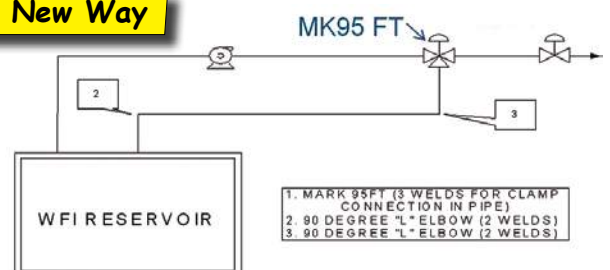
- Chemically-resistant physically modified Teflon, designed to withstand vacuum, very low creep, and cold flow
- FDA/USP Class VI
- Excellent on continuous steam service, CPI, process, and aggressive buffers and acids
- Reduced regulator droop over stainless steel diaphragms
- Extremely long life cycle — Valves and diaphragms tested to more than a million stroke cycles on continuous steam service and 100 vacuum/steam cycles with no reports of diaphragm failures any time in the last six years!
- Jorlon diaphragm warranty — For a lifetime of use on all clean steam, water for injection (WFI), clean utility, or process applications at continuous operating pressures and temperatures no greater than 75 PSIG @ 340° F, including intermittent exposure to negative pressure not greater than 25" Hg

## Simplify your piping, eliminate elbows for WFI pump dead head recirculation

### The Old Way



### The New Way



In the 1980s and 90s, before the widespread use of variable frequency drive (variable speed) sanitary pumps, pharmaceutical waters (Water for Injection in particular), were circulated by constant pressure pumps to help maintain sterility. Downstream of the pump outlet, the MK95 was used to bypass WFI volume if plant demand dropped.

With constant pressure pumps, as WFI demand lessens, the constant volume output causes pressure to build upstream of the pump. If an MK95 regulator is installed as illustrated here, the elevated pressure will cause the valve to open at setpoint, and bypass the unneeded volume back to the reservoir for recirculation.





# Sanitary Process Valves and Accessories



## MK978 Sanitary Control Valves

- Meets ASME BPE 2009 guidelines
- FDA and USP Class VI compliance standard on all process seal and seat materials
- For use in biopharmaceutical, parenteral, cosmetic, dairy, and food and beverage industries — ideal for sterile process, buffer, WFI and acid metering, and clean gas and steam services
- Available in Jorlon diaphragm, O-ring, and low flow models
- Wetted parts made of 100% ASTM A479 316L stainless steel barstock, 20Ra mechanically polished internals
- High rangeability, true characterized trim, high capacity, superior temperature and pressure ratings
- Easy maintenance with simple disassembly and reassembly
- Valve sizes from 1/2" to 3" (angle body), or 1" to 2" (inline)
- ANSI Class III shutoff standard with metal seat, ANSI Class VI optional with soft seat (3/4" to 3" valves only)
- Available flow ranges: 3-15 PSI, 6-30 PSI, 3-9\* PSI, or 9-15\* PSI (\* positioner required)
- Maximum pressure/temperature rating: 100 psi @ 340° F

## JSR Gas Pressure Reducing Valve

- First high purity gas pressure regulator specifically for hygienic, ASME BPE gas applications — can be used on continuous clean steam and non-cavitating fluids
- Clean-in-Place, Steam-in-Place capability
- Compliant to FDA and USP Class VI
- Available in 1/2" and 3/4" sizes
- Maximum inlet pressure: 150 PSIG
- Spring ranges 5-70 PSI or 50-125 PSI
- High Flow: Trim Cv 0.8, Relief valve Cv 1.9  
Low Flow: Trim Cv 0.5, Relief valve Cv 0.6
- 316L stainless steel body, 20Ra polished, Jorlon diaphragm, Teflon soft seat
- In-line removable trim set for quick trim changeout and cleaning without the need for disassembly



## MK95 Back Pressure Regulator

- 316L stainless steel barstock body and trim
- Clean-in-Place, Steam-in-Place dome with spring arrangement
- Self-draining, with no threads to disassemble for cleaning
- No guiding surfaces in the fluid — prevents particulate generation
- ANSI Class III hard seat or Class VI soft seat for shutoff
- Compliant to FDA and USP Class VI
- 200 PSID max pressure differential



Size	Setpoint Spring Range (PSI)	Cv (Metal Diaphragm)	Temperature Rating @100° F	Temperature Rating @ 450° F
1/2"	5-30, 15-50, or 35-90	0.5 or 1.5	350 PSIG	250 PSIG
3/4"		1.5, 3.5, or 4.5		
1"				
1-1/2"	10-25, 15-40, or 35-85	4.5 or 10.0	200 PSIG	200 PSIG
2"	15-25, 10-25, or 15-60	10.0 or 19.0		
3"	15-25 or 15-60	10.0 or 23.0		

## MK96 Sanitary Pressure Regulator

- All 316L stainless steel barstock body — no wetted parts made from forgings or casting
- Clean-in-Place, Steam-in-Place dome lock pin
- No threads in contact with service media, prevents accumulation of contaminants
- ANSI Class III hard seat or Class VI soft seat for shutoff
- Compliant to FDA and USP Class VI



Size	Setpoint Spring Range (PSI)	Cv (Metal Diaphragm)	Temperature Rating @100° F	Temperature Rating @ 450° F
3/4"	5-25, 15-50,	1.5	350 PSIG	250 PSIG
1"	40-90, or 75-135			
1-1/2"	10-25, 15-50, or 35-100	4.5 or 10.0		
2"	15-25, or 15-60	10.0 or 19.0	200 PSIG	200 PSIG
3"		10.0 or 23.0		

## Steriflow Unicert & Design Standards

- Certificate of compliance for materials, including MTRs, surface finish, FDA/USP Class VI
- Documentation and traceability: All valves are directly traceable to individual serial numbers, heat numbers, and MTRs
- Provided at NO COST with every order.

## Sanitary Process Valves and Accessories



### SHC Sanitary Check Valve

- Meet ASME BPE 2009 standards
- For gas or liquids, and CIP/SIP use
- Available in 1/2" to 2" sizes  
Vertical flow models 1/2" to 3" sizes
- 316L stainless steel body and metallic disc, Ra20 polished
- No spring, hinge, or mechanical return mechanism or stem, so they're crevice-free with no areas for particle entrapment — minimizes particulate shedding



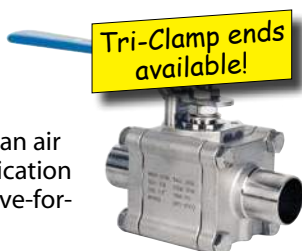
### SG In-Line Sight Glasses

- For ASME BPE applications in high purity tubing systems in the pharmaceutical and biopharmaceutical industries
- Double-window design ensures optimum viewing area, eliminates the need for a back light
- Bore and end fittings match that of corresponding tube size, preventing the possibility of fluid retention, even when units are installed horizontally
- Suitable for CIP and SIP applications
- Available in 1/2" to 4" sizes with Tri-Clamp® connections
- 316L stainless steel body, end fitting, borosilicate glass, EPDM seal standard
- Good to 145 PSIG and 302° F



### MK9020 Sanitary Ball Valve

- Meet ASME BPE 2007 standards
- Available in 1/2" to 4" sizes, and pressure ratings to 1000 PSIG
- For clean steam, condensate, CIP, clean air or gas, or any viscous media or application where inline valve cleaning or remove-for-cleaning access is desired
- Industry-grade high density 316L stainless steel body, ball, stem, and end caps with <3% ferrite standard
- Certified TFM 1600 body seal, seat, thrust washer and packing material meet FDA and USP in-vivo and in-vitro testing requirements



### MK93 Thermostatic Steam Trap

- 1/2", 3/4", and 1" sizes
- For fermenters, sterilizers, SIP/CIP systems, autoclaves, bioreactors, process piping, and steam barriers
- All 316L stainless steel housing and internals; 20 Ra finish polished
- FDA, USP Class VI TFE-VIT gasket standard
- For differential pressures up to 65 PSID (high pressure model good to 90 PSID); Maximum operating pressures to 90 PSIG
- Self-draining when installed vertically (outlet side down)
- Excellent flow rates, even at subcooling levels less than 3° F



### CSDT Thermostatic Disc Trap

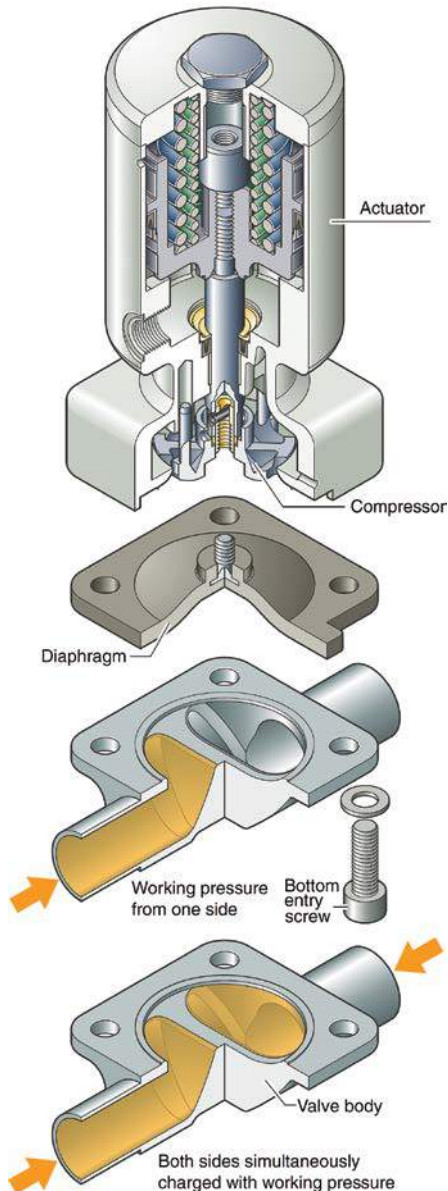
- For fluctuating loads and pressures in clean steam applications and quick response applications where subcooling problems exist
- AISI 316L stainless steel body, disc, and disc trap with 20Ra mechanical finish
- Available in 1/2" and 3/4" sizes with Tri-Clamp® ends
- For pressures to 227 PSIG, and temperatures to 842° F
- Immediate full discharge when open. No output modulation



Sample coolers, left to right:  
SC60, SC50, and portable SC30

### SC Series Sample Coolers

- Take clean steam and high purity water samples quickly and easily, while maintaining a sterile testing environment
- Use the SC60 for permanent mounting — designed to be sterilized in place. Ideal for obtaining samples at both the point of generation (clean steam generator or WFI still) or any permanent sampling point in the distribution system
- Use the SC50 for environments where the water supply may cause fouling of the coil — can be disassembled for cleaning. Suitable for continuous inline cooling applications, like monitoring conductivity in high purity water
- Use the HSC30 portable model to take samples quickly and safely at any accessible location within a clean steam, high purity water, or WFI distribution system
- 316L stainless steel construction with 1/2" Tri-Clamp® sample connections at inlet and outlet
- Steam capacity 10 l/hr condensate at 86° F from steam at 43.5 PSIG; Water capacity 30 l/hr water from 185° to 86° F

**SED**  
FLOW CONTROL


### Why use diaphragm valves for aseptic service applications?

- The resilient diaphragm bead in contact with the metal weir ensures positive closure.
- Clean-in-place and steam-in-place operations can be performed in-line without valve disassembly.
- Top entry designed for in-line maintenance
- Diaphragm isolates the working parts of the valve from the process media.
- Minimal process contact surfaces enhance the ease of cleaning and sterilization.
- A smooth contoured body, streamlined flow path, and high quality interior surface prevent the accumulation of process fluids or contaminants.
- One centerline for inlet and outlet simplifies installation and plant design work.

## Aseptic Service Diaphragm Valves



### KMD 289 Manually Operated Aseptic Valve

- 3/8" to 3/4" sizes
- 87 PSI max. working pressure
- 176° F max. working temperature, dependent on application. Units available for temps to 300° F
- **Materials:** *Diaphragm:* EPDM or Teflon; *Body:* Forged 1.4435/316L ASME/BPE, Investment cast 1.4435/316L stainless steel
- Sealed thermoplastic bonnet with optical indicator
- Rising hand wheel, adjustable internal travel stop
- Circumferential-defined sealing angle between process diaphragm and valve body
- Encapsulated diaphragm with flexible suspension
- Choice of butt-weld ends, clamps, or flanges



### KMD 385 Pneumatically Actuated Aseptic Valve

- 3/4" to 3" sizes
- 87 PSI to 145 PSI max. working pressure, depending on size and diaphragm material
- 176° F max. working temperature
- **Materials:** *Diaphragm:* EPDM or Teflon; *Body:* Forged 1.4435/316L ASME/BPE, Investment cast 1.4435/316L stainless steel
- Actuator highly resistant to heat transfer
- Smooth exterior design ideal for washdown areas
- Control air connection 90° to flow direction
- Encapsulated diaphragm with flexible suspension
- Choice of butt-weld ends, clamps, or flanges



### SA Sterile Access Welded Valve Configurations

- Can be used for applications including sampling, steam, condensate, or divert port
- Sizes available up to 4" for both the main valve and access valve or tube port
- Uses two standard 2/2-way valve bodies welded together per the required orientation
- For horizontal piping system where the main valve is set at the self-draining angle and the access port is at the lowest drainable point of the waterway
- Available with either a tube port or a vertical or horizontal valve port

### Advantages of welded valve configurations:

- Totally self-draining
- Minimized dead legs
- Reduces media surface contact and hold-up volume
- Reduces number of welds
- Ready-made assembly for easier installation

Welded valve configurations are designed to improve the process in aseptic production facilities by reducing the dead legs in accordance to cGMP. Welded valve configurations can be as simple as a valve-by-tube configuration or as complex as multiple valve bodies of different sizes welded into a valve cluster.

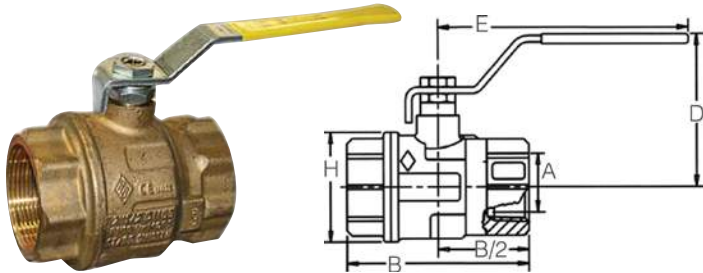
# Introduction to Ball Valves

Which ball valve do you need?

Valve Size	Number of Ports	Port Type	Max Pressure	Standard Materials			Standard End Connections	Features	Series	See Page
				Body	Trim	Seat				
1/2" to 6"	2	Reduced	285 PSI	CS, SS	SS	RTFE	150# Flanged	Firesafe unibody direct mount ball valve	F91	326
1/2" to 2"	2	Full	600 PSI	Brass	Brass, SS	PTFE	Threaded	Two-piece cost-effective ball valve for common fluid control applications	600	320
1/2" to 8"	2	Full	740 PSI	SS	SS	RTFE	150# Flanged	Firesafe two-piece direct mount ball valve with pyramidal stem packing	FD9	328
1/4" to 2"	3	Reduced	1000 PSI	SS	SS	RTFE	Threaded	General service multiport ball valve	38	332
1/4" to 3"	2	Full	1000 PSI	SS	SS	RTFE	Threaded	Two-piece high performance, direct mount ball valve	22	322
1/2" to 4"	2	Full	1000 PSI	SS	SS	PTFE	Tri-Clamp Flanged Ends	Cavity-filled three-piece ball valve, locking handle, ISO 5211 actuator mounting pad, 25Ra polished internal wetted surfaces, swing-out design	KF8900	320
1/4" to 4"	2	Full	1500 or 2000 PSI	SS	SS	RTFE	Threaded	Three-piece high performance, direct mount ball valve with locking handle	88	324
1/2" to 4"	2	Reduced	4000 PSI	CS, SS	SS	PTFE	Threaded	High pressure valve with encapsulated seats, triple stem seal, dual body seals, and individually bolted end caps API 607 fire tested	3000	321

## MARWIN VALVE Manual Operated Ball Valves

### 600 Series Two-Piece Brass Manual Ball Valve

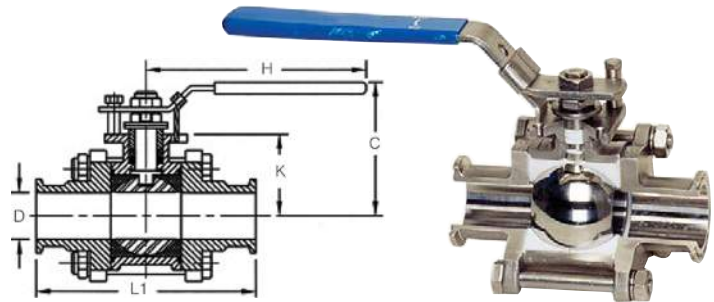


- Brass body, ball, blowout-proof stem, Teflon packing and seats
- Full port configuration, NPT female threaded ends
- Pressure rating: 600 PSI WOG, WSP 150 PSI steam
- Temperature range: -40° to 366° F

#### Model Selection Guide

Valve Size	Cv	Dimensions					Catalog Number	Price
		A	B	D	E	H		
1/4"	6.3	0.39"	2.02"	1.7"	3.9"	0.9"	666FTTS-025	\$ 8.19
3/8"	7.0	0.39"	2.02"	1.7"	3.9"	0.9"	666FTTS-038	11.83
1/2"	19.0	0.59"	2.44"	1.8"	3.9"	1.25"	666FTTS-050	13.65
3/4"	34.4	0.79"	2.71"	2.3"	4.8"	1.53"	666FTTS-075	18.20
1"	50.0	0.98"	3.07"	2.4"	4.8"	1.92"	666FTTS-100	29.12
1-1/4"	104.0	1.26"	3.42"	3"	6"	2.32"	666FTTS-125	49.14
1-1/2"	268.0	1.57"	3.89"	3.2"	6"	2.87"	666FTTS-150	73.71
2"	309.0	1.95"	4.33"	3.7"	6.4"	3.38"	666FTTS-200	101.92
2-1/2"	629.0	2.4"	5.59"	4.8"	8.1"	4.37"	666FTTS-250	216.58
3"	1018.0	2.87"	6.45"	5.2"	8.1"	5.35"	666FTTS-300	333.06
4"	1622.0	3.82"	7.6"	6.5"	10.2"	6.35"	666FTTS-400	549.64

Also available with locking lever.



### KF8900 Three-Piece Stainless Steel Cavity-Filled Ball Valve

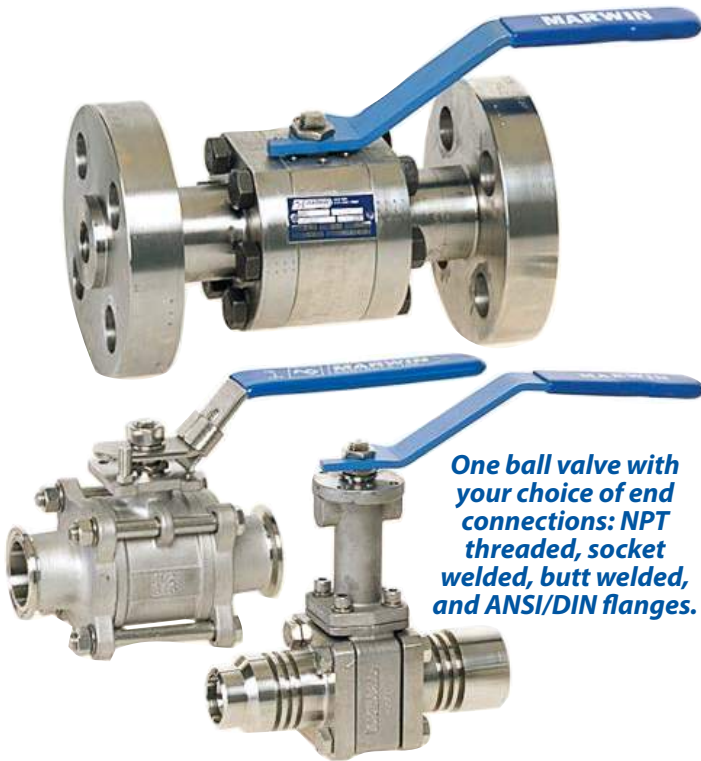
- Investment cast stainless steel body and trim with Teflon seat
- Blowout-proof stem with adjustable live loaded packing
- Body Rated to 1000 PSI, -20° to 400° F
- Tri-clamp flanged ends standard, ISO 5211 mounting pad
- Not ASME BPE certified.

#### Model Selection Guide

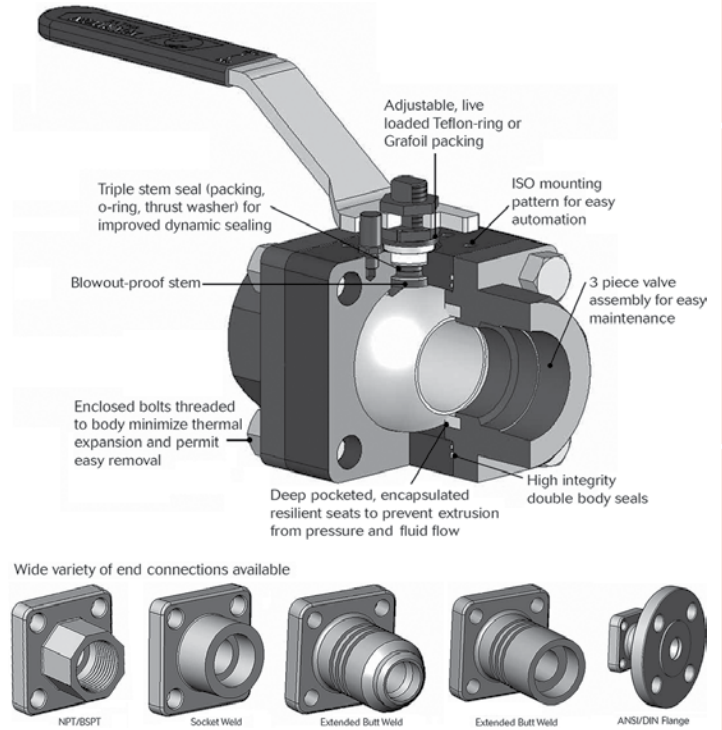
Description								Catalog Number	Price
Three-piece full port ball valve, Stainless steel body and trim, Teflon seat, ISO 5211 direct mount pad, live loaded packing, and standard clamp ends.									
Size	Cv	C	D	H	K	L1	KF8900F-		
1/2"	8	2.6"	0.37"	5.2"	1.18"	3.5"	-05AS6AK-	\$ 130.13	
3/4"	30	2.8"	0.62"	5.2"	1.37"	4.0"	-07AS6AK-	142.87	
1"	65	3.1"	0.87"	6.5"	1.48"	4.5"	-10AS6AK-	171.99	
1-1/2"	190	4.0"	1.37"	7.9"	2.10"	5.5"	-15AS6AK-	279.37	
2"	435	4.3"	1.87"	8.4"	2.43"	6.1"	-20AS6AK-	414.96	
2-1/2"	720	6.1"	2.37"	10.9"	3.14"	7.8"	-25AS6AK-	720.72	
3"	1120	6.4"	2.87"	14.6"	3.41"	9.0"	-30AS6AK-	1049.23	
4"	2100	7.6"	3.83"	14.7"	4.54"	9.5"	-40AS6AK-	1049.23	
Handle	SST Lever Handle (Std.) None							HL NN	0.00 0.00



# Three-Piece Ball Valves



**One ball valve with your choice of end connections: NPT threaded, socket welded, butt welded, and ANSI/DIN flanges.**

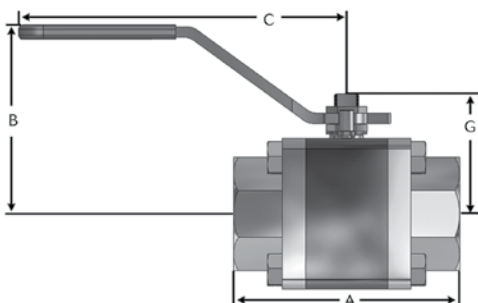


## 3000 Series High Pressure Ball Valve

- Soft seat valve for applications with pressures to 4000 PSI and temperatures to 600° F, up to 450 PSI steam pressure
- Ideal for hydraulic, gas, steam, or process piping applications
- Anti-static construction
- Sizes 1/4" to 4" reduced port (Call for 1/4" to 3" full port)
- Looking for a V-Ball control valve? See page xx.

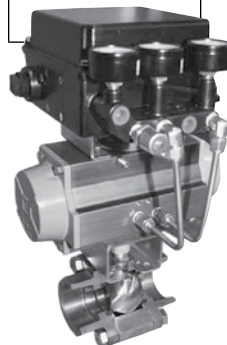
### Key Specifications

Valve Size	Flow Cv	Torque In-Lbs	Dimensions				
			Port	A	B	C	G
1/2"	8	72	0.43"	2.91"	2.60"	6.00"	1.40"
3/4"	15	72	0.56"	3.17"	2.80"	6.00"	1.50"
1"	34	108	0.74"	3.87"	3.20"	7.60"	2.10"
1-1/4"	48	204	1.00"	4.36"	3.60"	7.60"	2.30"
1-1/2"	85	220	1.25"	4.68"	4.30"	8.90"	2.70"
2"	125	240	1.50"	5.50"	4.50"	8.90"	2.90"
2-1/2"	275	432	1.93"	5.59"	4.70"	11.00"	3.30"
3"	460	1348	2.44"	8.98"	5.40"	13.80"	4.00"
4"	700	1460	3.00"	8.78"	5.90"	19.70"	4.90"



### Model Selection Guide

Description	Size	Catalog Number	Price
Three-piece high performance reduced port ball valve, ASTM A26 Grade WC8 carbon steel body, 316 stainless steel trim, encapsulated Teflon seats, seals, and thrust washer, NPT threaded end connections, and handle lever operator			
Reduced Port Valve Carbon Steel Body	1/2"	3000R-050-CS-PTS6TFTVHL	\$238.42
	3/4"	3000R-075-CS-PTS6TFTVHL	265.72
	1"	3000R-100-CS-PTS6TFTVHL	283.92
	1-1/4"	3000R-125-CS-PTS6TFTVHL	360.36
	1-1/2"	3000R-150-CS-PTS6TFTVHL	414.05
	2"	3000R-200-CS-PTS6TFTVHL	485.94
	2-1/2"	3000R-250-CS-PTS6TFTVHL	910.00
Reduced Port Valve Stainless Steel Body	3"	3000R-300-CS-PTS6TFTVHL	1149.33
	4"	3000R-400-CS-PTS6TFTVHL	1951.04
	1/2"	3000R-050-S6-PTS6TFTVHL	267.54
	3/4"	3000R-075-S6-PTS6TFTVHL	276.64
	1"	3000R-100-S6-PTS6TFTVHL	309.40
	1-1/4"	3000R-125-S6-PTS6TFTVHL	455.00
	1-1/2"	3000R-150-S6-PTS6TFTVHL	572.39
Stainless Steel Body	2"	3000R-200-S6-PTS6TFTVHL	644.28
	2-1/2"	3000R-250-S6-PTS6TFTVHL	1119.30
	3"	3000R-300-S6-PTS6TFTVHL	1695.33
	4"	3000R-400-S6-PTS6TFTVHL	2184.00



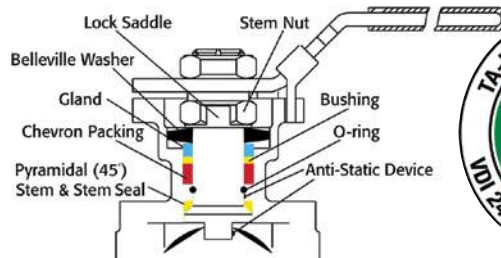
**Call for API 607 4th Edition Fire-Tested Approvals**

# Direct-Mount Two Piece Ball Valves Series 22



### Key Specifications

- Full port valve with direct actuator mount
- Two-piece, high cycle design
- Available in 1/4" to 3" sizes
- 316 SS body, ball, and stem
- Rated to 800/1000 PSI for water, oil, or gas (WOG)
- Pyramidal stem packing system
- Blowout-proof stem
- NACE MR-0175
- Meets industry standards ANSI B16.34, B16.25, B1.20.1, API 6D, ISO 5211, MSS SP25, SP55, BS 5351, 21

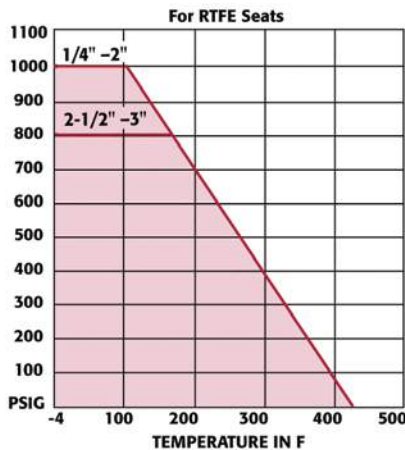


A-T Controls' patented Pyramidal stem seal system protects your valve against wear and leakage, and reduce your plant's fugitive emissions.

Valves with the TA-Luft certification meet the permissible limit standard for the emission of vapors or gases during processing or transfer of liquids or gaseous materials.

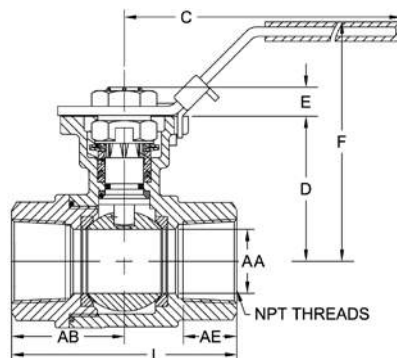


### Direct Mount Ball Valve with Slide Lock Lever Handle



### Model Selection Guide

Valve Size	Valve Cv	Valve Dimensions				Lever Handle Dimensions				Valve and Lever Handle Catalog Number	List Price
		AA	L	AB	AE	C	D	E	F		
0.25"	7	0.45	2.56	1.28	0.55	5.88	1.53	0.26	2.99	22-TH-025-XXX	\$70.00
0.375"	8	0.49	2.56	1.28	0.53	6.12	1.52	0.26	2.99	22-TH-038-XXX	70.00
0.5"	15	0.59	2.56	1.28	0.53	5.83	1.60	0.26	3.05	22-TH-050-XXX	70.00
0.75"	40	0.79	2.94	1.47	0.61	5.88	1.82	0.28	3.23	22-TH-075-XXX	90.00
1"	70	0.98	3.46	1.73	0.72	6.77	2.24	0.43	3.74	22-TH-100-XXX	101.00
1.25"	110	1.26	4.02	2.01	0.81	6.77	2.40	0.43	3.92	22-TH-125-XXX	127.00
1.5"	250	1.5	4.33	2.17	0.76	8.51	3.06	0.55	4.00	22-TH-150-XXX	196.00
2"	350	1.97	4.92	2.46	0.89	8.51	3.35	0.56	5.16	22-TH-200-XXX	246.00
2.5"	600	2.56	6.32	3.16	1.09	10.53	4.31	0.67	6.18	22-TH-250-XXX	449.00
3"	900	3.15	7.01	3.51	1.19	11.88	4.63	0.71	6.80	22-TH-300-XXX	589.00



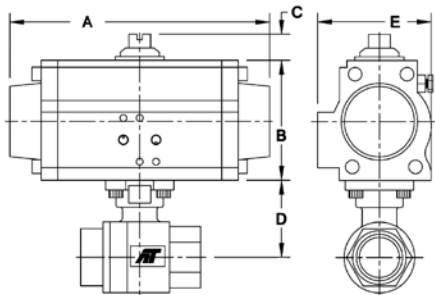
Valve dimensions (AA, L, AB, and AE) will stay the same, regardless of your choice of actuator.

Solids Flow and Motion  
Controllers and Programmers  
Digital Indicators  
Recorders and Data Acquisition  
Combustion Safety and Efficiency  
Process Valves



### Ball Valve with Pneumatic Spring Return Actuator

Actuators are sized based on clean/clear fluid, and 60 PSI air supply.



### Model Selection Guide

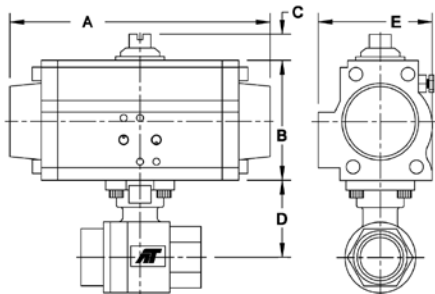
Valve Size	Valve Cv	Valve Dimensions				Pneumatic Actuator Dimensions					Valve and Actuator Catalog Number	List Price
		AA	L	AB	AE	A	B	C	D	E		
0.25"	7	0.45	2.56	1.28	0.55	7.60	2.76	0.79	1.53	2.58	22-TX-025/TR1S-	\$262.00
0.375"	8	0.49	2.56	1.28	0.53	7.60	2.76	0.79	1.53	2.58	22-TX-038/TR1S-	262.00
0.5"	15	0.59	2.56	1.28	0.53	7.60	2.76	0.79	1.60	2.58	22-TX-050/TR1S-	262.00
0.75"	40	0.79	2.94	1.47	0.61	7.95	3.43	0.79	1.82	3.29	22-TX-075/2R2S-	323.00
1"	70	0.98	3.46	1.73	0.72	9.29	4.49	0.79	2.24	3.29	22-TX-100/2R3S-	418.00
1.25"	110	1.26	4.02	2.01	0.81	9.29	4.49	0.79	2.40	4.41	22-TX-125/2R3S-	444.00
1.5"	250	1.5	4.33	2.17	0.76	9.29	4.49	0.79	3.06	4.41	22-TX-150/2R4S-	590.00
2"	350	1.97	4.92	2.46	0.89	7.95	4.49	0.79	3.35	4.41	22-TX-200/2R4S-	650.00
2.5"	600	2.56	6.32	3.16	1.09	11.46	5.28	0.79	4.31	5.20	22-TX-250/2R5S-	839.00
3"	900	3.15	7.01	3.51	1.19	13.90	6.18	0.79	4.63	6.04	22-TX-300/2R6S-	1185.00
Optional Solenoid	None NEMA 4 NAMUR-Mounted Solenoid, 24 VDC/120 VAC NEMA 7 NAMUR-Mounted Solenoid, 24 VDC/120 VAC Intrinsically Safe Solenoid										-X _	0.00
											-A _	96.00
											-B _	180.00
											-C _	387.00
Optional Limit Switches	None Two SPDT NEMA 4 Two SPDT NEMA 7 Intrinsically Safe Limit Switch										- _ X	0.00
											- _ A	148.00
											- _ B	340.00
											- _ C	178.00

\*Please specify solenoid voltage at time of order.



### Ball Valve with Pneumatic Double-Acting Actuator

Actuators are sized based on clean/clear fluid, and 60 PSI air supply.



### Model Selection Guide

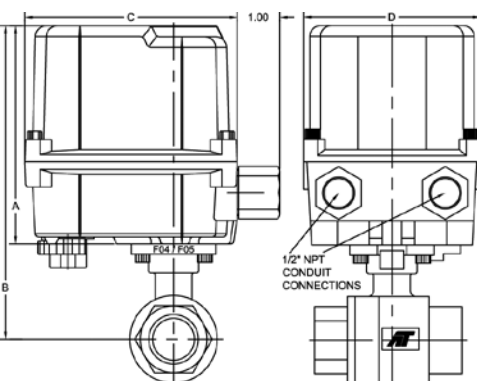
Valve Size	Valve Cv	Valve Dimensions				Pneumatic Actuator Dimensions					Valve and Actuator Catalog Number	List Price
		AA	L	AB	AE	A	B	C	D	E		
0.25"	7	0.45	2.56	1.28	0.55	4.57	1.91	0.79	1.53	1.93	22-TX-025/TRYD-	\$237.00
0.375"	8	0.49	2.56	1.28	0.53	4.57	1.91	0.79	1.53	1.93	22-TX-038/TRYD-	237.00
0.5"	15	0.59	2.56	1.28	0.53	4.57	1.91	0.79	1.60	1.93	22-TX-050/TRYD-	241.00
0.75"	40	0.79	2.94	1.47	0.61	5.98	2.76	0.79	1.82	2.58	22-TX-075/TR1D-	279.00
1"	70	0.98	3.46	1.73	0.72	5.98	2.76	0.79	2.24	2.58	22-TX-100/TR1D-	285.00
1.25"	110	1.26	4.02	2.01	0.81	7.95	3.43	0.79	2.40	3.29	22-TX-125/2R2D-	350.00
1.5"	250	1.5	4.33	2.17	0.76	9.29	4.49	0.79	3.06	3.29	22-TX-150/2R3D-	470.00
2"	350	1.97	4.92	2.46	0.89	9.29	4.49	0.79	3.35	3.29	22-TX-200/2R3D-	609.00
2.5"	600	2.56	6.32	3.16	1.09	9.29	4.49	0.79	4.31	4.41	22-TX-250/2R3D-	711.00
3"	900	3.15	7.01	3.51	1.19	10.87	4.88	0.79	4.63	4.69	22-TX-300/2R4D-	1056.00
Optional Solenoid	None NEMA 4 NAMUR-Mounted Solenoid, 24 VDC/120 VAC NEMA 7 NAMUR-Mounted Solenoid, 24 VDC/120 VAC Intrinsically Safe Solenoid										-X _	0.00
											-A _	96.00
											-B _	180.00
											-C _	387.00
Optional Limit Switches	None Two SPDT NEMA 4 Two SPDT NEMA 7 Intrinsically Safe Limit Switch										- _ X	0.00
											- _ A	148.00
											- _ B	340.00
											- _ C	178.00

\*Please specify solenoid voltage at time of order.



### Ball Valve with NEMA 4/4X Electric On/Off Actuator

Actuators are sized based on clean/clear fluid.



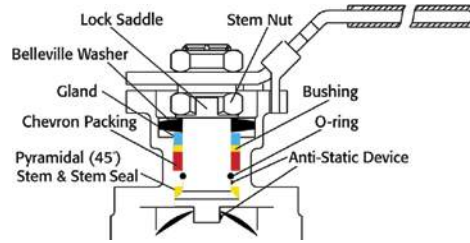
### Model Selection Guide

Valve Size	Valve Cv	Valve Dimensions				Electric Actuator Dimensions				Valve and Actuator Catalog Number	List Price	
		AA	L	AB	AE	A	B	C	D			
0.25"	7	0.45	2.56	1.28	0.55	5.24	6.77	4.94	4.08	22-TX-025/WEA1-	\$532.00	
0.375"	8	0.49	2.56	1.28	0.53	5.24	6.77	4.94	4.08	22-TX-038/WEA1-	532.00	
0.5"	15	0.59	2.56	1.28	0.53	5.24	6.84	4.94	4.08	22-TX-050/WEA1-	532.00	
0.75"	40	0.79	2.94	1.47	0.61	5.24	7.06	4.94	4.08	22-TX-075/WEA1-	539.00	
1"	70	0.98	3.46	1.73	0.72	5.24	7.48	4.94	4.08	22-TX-100/WEA1-	567.00	
1.25"	110	1.26	4.02	2.01	0.81	5.24	7.64	4.94	4.08	22-TX-125/WEA1-	590.00	
1.5"	250	1.5	4.33	2.17	0.76	5.24	8.30	4.94	4.08	22-TX-150/WEA1-	651.00	
2"	350	1.97	4.92	2.46	0.89	5.24	8.59	4.94	4.08	22-TX-200/WEA1-	705.00	
2.5"	600	2.56	6.32	3.16	1.09	9.25	13.56	6.69	10.16	22-TX-250/WEB1-	1561.00	
3"	900	3.15	7.01	3.51	1.19	10.55	15.18	9.02	13.31	22-TX-300/WEC1-	1985.00	
Voltage	120/60 VAC 24 VAC/24 VDC/ 220 VAC										-X _	0.00
											-V _	Call
Feedback Signals	None Feedback Potentiometer										- _ X	0.00
											- _ F	Call

# Direct-Mount Three Piece Ball Valves Series 88

## Key Specifications

- Full port valve with direct actuator mount
- Threaded, socket weld, or butt weld
- Available in 1/4" to 4" sizes
- Stainless steel or carbon steel body, reinforced TFE seats
- Rated to 1500/2000 PSI for water, oil, or gas (WOG)
- Pyramidal stem packing system
- Meets industry standards  
ANSI B16.34, B16.25, B1.20.1, B16.11, API 6D, 598, ISO 5211, 5209, 5752, 7/1, 261 MSS PS25, PS72, BS 5351, 6755-1, 6755-2



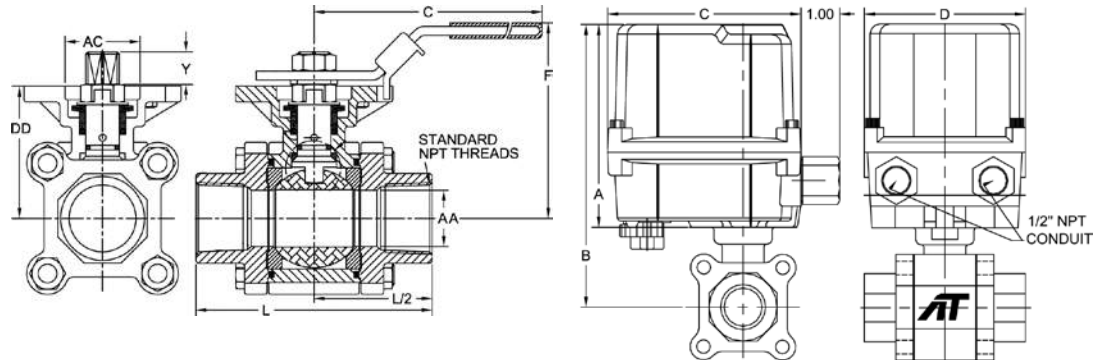
A-T Controls' Pyramidal stem seal system protects your valve against wear and leakage. Valves with the TA-Luft certification meet the permissible limit standard for the emission of vapors or gases during processing or transfer of liquids or gaseous materials.

## Dimensions

**Left: Ball Valves with Slide Lock Lever Handles**

**Right: Ball Valves with Electric Actuators**

Valve dimensions (AA, L, AC, DD, and Y) will stay the same, regardless of your choice of actuator.



**Direct Mount Ball Valve with Manual Actuator**

## Model Selection Guide

Valve Size	Valve Cv	Valve Dimensions					Lever Dimensions			Carbon Steel Valve Catalog Number	Price	Stainless Steel Valve Catalog Number	Price
		AA	L	DD	Y	AC	C	F					
0.25"	7	0.45	2.95	1.66	0.25	1.04	5.47	3.00	88C-TH-025-XXX	\$103.00	88-TH-025-XXX	\$114.00	
0.375"	8	0.50	2.95	1.66	0.25	1.04	5.47	3.00	88C-TH-038-XXX	103.00	88-TH-038-XXX	114.00	
0.5"	15	0.59	2.85	1.66	0.25	1.07	5.47	3.00	88C-TH-050-XXX	105.00	88-TH-050-XXX	116.00	
0.75"	40	0.79	3.36	1.83	0.33	1.07	5.47	3.20	88C-TH-075-XXX	135.00	88-TH-075-XXX	150.00	
1"	70	0.98	4.15	2.31	0.41	1.34	6.50	3.86	88C-TH-100-XXX	180.00	88-TH-100-XXX	197.00	
1.25"	110	1.26	4.37	2.46	0.41	1.34	6.50	4.00	88C-TH-125-XXX	226.00	88-TH-125-XXX	266.00	
1.5"	250	1.5	5.01	3.11	0.53	1.54	8.46	5.04	88C-TH-150-XXX	303.00	88-TH-150-XXX	347.00	
2"	430	1.97	5.62	3.42	0.53	1.54	8.46	5.35	88C-TH-200-XXX	381.00	88-TH-200-XXX	440.00	
2.5"	600	2.56	7.28	4.28	0.66	2.09	10.31	6.60	88C-TH-250-XXX	693.00	88-TH-250-XXX	761.00	
3"	1100	3.15	8.07	4.63	0.70	2.09	10.31	6.96	88C-TH-300-XXX	881.00	88-TH-300-XXX	933.00	
4"	2000	3.94	9.45	5.26	0.66	2.09	12.28	7.59	88C-TH-400-XXX	1296.00	88-TH-400-XXX	1466.00	



**Ball Valve with Electric On/Off Actuator**

Actuators are sized based on clean/clear fluid.

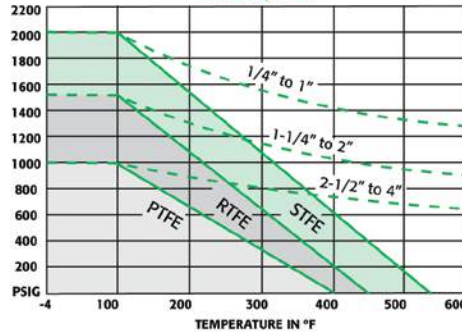
## Model Selection Guide

Valve Size	Valve Cv	Valve Dimensions				Actuator Dimensions				Carbon Steel Valve Catalog Number	Price	Stainless Steel Valve Catalog Number	Price
		AA	L	DD	A	B	C	D					
0.25"	7	0.45	2.95	1.66	5.24	6.9	4.94	4.08	88C-TX-025-WEA1-	\$648.00	88-TX-025-WEA1-	\$677.00	
0.375"	8	0.50	2.95	1.66	5.24	6.9	4.94	4.08	88C-TX-038-WEA1-	648.00	88-TX-038-WEA1-	677.00	
0.5"	15	0.59	2.85	1.66	5.24	6.9	4.94	4.08	88C-TX-050-WEA1-	654.00	88-TX-050-WEA1-	684.00	
0.75"	40	0.79	3.36	1.83	5.24	7.07	4.94	4.08	88C-TX-075-WEA1-	660.00	88-TX-075-WEA1-	691.00	
1"	70	0.98	4.15	2.31	5.24	7.55	4.94	4.08	88C-TX-100-WEA1-	674.00	88-TX-100-WEA1-	709.00	
1.25"	110	1.26	4.37	2.46	5.24	7.7	4.94	4.08	88C-TX-125-WEA1-	731.00	88-TX-125-WEA1-	771.00	
1.5"	250	1.5	5.01	3.11	5.24	8.35	4.94	4.08	88C-TX-150-WEA1-	797.00	88-TX-150-WEA1-	856.00	
2"	430	1.97	5.62	3.42	5.24	8.66	4.94	4.08	88C-TX-200-WEA1-	1085.00	88-TX-200-WEA1-	1134.00	
2.5"	600	2.56	7.28	4.28	9.25	13.53	6.69	10.16	88C-TX-250-WEB1-	2010.00	88-TX-250-WEB1-	2080.00	
3"	1100	3.15	8.07	4.63	10.55	15.18	9.02	13.31	88C-TX-300-WEC1-	2090.00	88-TX-300-WEC1-	2218.00	
4"	2000	3.94	9.45	5.26	10.55	15.81	9.02	13.31	88C-TX-400-WED1-	3115.00	88-TX-400-WED1-	3354.00	
Voltage		120/60 VAC 24 VAC/24 VDC/ 220 VAC							-X _ -V _	0.00 Call	-X _ -V _	0.00 Call	
Feedback Signals		None Feedback Potentiometer							- _ X - _ F	0.00 Call	- _ X - _ F	0.00 Call	

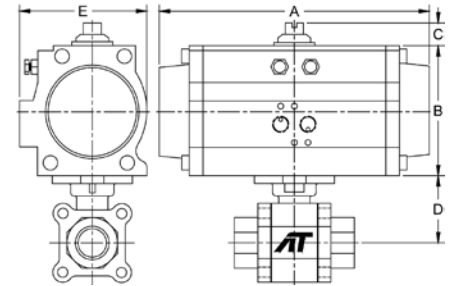




**Pressure vs. Temperature Chart**  
for Valve 1/4" to 4"



**Dimensions: Pneumatic Actuators**



**Ball Valve with Pneumatic Spring Return Actuator**

Actuators are sized based on clean/clear fluid, and 60 PSI air supply.

**Model Selection Guide**

Valve Size	Valve Cv	Valve Dimensions*			Actuator Dimensions					Carbon Steel Valve Catalog Number	Price	Stainless Steel Valve Catalog Number	Price
		AA	L	DD	A	B	C	D	E				
0.25"	7	0.45	2.95	1.66	7.6	2.76	0.79	1.66	2.58	88C-TX-025-TR1S-	\$392.00	88-TX-025-TR1S-	\$412.00
0.375"	8	0.50	2.95	1.66	7.6	2.76	0.79	1.66	2.58	88C-TX-038-TR1S-	392.00	88-TX-038-TR1S-	412.00
0.5"	15	0.59	2.85	1.66	7.6	3.43	0.79	1.66	3.29	88C-TX-050-TR2S-	412.00	88-TX-050-TR2S-	434.00
0.75"	40	0.79	3.36	1.83	9.29	4.49	0.79	1.83	4.41	88C-TX-075-2R3S-	491.00	88-TX-075-2R3S-	516.00
1"	70	0.98	4.15	2.31	9.29	4.49	0.79	2.31	4.41	88C-TX-100-2R3S-	544.00	88-TX-100-2R3S-	569.00
1.25"	110	1.26	4.37	2.46	9.29	4.49	0.79	2.46	4.41	88C-TX-125-2R3S-	604.00	88-TX-125-2R3S-	642.00
1.5"	250	1.5	5.01	3.11	9.29	4.49	0.79	3.11	4.41	88C-TX-150-2R3S-	727.00	88-TX-150-2R3S-	774.00
2"	430	1.97	5.62	3.42	10.87	4.88	0.79	3.42	4.82	88C-TX-200-2R4S-	875.00	88-TX-200-2R4S-	934.00
2.5"	600	2.56	7.28	4.28	11.46	5.28	0.79	4.28	5.2	88C-TX-250-2R5S-	1400.00	88-TX-250-2R5S-	1468.00
3"	1100	3.15	8.07	4.63	13.9	6.18	0.79	4.63	6.04	88C-TX-300-2R6S-	1588.00	88-TX-300-2R6S-	1640.00
4"	2000	3.94	9.45	5.26	15.16	6.93	1.18	5.26	6.69	88C-TX-400-2R7S-	2106.00	88-TX-400-2R7S-	2276.00
Optional Solenoid	None NEMA 4 NAMUR-Mounted Solenoid, 24 VDC/120 VAC NEMA 7 NAMUR-Mounted Solenoid, 24 VDC/120 VAC Intrinsically Safe Solenoid									-X _ -A _ -B _ -C _	0.00 96.00 180.00 387.00	-X _ -A _ -B _ -C _	0.00 96.00 180.00 387.00
Optional Limit Switches	None Two SPDT NEMA 4 Two SPDT NEMA 7 Intrinsically Safe Limit Switch									- _X - _A - _B - _C	0.00 148.00 340.00 178.00	- _X - _A - _B - _C	0.00 148.00 340.00 178.00

\*See model selection guide on previous page for full valve dimensions.

Please specify solenoid voltage at time of order.



**Ball Valve with Pneumatic Double-Acting Actuator**

Actuators are sized based on clean/clear fluid, and 60 PSI air supply.

**Model Selection Guide**

Valve Size	Valve Cv	Valve Dimensions*			Actuator Dimensions					Carbon Steel Valve Catalog Number	Price	Stainless Steel Valve Catalog Number	Price
		AA	L	DD	A	B	C	D	E				
0.25"	7	0.45	2.95	1.66	7.6	2.76	0.79	1.66	2.58	88C-TX-025-TR1D-	\$329.00	88-TX-025-TR1D-	\$344.00
0.375"	8	0.50	2.95	1.66	7.6	2.76	0.79	1.66	2.58	88C-TX-038-TR1D-	329.00	88-TX-038-TR1D-	344.00
0.5"	15	0.59	2.85	1.66	7.6	3.43	0.79	1.66	3.29	88C-TX-050-TR1D-	331.00	88-TX-050-TR1D-	347.00
0.75"	40	0.79	3.36	1.83	9.29	4.49	0.79	1.83	4.41	88C-TX-075-2R2D-	398.00	88-TX-075-2R2D-	418.00
1"	70	0.98	4.15	2.31	9.29	4.49	0.79	2.31	4.41	88C-TX-100-2R2D-	430.00	88-TX-100-2R2D-	458.00
1.25"	110	1.26	4.37	2.46	9.29	4.49	0.79	2.46	4.41	88C-TX-125-2R2D-	480.00	88-TX-125-2R2D-	508.00
1.5"	250	1.5	5.01	3.11	9.29	4.49	0.79	3.11	4.41	88C-TX-150-2R3D-	612.00	88-TX-150-2R3D-	648.00
2"	430	1.97	5.62	3.42	10.87	4.88	0.79	3.42	4.82	88C-TX-200-2R3D-	693.00	88-TX-200-2R3D-	732.00
2.5"	600	2.56	7.28	4.28	11.46	5.28	0.79	4.28	5.2	88C-TX-250-2R4D-	1081.00	88-TX-250-2R4D-	1134.00
3"	1100	3.15	8.07	4.63	13.9	6.18	0.79	4.63	6.04	88C-TX-300-2R5D-	1314.00	88-TX-300-2R5D-	1375.00
4"	2000	3.94	9.45	5.26	15.16	6.93	1.18	5.26	6.69	88C-TX-400-2R6D-	1640.00	88-TX-400-2R6D-	1940.00
Optional Solenoid	None NEMA 4 NAMUR-Mounted Solenoid, 24 VDC/120 VAC NEMA 7 NAMUR-Mounted Solenoid, 24 VDC/120 VAC Intrinsically Safe Solenoid									-X _ -A _ -B _ -C _	0.00 96.00 180.00 387.00	-X _ -A _ -B _ -C _	0.00 96.00 180.00 387.00
Optional Limit Switches	None Two SPDT NEMA 4 Two SPDT NEMA 7 Intrinsically Safe Limit Switch									- _X - _A - _B - _C	0.00 148.00 340.00 178.00	- _X - _A - _B - _C	0.00 148.00 340.00 178.00

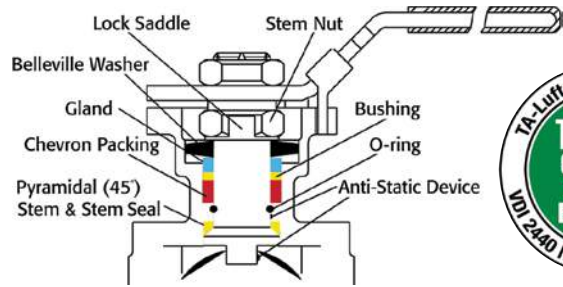
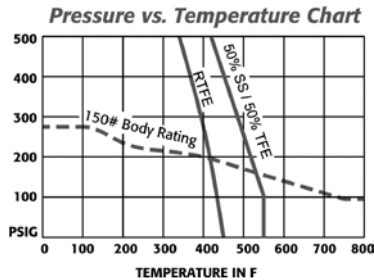
\*See model selection guide on previous page for full valve dimensions.

Please specify solenoid voltage at time of order.

# Firesafe Direct Mount Flanged Ball Valves Series F91

## Key Specifications

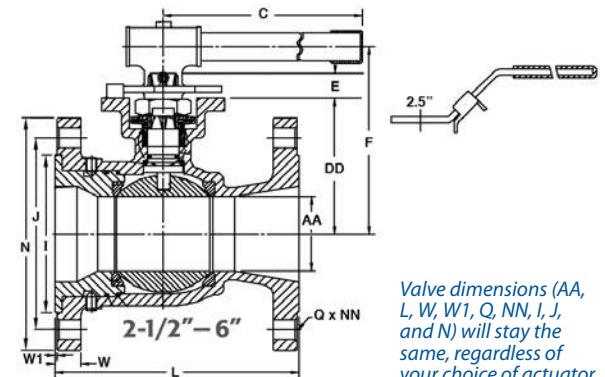
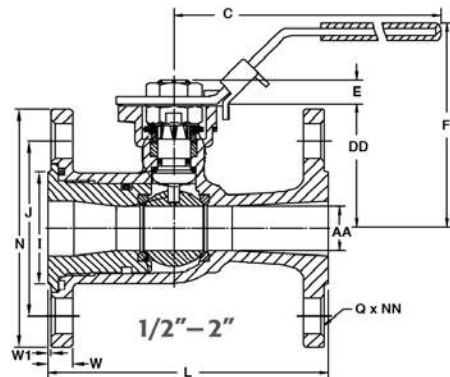
- Available in 1/2" to 6" sizes
- Regular port valve with direct actuator mount
- Pyramidal stem packing system
- ANSI Class 150# flanged connections and ISO 5211 mounting
- Carbon steel or 316 stainless steel body, ball, and blowout-proof stem
- Anti-static and firesafe
- Compliant to NACE MRO175



A-T Controls' patented Pyramidal stem seal system protects your valve against wear and leakage, and reduce your plant's fugitive emissions. Valves with the TA-Luft certification meet the permissible limit standard for the emission of vapors or gases during processing or transfer of liquids or gaseous materials.



**Flanged Ball Valve with Slide Lock Lever Handle**



Valve dimensions (AA, L, W, W1, Q, NN, I, J, and N) will stay the same, regardless of your choice of actuator.

## Model Selection Guide

Valve Size	Valve Cv	Valve Dimensions											Actuator Dimensions			Carbon Steel Valve		Stainless Steel Valve	
		AA	DD	L	W	W1	Q	NN	I	J	N	C	E	F	Catalog Number	Price	Catalog Number	Price	
0.5"	9	0.50	1.8	4.26	0.44	0.06	0.63	4	1.38	2.38	3.5	6.5	0.37	3.22	F91C-F1-050-XXX	\$138.00	F91-F1-050-XXX	\$150.00	
0.75"	15	0.59	2.02	4.62	0.44	0.06	0.63	4	1.69	2.75	3.88	6.5	0.39	3.44	F91C-F1-075-XXX	145.00	F91-F1-075-XXX	152.00	
1"	42	0.79	2.19	5.00	0.44	0.06	0.63	4	2.00	3.12	4.25	6.5	0.39	3.61	F91C-F1-100-XXX	196.00	F91-F1-100-XXX	206.00	
1.5"	125	1.26	2.86	6.5	0.56	0.06	0.63	4	2.88	3.88	5	8.46	0.51	4.71	F91C-F1-150-XXX	324.00	F91-F1-150-XXX	354.00	
2"	165	1.5	3.51	7.02	0.63	0.06	0.75	4	3.62	4.75	6	10.35	0.75	5.68	F91C-F1-200-XXX	437.00	F91-F1-200-XXX	475.00	
2.5"	245	1.97	3.8	7.5	0.69	0.06	0.75	4	4.12	5.5	7	10.35	0.75	5.97	F91C-F1-250-XXX	550.00	F91-F1-250-XXX	779.00	
3"	350	2.56	4.57	8.0	0.75	0.06	0.75	4	5	6	7.5	14.37	0.75	6.31	F91C-F1-300-XXX	719.00	F91-F1-300-XXX	1018.00	
4"	680	3.15	5.22	9.0	0.94	0.06	0.75	8	6.19	7.5	9	14.37	0.91	7.13	F91C-F1-400-XXX	1062.00	F91-F1-400-XXX	1396.00	
6"	1020	4.37	7.07	10.5	1.0	0.06	0.87	8	8.5	9.5	11	29.53	1.12	9.63	F91C-F1-600-XXX	2113.00	F91-F1-600-XXX	3655.00	



**Ball Valve with Electric On/Off Actuator**

## Model Selection Guide

Valve Size	Valve Cv	Valve Dimensions											Actuator Dimensions				Carbon Steel Valve		Stainless Steel Valve	
		AA	DD	L	W	I	J	N	A	B	D	E	Catalog Number	Price	Catalog Number	Price				
0.5"	9	0.50	1.8	4.26	0.44	1.38	2.38	3.5	5.94	5.24	1.8	4.15	F91C-F1-050/WEA1	\$702.00	F91-F1-050/WEA1	\$751.00				
0.75"	15	0.59	2.02	4.62	0.44	1.69	2.75	3.88	5.94	5.24	2.02	4.15	F91C-F1-075/WEA1	714.00	F91-F1-075/WEA1	769.00				
1"	42	0.79	2.19	5.00	0.44	2.00	3.12	4.25	5.94	5.24	2.19	4.15	F91C-F1-100/WEA1	743.00	F91-F1-100/WEA1	800.00				
1.5"	125	1.26	2.86	6.5	0.56	2.88	3.88	5	5.94	5.24	2.86	4.15	F91C-F1-150/WEA1	869.00	F91-F1-150/WEA1	970.00				
2"	165	1.5	3.51	7.02	0.63	3.62	4.75	6	5.94	5.24	3.51	4.15	F91C-F1-200/WEA1	985.00	F91-F1-200/WEA1	1112.00				
2.5"	245	1.97	3.8	7.5	0.69	4.12	5.5	7	13.31	10.55	3.8	9.02	F91C-F1-250/WEC1	2009.00	F91-F1-250/WEC1	2280.00				
3"	350	2.56	4.57	8.0	0.75	5	6	7.5	13.31	10.55	4.57	9.02	F91C-F1-300/WEC1	2160.00	F91-F1-300/WEC1	2498.00				
4"	680	3.15	5.22	9.0	0.94	6.19	7.5	9	14.49	11.42	5.22	10.20	F91C-F1-400/WEE1	2790.00	F91-F1-400/WEE1	3290.00				
6"	1020	4.37	7.07	10.5	1.0	8.5	9.5	11	14.49	11.42	7.07	10.20	F91C-F1-600/WEE1	4068.00	F91-F1-600/WEE1	5685.00				
Voltage		1120/60 VAC 24 VAC/24 VDC/ 220 VAC											-X _	0.00	-X _	0.00				
													-V _	Call	-V _	Call				
Feedback Signals		None Feedback Potentiometer											- _ X	0.00	- _ X	0.00				
													- _ F	Call	- _ F	Call				

\*See next page for actuator dimension chart..

Solids Flow and Motion

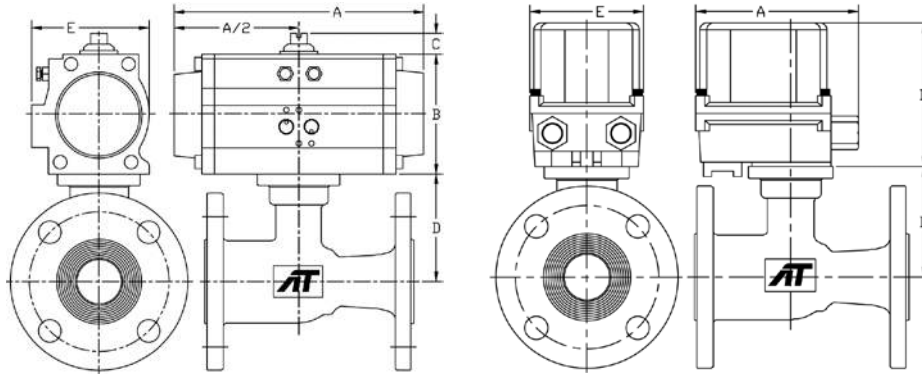
Controllers and Programmers

Digital Indicators

Recorders and Data Acquisition

Combustion Safety and Efficiency

Process Valves



**Dimensions:  
Pneumatic Actuators**

Actuators sizes based on clean/clear fluid, and 60 PSI air supply.

**Dimensions:  
Electric Actuators**

Actuators sizes based on clean/clear fluid.

**Model Selection Guide: Ball Valve with Pneumatic Spring Return Actuator**

Valve Size	Valve Cv	Valve Dimensions											Actuator Dimensions					Carbon Steel Valve		Stainless Steel Valve	
		AA	DD	L	W	W1	Q	NN	I	J	N	A	B	C	D	E	Catalog Number	Price	Catalog Number	Price	
0.5"	9	0.50	1.8	4.26	0.44	0.06	0.63	4	1.38	2.38	3.5	5.98	2.76	0.79	1.80	2.58	F91C-F1-050/2R2S-	\$449.00	F91-F1-050/2R2S-	\$550.00	
0.75"	15	0.59	2.02	4.62	0.44	0.06	0.63	4	1.69	2.75	3.88	5.98	2.76	0.79	2.02	2.58	F91C-F1-075/2R3S-	537.00	F91-F1-075/2R3S-	585.00	
1"	42	0.79	2.19	5.00	0.44	0.06	0.63	4	2.00	3.12	4.25	7.95	3.43	0.79	2.19	3.29	F91C-F1-100/2R3S-	566.00	F91-F1-100/2R3S-	618.00	
1.5"	125	1.26	2.86	6.5	0.56	0.06	0.63	4	2.88	3.88	5	9.29	4.49	0.79	2.86	4.41	F91C-F1-150/2R3S-	693.00	F91-F1-150/2R3S-	788.00	
2"	165	1.5	3.51	7.02	0.63	0.06	0.75	4	3.62	4.75	6	9.29	4.49	0.79	3.51	4.41	F91C-F1-200/2R5S-	938.00	F91-F1-200/2R5S-	1066.00	
2.5"	245	1.97	3.8	7.5	0.69	0.06	0.75	4	4.12	5.5	7	9.29	4.49	0.79	3.80	4.41	F91C-F1-250/2R5S-	1066.00	F91-F1-250/2R5S-	1556.00	
3"	350	2.56	4.57	8.0	0.75	0.06	0.75	4	5	6	7.5	9.29	4.49	0.79	4.75	4.41	F91C-F1-300/2R6S-	1438.00	F91-F1-300/2R6S-	1756.00	
4"	680	3.15	5.22	9.0	0.94	0.06	0.75	8	6.19	7.5	9	11.46	5.28	0.79	5.22	5.20	F91C-F1-400/2R7S-	1898.00	F91-F1-400/2R7S-	2373.00	
6"	1020	4.37	7.07	10.5	1.0	0.06	0.87	8	8.5	9.5	11	13.9	6.18	0.79	7.07	6.04	F91C-F1-600/2R8S-	3743.00	F91-F1-600/2R8S-	5363.00	
Optional Solenoid	None NEMA 4 NAMUR-Mounted Solenoid, 24 VDC/120 VAC NEMA 7 NAMUR-Mounted Solenoid, 24 VDC/120 VAC Intrinsically Safe Solenoid															-X _	0.00	-X _	0.00		
																-A _	96.00	-A _	96.00		
																-B _	180.00	-B _	180.00		
																-C _	387.00	-C _	387.00		
Optional Limit Switches	None Two SPDT NEMA 4 Two SPDT NEMA 7 Intrinsically Safe Limit Switch															- _ X	0.00	- _ X	0.00		
																- _ A	148.00	- _ A	148.00		
																- _ B	340.00	- _ B	340.00		
																- _ C	178.00	- _ C	178.00		

\*Please specify solenoid voltage at time of order.

**Model Selection Guide: Ball Valve with Pneumatic Double-Acting Actuator**

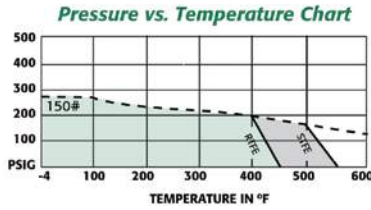
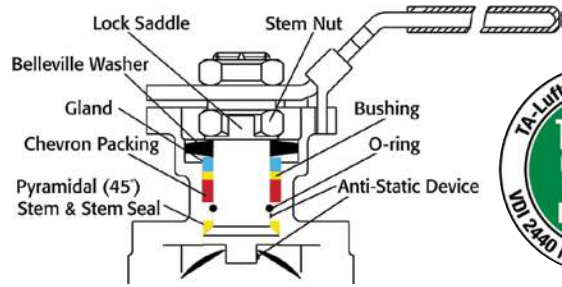
Valve Size	Valve Cv	Valve Dimensions											Actuator Dimensions					Carbon Steel Valve		Stainless Steel Valve	
		AA	DD	L	W	W1	Q	NN	I	J	N	A	B	C	D	E	Catalog Number	Price	Catalog Number	Price	
0.5"	9	0.50	1.8	4.26	0.44	0.06	0.63	4	1.38	2.38	3.5	5.98	2.76	0.79	1.80	2.58	F91C-F1-050/TR1D-	\$389.00	F91-F1-050/TR1D-	\$483.00	
0.75"	15	0.59	2.02	4.62	0.44	0.06	0.63	4	1.69	2.75	3.88	5.98	2.76	0.79	2.02	2.58	F91C-F1-075/TR1D-	400.00	F91-F1-075/TR1D-	498.00	
1"	42	0.79	2.19	5.00	0.44	0.06	0.63	4	2.00	3.12	4.25	7.95	3.43	0.79	2.19	3.29	F91C-F1-100/2R2D-	477.00	F91-F1-100/2R2D-	527.00	
1.5"	125	1.26	2.86	6.5	0.56	0.06	0.63	4	2.88	3.88	5	9.29	4.49	0.79	2.86	4.41	F91C-F1-150/2R3D-	605.00	F91-F1-150/2R3D-	746.00	
2"	165	1.5	3.51	7.02	0.63	0.06	0.75	4	3.62	4.75	6	9.29	4.49	0.79	3.51	4.41	F91C-F1-200/2R3D-	769.00	F91-F1-200/2R3D-	892.00	
2.5"	245	1.97	3.8	7.5	0.69	0.06	0.75	4	4.12	5.5	7	9.29	4.49	0.79	3.80	4.41	F91C-F1-250/2R3D-	898.00	F91-F1-250/2R3D-	1133.00	
3"	350	2.56	4.57	8.0	0.75	0.06	0.75	4	5	6	7.5	9.29	4.49	0.79	4.75	4.41	F91C-F1-300/2R4D-	1158.00	F91-F1-300/2R4D-	1462.00	
4"	680	3.15	5.22	9.0	0.94	0.06	0.75	8	6.19	7.5	9	11.46	5.28	0.79	5.22	5.20	F91C-F1-400/2R5D-	1562.00	F91-F1-400/2R5D-	2021.00	
6"	1020	4.37	7.07	10.5	1.0	0.06	0.87	8	8.5	9.5	11	13.9	6.18	0.79	7.07	6.04	F91C-F1-600/2R7D-	2946.00	F91-F1-600/2R7D-	4440.00	
Optional Solenoid	None NEMA 4 NAMUR-Mounted Solenoid, 24 VDC/120 VAC NEMA 7 NAMUR-Mounted Solenoid, 24 VDC/120 VAC Intrinsically Safe Solenoid															-X _	0.00	-X _	0.00		
																-A _	96.00	-A _	96.00		
																-B _	180.00	-B _	180.00		
																-C _	387.00	-C _	387.00		
Optional Limit Switches	None Two SPDT NEMA 4 Two SPDT NEMA 7 Intrinsically Safe Limit Switch															- _ X	0.00	- _ X	0.00		
																- _ A	148.00	- _ A	148.00		
																- _ B	340.00	- _ B	340.00		
																- _ C	178.00	- _ C	178.00		

\*Please specify solenoid voltage at time of order.

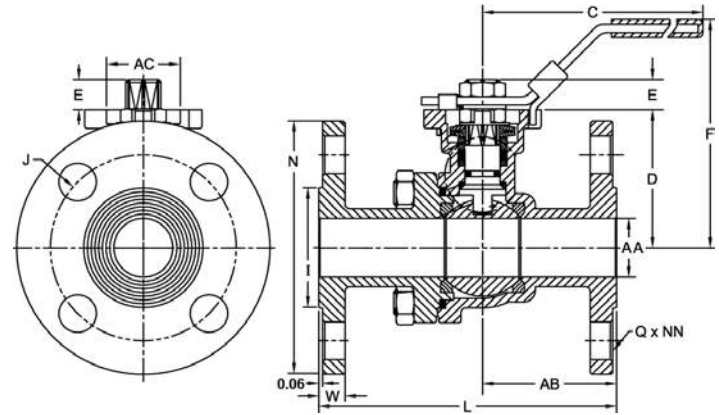
# Firesafe Direct Mount Split Body Flanged Ball Valves Series FD9

## Key Specifications

- Available in 1/2" to 6" sizes
- Full port valve with direct actuator mount
- Carbon steel or 316 stainless steel construction
- Pyramidal stem packing system
- ANSI Class 150# flange and ISO 5211 mount
- Anti-static and firesafe



Direct Mount Ball Valve (Shown Without Actuator)



## Model Selection Guide: Ball Valve with Manual Actuator

Valve Size	Valve CV	Valve Dimensions										Actuator Dimensions					Carbon Steel Valve		Stainless Steel Valve	
		AA	AB	L	W	I	N	J	Q	NN	AC	C	D	E	F	Catalog Number	Price	Catalog Number	Price	
0.5"	15	0.59	1.84	4.26	0.44	1.38	3.5	2.38	0.63	4	1.26	6.5	1.84	0.39	3.3	FD9C-F1-050-XXX	\$185.00	FD9-F1-050-XXX	\$198.00	
0.75"	45	0.79	2.18	4.62	0.44	1.69	3.88	2.74	0.63	4	1.26	6.5	2.02	0.39	3.45	FD9C-F1-075-XXX	206.00	FD9-F1-075-XXX	223.00	
1"	85	0.98	2.21	5	0.44	2	4.25	3.12	0.63	4	1.26	6.5	2.31	0.41	3.81	FD9C-F1-100-XXX	256.00	FD9-F1-100-XXX	281.00	
1.5"	275	1.5	2.83	6.5	0.56	2.88	5	3.88	0.63	4	2.09	10.32	3.51	0.75	5.6	FD9C-F1-150-XXX	466.00	FD9-F1-150-XXX	527.00	
2"	450	1.97	3.38	7.02	0.63	3.62	6	4.75	0.75	4	2.09	10.32	3.8	0.75	5.78	FD9C-F1-200-XXX	565.00	FD9-F1-200-XXX	651.00	
2.5"	700	2.56	3.06	7.48	0.69	4.12	7	5.5	0.75	4	2.09	10.32	4.57	0.75	6.75	FD9C-F1-250-XXX	958.00	FD9-F1-250-XXX	1103.00	
3"	1100	3.15	4.01	8.01	0.75	5	7.5	6	0.75	4	2.55	14.37	5.22	0.91	8.05	FD9C-F1-300-XXX	1182.00	FD9-F1-300-XXX	1306.00	
4"	2200	3.94	4.07	9	0.94	6.19	9	7.5	0.75	8	2.55	14.37	6.18	0.91	9	FD9C-F1-400-XXX	1707.00	FD9-F1-400-XXX	1903.00	
6"	5150	5.91	7.00	15.5	1.00	8.5	11	9.5	0.87	8	2.97	29.53	8.28	1.12	12.5	FD9C-F1-600-XXX	4727.00	FD9-F1-600-XXX	5139.00	

## Model Selection Guide: Ball Valve with NEMA 4/4X On/Off Electric Actuator

Valve Size	Valve CV	Valve Dimensions										Actuator Dimensions					Carbon Steel Valve		Stainless Steel Valve	
		AA	AB	L	W	I	N	J	Q	A	B	C	D	E	Catalog Number	Price	Catalog Number	Price		
0.5"	15	0.59	1.84	4.26	0.44	1.38	3.5	2.38	0.63	5.94	4.09	-	5.24	1.84	FD9C-F1-050/WEA1-	\$753.00	FD9-F1-050/WEA1-	\$793.00		
0.75"	45	0.79	2.18	4.62	0.44	1.69	3.88	2.74	0.63	5.94	4.09	-	5.24	2.02	FD9C-F1-075/WEA1-	766.00	FD9-F1-075/WEA1-	800.00		
1"	85	0.98	2.21	5	0.44	2	4.25	3.12	0.63	5.94	4.09	-	5.24	2.31	FD9C-F1-100/WEA1-	843.00	FD9-F1-100/WEA1-	884.00		
1.5"	275	1.5	2.83	6.5	0.56	2.88	5	3.88	0.63	5.94	4.09	-	5.24	3.51	FD9C-F1-150/WEA1-	1204.00	FD9-F1-150/WEA1-	1277.00		
2"	450	1.97	3.38	7.02	0.63	3.62	6	4.75	0.75	5.94	4.09	-	5.24	3.8	FD9C-F1-200/WEA1-	1382.00	FD9-F1-200/WEA1-	1473.00		
2.5"	700	2.56	3.06	7.48	0.69	4.12	7	5.5	0.75	9.02	13.31	10.43	10.55	4.57	FD9C-F1-250/WEC1-	2256.00	FD9-F1-250/WEC1-	2387.00		
3"	1100	3.15	4.01	8.01	0.75	5	7.5	6	0.75	9.02	13.31	10.43	10.55	5.22	FD9C-F1-300/WEC1-	2594.00	FD9-F1-300/WEC1-	2737.00		
4"	2200	3.94	4.07	9	0.94	6.19	9	7.5	0.75	10.2	14.49	11.26	11.42	6.18	FD9C-F1-400/WEE1-	3655.00	FD9-F1-400/WEE1-	3886.00		
6"	5150	5.91	7.00	15.5	1.00	8.5	11	9.5	0.87	11.69	16.14	12.09	12.99	8.28	FD9C-F1-600/WEH1-	6257.00	FD9-F1-600/WEH1-	7190.00		
Voltage		120/60 VAC 24 VAC/24 VDC/ 220 VAC													-X_	0.00	-X_	0.00		
															-V_	Call	-V_	Call		
Feedback Signals		None Feedback Potentiometer													-_X	0.00	-_X	0.00		
															-_F	Call	-_F	Call		

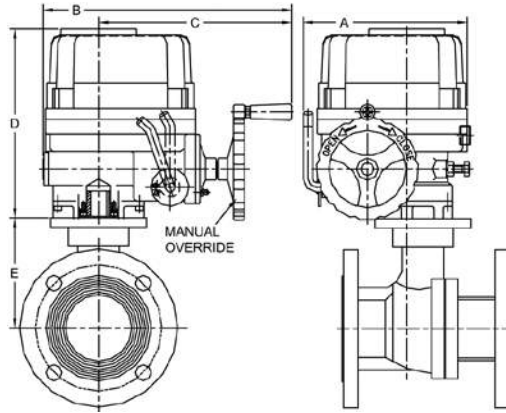
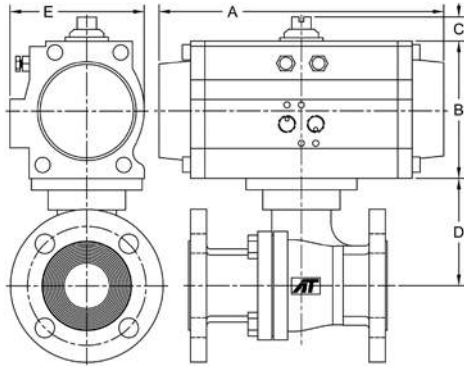
\*See next page for actuator dimension chart.

Solids Flow and Motion  
Controllers and Programmable  
Digital Indicators  
Recorders and Data Acquisition  
Combustion Safety and Efficiency  
Process Valves



**Dimensions:  
Pneumatic  
Actuators**

Actuators sizes based on clean/clear fluid, and 60 PSI air supply.



**Dimensions:  
NEMA 4/4X  
Electric On/Off  
Actuator**

Actuators sizes based on clean/clear fluid.

**Model Selection Guide: Ball Valve with Pneumatic Spring Return Actuator**

Valve Size	Valve Cv	Valve Dimensions										Actuator Dimensions					Carbon Steel Valve		Stainless Steel Valve	
		AA	AB	L	W	I	N	J	Q	NN	A	B	C	D	E	Catalog Number	Price	Catalog Number	Price	
0.5"	15	0.59	1.84	4.26	0.44	1.38	3.5	2.38	0.63	4	7.95	3.43	0.79	1.84	3.29	FD9C-F1-050/2R3S-	\$637.00	FD9-F1-050/2R3S-	\$665.00	
0.75"	45	0.79	2.18	4.62	0.44	1.69	3.88	2.74	0.63	4	7.95	3.43	0.79	2.02	3.29	FD9C-F1-075/2R3S-	652.00	FD9-F1-075/2R3S-	678.00	
1"	85	0.98	2.21	5	0.44	2	4.25	3.12	0.63	4	9.29	4.49	0.79	2.31	4.41	FD9C-F1-100/2R3S-	692.00	FD9-F1-100/2R3S-	725.00	
1.5"	275	1.5	2.83	6.5	0.56	2.88	5	3.88	0.63	4	10.87	4.88	0.79	3.51	4.82	FD9C-F1-150/2R4S-	910.00	FD9-F1-150/2R4S-	964.00	
2"	450	1.97	3.38	7.02	0.63	3.62	6	4.75	0.75	4	10.87	4.88	0.79	3.8	4.82	FD9C-F1-200/2R5S-	1072.00	FD9-F1-200/2R5S-	1154.00	
2.5"	700	2.56	3.06	7.48	0.69	4.12	7	5.5	0.75	4	13.9	6.18	0.79	4.57	6.04	FD9C-F1-250/2R6S-	1686.00	FD9-F1-250/2R6S-	1794.00	
3"	1100	3.15	4.01	8.01	0.75	5	7.5	6	0.75	4	13.9	6.18	0.79	5.22	6.04	FD9C-F1-300/2R6S-	1904.00	FD9-F1-300/2R6S-	2020.00	
4"	2200	3.94	4.07	9	0.94	6.19	9	7.5	0.75	8	15.16	6.93	1.18	6.18	6.69	FD9C-F1-400/2R7S-	2492.00	FD9-F1-400/2R7S-	2694.00	
6"	5150	5.91	7.00	15.5	1.00	8.5	11	9.5	0.87	8	24.37	10.12	1.18	8.28	9.29	FD9C-F1-600/2R0S-	6563.00	FD9-F1-600/2R9D-	6849.00	
Optional Solenoid	None NEMA 4 NAMUR-Mounted Solenoid, 24 VDC/120 VAC NEMA 7 NAMUR-Mounted Solenoid, 24 VDC/120 VAC Intrinsically Safe Solenoid															-X _	0.00	-X _	0.00	
																-A _	96.00	-A _	96.00	
																-B _	180.00	-B _	180.00	
																-C _	387.00	-C _	387.00	
Optional Limit Switches	None Two SPDT NEMA 4 Two SPDT NEMA 7 Intrinsically Safe Limit Switch															-_X	0.00	-_X	0.00	
																-_A	148.00	-_A	148.00	
																-_B	340.00	-_B	340.00	
																-_C	178.00	-_C	178.00	

\*Please specify solenoid voltage at time of order.

**Model Selection Guide: Ball Valve with Pneumatic Double-Acting Actuator**

Valve Size	Valve Cv	Valve Dimensions										Actuator Dimensions					Carbon Steel Valve		Stainless Steel Valve	
		AA	AB	L	W	I	N	J	Q	NN	A	B	C	D	E	Catalog Number	Price	Catalog Number	Price	
0.5"	15	0.59	1.84	4.26	0.44	1.38	3.5	2.38	0.63	4	5.98	2.76	0.79	1.84	2.58	FD9C-F1-050/TR1D-	\$502.00	FD9-F1-050/TR1D-	\$530.00	
0.75"	45	0.79	2.18	4.62	0.44	1.69	3.88	2.74	0.63	4	5.98	2.76	0.79	2.02	2.58	FD9C-F1-075/2R2D-	546.00	FD9-F1-075/2R2D-	576.00	
1"	85	0.98	2.21	5	0.44	2	4.25	3.12	0.63	4	7.95	3.43	0.79	2.31	3.29	FD9C-F1-100/2R2D-	595.00	FD9-F1-100/2R2D-	619.00	
1.5"	275	1.5	2.83	6.5	0.56	2.88	5	3.88	0.63	4	9.29	4.49	0.79	3.51	4.41	FD9C-F1-150/2R3D-	759.00	FD9-F1-150/2R3D-	814.00	
2"	450	1.97	3.38	7.02	0.63	3.62	6	4.75	0.75	4	9.29	4.49	0.79	3.8	4.41	FD9C-F1-200/2R3D-	911.00	FD9-F1-200/2R3D-	972.00	
2.5"	700	2.56	3.06	7.48	0.69	4.12	7	5.5	0.75	4	10.98	4.88	0.79	4.57	4.82	FD9C-F1-250/2R5D-	1408.00	FD9-F1-250/2R5D-	1502.00	
3"	1100	3.15	4.01	8.01	0.75	5	7.5	6	0.75	4	13.9	6.18	0.79	5.22	6.04	FD9C-F1-300/2R6D-	1768.00	FD9-F1-300/2R6D-	1882.00	
4"	2200	3.94	4.07	9	0.94	6.19	9	7.5	0.75	8	13.9	6.18	0.79	6.18	6.04	FD9C-F1-400/2R6D-	2285.00	FD9-F1-400/2R6D-	2448.00	
6"	5150	5.91	7.00	15.5	1.00	8.5	11	9.5	0.87	8	20.95	8.31	1.18	8.28	7.64	FD9C-F1-600/2R9D-	5915.00	FD9-F1-600/2R9D-	6849.00	
Optional Solenoid	None NEMA 4 NAMUR-Mounted Solenoid, 24 VDC/120 VAC NEMA 7 NAMUR-Mounted Solenoid, 24 VDC/120 VAC Intrinsically Safe Solenoid															-X _	0.00	-X _	0.00	
																-A _	96.00	-A _	96.00	
																-B _	180.00	-B _	180.00	
																-C _	387.00	-C _	387.00	
Optional Limit Switches	None Two SPDT NEMA 4 Two SPDT NEMA 7 Intrinsically Safe Limit Switch															-_X	0.00	-_X	0.00	
																-_A	148.00	-_A	148.00	
																-_B	340.00	-_B	340.00	
																-_C	178.00	-_C	178.00	

\*Please specify solenoid voltage at time of order.

## FM-Approved Ball Valves for Safety Shut-Off




FM approved for use in applications that require protection for fuel-burning equipment per FM class 7400, 7420, and 7422. Available in threaded or ANSI flange design, in sizes from 1/4" to 6". Components include a spring-return automated ball valve, explosion-proof limit switch, and a solenoid pilot valve.

Assemblies feature the latest in quarter-turn automation and rack-and-pinion actuator design, for a marked improvement over older spring-diaphragm technology.

The actuator, combined with the superior valve seating and stem seal design, provides for reliable and consistent closure in a compact fuel gas safety shut-off system.

### Features

- Pyramidal stem seal system
- 316 stainless steel or carbon steel bodies, reinforced Teflon seat
- Three-piece threaded or ANSI flanged connections
- Solenoids approved for waterproof and explosion-proof environments
- Two SPDT mechanical limit switch, 5 Amp, NEMA 4, 4X, 7, and 9

### Specifications

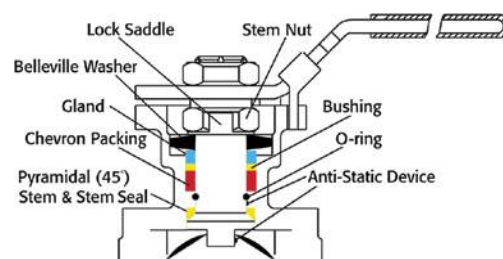
**Body:** Choice of 316 stainless steel or carbon steel

**Approvals:** FM Class 7400, 7420, and 7400

**Maximum Operating Pressure (depends on valve size):** F88 (threaded) carbon steel: 1000 to 1450 PSI at 100° F; F88 stainless steel: 1000 to 1440 PSI at 100° F; F9D (flanged) carbon steel: 285 to 740 PSI at 100° F; F9D stainless steel: 275 to 720 PSI at 100° F

**Limit Switch:** Standard: Two SPDT mechanical switches, 5 Amp @ 125 VAC, NEMA 4, 4X, 7, and 9.

Optional: Two 5 Amp DPDT mechanical switches, two 1 Amp SPDT proximity switches, or two 5 Amp SPDT mechanical switches with 4-20 mA position transmitter



A-T Controls' patented Pyramidal stem seal system protects your valve against wear and leakage, and reduce your plant's fugitive emissions.

Call for pricing and delivery on Oxygen-cleaned valves

## SMARTLINK® MRV Micro-Ratio Valve with Electronic Linkage

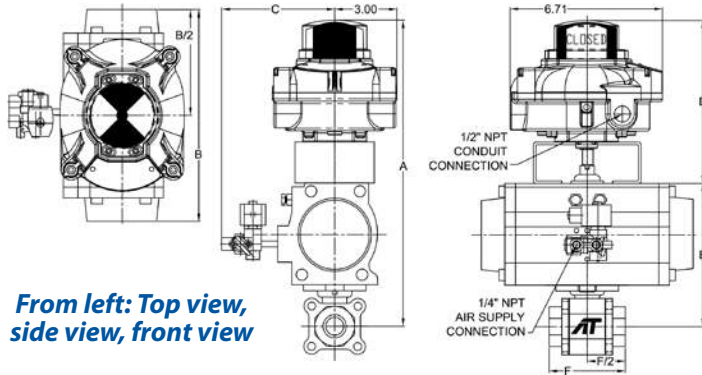
- Precise and repeatable flow control optimizes fuel efficiency, enables accurate temperature control and lowers burner emissions
- Synchronous control of up to four valves with conventional signal from your process controller
- Stores 22 point customized profile for each valve
- Standby, purge and light off positions can be defined independent of valve profiles
- UL and CE approved electronics and software for air-fuel ratio control
- FM approved as non-incendive for Class I, Div 2, Groups A-D, and T4; NEMA 4X standard actuator

Today's advanced industrial burner systems use advanced ratio control to minimize emissions while maximizing efficiency. Maxon SMARTLINK® MRV flow control valves provide that control and more.

An electronic parallel positioning system for air:fuel ratio control, SMARTLINK MRV is the industry standard in gas valves when operational reliability and precision are required. MAXON's complete SMARTLINK system includes up to four gas valves and a Control Interface Unit to electronically link the valves to your process controller. Each flow control valve is continuous duty and fully adjustable to 0.1% accuracy to provide dynamic control of burner ratios for optimal performance.

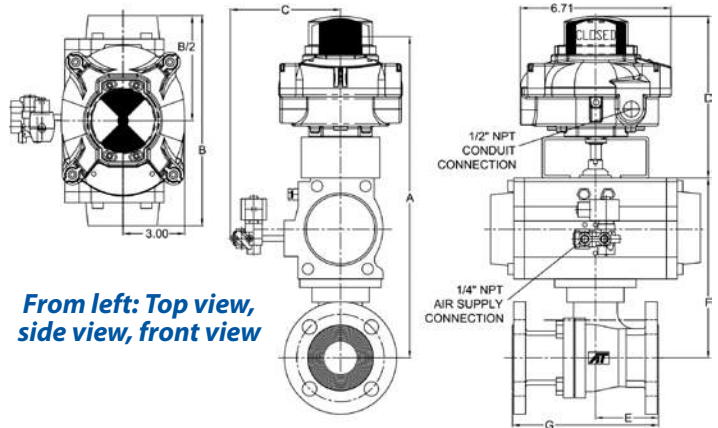


**Dimensions: F88 Three-Piece Threaded Assembly**



*From left: Top view, side view, front view*

**Dimensions: FD9 ANSI Flanged Assembly**



*From left: Top view, side view, front view*

**Model Selection Guide — Ball Valves with Gas Safety Shutoff Assembly**

Valve Size	Valve Cv	Valve Dimensions			Actuator Dimensions			Carbon Steel Valve		Stainless Steel Valve	
		A	C	F	B	D	E	Catalog Number	Price	Catalog Number	Price
<b>Model F88 Firesafe NACE, Three-Piece Full Port Ball Valve, Direct Mount Gas Safety Shutoff Assembly</b>											
1/4"	7	12.14	6.60	2.95	8.00	7.05	5.09	SS-8C-TX-025-6AA	\$ 1420.00	SS-8S-TX-025-6AA	\$ 1432.00
3/8"	8	12.14	6.60	2.95	8.00	7.05	5.09	SS-8C-TX-038-6AA	1420.00	SS-8S-TX-038-6AA	1432.00
1/2"	15	12.14	6.60	2.85	8.00	7.05	5.09	SS-8C-TX-050-6AA	1437.00	SS-8S-TX-050-6AA	1440.00
3/4"	40	13.37	5.98	3.36	9.34	7.05	6.32	SS-8C-TX-075-6AA	1515.00	SS-8S-TX-075-6AA	1530.00
1"	70	13.85	5.98	4.25	9.34	7.05	6.80	SS-8C-TX-100-6AA	1593.00	SS-8S-TX-100-6AA	1584.00
1 1/4"	110	14.00	5.98	4.37	9.34	7.05	6.95	SS-8C-TX-125-6AA	1639.00	SS-8S-TX-125-6AA	1649.00
1 1/2"	250	15.04	6.22	5.01	10.92	7.05	7.99	SS-8C-TX-150-6AA	1867.00	SS-8S-TX-150-6AA	1880.00
2"	430	15.75	6.39	5.62	11.51	7.05	8.70	SS-8C-TX-200-6AA	2201.00	SS-8S-TX-200-6AA	2218.00
2 1/2"	600	17.51	6.85	7.28	13.92	7.05	10.46	SS-8C-TX-250-6AA	2547.00	SS-8S-TX-250-6AA	2633.00
3"	1100	17.51	6.85	8.07	13.92	7.05	10.81	SS-8C-TX-300-6AA	2892.00	SS-8S-TX-300-6AA	2999.00
4"	2200	19.67	7.20	9.45	15.20	7.48	12.19	SS-8C-TX-400-6AA	3410.00	SS-8S-TX-400-6AA	3573.00

Valve Size	Valve Cv	Valve Dimensions				Actuator Dimensions			Carbon Steel Valve		Stainless Steel Valve	
		A	C	E	G	B	D	F	Catalog Number	Price	Catalog Number	Price
<b>Model FD9 Firesafe NACE, ANSI #150 Flanged Full Port Ball Valve Gas Safety Shutoff Assembly</b>												
1/2"	15	12.32	6.60	1.84	4.26	8.00	7.05	5.27	SS-9C-FX-050-6AA	\$ 1500.00	SS-9S-FX-050-6AA	\$ 1535.00
3/4"	45	13.56	5.98	2.18	4.62	9.34	7.05	6.51	SS-9C-FX-075-6AA	1586.00	SS-9S-FX-075-6AA	1591.00
1"	85	13.85	5.98	2.21	5.00	9.34	7.05	6.80	SS-9C-FX-100-6AA	1644.00	SS-9S-FX-100-6AA	1649.00
1 1/2"	275	15.84	6.39	2.83	6.50	11.51	7.05	8.79	SS-9C-FX-150-6AA	1986.00	SS-9S-FX-150-6AA	2027.00
2"	460	16.13	6.39	3.38	7.02	11.51	7.05	9.08	SS-9C-FX-200-6AA	2147.00	SS-9S-FX-200-6AA	2205.00
2 1/2"	700	17.80	6.85	3.06	7.48	13.92	7.05	10.75	SS-9C-FX-250-6AA	2719.00	SS-9S-FX-250-6AA	2832.00
3"	1100	18.45	6.85	4.01	8.01	13.92	7.05	11.40	SS-9C-FX-300-6AA	3120.00	SS-9S-FX-300-6AA	3259.00
4"	2200	20.59	7.20	4.07	9.00	15.20	7.48	13.11	SS-9C-FX-400-6AA	4227.00	SS-9S-FX-400-6AA	4472.00
6"	5150	25.88	8.22	7.00	15.50	24.37	7.48	18.40	SS-9C-FX-600-6AA	7812.00	SS-9S-FX-600-6AA	8468.00

<b>Model FD9 Firesafe NACE, ANSI #300 Flanged Full Port Ball Valve Gas Safety Shutoff Assembly</b>												
1/2"	15	12.32	6.60	1.84	4.26	8.00	7.05	5.27	SS-9C-3X-050-6AA	1544.00	SS-9S-3X-050-6AA	1554.00
3/4"	45	13.56	5.98	2.18	4.62	9.34	7.05	6.51	SS-9C-3X-075-6AA	1670.00	SS-9S-3X-075-6AA	1682.00
1"	85	13.85	5.98	2.21	5.00	9.34	7.05	6.80	SS-9C-3X-100-6AA	1752.00	SS-9S-3X-100-6AA	1769.00
1 1/2"	275	15.84	6.39	2.83	6.50	11.51	7.05	8.79	SS-9C-3X-150-6AA	2189.00	SS-9S-3X-150-6AA	2261.00
2"	460	16.13	6.39	3.38	7.02	11.51	7.05	9.08	SS-9C-3X-200-6AA	2329.00	SS-9S-3X-200-6AA	2420.00
2 1/2"	700	17.80	6.85	3.06	7.48	13.92	7.05	10.75	SS-9C-3X-250-6AA	2982.00	SS-9S-3X-250-6AA	3129.00
3"	1100	18.45	6.85	4.01	8.01	13.92	7.05	11.40	SS-9C-3X-300-6AA	3535.00	SS-9S-3X-300-6AA	3747.00
4"	2200	20.59	7.20	4.07	9.00	15.20	7.48	13.11	SS-9C-3X-400-6AA	5104.00	SS-9S-3X-400-6AA	5434.00
6"	5150	25.88	8.22	7.00	15.50	24.37	7.48	18.40	SS-9C-3X-600-6AA	9273.00	SS-9S-3X-600-6AA	10113.00

# General Purpose Multiport Ball Valves Series 38



## Key Specifications

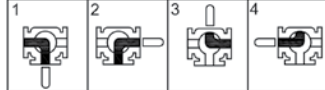
- Available in 1/4" to 2" sizes
- Threaded ends only
- Reduced port design with L and T port options
- 316 stainless steel construction
- Locking handle standard
- Direct actuator mount; ISO 5211 mounting pad
- Blowout-proof stem
- Four-seat design



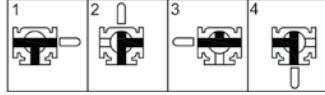
Also available with pneumatic and electric actuators. Call for pricing.

Specify -T or -L when ordering a Series 38 valve.

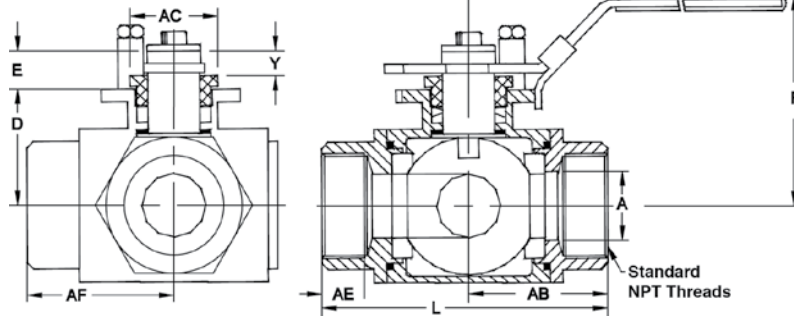
### Flow Patterns for L-Port



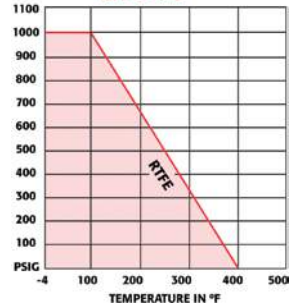
### Flow Patterns for T-Port



## Dimensions



## Pressure vs. Temperature Chart For RTFE Seats



## Model Selection Guide: Ball Valve with Manual Operator

Valve Size	Valve Cv		Valve Dimensions						Manual Operator Dimensions					T-Port Valve Catalog Number	L-Port Valve Catalog Number	Price
	T Port	L Port	A	AB	AE	L	AF	D	F	C	E	Y	AC			
0.25"	3	3.5	0.43	1.37	0.61	2.73	1.37	1.06	2.39	5.25	0.42	0.2	0.87	38-TH-025-XXX-T	38-TH-025-XXX-L	\$124.00
0.375"	3.5	4	0.43	1.37	0.61	2.73	1.37	1.06	2.39	5.25	0.42	0.2	0.87	38-TH-038-XXX-T	38-TH-038-XXX-L	124.00
0.5"	4.2	5	0.49	1.49	0.68	2.98	1.49	1.2	2.52	5.25	0.42	0.19	0.87	38-TH-050-XXX-T	38-TH-050-XXX-L	129.00
0.75"	7	8	0.63	1.7	0.76	3.41	1.7	1.45	3.24	7.03	0.55	0.28	1.22	38-TH-075-XXX-T	38-TH-075-XXX-L	152.00
1"	14	20	0.79	2.02	0.85	4.03	2.02	1.6	3.39	7.03	0.79	0.45	1.22	38-TH-100-XXX-T	38-TH-100-XXX-L	215.00
1.25"	19	30	0.098	2.33	0.93	4.65	2.33	1.85	3.6	8.26	0.94	0.63	1.22	38-TH-125-XXX-T	38-TH-125-XXX-L	265.00
1.5"	35	40	1.26	2.48	0.92	4.95	2.48	2.14	4.04	8.19	1.02	0.61	1.22	38-TH-150-XXX-T	38-TH-150-XXX-L	376.00
2"	45	60	1.5	2.93	1.0	5.87	2.93	2.48	4.36	9.05	1.0	0.61	1.34	38-TH-200-XXX-T	38-TH-200-XXX-L	518.00

See pages 55-76.

## Coriolis mass flowmeters



## Magnetic flowmeters



## Clamp-on ultrasonic flowmeters

