

Fisher® POSI-SEAL™ A11 High-Performance Butterfly Valve

The Fisher A11 High-Performance Butterfly Valve maintains tight shutoff, and can be specified for a wide range of pressure and temperature conditions, including cryogenic applications.

The A11 valve is available in either a wafer or a single-flange design (single-flange only for CL600, 900, and 1500). A square or keyed shaft can combine with a variety of hand levers, handwheels, or pneumatic piston diaphragm actuators. A splined shaft can combine with a variety of spring-and- diaphragm or pneumatic piston actuators. These combinations help

make the A11 valve a reliable, high-performance butterfly valve for both throttling and on-off applications in the process industries.

The A11 valve can be supplied with one of several dynamic seals (figure 1) that can be used in a variety of demanding applications. With the appropriate seal selection and materials of construction, the pressure-assisted seal helps provide excellent shutoff against the full ASME class pressure range for the A11 valve.



W9570-1



Features

- **Shaft Versatility**— This valve will meet your actuator needs with a choice of square, keyed, or splined shaft connections.
- **Excellent Shutoff Integrity**—The pressure-assisted seal design provides tight shutoff and permits the use of smaller, less expensive actuators in applications requiring full ASME B16.34 shutoff capabilities.
- **Excellent Emissions Capabilities**— The optional ENVIRO-SEAL™ packing systems are designed with very smooth shaft surfaces and live-loading to provide improved sealing, guiding, and loading force transmission. The seal of the ENVIRO-SEAL system can control emissions to below 100 ppm (parts per million).
- **Sour Service Capability**— Trim and bolting materials are available for applications involving sour liquids and gases. These constructions comply with NACE MR0175-2002, MR0103, and MR0175 / ISO 15156.
- **High-Temperature/Cryogenic Capabilities**— Optional valve constructions allow this valve to meet both high-temperature and cryogenic applications (see table 7 for cryogenic and high-temperature actuator configurations).
- **Easy Installation**—The valve body self-centers on the line flange bolts as a fast, accurate means of centering the valve in the pipeline.
- **Reliable Flange Gasketing Surface**—Seal retainer screws are located so there is no interference with the sealing function of either flat sheet or spiral wound line flange gaskets.
- **True Bidirectional Shutoff Performance**—A feature of the valve design is that the torque necessary to open and close the valve is the same regardless of the direction in which the differential pressure is applied.
- **Ease of Maintenance**—Interchangeability of all parts, including shafts and discs, simplifies service and reduces maintenance costs.

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Specifications

Available Configurations and Sizes

■ Flangeless (wafer) or ■ Single-flange (lugged)

Available Sizes and Shaft Styles

PRESSURE RATING	VALVE SIZE, NPS		
	Keyed	Square	Splined
CL150/150 ⁽¹⁾	30 to 72	---	---
CL150	30 to 72	---	---
CL300	30 to 72	---	---
CL600	14 to 48 (standard), 3 to 12 (optional)	3 to 12 (optional)	3 to 12 (standard) 14 to 24 (optional)
CL900	12 to 24 (standard), 6 to 10 (optional)	6 to 10 (standard)	Consult your Emerson Process Management sales office
CL1500	10 to 20 (standard)	---	
CL2500	Consult your Emerson Process Management Sales Office		

1. Refers to a valve construction consisting of a CL150 body and trim suitable for a shutoff pressure drop of 150 psid.

End Connection Style

Flangeless or single flange style designed to fit between raised-face mating flanges of appropriate class pressure rating.

ASME B16.5

NPS 3 through 24: CL600

NPS 6 through 24: CL900

NPS 10 through 20: CL1500

ASME B16.47 Class A and MSS-SP-44

NPS 30 through 48: CL150, 300, and 600

NPS 30 through 36: CL900

Consult your Emerson Process Management sales office for valves compatible with API 605 and ASME B16.47 Class B flanges

Maximum Inlet Pressure⁽¹⁾

Valve Body: Consistent with CL150, 300, 600, 900, and 1500 pressure/temperature ratings per ASME B16.34, see table 8.

Seal: see figure 1

Materials of Construction

See table 2.

Disc Hard Surfacing: All CL600, 900, and 1500 disc edges must be coated, regardless of the seal type. Metal, NOVEX, Phoenix III and cryogenic seals require the disc to be coated, regardless of the valve class.

Maximum Temperature Capabilities⁽¹⁾

See table 2

High-Temperature and Cryogenic Applications: See table 7 for available valve and actuator combinations

Shutoff Classification per ANSI/FCI 70-2 and IEC 60534-4

Standard Soft Seal: Bubble-tight shutoff (exceeds Class VI)

Metal Seal: 20% of Class IV (reverse direction only)

NOVEX Seal: Standard Class V (Class VI optional, reverse direction only)

Phoenix III Seal: Bubble-tight (reverse direction only), Class VI (forward direction only)

High Pressure Seal: Standard Class V (Class VI optional, reverse direction only)

Cryogenic Seal (Reverse direction only): NOVEX: Class VI

CTFE: 10% of Class IV

CTFE with Aluminum Backup Ring: Class VI

Flow Characteristic

Modified equal percentage

Flow Coefficients

See this bulletin's Coefficients section, or Catalog 12

Noise Levels

See Catalog 12 for sound pressure level prediction

Available Actuators

Handlever; handwheel; or pneumatic piston, spring return, double-acting, spring and diaphragm

Disc Rotation

Clockwise (CW) to close

Valve Dimensions and Approximate Weights

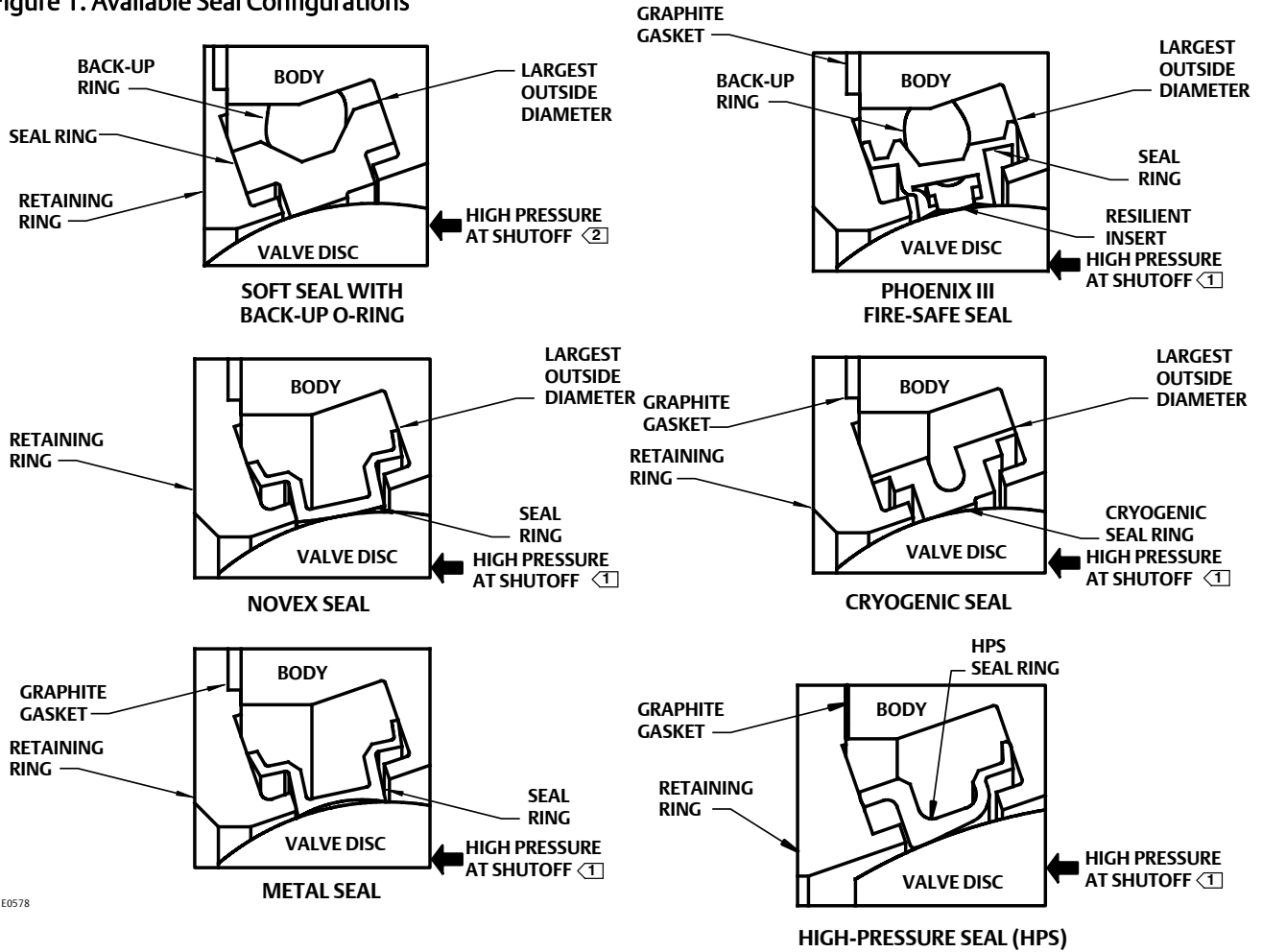
See figures 3, 4, 5, 6 and 7

For general packing guidelines, see Bulletin 59.3:042 Packing Selection Guidelines for Rotary Valves, D102093X012

For information on ENVIRO-SEAL packing system see Bulletin 59.3:041 ENVIRO-SEAL Packing Systems for Rotary Valves, D101638X012

1. The pressure/temperature limits in this bulletin, and any applicable code or standard limitation, should not be exceeded.

Figure 1. Available Seal Configurations



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NOTES:

① THIS UNIDIRECTIONAL SEAL MUST BE INSTALLED SO THAT THE RETAINING RING IS DOWNSTREAM FROM THE HIGH PRESSURE SIDE OF THE VALVE AT SHUT-OFF, AS SHOWN.

② FOR THIS BIDIRECTIONAL SEAL, THE "PREFERRED" VALVE ORIENTATION PLACES THE RETAINING RING DOWNSTREAM FROM THE HIGH PRESSURE SIDE OF THE VALVE AT SHUT-OFF.

Standard Seal Configurations

- **Standard Soft Seal (PTFE CL150 and 300, and ETFE CL600, 900, and 1500)**—A resilient dynamic seal with an elastomeric back-up ring for low to moderate temperature applications.
- **Metal Seal**—This stainless steel seal is available for severe service and high-temperature applications to 704°C (1300°F) for NACE applications and 816°C (1500°F) for other applications.
- **NOVEX Seal**—The NOVEX stainless steel seal is available for severe service, Cryogenic, and high-temperature applications to 816°C (1500°F). Available for CL150/150, 150, and 300, up to NPS 36 only.
- **Phoenix III Seal**—This three-component, metal-and-polymeric seal is available for severe service with low to moderate temperature applications.
- **High-Pressure Seal (CL600, 900, and 1500)**—This robust, stainless steel seal is available for severe service, cryogenic, and high-temperature applications to 704°C (1300°F), for NACE, and for other applications to 816°C (1500°F).
- **Cryo-Tight Cryogenic Seal**—This resilient dynamic seal is available with or without an aluminum back-up ring for low temperature applications.

Table 1. Temperature Limits for Metal Seal

SEAL TYPE	PRESSURE RATING	SEAL MATERIAL	MAXIMUM TEMPERATURE LIMITS		BACKUP RING
			°C	°F	
Metal	CL150/150, and 150 ⁽²⁾	S31600 w/ CF8M disc	538	1000	No
		S31600 w/ WCC disc ⁽²⁾	232	450	
	300	S31600 w/ CF8M disc	816	1500	No
		S31600 w/ WCC disc ⁽²⁾	232	450	
	600 ^(1,2)	S20910 NACE w/ CF8M disc	649	1200	No
		S20910 w/ WCC disc	232	450	
S17400 H1150M w/ CF8M disc		232	450	No	
S17400 H1150M w/ WCC disc	427	800			

1. When used with CF8M discs, S20910 is the preferred seal material. When used with WCC discs, S17400 H1150M is the preferred material.
2. For valves with WCC discs at temperatures over 254°C (450°F), contact your Emerson Process Management sales office for seal material selection.

Installation

Preferred valve orientation for the A11 valve is reverse flow direction. Reverse flow direction is into the side of the valve body opposite the retaining ring or into the shaft side of the disc.

For erosive and many severe service applications, valves with bidirectional seals can and should be installed with the shaft horizontal and in the forward flow direction to prevent direct impingement of the process media on the seal, and to minimize the exposure of the shaft bearings to the process media.

The standard soft seal and the Phoenix III seal both offer bidirectional shutoff. Valves using either metal, NOVEX, or cryogenic seals are unidirectional and must be installed in the reverse flow orientation.

For assistance in selecting the appropriate combination of actuator action and open valve position, consult your Emerson Process Management sales office.

Dimensions and weights for wafer-style and single-flange valves are shown in figures 3, 4, 5, 6, and 7.

Table 2. Material Temperature Ranges

PART NAME	MATERIAL	TEMP °C	TEMP °F	
Valve Body ⁽¹⁾	WCC Steel, SA-516-70 or SA-105	-29 to 427	-20 to 800	
	CF8M, CF8, CF3M, CF3	-254 to 538	-425 to 1000	
	CF8M, CF8C, CF8 ⁽²⁾ FMS 20B16 a Fisher material standard (0.04% min carbon)	over 538 to 816	over 1000 to 1500	
	LCC	-45 to 343	-50 to 650	
	C12A	-29 to 649	-20 to 1200	
	WC9	-29 to 593	-20 to 1100	
Disc ⁽⁵⁾	CG8M, CG3M, CF8C	-198 to 538	-325 to 1000	
	WCC Steel	-29 to 427	-20 to 800	
	CF8M, CF8, CF3M, CF3	-254 to 538	-425 to 1000	
	CF8M, CF8C, CF8 ⁽²⁾ FMS 20B16 a Fisher material standard (0.04% min carbon)	over 538 to 816	over 1000 to 1500	
Disc Seating Surface Coating	CB7Cu-1	-29 to 427	-20 to 800	
	CG8M, CG3M, CF8C	-198 to 538	-325 to 1000	
	Chrome Plating	-254 to 316	-425 to 600	
	Chromium Coat per FFS 2E1	-254 to 593	-425 to 1100	
	Electroless Nickel Coating (ENC)	-254 to 343	-425 to 650	
Shaft	Chromium Carbide Coating	-254 to 816	-425 to 1500	
	CoCr-A (Alloy 6) ⁽⁴⁾			
	S17400 (H1025)	-73 to 427	-100 to 800	
	S17400 (H1150M)	-196 to 427	-320 to 800	
	N05500 ⁽⁴⁾	-254 to 482	-425 to 900	
	N07718	-254 to 704	-425 to 1300	
Bearings ⁽³⁾	S20910 ⁽⁴⁾	-254 to 593	-320 to 1100	
	N07750 ⁽⁴⁾	over 593 to 816	over 1100 to 1500	
	PEEK	-73 to 260	-100 to 500	
	PTFE Composition	-254 to 163	-425 to 325	
	S31600 (316 SST Nitrided)	-254 to 816	-425 to 1500	
	R30006 (Alloy 6) ⁽⁴⁾			
Seal Ring	Bronze ⁽⁴⁾	-254 to 302	-425 to 575	
	PTFE Lined N04400 ⁽⁴⁾	-254 to 232	-425 to 450	
	Soft - PTFE	-62 to 232	-80 to 450	
	Soft - ETFE	-54 to 149	-65 to 300	
Backup Ring	Metal - All	See table 1		
	HPS - S20910 ⁽⁴⁾	-254 to 649	-425 to 1200	
	Used with Soft Seal			
	Fluorocarbon	-29 to 204	-20 to 400	
	EPR	-54 to 182	-65 to 360	
	Nitrile ⁽⁴⁾	-29 to 93	-20 to 200	
	Chloroprene ⁽⁴⁾	-43 to 149	-45 to 300	
	Used with Phoenix III Seal			
	Fluorocarbon	-40 to 232	-40 to 450	
	EPR	-62 to 204	-80 to 400	
	Nitrile ⁽⁴⁾	-40 to 149	-40 to 300	
	Chloroprene ⁽⁴⁾	-54 to 149	-65 to 300	
	Used with Cryogenic Seal			
Aluminum ⁽⁴⁾	-254 to 149	-425 to 300		
Packing	PTFE V-Ring	-254 to 232	-425 to 450	
	PTFE ENVIRO-SEAL	-254 to 232	-425 to 450	
	Square Ring Graphite for Oxidizing Service	-254 to 538	-425 to 1000	
	Square Ring Graphite for Non-oxidizing Service	-254 to 816	-425 to 1500	
	Graphite ENVIRO-SEAL	-140 to 315	-325 to 600	

1. Special gasket retainer bolts are required for over 538°C (1000°F).
 2. Special retaining ring screws for single flange valves over 538°C (1000°F).
 3. Special thrust bearings are required for high temperature applications over 343°C (650°F) (with 6 and 12 inch extensions). Constructions with carbon steel valves and SST discs may require special thrust bearings at temperatures greater than 343°C (650°F).
 4. Special option; contact your Emerson Process Management sales office.
 5. For valves NPS 30 and larger at temperatures over 254°C (450°F), the disc material should be the same as the valve body material.

Table 3. Trim Descriptions - CL600

Trim Type	Trim Number	Temperature Range	Disc Material	Disc Edge Coating	Seal Type	Seal Material	Shaft	Bearings	Packing
Standard	500 ⁽¹⁾	-29 to 149°C -20 to 300°F	CF8M	Chrome Plated	Soft	ETFE	S17400 H1025	PEEK	PTFE
	502	-46 to 232°C -50 to 450°F	CF8M	Chrome Plated	Metal	S20910	S17400 H1025	PEEK	PTFE
	504	-40 to 149°C -40 to 300°F	CF8M	Chrome Plated	Phoenix III	S31600/ETFE	S17400 H1025	PEEK	PTFE
	506 ⁽²⁾	-46 to 427°C -50 to 800°F	CF8M	Chromium Coat per FFS 2E1	Metal	S20910	S17400 H1025	316 SST Nitrided	Graphite
High-Temperature	514H ⁽³⁾	-46 to 427°C -50 to 800°F	CF8M	Chromium Coat per FFS 2E1	Metal	S20910	S17400 H1025	316 SST Nitrided	Graphite
	516H ⁽⁴⁾	-46 to 538°C -50 to 1000°F	CF8M	Chromium Coat per FFS 2E1	Metal	S21800	N07718	316 SST Nitrided	Graphite
Cryogenic	517C ⁽⁵⁾	-196 to 163°C -320 to 325°F	CF8M	Chrome Plated	HPS	S20910 Nitrided	S17400 H1150M	PTFE Composition	PTFE

1. Trim 500 is furnished as standard trim in all CL600 A11 valves.
2. If operating temperature is above 343°C (650°F), see table 7 for available actuator configurations.
3. Trim includes 6-inch shaft extension.
4. Trim includes 12-inch shaft extension.
5. Trim includes Cryogenic shaft extension, see table 6 for extension length.

Table 4. Trim Descriptions - CL900 and CL1500

Trim Type	Trim Number	Temperature Range	Disc Material	Disc Edge Coating	Seal Type	Seal Material	Shaft	Bearings	Packing ⁽⁵⁾
Standard	500 ⁽¹⁾	-29 to 149°C -20 to 300°F	CB7Cu-1	Chrome Plated	Soft	ETFE	S17400 H1025	PEEK	PTFE
	502	-46 to 232°C -50 to 450°F	CB7Cu-1	Chrome Plated	HPS	S20910 Nitrided	S17400 H1025	PEEK	PTFE
	504	-40 to 149°C -40 to 300°F	CB7Cu-1	Chrome Plated	Phoenix III	S31600/ETFE	S17400 H1025	PEEK	PTFE
	506 ⁽²⁾	-46 to 427°C -50 to 800°F	CB7Cu-1	Chromium Coat per FFS 2E1	HPS	S20910 Nitrided	S17400 H1025	316 SST Nitrided	Graphite
High-Temperature	514H ⁽³⁾	-46 to 427°C -50 to 800°F	CB7Cu-1	Chromium Coat per FFS 2E1	HPS	S20910 Nitrided	S17400 H1025	316 SST Nitrided	Graphite
	516H ⁽⁴⁾	-46 to 538°C -50 to 1000°F	CF8M	Chromium Coat per FFS 2E1	HPS	S21800 Nitrided	N07718	316 SST Nitrided	Graphite

1. Trim 500 is furnished as standard trim in all CL1500 A11 valves.
2. If operating temperature is above 343°C (650°F), see table 7 for available actuator configurations.
3. Trim includes 6-inch shaft extension.
4. Trim includes 12-inch shaft extension.
5. Consult Fisher bulletin 59.3:042 (D102093X012) for packing selection guidelines regarding pressure/temperature limits.

Table 5. Trim Descriptions - CL150/150, CL150, and CL300

Trim Type	Trim Number	Temperature Range	Disc Material	Disc Edge Coating	Seal Type	Seal Material	Shaft	Bearings	Packing
Standard	550 ⁽¹⁾	-29 to 204°C -20 to 400°F	CF8M or WCC	None	Soft	PTFE	S17400 H1025	PEEK	PTFE
	552	-46 to 232°C -50 to 450°F	CF8M or WCC	Chrome Plated	NOVEX ⁽⁶⁾	S31600	S17400 H1025	PEEK	PTFE
	554	-40 to 232°C -40 to 450°F	CF8M or WCC	Chrome Plated	Phoenix III	S31600/PTFE	S17400 H1025	PEEK	PTFE
	556 ⁽²⁾	-46 to 427°C -50 to 800°F	CF8M or WCC	Chromium Coat per FFS 2E1	NOVEX ⁽⁶⁾	S31600	S17400 H1025	316 SST Nitrided	Graphite
High-Temperature	564H ⁽³⁾	-46 to 427°C -50 to 800°F	CF8M or WCC	Chromium Coat per FFS 2E1	NOVEX ⁽⁶⁾	S31600	S17400 H1025	316 SST Nitrided	Graphite
	566H ⁽⁴⁾	-46 to 538°C -50 to 1000°F	CF8M	Chromium Coat per FFS 2E1	NOVEX ⁽⁶⁾	S31600	N07718	316 SST Nitrided	Graphite
Cryogenic	567C ⁽⁵⁾	-196 to 163°C -320 to 325°F	CF8M	Chrome Plated	NOVEX ⁽⁶⁾	S31600	S17400 H1150M	PTFE Composition	PTFE

1. Trim 550 is furnished as standard trim in all CL150/150, 150, and 300 A11 valves.
 2. If operating temperature is above 343°C (650°F), see table 7 for available actuator configurations.
 3. Trim includes 6-inch shaft extension.
 4. Trim includes 12-inch shaft extension.
 5. Trim includes Cryogenic shaft extension, see table 6 for extension length.
 6. NPS 42 and 48 will have an S31600 metal seal ring in place of the S31600 NOVEX seal ring.

Table 6. Cryogenic Shaft Extension Lengths⁽¹⁾

CRYOGENIC EXTENSION LENGTH, INCH FOR VALVE BODY SIZE, NPS														
3	4	6	8	10	12	14	16	18	20	24	30	36	42	48
14-3/4	17-3/4	19-1/4	26-3/4	28-1/2	33-1/2	36	36	36	36	36	36	36	36	36

1. Extension length measured from center of valve body to bottom of packing flange.

Note

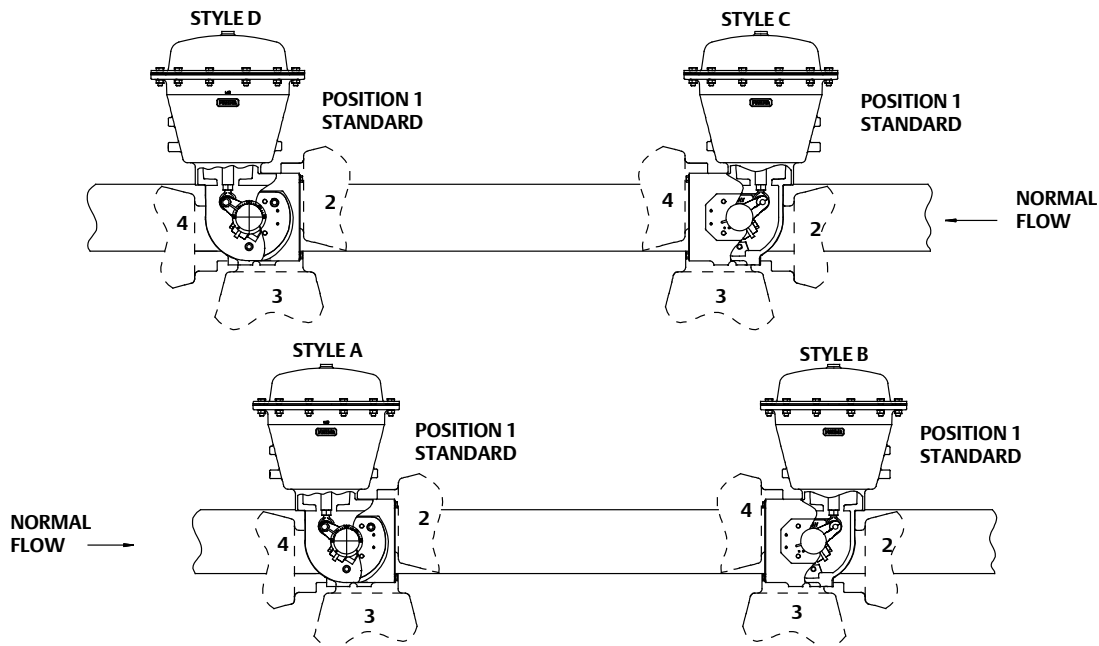
Trim will include the standard disc material included in the FS number selected. If the trim number indicates only a CF8M disc, the trim cannot be used with an FS number including a WCC disc.

Table 7. Valve/Actuator Combinations

TEMPERATURE RANGE	SELECTION GUIDELINES	
	1052, 1061, or 2052 ^(1, 2)	Bettis ^{TM(3)} , FieldQ ^{TM (5)} , 1035 ⁽⁵⁾ , or Hytork XL
-254 to -196°C (-425 to -320°F)	Valve with cryogenic extension and special trim materials ⁽⁴⁾ and standard actuator	Valve with cryogenic extension and special trim materials ⁽⁴⁾ and standard actuator
-196 to -46°C (-320 to -50°F)	Valve with cryogenic extension and trim and standard actuator	Valve with cryogenic extension and trim and standard actuator
-46 to 343°C (-50 to 650°F)	Valve (select appropriate trim) and standard actuator	Valve (select appropriate trim) and standard actuator
343 to 426°C (650 to 800°F)	Mounting positions 1 and 3: Valve (select appropriate trim) and standard actuator Mounting positions 2 and 4: Valve with 6-inch extension (select trim 514H or 564H) and standard actuator - ambient temperature may dictate the need for a high-temperature diaphragm	Valve (select appropriate trim) and actuator with high-temperature O-rings option or Valve with 6-inch extension (select trim 514H) and standard actuator
426 to 538°C (800 to 1000°F)	Mounting positions 1 and 3: Valve (select appropriate trim) and standard actuator Mounting positions 2 and 4: Valve with 6-inch extension (select trim 564H or 514H with N07718 shaft) and standard actuator - ambient temperature may dictate the need for a high-temperature diaphragm	Valve (select appropriate trim) and actuator with high-temperature O-rings option or Valve with 6-inch extension (select trim 564H or 514H with N07718 shaft) and standard actuator
538 to 816°C (1000 to 1500°F)	Valve with 12-inch extension and special trim materials ⁽⁴⁾ and standard actuator	Valve with 12-inch extension and special trim materials ⁽⁴⁾ and standard actuator

1. Select splined shaft option when necessary (standard for NPS 3-12 CL600 valves).
 2. See figure 2 for actuator mounting positions.
 3. Select keyed shaft option when using Bettis "G" Series Actuator, NPS 6-12.
 4. Consult your Emerson Process Management sales office.
 5. Select square shaft option when using FieldQ or 1035 actuators.

Figure 2. Mounting Styles and Positions



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Pressure Drops

Pressure drop limits of any given valve are based on valve body, and trim material limits. To find the appropriate pressure drop limitation, choose the desired valve size and temperature range. Then search

table 8 for body limitations and tables 9, 10, 11, and 12 for trim limitations. Information on limits for S31254, CW2M, M35-1 and other alloy constructions can be obtained by contacting your Emerson Process Management sales office. The lowest number from the tables is the appropriate limit. **The tables for both trim and body limits must be consulted.**

Table 8. Maximum Allowable Shutoff Pressure Drops (Valve Ratings) Based on Carbon Steel and Stainless Steel Valve Types⁽¹⁾ (The tables for both trim and body limits must be consulted)

TEMPERATURE RANGE	PRESSURE RANGE											
	CL150/150		CL150		CL300		CL600		CL900		CL1500	
	WCC	CF8M	WCC	CF8M	WCC	CF8M	WCC	CF8M	WCC	CF8M	WCC	CF8M
°C	Bar											
-254 to -29	---	10.3	---	19.0	---	49.6	---	99.3	---	148.9	---	248.2
-29 to 38	10.3	10.3	20	19.0	51.7	49.6	103.4	99.3	155.1	148.9	258.6	248.2
93	9.3	9.0	17.9	16.2	51.7	42.7	103.4	85.5	155.1	128.2	258.6	213.4
149	8.3	7.9	15.9	14.8	50.3	38.6	100.3	77.2	150.7	115.8	251.0	192.7
204	7.2	7.2	13.8	13.4	48.6	35.5	96.9	70.7	145.5	106.2	242.7	177.2
260	6.2	6.2	11.7	11.7	45.9	33.1	91.7	65.8	137.6	98.9	229.3	164.8
316	5.2	5.2	9.7	9.7	41.7	31.0	83.4	62.1	125.1	93.4	208.6	155.5
343	4.5	4.5	8.6	8.6	40.7	30.3	81.0	61.0	121.7	91.4	202.7	152.4
371	4.1	4.1	7.6	7.6	38.3	30.0	76.5	60.0	114.8	90.0	191.3	149.6
399	3.4	3.4	6.6	6.6	34.8	29.3	70.0	59.0	104.8	88.3	174.8	147.2
427	2.8	2.8	5.5	5.5	28.3	29.0	56.9	58.3	85.2	87.2	141.7	145.5
454	---	2.4	---	4.5	---	29.0	---	57.6	---	86.5	---	144.1
482	---	1.7	---	3.4	---	28.6	---	57.2	---	85.8	---	143.1
510	---	1.4	---	2.4	---	26.5	---	53.4	---	80.0	---	133.1
538	---	0.7	---	1.4	---	25.2	---	50.0	---	75.2	---	125.5
°F	Psi											
-450 to -20	---	150	---	275	---	720	---	1440	---	2160	---	3600
-20 to 100	150	150	290	275	750	720	1500	1440	2250	2160	3750	3600
200	135	130	260	235	750	620	1500	1240	2250	1860	3750	3095
300	120	115	230	215	730	560	1455	1120	2185	1680	3640	2795
400	105	105	200	195	705	515	1405	1025	2110	1540	3520	2570
500	90	90	170	170	665	480	1330	955	1995	1435	3325	2390
600	75	75	140	140	605	450	1210	900	1815	1355	3025	2255
650	65	65	125	125	590	440	1175	885	1765	1325	2940	2210
700	60	60	110	110	555	435	1110	870	1665	1305	2775	2170
750	50	50	95	95	505	425	1015	855	1520	1280	2535	2135
800	40	40	80	80	410	420	825	845	1235	1265	2055	2110
850	---	35	---	65	---	420	---	835	---	1255	---	2090
900	---	25	---	50	---	415	---	830	---	1245	---	2075
950	---	20	---	35	---	385	---	775	---	1160	---	1930
1000	---	10	---	20	---	365	---	725	---	1090	---	1820

1. For pressure/temperature rating of other materials, contact your Emerson Process Management sales office.

Table 9. Maximum Allowable Shutoff Pressure Drops⁽¹⁾

TRIM NUMBER	TEMPERATURE RANGE	PRESSURE RANGE											
		CL150/150				CL150				CL300			
		Valve Body Size, NPS				Valve Body Size, NPS				Valve Body Size, NPS			
		30	36	42	48	30	36	42	48	30	36	42	48
°C		Bar											
550	-46 to 38	10.34	10.34	10.34	10.34	32.06	27.85	18.55	12.34	38.47	51.02	46.06	51.02
	38 to 149	10.34	10.34	10.34	10.34	27.58	27.58	18.55	12.34	27.58	27.58	27.58	27.58
	149 to 232	3.447	3.447	3.447	3.447	3.447	3.447	3.447	3.447	3.447	3.447	3.447	3.447
552	-46 to 38	10.34	10.34	10.34	10.34	29.72	23.72	16.27	11.17	32.82	45.44	41.23	61.64
	38 to 149	10.34	10.34	10.34	10.34	25.72	23.72	16.27	11.17	32.82	45.44	41.23	61.64
	149 to 232	10.34	10.34	10.34	10.34	24.2	23.72	16.27	11.17	32.82	45.44	41.23	61.09
554	-46 to 38	10.34	8.136	10.34	4.964	21.24	16	9.584	5.792	26.48	35.78	31.37	48.06
	38 to 149	10.34	8.136	10.34	4.964	17.93	16	9.584	5.792	26.48	35.78	31.37	39.64
	149 to 232	10.34	8.136	10.34	4.964	16.75	16	9.584	5.792	20.68	20.68	20.68	20.68
556	-46 to 38	10.34	10.34	10.34	7.722	22.75	16.62	11.45	7.653	22.75	32.47	29.51	44.33
	38 to 149	10.34	10.34	10.34	7.722	19.65	16.62	11.45	7.653	22.75	32.47	29.51	44.33
	149 to 232	10.34	10.34	10.34	7.722	18.48	16.62	11.45	7.653	22.75	32.47	29.51	44.33
	232 to 343	10.34	10.34	10.34	7.722	17.44	16.62	11.45	7.653	22.75	32.47	29.51	44.33
556	343 to 427	10.34	10.34	10.34	7.446	16.89	16.62	11.17	7.446	22.75	32.47	29.51	44.33
564H, 566H	343 to 427	10.34	10.34	10.34	7.722	16.89	16.96	11.45	7.653	22.75	32.54	29.51	44.33
564H ⁽²⁾ , 566H	427 to 482	10.34	10.34	10.34	7.722	24.55	16.96	11.45	7.653	22.75	32.54	29.51	44.33
567C	-196 to -46	10.34	10.34	10.34	10.34	26.34	28.89	20.82	14.34	41.78	55.23	46.61	56.95
	-46 to 149	10.34	10.34	10.34	10.34	17.24	22.89	16.89	14.34	41.78	43.99	36.89	45.23
TRIM NUMBER	°F	Psi											
550	-50 to 100	150	150	150	150	465	404	269	179	558	740	668	740
	100 to 300	150	150	150	150	400	400	269	179	400	400	400	400
	300 to 450	50	50	50	50	50	50	50	50	50	50	50	50
552	-50 to 100	150	150	150	150	431	344	236	162	476	659	598	894
	100 to 300	150	150	150	150	373	344	236	162	476	659	598	894
	300 to 450	150	150	150	150	351	344	236	162	476	659	598	886
554	-50 to 100	150	118	150	72	308	232	139	84	384	519	455	697
	100 to 300	150	118	150	72	260	232	139	84	384	519	455	575
	300 to 450	150	118	150	72	243	232	139	84	300	300	300	300
556	-50 to 100	150	150	150	112	330	241	166	111	330	471	428	643
	100 to 300	150	150	150	112	285	241	166	111	330	471	428	643
	300 to 450	150	150	150	112	268	241	166	111	330	471	428	643
	450 to 650	150	150	150	112	253	241	166	111	330	471	428	643
556	650 to 800	150	150	150	108	245	241	162	108	330	471	428	643
564H, 566H	650 to 800	150	150	150	112	245	246	166	111	330	472	428	643
564H ⁽²⁾ , 566H	800 to 1000	150	150	150	112	356	246	166	111	330	472	428	643
567C	-320 to -50	150	150	150	150	382	419	302	208	606	801	676	826
	-50 to 300	150	150	150	150	250	332	245	208	606	638	535	656

1. Consult your Emerson Process Management sales office if higher pressure drops are required.
2. Trim 564H with optional N07718 shaft for temperatures up to 482°C. (1000°F).

Table 10. Maximum Allowable Shutoff Pressure Drops, CL600⁽¹⁾

TRIM NUMBER	TEMP RANGE	NPS 3	NPS 4	NPS 6	NPS 8	NPS 10	NPS 12	NPS 14	NPS 16	NPS 18	NPS 20	NPS 24	
	°C												
		Bar											
500	-46 to 38	98.9	103.1	103.4	103.4	99.1	100.3	103.4	103.4	103.4	103.4	103.4	60.9
	38 to 93	75.8	75.8	75.8	75.8	75.8	75.8	75.8	75.8	75.8	75.8	75.8	60.9
	93 to 121	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4
	121 to 149	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
502	-46 to 38	73.8	100.4	103.4	103.4	98.0	103.4	103.4	103.4	103.4	94.8	55.2	
	38 to 232	50.7	87.6	96.5	93.3	86.9	84.1	103.4	103.4	103.4	94.8	55.2	
504	-46 to 38	48.2	100.1	103.4	103.4	98.1	101.8	103.4	103.4	103.4	84.7	46.2	
	38 to 93	35.3	94.3	96.5	96.5	93.0	92.6	96.5	96.5	96.5	84.7	46.2	
	93 to 121	31.1	62.1	62.1	62.1	62.1	62.1	62.1	62.1	62.1	62.1	46.2	
	121 to 149	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	
506	-46 to 38	49.4	98.4	103.4	75.5	81.6	59.5	103.4	103.4	93.3	67.2	38.1	
	38 to 343	26.0	82.0	91.0	75.5	81.6	59.5	101.8	83.2	93.3	67.2	38.1	
	343 to 427	23.4	80.1	88.9	75.5	80.5	59.5	98.5	80.5	93.3	67.2	38.1	
514H, 516H	343 to 427	23.4	80.1	88.9	58.5	80.5	55.4	98.5	80.5	93.3	67.2	38.1	
514H ⁽²⁾ , 516H	427 to 482	59.2	103.4	103.4	75.5	81.6	59.5	103.4	103.4	93.4	67.2	38.1	
517C	-196 to 163	Consult your Emerson Process Management sales office.											
517C ⁽³⁾	-196 to -129	88.4	92.3	100.2	98.7	89.9	103.4	103.4	103.4	103.4	103.4	103.4	78.3
	-129 to -46	79.6	83.2	90.3	89.1	81.6	94.8	102.3	103.4	103.4	103.4	103.4	78.3
	-46 to 38	61.5	70.7	76.7	76.3	70.3	77.6	88.6	93.1	94.5	103.4	78.3	
	38 to 149	51.0	64.1	69.5	69.4	64.3	66.7	81.2	85.1	86.3	96.5	78.3	
TRIM NUMBER	°F	Psi											
500	-50 to 100	1435	1495	1500	1500	1437	1455	1500	1500	1500	1500	1500	883
	100 to 200	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	883
	200 to 250	600	600	600	600	600	600	600	600	600	600	600	600
	250 to 300	100	100	100	100	100	100	100	100	100	100	100	100
502	-50 to 100	1071	1456	1500	1500	1422	1500	1500	1500	1500	1375	800	
	100 to 450	735	1270	1400	1353	1260	1220	1500	1500	1500	1375	800	
504	-50 to 100	699	1453	1500	1500	1422	1477	1500	1500	1500	1229	670	
	100 to 200	512	1368	1400	1400	1349	1344	1400	1400	1400	1229	670	
	200 to 250	452	900	900	900	900	900	900	900	900	900	670	
	250 to 300	300	300	300	300	300	300	300	300	300	300	300	
506	-50 to 100	716	1427	1500	1095	1184	863	1500	1500	1353	974	553	
	100 to 650	377	1190	1320	1095	1184	863	1477	1206	1353	974	553	
	650 to 800	339	1162	1290	1095	1167	863	1429	1168	1353	974	553	
514H, 516H	650 to 800	339	1162	1290	849	1167	803	1429	1168	1353	974	553	
514H ⁽²⁾ , 516H	800 to 1000	858	1500	1500	1095	1184	863	1500	1500	1354	974	553	
517C	-320 to 325	Consult your Emerson Process Management sales office.											
517C ⁽³⁾	-320 to -200	1282	1339	1454	1431	1304	1500	1500	1500	1500	1500	1500	1135
	-200 to -50	1155	1206	1309	1293	1184	1375	1484	1500	1500	1500	1500	1135
	-50 to 100	892	1025	1113	1106	1020	1126	1285	1350	1371	1500	1135	
	100 to 300	739	929	1008	1006	933	967	1178	1234	1251	1400	1135	

1. Consult your Emerson Process Management sales office if higher pressure drops are required.
 2. Trim 514H with optional N07718 shaft for temperatures up to 482°C (1000°F).
 3. Trim 517C with optional C1FE cryogenic seal without backup ring.

Table 11. Maximum Allowable Shutoff Pressure Drops, CL900^(1,2)

TRIM NUMBER	TEMP RANGE	NPS 6	NPS 8	NPS 10	NPS 12	NPS 14	NPS 16	NPS 18	NPS 20	NPS 24
	°C	Bar								
500	-46 to 38	103.4	103.4	103.4	103.4	103.4	103.4	103.4	103.4	103.4
	38 to 93	75.8	75.8	75.8	75.8	75.8	75.8	75.8	75.8	75.8
	93 to 121	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4
	121 to 149	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
502	-46 to 38	100.0	155.1	110.7	155.1	146.6	154.2	151.9	120.0	128.7
	38 to 149	84.6	146.2	110.7	150.7	146.5	139.3	139.1	120.0	128.6
	149 to 232	78.8	140.4	110.7	141.7	141.7	131.5	134.1	120.0	128.7
504	-46 to 38	103.4	103.4	103.4	103.4	103.4	103.4	103.4	91.0	92.8
	38 to 93	96.5	96.5	96.5	96.5	96.5	96.5	96.5	91.0	92.8
	93 to 121	62.1	62.1	62.1	62.1	62.1	62.1	62.1	62.1	62.1
	121 to 149	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7
506	-46 to 38	81.1	122.2	78.5	131.3	104.1	119.8	118.7	82.5	89.9
	38 to 149	67.6	122.2	78.5	131.3	104.1	103.4	118.7	82.5	89.9
	149 to 232	62.6	122.2	78.5	131.3	104.1	97.4	118.7	82.5	89.9
	232 to 343	58.1	121.3	78.5	121.3	104.1	91.8	118.7	82.5	89.9
	343 to 427	55.5	105.1	78.5	105.1	104.1	88.7	105.1	82.5	89.9
514H, 516H	343 to 427	55.5	105.1	78.5	105.1	104.1	88.7	105.1	82.5	89.9
514H ⁽³⁾ , 516H	427 to 482	70.4	62.5	58.7	88.0	48.9	39.1	37.2	52.8	43.0
TRIM NUMBER	°F	Psi								
500	-50 to 100	1500	1500	1500	1500	1500	1500	1500	1500	1500
	100 to 200	1100	1100	1100	1100	1100	1100	1100	1100	1100
	200 to 250	600	600	600	600	600	600	600	600	600
	250 to 300	100	100	100	100	100	100	100	100	100
502	-50 to 100	1451	2250	1606	2250	2126	2237	2203	1741	1866
	100 to 300	1227	2120	1606	2185	2125	2020	2017	1741	1865
	300 to 450	1143	2036	1606	2055	2055	1907	1945	1741	1866
504	-50 to 100	1500	1500	1500	1500	1500	1500	1500	1320	1346
	100 to 200	1400	1400	1400	1400	1400	1400	1400	1320	1346
	200 to 250	900	900	900	900	900	900	900	900	900
	250 to 300	300	300	300	300	300	300	300	300	300
506	-50 to 100	1176	1773	1138	1905	1510	1737	1721	1197	1304
	100 to 300	980	1773	1138	1905	1510	1500	1721	1197	1304
	300 to 450	908	1773	1138	1905	1510	1412	1721	1197	1304
	450 to 650	842	1760	1138	1760	1510	1332	1721	1197	1304
	650 to 800	805	1525	1138	1525	1510	1286	1525	1197	1304
514H, 516H	650 to 800	805	1525	1138	1525	1510	1286	1525	1197	1304
514H ⁽³⁾ , 516H	800 to 1000	1021	907	851	1276	709	567	539	766	624

1. Consult your Emerson Process Management sales office if higher pressure drops are required.
2. Consult Fisher bulletin 59.3:042 (D102093X012) for packing selection guidelines regarding pressure/temperature limits.
3. Trim 514H with optional N07718 shaft.

Table 12. Maximum Allowable Shutoff Pressure Drops, CL1500(1, 2)

TRIM NUMBER	TEMP RANGE	NPS 10	NPS 12	NPS 14	NPS 16	NPS 18	NPS 20
	°C	Bar					
500	-46 to 38	103.4	103.4	103.4	103.4	103.4	103.4
	38 to 93	75.8	75.8	75.8	75.8	75.8	75.8
	93 to 121	41.4	41.4	41.4	41.4	41.4	41.4
	121 to 149	6.9	6.9	6.9	6.9	6.9	6.9
502	-46 to 38	179.0	248.1	169.4	201.5	249.7	243.0
	38 to 149	155.0	226.5	169.5	201.5	228.1	222.1
	149 to 232	146.1	218.2	169.5	201.5	219.7	214.0
504	-46 to 38	103.4	103.4	103.4	103.4	103.4	103.4
	38 to 93	96.5	96.5	96.5	96.5	96.5	96.5
	93 to 121	62.1	62.1	62.1	62.1	62.1	62.1
	121 to 149	20.7	20.7	20.7	20.7	20.7	20.7
506	-46 to 38	133.5	186.2	116.5	139.5	235.4	174.7
	38 to 149	114.2	186.2	116.5	139.5	224.8	174.7
	149 to 232	107.1	186.2	116.5	139.5	216.3	174.7
	232 to 343	100.6	186.2	116.5	139.5	202.2	174.7
	343 to 427	96.9	175.1	116.5	139.5	175.1	174.7
514H, 516H	343 to 427	96.9	175.1	116.5	139.5	175.1	174.8
514H ⁽³⁾ , 516H	427 to 482	78.2	70.4	86.0	78.2	66.5	74.3
TRIM NUMBER	°F	Psi					
500	-50 to 100	1500	1500	1500	1500	1500	1500
	100 to 200	1100	1100	1100	1100	1100	1100
	200 to 250	600	600	600	600	600	600
	250 to 300	100	100	100	100	100	100
502	-50 to 100	2596	3599	2457	2922	3622	3525
	100 to 300	2248	3285	2458	2922	3309	3221
	300 to 450	2119	3164	2458	2922	3187	3104
504	-50 to 100	1500	1500	1500	1500	1500	1500
	100 to 200	1400	1400	1400	1400	1400	1400
	200 to 250	900	900	900	900	900	900
	250 to 300	300	300	300	300	300	300
506	-50 to 100	1936	2700	1689	2024	3414	2534
	100 to 300	1657	2700	1689	2024	3260	2534
	300 to 450	1553	2700	1689	2024	3137	2534
	450 to 650	1459	2700	1689	2024	2933	2534
	650 to 800	1405	2540	1689	2024	2540	2534
514H, 516H	650 to 800	1406	2540	1689	2024	2540	2535
514H ⁽³⁾ , 516H	800 to 1000	1134	1021	1248	1134	964	1077

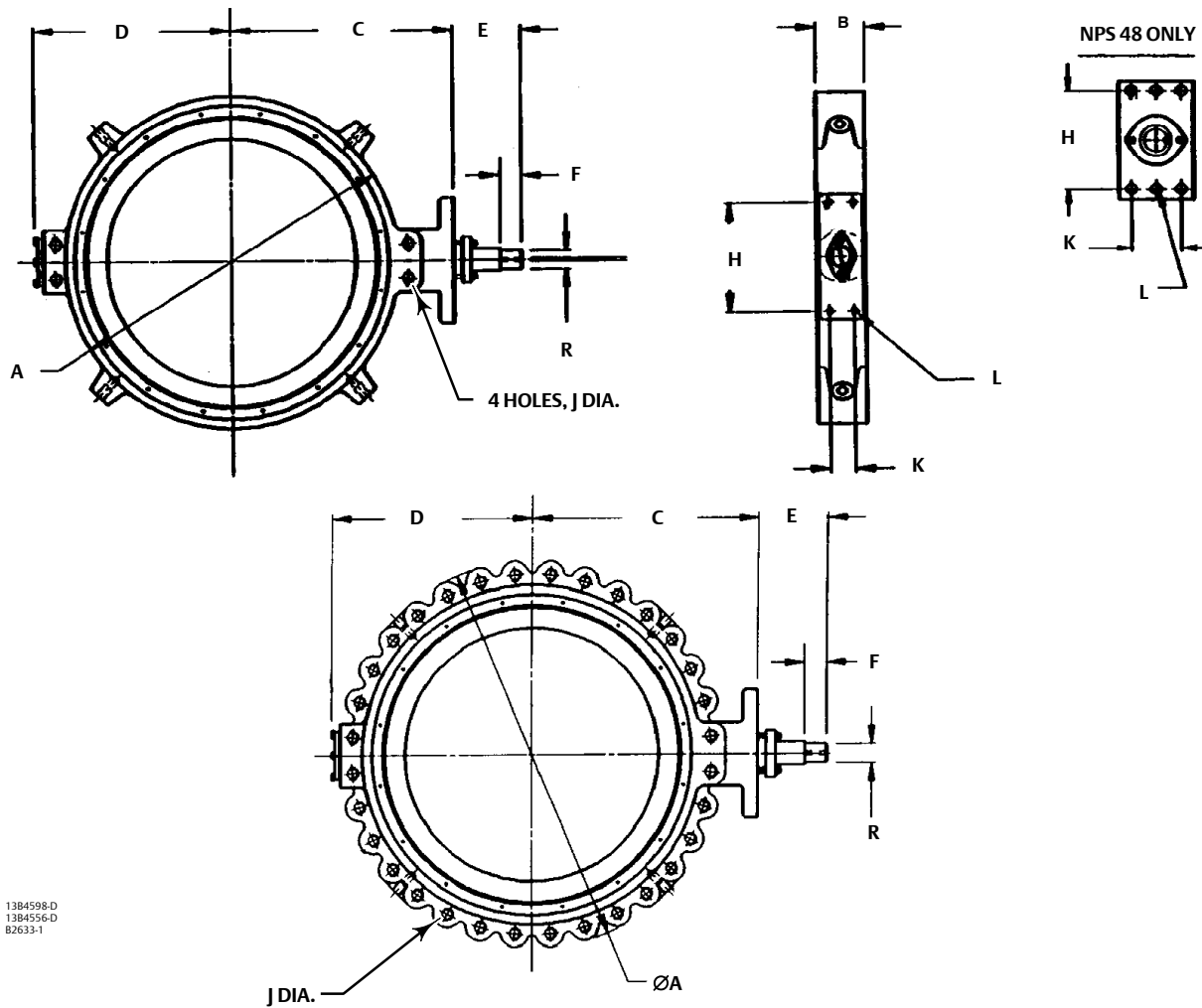
1. Consult your Emerson Process Management sales office if higher pressure drops are required.
 2. Consult Fisher bulletin 59.3:042 (D102093X012) for packing selection guidelines regarding pressure/temperature limits.
 3. Trim 514H with optional N07718 shaft.

Table 13. Dimensions and Weights Wafer and Single Flange Style CL150/150

VALVE SIZE, NPS	A		B	C	D	E	F	H	J	K	L	M ⁽¹⁾	R	KEY SQ SIZE	APPROX WEIGHT
	Wafer	Single Flange													
mm															
30	864	994	121	559	516	295	95.25	337	See Thread Info Below	76.2	See Thread Info Below	744	57.2	12.7	528
36	1029	1178	149	683	613	295	95.25	337		76.2		888	57.2	12.7	806
42	1207	1356	210	762	695	314	114.3	337		76.2		1032	69.9	15.9	1302
48	1364	1524	229	889	826	314	114.3	305		152		1180	69.9	15.9	1904
Inches															
30	34.00	39.12	4.75	22.00	20.31	11.62	3.75	13.25	1-1/4-8	3.00	7/8-9	29.30	2.25	1/2	1164
36	40.50	46.38	5.88	26.88	24.12	11.62	3.75	13.25	1-1/2-8	3.00	7/8-9	34.96	2.25	1/2	1778
42	47.50	53.38	8.25	30.00	27.38	12.38	4.5	13.25	1-1/2-8	3.00	7/8-9	40.64	2.75	5/8	2871
48	53.69	60.00	9.00	35.00	32.50	12.38	4.5	12.00	1-1/2-8	6.00	1-1/4-7	46.47	2.75	5/8	4198

1. M dimension is disc chordal swing diameter.

Figure 3. Dimensions Wafer and Single Flange Style CL150/150 (also see table 13)



1384598-D
1384556-D
82633-1

Table 14. Dimensions and Weights Wafer and Single Flange Style CL150

VALVE SIZE, NPS	A		B	C	D	E	F	H	J	K	L	M ⁽¹⁾	R	KEY SQ SIZE	APPROX WEIGHT
	Wafer	Single Flange													
mm															
30	866.6	991	158.8	590.6	520.7	314.5	114.3	336.6	See Thread Info Below	76.2	See Thread Info Below	735.8	69.9	15.9	528
36	1031.7	1175	177.8	657.4	619.3	314.5	114.3	304.8		152.4		887.7	69.9	15.9	806
42	1050	1360	228.6	838.2	730.3	314.5	114.3	304.8		152.4		1028.2	69.9	15.9	1302
48	1371.6	1524	260.4	901.7	797.1	314.5	114.3	508.0	203.2	1110.9	69.9	15.9	1904		
Inches															
30	34.12	39.00	6.25	23.25	20.50	12.38	4.5	13.25	1-1/4-8	3.00	7/8-9	28.97	2-3/4	5/8	1164
36	40.62	46.25	7.00	25.88	24.38	12.38	4.5	12.00	1-1/2-8	6.00	1-1/4-7	34.95	2-3/4	5/8	1778
42	47.50	53.56	9.00	33.00	28.75	12.38	4.5	12.00	1-1/2-8	6.00	1-1/4-7	40.48	2-3/4	5/8	2871
48	54.00	60.00	10.25	35.50	31.38	12.38	4.5	20.00	1-1/2-8	8.00	1-1/4-7	46.09	2-3/4	5/8	4198

1. M dimension is disc chordal swing diameter.

Figure 4. Dimensions Wafer and Single Flange Style CL150 (also see table 14)

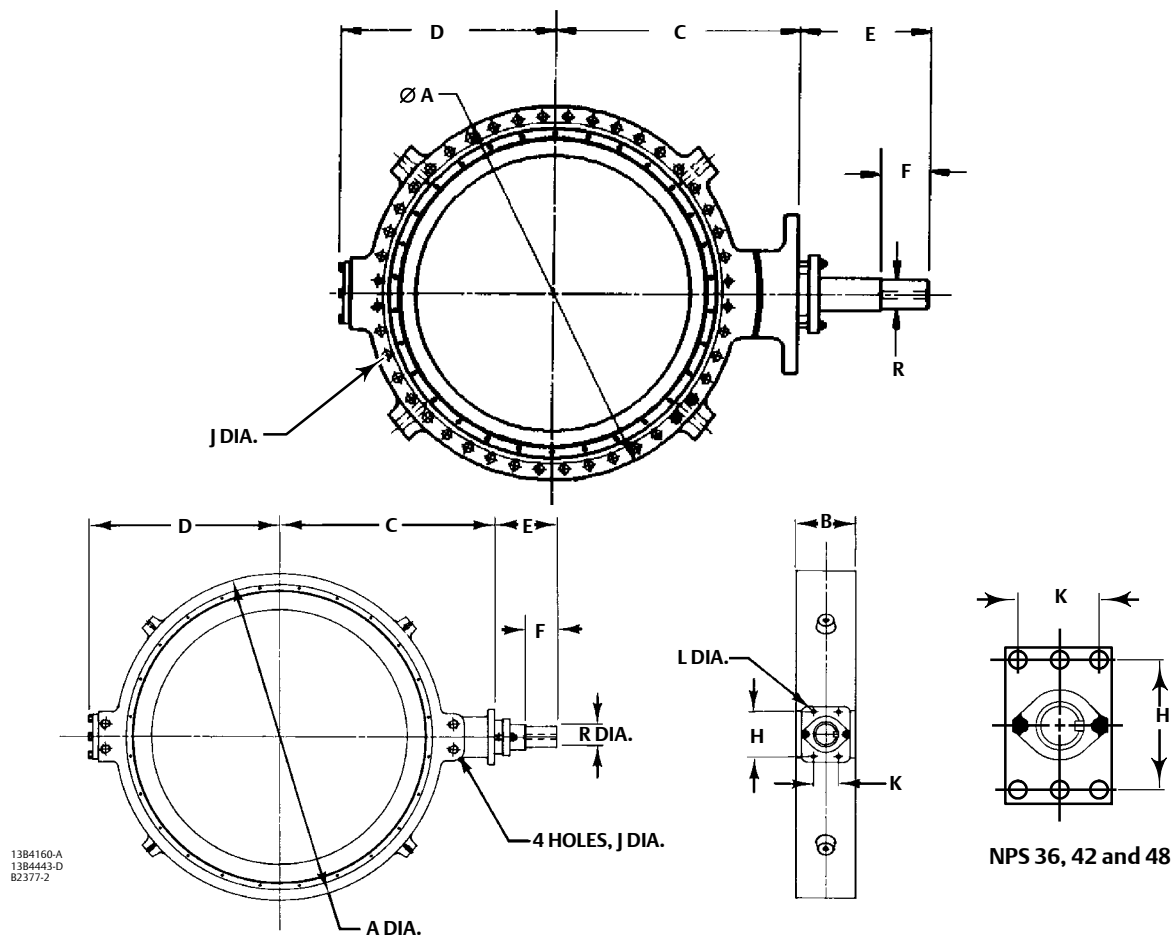


Table 15. Dimensions and Weights Wafer and Single Flange Style CL300

VALVE SIZE NPS	A		B	C	D	E	F	H	J	K	L	M ⁽¹⁾	R	KEY SQ SIZE	APPROX WEIGHT
	Wafer	Single Flange													
mm															
30	865	1105	241	648	576	314	114.3	508	See Thread Info Below	203	See Thread Info Below	681	70	15.9	952
36	1035	1286	273	740	675	353	152.4	432		203		838	95	22.2	1315
42	1162	1346	299	867	768	363	163.6	432		203		943	102	25.4	2263
48	1315	1484	422	934	888	497	114.3	660		330		1125	146	38.1	3056
Inches															
30	34.06	43.50	9.50	25.50	22.69	12.38	4.5	20.00	1-3/4-8	8.00	1-1/4-7	26.80	2-3/4	5/8	2100
36	40.75	50.62	10.75	29.12	26.56	13.88	6	17.00	2-8	8.00	1-1/4-7	32.99	3-3/4	7/8	2900
42	45.75	53.00	11.75	34.12	30.25	14.31	6.44	17.00	1-5/8-8	8.00	1-1/4-7	37.13	4	1	4989
48	51.75	58.44	16.62	36.75	34.94	19.56	4.5	26.00	1-7/8-8	13.00	1-1/4-7	44.29	5-3/4	1-1/2	6738

1. M dimension is disc chordal swing diameter.

Figure 5. Dimensions Wafer and Single Flange Style CL300 (also see table 15)

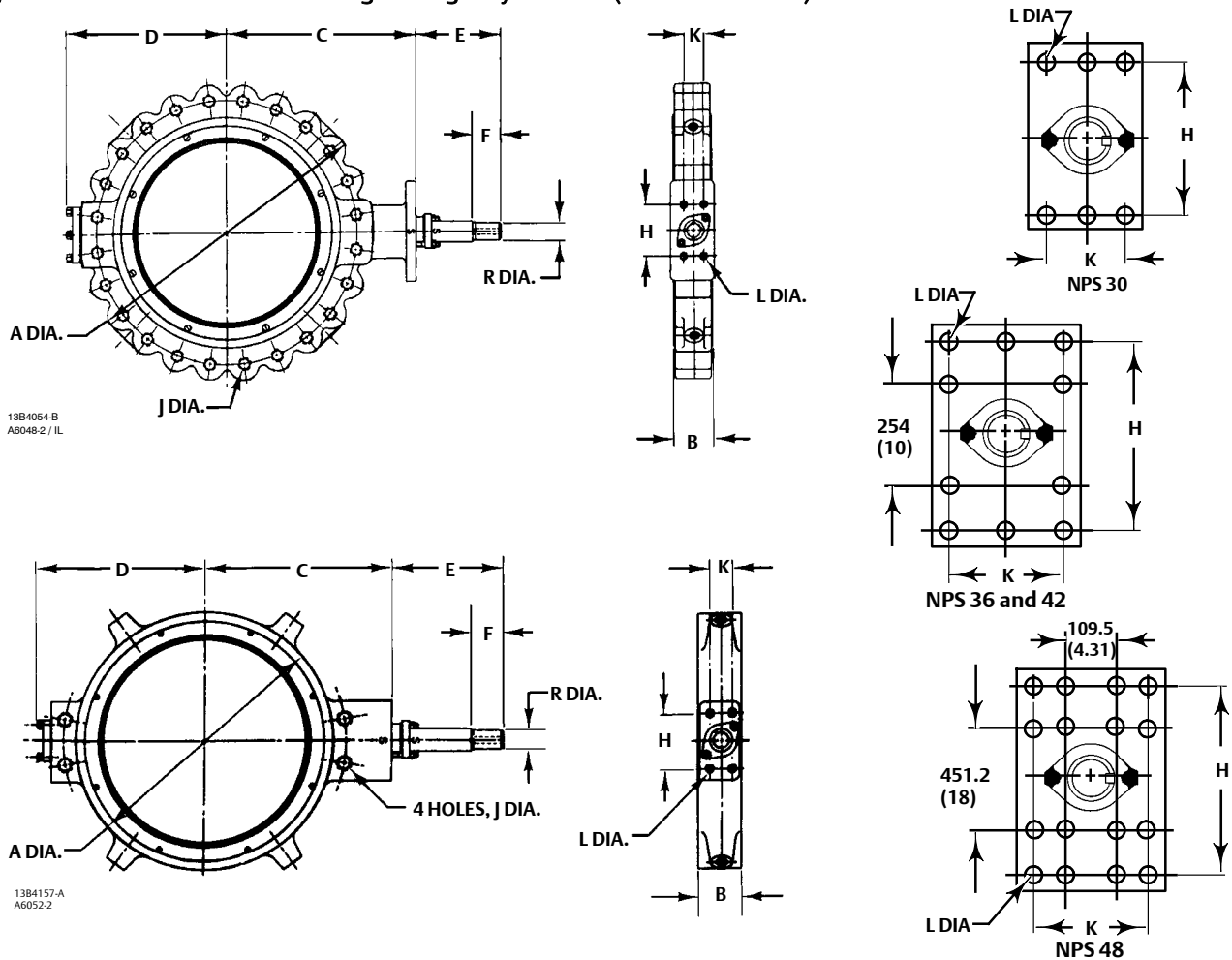


Table 16. Dimensions and Weights Single Flange Style CL600

VALVE SIZE, NPS	A	B	C	D	E			F		G Square	H	K	M(1)	R \varnothing		KEY SQ SIZE	APPROX WEIGHT
					Keyed Shaft	Splined Shaft	Sq Shaft	Keyed Shaft	Splined Shaft					Keyed	Splined		
mm																	kg
3	213	46	146	83	210	187	57	66.68	67	10.3	89	---	64	12.7	14.2 x 15.9	3.2	9
4	276	61	178	105	210	214	67	66.68	73	15.9	114	---	86	15.9	19.1	4.8	10
6	346	73	235	156	210	214	90	66.68	86	22.2	114	---	127	25.4	25.4	6.4	25
8	424	89	260	230	210	208	90	66.80	92	25.4	127	51	182	31.8	38.1	6.4	52
10	521	114	321	282	210	356	95	66.80	156	34.9	127	51	221	38.1	44.5	9.5	113
12	569	140	356	318	210	356	95	73.15	156	34.9	273	51	260	44.5	44.5	9.5	153
14	613	159	371	343	295	356	---	95.25	156	---	337	76.2	282	57.2	50.8	12.7	186
16	689	178	432	384	314	356	---	114.3	156	---	337	76.2	321	69.9	55.9	15.9	274
18	752	197	476	430	314	(2)	---	114.3	(2)	---	305	152.4	371	69.9	(2)	15.9	361
20	823	229	508	449	314	(2)	---	114.3	(2)	---	305	152.4	399	69.9	(2)	15.9	526
24	946	229	562	524	314	(2)	---	114.3	(2)	---	508	203.2	516	69.9	(2)	15.9	669
Inches																	lbs
3	8.38	1.81	5.75	3.25	8.25	7.38	2.25	2.625	2.62	13/32	3.50	---	2.52	1/2	9/16 x 5/8	1/8	20
4	10.88	2.38	7.00	4.12	8.25	8.44	2.62	2.625	2.88	5/8	4.50	---	3.40	5/8	3/4	3/16	23
6	13.62	2.88	9.25	6.12	8.25	8.44	3.56	2.625	3.38	7/8	4.50	---	4.98	1	1	1/4	54
8	16.69	3.50	10.25	9.06	8.25	8.19	3.56	2.63	3.63	1	5.00	2.00	7.17	1-1/4	1-1/2	1/4	115
10	20.50	4.50	12.62	11.12	8.25	14.00	3.75	2.63	6.13	1-3/8	5.00	2.00	8.70	1-1/2	1-3/4	3/8	249
12	22.38	5.50	14.00	12.50	8.25	14.00	3.75	2.88	6.13	1-3/8	10.75	2.00	10.22	1-3/4	1-3/4	3/8	337
14	24.12	6.25	14.62	13.50	11.63	14.00	---	3.75	6.13	---	13.25	3.00	11.09	2-1/4	2	1/2	410
16	27.12	7.00	17.00	15.12	12.38	14.00	---	4.5	6.13	---	13.25	3.00	12.63	2-3/4	2-1/2	5/8	605
18	29.62	7.75	18.75	16.94	12.38	(2)	---	4.5	(2)	---	12.00	6.00	14.62	2-3/4	(2)	5/8	796
20	32.38	9.00	20.00	17.69	12.38	(2)	---	4.5	(2)	---	12.00	6.00	15.71	2-3/4	(2)	5/8	1160
24	37.25	9.00	22.12	20.62	12.38	(2)	---	4.5	(2)	---	20.00	8.00	20.32	2-3/4	(2)	5/8	1475

1. M dimension is the disc chordal swing diameter.
2. Consult your Emerson Process Management sales office.

Table 17. Dimensions Single Flange Style CL600

VALVE SIZE, NPS	L	P
	mm	
3 - 24	See Thread Info Below	See Thread Info Below
VALVE SIZE, NPS	Inches	
3	0.53	3/4-10 8 holes
4	0.53	7/8-9 8 holes
6	0.53	1-8 12 holes
8	1/2-13	1-1/8-8 12 holes
10	3/4-10	1-1/4-8 16 holes
12	3/4-10	1-1/4-8 20 holes
14	7/8-9	1-3/8-8 20 holes
16	7/8-9	1-1/2-8 20 holes
18	1-1/4-7	1-5/8-8 20 holes
20	1-1/4-7	1-5/8-8 24 holes
24	1-1/4-7	1-7/8-8 24 holes

Figure 6. Dimensions Single Flange Style CL600 (also see table 16)

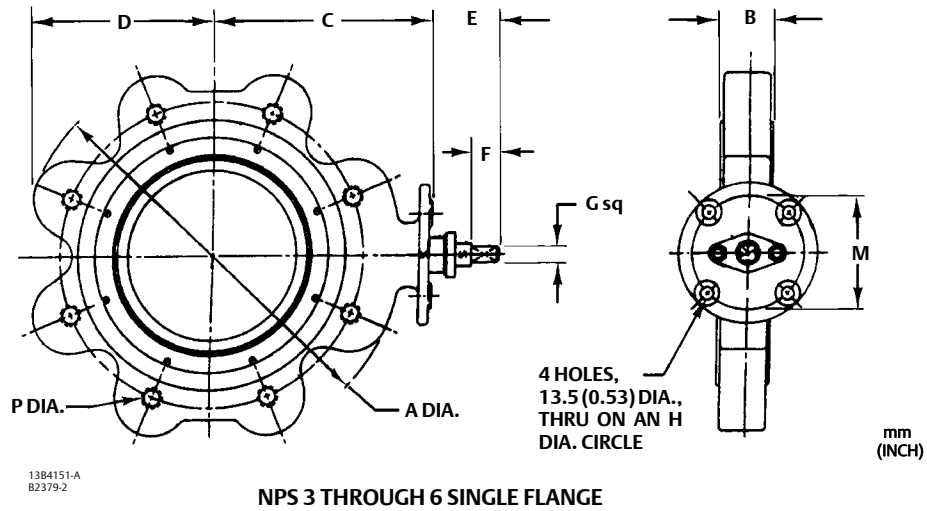


Figure 7. Dimensions Single Flange Style CL600 (also see table 16)

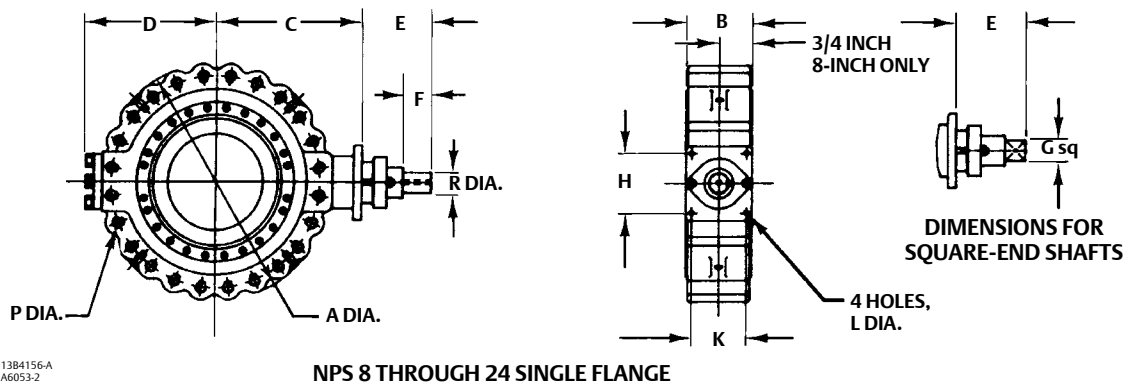


Table 18. Dimensions and Weights Single Flange Style CL900

VALVE SIZE, NPS	A	B	C	D	E		F	G Square	H	K	M ⁽¹⁾	R _Ø Keyed	KEY SQ SIZE	APPROX WEIGHT
					Keyed Shaft	Sq Shaft								
mm														kg
6	381	76	233	233	210	90	67	22	235	46	126	25	6	59.0
8	470	109	305	305	210	90	67	35	273	51	164	38	10	120
10	546	146	353	353	210	95	67	35	273	51	182	44	10	210
12	610	229	445	445	295	---	95	---	337	76	165	57	13	450
14	635	216	451	451	295	---	95	---	337	76	208	57	13	444
16	705	241	438	438	314	---	117	---	337	76	217	70	16	513
18	781	273	524	524	314	---	114	---	337	76	⁽²⁾	70	16	703
20	857	292	695	695	314	---	114	---	305	165	284	70	16	991
24	1041	333	657	657	314	---	117	---	572	203	366	95	22	1628
Inches														lbs
6	15.00	3.00	9.19	9.19	8.25	3.56	2.62	0.87	9.25	1.812	4.98	1.00	1/4	130
8	18.50	4.31	12.00	12.00	8.25	3.75	2.62	1.37	10.75	2.00	6.46	1.50	3/8	264
10	21.50	5.75	13.88	13.88	8.25	3.75	2.62	1.37	10.75	2.00	7.17	1.75	3/8	463
12	24.00	9.00	17.50	17.50	11.62	---	3.75	---	13.25	3.00	6.48	2.25	1/2	993
14	25.00	8.50	17.75	17.75	11.62	---	3.75	---	13.25	3.00	8.17	2.25	1/2	978
16	27.75	9.50	17.25	17.25	12.38	---	4.62	---	13.25	3.00	8.55	2.75	5/8	1132
18	30.76	10.75	20.63	20.63	12.38	---	4.50	---	13.25	3.00	⁽²⁾	2.75	5/8	1550
20	33.75	11.50	27.38	27.38	12.38	---	4.50	---	12.00	6.50	11.19	2.75	5/8	2185
24	41.00	13.12	25.88	25.88	12.38	---	4.62	---	22.50	8.00	14.40	3.75	7/8	3590

1. M dimension is the disc chordal swing diameter.
2. Contact your Emerson Process Management sales office.

Table 19. Dimensions Single Flange Style CL900

VALVE SIZE, NPS	L	J
	mm	
6	See Thread Info Below	See Thread Info Below
8		
10		
12		
14		
16		
18		
20		
24		
VALVE SIZE, NPS	Inches	
6	5/8-11 4 Holes	1-1/8-8 12 Holes
8	3/4-10 4 Holes	1-3/8-8 12 Holes
10	3/4-10 4 Holes	1-3/8-8 16 Holes
12	7/8-9 4 Holes	1-3/8-8 20 Holes
14	7/8-9 4 Holes	1-1/2-8 20 Holes
16	7/8-9 4 Holes	1-5/8-8 20 Holes
18	1-1/4-7 6 Holes	1-7/8-8 20 Holes
20	1-1/4-7 6 Holes	2-8 20 Holes
24	1-1/4-7 6 Holes	2-1/2-8 20 Holes

Table 20. Dimensions and Weights Single Flange Style CL1500

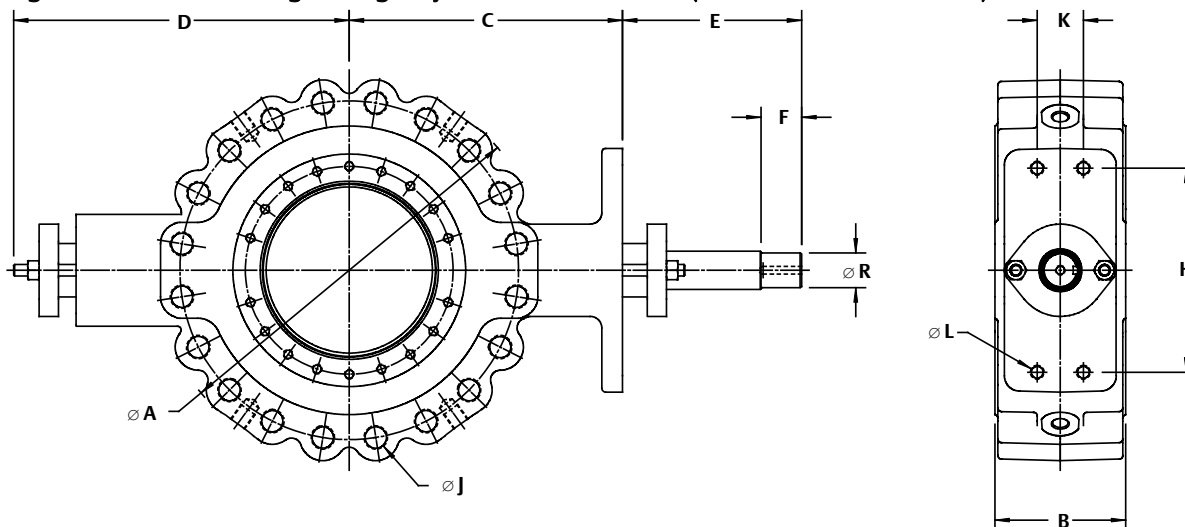
VALVE SIZE, NPS	A	B	C	D	E	F	H	K	M(1)	R \varnothing Keyed	KEY SQ SIZE	APPROX WEIGHT
					Keyed Shaft							
mm												
10	584	178	399	399	295	95	337	76	118	57	13	311
12	673	267	445	445	305	105	337	76	(2)	64	16	663
14	754	283	483	483	210	114	337	76	(2)	70	16	810
16	826	321	559	559	314	152	305	152	(2)	70	22	1152
18	914	349	629	629	379	164	508	203	(2)	102	25	1613
20	991	410	682	682	404	171	508	203	(2)	108	25	2250
Inches												
10	23.00	7.00	15.69	15.69	11.62	3.75	13.25	3.00	4.63	2.25	1/2	685
12	26.50	10.50	17.50	17.50	12.00	4.13	13.25	3.00	(2)	2.50	5/8	1462
14	29.69	11.13	19.00	19.00	8.25	4.50	13.25	3.00	(2)	2.75	5/8	1785
16	21.50	12.63	22.00	22.00	12.38	6.00	12.00	6.00	(2)	2.75	7/8	2540
18	36.00	13.75	24.75	24.75	14.94	6.44	20.00	8.00	(2)	4.00	1	3555
20	39.00	16.13	26.84	26.84	15.89	6.75	20.00	8.00	(2)	4.25	1	4960

1. M dimension is the disc chordal swing diameter.
2. The disc size is less than the face-to-face dimension of this valve. Therefore, the disc chordal swing is not applicable when sizing this valve.

Table 21. Dimensions Single Flange Style CL1500

VALVE SIZE, NPS	L	J
	mm	
10	See Thread Info Below	See Thread Info Below
12		
14		
16		
18		
20		
VALVE SIZE, NPS	Inches	
10	7/8-9 4 Holes	1-7/8-8 12 Holes
12	7/8-9 4 Holes	2-8 16 Holes
14	7/8-9 4 Holes	2-1/4-8 16 Holes
16	1-1/4-7 6 Holes	2-1/2-8 16 Holes
18	1-1/4-7 6 Holes	2-3/4-8 16 Holes
20	1-1/4-7 6 Holes	3-8 16 Holes

Figure 8. Dimensions Single Flange Style CL900 and CL1500 (also see tables 18 and 20)



Coefficients

Table 22. CL150/150, Reverse Flow

CL150/150										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	30	608	2030	4460	7700	12,200	18,200	25,500	32,800	40,500
K _v		526	1760	3860	6660	10,600	15,700	22,100	28,400	35,000
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	36	910	3030	6670	11,500	18,200	27,300	38,200	49,100	60,600
K _v		787	2620	5770	9950	15,700	23,600	33,000	42,500	52,400
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	42	1200	3990	8780	15,200	24,000	35,900	50,300	64,700	79,800
K _v		1040	3450	7600	13,100	20,800	31,100	43,500	56,000	69,000
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	48	1590	5300	11,700	20,100	31,800	47,700	66,800	85,800	106,000
K _v		1380	4580	10,100	17,400	27,500	41,300	57,800	74,200	91,700
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23

Table 23. CL150, Reverse Flow

CL150										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	30	508	1690	3730	6440	10,200	15,200	21,300	27,400	33,900
K _v		439	1460	3230	5570	8823	13,100	18,400	23,700	29,300
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	36	757	2520	5550	9590	15,100	22,700	31,800	40,900	50,500
K _v		654	2180	4800	8300	13,100	19,600	27,500	35,400	43,700
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	42	1090	3640	8000	13,800	21,800	32,700	45,800	58,900	72,700
K _v		943	3150	6920	11,900	18,900	28,300	39,600	50,900	62,900
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	48	1390	4630	10,200	17,600	27,800	41,700	58,400	75,000	92,600
K _v		1200	4000	8820	15,200	24,000	36,100	50,500	64,900	80,100
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23

Table 24. CL300, Reverse Flow

CL300										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	30	715	1790	3700	6320	9780	14,000	18,100	21,200	23,800
K _v		618	1550	3200	5470	8460	12,100	15,700	18,300	20,600
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	36	1100	2760	5700	9750	15,100	21,700	28,000	32,800	36,800
K _v		952	2390	4930	8430	13,100	18,800	24,200	28,400	31,800
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	42	1710	4280	8840	15,100	23,400	33,700	43,400	50,800	57,100
K _v		1480	3700	7650	13,100	20,200	29,200	37,500	43,900	49,400
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	48	1870	4670	9650	16,500	25,500	36,700	47,300	55,400	62,200
K _v		1620	4040	8350	14,300	22,100	31,700	40,900	47,900	53,800
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23

Table 25. CL600, Reverse Flow, NPS 3 through 6

CL600										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	3	5	16	31	51	84	122	151	169	182
K _v		4	14	27	44	73	106	131	146	157
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	4	8	23	43	71	116	169	209	234	252
K _v		7	20	37	61	100	146	181	202	218
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	6	15	46	87	144	236	344	426	477	513
K _v		13	40	75	125	204	298	368	413	444
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23

Table 26. CL600, Reverse Flow, NPS 8 through 24

CL600										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	8	35	104	197	324	532	775	960	1080	1160
K _v		30	90	170	280	460	670	830	934	1000
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	10	62	185	350	577	947	1380	1710	1920	2060
K _v		53	160	303	499	819	1190	1480	1660	1780
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	12	85	255	481	793	1300	1900	2350	2630	2830
K _v		74	221	416	686	1120	1640	2030	2270	2450
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	14	104	312	590	971	1600	2320	2880	3230	3470
K _v		90	270	510	840	1380	2010	2490	2790	3000
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	16	138	413	781	1290	2110	3080	3810	4270	4590
K _v		119	357	676	1120	1830	2660	3300	3690	3970
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	18	175	524	989	1630	2680	3900	4830	5410	5820
K _v		151	453	855	1410	2320	3370	4180	4680	5030
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	20	196	588	1110	1830	3010	4380	5430	6080	6540
K _v		170	509	960	1580	2600	3790	4700	5260	5660
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	24	349	1050	1980	3260	5350	7790	9650	10,800	11,600
K _v		302	908	1710	2820	4630	6740	8350	9340	10,000
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23

Table 27. CL900, Reverse Flow

CL900										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	6	17	52	100	174	265	343	385	417	434
K _v		15	45	87	151	229	297	333	361	375
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	8	30	89	170	296	452	585	659	711	741
K _v		26	77	147	256	391	506	570	615	641
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	10	56	169	324	563	859	1112	1253	1352	1408
K _v		48	146	280	487	743	962	1084	1169	1218
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	12	50	151	290	504	769	995	1121	1210	1260
K _v		43	131	251	436	665	861	970	1047	1090
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	14	111	332	636	1106	1687	2184	2461	2654	2765
K _v		96	287	550	957	1459	1889	2129	2296	2392
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	16	140	421	806	1402	2138	2769	3119	3365	3505
K _v		121	364	697	1213	1849	2395	2698	2911	3032
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	18	182	546	1046	1820	2775	3594	4049	4367	4549
K _v		157	472	905	1574	2400	3109	3502	3777	3935
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	20	214	614	1228	2135	3256	4217	4751	5124	5338
K _v		185	531	1062	1847	2816	3648	4110	4432	4617
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	24	330	989	1895	3296	5029	6509	7333	7909	8239
K _v		285	855	1639	2851	4347	5630	6343	6841	7127
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23

Table 28. CL1500, Reverse Flow

CL1500										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	10	44	147	265	420	553	649	700	730	737
K _v		38	127	229	363	478	561	606	631	638
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.8	0.81	0.76	0.7	0.63	0.57	0.54	0.52	0.52
X _T		0.54	0.55	0.49	0.41	0.34	0.27	0.24	0.23	0.23
C _v	12	76	153	456	722	950	1115	1204	1254	1267
K _v		66	132	394	625	822	964	1041	1085	1096
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.8	0.81	0.76	0.7	0.63	0.57	0.54	0.52	0.52
X _T		0.54	0.55	0.49	0.41	0.34	0.27	0.24	0.23	0.23
C _v	14	83	275	495	784	1032	1211	1307	1362	1376
K _v		72	238	428	678	893	1048	1131	1178	1190
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.8	0.81	0.76	0.7	0.63	0.57	0.54	0.52	0.52
X _T		0.54	0.55	0.49	0.41	0.34	0.27	0.24	0.23	0.23
C _v	16	109	363	653	1033	1360	1595	1722	1795	1813
K _v		94	314	565	894	1176	1380	1490	1553	1568
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.8	0.81	0.76	0.7	0.63	0.57	0.54	0.52	0.52
X _T		0.54	0.55	0.49	0.41	0.34	0.27	0.24	0.23	0.23
C _v	18	166	554	997	1579	2077	2438	2631	2742	2770
K _v		144	479	862	1366	1797	2109	2276	2372	2396
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.8	0.81	0.76	0.7	0.63	0.57	0.54	0.52	0.52
X _T		0.54	0.55	0.49	0.41	0.34	0.27	0.24	0.23	0.23
C _v	20	203	677	1219	1931	2540	2981	3218	3353	3387
K _v		176	586	1054	1670	2197	2579	2784	2900	2930
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.8	0.81	0.76	0.7	0.63	0.57	0.54	0.52	0.52
X _T		0.54	0.55	0.49	0.41	0.34	0.27	0.24	0.23	0.23

Table 29. CL600/300, CL900/300, and CL1500/300, Reverse Flow, NPS 3 through 18

CL600/300, CL900/300, and CL1500/300										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	3	6	14	29	50	77	111	143	167	188
K _v		5	12	25	43	67	96	124	144	163
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	4	12	30	63	107	166	238	307	360	404
K _v		10	26	54	93	144	206	266	311	349
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	6	32	81	167	285	441	635	818	958	1076
K _v		28	70	144	247	381	549	708	829	931
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	8	40	100	206	352	545	784	1010	1183	1329
K _v		35	87	178	304	471	678	874	1023	1150
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	10	71	178	367	628	971	1398	1800	2108	2369
K _v		61	154	317	543	840	1209	1557	1823	2049
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	12	110	276	571	975	1509	2172	2798	3276	3681
K _v		95	239	494	843	1305	1879	2420	2834	3184
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	14	136	341	704	1204	1863	2682	3454	4045	4545
K _v		118	295	609	1041	1611	2320	2988	3499	3931
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	16	169	422	873	1492	2309	3323	4280	5012	5632
K _v		146	365	755	1291	1997	2874	3702	4335	4872
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	18	247	617	1276	2181	3374	4856	6255	7325	8230
K _v		214	534	1104	1887	2919	4200	5411	6336	7119
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23

Table 30. CL600/300, CL900/300, and CL1500/300, Reverse Flow, NPS 20 through 24

CL600/300, CL900/300, and CL1500/300										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C_v	20	286	714	1477	2524	3906	5620	7240	8478	9526
K_v		247	618	1278	2183	3379	4861	6263	7333	8240
F_d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F_L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X_T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C_v	24	375	938	1939	3315	5130	7381	9508	11135	12511
K_v		324	811	1677	2867	4437	6385	8224	9632	10822
F_d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F_L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X_T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23

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