High Cycle Ball Valves

Index

Family Features

- Rated up to 100,000 cycles
- Working pressures up to 6000 psig (414 bar)
- Working temperatures up to 500° F (260° C)
- Wide range of end connections

ball valves

CRANE Instrumentation & Sampling, HOKE®
PO Box 4866 • Spartanburg, SC 29305-4866
(864) 574-7966 • www.hoke.com

For Your Safety

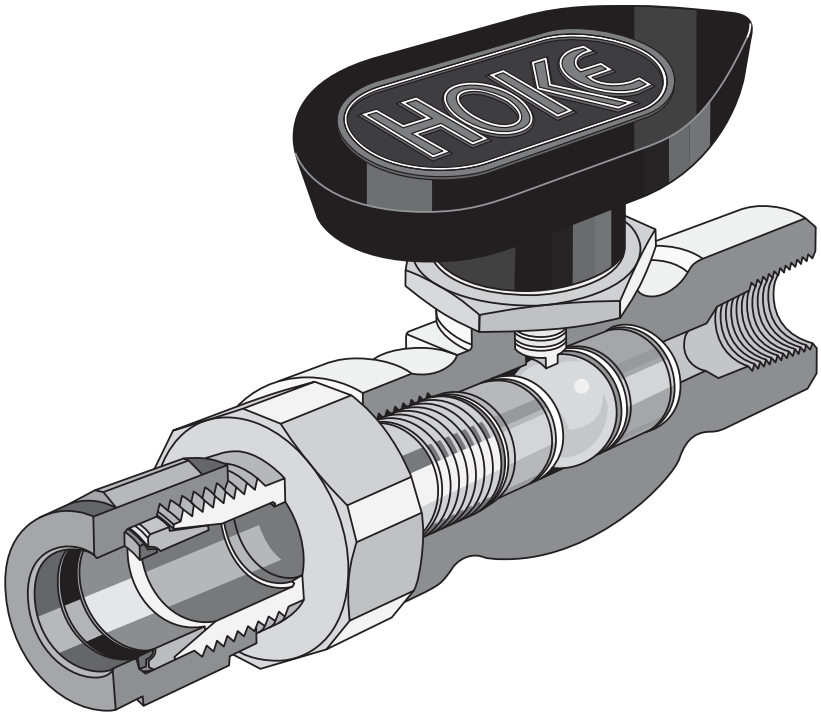
It is solely the responsibility of the system designer and user to select products suitable for their specific application requirements and to ensure proper installation, operation, and maintenance of these products. When selecting products, the total system design must be considered to ensure safe, trouble-free performance. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.

Contact your authorized HOKE® sales and service representative for information about additional sizes and special alloys.

SAFETY WARNING:

HOKE® products are designed for installation only by professional suitably qualified licensed system installers experienced in the applications and environments for which the products are intended. These products are intended for integration into a system. Where these products are to be used with flammable or hazardous media, precautions must be taken by the system designer and installer to ensure the safety of persons and property. Flammable or hazardous media pose risks associated with fire or explosion, as well as burning, poisoning or other injury or death to persons and/or destruction of property. The system designer and installer must provide for the capture and control of such substances from any vents in the product(s). The system installer must not permit any leakage or uncontrolled escape of hazardous or flammable substances. The system operator must be trained to follow appropriate precautions and must inspect and maintain the system and its components including the product(s) and at regular intervals in accordance with timescales recommended by the supplier to prevent unacceptable wear or failure.

High Cycle Ball Valves at a Glance



HOKE® High Cycle ball valves are designed for repeatable, zero leakage sealing when control conditions demand valve actuation exceeding 50,000 cycles. Their unique stem- and seat designs provide packless-free operation and ease of maintenance.

HOKE® High Cycle ball valves provide a wide range of capabilities for demanding applications. Temperature limits range from -65° F (-54° C) to 500° (260° C). Operating pressure limits run as high as 6000 psig (414 bar) for the D/DL Series valves. Choose a 2-way ball valve for fast, quarter-turn on-off operation. Alternatively, a 3-way ball valve such as the HOKE® 7 Series employs 180° operation for diverting flow from one line to another. In situations where fire propagation is an issue, HOKE® offers the 7 Series Fire Safe ball valve.

Before making your high cycle ball valve selection, be sure to consider the system pressure, operating temperature, required flow and materials of construction. If you application requires a ball valve not listed in this catalog, contact your local HOKE® stocking distributor, or the factory.

High Cycle Ball Valves at a Glance

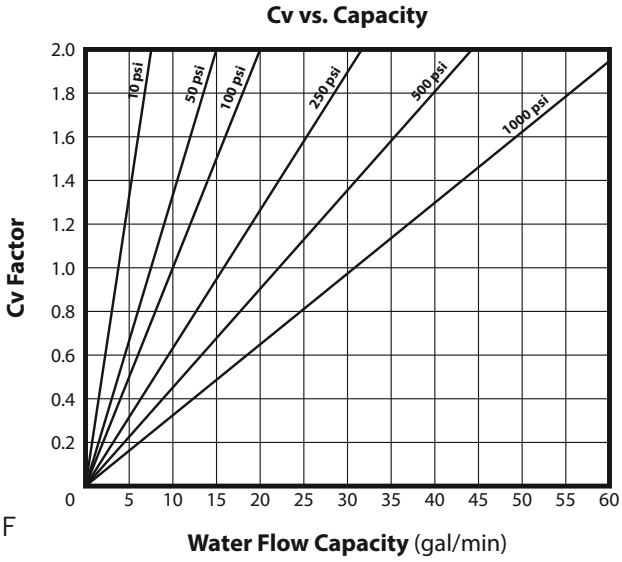
	SERIES	DESCRIPTION/APPLICATIONS	FEATURES	STANDARD BODY MATERIAL
	D, DL, T & TL Series High Cycle, Zero Leak Ball Valves 2-way Ball Valves (page 5)	• DL/TL Series - 100K cycles • D/T Series - 50K cycles • D/DL Series - High pressure	• Live-loaded seats (DL & TL) • Bi-directional (T & D) • Uni-directional (DL & TL)	316 stainless steel Brass (DL/T/TL) MONEL®
	7223D Series High Performance Rotoball® 2-way Ball Valves (page 13)	• CNG fuel stations • CNG vehicles • Hydrogen fuel cells • Pilot plants	• Bi-directional • Blow-out proof stem • Extended life cycle	316 stainless steel MONEL® R-405
	7 Series 2- and 3-way 3-piece Bolted Ball Valves (page 17)	• On-off service • High cycle life • High flow	• Removable valve center • Live-loaded stem and seat seals compensate for thermal cycling and wear with zero leakage • Blow-out proof stem	316L stainless steel
	7 Series – Fire Safe 2-way, 3-piece Bolted Ball Valve (page 32)	• High flow, high safety • Chemical processing • Petroleum refining • Gas distribution • Hydraulic fluids	• Design retards propagation of downstream fire • Meets API 607 4th edition requirements • Bottom-loaded, blow-out proof stem • Fully encapsulated bolts	316 stainless steel, grade CF8M

Liquid Flow capacity of HOKE® Ball Valves

To determine the Cv or flow of a **liquid** @ 60° F (16° C):

$$\textbf{Cv} = \frac{\text{GPM}}{\sqrt{\frac{\Delta p}{\text{S.G.}}}} \quad \text{or} \quad \textbf{GPM} = \text{Cv}\sqrt{\frac{\Delta p}{\text{S.G.}}}$$

where: $\Delta p = p1 - p2$
p1 = inlet pressure in psia
p2 = outlet pressure in psia
GPM = flow in gallons per minute
S.G. = specific gravity of liquid where water = 1.0 @ 60° F (16° C)



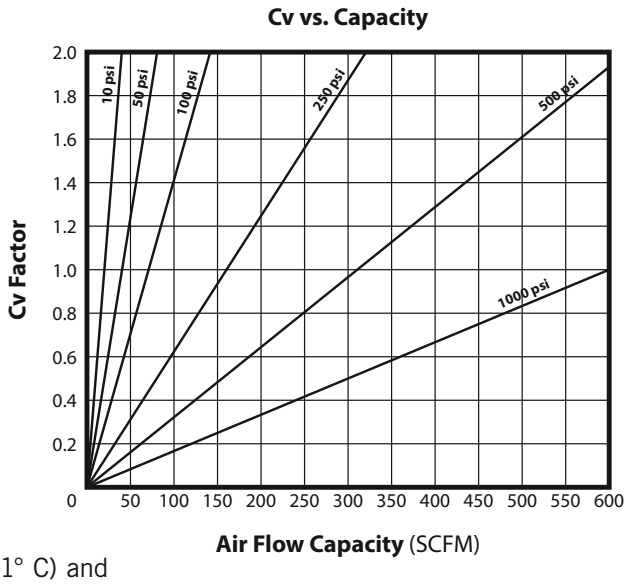
High Cycle Ball Valves at a Glance

MAX. OPERATING PRESSURE @70° F (21°C)	OPERATING TEMPERATURE RANGE	C_v FLOW RANGE (VARIES W/END CONNECTION)	ORIFICE SIZES	STANDARD END CONNECTORS
316 SS and MONEL® D & DL: 6000 psig (414 bar) T: 1500 psig (103 bar) TL: 3000 psig (207 bar) **Brass** DL: 3000 psig (207 bar) T: 1500 psig (103 bar) TL: 3000 psig (207 bar)	–40° F to +350° F (–40° C to +177° C)	0.023 to 1.44	0.093″ to 0.250″ (2.36 mm to 6.35 mm)	⅛″, ¼″, ⅜″, ½″ GYROLOK® ¼″ male NPT × ¼″ GYROLOK® ¼″ female NPT 6 mm, 8 mm, 10 mm GYROLOK®
5000 psig (345 bar)	–65° F to +400° F (–54° C to +204° C)	3.4	0.375″ (9.35 mm)	⅜″, ½″ GYROLOK® ⅜″, ½″ female NPT ⅜″, ½″ SAE 12 mm GYROLOK®
2500 psig (172 bar)	**FKM (Viton®)** –20° F to +450° F (–29° C to +232° C) **Curved Disc Springs** –65° F to +500° F (–54° C to +260° C)	1.0 to 0.38	0.19″ to 0.81″ (4.8 mm to 20.6 mm)	⅛″, ¼″, ⅜″, ½″, ¾″, 1″ GYROLOK® ¼″, ⅜″, ½″, ¾″, 1″ female NPT 6, 8, 10, 12, 18, 20, 22, 25mm GYROLOK® ¼″, ⅜″, ½″, ¾″, 1″ tube socket weld ¼″, ⅜″, ½″, ¾″, 1″ pipe socket weld ¼″, ⅜″, ½″, ¾″, 1″ pipe butt weld
vacuum to 1500 psig (103 bar)	–40° F to +500° F (–40° C to +260° C)	4.5 to 38	0.28″ to 0.88″ (7.1 mm to 22.3 mm)	⅜″, ½″, ¾″, 1″ GYROLOK® ⅜″, ½″, ¾″, 1″ female NPT ⅜″, ½″, ¾″, 1″ tube socket weld ⅜″, ½″, ¾″, 1″ pipe socket weld ⅜″, ½″, ¾″, 1″ pipe butt weld 12 mm, 18 mm, 25 mm GYROLOK®

Gas Flow capacity of HOKE® Ball Valves

To determine the Cv or flow of a **gas** @ 70° F (21° C):

$$\textbf{Cv} = \frac{\text{SCFH}}{1360\sqrt{\frac{(\Delta p)\,(p_1)}{(460+T)\,(S.G.)}}} \quad \text{or} \quad \textbf{SCFH} = 1360\,Cv\sqrt{\frac{(\Delta p)\,(p_1)}{(460+T)\,(S.G.)}}$$



where:
- Δp = p1 – p2
- p1 = inlet pressure in psia
- p2 = outlet pressure in psia
- SCFH = flow in standard cubic feet per hour
- S.G. = specific gravity of gas where air = 1.0 @ 70° F (21° C) and 14.7 psia
- T = temperature in ° F

D & T Series

Bi-directional, High Cycle, Zero Leak Ball Valves

DL & TL Series

Uni-directional, High Cycle, Zero Leak Ball Valves

HOKE®'s DL/TL ball valves are uni-directional, high cycle valves that exceed 100,000 cycles with zero seat leakage. ** In applications where bi-directional flow is required, HOKE® D and T series valves exceed 50,000 cycles. HOKE® ball valves can be ordered in brass, 316 stainless steel or MONEL® materials with a manual handle as standard.

For remote actuation , factory-assembled HOKE® Space Saver™ Actuators are available. D, DL, T and TL series valves can be ordered with welded end fittings to prevent accidental disassembly or with gasketed end fittings, if valve rebuild becomes necessary.

Technical Data

BODY MATERIAL*	316 stainless steel, brass, MONEL®
CYCLE LIFE	D, T = 50,000; DL, TL = 100,000
MAXIMUM OPERATING PRESSURE	• *316 stainless steel and MONEL®* D & DL: 6000 psig @ 70° C (414 bar @ 21° C) T: 1500 psig @ 70° C (207 bar @ 21° C) TL: 3000 psig @ 70° C (207 bar @ 21° C) • *Brass* DL & TL: 3000 psig @ 70° C (207 bar @ 21° C) T: 1500 psig @ 70° C (207 bar @ 21° C)
PROOF PRESSURE SAFETY FACTOR	2:1
BURST PRESSURE SAFETY FACTOR	4:1
TEMPERATURE RANGE	–40° F to +350° F (–40° C to +177° C)**
ORIFICE SIZES	0.093″ to 0.250″ (2.36mm to 6.35mm)
Cv FACTORS	0.023 to 1.44

* *Consult factory for other materials*

** *Depending on seat, seal, and washer material selected. See page 11 for ordering details*

Features & Benefits

Delta stem seal (D & DL)
- Improved cycle life
- No packing adjustment required
- Rated to 6000 psig (414 bar)
- Low operating torque for ease of operation

Spring-loaded PTFE seal (T & TL)
- Compensates for wear and thermal cycling with zero leakage, providing excellent durability and reliability.

Choice of end-fittings for versatility
- 70 Series – welded
- 71 Series – gasketed

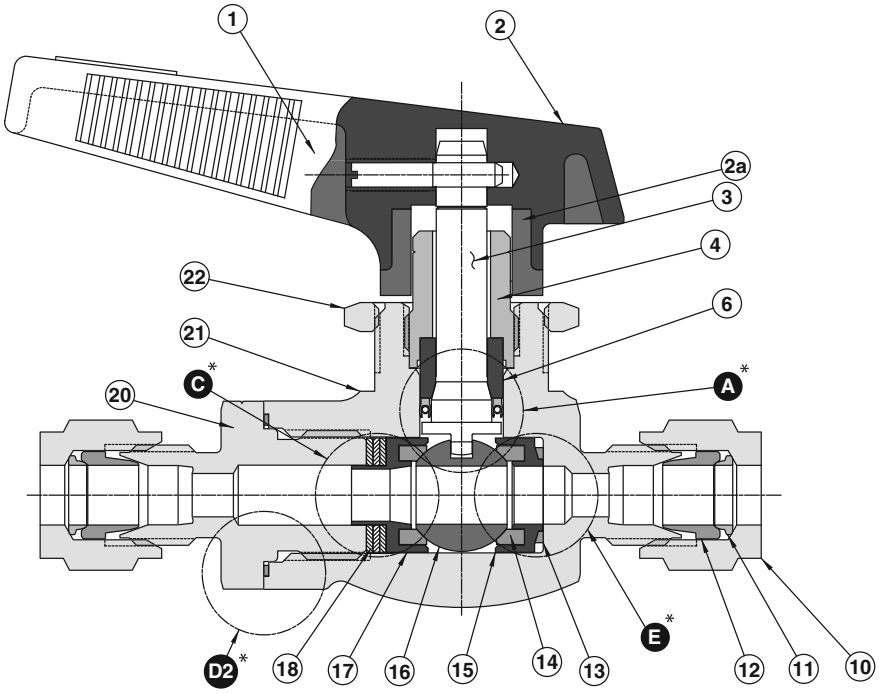
Live-loaded seats (DL & TL)
- Compensates for wear and thermal cycling with zero leakage, providing excellent durability and reliability.
- Ensures leak-tight performance over entire pressure range simplifying ball valve specification and installation, saving time and expense.

Static –grounded stem
- Prevents static discharge for added safety

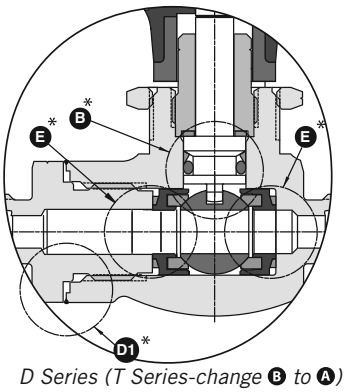
Quarter-turn handle
- Quick on/off simplifies operation and saves time.
- Directional handle provides quick visual indication of orifice, improves operator efficiency and safety.
- Special High Tolerance NPT Thread

D, DL, T, TL Series

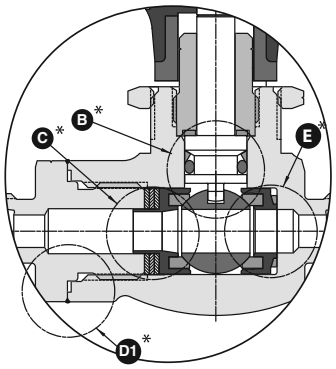
Materials of Construction



TL Series (PTFE stem seal)
uni-directional flow



D Series (T Series-change B to A)
bi-directional flow



DL Series (Delta stem seal)
uni-directional flow

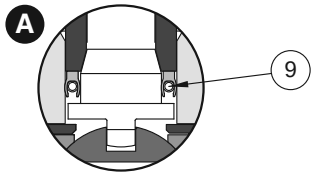
* *Refer to page 7 for details*

		D, DL VALVES			T, TL VALVES		
		BASIC VALVE MATERIAL			BASIC VALVE MATERIAL		
	DESCRIPTION	316 STAINLESS STEEL	MONEL®	BRASS	316 STAINLESS STEEL	MONEL®	BRASS
1	Handle pin		316 stainless steel			316 stainless steel	
2	Handle		Nylon			Nylon	
2a	Handle insert		316L stainless steel			316L stainless steel	
3	Stem	316 SS	MONEL® R-405	316 SS	316 SS	MONEL® R-405	316 SS
4	Stem retainer	316 SS	MONEL® R-405	Brass	316 SS	MONEL® R-405	Brass
5	Thrust washer (D & DL)		PEEK™			—	
6	Stem guide (T & TL)		—			15% Graphite-filled PTFE	
7	Delta backup ring (D & DL)		PTFE			—	
8	O-ring (D & DL)		FKM (Viton®)			—	
9	Energized PTFE seal (T & TL)		—			Graphite-filled PTFE / Elgiloy®	
10	GYROLOK® Nut (both ends)	316 SS	MONEL® R-405	Brass	316 SS	MONEL® R-405	Brass
11	Rear ferrule	316 SS	MONEL® R-405	Brass	316 SS	MONEL® R-405	Brass
12	Front ferrule	316 SS	MONEL® R-405	Brass	316 SS	MONEL® R-405	Brass
13	Washer		PTFE			PTFE	
14	Seat		PCTFE			15% Graphite-filled PTFE	
15	Downstream seat retainer	316 SS	MONEL® R-405	Brass	316 SS	MONEL® R-405	Brass
16	Ball	316 SS	MONEL® R-405	316 SS	316 SS	MONEL® R-405	316 SS
17	Upstream seat retainer	316 SS	MONEL® R-405	Brass	316 SS	MONEL® R-405	Brass
18	Spring washers (3)	316 SS	INCONEL®	316 SS	316 SS	INCONEL®	316 SS
19	Gasket (71 Series)		PTFE			PTFE	
20	End fitting	316 SS	MONEL® R-405	Brass	316 SS	MONEL® R-405	Brass
21	Body	316 SS	MONEL® 400	Brass	316 SS	MONEL® 400	Brass
22	Mounting nut	316 SS	MONEL® R-405	Brass	316 SS	MONEL® R-405	Brass

D, DL, T, TL Series

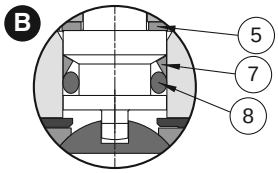
Distinctions

T & TL Series valves come with...



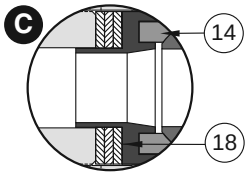
Energized PTFE Seal

D & DL Series valves come with...



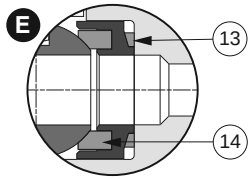
Delta Stem Seal

TL & DL Series valves come with...



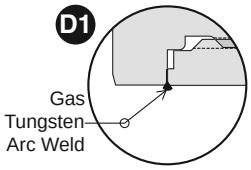
Spring-loaded Seats-Inlet TL & DL have "E" Outlet (uni-directional flow)

D & T Series valves come with...

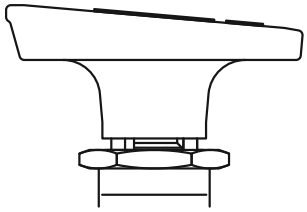


PCTFE Seats-Inlet and Outlet (bi-directional flow)

70 Series valves come with...

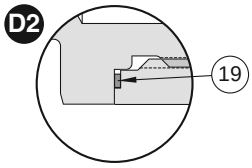


Welded End Fittings
(prevents accidental disassembly)

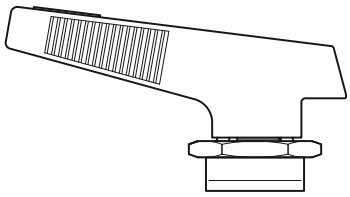


Nylon Oval Handle
(prevents accidental cycling of valve)

71 Series valves come with...

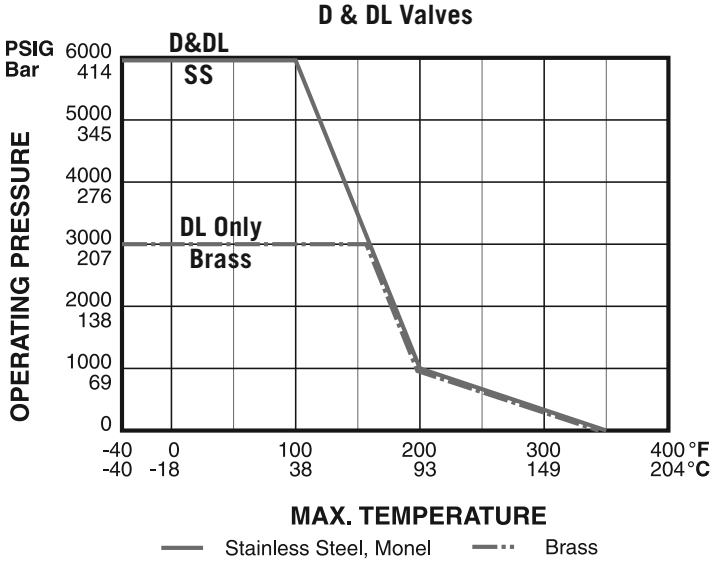


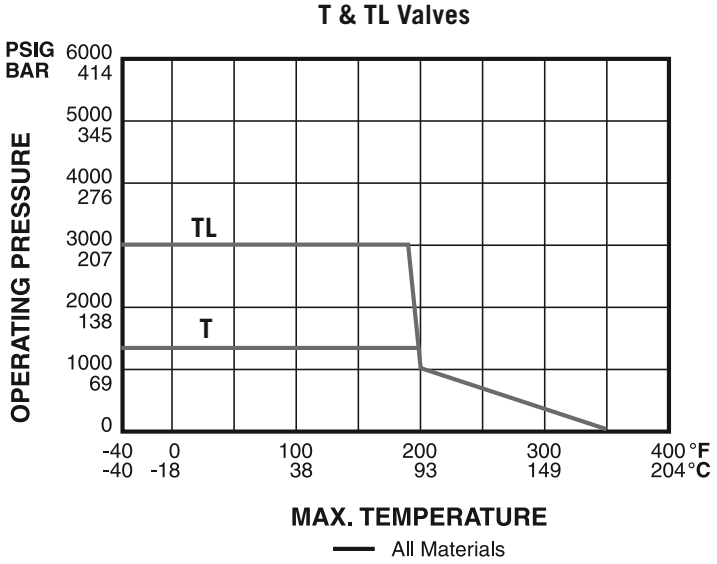
Gasketed End Fittings
(allows for rebuilding)



Nylon Lever Handle
(maximum visual indication of valve position)

Pressure vs. Temperature Charts



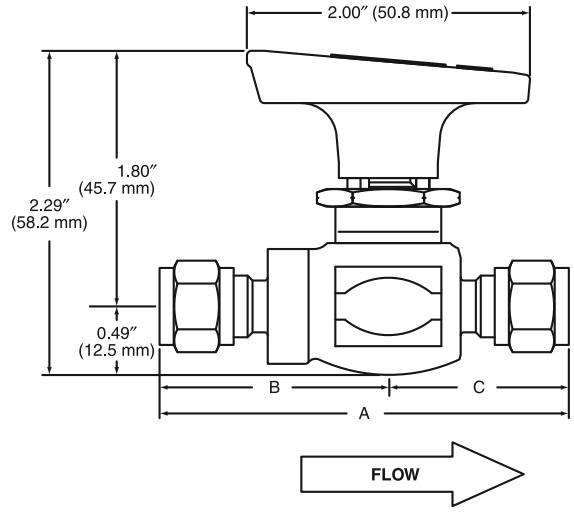


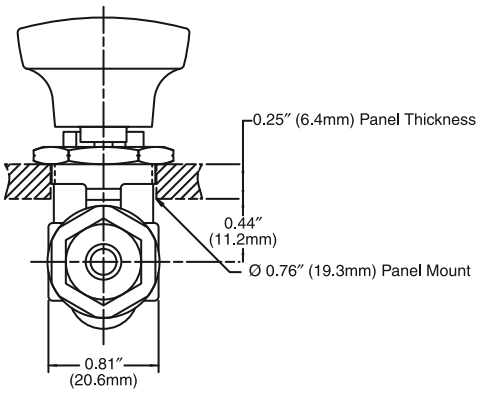
D, DL, T, TL Series

Dimensions

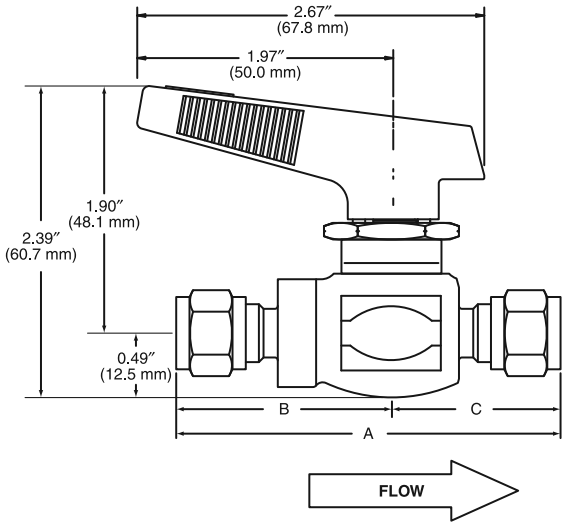
PART NUMBER	END CONNECTIONS		ORIFICE	Cv	A	B	C
G2	⅛″ GYROLOK® × ⅛″ GYROLOK®	inch	0.093	0.23	2.96	1.72	1.24
		mm	2.36		75.2	43.7	31.5
G4	¼″ GYROLOK® × ¼″ GYROLOK®	inch	0.187	0.8	3.11	1.82	1.29
		mm	4.75		79.0	46.2	32.8
G6	⅜″ GYROLOK® × ⅜″ GYROLOK®	inch	0.250	1.44	3.08	1.78	1.30
		mm	6.35		78.2	45.2	33.0
H4	¼″ male NPT × ¼″ GYROLOK®	inch	0.187	0.8	2.84	1.56	1.28
		mm	4.75		72.1	39.6	32.5
F4	¼″ female NPT × ¼″ female NPT	inch	0.250	1.44	2.40	1.46	0.94
		mm	6.35		61.0	37.1	23.9
L4	¼″ male NPT × ¼″ female NPT	inch	0.250	1.44	2.52	1.58	0.94
		mm	6.35		64.0	40.1	23.9
Z6	6mm GYROLOK® × 6mm GYROLOK®	inch	0.156	0.56	3.06	1.78	1.28
		mm	3.96		77.7	45.2	32.5
Z8	8mm GYROLOK® × 8mm GYROLOK®	inch	0.234	1.14	3.12	1.84	1.28
		mm	5.94		79.3	46.7	32.5
Z10	10mm GYROLOK® × 10mm GYROLOK®	inch	0.250	1.44	3.19	1.89	1.30
		mm	6.35		81.0	48.0	33.0

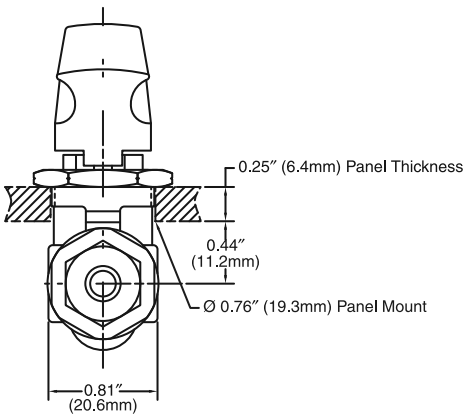
70 Series (Welded End Fittings)





71 Series (Gasketed End Fittings)





HOKE® Space Saver™ Pneumatic Actuators

For remote control of HOKE® D/DL/T/TL ball valves, order a pneumatic actuator. Pneumatically-actuated ball valves incorporating HOKE®'s Space Saver™ actuators can be used for both double acting and spring return applications. D/DL/T/TL ball valves may be ordered from the factory pre-assembled with HOKE® Space Saver™ actuators. See page 12 for basic ordering information. Electric actuators are also available. Electric actuators are supplied in either 115 VAC or 24 VDC with weatherproof or explosion-proof housings. Refer to HOKE®'s Actuator Catalog (79005) or contact your local factory-authorized distributor for more details.

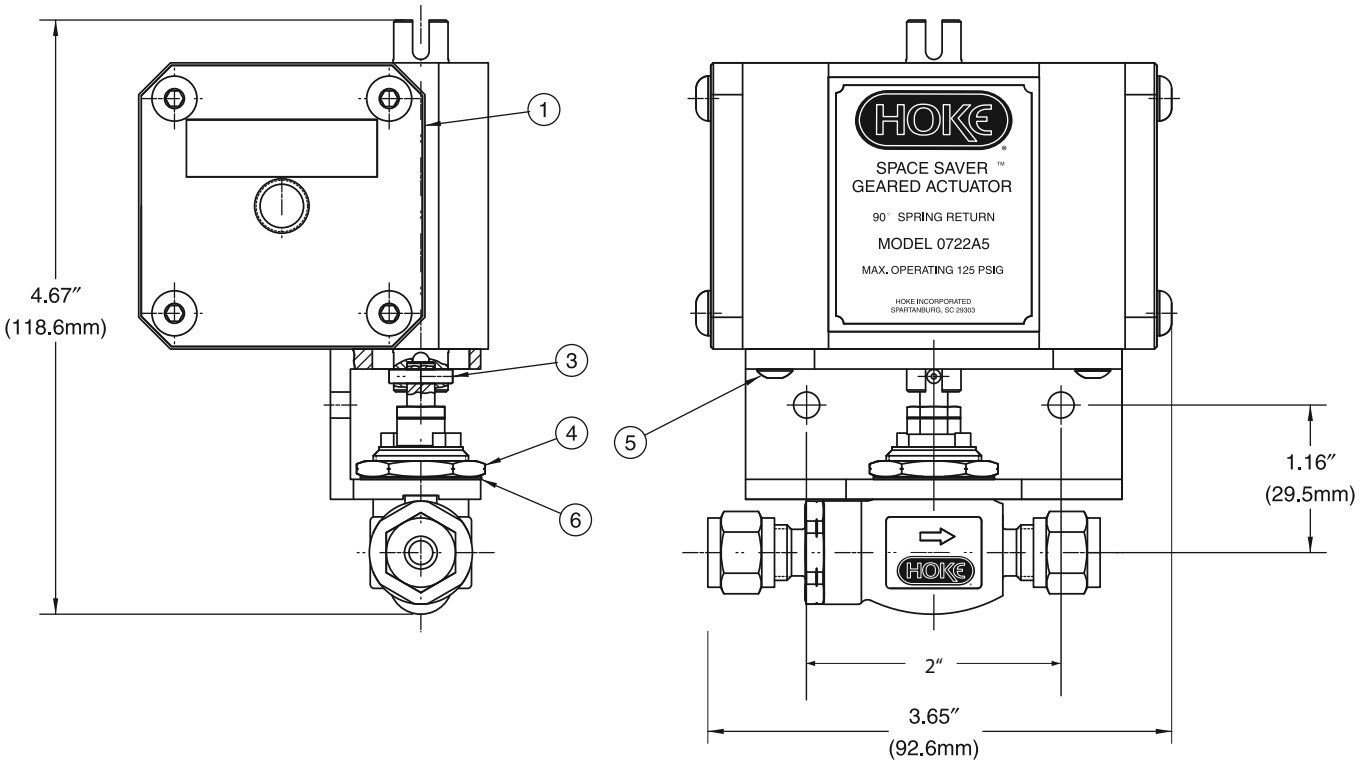
Pneumatic Actuator Specifications

MAXIMUM OPERATING AIR PRESSURE	125 psig (9 bar)
MINIMUM OPERATING AIR PRESSURE	40 psig (3 bar)
TEMPERATURE RANGE*	0° F to +400° F (–18° C to +204° C)

* *Maximum valve temperature is 350° F, depending on seat, seal, and washer material selected. See page 11 for details.*

Materials of Construction

	DESCRIPTION	QUANTITY	MATERIAL
1	Actuator	1	Aluminum
2	Mounting bracket (not shown)	1	Aluminum
3	Groove pin	1	18-8 stainless steel
4	Lock nut	1	316 stainless steel
5	Button head cap screw	4	316 stainless steel
6	Lock washer	1	300 stainless steel



To Order for Field Assembly:

Part No.	Description
0700K3	Mounting Kit for 70 & 71 Series

Actuators

0722A5	Spring Return 0° F to +400° F (-18° C to +204° C) standard
0760A5	Double Acting 0° F to +400° F (-18° C to +204° C) standard
0722A3	Spring Return -50° F to 250° F optional
0760A3	Double Acting -45° C to 121° C optional

Note: Actuator and mounting kit are included when ordering the factory-assembled option. Use the part numbers listed above when ordering actuator or mounting kit separately. "A5" actuators are standard when a factory-assembled valve and actuator are ordered. For "A3" actuators ordered as factory-assembled on HOKE® ball valves, please consult the factory.

D, DL, T, TL Series

How to Order: Standard Valves

Use the following list to order standard valves that are readily available from the factory. If your application requires a customized valve, use the "Build to Order" matrix on page 11.

Refer to page 6 for a complete list of Materials of Construction.

END CONNECTIONS ALL PORTS	ACTUATION METHOD	PACKING MATERIAL	MAXIMUM PRESSURE	END FITTING TO BODY CONNECTION	END CONNECTION SIZE	BODY MATERIAL	PART NUMBER*
GYROLOK®	Lever handle	PTFE & FKM (Viton®)	6000 psig (414 bar)	Gasketed 71 Series, D/DL Series	⅛"	stainless steel	**7115G2YDL(D)**
					¼"	stainless steel	**7115G4YDL(D)**
					¼"	MONEL®	**7115G4MDL(D)**
					⅜"	stainless steel	**7115G6YDL(D)**
					½"	stainless steel	**7115G8YDL(D)**
					6mm	stainless steel	**7115Z6YDL(D)**
					8mm	stainless steel	**7115Z8YDL(D)**
					10mm	stainless steel	**7115Z10YDL(D)**
					10mm	MONEL®	**7115Z10MDL(D)**
GYROLOK®	Lever Handle	PTFE Graphite Filled PTFE	1500 psig T 3000 psig TL (207 bar)	Gasketed 71 Series, T/TL Series	⅛"	stainless steel	**7122G2YTL(T)**
					¼"	stainless steel	**7122G4YTL(T)**
					¼"	MONEL®	**7122G4MTL(T)**
					⅜"	stainless steel	**7122G6YTL(T)**
					½"	stainless steel	**7122G8YTL(T)**
					6mm	stainless steel	**7122Z6YTL(T)**
					8mm	stainless steel	**7122Z8YTL(T)**
					10mm	stainless steel	**7122Z10YTL(T)**
					10mm	MONEL®	**7122Z10MTL(T)**
GYROLOK®	Normally Closed Spring Return	PTFE & FKM (Viton®)	6000 psig (414 bar)	Gasketed 71 Series, D/DL Series	⅛"	stainless steel	**7115G2YDLC(D)**
					¼"	stainless steel	**7115G4YDLC(D)**
					¼"	MONEL®	**7115G4MDLC(D)**
					⅜"	stainless steel	**7115G6YDLC(D)**
					½"	stainless steel	**7115G8DLC(D)**
					6mm	stainless steel	**7115Z6YDLC(D)**
					8mm	stainless steel	**7115Z8YDLC(D)**
					10mm	stainless steel	**7115Z10YDLC(D)**
					10mm	MONEL®	**7115Z10MDLC(D)**
GYROLOK®	Normally Closed Spring Return	PTFE Graphite Filled PTFE	1500 psig T 3000 psig TL (207 bar)	Gasketed 71 Series, T/TL Series	⅛"	stainless steel	**7122G2YTLC(T)**
					¼"	stainless steel	**7122G4YTLC(T)**
					¼"	MONEL®	**7122G4MTLC(T)**
					⅜"	stainless steel	**7122G6YTLC(T)**
					½"	stainless steel	**7122G8YTLC(T)**
					6mm	stainless steel	**7122Z6YTLC(T)**
					8mm	stainless steel	**7122Z8YTLC(T)**
					10mm	stainless steel	**7122Z10YTLC(T)**
					10mm	MONEL®	**7122Z10MTLC(T)**
GYROLOK®	Oval Handle	PTFE & FKM (Viton®)	6000 psig (414 bar)	Welded 70 Series, D/DL Series	⅛"	stainless steel	**7015G2YDL(D)**
					¼"	stainless steel	**7015G4YDL(D)**
					¼"	MONEL®	**7015G4MDL(D)**
					⅜"	stainless steel	**7015G6YDL(D)**
					½"	stainless steel	**7015G8YDL(D)**
					6mm	stainless steel	**7015Z6YDL(D)**
					8mm	stainless steel	**7015Z8YDL(D)**
					10mm	stainless steel	**7115Z10YDL(D)**
					10mm	MONEL®	**7015Z10MDL(D)**
GYROLOK®	Oval handle	PTFE	1500 psig T 3000 psig TL (207 bar)	Welded 70 Series, T/TL Series	⅛"	stainless steel	**7022G2YTL(T)**
					¼"	stainless steel	**7022G4YTL(T)**
					¼"	MONEL®	**7022G4MTL(T)**
					⅜"	stainless steel	**7022G6YTL(T)**
					½"	stainless steel	**7022G8TL(T)**
					6mm	stainless steel	**7022Z6YTL(T)**
					8mm	stainless steel	**7022Z8YTL(T)**
					10mm	stainless steel	**7022Z10YTL(T)**
					10mm	MONEL®	**7022Z10MTL(T)**

** For D (or T) Series bidirectional valves, delete "L" in part number*

D, DL, T, TL Series

How to Order: Standard Valves

END CONNECTIONS ALL PORTS	ACTUATION METHOD	PACKING MATERIAL	MAXIMUM PRESSURE	END FITTING TO BODY CONNECTION	END CONNECTION SIZE	BODY MATERIAL	PART NUMBER*
GYROLOK®	Normally Closed Spring Return	PTFE & FKM (Viton®)	6000 psig (414 bar)	Welded 70 Series, D/DL series	1/8"	stainless steel	**7015G2YDLC(D)**
					1/4"	stainless steel	**7015G4YDLC(D)**
					1/4"	MONEL®	**7015G4MDLC(D)**
					3/8"	stainless steel	**7015G6YDLC(D)**
					1/2"	stainless steel	**7015G8YDLC(D)**
					6mm	stainless steel	**7015Z6YDLC(D)**
					8mm	stainless steel	**7015Z8DLC(D)**
					10mm	stainless steel	**7015Z10YDLC(D)**
					10mm	MONEL®	**7015Z10MDLC(D)**
GYROLOK®	Normally Closed Spring Return	PTFE	1500 psig T 3000 psig TL (207 bar)	Welded 70 Series, T/TL Series	1/8"	stainless steel	**7022G2YTLC(T)**
					1/4"	stainless steel	**7022G4YTLC(T)**
					1/4"	MONEL®	**7022G4MTLC(T)**
					3/8"	stainless steel	**7022G6YTLC(T)**
					1/2"	stainless steel	**7022G8TLCC(T)**
					6mm	stainless steel	**7022Z6YTLC(T)**
					8mm	stainless steel	**7022Z8YTLC(T)**
					10mm	stainless steel	**7022Z10YTLC(T)**
					10mm	MONEL®	**7022Z10MTLC(T)**
Female NPT	Lever handle	PTFE & FKM (Viton®)	6000 psig (414 bar)	Gasketed 71 Series, D/DL Series	1/4"	stainless steel	**7115F4YDL(D)**
					1/4"	MONEL®	**7115F4MDL(D)**
	Lever Handle	PTFE Graphite Filled PTFE	1500 psig T 3000 psig TL (207 bar)	Gasketed 71 Series, T/TL Series	1/4"	stainless steel	**7122F4YTL(T)**
					1/4"	MONEL®	**7122F4MTL(T)**
	Normally Closed Spring Return	PTFE Graphite Filled PTFE	1500 psig T 3000 psig TL (207 bar)	Gasketed 71 Series, T/TL Series	1/4"	stainless steel	**7122F4YTLC(T)**
	Normally Closed Spring Return	PTFE & FKM (Viton®)	6000 psig (414 bar)	Gasketed 71 Series, D/DL Series	1/4"	stainless steel	**7115F4YDLC(D)**
	Oval Handle	PTFE & FKM (Viton®)	6000 psig (414 bar)	Welded 70 Series, D/DL Series	1/4"	stainless steel	**7015F4YDL(D)**
	Oval handle	PTFE	1500 psig T 3000 psig TL (207 bar)	Welded 70 Series, T/TL Series	1/4"	stainless steel	**7022F4YTL(T)**
	Normally Closed Spring Return	PTFE & FKM (Viton®)	6000 psig (414 bar)	Welded 70 Series, D/DL Series	1/4"	stainless steel	**7015F4YDLC(D)**
					1/4"	MONEL®	**7015F4MDLC(D)**
	Normally Closed Spring Return	PTFE	1500 psig T 3000 psig TL (207 bar)	Welded 70 Series, T/TL Series	1/4"	stainless steel	**7022F4YTLC(T)**
					1/4"	MONEL®	**7022F4MTLC(T)**

* For D (or T) Series bidirectional valves, delete "L" in part number

Repair Kits

71 Series – DL

Kit includes delta backup ring, stem, PEEK® seat & washer, O-ring, and instructions

SP71DL21

Seals	
21	Buna-N
50	Viton®
64	Kalrez®

71 Series – TL

Kit includes stem guide, seat, packing material, and instructions.

SP71TL

D, DL, T, TL Series

How to Order: Build-to-Order

Use the matrix below to customize your D, DL, T, TL ball valves. Use the chart on page 9 to order standard, readily available valves. **Standard items in bold.**

71 15 G4 Y D L ____

VALVE SERIES

71 Gasketed-end fitting
70 Welded-end fitting

SEATS, SEALS & WASHERS

14 D and DL valves only –40° F to +500° F
Seats: PCTFE (–40° C to +260° C)
Washers: PTFE
Delta back-up ring: PTFE
O-ring: Kalrez®

15 D and DL valves only –40° F to +350° F
Seats: PCTFE (–40° C to +177° C)
Washers: PTFE
Delta back-up ring: PTFE
O-ring: FKM (Viton®)

16 D and DL valves only –40° F to +250° F
Seats: PCTFE (–40° C to +121° C)
Washers: PTFE
Delta back-up ring: PTFE
O-ring: Buna N

22 T and TL valves only –40° F to +350° F
Seats: PTFE (–40° C to +177° C)
Washers: PTFE
Back-up ring: PTFE
Energized PTFE seal: Graphite-filled PTFE/Elgiloy®

CONNECTION TYPE & SIZE

G2 ⅛″ GYROLOK® inlet, ⅛″ GYROLOK® outlet
G4 ¼″ GYROLOK® inlet, ¼″ GYROLOK® outlet
G6 ⅜″ GYROLOK® inlet, ⅜″ GYROLOK® outlet
G8 ½″ GYROLOK® inlet, ½″ GYROLOK® outlet
H4 ¼″ male NPT inlet, ¼″ GYROLOK® outlet
F4 ¼″ female NPT inlet, ¼″ female NPT outlet
F6 ⅜″ female NPT inlet, ⅜″ GYROLOK® outlet
F8 ½″ female NPT inlet, ½″ GYROLOK® outlet
L4 ¼″ male NPT inlet, ¼″ female NPT outlet
Z6 6mm GYROLOK® inlet, 6mm GYROLOK® outlet
Z8 8mm GYROLOK® inlet, 8mm GYROLOK® outlet
Z10 10mm GYROLOK® inlet, 10mm GYROLOK® outlet

BASIC MATERIAL*

Y 316 stainless steel
B Brass
M MONEL®

STEM SEAL TYPE

D Delta stem seal (D or DL valve only)
T Energized PTFE seal (T or TL valve only)

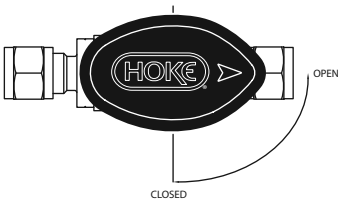
DENOTES "LIVE-LOADED SEATS"

L Live loaded seat (uni-directional flow)
(Leave blank for D or T series bi-directional flow)

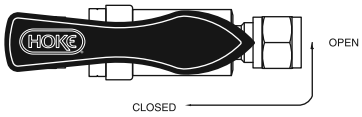
FACTORY ASSEMBLED ACTUATOR OPTION**

Blank-Manual Nylon Handle
C Normally closed actuator (0722A5)
O Normally open actuator (0722A5)
D Double acting (0760A5)

** Consult factory for other materials*
*** To order "A3" actuators, please contact the factory*

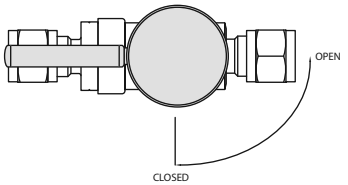


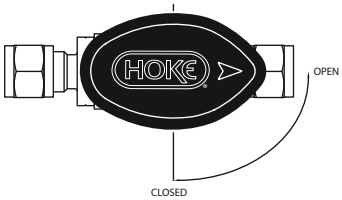
70 Series handle (black nylon)



71 Series handle (red nylon)

Optional Handles

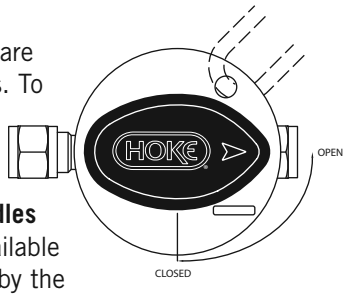




Metal Handles
316 stainless steel handles are available for 70 & 71 Series. To order, specify kit **7100K13**.

Color-coded Oval Nylon Handles
Color-coded handles are available for 70 Series Valves. Order by the part number listed below.

Red 95683–030
Blue 95683–031
Black 95683–032
Green 95683–033
Orange 95683–034



Handle Locking Kit
Safety lockout kits are available for applications which must conform to Code of Federal Regulations 29CFR Part 1910, OSHA Safety and Health Act and other international regulations. Valves can be locked in either an opened or closed position with the stainless steel upper and lower locking plates. Lock with readily available padlocks or commercially available multiple lockout devices. Locking kits include the locking plates and assembly instructions. To order a safety lockout kit, specify kit **7100K18**.

7223D Series

High Performance Rotoball® Valve; Bi-Directional Flow

The 7223D Series is designed for demanding high cycle actuation applications. The high performance Rotoball® valve is ideally suited for manual and actuated CNG and alternative fuel applications.

Typical Applications

- CNG fuel stations
- CNG vehicles
- Hydrogen fuel cells
- Hydrogen vehicles
- Test stands
- Pilot plants

Technical Data

BODY MATERIAL*	316 stainless steel, MONEL®
MAXIMUM OPERATING PRESSURE	5000 psig (345 bar) @ 70° F (21° C)
OPERATING TEMPERATURE RANGE	–65° F to +350° F (–54° C to +177° C)
ORIFICE	0.375″ (9.35mm)
Cv FACTOR	3.4
END CONNECTIONS	GYROLOK®, NPT, SAE
PROOF PRESSURE	10,000 psig (690 bar) @ 70° F (21° C)

** Consult factory for other materials*

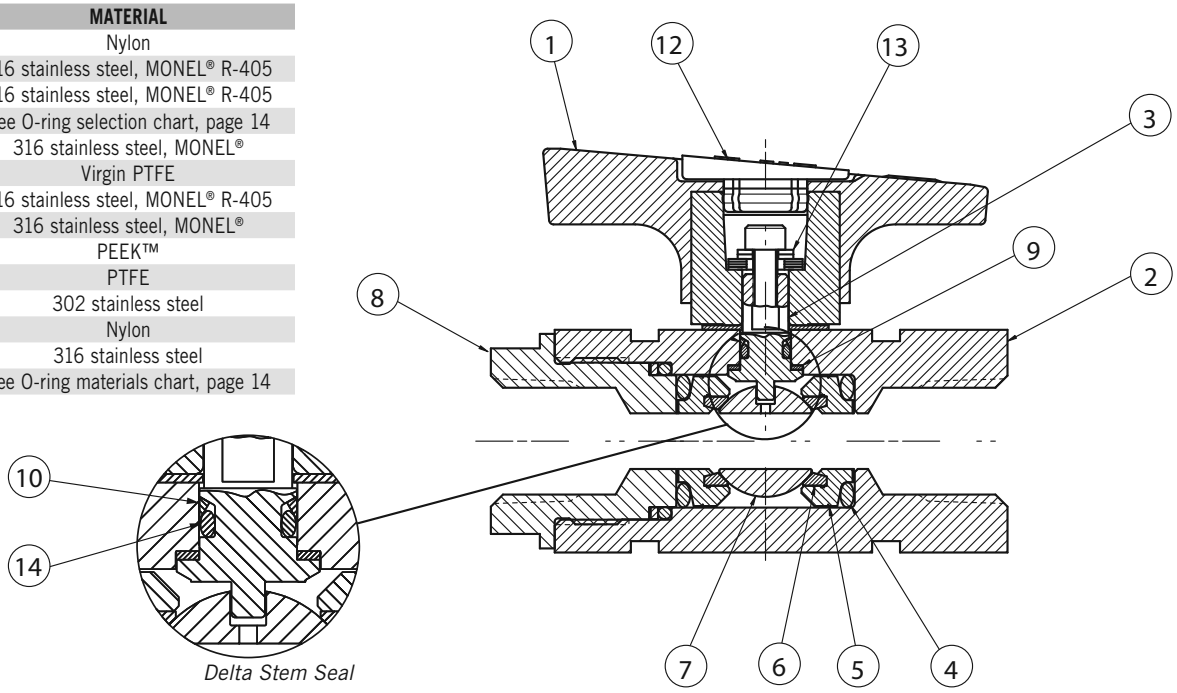
Features & Benefits

- Blowout-proof stem for added safety
- High performance Delta stem seal design for extended cycle life and reduced cost of ownership.
- Variety of end connections for greater system design flexibility
- Variety of O-rings available to meet specific system / media requirements.
- Special High Tolerance NPT Thread

7223D Series

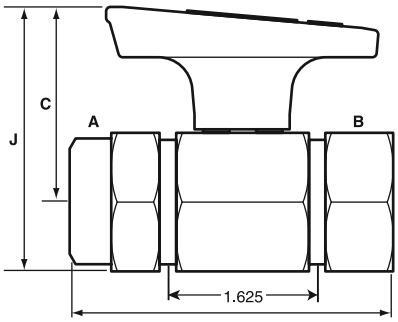
Materials of Construction

	DESCRIPTION	MATERIAL
1	Handle	Nylon
2	Body	316 stainless steel, MONEL® R-405
3	Stem	316 stainless steel, MONEL® R-405
4	O-ring	See O-ring selection chart, page 14
5	Seat retainer	316 stainless steel, MONEL®
6	Seat	Virgin PTFE
7	Ball	316 stainless steel, MONEL® R-405
8	Plug	316 stainless steel, MONEL®
9	Thrust washer	PEEK™
10	Back-up ring	PTFE
11	Spring pin	302 stainless steel
12	Hole plug	Nylon
13	Washer	316 stainless steel
14	O-ring	See O-ring materials chart, page 14



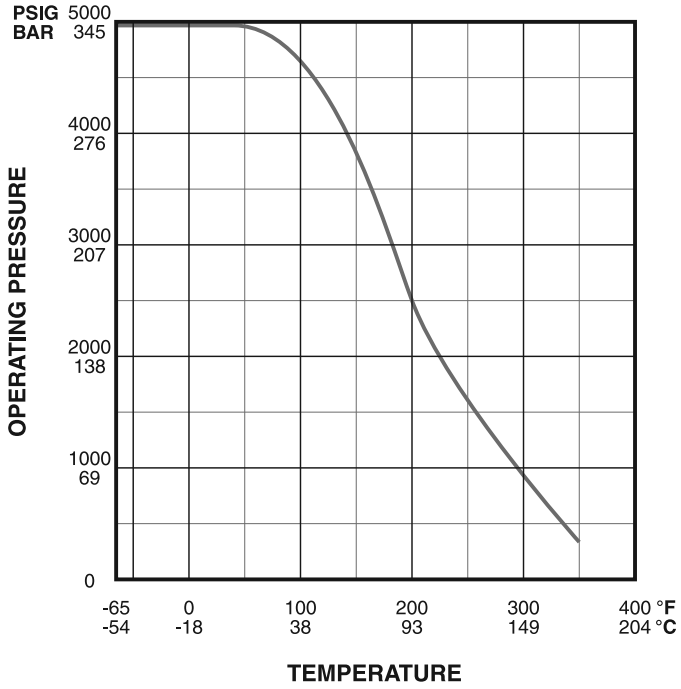
Delta Stem Seal

Dimensions Chart



INLET A & OUTLET B		C	E	J
⅜ Female NPT	inch	1⅞	3½	2⁹⁄₁₆
	mm	48	89	65
½ Female NPT & SAE	inch	1⅞	3½	2⁹⁄₁₆
	mm	48	89	65
½ GYROLOK®	inch	1⅞	4⅞	2⁹⁄₁₆
	mm	48	124	65
12mm GYROLOK®	inch	1⅞	4⅞	2⁹⁄₁₆
	mm	48	124	65

Pressure vs. Temperature Curve



7223D Series

How to Order

Standard items in bold

7223 F 6 Y D 50 EA

CONNECTION CONFIGURATION
- F Female NPT
- FS SAE
- G GYROLOK®
- Z Metric GYROLOK®

CONNECTION SIZE
- 6 ⅜″
- 8 ½″
- 12 12mm

BASIC MATERIAL
- M MONEL®
- **Y 316 stainless steel**

ACTUATORS—FACTORY ASSEMBLED
(omit for manual valve)
- WA 115 VAC weatherproof
- EA 115 VAC explosion-proof
- WD 24 VDC weatherproof
- NO 90° spring return, normally open
- NC 90° spring return, normally closed
- DA90° double acting

O-RING MATERIAL *(refer to chart below)*
- 20 Buna N
- **50 Viton®**
- 64 Kalrez®

- **D Denotes Delta Stem Seal**

Actuator & Mounting Kit Part Numbers

OPTION	ACTUATOR	MOUNTING KIT
WA	**0112L2**	**0112K7200**
EA	**0112Y6**	Consult Factory
WD	**0172L2**	Consult Factory
NO	**07L90SR3/ISO**	**LBMK7223-ISO**
NC 90°	**07L90SR3/ISO**	**LBMK7223-ISO**
DA 90°	**07L90DA/ISO**	**LBMK7223-ISO**

Actuators

O-Ring Materials

MATERIAL	OPERATING TEMPERATURE °F	OPERATING TEMPERATURE °C
Buna N	–65° to +250°	–54° to +121°
Viton®	–20° to +400°	–29° to +204°
Kalrez®	+20° to +400°	–7° to +204°

7223D Series

Ordering Options

Metal Lever Handle

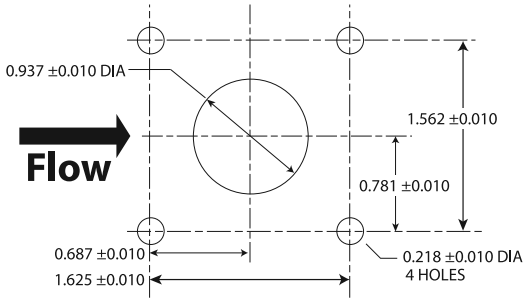
A red metal lever handle is available for the 7223D Series. To order specify 90043-1 with plug button 5982.

Handle Locking Kit

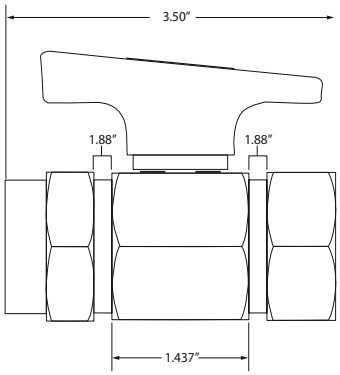
Safety lockout kits are available for applications which must conform to Code of Federal Regulations 29CFR Part 1910; OSHA Safety and Health Act and other international regulations. Valves can be locked in either an opened or closed position with the stainless steel upper and lower locking plates. Secure the valve with readily available padlocks or commercially available multiple lockout devices. Locking kits include the locking plates and assembly instructions. To order the safety lockout kit for Rotoball® 7223D Series specify kit **7200K7**.

Panel Mounting

To order panel mounting kit, specify **7200K1**.



Panel Configuration
Max Panel Thickness 0.250



Electric and Pneumatic Actuators

For remote control of Rotoball® 7223D Series valves, order an electric or pneumatic actuator. Electric actuators are supplied in either 115 VAC or 24 VDC with weatherproof or explosion-proof housings. Pneumatically actuated ball valves incorporating HOKE®'s rack and pinion actuators can be used for both double acting and spring return applications. Refer to HOKE®'s Actuator Catalog (79005) or contact your local factory-authorized distributor for more details.

Actuators

Spare Parts

Spare parts and repair kits are available for all ball valves.

Kit includes stem, Delta backup ring, seat and retainer, O-rings, backup ring and thrust washers.

SP7223D Y 50

MATERIAL	*O-RING COMPONENT*
M MONEL® R405	20 Buna N
Y 316 stainless steel	50 Viton®
	64 Kalrez®

Cleaning and Testing

When ordering, please specify if oxygen cleaning or helium leak testing is required.

7 Series

2- and 3–way 3-piece Bolted Ball Valves

HOKE® 7 Series high performance, bi-directional ball valves exceed 50,000 cycles* with zero leakage**. The 7 Series includes an energized PTFE stem seal and live loaded seats which require no adjustment over the life of the valve. 2–way valves can be configured for uni-directional flow by replacing standard seat rings with opposing curved disc spring seats. 7 series come standard in 316 stainless steel, and special alloys when requested. A variety of handles and remote actuation packages are available.

Technical Data

BODY MATERIAL	316 stainless steel
CYCLE LIFE	Exceeds 50,000
MAXIMUM OPERATING PRESSURE	2500 psig @70° F (172 bar @ 21° C)
OPERATING TEMPERATURE RANGE	–65° F to +500° F (–29° C to +232° C)
ORIFICE	0.19 to 0.81˝ (4.8 to 6mm)
Cv FACTORS	1.0 to 38

Features & Benefits

Energized PTFE stem seal

- Exceeds 50,000 cycles, reducing costs of ownership*
- No packing adjustments required, providing operator peace of mind
- Low operating torque for ease of operation

Live-loaded seats

- Compensate for wear and temperature cycling with zero leakage, providing excelling durability and reliability.**
- Ensure leak-tight performance over entire pressure range simplifying ball valve specification and installation, saving time and expense.
- Optional vented ball equalizes pressure between ball orifice and center body cavity

Static–grounded stem

- Prevents static discharge for added safety
- Quarter turn handle provides a visual indication of on/off valve position, improving safety
- Stem flats provide visual indication of valve position, improving safety
- Bottom-loaded stem prevents stem blowout for added safety
- Optional trip-proof or latching / locking handle prevents accidental opening or closing of the valve for greater security and safety
- Fully encapsulated bolts are protected from the environment, extending valve life and reducing costs

Valves are designed, manufactured and tested in compliance with: ANSI/ASME B16.34 (valves: flanged, threaded, and welding end†), API 608 (metal ball valves: flanged, threaded and welding end), API 598 (valve inspection and test), and MSS SP-99 (instrument valves)

- Industry standards ensure reliability and integrity of components and systems

Top-mount actuators and brackets are designed and manufactured in compliance with ISO 5211 (industrial valve: part-turn actuator attachment)

- Allow HOKE® 7 Series to easily interchange with a wide variety of pneumatic actuators
- Allow user to easily convert manual valve to pneumatic operation in the field
- Special High Tolerance NPT Thread

** For best results use a filter upstream of the valve. Dirty, erosive and corrosive fluids may affect the cycle life of the valve. Cycle life is based on working pressures less than 150 psig.*

*** Zero leakage per API 598.*

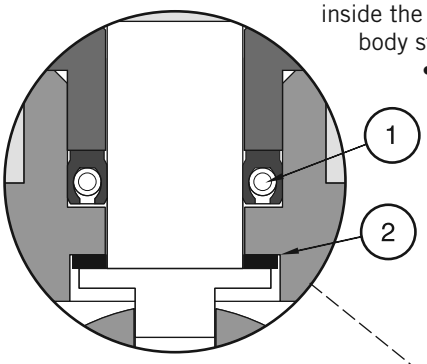
† When B16.34 (option B) is selected, testing is conducted in accordance with these specifications.

7 Series

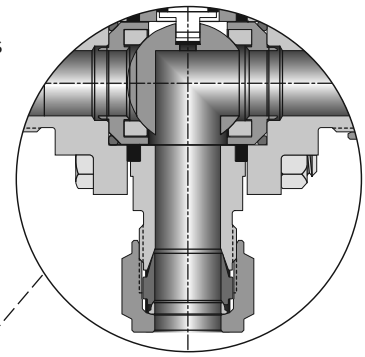
Materials of Construction

Energized PTFE Stem Seal Circular Elgiloy® spring contained within an inverted cup-shaped PTFE packing ring applies constant dynamic radial force.

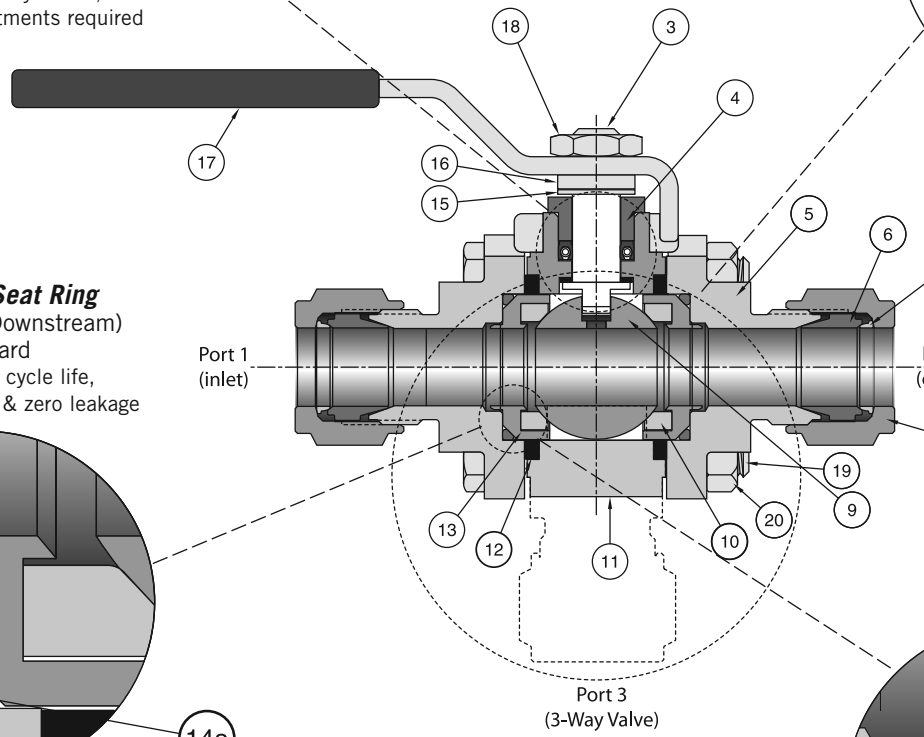
- Low pressure operation: Spring applies constant dynamic radial force from inside the PTFE cup, effecting a constant dynamic seal against stem and body stuffing box.
- High pressure operation: Rising system pressure increases the force applied from inside the PTFE cup, effecting a constant dynamic seal against stem and body stuffing box.
- Thermal cycling and wear: Spring applies constant dynamic radial force from inside the PTFE cup, compensating for expansion and contraction of components due to thermal cycling and wear.



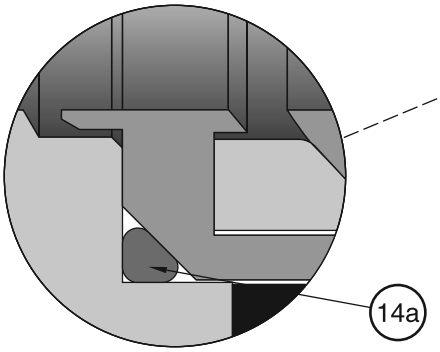
Energized PTFE Seal
Provides high cycle life,
no packing adjustments required

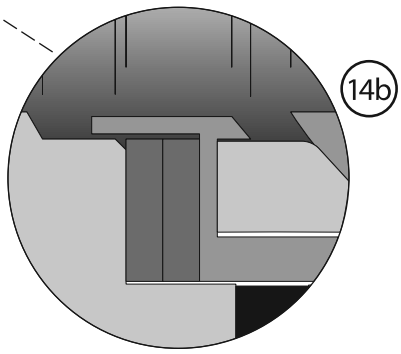


Third Port View
3–way Valve



Energized Seat Ring
(Upstream & Downstream)
Standard
Provides high cycle life,
bi-directional flow & zero leakage





Energized Seat Rings Compressed O-rings apply constant dynamic force to the seat packing.

- *Low pressure operation:* Due to their resilient characteristics compressed O-rings apply constant dynamic force to the seats which make a leak tight seal against the ball.
- *High pressure operation:* Rising system pressure pushes the floating ball against the downstream seat enhancing the constant dynamic force generated by the O-rings which results in a leak-tight seal.
- *Thermal cycling and wear:* Due to their resilient characteristics compressed O-rings apply constant dynamic force to the seats, compensating for expansion and contraction of components due to thermal cycling and wear.
- *Bi-directional flow:* Energized seat rings utilizing compressed O-rings allow control of process fluid in both directions.

Optional Spring Loaded Seats Opposing curved disc spring seats (upstream only) in lieu of standard seat ring allow unidirectional flow.

- Available for 2–way valves only.
- Provide high cycle life and zero leakage.
- Located on upstream side only, no seat assembly is located on downstream side of ball for this option.

7 Series

Materials of Construction

316 Stainless Steel Valve with 'G' Seat and Seal Material – 15% Graphite filled PTFE (standard)

	DESCRIPTION	COMPONENT MATERIAL	GRADE/ASTM SPECIFICATION
1	Energized PTFE stem seal*	Graphite-filled PTFE/Elgiloy®	—
2	Thrust washer*	PEEK™	—
3	Stem*	316 stainless steel	A479
4	Spacer	PEEK™	—
5	Adapter ends*	316 stainless steel	CF3M/A351
6	Ferrule, front*	316 stainless steel	A479
7	Ferrule, rear	316 stainless steel	A479
8	GYROLOK® nut	316 stainless steel	A479
9	Ball*	316 stainless steel	A479
10	Seat*	Graphite-filled PTFE	—
11	Body*	316 stainless steel	CF3M/A351
12	Body seal*	PTFE	—
13	Seat retainer*	316 stainless steel	A479
14a	Energized seat ring (standard)*	FKM (Viton®)	MIL-R-83248
14b	Energized seat ring: curved disc springs (optional)*	316 stainless steel	—
15	Retaining ring	Stainless steel	PH15-7 MO
16	Handle spacer	316 stainless steel	A479
17	Handle	316 stainless steel	A240
18	Stem nut	316 stainless steel	ASTM A194 Grade 8
19	Body bolt	316 stainless steel	ASTM A193 B8
20	Body nut	316 stainless steel	ASTM A193 B8
	Handle stop roll pin (not shown, 7D Series only)	420 stainless steel	—
	Lubricant: Energized PTFE stem seal	non silicone-based	Krytox® 104
	Lubricant: stem	non silicone-based	Krytox® 104
	Lubricant: seat	non silicone-based	Krytox® 206

* *Wetted component*

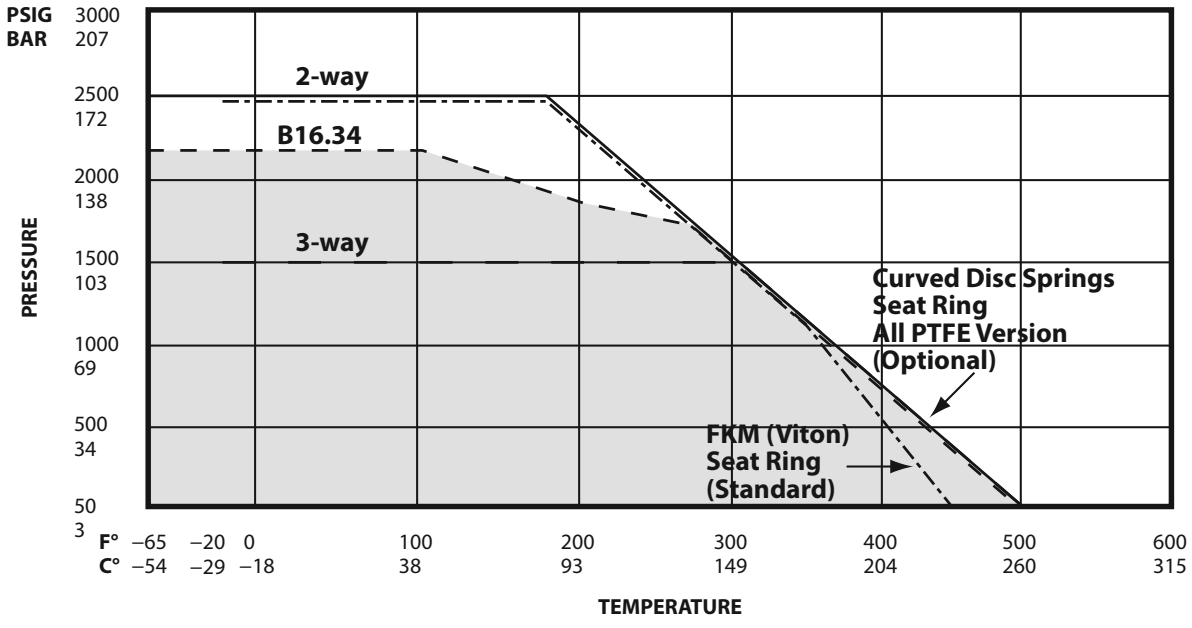
Technical Data (Standard)

SEAT	15% Graphite-filled PTFE
BODY SEAL	PTFE
ENERGIZED STEM SEAL	Graphite-filled PTFE / Elgiloy®
THRUST WASHER	PEEK™
MAXIMUM OPERATING PRESSURE*	2500 psig @ 70° F (172 bar @ 21° C)
TEMPERATURE RANGE (LIMITED BY SEAT RING MATERIAL)	FKM (Viton®): –20° F to +450° F (–29° C to +232° C) Curved Disc Springs: –65° F to +500° F (–54° C to +260° C)

** 3–way valves are limited to 1500 psig (103 bar)*

Pressure vs. Temperature Curves

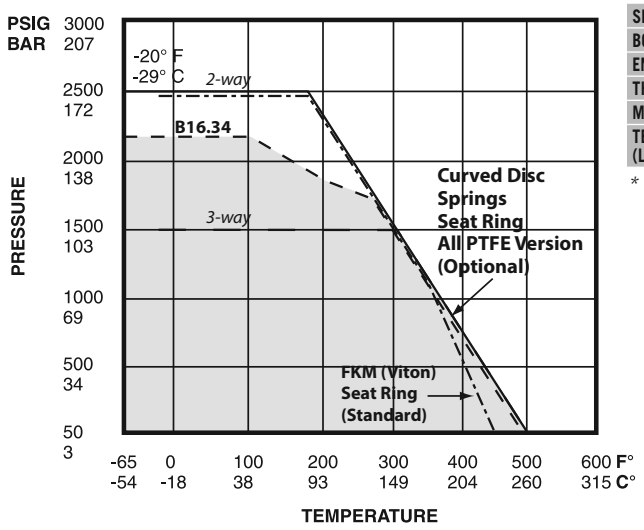
'G' Seat and Seal Material –15% Graphite filled PTFE(Standard)



Pressure vs. Temperature Curves

These optional seat and seal materials are available through the 'Build to Order' matrix on pages 26 and 27.

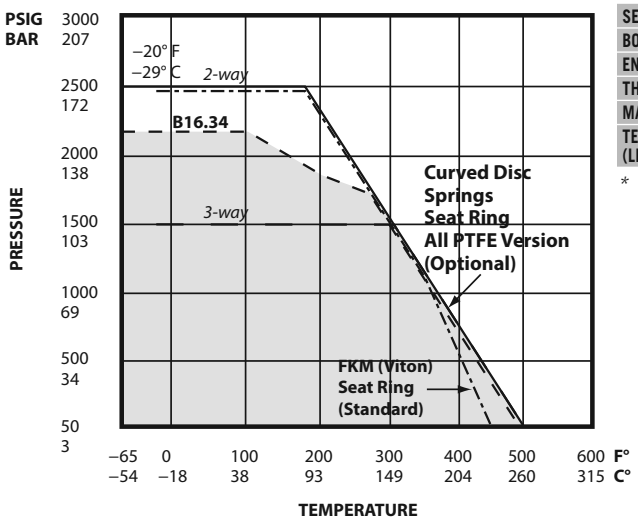
'T' Seat and Seal Material –PTFE (Optional)



SEAT	PTFE
BODY SEAL	PTFE
ENERGIZED STEM SEAL	Graphite-filled PTFE / Elgiloy®
THRUST WASHER	PEEK™
MAXIMUM OPERATING PRESSURE*	2500 psig @ 70° F (172 bar @ 21° C)
TEMPERATURE RANGE (LIMITED BY SEAT RING MATERIAL)	FKM (Viton®): –20° F to +450° F (–29° C to +232° C) Curved Disc Springs: –65° F to +500° F (–54° C to +260° C)

* *3–way valves limited to 1500 psig (103 bar).*

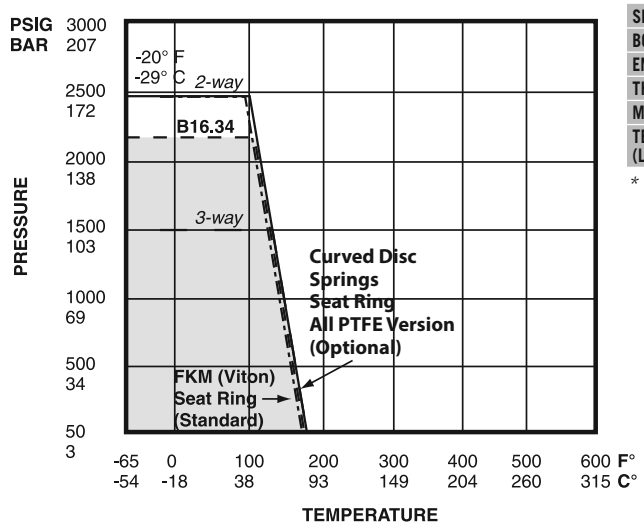
'P' Seat and Seal Material –PEEK™ (Optional)



SEAT	PEEK™
BODY SEAL	PTFE
ENERGIZED STEM SEAL	Graphite-filled PTFE / Elgiloy®
THRUST WASHER	PEEK™
MAXIMUM OPERATING PRESSURE*	2500 psig @ 70° F (172 bar @ 21° C)
TEMPERATURE RANGE (LIMITED BY SEAT RING MATERIAL)	FKM (Viton®): –20° F to +450° F (–29° C to +232° C) Curved Disc Springs: –65° F to +500° F (–54° C to +260° C)

* *3–way valves limited to 1500 psig (103 bar).*

'U' Seat and Seal Material –UHMWPE (Optional)



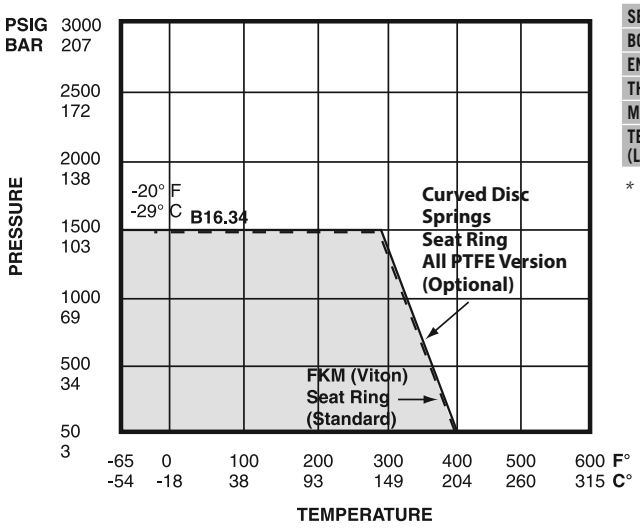
SEAT	UHMWPE
BODY SEAL	PTFE
ENERGIZED STEM SEAL	Graphite-filled PTFE / Elgiloy®
THRUST WASHER	PEEK™
MAXIMUM OPERATING PRESSURE*	2500 psig @ 70° F (172 bar @ 21° C)
TEMPERATURE RANGE (LIMITED BY SEAT RING MATERIAL)	FKM (Viton®): –20° F to +180° F (–29° C to +82° C) Curved Disc Springs: –65° F to +180° F (–54° C to +82° C)

* *3–way valves limited to 1500 psig (103 bar).*

Pressure vs. Temperature Curves

These optional seat and seal materials are available through the 'Build to Order' matrix on pages 26 and 27.

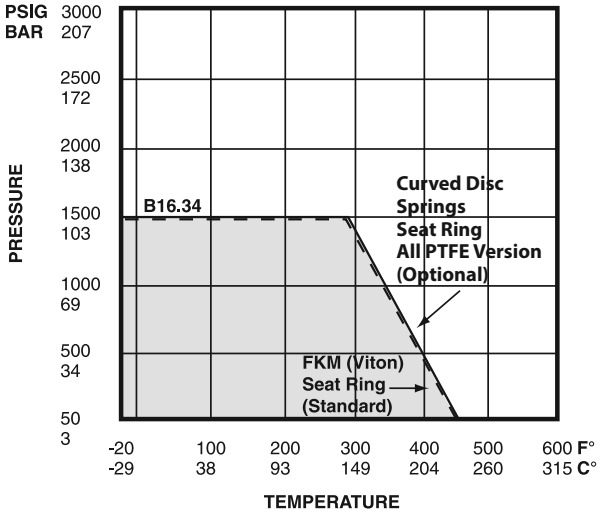
'V' Seat and Seal Material –Virgin TFE (Optional)



SEAT	TFE (virgin)
BODY SEAL	PTFE
ENERGIZED STEM SEAL	Graphite-filled PTFE / Elgiloy®
THRUST WASHER	PEEK™
MAXIMUM OPERATING PRESSURE*	1500 psig @ 70° F (103 bar @ 21° C)
TEMPERATURE RANGE (LIMITED BY SEAT RING MATERIAL)	FKM (Viton®): –20° F to +400° F (–29° C to +204° C) Curved Disc Springs: –65° F to +400° F (–54° C to +204° C)

** 3–way valves limited to 1500 psig (103 bar).*

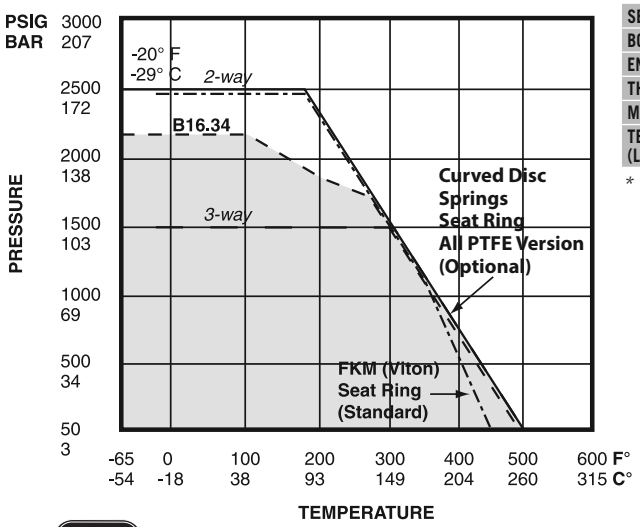
'O' Seat and Seal Material –PTFE/FKM O-ring (Optional)



SEAT	PTFE
BODY SEAL	FKM (Viton®) o-ring
ENERGIZED STEM SEAL	Graphite-filled PTFE / Elgiloy®
THRUST WASHER	PEEK™
MAXIMUM OPERATING PRESSURE*	1500 psig @ 70° F (103 bar @ 21° C)
TEMPERATURE RANGE (LIMITED BY SEAT RING MATERIAL)	FKM (Viton®): –20° F to +450° F (–29° C to +232° C) Curved Disc Springs: –20° F to +450° F (–29° C to +232° C)

** 3–way valves limited to 1500 psig (103 bar).*

'R' Seat and Seal Material –PTFE/Reinforced PTFE (Optional)



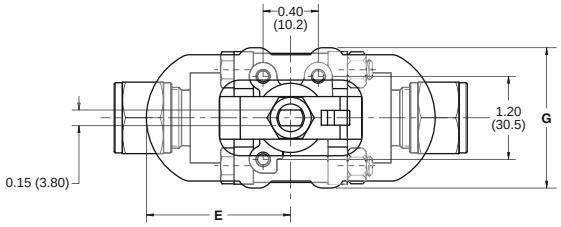
SEAT	PTFE
BODY SEAL	PTFE
ENERGIZED STEM SEAL	Graphite-filled PTFE / Elgiloy®
THRUST WASHER	Reinforced PTFE
MAXIMUM OPERATING PRESSURE*	2500 psig @ 70° F (172 bar @ 21° C)
TEMPERATURE RANGE (LIMITED BY SEAT RING MATERIAL)	FKM (Viton®): –20° F to +450° F (–29° C to +232° C) Curved Disc Springs: –65° F to +500° F (–54° C to +260° C)

** 3–way valves limited to 1500 psig (103 bar).*

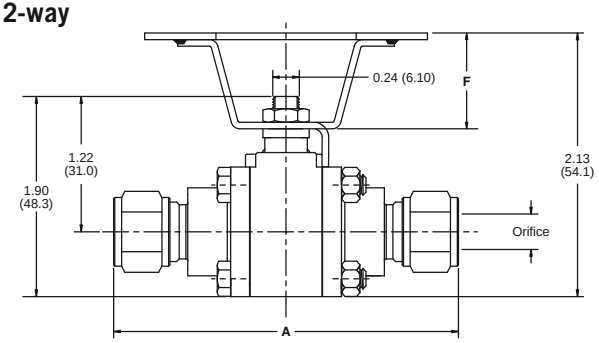
7 Series

Dimensions: 7D Series (Cv Range = 1.0 to 3.8)

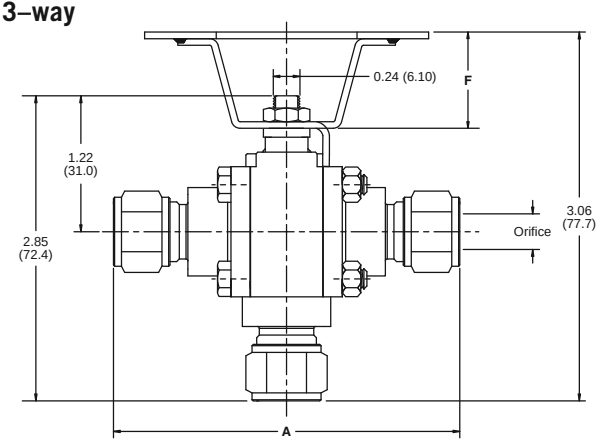
	2-WAY	3–WAY
ORIFICE SIZE	0.09˝ - 0.28˝ (2.3mm - 7.1mm)	0.09˝ - 0.20˝ (2.3mm - 5.1mm)
Cv RANGE	1.0 - 3.8	1.0 - 1.7



2-way



3–way



7D Series (Cv Range 1.0 to 3.8)

END CONNECTIONS	2-WAY BALL ORIFICE	2-WAY ORIFICE*	2-WAY Cv	3–WAY BALL ORIFICE	3–WAY ORIFICE*	3–WAY Cv		A
⅛˝ GYROLOK®	0.28”	0.09”	1.0	0.20”	0.09”	1.0	inch	3.38
							mm	85.9
¼˝ GYROLOK®	0.28”	0.19”	1.8	0.20”	0.19”	1.7	inch	3.38
							mm	85.9
⅜˝ GYROLOK®	0.28”	0.28”	3.8	0.20”	0.20”	1.7	inch	3.38
							mm	85.9
6mm GYROLOK®	0.28”	0.16”	1.3	0.20”	0.16”	1.7	inch	3.35
							mm	85.1
8mm GYROLOK®	0.28”	0.23”	2.6	0.20”	0.20”	1.7	inch	3.35
							mm	85.1
10mm GYROLOK®	0.28”	0.28”	3.8	0.20”	0.20”	1.7	inch	3.43
							mm	87.1
¼˝ female NPT	0.28”	0.28”	3.8	0.20”	0.20”	1.7	inch	2.29
							mm	58.2
¼˝ male NPT	0.28”	0.28”	3.8	0.20”	0.20”	1.7	inch	3.55
							mm	90.2
¼˝ Vaculok™	0.28”	0.28”	3.8	0.20”	0.20”	1.7	inch	3.59
							mm	91.2
¼˝ tube socket weld	0.28”	0.26”	3.4	0.20”	0.20”	1.7	inch	2.30
							mm	58.4
⅜˝ tube socket weld	0.28”	0.28”	3.8	0.20”	0.20”	1.7	inch	2.50
							mm	63.5
6mm tube socket weld	0.28”	0.25”	3.1	0.20”	0.20”	1.7	inch	2.50
							mm	63.5
8mm tube socket weld	0.28”	0.28”	3.8	0.20”	0.20”	1.7	inch	2.50
							mm	63.5
10mm tube socket weld	0.28”	0.28”	3.8	0.20”	0.20”	1.7	inch	2.50
							mm	63.5
¼˝ pipe butt weld sch 40	0.28”	0.28”	3.8	0.20”	0.20”	1.7	inch	1.97
							mm	50.0
⅜˝ pipe butt weld sch 40	0.28”	0.28”	3.8	0.20”	0.20”	1.7	inch	1.97
							mm	50.0
¼˝ pipe socket weld sch 80	0.28”	0.28”	3.8	0.20”	0.20”	1.7	inch	2.35
							mm	59.7
¼˝ pipe butt weld sch 80	0.28”	0.28”	3.8	0.20”	0.20”	1.7	inch	1.97
							mm	50.0
⅜˝ pipe butt weld sch 80	0.28”	0.28”	3.8	0.20”	0.20”	1.7	inch	1.97
							mm	50.0

Handles

Oval handle
E 1.44” (36.6mm)
F 0.57” (14.5mm)
G 1.50” (38.1mm)

Lever handle
E 2.25” (57.2mm)
F 0.42” (10.8mm)
G 0.38” (9.65mm)

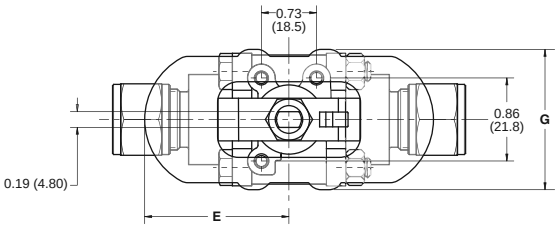
Consult factory for additional end connection sizes.

** Orifice diameter and flow rate listed for the total valve. The most restrictive orifice may be either the ball or the end connection orifice. Dimensions for reference only, subject to change.*

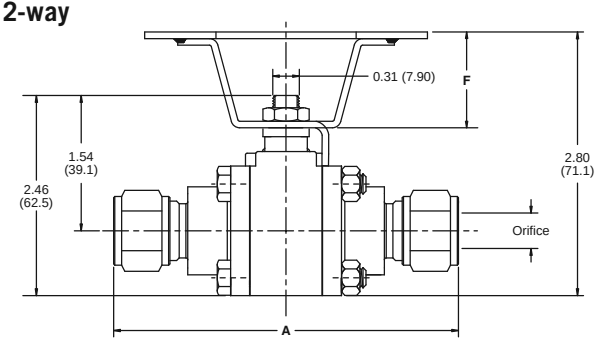
7 Series

Dimensions: 7E Series (Cv Range = 4.0 to 12.5)

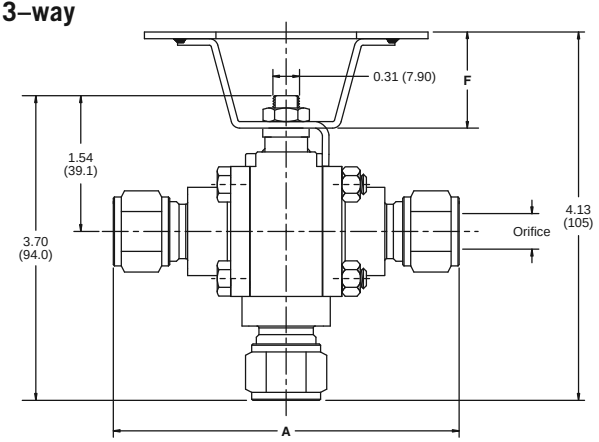
	2-WAY	3–WAY
ORIFICE SIZE	0.30″ - 0.50″ (7.6mm - 12.7mm)	0.30″ - 0.42″ (7.6mm - 10.7mm)
Cv RANGE	4.5 - 12.5	4.0



2-way



3–way



7E Series (Cv Range = 4.0 to 12.5)

END CONNECTIONS	2-WAY BALL ORIFICE	2-WAY ORIFICE*	2-WAY Cv	3–WAY BALL ORIFICE	3–WAY ORIFICE*	3–WAY Cv		A
⅜″ GYROLOK®	0.50”	0.30”	4.5	0.42”	0.30”	4.0	inch	3.31
							mm	84.1
½″ GYROLOK®	0.50”	0.42”	7.5	0.42”	0.42”	4.0	inch	3.80
							mm	96.5
¾″ GYROLOK®	0.50”	0.50”	12.5	0.42”	0.42”	4.0	inch	3.80
							mm	96.5
12mm GYROLOK®	0.50”	0.39”	7.0	0.42”	0.39”	4.0	inch	3.80
							mm	96.5
18mm GYROLOK®	0.50”	0.50”	12.5	0.42”	0.42”	4.0	inch	3.80
							mm	96.5
⅜″ female NPT	0.50”	0.50”	12.5	0.42”	0.42”	4.0	inch	3.25
							mm	82.5
½″ female NPT	0.50”	0.50”	12.5	0.42”	0.42”	4.0	inch	3.25
							mm	82.5
½″ Vaculok™	0.50”	0.50”	12.5	0.42”	0.42”	4.0	inch	3.27
							mm	83.1
⅜″ tube socket weld	0.50”	0.30”	4.5	0.42”	0.30”	4.0	inch	2.36
							mm	59.9
½″ tube socket weld	0.50”	0.42”	7.5	0.42”	0.42”	4.0	inch	2.36
							mm	59.9
¾″ tube socket weld	0.50”	0.50”	12.5	0.42”	0.42”	4.0	inch	2.36
							mm	59.9
12mm tube socket weld	0.50”	0.42”	7.5	0.42”	0.42”	4.0	inch	2.36
							mm	59.9
18mm tube socket weld	0.50”	0.50”	12.5	0.42”	0.42”	4.0	inch	2.36
							mm	59.9
⅜″ pipe socket weld	0.50”	0.50”	12.5	0.42”	0.42”	4.0	inch	2.36
							mm	59.9
½″ pipe socket weld	0.50”	0.50”	12.5	0.42”	0.42”	4.0	inch	2.36
							mm	59.9
⅜″ pipe butt weld sch 40	0.50”	0.42”	7.5	0.42”	0.42”	4.0	inch	2.10
							mm	53.3
½″ pipe butt weld sch 40	0.50”	0.50”	12.5	0.42”	0.42”	4.0	inch	2.10
							mm	53.3
⅜″ pipe butt weld sch 80	0.50”	0.42”	7.5	0.42”	0.42”	4.0	inch	2.10
							mm	53.3
½″ pipe butt weld sch 80	0.50”	0.50”	12.5	0.42”	0.42”	4.0	inch	2.10
							mm	53.3

Handles

Oval handle
E 2.14” (54.4mm)
F 1.50” (38.1mm)
G 2.08” (52.8mm)

Lever handle
E 3.72” (94.5mm)
F 0.62” (15.7mm)
G 0.63” (15.9mm)

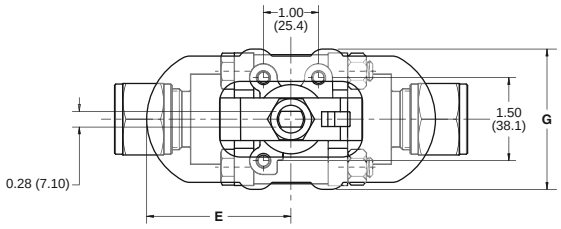
Consult factory for additional end connection sizes.

* *Orifice diameter and flow rate listed for the total valve. The most restrictive orifice may be either the ball or the end connection orifice. Dimensions for reference only, subject to change.*

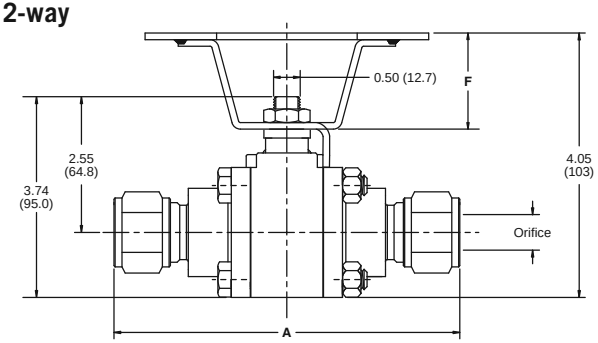
7 Series

Dimensions: 7F Series (Cv Range = 7.5 to 38.0)

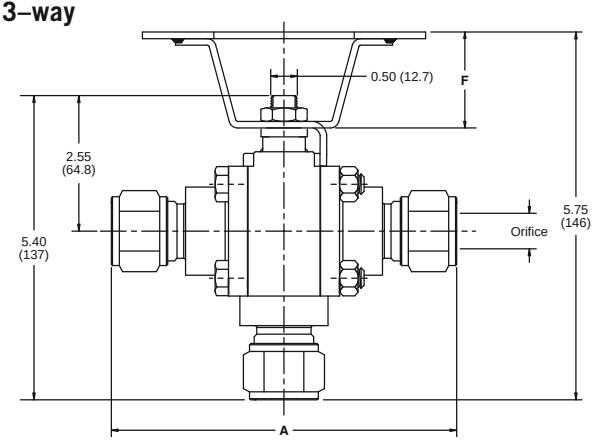
	2-WAY	3–WAY
ORIFICE SIZE	0.42˝ - 0.88˝ (10.7mm - 22.4mm)	0.42˝ - 0.63˝ (10.7mm - 16.0mm)
Cv RANGE	7.5 - 38.0	9.0



2-way



3–way



7F Series (Cv Range = 7.5 to 38.0)

END CONNECTIONS	2-WAY BALL ORIFICE	2-WAY ORIFICE*	2-WAY Cv	3–WAY BALL ORIFICE	3–WAY ORIFICE*	3–WAY Cv		A
1˝ GYROLOK®	0.88”	0.88”	38.0	0.63”	0.63”	9.0	inch	5.60
							mm	142
25mm GYROLOK®	0.88”	0.88”	38.0	0.63”	0.63”	9.0	inch	3.69
							mm	93.7
¾˝ female NPT sch 80	0.88”	0.88”	38.0	0.63”	0.63”	9.0	inch	3.69
							mm	93.7
1˝ female NPT sch 80	0.88”	0.88”	38.0	0.63”	0.63”	9.0	inch	3.45
							mm	87.6
1˝ tube socket weld	0.88”	0.88”	38.0	0.63”	0.63”	9.0	inch	3.45
							mm	87.6
25mm tube socket weld	0.88”	0.88”	38.0	0.63”	0.63”	9.0	inch	3.45
							mm	87.6
¾˝ pipe socket weld	0.88”	0.88”	38.0	0.63”	0.63”	9.0	inch	3.45
							mm	87.6
1˝ pipe socket weld	0.88”	0.88”	38.0	0.63”	0.63”	9.0	inch	3.45
							mm	87.6
¾˝ pipe butt weld sch 40	0.88”	0.75”	27.0	0.63”	0.63”	9.0	inch	3.45
							mm	87.6
1˝ pipe butt weld sch 40	0.88”	0.88”	38.0	0.63”	0.63”	9.0	inch	3.45
							mm	87.6
¾˝ pipe butt weld sch 80	0.88”	0.75”	27.0	0.63”	0.63”	9.0	inch	3.45
							mm	87.6
1˝ pipe butt weld sch 80	0.88”	0.88”	38.0	0.63”	0.63”	9.0	inch	3.45
							mm	87.6

Handles

Oval handle
E 2.61” (66.3mm)
F 1.75” (44.4mm)
G 2.54” (64.5mm)

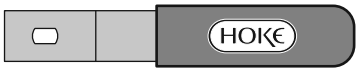
Lever handle
E 5.44” (138mm)
F 0.80” (20.4mm)
G 0.75” (19.0mm)

Consult factory for additional end connection sizes.

** Orifice diameter and flow rate listed for the total valve. The most restrictive orifice may be either the ball or the end connection orifice. Dimensions for reference only, subject to change.*

Accessories: Handles

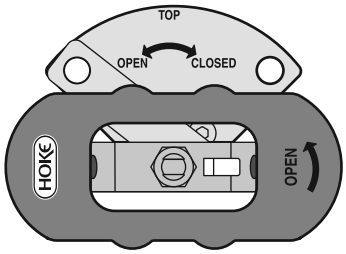
Lever Handle*



Handle Option "K"
316 Stainless Steel

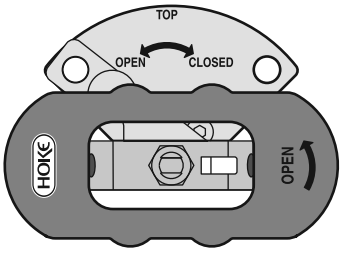
* Standard handle for 7 Series

Oval Locking Handle



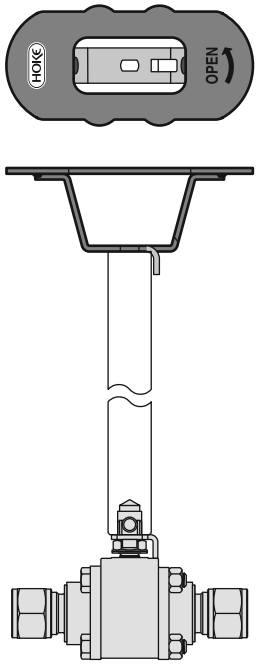
Handle Option "N"
316 Stainless Steel

Oval Locking/Latching Handle



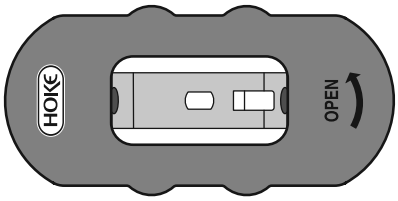
Handle Option "L"
316 Stainless Steel

Oval Extended Handle



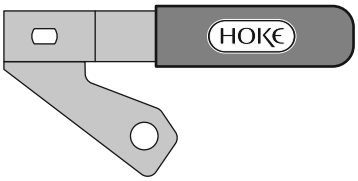
Handle Option "4"
316 Stainless Steel

Oval Handle



Handle Option "N"
N – 316 stainless steel

Locking Lever Handle



Handle Option "S"
316 Stainless Steel

7 Series

How to Order: Standard Valves

Use the following list to order standard valves that are readily available from your local HOKE® distributor. If your application requires a customized valve, use the 'Build to Order' matrix on page 26 for 2-way valves or page 27 for 3–way valves.

All valves listed in this matrix are built with the following components as standard:

- 316 stainless steel body* stainless steel energized stem seal*
- PEEK™ thrust washer*
- 316 stainless steel body bolt
- 316 stainless steel ball*
- 316 stainless steel handle
- FKM (Viton®) seat rings*
- Standard cleaning

* *Wetted components*

2-way Valves

END CONNECTION (ALL PORTS)	END CONNECTION SIZE	ACTUATION METHOD	PART NUMBER
GYROLOK® Metric Sizes 6mm, 8mm, 10mm, 12mm, 18mm, and 25mm are also available	¼″	Lever handle	7D2GGO4GO4YKS20V
	⅜″	Lever handle	7D2GGO6GO6YKS20V
	½″	Lever handle	7E2GGO8GO8YKS20V
	¾″	Lever handle	7E2GG12G12YKS20V
	1″	Lever handle	7F2GG16G16YKS20V
	¼″	Oval handle	7D2GGO4GO4YNS20V
	⅜″	Oval handle	7D2GGO6GO6YNS20V
	½″	Oval handle	7E2GGO8GO8YNS20V
	¾″	Oval handle	7E2GG12G12YNS20V
	1″	Oval handle	7F2GG16G16YNS20V
	¼″	Normally closed spring return pneumatic	7D2GGO4GO4Y6S20V
	⅜″	Normally closed spring return pneumatic	7D2GGO6GO6Y6S20V
	½″	Normally closed spring return pneumatic	7E2GGO8GO8Y6S20V
	¾″	Normally closed spring return pneumatic	7E2GG12G12Y6S20V
	1″	Normally closed spring return pneumatic	7F2GG16G16Y6S20V
Female NPT	¼″	Lever handle	7D2GFO4FO4YKS20V
	⅜″	Lever handle	7D2GFO6FO6YKS20V
	½″	Lever handle	7E2GFO8FO8YKS20V
	¾″	Lever handle	7F2GF12F12YKS20V
	1″	Lever handle	7F2GF16F16YKS20V
	¼″	Oval handle	7D2GFO4FO4YNS20V
	⅜″	Oval handle	7D2GFO6FO6YNS20V
	½″	Oval handle	7E2GFO8FO8YNS20V
	¾″	Oval handle	7F2GF12F12YNS20V
	1″	Oval handle	7F2GF16F16YNS20V
	¼″	Normally closed spring return pneumatic	7D2GFO4FO4Y6S20V
	⅜″	Normally closed spring return pneumatic	7D2GFO6FO6Y6S20V
	½″	Normally closed spring return pneumatic	7E2GFO8FO8Y6S20V
	¾″	Normally closed spring return pneumatic	7F2GF12F12Y6S20V
	1″	Normally closed spring return pneumatic	7F2GF16F16Y6S20V

3–way Valves

END CONNECTION (ALL PORTS)	END CONNECTION SIZE	ACTUATION METHOD	PART NUMBER
GYROLOK® Metric Sizes 6mm, 8mm, 10mm, 12mm, 18mm, and 25mm are also available	¼″	Lever handle	7D3GGO4GO4GO4YKS2V
	⅜″	Lever handle	7D3GGO6GO6GO6YKS2V
	½″	Lever handle	7E3GGO8GO8GO8YKS2V
	¾″	Lever handle	7E3GG12G12G12YKS2V
	1″	Lever handle	7F3GG16G16G16YKS2V
	¼″	Oval handle	7D3GGO4GO4GO4YNS2V
	⅜″	Oval handle	7D3GGO6GO6GO6YNS2V
	½″	Oval handle	7E3GGO8GO8GO8YNS2V
	¾″	Oval handle	7E3GG12G12G127YNS2V
	1″	Oval handle	7F2GG16G16G16YNS2V
	¼″	Double acting pneumatic (switching)	7D3GGO4GO4GO4Y5S2V
	⅜″	Double acting pneumatic (switching)	7D3GGO6GO6GO6Y5S2V
	½″	Double acting pneumatic (switching)	7E3GGO8GO8GO8Y5S2V
	¾″	Double acting pneumatic (switching)	7E3GG12G12G12Y5S2V
	1″	Double acting pneumatic (switching)	7F3GG16G16G16Y5S2V

How to Order: Build to Order for 2-way Valves

Use the matrix below to customize your 7 Series valve. Use the chart on page 25 to order standard, readily available 7 Series valves. **Standard items in bold.**

7E2 G G08 G08 Y K S 2 0 V —

SERIES NUMBER
- **7D2 Cv Range 1.0 to 3.8**
- **7E2 Cv Range 4.0 to 12.5**
- **7F2 Cv Range 7.5 to 38.0**
- **(See pages 21-23)**

SEAT & SEAL MATERIAL
- **G 15% Graphite filled PTFE**
- **T** PTFE
- P PEEK™
- U UHMWPE
- V Virgin PTFE

(Consult factory if valve is actuated pneumatically)
- O PTFE/FKM O-ring
- R PTFE/Reinforced PTFE washer

Inlet PORT END
See 'Inlet / Outlet Ports' table below

Outlet PORT END
See 'Inlet / Outlet Ports' table below

WETTED METAL COMPONENTS
- **Y 316 stainless steel (standard)**
- **H** HASTELLOY® C-276
- M MONEL® 400

Consult factory for other materials

ACTUATION OPTIONS

Lever Handles (see page 24)
- **K 316 stainless steel (standard)**
- **S** 316 stainless steel, locking

Ergonomic Oval Handles (see page 24)
- **L** 316 stainless steel, latching/locking
- N 316 stainless steel
- 3 316 stainless steel, locking
- 4 316 stainless steel, extended (standard length = 4″)**

Pneumatic Actuator†
- **5 Double acting (air to open/air to close)**
- **6 Normally closed (spring returned)**
- **7 Normally open (spring returned)**

ANSI B16.34
- **Blank-Standard**
- **B** ANSI/ASME B16.34 Class 800*

SEAT RINGS
- **V FKM (Viton®) (standard)**
- **K** Kalrez® (–58° to +450° F / –50° to +232° C)
- E EPDM (–65° to +250° F / –54° to +121° C)

Blank Seat rings are replaced with 2 opposing curved disc springs on upstream side. Valve becomes unidirectional when selecting this option. (Refer to drawing on bottom of page 17.)

BALL
- **0 Standard ball**
- **1** Upstream vented ball, 316 stainless steel
- **2** Steam trap test valve (Note: Cannot be used in 7D Valves)

BODY BOLT, BODY NUT, AND STEM NUT
- **2 316 stainless steel**
- **3** 316 stainless steel –NACE compliant***

CLEANING OPTIONS
See page 27 for details
- **S Standard cleaning per HPS-1 and -2**
- **A** Industrial oxygen cleaning per HPS-18
- B Chlorine service cleaning per HPS-172

****Per NACE MR0175/ISO15156, the user must determine if this product is satisfactory for use in its intended environment.*

** Valves proof tested to 1.5x working pressure and tagged per B16.34.*
*** Consult factory for additional lengths.*
† Refer to page 29 for specifications.

Inlet / Outlet Ports

SERIES	SIZE	GYROLOK®	FEMALE NPT	TUBE SOCKET WELD	TUBE BUTT WELD	PIPE SOCKET WELD	SCH 80 PIPE BUTT WELD	SCH 40 PIPE BUTT WELD
7D2	⅛″	G02	—	—	—	—	—	—
	¼″	G04	F04	T04	—	P04	B04	H04
	⅜″	G06	—	T06	—	—	B06	H06
	6mm	Z06	—	W06	—	—	—	—
	8mm	Z08	—	W08	—	—	—	—
	10mm	Z10	—	W10	—	—	—	—

Inlet / Outlet Ports

SERIES	SIZE	GYROLOK®	FEMALE NPT	TUBE SOCKET WELD	TUBE BUTT WELD	PIPE SOCKET WELD	SCH 80 PIPE BUTT WELD	SCH 40 PIPE BUTT WELD
7E2	¼″	G04	F04	T04	S04	—	B04	
	⅜″	G06	F06	T06	S06	P06	B06	H06
	½″	G08	F08	T08	S08	P08	B08	H08
	⅝″	G10	—	T10	—	—	—	—
	¾″	G12	—	T12	S12	—	—	—
	1″	—	—	—	S16	—	—	—
	6mm	Z06	—	W06	—	—	—	—
	8mm	Z08	—	W08	—	—	—	—
	10mm	Z10	—	W10	—	—	—	—
	12mm	Z12	—	W12	—	—	—	—
	14mm	Z14	—	W14	—	—	—	—
	15mm	Z15	—	W15	—	—	—	—
	16mm	Z16	—	W16	—	—	—	—
	18mm	Z18	—	W18	—	—	—	—
7F2	¾″	G12	F12	T12	—	P12	B12	H12
	⅞″	G14	—	—	—	—	—	—
	1″	G16	F16	T16	—	P16	B16	H16
	18mm	Z18	—	—	—	—	—	—
	20mm	Z20	—	—	—	—	—	—
	22mm	Z22	—	—	—	—	—	—
	25mm	Z25	—	W25	—	—	—	—

7 Series

How to Order: Build to Order for 3–way Valves

Standard items in bold.

7E3 G G08 G08 G08 Y K S 2 V –

SERIES NUMBER
- **7D3 Cv Range 1.0–3.8**
- **7E3 Cv Range 4.0–12.5**
- **7F3 Cv Range 7.5–38.0**
- **(See pages 20-22)**

SEAT & SEAL MATERIAL
- **G 15% Graphite filled PTFE**
- **T** PTFE
- P PEEK™
- U UHMWPE
- V Virgin PTFE

Consult factory if valve is actuated pneumatically

- O PTFE/FKM O-ring
- R PTFE/Reinforced PTFE washer

PORT 1 END
See 'Ports' table below

PORT 2 END
See 'Ports' table below

PORT 3 END
See 'Ports' table below

WETTED METAL COMPONENTS
- **Y 316 stainless steel (standard)**
- **H** HASTELLOY® C-276
- M MONEL® 400

Consult factory for other materials

ACTUATION OPTIONS

Lever Handles (see page 24)
- **K 316 stainless steel (standard)**
- **S** 316 stainless steel, locking

Ergonomic Oval Handles (see page 24)
- **3** 316 stainless steel, locking
- 4 316 stainless steel, extended (standard length = 4″)
- L 316 stainless steel, latching/locking
- N 316 stainless steel

Pneumatic Actuator†
- **5** Double acting (air to open/air to close, 180° rotation)
- 6 Spring return (180° rotation)

ANSI B16.34
- **Blank-Standard**
- **B** ANSI/ASME B16.34 Class 800*

SEAT RINGS
- **V FKM (Viton®) (standard)**
- **K** Kalrez® (–58° to +450° F / –50° to +232° C)
- E EPDM (–65° to +250° F / –54° to +121° C)

BODY BOLT, BODY NUT, AND STEM NUT
- **2 316 stainless steel**
- **3** 316 stainless steel –NACE compliant**

CLEANING OPTIONS (see below)
- **S Standard cleaning per HPS-1 and -2**
- **A** Industrial oxygen cleaning per HPS-18
- B Chlorine service cleaning per HPS-172

** Valves proof tested to 1.5× working pressure and tagged per B16.34.*
*** Per NACE MR0175/ISO15156, the user must determine if this product is satisfactory for use in its intended environment.*
† Refer to page 29 for specifications.

Cleaning Options

HPS-1 Cleaning procedure to remove oil and grease from metal valve parts with solvent vapor- and solvent ultrasonic vapor degreasers.

HPS-2 Cleaning procedure to remove dirt, oil, and grease from non-metallic parts with non-ionic detergent and water solution.

HPS-18 Cleaning procedure to remove oil, grease, and other contaminates from the valve and fitting components prior to assembly for industrial oxygen service.

HPS-172 Procedure to clean and package valve parts and assemblies for use with dry chlorine gas or liquid.

Port 1 / Port 2 / Port 3

SERIES	SIZE	GYROLOK®	FEMALE NPT	TUBE SOCKET WELD	TUBE BUTT WELD	PIPE SOCKET WELD	SCH 80 PIPE BUTT WELD	SCH 40 PIPE BUTT WELD
7D3	⅛″	G02	—	—	—	—	—	—
	¼″	G04	F04	T04	—	P04	B04	H04
	⅜″	G06	—	T06	—	—	B06	H06
	6mm	Z06	—	W06	—	—	—	—
	8mm	Z08	—	W08	—	—	—	—
	10mm	Z10	—	W10	—	—	—	—
7E3	¼″	G04	F04	T04	S04	—	B04	
	⅜″	G06	F06	T06	—	P06	B06	H06
	½″	G08	F08	T08	—	P08	B08	H08
	⅝″	G10	—	T10	—	—	—	—
	¾″	G12	—	T12	—	—	—	—
	1″	—	—	—	S16	—	—	—
	6mm	Z06	—	W06	—	—	—	—
	8mm	Z08	—	W08	—	—	—	—
	10mm	Z10	—	W10	—	—	—	—
	12mm	Z12	—	W12	—	—	—	—
	14mm	Z14	—	W14	—	—	—	—
	15mm	Z15	—	W15	—	—	—	—
	16mm	Z16	—	W16	—	—	—	—
	18mm	Z18	—	W18	—	—	—	—
7F3	¾″	G12	F12	T12	—	P12	B12	H12
	⅞″	G14	—	—	—	—	—	—
	1″	G16	F16	T16	—	P16	B16	H16
	18mm	Z18	—	—	—	—	—	—
	20mm	Z20	—	—	—	—	—	—
	22mm	Z22	—	—	—	—	—	—
	25mm	Z25	—	W25	—	—	—	—

7 Series – Accessories

NEMA 7 Position Monitor

Fully compatible with HOKE® 07L Series pneumatic actuators, the NEMA 7 position monitor provides both electrical and visual verification of valve status. This device is especially useful in hard to reach areas including exhaust stacks, tanks, and areas where digital feedback is not readily available.

Features & Benefits

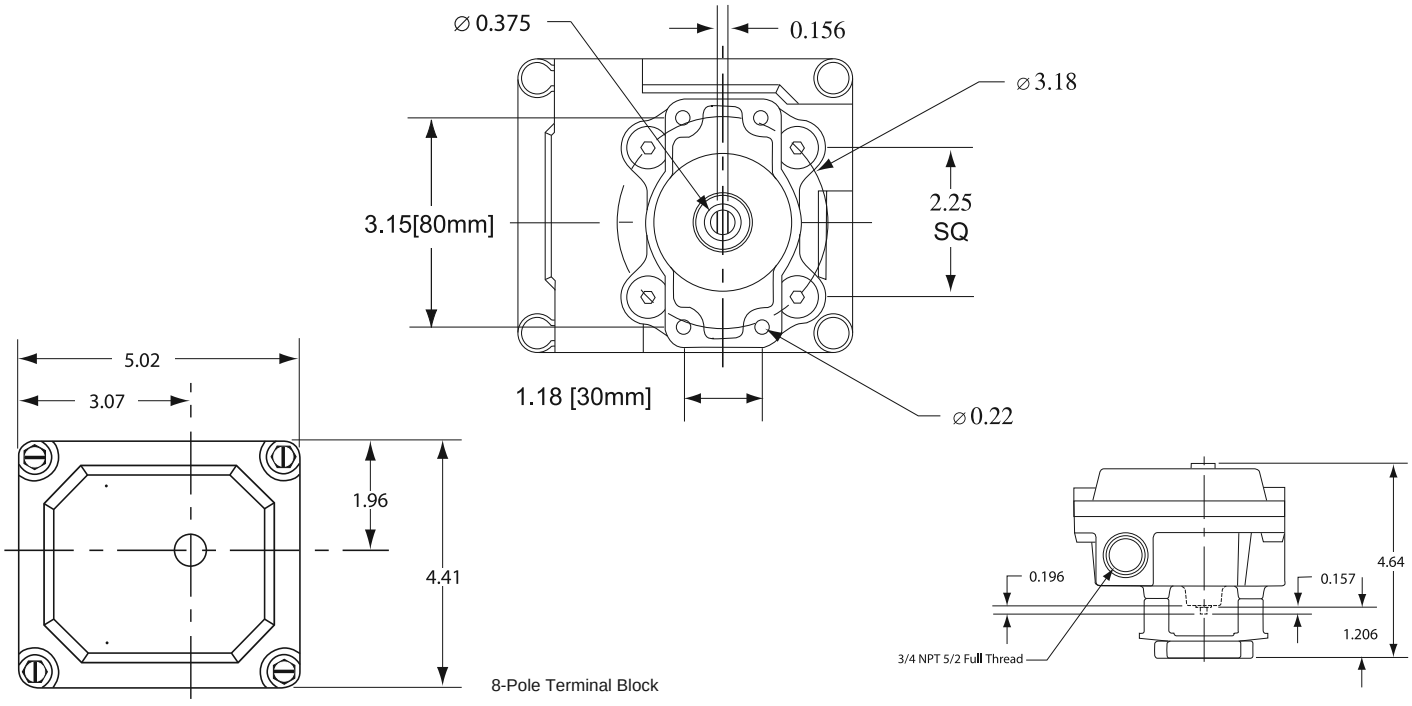
- Aluminum housing with powder-coated epoxy finish provides rugged protection for years of maintenance free service
- 90° Black/Yellow indicator provides clear position indication
- Separate ¾" female threaded conduit openings for installation flexibility
- Setting system utilizes an internal leaf spring design that precisely positions and locks onto a splined shaft
- Cam system is easy to adjust, and includes a 303 stainless steel ¼" NAMUR shaft
- Hermetically-sealed switches offer high level protection from moisture, shock, and corrosive environments for long life, accuracy and reliability

Technical Data

HOUSING	NEMA 7 Aluminum
BEARINGS	316 stainless steel
PROXIMITY SWITCHES	2 switches, 3-amps
VOLTAGE	120 Volts AC/DC
WATTAGE	100 Watts
OPERATING TEMPERATURE RANGE	-40° F to 257° F (-40° C to 125° C)
TERMINAL TYPE	8-pole fixed terminal strip
MOUNTING	80mm x 20mm NAMUR mounting

For field installation order number: **ZASAC-21110**

To order factory installation, add **"/ZASAC-21110** to end of 7 Series part number



7 Series

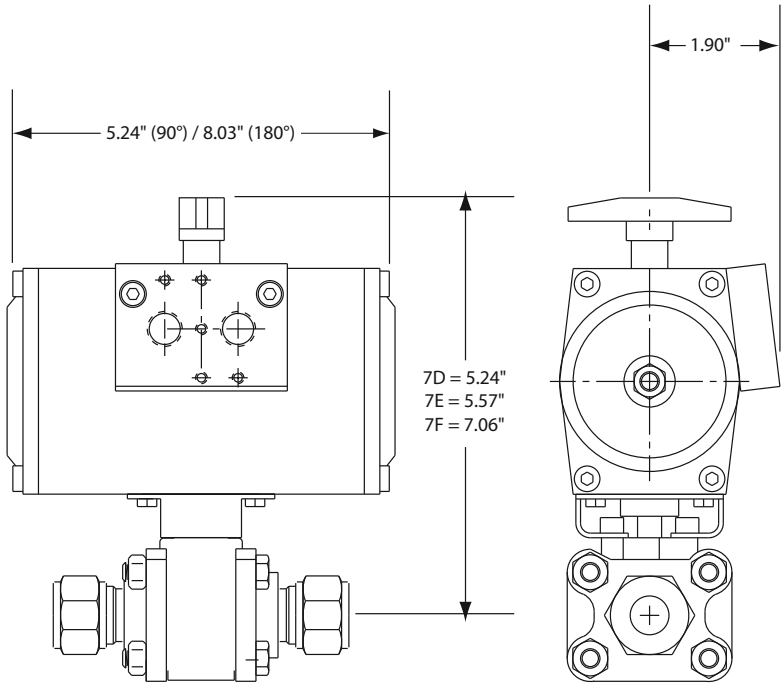
Pneumatic Actuators

For remote actuation of 7 Series Ball Valves, order a pneumatic actuator and mounting kit for field assembly (see below) or use the "How to Order" guide on page 26 for factory assembly. Actuators for 7 Series are available in Double Acting (air to open and air to close) or Spring Return (normally open or normally closed) versions.

Features & Benefits

- Durable construction stands up to harsh environmental conditions, increasing durability and reliability.
- Compact size provides greater installation flexibility in tight spaces.
- Field assembled valve/actuator option provides simple conversion of manual valve to pneumatic operation. This increases flexibility and decreases installation costs.
- Top mounted actuator allows for conversion from manual valve to pneumatic operation without disrupting packing. Ensuring leak-tightness and improving reliability.
- Long cycle life results in reduced maintenance requirements and lower cost of ownership.

Limit switches, electro-pneumatic and electric actuators are available upon request. Please consult your local distributor.



How to Order: Actuators and Mounting Kits

Actuator Pressure Requirements (Double Acting)

VALVE SERIES	DESCRIPTION	ACTUATOR PART NUMBER	MOUNTING KIT PART NUMBER	OPERATING TORQUE (IN LBS) FOR ACTUATOR INLET PRESSURE				
				40 PSIG	60 PSIG	80 PSIG	100 PSIG	120 PSIG
7D2	Double acting (90°)	**07L90DA/ISO**	**7DM05K**	151	227	302	378	453
7E2	Double acting (90°)	**07L90DA/ISO**	**7EM05K**					
7F2	Double acting (90°)	**07L90DA/ISO**	**7FL07K**					
7D3	Double acting (180°)	**07L180DA/ISO**	**7DM05K**					
7E3	Double acting (180°)	**07L180DA/ISO**	**7EM05K**					
7F3	Double acting (180°)	**07L180DA/ISO**	**7FL07K**					

Standard actuator operating temperature = –4° to +194° F (-20° C to +90° C); optional high temperature version to +320° F (+160° C).

Actuator Pressure Requirements (Spring Return)

VALVE SERIES	DESCRIPTION	ACTUATOR PART NUMBER	MOUNTING KIT PART NUMBER	OPERATING TORQUE (IN LBS) FOR ACTUATOR INLET PRESSURE										CLOSING FORCE (IN LBS)
				40 PSIG		60 PSIG		80 PSIG		100 PSIG		120 PSIG		
				START	END	START	END	START	END	START	END	START	END	
7D2	Spring Return	**07L90SR2/ISO**	**7DM05K**	69	93	144	168	218	242	293	317	367	391	38
7E2	Spring Return	**07L90SR2/ISO**	**7EM05K**											
7F2	Spring Return	**07L90SR2/ISO**	**7FL07K**											
7D3	Spring Return	**07L180SR2/ISO**	**7DM05K**											
7E3	Spring Return	**07L180SR2/ISO**	**7EM05K**											
7F3	Spring Return	**07L180SR2/ISO**	**7FL07K**											

Standard actuator operating temperature = –4° to +194° F (-20° C to +90° C); optional high temperature version to +320° F (+160° C).

Valve Spare Parts

Kit contents: Seats, energized PTFE stem seals, thrust washer, body seal, TFR–61 rebuild instructions. **Standard items in bold.**

R7 E G V

Valve Size
- **D (Cv Range 1.0 to 3.8)**
- **E (Cv Range 4.0 to 12.5)**
- **F (Cv Range 7.5 to 38.0)**

Seat & Stem Seal Material
See 'Seat & Stem Seal Materials' table below

Energized Seat Ring Material
- **V FKM (Viton®), standard**
- **E** EPDM (–65° F to +250° F / –54° C to +121° C)
- K Kalrez® (–58° F to +450° F / –50° C to +232° C)

Blank Seat rings are replaced with 2 opposing curved disc springs on upstream side. Valve becomes uni-directional when choosing this option. Not available on 3–way valves.

Seat & Stem Seal Materials

DESIGNATOR	SEAT	ENERGIZED STEM SEALS	BODY SEAL	THRUST WASHER
G (standard)	**15% graphite-filled PTFE**	**Graphite-filled PTFE/Elgiloy®**	**PTFE**	**PTFE**
O	PTFE	Graphite-filled PTFE/Elgiloy®	FKM (Viton®) o-ring	PEEK™
P	PEEK™	Graphite-filled PTFE/Elgiloy®	PTFE	PEEK™
R	PTFE	Graphite-filled PTFE/Elgiloy®	PTFE	PTFE
T	PTFE	Graphite-filled PTFE/Elgiloy®	PTFE	PEEK™
U	UHMWPE	Graphite-filled PTFE/Elgiloy®	PTFE	PEEK™
V	PTFE (Viton®)	Graphite-filled PTFE/Elgiloy®	PTFE	PEEK™

7 Series—Fire Safe

2-way, 3-piece Bolted Ball Valves

HOKE®'s 7 Series Fire Safe Valves meet demanding application requirements in the production environment of chemical and petrochemical processing facilities. These valves have been tested to and meet the requirements of API 607, 4th edition for soft-seated valves. API 607 measures the ability of a closed soft-seated ball valve to retard the propagation of a fire (downstream and to atmosphere). The 7 Series Fire Safe Valves offer high flow, safety, and flexibility in a variety of end connections and sizes. This series is available in fractional sizes from ½″ to 1″ and in metric sizes from 12mm to 25mm in tube and pipe ends.

Typical Applications

- Chemical processing
- Petroleum refining
- Gas distribution
- Hydraulic fluids

Technical Data

BODY MATERIAL*	316 stainless steel, grade CF8M
MAXIMUM OPERATING PRESSURE	1500 psig @ 70° F (103 bar @ 21° C)
OPERATING TEMPERATURE RANGE	–40° F to +500° F (–40° C to +260° C)
ORIFICE SIZE	0.28″ to 0.88″ (7.1mm to 22.3mm)
Cv FACTORS	4.5 to 38
END CONNECTIONS	GYROLOK® tube fittings, female NPT, tube socket weld, pipe socket weld, pipe butt weld

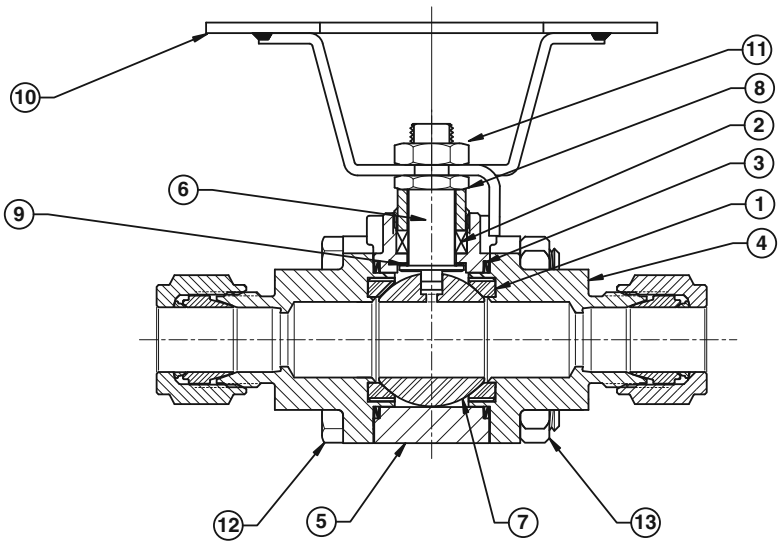
** Consult factory for other materials*

Features & Benefits

- Bottom-loaded stem prevents stem blowout for added safety.
- Fully encapsulated bolts are protected from the environment, extending valve life and reducing costs.
- Optional trip-proof or latching/locking handle prevents accidental opening or closing of the valve for a secure process.
- Optional fuse plugs are available on actuators for added safety.
- Fire-safe design retards the propagation of a fire downstream or to the atmosphere, enhancing safety and increasing the range of possible applications.
- Handle provides a visual indicator of whether valve is in the open or closed position, enhancing safety.
- Stem flats provide visual indication of valve position, improving safety.
- Actuators can be mounted to valves without disrupting the packing, seats or seals. Installation time and costs are minimized.
- Special High Tolerance NPT Thread

7 Series – Fire Safe

Materials of Construction



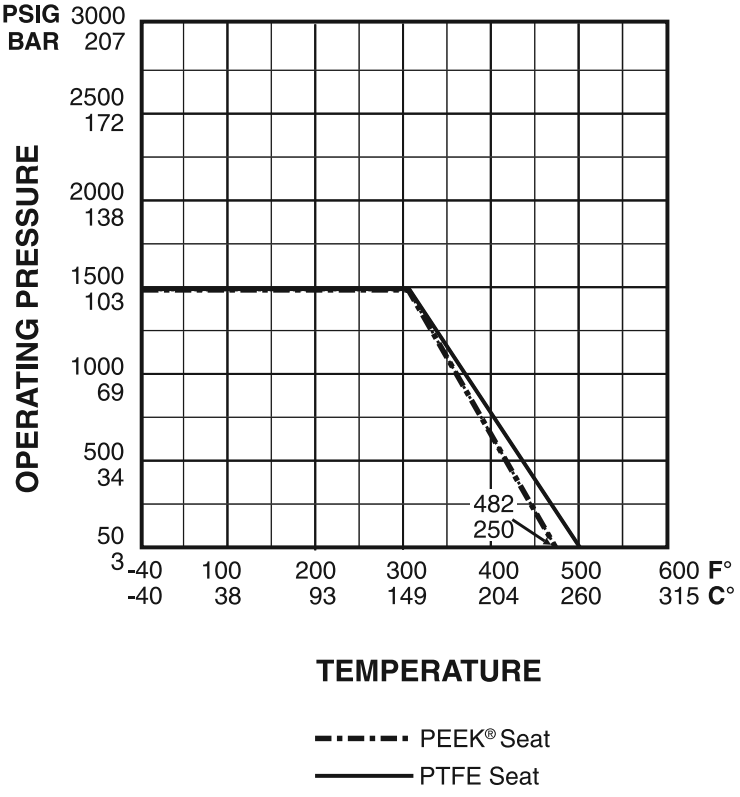
#	DESCRIPTION	MATERIAL
1	Seat*	PTFE**
2	Packing*	GRAFOIL®
3	Body seal*	316 stainless steel, PTFE coated
4	End plate*	316 stainless steel, grade CF3M
5	Body*	316 stainless steel, grade CF8M
6	Stem*	316 stainless steel
7	Ball*	316 stainless steel
8	Packing nut	316 stainless steel
9	Thrust washer*	PTFE or PEEK™
10	Handle	316 stainless steel
11	Stem nut	316 stainless steel
12	Body bolt	316 stainless steel
13	Body nut	316 stainless steel

Other materials available upon request.

* *Wetted Components*

** *PTFE seat is modified to reduce cold flow and increase durability without losing inert property.*

Pressure vs. Temperature Chart

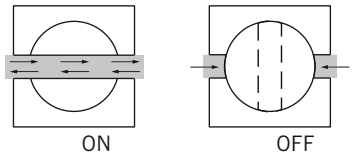


	SEAT	BODY SEAL	PACKING	THRUST WASHER
T	PTFE*	Stainless steel PTFE coated	GRAFOIL®	PTFE
P	PEEK™	Stainless steel PTFE coated	GRAFOIL®	PEEK™

** PTFE seat is modified to reduce cold flow and increase durability without losing inert property*

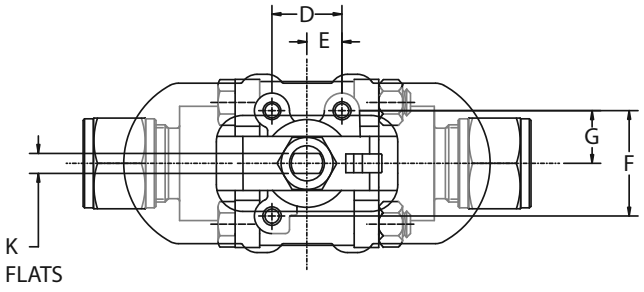
Flow Diagrams – 2-way valve

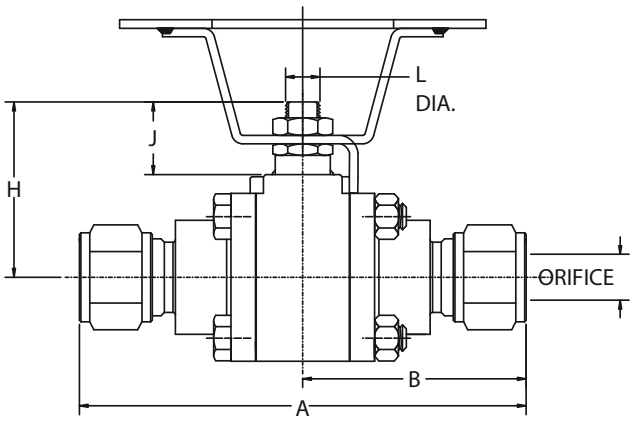
Straight Pattern Valve



7 Series – Fire Safe

Dimensions





7EF Series (C_v Range 4.5 - 12.5)

END CONNECTION	ORIFICE	Cv	A	B	D	E	F	G	H	J	K	L
⅜″ GYROLOK®	0.30”	4.5	3.31”	1.70”								
½″ GYROLOK®	0.42”	7.5	3.80”	1.90”								
¾″ GYROLOK®	0.50”	12.5	3.80”	1.90”								
12mm GYROLOK®	0.39”	7.0	3.80”	1.90”								
18mm GYROLOK®	0.50”	12.5	3.80”	1.90”								
⅜″ FNPT sch 80	0.50”	12.5	3.25”	1.67”								
½″ FNPT sch 80	0.50”	15	3.25”	1.67”								
⅜″ tube socket weld	0.30”	4.5	2.36”	1.18”	0.73”	0.37”	0.35”	0.43”	1.54”	0.59”	0.19”	0.31”
½″ tube socket weld	0.42”	7.5	2.36”	1.18”	18.5mm	9.4mm	8.9mm	10.9mm	39.1mm	15.0mm	4.8mm	7.9mm
¾″ tube socket weld	0.50”	12.5	2.36”	1.18”								
12mm tube socket weld	0.42”	7.5	2.36”	1.18”								
18mm tube socket weld	0.50”	12.5	2.36”	1.18”								
⅜″ pipe socket weld sch 80	0.50”	12.5	2.36”	1.18”								
½″ pipe socket weld sch 80	0.50”	12.5	2.36”	1.18”								
⅜″ pipe butt weld sch 80	0.42”	7.5	2.10”	1.05”								
½″ pipe butt weld sch 80	0.50”	12.5	2.10”	1.05”								

7FF Series (C_v Range 27 - 38)

END CONNECTION	ORIFICE	Cv	A	B	D	E	F	G	H	J	K	L
1″ GYROLOK®	0.88”	38	5.60”	2.80”								
25mm GYROLOK®	0.88”	38	5.60”	2.80”								
¾″ FNPT sch 80	0.88”	38	3.69”	1.85”								
1″ FNPT sch 80	0.88”	38	3.69”	1.85”								
1″ tube socket weld	0.88”	38	3.45”	1.73”	1.00”	0.50”	1.50”	0.75”	2.20”	0.80”	0.28”	0.50”
25mm tube socket weld	0.88”	38	3.45”	1.73”	25.4 mm	12.7mm	38.1mm	19.1mm	55.9mm	20.3mm	7.1mm	12.7mm
¾″ pipe socket weld sch 80	0.88”	38	3.45”	1.73”								
1″ pipe socket weld sch 80	0.88”	38	3.45”	1.73”								
¾″ pipe butt weld sch 80	0.75”	27	3.45”	1.73”								
1″ pipe butt weld sch 80	0.88”	38	3.45”	1.73”								

Note: Orifice dimension and Cv are listed for the total valve.
Dimensions for reference only, subject to change.

7 Series – Fire Safe

How to Order

Standard items in bold.

7EF T G08 G08 Y O S 1 O

SERIES NUMBER
7EF Cv Range 4.5 - 12.5
7FF Cv Range 27 - 38

SEAT & SEAL MATERIAL
See 'Seat & Seal Materials' table below

P1 INLET PORT END
See 'Port End Type' table below

P2 OUTLET PORT END
See 'Port End Type' table below

BODY & END PLATE MATERIAL
Y 316 stainless steel
Consult factory for other materials

ACTUATION OPTIONS
O 316 stainless steel lever handle
1 316 stainless steel locking lever
2 316 stainless steel oval handle
3 316 stainless steel locking oval handle
4 316 stainless steel extended oval handle
5 Actuator, double acting
6 Actuator, spring return normally closed
7 Actuator, spring return normally open
8 Actuator, spring return normally closed with fuse plug
L 316 stainless steel oval latching handle

CLEANING OPTIONS
S Standard cleaning per HPS-1 & -2
A Industrial oxygen cleaning per HPS-18
B Chlorine service cleaning per HPS-172

NUT, BOLT, STEM NUT & LOCKING BRACKET OPTIONS
1 316 stainless steel, per ASTM A193 B8M
2 316 stainless steel - NACE compliant**

MISCELLANEOUS OPTIONS
O None
1 Upstream vented ball

Seat & Seal Materials

	SEAT	BODY SEAL	PACKING	THRUST WASHER
T	**PTFE***	**Stainless steel PTFE coated**	**GRAFOIL®**	**PTFE**
P	PEEK™	Stainless steel PTFE coated	GRAFOIL®	PEEK™

* *PTFE seat is modified to reduce cold flow and increase durability without losing inert properties.*

** *Per NACE MR0175/ISO 15156 the user must determine if this product is satisfactory for use in its intended environment.*

P1 Inlet / P2 Outlet Ports End Type

SERIES	SIZE	GYROLOK®	FEMALE NPT	TUBE SOCKET WELD	PIPE SOCKET WELD	PIPE BUTT WELD
7EF	⅜″	G06	F06	T06	P06	B06
	½″	G08	F08	T08	P08	B08
	¾″	G12	—	T12	—	—
	12mm	Z12	—	W12	—	—
	18mm	Z18	—	W18	—	—
7FF	¾″	—	F12	—	P12	B12
	1″	G16	F16	T16	P16	B16
	25mm	Z25	—	W25	—	—

Cleaning Options

HPS-1 Cleaning procedure to remove oil and grease from metal valve parts with solvent vapor- and solvent ultrasonic vapor degreasers.

HPS-2 Cleaning procedure to remove dirt, oil, and grease from non-metallic parts with non-ionic detergent and water solution.

HPS-18 Cleaning procedure to remove oil, grease, and other contaminates from the valve and fitting components prior to assembly for industrial oxygen service.

HPS-172 Procedure to clean and package valve parts and assemblies for use with dry chlorine gas or liquid.

Notes

The Small Bore Instrumentation Specialists

We specialize in small bore instrumentation products up to 2" that deliver benchmark performance quality & safety; provide the broadest array of superior alloy offerings in the market; decades of proven success in a wide range of industries; a roster of "who's who" customers & projects globally; original "Best Solution" engineering & designs; and are focused on continuous improvement in all aspects of our business.

Proudly Distributed By:

CRANE INSTRUMENTATION & SAMPLING Inc.
405 Centura Ct.
Spartanburg, SC 29305, USA

Tel: 1-864-574-7966
PO Box 4866, Spartanburg, SC 29305-4866 USA

79067ENG • 03/12/20 • APS2174