



# Simple and Effective, The Tri-Clover® Ball Valve

## 5308/5309 Series Ball Valves

### Application

Tri-Clover ball valves are ideal for applications requiring a full flow body design to minimize line turbulence and pressure drop. An encapsulated seat option is available for critical process applications requiring maximum reduction of potential for product entrapment.

### Standard Design

The Tri-Clover ball valve consists of a stainless steel body that houses a rotating ball. The rotating ball is sealed in the body with a PTFE seat that either partially or fully encapsulates the ball. The valve is activated by a stainless steel handle that opens and closes the valve through a quarter turn. The valve can also be operated by an optional ¼ turn pneumatic actuator. External thrust springs maintain constant pressure on the stem packing. The stem and packing design eliminate the possibility of the stem becoming dislodged or blown out.

### Actuator Function

- Pneumatic actuator air to air
- Pneumatic actuator air to spring

### Materials

Elastomers	PTFE (standard) Reinforced PTFE (optional)
Valve Body	.316L cast stainless steel
Handle	.304 stainless steel
Ball & Stem	.316L stainless steel
Actuators	Epoxy coated (standard)
Surface finish	.20 RA ID Stainless Steel (optional)
Actuator bracket, coupling and hardware	.304 stainless steel



5308 Ball Valve

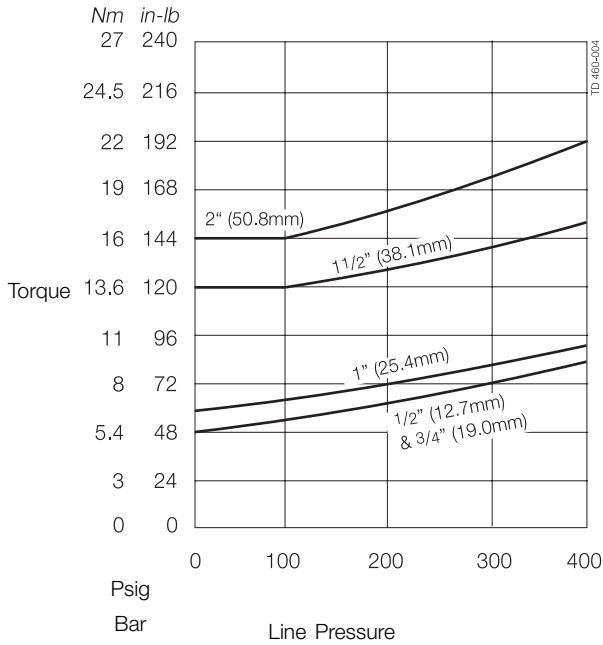
### Sizes

- Model 5308 (Tri-Clamp connections):**  
½" to 4" (12.7mm to 101.6mm) Tube OD (2 way)
- Model 5309 (Butt-Weld connections):**  
½" to 2" (12.7mm to 50.8mm) Tube OD (2 way)

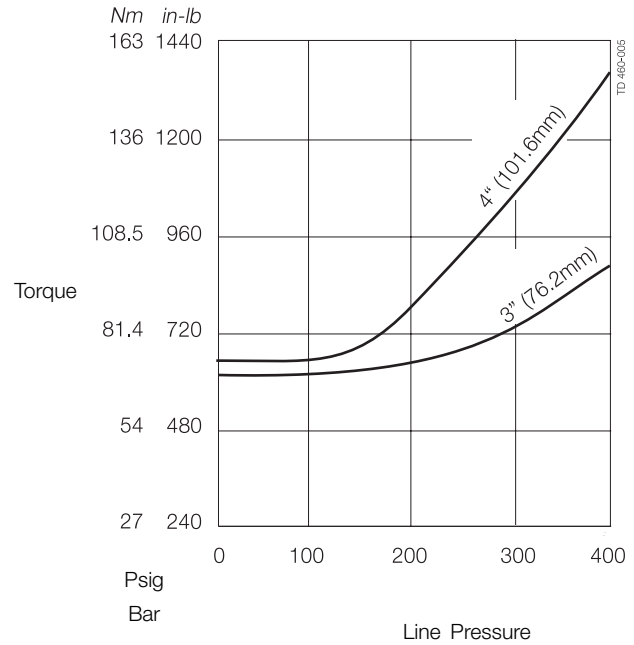
## Torque vs. Pressure

### Standard Seats

1/2" (12.7 mm) - 2" (50.8 mm) Tube OD

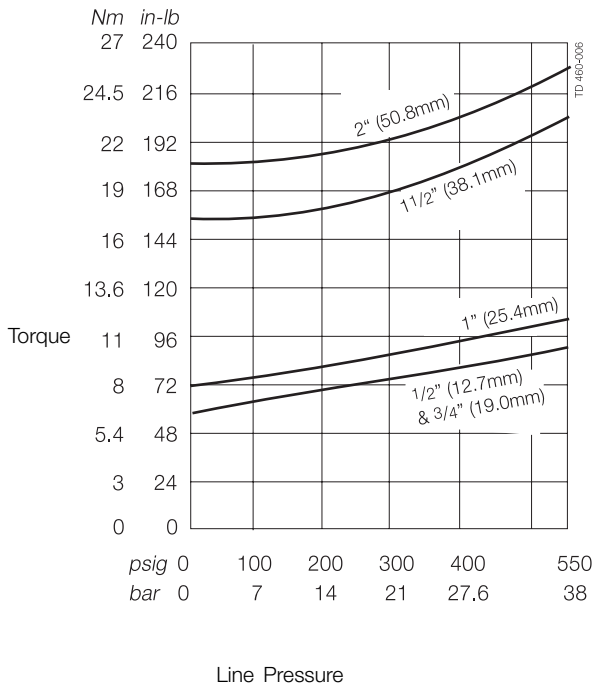


3" (76.2 mm) - 4" (101.68 mm) Tube OD

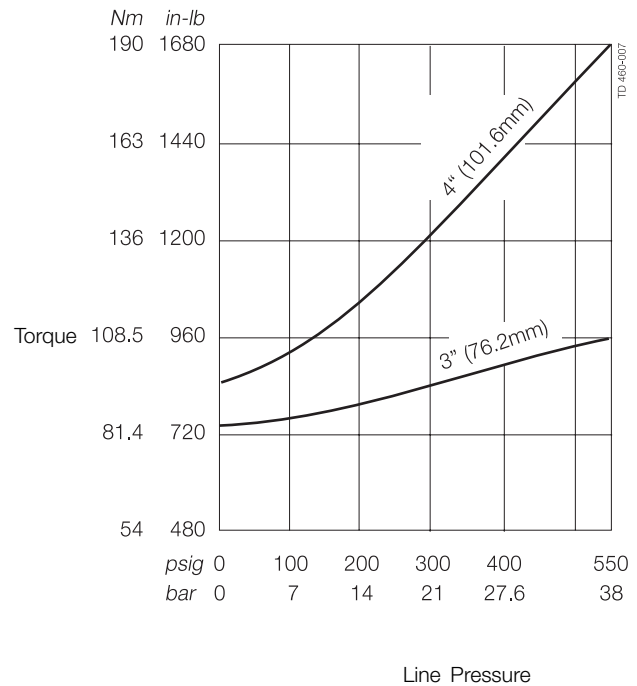


### Encapsulated Seats

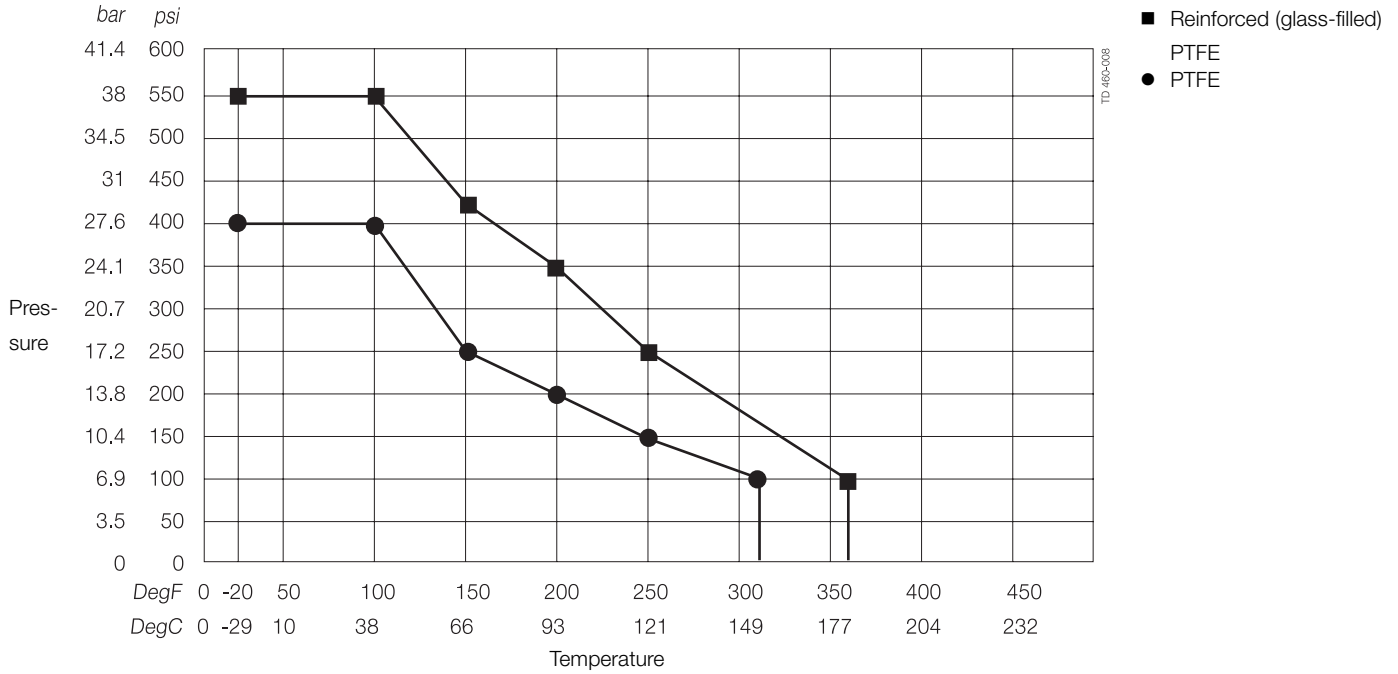
1/2" (12.7 mm) - 2" (50.8 mm) Tube OD



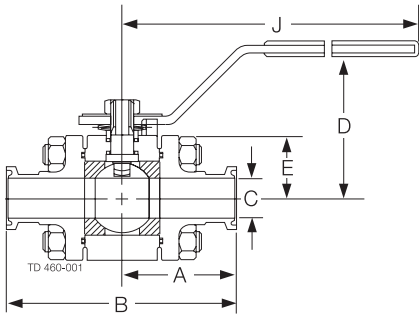
3" (76.2 mm) - 4" (101.68 mm) Tube OD



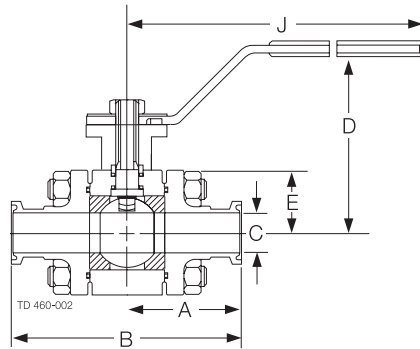
Use the charts above to determine the amount of torque required to cycle the ball valve.



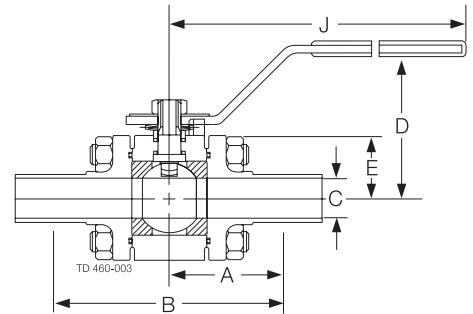
### Manual Valve Dimensions



Tri-Clamp® Ends  
Model 5308  
Sizes 1/2" - 2"



Tri-Clamp® Ends  
Model 5308  
Sizes 3" and 4"



Butt-Weld Ends  
Model 5309

Model	Size		A		B		C		D		E		J		Weight (valve + handle)	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	lb	kg
5308 Tri-Clamp® (both ends)	1/2	12.7	1.75	44.5	3.50	88.9	0.37	9.5	2.3	58.7	1.14	29.0	5.25	134	2	0.9
	3/4	19.0	1.75	44.5	3.50	88.9	0.63	15.9	2.4	61.9	1.14	29.0	5.25	134	2	0.9
	1	25.4	1.75	44.5	3.50	88.9	0.84	21.4	2.3	58.7	1.30	33.0	5.25	134	3	1.4
	1 1/2	38.1	2.25	57.2	4.50	114.3	1.36	34.5	3.8	95.3	1.57	40.0	6.69	170	6	2.7
	2	50.8	2.50	63.5	5	127.0	1.86	47.2	4.1	104.8	2.19	55.5	8.15	207	10	4.5
	3	76.2	3.87	98.4	7.75	196.9	2.86	72.6	7	177.8	4.56	115.5	11.75	298.4	30	13.6
5309 Butt-Weld (both ends)	1/2	12.7	2.69	68.3	5.37	136.5	0.37	9.5	2.3	58.7	1.14	29.0	5.75	134.0	2	0.9
	3/4	19.0	2.81	71.4	5.63	142.9	0.63	15.9	2.4	61.9	1.14	29.0	5.75	134.0	2	0.9
	1	25.4	3.22	81.8	6.44	163.5	0.84	21.4	2.3	58.7	1.30	33.0	5.75	134.0	3	1.4
	1 1/2	38.1	3.63	92.1	7.25	184.2	1.36	34.5	3.8	95.3	1.57	40.0	6.69	170.0	6	2.7
	2	50.8	3.19	81.0	7.63	193.7	1.86	47.2	4.1	104.8	2.19	55.5	8.15	207.0	10	4.5

## Valves with Pneumatic Actuators

Alfa Laval offers two types of pneumatic actuators, available in air-to-air or air-to-spring. Air-to-spring is available in normally open or normally-closed models. All models are offered with epoxy-coated aluminium alloy or optional 304 stainless steel housing. Pneumatic actuator air pressure requirements are:

Air-to-Air: 25 to 100 psi (1.7 to 6.9 bar)

Air-to-Spring: 80 to 100 psi (5.5 to 6.9 bar)

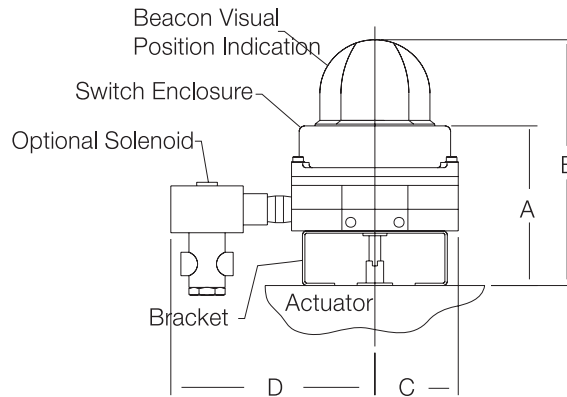
**Note:** Air pressure requirements are dependent upon the valve scope and operating conditions.

## Selection Tables for Pneumatic Actuators

Stainless Steel			
Valve Size	Type	Air Volume Req'd	NTP Air Connector Size
½" or ¾"	Air-to-Air	15.26 cu. in.	1/8"
1" or 1½"	Air-to-Air	15.26 cu. in.	1/8"
2"	Air-to-Air	36.60 cu. in.	1/8"
3" or 4"	Air-to-Air	67.12 cu. in.	1/8"
½"	Air-to-Spring	9.15 cu. in.	1/8"
¾", 1" or 1½"	Air-to-Spring	15.26 cu. in.	1/8"
2"	Air-to-Spring	27.46 cu. in.	1/8"
3" or 4"	Air-to-Spring	86.65 cu. in.	1/4"

Aluminum			
Valve Size	Type	Air Volume Req'd	NTP Air Connector Size
½" or ¾"	Air-to-Air	15.26 cu. in.	1/8"
1" or 1½"	Air-to-Air	15.26 cu. in.	1/8"
2"	Air-to-Air	36.60 cu. in.	1/8"
3" or 4"	Air-to-Air	67.12 cu. in.	1/8"
½"	Air-to-Spring	9.15 cu. in.	1/8"
Cv" or 1"	Air-to-Spring	9.15 cu. in.	1/8"
1Zx"	Air-to-Spring	15.26 cu. in.	1/8"
2"	Air-to-Spring	22.00 cu. in.	Z,"
3" or 4"	Air-to-Spring	86.65 cu. in.	ZV"

## Dimensions - Accord Switch Options



Model	A		B		C		D	
	inch	mm	inch	mm	inch	mm	inch	mm
NEMA 4, 4X, 7, 9 (Aluminum)	5.13	130.2	7.59	192.9	2.63	66.7	6.06	154.0
NEMA 4, 4X (Zytel)	5.13	130.2	7.59	192.9	2.31	58.7	4.06	103.2

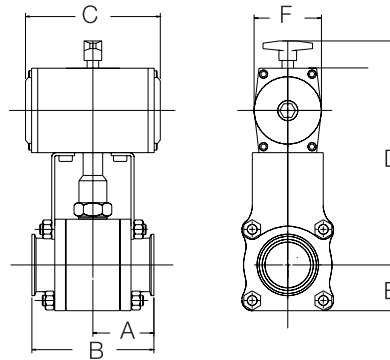
Optional: Two mechanical or proximity switches contained within the enclosure.

## Pneumatic Actuator Options

- A. All stainless steel and non-stainless, epoxy coated aluminum alloy actuators can be furnished with a basic switch enclosure. Specify either NEMA 4 or NEMA 7. The enclosure/bracket assembly is mounted on top of the actuator.
- B. Basic switch enclosure can be furnished with optional Pharos visual indicator.

- C. 3-way and 4-way solenoids can be mounted to basic switch enclosure. All wire connections are through a terminal strip, located inside the basic switch enclosure.

**Dimensions - Valves with Pneumatic Actuators**  
**Tri-Clamp® Connection**



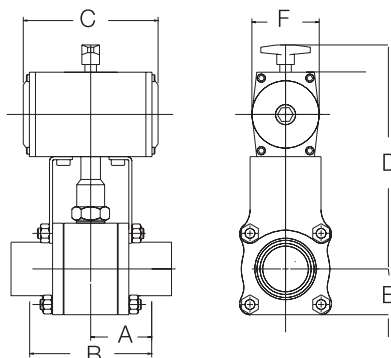
Air to Air Actuators (Aluminum or Stainless Steel)														
Model	Size		A		B		C		D		E		F	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
5308 Tri-Clamp® ends	½	12.7	1.75	44.5	3.50	88.9	4.25	107.9	5.62	142.8	0.91	23.0	3.00	76.0
	¾	19.0	1.75	44.5	3.50	88.9	4.25	107.9	5.69	144.4	0.97	24.6	3.00	76.0
	1	25.4	1.75	44.5	3.50	88.9	4.25	107.9	5.78	146.0	1.13	28.6	3.00	76.0
	1½	38.1	2.25	57.2	4.50	114.3	4.25	107.9	6.661	168.0	1.50	38.1	3.00	76.0
	2	50.8	2.50	63.5	5.00	127.0	5.24	133.0	8	203.0	1.87	47.6	2.75	69.8
	3	76.2	3.87	98.4	7.75	196.9	8.03	204.0	10.87	276.0	2.72	69.1	3.96	100.7
4	101.6	4.75	120.7	9.50	241.3	8.03	204.0	11.56	293.7	3.47	88.1	3.96	100.7	

Air to Spring Actuators (Aluminum)														
Model	Size		A		B		C		D		E		F	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
5308 Tri-Clamp® ends	½	12.7	1.75	44.5	3.50	88.9	4.25	107.9	5.62	142.8	0.91	23.0	3.00	76.0
	¾	19.0	1.75	44.5	3.50	88.9	7.00	177.8	6.50	165.0	0.97	24.6	3.62	92.0
	1	25.4	1.75	44.5	3.50	88.9	7.00	177.8	7.75	196.8	1.13	28.6	3.62	92.0
	1½	38.1	2.25	57.2	4.50	114.3	8.03	204.0	8.37	212.7	1.50	38.1	3.62	92.0
	2	50.8	2.50	63.5	5.00	127.0	8.03	204.0	8.81	223.8	1.87	47.6	3.96	100.7
	3	76.2	3.87	98.4	7.75	196.9	11.50	292.0	13.03	331.0	2.72	69.1	5.37	136.5
4	101.6	4.75	120.7	9.50	241.3	11.50	292.0	13.74	349.0	3.47	88.1	5.37	136.5	

Air to Spring Actuators (Stainless Steel)														
Model	Size		A		B		C		D		E		F	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
5308 Tri-Clamp® ends	½	12.7	1.75	44.5	3.50	88.9	4.25	107.9	5.62	142.8	0.91	23.0	3.00	76.0
	¾	19.0	1.75	44.5	3.50	88.9	7.00	177.8	7.75	196.8	0.97	24.6	3.62	92.0
	1	25.4	1.75	44.5	3.50	88.9	7.00	177.8	7.75	196.8	1.13	28.6	3.62	92.0
	1½	38.1	2.25	57.2	4.50	114.3	7.00	177.8	8.38	212.7	1.50	38.1	3.62	92.0
	2	50.8	2.50	63.5	5.00	127.0	8.03	204.0	9.13	231.8	1.87	47.6	3.96	100.7
	3	76.2	3.87	98.4	7.75	196.9	11.50	292.0	13.03	331.0	2.72	69.1	5.37	136.5
4	101.6	4.75	120.7	9.50	241.3	11.50	292.0	13.74	349.0	3.47	88.1	5.37	136.5	

**Note:** 3" and 4" valves do not require actuator mounting brackets. Body Design includes actuator mounting pad as standard.

**Dimensions - Valves with Pneumatic Actuators  
Butt-Weld Connection**



Air to Air Actuators (Aluminum or Stainless Steel)														
Model	Size		A		B		C		D		E		F	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
5309	1/2	12.7	2.69	68.3	5.37	136.5	4.25	107.9	5.62	142.8	0.91	23.0	3.00	76.0
	3/4	19.0	2.81	71.4	5.63	142.9	7.00	177.8	5.69	144.4	0.97	24.6	3.00	76.0
Weld ends	1	25.4	3.22	81.8	6.44	163.5	7.00	177.8	5.75	146.0	1.13	28.6	3.00	76.0
	1 1/2	38.1	3.63	92.1	7.25	184.2	7.00	177.8	6.61	168.0	1.50	38.1	3.00	76.0
	2	50.8	3.94	100.0	7.63	193.7	8.03	204.0	8.00	203.0	1.87	47.6	2.75	69.8

Air to Spring Actuators (Aluminum)														
Model	Size		A		B		C		D		E		F	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
5309	1/2	12.7	2.69	68.3	5.37	136.5	4.25	107.9	5.62	142.8	0.91	23.0	3.00	76.0
	3/4	19.0	2.81	71.4	5.63	142.9	5.24	133.0	6.50	165.0	0.97	24.6	2.75	69.8
Weld ends	1	25.4	3.22	81.8	6.44	163.5	5.24	133.0	7.75	196.8	1.13	28.6	2.75	69.8
	1 1/2	38.1	3.63	92.1	7.25	184.2	7.00	177.8	8.37	212.7	1.50	38.1	3.62	92.0
	2	50.8	3.94	100.0	7.63	193.7	7.00	177.8	8.81	223.8	1.87	47.6	3.62	92.0

Air to Spring Actuators (Stainless Steel)														
Model	Size		A		B		C		D		E		F	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
5309	1/2	12.7	2.69	68.3	5.37	136.5	4.25	107.9	5.62	142.8	0.91	23.0	3.00	76.0
	3/4	19.0	2.81	71.4	5.63	142.9	7.00	177.8	7.75	196.8	0.97	24.6	3.62	92.0
Weld ends	1	25.4	3.22	81.8	6.44	163.5	7.00	177.8	7.75	196.8	1.13	28.6	3.62	92.0
	1 1/2	38.1	3.63	92.1	7.25	184.2	7.00	177.8	8.37	212.7	1.50	38.1	3.62	92.0
	2	50.8	3.94	100.0	7.63	193.7	8.03	204.0	9.13	231.8	1.87	47.6	3.96	100.7

**Options  
Equipment**

- Product connections: weld, bevel seat
- Position indication: mechanical or proximity switches

**Ordering**

Please state the following when ordering:

- Size.
- Product connections
- Valve body combination.
- Actuator function, NC, NO or A/A
- Options.

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The information contained herein is correct at the time of issue,  
but may be subject to change without prior notice.

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