

The Soft Touch 2 (ST2) Series characterized ball valves provide accurate and cost effective control of a wide range of equipment in HVAC applications.

The ST2 series features a forged brass 2-piece body with Stainless Steel balls and stems for water temperature up to 284°F (140°C) and saturated steam up to 15 PSI.

The Amodel® Flow Characterizing Disk maintains equal percentage Flow Characteristics for optimum temperature control. The blowout-proof stem and mounting flange, combined with an innovative double O-Ring stem seal and self-centering stem bushing design provides quick and easy electric actuator field mounting while ensuring long life and leak-free valve performance.

Graphite reinforced PTFE seats backed with EPDM O-rings significantly reduce operating torque allowing the use of the most economical actuator to provide the torque required for the application. All valve and actuator assemblies provide 200 psig (1,379 kPa) close-off pressure while ensuring operation after long idle periods. Because of their cost-effective, reliable design, ST2 Series Ball Valves are maintenance free.



Features and Benefits

- **580 PSI (PN 40) Body Rating**
Meets any HVAC application
- **200 PSI Close-Off Rating**
Worry-free at high differential pressures
- **ANSI Class IV (<.01%) Leakage**
Energy efficient
- **Low Torque**
Minimizes actuator costs/extends life
- **Greater than 500:1 Rangeability**
Superior control accuracy and stability

5 Year Warranty

SoftTouch 2 - Specifications

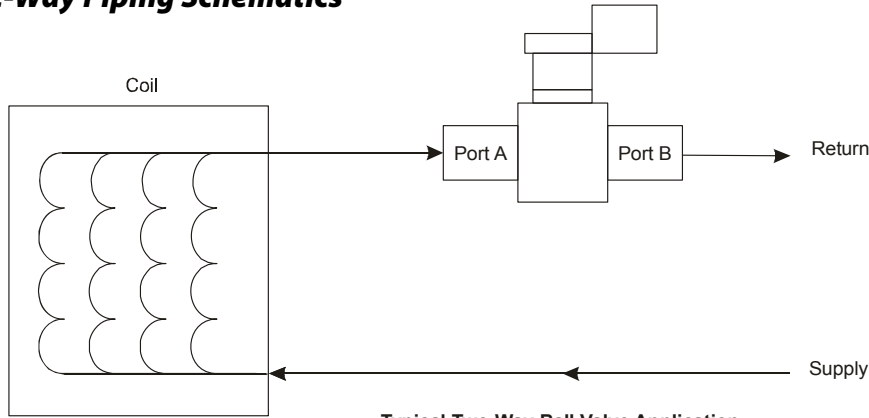
Technical Specifications

Service		Hot Water, Chilled Water, 50/50 Glycol Solutions 15 psig (103 kPa) Saturated Steam for HVAC Systems
Valve Body Pressure/ Temperature Rating	Cold Working Pressure (CWP)	580 PSI (PN 40)
	Water (with Standard Mounting)	-22°F to 203°F (-30°C to 95°C)
	Water (with "High Temp" Mounting)	-22°F to 284°F (-30°C to 140°C)
	Steam (with "High Temp" Mounting)	15 PSIG (103 kPa) at 284°F (140°C)
Maximum Recommended Operating Pressure Drop		50 psi Maximum Differential Pressure for Valves with Characterized Flow Control Disk and 30 psi Maximum for Quiet Service Ball Valves
Flow Characteristics	Two-Way	Equal Percentage
	Three-Way	Equal Percentage Port A, Linear Port B (Bypass)
Rangeability		Greater than 500:1
Minimum Ambient Operating		See Actuator Specifications
Leakage		.01% of Maximum Flow per ANSI/FCI 70-2, Class 4 1% of Maximum Flow for Three-Way Bypass Port
End Connections		NPT or BSP
Materials	Body	Forged Brass
	Ball	300 Series Stainless Steel
	Stem	300 Series Stainless Steel
	Seats	Graphite-Reinforced PTFE with EPDM O-ring backing
	Stem Seals	EPDM Double O-rings
	Characterizing Disk	Amodel®
Close-Off		200 PSI
Compliance CRN		OC16910.5

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

SoftTouch 2 - Piping and Installation Tips

2-Way Piping Schematics



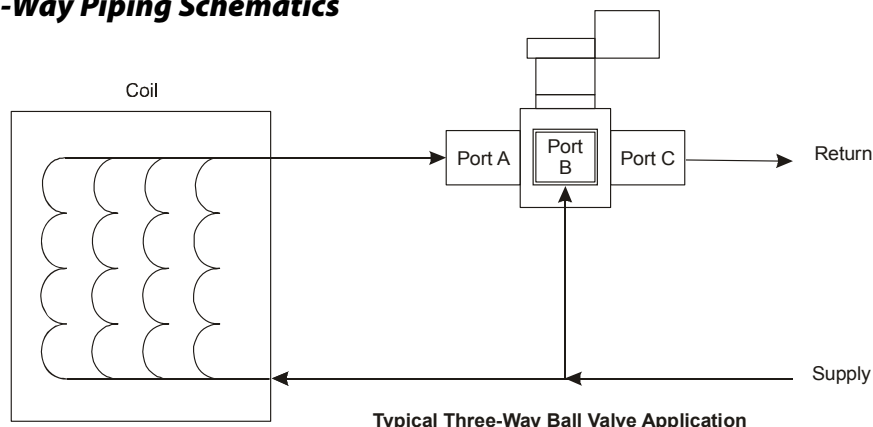
Note: Mount the valve downstream from the coil to minimize heat transfer to the actuator.

2-Way - Default Configuration for ST2 Ball Valves

Valve Position at Actuator Position	2-Way Non Spring Return	2-Way Spring Return N.O	2-Way Spring Return N.C.
Valve Position w/ Act CCW	Open	Open	Open
Valve position w/Act CW	Closed	Closed	Closed
Valve Position w power removed	Last Position	Open	Closed
Proportional actuator control signal Action (Direct Acting)*	CCW at 0; CW at Max	CCW at 0, CW at Max	CW at 0, CCW at Max

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

3-Way Piping Schematics



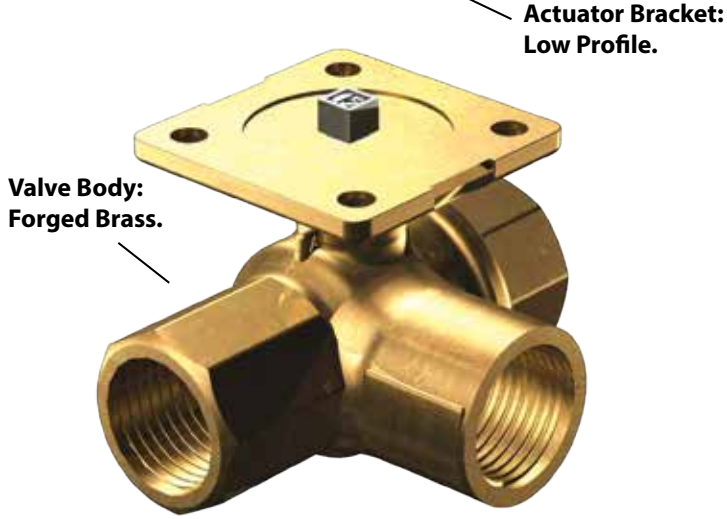
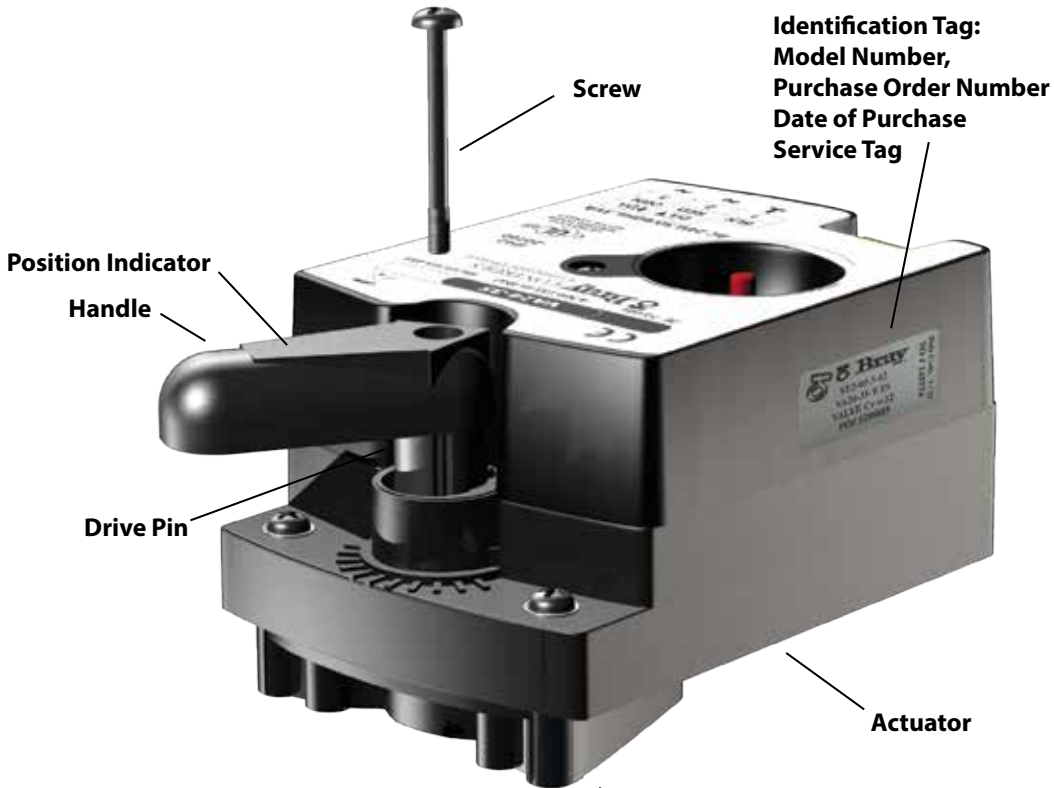
Note: Mount the valve downstream from the coil to minimize heat transfer to the actuator. For pure diverting applications (one inlet/two outlets), only the standard port (no characterization disc) versions will work.

3-Way - Default Configuration for ST2 Ball Valves

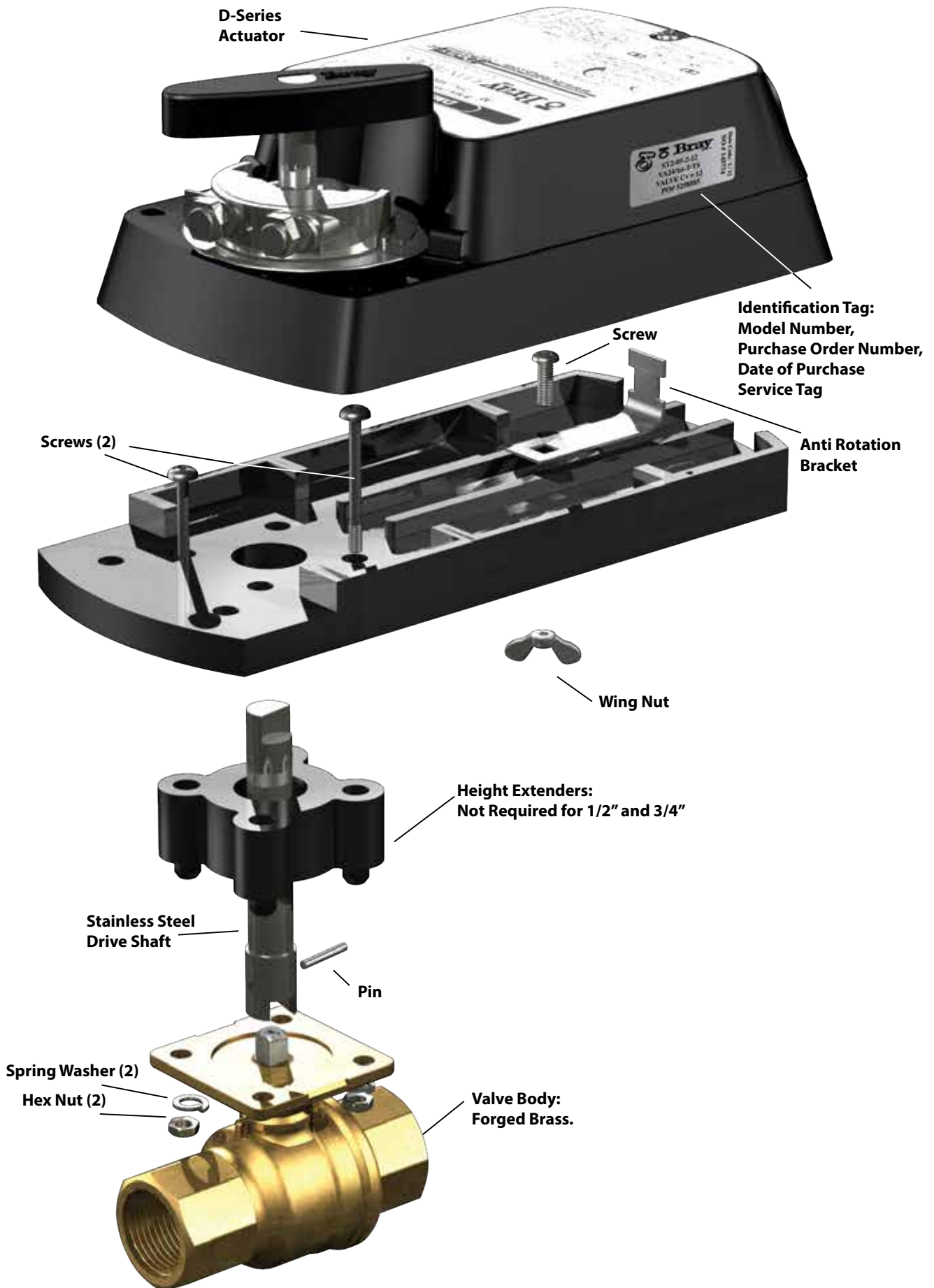
Valve Position at Actuator Position	3-Way Non Spring Return	3-Way Spring Return N.O	3-Way Spring Return N.C.
Valve Position w/ Act CCW	A open to C	A open to C	A open to C
Valve position w/Act CW	B open to C	B open to C	B open to C
Valve Position w power removed	Last Position	A open to C	B open to C
Proportional actuator control signal Action (Direct Acting)*	CCW at 0; CW at Max	CCW at 0, CW at Max	CW at 0, CCW at Max

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

SoftTouch 2 - Exploded View - Direct Mount Actuators



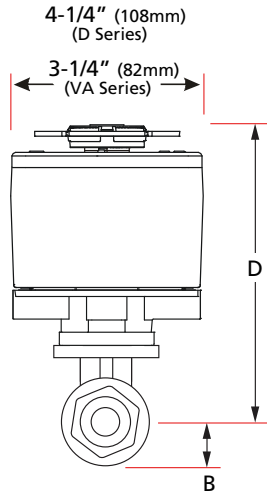
SoftTouch 2 - Exploded View - Universal Mount (D-Series) Actuators



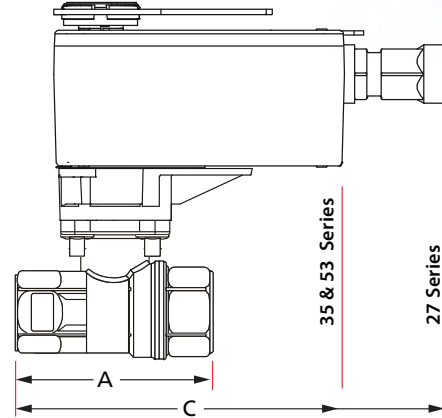
SoftTouch 2 - 2-Way Dimensions



VAS27, VA35 & D53-Series



Shown without Thermal Barrier



ST2 Dimensions - 2-Way - VAS 27 Series

Direct Mount	ST2 VALVE MODEL # PREFIX ST2 Size-Way-Cv	Connection		Available Cv's	Please reference the illustration									
		in.	mm		A		B		C		D*		Weight	
					in.	mm	in.	mm	in.	mm	in.	mm	lb	kg
	ST2-05-2-...	1/2	15	0.46, 0.73, 1.2, 1.9, 2.9, 4.7, 11.7	2-1/2	64	5/8	17	6-31/32	177	4-5/8	117.3	3.0	1.4
	ST2-75-2-...	3/4	20	4.7, 7.4, 11.7	2-13/16	71	5/8	17	7-1/8	181	4-5/8	117.3	3.1	1.4
	ST2-1-2-...	1	25	7.4, 11.7, 18.7	3-7/16	87	3/4	19	7-31/64	190	4-11/16	119.0	3.4	1.5
	ST2-125-2-...	1-1/4	32	11.7, 18.7, 29.2	3-15/16	101	1	26	7-3/4	197	5-9/64	130.3	5.7	2.6
	ST2-150-2-...	1-1/2	40	18.7, 29.2, 46.8	4-5/16	109	1-1/8	29	7-21/23	201	5-19/64	134.3	6.4	2.9
	ST2-2-2-...	2	50	29.2, 46.8, 73.7	4-7/8	124	1-1/2	37	8-1/4	209	5-17/32	140.3	8.1	3.7

ST2 Dimensions - 2-Way - VA 35 Series

Direct Mount	ST2 VALVE MODEL # PREFIX ST2 Size-Way-Cv	Connection		Available Cv's	Please reference the illustration									
		in.	mm		A		B		C		D*		Weight	
					in.	mm	in.	mm	in.	mm	in.	mm	lb	kg
	ST2-05-2-...	1/2	15	0.46, 0.73, 1.2, 1.9, 2.9, 4.7, 11.7	2-1/2	64	5/8	17	5-7/64	129	3-7/8	98	3.0	1.4
	ST2-75-2-...	3/4	20	4.7, 7.4, 11.7	2-13/16	71	5/8	17	5-7/32	133	3-7/8	98	3.1	1.4
	ST2-1-2-...	1	25	7.4, 11.7, 18.7	3-7/16	87	3/4	19	5-9/16	141	3-11/16	100	3.4	1.5
	ST2-125-2-...	1-1/4	32	11.7, 18.7, 29.2	3-15/16	101	1	26	5-13/16	148	4-3/8	111	5.7	2.6
	ST2-150-2-...	1-1/2	40	18.7, 29.2, 46.8	4-5/16	109	1-1/8	29	6-1/2	152	4-9/17	115	6.4	2.9
	ST2-2-2-...	2	50	29.2, 46.8, 73.7	4-7/8	124	1-1/2	37	6-1/3	160	4-3/4	121	8.1	3.7

ST2 Dimensions - 2-Way - D 53 Series

Universal Mount	ST2 VALVE MODEL # PREFIX ST2 Size-Way-Cv	Connection		Available Cv's	Please reference the illustration									
		in.	mm		A		B		C		D*		Weight	
					in.	mm	in.	mm	in.	mm	in.	mm	lb	kg
	ST2-125-2-...	1-1/4	32	11.7, 18.7, 29.2	3-15/16	100	1	26	7-7/8	175	6-7/16	164	5.7	2.6
	ST2-150-2-...	1-1/2	40	18.7, 29.2, 46.8	4-5/16	110	1-1/8	29	8-1/16	180	6-5/8	168	6.4	2.9
	ST2-2-2-...	2	50	29.2, 46.8, 73.7	4-13/16	123	1-1/2	38	8-5/16	186	6-3/4	171	8.1	3.7

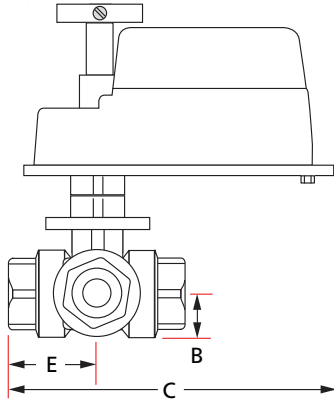
Dimensions may vary, depending on the actuator.
Weights shown are for valve bodies only.
Allow 3-1/2" clearance for actuator removal.

Dimensions are shown in inches and are approximate.
* Add 1-3/4" additional height for High Temp mounting kit. (-HT)

SoftTouch 2 - 3-Way Dimensions

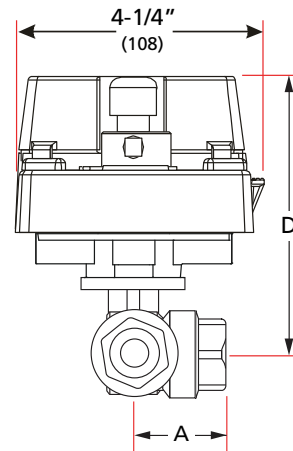
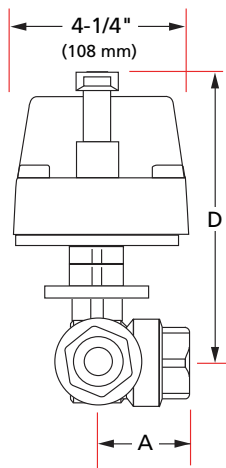
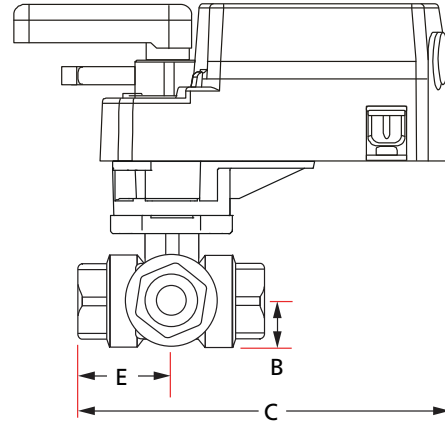


**Universal Mount
D-Series**



Shown without
Thermal Barrier

**Direct Mount
VA-Series**



ST2 Dimensions - 3-Way

	ST2 VALVE MODEL # PREFIX ST2 Size-Way-Cv	Connection		Available Cv's	Please reference the illustration											
		in.	mm		A		B		C		D*		E		Weight	
					in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lb	kg
Direct Mount	ST2-05-3-...	1/2	15	1.2, 1.9, 2.9, 4.7, 11.7	1-1/4	32	5/8	16	6-3/4	172	4-5/8	118	1-1/4	32	3.0	1.4
	ST2-75-3-...	3/4	20	4.7, 7.4, 11.7	1-13/32	36	5/8	16	6-15/16	176	4-5/8	118	1-3/8	36	3.2	1.5
	ST2-1-3-...	1	25	7.4, 11.7, 18.7	1-11/16	43	3/4	19	7-3/16	183	4-11/16	119	1-11/16	43	3.3	1.5
	ST2-125-3-...	1-1/4	32	11.7, 18.7, 29.2	1-15/16	49	1	26	7-1/2	191	5-1/8	130	1-15/16	50	6.1	2.8
	ST2-150-3-...	1-1/2	40	18.7, 29.2, 46.8	2-1/4	57	1-1/8	29	7-13/16	198	5-3/16	148	2-3/16	55	6.9	3.1
	ST2-2-3-...	2	50	29.2, 46.8, 73.7	2-5/8	67	1-3/8	35	8-3/8	213	5-3/8	137	2-7/16	62	9.5	4.3
Universal Mount	ST2-125-3-...	1-1/4	32	11.7, 18.7, 29.2	2	51	1	26	7-7/8	175	6-7/16	164	1-15/16	50	5.0	2.3
	ST2-150-3-...	1-1/2	40	18.7, 29.2, 46.8	2-1/8	54	1-1/8	29	8-1/16	180	6-5/8	168	2-3/16	55	5.8	2.6
	ST2-2-3-...	2	50	29.2, 46.8, 73.7	2-9/16	65	1-1/2	38	8-5/16	186	6-3/4	171	2-7/16	62	7.7	3.5

Dimensions may vary, depending on the actuator.
Weights shown are for valve bodies only.
Allow 3-1/2" clearance for actuator removal.

Dimensions are shown in inches and are approximate.
* Add 1-3/4" additional height for High Temp mounting kit. (-HT)
Dimensions are shown for the largest spring return actuator currently available.

SoftTouch 2 - Valve Sizing Steps

STEP ONE Determine the designed Cv by using the following equation.

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

Where

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

NOTES

* Specific gravity is negligible (equal to 1) for water below 200°F. Use actual specific gravity of pure fluids other than water. In most cases, the valve selected for a H₂O mixture will not be affected by the specific gravity.

EXAMPLE

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

$$\frac{1}{\text{Specific Gravity}} = \frac{0.5}{1.0} + \frac{0.5}{1.113} = 1.05$$

$$\frac{1}{G_{\text{soln}}} = \frac{\text{wt\% of Compound 1}}{\text{Specific Gravity (G)}} + \frac{\text{wt\% of Compound 2}}{\text{Specific Gravity (G)}}$$

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

OPTION 1

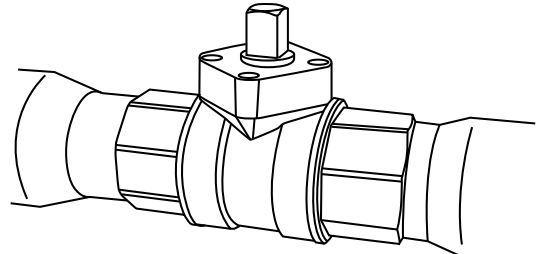
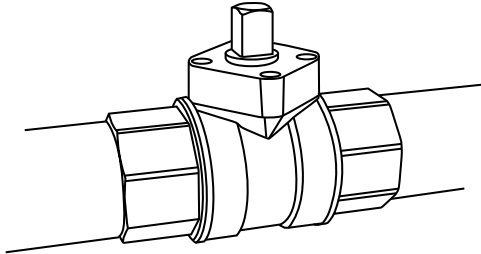
LINE SIZE

Go to page S2-9, ST2 Series Quick Reference Charts. Using the line size, find a valve of the same size with a Cv that best matches the one calculated in Step 1.

OPTION 2

SIZE FOR PRECISE CONTROL

Go to pages S2-10 (2-Way or 3-Way), ST2 Series Piping Geometry Charts. Find the line size at the top of the chart. Scan down the page to the Cv that best matches the one calculated in Step 1.



STEP THREE Determine the actual pressure drop using the below equation.

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

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

STEP FOUR Check to be sure that the close-off requirements are met. Refer to Page S2-11 - S2-14.

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

SoftTouch 2 - GPM - Quick Reference Sizing and Selection Table

2-WAY - GPM - Quick Reference Sizing Chart

VALVE SIZE	MODEL NO.	FULL PORT	Cv 1.0	DIFFERENTIAL PRESSURE (PSI)									
				1.5	2.0	2.5	3.0Δ	3.5Δ	4.0Δ	4.5Δ	5.0Δ	7.0	10.0
1/2"	ST2-05-2-005		0.46	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.0	1.2	1.5
	ST2-05-2-007		0.73	0.9	1.0	1.2	1.3	1.4	1.5	1.5	1.6	1.9	2.3
	ST2-05-2-01		1.2	1.5	1.7	1.9	2.1	2.2	2.4	2.5	2.7	3.2	3.8
	ST2-05-2-02		1.9	2.3	2.7	3.0	3.3	3.6	3.8	4.0	4.2	5.0	6.0
	ST2-05-2-03		2.9	3.6	4.1	4.6	5.0	5.4	5.8	6.2	6.5	7.7	9.2
	ST2-05-2-05		4.7	5.8	6.6	7.4	8.1	8.8	9.4	10.0	10.5	12.4	14.9
3/4"	ST2-05-2-12	●	11.7	14.3	16.5	18.5	20.3	21.9	23.4	24.8	26.2	31.0	37.0
	ST2-75-2-05		4.7	5.8	6.6	7.4	8.1	8.8	9.4	10.0	10.5	12.4	14.9
	ST2-75-2-07		7.4	9.1	10.5	11.7	12.8	13.8	14.8	15.7	16.5	19.6	23.4
1"	ST2-75-2-12	●	11.7	14.3	16.5	18.5	20.3	21.9	23.4	24.8	26.2	31.0	37.0
	ST2-1-2-07		7.4	9.1	10.5	11.7	12.8	13.8	14.8	15.7	16.5	19.6	23.4
	ST2-1-2-12		11.7	14.3	16.5	18.5	20.3	21.9	23.4	24.8	26.2	31.0	37.0
1-1/4"	ST2-1-2-19	●	18.7	22.9	26.4	29.6	32.4	35.0	37.4	39.7	41.8	49.5	59.1
	ST2-125-2-12		11.7	14.3	16.5	18.5	20.3	21.9	23.4	24.8	26.2	31.0	37.0
	ST2-125-2-19		18.7	22.9	26.4	29.6	32.4	35.0	37.4	39.7	41.8	49.5	59.1
1-1/2"	ST2-125-2-29	●	29.2	35.8	41.3	46.2	50.6	54.6	58.4	61.9	65.3	77.3	92.3
	ST2-150-2-19		18.7	22.9	26.4	29.6	32.4	35.0	37.4	39.7	41.8	49.5	59.1
	ST2-150-2-29		29.2	35.8	41.3	46.2	50.6	54.6	58.4	61.9	65.3	77.3	92.3
2"	ST2-150-2-47	●	46.8	57.3	66.2	74.0	81.1	87.6	93.6	99.3	104.6	123.8	148.0
	ST2-2-2-29		29.2	35.8	41.3	46.2	50.6	54.6	58.4	61.9	65.3	77.3	92.3
	ST2-2-2-47		46.8	57.3	66.2	74.0	81.1	87.6	93.6	99.3	104.6	123.8	148.0
2"	ST2-2-2-74	●	73.7	90.3	104.2	116.5	127.7	137.9	147.4	156.3	164.8	195.0	233.1

* Cv is the gallons per minute of water that the valve will pass with 1 PSI pressure drop.
 Δ 3-5 PSI is typically the preferred pressure drop in a modulating application.

3-WAY - GPM - Quick Reference Sizing Chart

VALVE SIZE	MODEL NO.	FULL PORT	Cv 1.0	DIFFERENTIAL PRESSURE (PSI)									
				1.5	2.0	2.5	3.0Δ	3.5Δ	4.0Δ	4.5Δ	5.0Δ	7.0	10.0
1/2"	ST2-05-3-01		1.2	1.5	1.7	1.9	2.1	2.2	2.4	2.5	2.7	3.2	3.8
	ST2-05-3-02		1.9	2.3	2.7	3.0	3.3	3.6	3.8	4.0	4.2	5.0	6.0
	ST2-05-3-03		2.9	3.6	4.1	4.6	5.0	5.4	5.8	6.2	6.5	7.7	9.2
	ST2-05-3-05		4.7	5.8	6.6	7.4	8.1	8.8	9.4	10.0	10.5	12.4	14.9
	ST2-05-3-12	●	11.7	14.3	16.5	18.5	20.3	21.9	23.4	24.8	26.2	31.0	37.0
3/4"	ST2-75-3-05		4.7	5.8	6.6	7.4	8.1	8.8	9.4	10.0	10.5	12.4	14.9
	ST2-75-3-07		7.4	9.1	10.5	11.7	12.8	13.8	14.8	15.7	16.5	19.6	23.4
	ST2-75-3-12	●	11.7	14.3	16.5	18.5	20.3	21.9	23.4	24.8	26.2	31.0	37.0
1"	ST2-1-3-07		7.4	9.1	10.5	11.7	12.8	13.8	14.8	15.7	16.5	19.6	23.4
	ST2-1-3-12		11.7	14.3	16.5	18.5	20.3	21.9	23.4	24.8	26.2	31.0	37.0
	ST2-1-3-19	●	18.7	22.9	26.4	29.6	32.4	35.0	37.4	39.7	41.8	49.5	59.1
1-1/4"	ST2-125-3-12		11.7	14.3	16.5	18.5	20.3	21.9	23.4	24.8	26.2	31.0	37.0
	ST2-125-3-19		18.7	22.9	26.4	29.6	32.4	35.0	37.4	39.7	41.8	49.5	59.1
	ST2-125-3-29	●	29.2	35.8	41.3	46.2	50.6	54.6	58.4	61.9	65.3	77.3	92.3
1-1/2"	ST2-150-3-19		18.7	22.9	26.4	29.6	32.4	35.0	37.4	39.7	41.8	49.5	59.1
	ST2-150-3-29		29.2	35.8	41.3	46.2	50.6	54.6	58.4	61.9	65.3	77.3	92.3
	ST2-150-3-47	●	46.8	57.3	66.2	74.0	81.1	87.6	93.6	99.3	104.6	123.8	148.0
2"	ST2-2-3-29		29.2	35.8	41.3	46.2	50.6	54.6	58.4	61.9	65.3	77.3	92.3
	ST2-2-3-47		46.8	57.3	66.2	74.0	81.1	87.6	93.6	99.3	104.6	123.8	148.0
	ST2-2-3-74	●	73.7	90.3	104.2	116.5	127.7	137.9	147.4	156.3	164.8	195.0	233.1

* Cv is the gallons per minute of water that the valve will pass with 1 PSI pressure drop.
 Δ 3-5 PSI is typically the preferred pressure drop in a modulating application.

SoftTouch 2 - Adjusted Cv Charts for Piping Geometry Factor(Fp)

2-WAY - PIPING GEOMETRY CHART - Adjusted Cv									
Valve Size	Valve Model Number	Nominal Cv	Pipe Size						
			3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
1/2"	ST2-05-2-005	0.46	.46	.46	---	---	---	---	---
	ST2-05-2-007	0.73	.73	.73	---	---	---	---	---
	ST2-05-2-01	1.2	1.2	1.2	---	---	---	---	---
	ST2-05-2-02	1.9	1.9	1.9	---	---	---	---	---
	ST2-05-2-03	2.9	2.8	2.8	---	---	---	---	---
	ST2-05-2-05	4.7	4.4	4.3	---	---	---	---	---
	ST2-05-2-12	11.7	8.8	7.6	---	---	---	---	---
3/4"	ST2-75-2-05	4.7	---	4.7	4.6	---	---	---	---
	ST2-75-2-07	7.4	---	7.3	7.1	---	---	---	---
	ST2-75-2-12	11.7	---	11.2	10.7	---	---	---	---
1"	ST2-1-2-07	7.4	---	---	7.4	7.3	---	---	---
	ST2-1-2-12	11.7	---	---	11.6	11.4	---	---	---
	ST2-1-2-19	18.7	---	---	18.2	17.7	---	---	---
1-1/4"	ST2-125-2-12	11.7	---	---	---	11.7	11.6	---	---
	ST2-125-2-19	18.7	---	---	---	18.6	18.2	---	---
	ST2-125-2-29	29.2	---	---	---	28.7	27.3	---	---
1-1/2"	ST2-150-2-19	18.7	---	---	---	---	18.6	18.4	---
	ST2-150-2-29	29.2	---	---	---	---	28.7	28.1	---
	ST2-150-2-47	46.8	---	---	---	---	44.8	42.8	---
2"	ST2-2-2-29	29.2	---	---	---	---	---	29.1	28.9
	ST2-2-2-47	46.8	---	---	---	---	---	46.3	45.7
	ST2-2-2-74	73.7	---	---	---	---	---	72.0	69.7

EXAMPLE What is the correct Cv rating for a (1") ST2-1-2-19 valve when placed on a 1-1/2" pipe?
 First go to the 1-1/2" pipe column and follow this down until you reach the ST2-1-2-19 row
 The value where they meet is the corrected Cv rating, which is 17.7.

SoftTouch 2 - Adjusted Cv Charts for Piping Geometry Factor(Fp)

3-WAY - PIPING GEOMETRY CHART - Adjusted Cv									
Valve Size	Valve Model Number	Nominal Cv	Pipe Size						
			3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
1/2"	ST2-05-3-01	1.2	1.2	1.2	---	---	---	---	---
	ST2-05-3-02	1.9	1.9	1.9	---	---	---	---	---
	ST2-05-3-03	2.9	2.8	2.8	---	---	---	---	---
	ST2-05-3-05	4.7	4.4	4.3	---	---	---	---	---
	ST2-05-3-12	11.7	8.8	7.6	---	---	---	---	---
3/4"	ST2-75-3-05	4.7	---	4.7	4.6	---	---	---	---
	ST2-75-3-07	7.4	---	7.3	7.1	---	---	---	---
	ST2-75-3-12	11.7	---	11.2	10.7	---	---	---	---
1"	ST2-1-3-07	7.4	---	---	7.4	7.3	---	---	---
	ST2-1-3-12	11.7	---	---	11.6	11.4	---	---	---
	ST2-1-3-19	18.7	---	---	18.2	17.7	---	---	---
1-1/4"	ST2-125-3-12	11.7	---	---	---	11.7	11.6	---	---
	ST2-125-3-19	18.7	---	---	---	18.6	18.2	---	---
	ST2-125-3-29	29.2	---	---	---	28.7	27.3	---	---
1-1/2"	ST2-150-3-19	18.7	---	---	---	---	18.6	18.4	---
	ST2-150-3-29	29.2	---	---	---	---	28.7	28.1	---
	ST2-150-3-47	46.8	---	---	---	---	44.8	42.8	---
2"	ST2-2-3-29	29.2	---	---	---	---	---	29.1	28.9
	ST2-2-3-47	46.8	---	---	---	---	---	46.3	45.7
	ST2-2-3-74	73.7	---	---	---	---	---	72.0	69.7

EXAMPLE What is the correct Cv rating for a (1-1/2") ST2-125-3-19 valve when placed on a 2" pipe?
 First go to the 2" pipe column and follow this down until you reach the ST2-125-3-19 row
 The value where they meet is the corrected Cv rating, which is 18.6.

SoftTouch 2 - 2-Way - Non Spring Return Close-Off Chart (PSI)

2-WAY - Non Spring Return - Close-Off Chart (PSI)								
Actuators			24 VAC On/Off or Floating		Modulating			
Control Input								
2-wire On/Off			■*	■	■			
3-wire On/Off or Floating			■	■				
3-wire On/Off or Floating with Time Out				■				
Proportional with Feedback					■	■		
Auxiliary Switches				■		■		
Wiring Connections					■	■		
Enclosed Terminal Strip					■	■		
Conduit Size - Flex(F)/NPT(N)			3/8 F	3/8 F	1/2 N	3/8	1/2 N	
Plenum Rated Leads			■	■		■		
Direct Mount			■	■		■		
Actuator Model No.			VA24-35-P	VA24-35-PTO	D24-53-TA	VAM24-35-P	DM24-53-A	
SIZE NPT	Flow Coefficient		MODEL #					
	Cv	Kv						
1/2"	0.46	0.4	ST2-05-2-005	200	200		200	
	0.73	0.6	ST2-05-2-007	200	200		200	
	1.2	1.0	ST2-05-2-01	200	200		200	
	1.9	1.6	ST2-05-2-02	200	200		200	
	2.9	2.5	ST2-05-2-03	200	200		200	
	4.7	4.1	ST2-05-2-05	200	200		200	
	11.7*	10.1	ST2-05-2-12	200	200		200	
3/4"	4.7	4.1	ST2-75-2-05	200	200		200	
	7.4	6.4	ST2-75-2-07	200	200		200	
	11.7*	10.1	ST2-75-2-12	200	200		200	
1"	7.4	6.4	ST2-1-2-07	200	200		200	
	11.7	10.1	ST2-1-2-12	200	200		200	
	18.7*	16.2	ST2-1-2-19	200	200		200	
1-1/4"	11.7	10.1	ST2-125-2-12	200	200	200	200	200
	18.7	16.2	ST2-125-2-19	200	200	200	200	200
	29.2*	25.3	ST2-125-2-29	200	200	200	200	200
1-1/2"	18.7	16.2	ST2-150-2-19	200	200	200	200	200
	29.2	25.3	ST2-150-2-29	200	200	200	200	200
	46.8*	40.5	ST2-150-2-47	200	200	200	200	200
2"	29.2	25.3	ST2-2-2-29	200	200	200	200	200
	46.8	40.5	ST2-2-2-47	200	200	200	200	200
	73.7*	63.8	ST2-2-2-74	200	200	200	200	200

Refer to the Actuator Section for a list of actuators with additional options (i.e. auxiliary switches etc.)

Add "HT" to the end of the valve body part number for the High Temperature mounting option. (VA series only)

* Round Port Valve- No characterizing disc.

• Relay Required



Key ST2-05-2-01	ST2	05	2	01	
	SoftTouch Valve Series	Size (in.)	Configuration	Cv	
			2 = 2 Way		
			3 = 3 Way		

SoftTouch 2 - 2-Way - Spring Return Close-Off Chart (PSI)

2-WAY - Spring Return - Close-Off Chart (PSI)				120 VAC On/Off	24 VAC On/Off	24 VAC Floating	Modulating
Actuators							
Control Input							
2-wire On/Off				■	■	■	
3-wire or Floating						■	
Proportional with Feedback							■
Optional Auxiliary Switches Available				■	■	■	■
Wiring Connections							
NPT Conduit Fitting				1/2	1/2	1/2	1/2
Plenum Rated Leads						■	■
Actuator Model No.							
SIZE NPT	Flow Coefficient		MODEL #	VASU20-27	VAS24-27	VAS24-27-T	VAMS24-27
	Cv	Kv					
1/2"	0.46	0.4	ST2-05-2-005_	200	200	200	200
	0.73	0.6	ST2-05-2-007_	200	200	200	200
	1.2	1.0	ST2-05-2-01_	200	200	200	200
	1.9	1.6	ST2-05-2-02_	200	200	200	200
	2.9	2.5	ST2-05-2-03_	200	200	200	200
	4.7	4.1	ST2-05-2-05_	200	200	200	200
	11.7*	10.1	ST2-05-2-12_	200	200	200	200
3/4"	4.7	4.1	ST2-75-2-05_	200	200	200	200
	7.4	6.4	ST2-75-2-07_	200	200	200	200
	11.7*	10.1	ST2-75-2-12_	200	200	200	200
1"	7.4	6.4	ST2-1-2-07_	200	200	200	200
	11.7	10.1	ST2-1-2-12_	200	200	200	200
	18.7*	16.2	ST2-1-2-19_	200	200	200	200
1-1/4"	11.7	10.1	ST2-125-2-12_	200	200	200	200
	18.7	16.2	ST2-125-2-19_	200	200	200	200
	29.2*	25.3	ST2-125-2-29_	200	200	200	200
1-1/2"	18.7	16.2	ST2-150-2-19_	200	200	200	200
	29.2	25.3	ST2-150-2-29_	200	200	200	200
	46.8*	40.5	ST2-150-2-47_	200	200	200	200
2"	29.2	25.3	ST2-2-2-29_	200	200	200	200
	46.8	40.5	ST2-2-2-47_	200	200	200	200
	73.7*	63.8	ST2-2-2-74_	200	200	200	200

C = Normally Closed, otherwise Normally Open

Refer to the Actuator Section for a list of actuators with additional options (i.e. auxiliary switches etc.)

Add "HT" to the end of the valve body part number for the High Temperature mounting option. (VAS series only)

* Round Port Valve- No characterizing disc.

• Relay Required



Key ST2-05-2-01	ST2	05	2	01	C
	SoftTouch Valve Series	Size (in.)	Configuration 2 = 2 Way 3 = 3 Way	Cv	C=Closed otherwise no indicator shown

SoftTouch 2 - 3-Way - Non Spring Return Close-Off Chart (PSI)

3-WAY - Non Spring Return - Close-Off Chart (PSI)									
Actuators				24 VAC On/Off or Floating				Modulating	
Control Input		2-wire On/Off		■*	■	■*	■		
		3-wire On/Off or Floating		■	■	■	■		■
		3-wire on/off or Floating with Time Out							■
		Proportional with Feedback						■	■
Optional Auxiliary Switches Available									
Wiring Connections		Enclosed Terminal Strip				■	■		
		Conduit Size - Flex(F)/NPT(N)		3/8 F	3/8 F	1/2 N	1/2 N	3/8 F	1/2 N
		Plenum Rated Leads		■	■			■	■
		Direct Mount		■	■			■	■
Actuator Model No.									
SIZE NPT	Flow Coefficient		MODEL #	VA24-35-P	VA24-35-PTO	D24-53-T	D24-70	VAM24-35-P	VAM24-90-PTO
	Cv	Kv							
1/2"	1.2	1.0	ST2-05-3-01	200	200			200	
	1.9	1.6	ST2-05-3-02	200	200			200	
	2.9	2.5	ST2-05-3-03	200	200			200	
	4.7	4.1	ST2-05-3-05	200	200			200	
	11.7*	10.1	ST2-05-3-12	200	200			200	
3/4"	4.7	4.1	ST2-75-3-05	200	200			200	
	7.4	6.4	ST2-75-3-07	200	200			200	
	11.7*	10.1	ST2-75-3-12	200	200			200	
1"	7.4	6.4	ST2-1-3-07	200	200			200	
	11.7	10.1	ST2-1-3-12	200	200			200	
	18.7*	16.2	ST2-1-3-19	200	200			200	
1-1/4"	11.7	10.1	ST2-125-3-12			200			200
	18.7	16.2	ST2-125-3-19			200			200
	29.2*	25.3	ST2-125-3-29			200			200
1-1/2"	18.7	16.2	ST2-150-3-19			200			200
	29.2	25.3	ST2-150-3-29			200			200
	46.8*	40.5	ST2-150-3-47			200			200
2"	29.2	25.3	ST2-2-3-29				200		200
	46.8	40.5	ST2-2-3-47				200		200
	73.7*	63.8	ST2-2-3-74				200		200

Refer to the Actuator Section for a list of actuators with additional options (i.e. auxiliary switches etc.)

Add "HT" to the end of the valve body part number for the High Temperature mounting option. (VA series only)

Bypass Port Cv has a characterizing disk.

* Round Port Valve- No characterizing disc.

• Relay Required



Key ST2-1-3-12	ST2	1	3	12	
	SoftTouch Valve Series	Size (in.)	Configuration	Cv	
		2 = 2 Way	3 = 3 Way		

SoftTouch 2 - 3-Way - Spring Return Close-Off Chart (PSI)

3-WAY - Spring Return - Close-Off Chart (PSI)												
Actuators			120 On/Off		24 VAC On/Off		24 VAC Floating		Modulating			
Control Input			2-wire On/Off		■	■	■	■	■	■		
			3-wire or Floating						■	■		
			Proportional with Feedback								■	■
Optional Auxiliary Switches Available			■	■	■	■	■	■	■	■		
Wiring Connections			Conduit Size - Flex(F)/NPT(N)		1/2 N	3/8 F	1/2 N	3/8 F	1/2 N	3/8 F	1/2 N	3/8 F
			Plenum Rated Leads					■		■		
Actuator Model No.			VASU20	VAS120	VAS24	VAS24	VAS24	VAS24	VAMS24	VAMS24		
SIZE NPT	Flow Coefficient		MODEL #	-27	-70	-27	-70	-27-T	-70-T	-27	-70	
	Cv	Kv										
1/2"	1.2	1.0	ST2-05-3-01_	200		200		200		200		
	1.9	1.6	ST2-05-3-02_	200		200		200		200		
	2.9	2.5	ST2-05-3-03_	200		200		200		200		
	4.7	4.1	ST2-05-3-05_	200		200		200		200		
	11.7*	10.1	ST2-05-3-12_	200		200		200		200		
3/4"	4.7	4.1	ST2-75-3-05_	200		200		200		200		
	7.4	6.4	ST2-75-3-07_	200		200		200		200		
	11.7*	10.1	ST2-75-3-12_	200		200		200		200		
1"	7.4	6.4	ST2-1-3-07_	200		200		200		200		
	11.7	10.1	ST2-1-3-12_	200		200		200		200		
	18.7*	16.2	ST2-1-3-19_	200		200		200		200		
1-1/4"	11.7	10.1	ST2-125-3-12_		200		200		200		200	
	18.7	16.2	ST2-125-3-19_		200		200		200		200	
	29.2*	25.3	ST2-125-3-29_		200		200		200		200	
1-1/2"	18.7	16.2	ST2-150-3-19_		200		200		200		200	
	29.2	25.3	ST2-150-3-29_		200		200		200		200	
	46.8*	40.5	ST2-150-3-47_		200		200		200		200	
2"	29.2	25.3	ST2-2-3-29_		200		200		200		200	
	46.8	40.5	ST2-2-3-47_		200		200		200		200	
	73.7*	63.8	ST2-2-3-74_		200		200		200		200	

C = Normally Closed, otherwise Normally Open

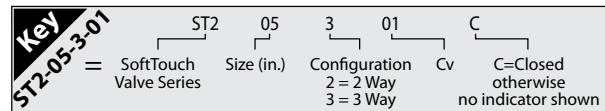
Refer to the Actuator Section for a list of actuators with additional options (i.e. auxiliary switches etc.)

Add "HT" to the end of the valve body part number for the High Temperature mounting option. (VAS series only)

Bypass Port Cv has a characterizing disk.

* Round Port Valve- No characterizing disc.

• Relay Required



SoftTouch 2 - Valve Comparison Chart

The Benefits of Ball Valves in Commercial Applications

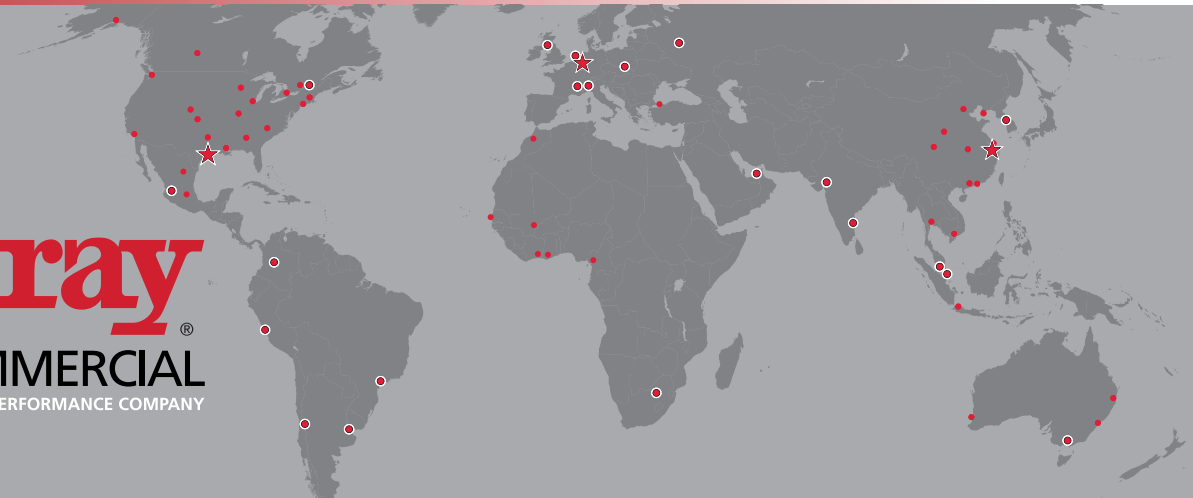
Ball valves are generally a superior alternative to globe valves where precise control is required. Ball valves tend to offer higher close-offs and rangeability ratios while providing smaller size, weights and costs. Ball valves also offer more Cv options in order to more closely match your specifications.

Bray offers two distinct lines that come in both threaded and flanged sizes. These characterized ball valves provide superior control characteristics, low torque requirements years of trouble free service and multiple actuator options.

NPT Threaded Comparative Specifications

	ST2 Series	BV Series
Valve Body Pressure Rating	580 PSI	1000 PSI
Max Water Temperature	284°F @ 36 PSI	225°F @ 1000 PSI
Steam	15 PSIG	150 PSIG
Max Recommended Operating Pressure Drop	50 PSI	80 PSI
Leakage	0.01%	Bubble Tight

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



**BRAY INTERNATIONAL
PRIMARY SALES AND SERVICE LOCATIONS**

USA Houston, Texas	CHINA Hangzhou, Zhejiang	MEXICO Zapopan, Jalisco	RUSSIA Moscow
AFRICA Johannesburg	COLOMBIA Bogotá	MIDDLE EAST Dubai	SINGAPORE Ubi Techpark
BENELUX Heerhugowaard	FRANCE Voiron	PACIFIC Melbourne, Australia	SOUTH KOREA Seoul
BRAZIL Paulinia, Sao Paulo	GERMANY Krefeld	PERU Lima	SOUTHEAST ASIA Malaysia
CANADA Montreal	INDIA Vadodara	POLAND Oświęcim	UNITED KINGDOM Glasgow
CHILE Santiago	ITALY Milano		

FLOW-TEK

USA Houston, Texas
BRAZIL Paulinia, Sao Paulo
CHINA Hangzhou, Zhejiang

RITE CORPORATION

CANADA Montreal
VALVTRONIC
ARGENTINA Buenos Aires

AMRESIST

USA Houston, Texas

KUGELHAHN MÜLLER

GERMANY Krefeld



Bray Controls Commercial Division
13788 West Road, Suite 200A
Houston, Texas 77041

BCDSales@Bray.com
Phone: 1-888-412-2729
Fax: 1-888-412-2720
www.braycommercialdivision.com

All statements, technical information, and recommendations in this bulletin are for general use only. Consult Bray representatives or factory for the specific requirements and material selection for your intended application. The right to change or modify product design or product without prior notice is reserved. Patents issued and applied for worldwide.

Bray® is a registered trademark of BRAY INTERNATIONAL, Inc.
© 2018 Bray International. All rights reserved.