

599 Series 2-Way Ball Valves

Description

The 599 Series 2-way Ball Valves are coupled with OpenAir™ actuators to provide equal percentage flow control. The Ball Valves are 1/4-turn rotary control valves.


Product Numbers

Use the product numbers in Tables 1 through Table 6 to order a valve and actuator assembly. The product number consists of a 3-digit actuator prefix code, a hyphen, and a 5-digit valve body suffix code. Stainless steel product numbers have an "S" suffix in tables 4 through 6.

Features


- 200 psi close-off with ANSI Class IV leakage for all line sizes and actuators.
- Available with chrome-plated brass ball and brass stem or stainless steel ball and stem.
- Blow-out proof stem withstands high pressure.
- Universal mounting plate.
- Actuator and plate can be rotated (90 degree increments).
- Standoffs provide a thermal barrier between the actuator and the mounting plate.
- Operating handle for manual operation.

Table 1. Fail-In-Place Assemblies: Chrome-Plated Ball with Brass Stem.

Valve Body Product Number *	Cv (Kvs)	Close-Off ΔP PSI	Line Size Inches (mm)	Fail-in-Place											
															
				Floating				0 to 10 Vdc							
				GDE 131.1P	GLB 131.1P	GDE 131.1Q	GLB 131.1Q	GDE 161.1P	GLB 161.1P	GDE 161.1Q	GLB 161.1Q				
				3 foot (.9m) Wires		Conduit Adapter & 6-foot (1.8m) Wires		3 foot (.9m) Wires		Conduit Adapter & 6-foot (1.8m) Wires					
Actuator Prefix Code								171A	171B	173A	173B	171C	171D	173C	173D
599-10300	0.4 (0.34)	200 PSI	1/2 (15)	171A-10300	173A-10300	171C-10300	173C-10300								
599-10301	0.63 (0.54)			171A-10301	173A-10301	171C-10301	173C-10301								
599-10302	1.0 (0.9)			171A-10302	173A-10302	171C-10302	173C-10302								
599-10303	1.6 (1.4)			171A-10303	173A-10303	171C-10303	173C-10303								
599-10304	2.5 (2.2)			171A-10304	173A-10304	171C-10304	173C-10304								
599-10305	4.0 (3.4)			171A-10305	173A-10305	171C-10305	173C-10305								
599-10306	6.3 (5.4)			171A-10306	173A-10306	171C-10306	173C-10306								
599-10307*	10 (8.6)			171A-10307*	173A-10307*	171C-10307*	173C-10307*								
599-10308	6.3 (5.4)		171A-10308	173A-10308	171C-10308	173C-10308									
599-10309	10 (8.6)		171A-10309	173A-10309	171C-10309	173C-10309									
599-10310	16 (14)		171A-10310	173A-10310	171C-10310	173C-10310									
599-10311*	25 (22)		171A-10311*	173A-10311*	171C-10311*	173C-10311*									
599-10312	10 (9.0)		171A-10312	173A-10312	171C-10312	173C-10312									
599-10313	16 (14)		171A-10313	173A-10313	171C-10313	173C-10313									
599-10314	25 (22)		171A-10314	173A-10314	171C-10314	173C-10314									
599-10315	40 (34)		171A-10315	173A-10315	171C-10315	173C-10315									
599-10316*	63 (54)		171A-10316*	173A-10316*	171C-10316*	173C-10316*									
599-10317	16 (14)		171A-10317	173A-10317	171C-10317	173C-10317									
599-10318	25 (22)		171A-10318	173A-10318	171C-10318	173C-10318									
599-10319	40 (34)		171A-10319	173A-10319	171C-10319	173C-10319									
599-10320	63 (54)		171A-10320	173A-10320	171C-10320	173C-10320									
599-10321*	100 (90)		171A-10321*	173A-10321*	171C-10321*	173C-10321*									
599-10322	25 (22)		171B-10322	173B-10322	171D-10322	173D-10322									
599-10323	40 (34)		171B-10323	173B-10323	171D-10323	173D-10323									
599-10324*	63 (54)		171B-10324*	173B-10324*	171D-10324*	173D-10324*									
599-10325	100 (90)		171B-10325	173B-10325	171D-10325	173D-10325									
599-10326*	160 (140)		171B-10326*	173B-10326*	171D-10326*	173D-10326*									
599-10327	40 (34)		171B-10327	173B-10327	171D-10327	173D-10327									
599-10328	63 (54)		171B-10328	173B-10328	171D-10328	173D-10328									
599-10329*	100 (90)		171B-10329*	173B-10329*	171D-10329*	173D-10329*									
599-10330*	160 (140)		171B-10330*	173B-10330	171D-10330	173D-10330									


*Denotes a full-port valve with no flow characterizers insert.

Table 2. Fail-Safe Assemblies: Chrome-Plated Ball with Brass Stem (1/2-inch and 3/4-inch).

Valve Body Product Number*	Cv (Kvs)	Close-off ΔP PSI	Line Size Inches (mm)	Fail-Safe					
									
				2-Position		Floating		2 to 10 Vdc	
				GQD121.1P		GQD131.1P		GQD151.1P	
				N.O.	N.C.	N.O.	N.C.	N.O.	N.C.
				Actuator Prefix Code					
171H	172H	171J	172J	171K	172K				
599-10300	0.4 (0.34)	200 psi	1/2 (15)	171H-10300	172H-10300	171J-10300	172J-10300	171K-10300	172K-10300
599-10301	0.63 (0.54)			171H-10301	172H-10301	171J-10301	172J-10301	171K-10301	172K-10301
599-10302	1.0 (0.9)			171H-10302	172H-10302	171J-10302	172J-10302	171K-10302	172K-10302
599-10303	1.6 (1.4)			171H-10303	172H-10303	171J-10303	172J-10303	171K-10303	172K-10303
599-10304	2.5 (2.2)			171H-10304	172H-10304	171J-10304	172J-10304	171K-10304	172K-10304
599-10305	4.0 (3.4)			171H-10305	172H-10305	171J-10305	172J-10305	171K-10305	172K-10305
599-10306	6.3 (5.4)			171H-10306	172H-10306	171J-10306	172J-10306	171K-10306	172K-10306
599-10307*	10 (8.6)			171H-10307*	172H-10307*	171J-10307*	172J-10307*	171K-10307*	172K-10307*
599-10308	6.3 (5.4)		3/4 (20)	171H-10308	172H-10308	171J-10308	172J-10308	171K-10308	172K-10308
599-10309	10 (8.6)			171H-10309	172H-10309	171J-10309	172J-10309	171K-10309	172K-10309
599-10310	16 (14)			171H-10310	172H-10310	171J-10310	172J-10310	171K-10310	172K-10310
599-10311*	25 (22)			171H-10311*	172H-10311*	171J-10311*	172J-10311*	171K-10311*	172K-10311*


*Denotes a full-port valve with no flow characterizer insert.

Table 3. Fail Safe Assemblies: Chrome-Plated Ball and Brass Stem (1-inch to 2-inch).

Valve Body Product Number *	Cv (Kvs)	Close-off ΔP PSI	Line Size Inches (mm)	Fail-Safe						
										
				2-Position		Floating		0 to 10 Vdc		
				GMA121.1P		GMA131.1P		GMA161.1P		
				N.O.	N.C.	N.O.	N.C.	N.O.	N.C.	
				Actuator Prefix Code						
171E	172E	171F	172F	171G	172G					
599-10312	10 (9.0)	200 psi	1 (25)	171E-10312	172E-10312	171F-10312	172F-10312	171G-10312	172G-10312	
599-10313	16 (14)			171E-10313	172E-10313	171F-10313	172F-10313	171G-10313	172G-10313	
599-10314	25 (22)			171E-10314	172E-10314	171F-10314	172F-10314	171G-10314	172G-10314	
599-10315	40 (34)			171E-10315	172E-10315	171F-10315	172F-10315	171G-10315	172G-10315	
599-10316*	63 (54)			171E-10316*	172E-10316*	171F-10316*	172F-10316*	171G-10316*	172G-10316*	
599-10317	16 (14)			1 1/4 (30)	171E-10317	172E-10317	171F-10317	172F-10317	171G-10317	172G-10317
599-10318	25 (22)				171E-10318	172E-10318	171F-10318	172F-10318	171G-10318	172G-10318
599-10319	40 (34)				171E-10319	172E-10319	171F-10319	172F-10319	171G-10319	172G-10319
599-10320	63 (54)		171E-10320		172E-10320	171F-10320	172F-10320	171G-10320	172G-10320	
599-10321*	100 (90)		171E-10321*		172E-10321*	171F-10321*	172F-10321*	171G-10321*	172G-10321*	
599-10322	25 (22)		1 1/2 (40)		171E-10322	172E-10322	171F-10322	172F-10322	171G-10322	172G-10322
599-10323	40 (34)				171E-10323	172E-10323	171F-10323	172F-10323	171G-10323	172G-10323
599-10324*	63 (54)			171E-10324*	172E-10324*	171F-10324*	172F-10324*	171G-10324*	172G-10324*	
599-10325	100 (90)			171E-10325	172E-10325	171F-10325	172F-10325	171G-10325	172G-10325	
599-10326*	160 (140)			171E-10326*	172E-10326*	171F-10326*	172F-10326*	171G-10326*	172G-10326*	
599-10327	40 (34)			2 (50)	171E-10327	172E-10327	171F-10327	172F-10327	171G-10327	172G-10327
599-10328	63 (54)				171E-10328	172E-10328	171F-10328	172F-10328	171G-10328	172G-10328
599-10329*	100 (90)		171E-10329*		172E-10329*	171F-10329*	172F-10329*	171G-10329*	172G-10329*	
599-10330	160 (140)		171E-10330		172E-10330	171F-10330	172F-10330	171G-10330	172G-10330	


* Denotes a full-port valve with no flow characterizer insert.

Table 4. Fail-In-Place Assemblies: Stainless Steel Ball and Stem.

Valve Body Product Number *	Cv (Kvs)	Close-Off ΔP PSI	Line Size Inches (mm)	Fail-in-Place							
											
				Floating				0 to 10 Vdc			
				GDE 131.1P	GLB 131.1P	GDE 131.1Q	GLB 131.1Q	GDE 161.1P	GLB 161.1P	GDE 161.1Q	GLB 161.1Q
				3 foot (.9m) Wires		Conduit Adapter & 6-foot (1.8m) Wires		3 foot (.9m) Wires		Conduit Adapter & 6-foot (1.8m) Wires	
				Actuator Prefix Code							
171A	171B	173A	173B	171C	171D	173C	173D				
599-10300S	0.4 (0.34)	200 PSI	1/2 (15)	171A-10300S	173A-10300S	171C-10300S	173C-10300S				
599-10301S	0.63 (0.54)			171A-10301S	173A-10301S	171C-10301S	173C-10301S				
599-10302S	1.0 (0.9)			171A-10302S	173A-10302S	171C-10302S	173C-10302S				
599-10303S	1.6 (1.4)			171A-10303S	173A-10303S	171C-10303S	173C-10303S				
599-10304S	2.5 (2.2)			171A-10304S	173A-10304S	171C-10304S	173C-10304S				
599-10305S	4.0 (3.4)			171A-10305S	173A-10305S	171C-10305S	173C-10305S				
599-10306S	6.3 (5.4)			171A-10306S	173A-10306S	171C-10306S	173C-10306S				
599-10307S*	10 (8.6)			171A-10307S*	173A-10307S*	171C-10307S*	173C-10307S*				
599-10308S	6.3 (5.4)		3/4 (20)	171A-10308S	173A-10308S	171C-10308S	173C-10308S				
599-10309S	10 (8.6)			171A-10309S	173A-10309S	171C-10309S	173C-10309S				
599-10310S	16 (14)			171A-10310S	173A-10310S	171C-10310S	173C-10310S				
599-10311S*	25 (22)			171A-10311S*	173A-10311S*	171C-10311S*	173C-10311S*				
599-10312S	10 (9.0)		1 (25)	171A-10312S	173A-10312S	171C-10312S	173C-10312S				
599-10313S	16 (14)			171A-10313S	173A-10313S	171C-10313S	173C-10313S				
599-10314S	25 (22)			171A-10314S	173A-10314S	171C-10314S	173C-10314S				
599-10315S	40 (34)			171A-10315S	173A-10315S	171C-10315S	173C-10315S				
599-10316S*	63 (54)			171A-10316S*	173A-10316S*	171C-10316S*	173C-10316S*				
599-10317S	16 (14)		1 1/4 (30)	171A-10317S	173A-10317S	171C-10317S	173C-10317S				
599-10318S	25 (22)			171A-10318S	173A-10318S	171C-10318S	173C-10318S				
599-10319S	40 (34)			171A-10319S	173A-10319S	171C-10319S	173C-10319S				
599-10320S	63 (54)			171A-10320S	173A-10320S	171C-10320S	173C-10320S				
599-10321S*	100 (90)			171A-10321S*	173A-10321S*	171C-10321S*	173C-10321S*				
599-10322S	25 (22)		1 1/2 (40)	171B-10322S	173B-10322S	171D-10322S	173D-10322S				
599-10323S	40 (34)			171B-10323S	173B-10323S	171D-10323S	173D-10323S				
599-10324S*	63 (54)			171B-10324S*	173B-10324S*	171D-10324S*	173D-10324S*				
599-10325S	100 (90)			171B-10325S	173B-10325S	171D-10325S	173D-10325S				
599-10326S*	160 (140)			171B-10326S*	173B-10326S*	171D-10326S*	173D-10326S*				
599-10327S	40 (34)		2 (50)	171B-10327S	173B-10327S	171D-10327S	173D-10327S				
599-10328S	63 (54)			171B-10328S	173B-10328S	171D-10328S	173D-10328S				
599-10329S*	100 (90)			171B-10329S*	173B-10329S*	171D-10329S*	173D-10329S*				
599-10330S	160 (140)			171B-10330S	173B-10330S	171D-10330S	173D-10330S				

*Denotes a full-port valve with no flow characterizer insert.


Table 5. Fail-Safe Assemblies: Stainless Steel Ball and Stem (1/2 inch and 3/4 inch).

Valve Body Product Number*	Cv (Kvs)	Close-off ΔP PSI	Line Size Inches (mm)	Fail-Safe					
									
				2-Position		Floating		2 to 10 Vdc	
				GQD121.1P		GQD131.1P		GQD151.1P	
				N.O.	N.C.	N.O.	N.C.	N.O.	N.C.
				Actuator Prefix Code					
171H	172H	171J	172J	171K	172K				
599-10300S	0.4 (0.34)	200 psi	1/2 (15)	171H-10300S	172H-10300S	171J-10300S	172J-10300S	171K-10300S	172K-10300S
599-10301S	0.63 (0.54)			171H-10301S	172H-10301S	171J-10301S	172J-10301S	171K-10301S	172K-10301S
599-10302S	1.0 (0.9)			171H-10302S	172H-10302S	171J-10302S	172J-10302S	171K-10302S	172K-10302S
599-10303S	1.6 (1.4)			171H-10303S	172H-10303S	171J-10303S	172J-10303S	171K-10303S	172K-10303S
599-10304S	2.5 (2.2)			171H-10304S	172H-10304S	171J-10304S	172J-10304S	171K-10304S	172K-10304S
599-10305S	4.0 (3.4)			171H-10305S	172H-10305S	171J-10305S	172J-10305S	171K-10305S	172K-10305S
599-10306S	6.3 (5.4)			171H-10306S	172H-10306S	171J-10306S	172J-10306S	171K-10306S	172K-10306S
599-10307S*	10 (8.6)		171H-10307S*	172H-10307S*	171J-10307S*	172J-10307S*	171K-10307S*	172K-10307S*	
599-10308S	6.3 (5.4)		3/4 (20)	171H-10308S	172H-10308S	171J-10308S	172J-10308S	171K-10308S	172K-10308S
599-10309S	10 (8.6)			171H-10309S	172H-10309S	171J-10309S	172J-10309S	171K-10309S	172K-10309S
599-10310S	16 (14)			171H-10310S	172H-10310S	171J-10310S	172J-10310S	171K-10310S	172K-10310S
599-10311S*	25 (22)			171H-10311S*	172H-10311S*	171J-10311S*	172J-10311S*	171K-10311S*	172K-10311S*

*Denotes a full-port valve with no flow characterizer insert.

**When ordered as an assembly, the actuator is provided with 3 foot (.9m) wires.

Table 6. Fail Safe Assemblies: Stainless Steel Ball and Stem (1-inch to 2-inch).

Valve Body Product Number *	Cv (Kvs)	Close-off ΔP PSI	Line Size Inches (mm)	Fail-Safe					
									
				2-Position		Floating		0 to 10 Vdc	
				GMA121.1P		GMA131.1P		GMA161.1P	
				N.O.	N.C.	N.O.	N.C.	N.O.	N.C.
				Actuator Prefix Code					
171E	172E	171F	172F	171G	172G				
599-10312S	10 (9.0)	200 psi	1 (25)	171E-10312S	172E-10312S	171F-10312S	172F-10312S	171G-10312S	172G-10312S
599-10313S	16 (14)			171E-10313S	172E-10313S	171F-10313S	172F-10313S	171G-10313S	172G-10313S
599-10314S	25 (22)			171E-10314S	172E-10314S	171F-10314S	172F-10314S	171G-10314S	172G-10314S
599-10315S	40 (34)			171E-10315S	172E-10315S	171F-10315S	172F-10315S	171G-10315S	172G-10315S
599-10316S*	63 (54)			171E-10316S*	172E-10316S*	171F-10316S*	172F-10316S*	171G-10316S*	172G-10316S*
599-10317S	16 (14)			171E-10317S	172E-10317S	171F-10317S	172F-10317S	171G-10317S	172G-10317S
599-10318S	25 (22)		1 1/4 (30)	171E-10318S	172E-10318S	171F-10318S	172F-10318S	171G-10318S	172G-10318S
599-10319S	40 (34)			171E-10319S	172E-10319S	171F-10319S	172F-10319S	171G-10319S	172G-10319S
599-10320S	63 (54)			171E-10320S	172E-10320S	171F-10320S	172F-10320S	171G-10320S	172G-10320S
599-10321S*	100 (90)			171E-10321S*	172E-10321S*	171F-10321S*	172F-10321S*	171G-10321S*	172G-10321S*
599-10322S	25 (22)		1 1/2 (40)	171E-10322S	172E-10322S	171F-10322S	172F-10322S	171G-10322S	172G-10322S
599-10323S	40 (34)			171E-10323S	172E-10323S	171F-10323S	172F-10323S	171G-10323S	172G-10323S
599-10324S*	63 (54)			171E-10324S*	172E-10324S*	171F-10324S*	172F-10324S*	171G-10324S*	172G-10324S*
599-10325S	100 (90)			171E-10325S	172E-10325S	171F-10325S	172F-10325S	171G-10325S	172G-10325S
599-10326S*	160 (140)			171E-10326S*	172E-10326S*	171F-10326S*	172F-10326S*	171G-10326S*	172G-10326S*
599-10327S	40 (34)		2 (50)	171E-10327S	172E-10327S	171F-10327S	172F-10327S	171G-10327S	172G-10327S
599-10328S	63 (54)			171E-10328S	172E-10328S	171F-10328S	172F-10328S	171G-10328S	172G-10328S
599-10329S*	100 (90)			171E-10329S*	172E-10329S*	171F-10329S*	172F-10329S*	171G-10329S*	172G-10329S*
599-10330S	160 (140)			171E-10330S	172E-10330S	171F-10330S	172F-10330S	171G-10330S	172G-10330S

* Denotes a full-port valve with no flow characterizer insert.

Typical Specifications

Ball valves shall have female NPT type fittings and shall be 1/2-inch to 2-inch (15 mm to 50-mm) line and ball sizes. The valves shall have a forged brass body; chrome-plated brass ball with brass stem or stainless steel ball and stem; and EPDM O-ring seals. Valves shall contain glass-filled PTFE ball valve seals and/or flow characterizers to provide an equal percentage control characteristic. Ball valves shall utilize a 90-degree rotation for control. They shall provide automated flow control of hot or chilled water and up to 50% water-glycol solution for HVAC control applications.

Technical Data

Pressure Rating	600 WOG	Ball Seals	Glass-filled PTFE with EPDM O-rings
Media Temperature	35°F to 250°F (2°C to 120°C)	End Connections	Female NPT
Controlled Medium	50% Water, -glycol solution	Stem	Brass or stainless steel
Body	Brass: ASTM B283, C37700	Stem Seals	EPDM O-rings
Ball	Chrome-plated brass or Stainless steel	Angle of Rotation	0° to 90°
Flow Characterizer	Glass-filled PTFE		

Table 7. Full-Port (No Flow Characterizer) Ball Valve Product Numbers and Flow Coefficients.

Valve Product Number	Valve Line Size in Inches (mm)	Effective (Installed) Cv (Kvs)										
		Supply Line Size in Inches (mm)										
		1/2 (13)	3/4 (20)	1 (25)	1-1/4 (32)	1-1/2 (38)	2 (51)	2-1/2 (63)	3 (76)	4 (102)	5 (127)	6 (152)
599-10307 or 599-10307S	1/2 (15)	10.00 (8.62)	6.94 (5.93)	6.19 (5.29)	—	—	—	—	—	—	—	—
599-10311 or 599-10311S	3/4 (20)	—	25.00 (21.55)	18.66 (15.95)	15.35 (13.12)	—	—	—	—	—	—	—
599-10316 or 599-10316S	1 (25)	—	—	63.00 (54.31)	39.78 (34.00)	33.56 (28.69)	—	—	—	—	—	—
599-10321 or 599-10321S	1-1/4 (30)	—	—	—	100.00 (86.21)	69.19 (59.13)	51.45 (43.98)	—	—	—	—	—
599-10324 or 599-10324S	1-1/2 (40)	—	—	—	—	63.00 (54.31)	55.34 (47.30)	51.00 (43.59)	—	—	—	—
599-10326 or 599-10326S		—	—	—	—	160.00 (137.93)	93.80 (80.17)	76.34 (65.25)	—	—	—	—
599-10329 or 599-10329S	2 (50)	—	—	—	—	—	100.00 (86.21)	94.30 (80.60)	86.12 (73.61)	—	—	—

■ = Valve may be oversized.

□ = Optimal valve size.

▨ = Valve may be undersized

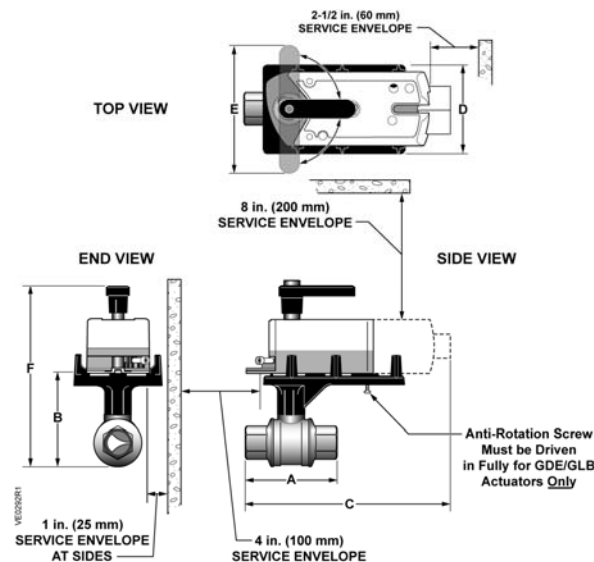


Figure 1. Two-way Ball Valves.

- All dimensions are in inches (mm).
- Dimension “D”, Depth, is 3.7 inches (94.5) “E”, Handle, is 5.3 inches (135.9).
- Dimension weights are in pounds (kg).

Table 8. Two-Way Ball Valve and Actuator Dimensions.

Line Size Inch (Mm)	Cv Range	A Length	C Length * Actuator Codes 171A-D, 173A-D GDE/GLB	C Length * Actuator Codes 171H,J,K GQD	C Length* Actuator Codes 171E,F 172E,F Fail Safe GMA	F Height	Weight (kg)
1/2 (15)	0.4 to 10.0	2-7/16 (61)	6-11/16 (170)	6 (153)	-	7-5/8 (193)	.50 (.23)
3/4 (20)	6.3 to 25	2-3/4 (70)		6 (153)	-	8 (204)	.78 (.35)
1 (25)	10	3 (77)	6-11/16 (170)	-	8-3/8 (213)	8 (204)	.97 (.44)
	16	3-1/4 (82)		-	8-3/8 (213)	8-5/15 (212)	1.75 (79)
	40, 63		7 (178)	-	8-11/16 (221)	8-13/16 (223)	1.19 (54)
	25	3-7/8 (98)	7 (178)	-	8-11/16 (221)	8-13/16 (223)	1.19 (.54)
1-1/4 (30)	16	3-3/8(86)	6-11/16 (170)	-	8-7/16 (214)	8-3/8 (213)	1.41 (.64)
	25 to 100	3-11/16 (94)	6-15/16 (176)	-	8-11/16 (221)	8-13/16 (223)	1.81 (.82)
1-1/2 (40)	25, 63	3-5/8 (92)		7-1/16 (180)	-	8-7/16 (214)	8-13/16 (223)
	40, 100, 160	3-15/16 (100)	-		8-3/4 (223)	9-1/4 (235)	2.50 (1.13)
2 (50)	40, 100	4 (102)	7-1/2 (190)	-	-	9-3/8 (238)	2.53 (1.14)
	63	4-5/8 (118)		-	9-1/8 (223)	10-1/16 (255)	4.66 (2.11)
	160		-	-	-	4.69 (2.13)	

*Dimension C is the maximum length, measured from actuator, end fitting, or mounting plate, whichever extends the furthest.

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