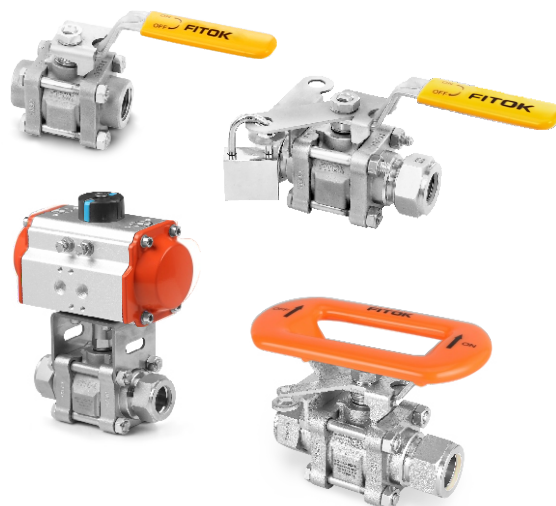


3-Piece Ball Valves

BH Series

Features

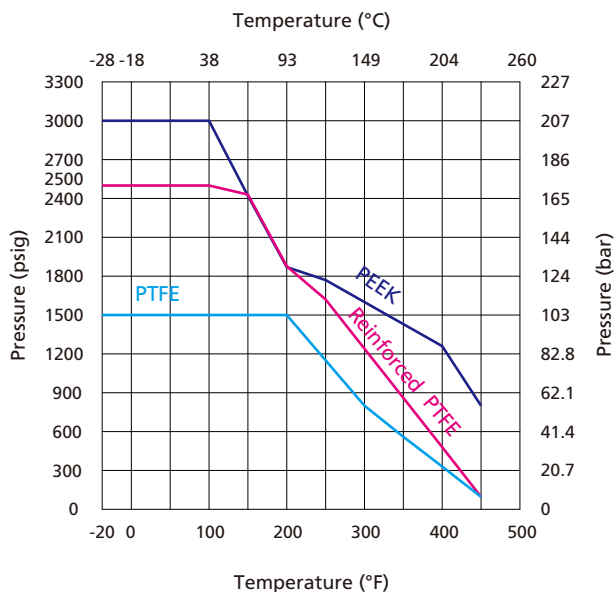
- Working pressures up to 3,000 psig (207 bar)
- Working temperature: -20°F to 450°F (-28°C to 232°C)
- Maximum-flow design with Cv up to 130
- Floating ball design paired with disc-spring-loaded seats to compensate for seat wear and pressure/temperature changes, improving leak-tight integrity
- Blowout-proof stem minimizes failures caused by stem movement or looseness
- Available in 2-way or 3-way flow patterns
- Each valve is factory leak-tested with nitrogen or compressed air at rated pressure
- Fire-safe ball valves available
- Low-temperature service option available



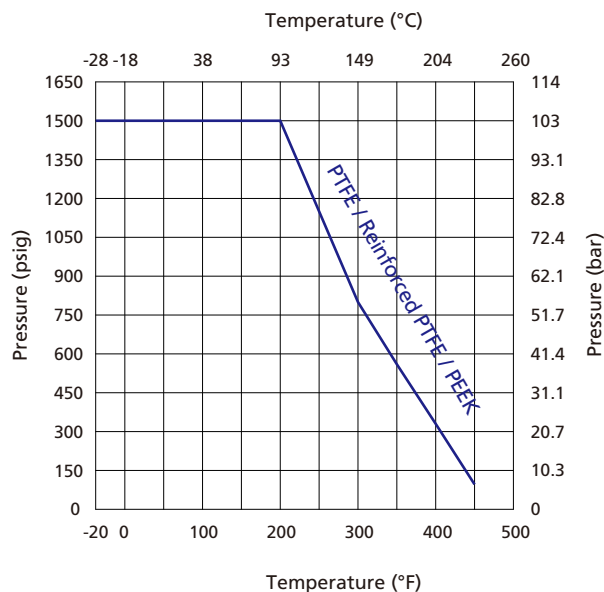
Pressure vs. Temperature

2-way Valves

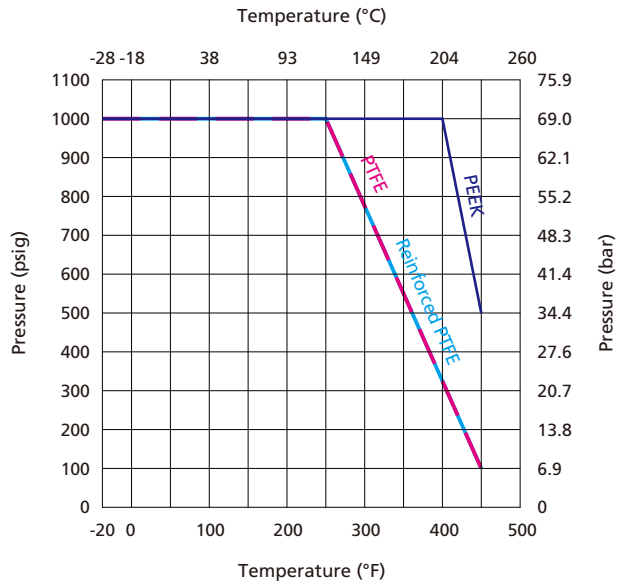
Orifice Size: 0.19", 0.28", 0.41", 0.52" & 0.88"



Orifice Size: 1.13", 1.25" & 1.50"



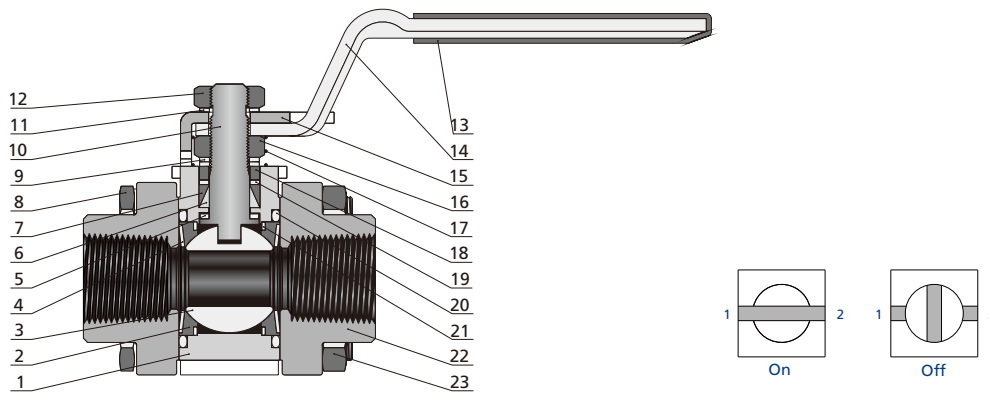
3-way Valves



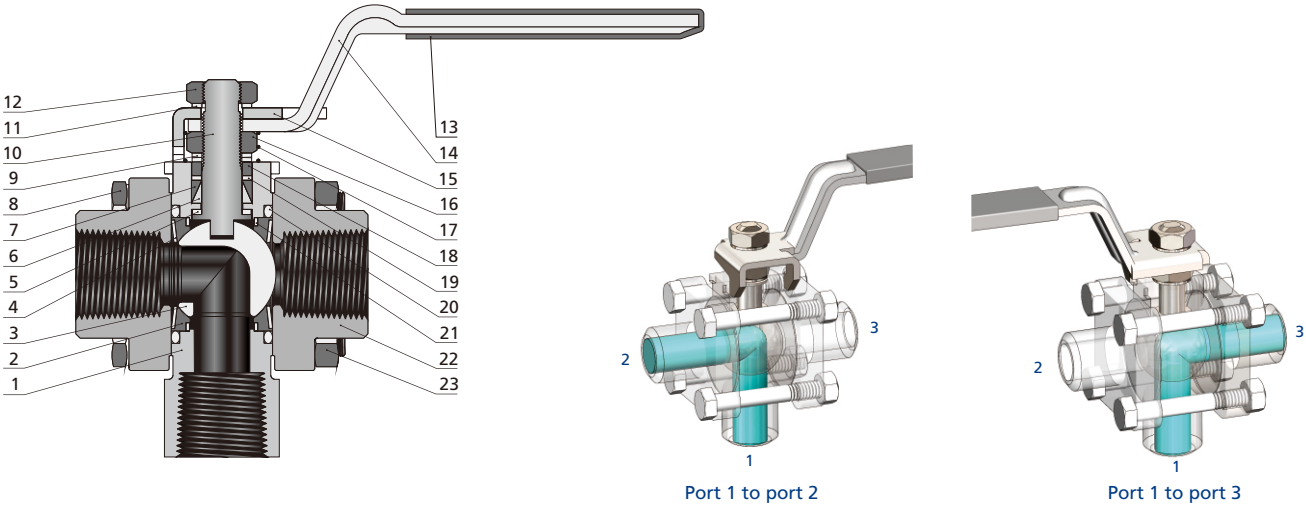
Note: The temperature and pressure rating are based on valves of standard materials.

Standard Materials of Construction

2-way Valves



3-way Valves

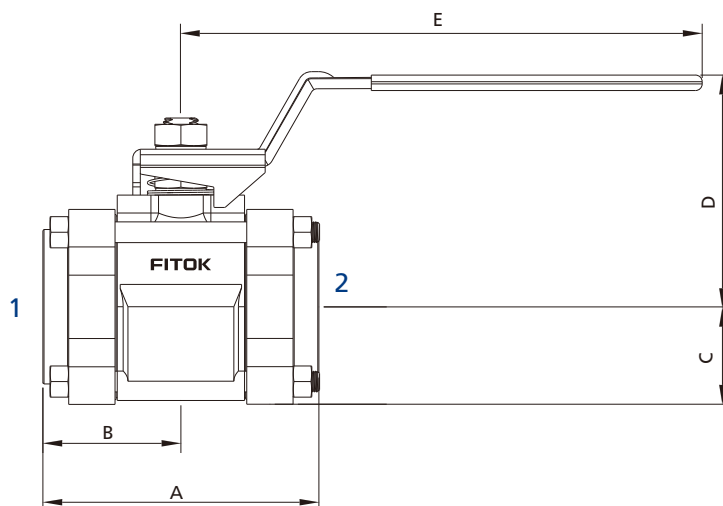


Item	Component	Material Grade/ASME Specification	
1	Body	CF8M/A351	CF8/A351
2	Seat	PTFE or Reinforced PTFE or PEEK	
3	Ball	316 SS/A479	
4	Coned-disc Spring	Strain-hardened 316 SS/A240	
5	Stem Bearing	PEEK	
6	Lower Packing	Reinforced PTFE	
7	Upper Packing	Reinforced PTFE	
8	Body Bolt	Gr. B8M/A193	
9	Stem Spring	Strain-hardened 316 SS/A240	
10	Stem	316 SS/A479	
11	Stem Spring	Strain-hardened 316 SS/A240	
12	Stem Nut	Gr. 8M/A194	
13	Handle Sleeve	Vinyl	
14	Handle	304 SS/A240	
15	Stop Plate	304 SS/A240	
16	Stem Nut	Gr. 8M/A194	
17	Grounding Spring	302 SS/A313	
18	Gland	PTFE-coated 316 SS/A479	
19	Packing Support	PEEK	
20	Flange Seal	PTFE/D1710	
21	Support Ring	316 SS/A240	
22	End Connection	CF8M/A351	CF8/A351
23	Body Nut	Gr.8M/A194	
Lubricants		Silicone-based and PTTE-based	

Note: Wetted components are listed in italics.
For other materials, please contact FITOK Group or our authorized distributors.

Dimensions

2-way Valves



Basic Ordering Number	Connection Type and Size		Orifice in. (mm)	Cv	Dimensions, in. (mm)				
	Connection 1	Connection 2/3			A	B	C	D	E
BHSS-FL4-05	1/4" FITOK	1/4" FITOK	0.19 (4.8)	1.2	3.17 (80.5)	1.59 (40.4)	0.68 (17.3)	1.66 (42.2)	2.37 (60.2)
BHSS-FL4-P05	1/4" FITOK	1/4" FITOK							
BHSS-ML6-05	6 mm FITOK	6 mm FITOK							
BHSS-FNS4-07	1/4 Female NPT	1/4 Female NPT	0.28 (7.1)	3.8	2.16 (54.9)	1.08 (27.4)	0.68 (17.3)	1.66 (42.2)	2.37 (60.2)
BHSS-FNS4-R07	1/4 NPT Female	1/4 NPT Female							
BHSS-FL6-07	3/8" FITOK	3/8" FITOK							
BHSS-FL6-R07	3/8" FITOK	3/8" FITOK							
BHSS-FL6-P07	3/8" FITOK	3/8" FITOK							
BHSS-FL8-10	1/2" FITOK	1/2" FITOK	0.41 (10.4)	7.5	4.04 (103)	2.02 (51.3)	0.89 (22.6)	2.35 (59.7)	4.50 (114)
BHSS-FL8-R10	1/2" FITOK	1/2" FITOK							
BHSS-FL8-P10	1/2" FITOK	1/2" FITOK							
BHSS-ML12-10	12 mm FITOK	12 mm FITOK							
BHSS-ML12-R10	12 mm FITOK	12 mm FITOK							
BHSS-ML12-P10	12 mm FITOK	12 mm FITOK							
BHSS-FNS8-13	1/2 Female NPT	1/2 Female NPT	0.52 (13.1)	12.0	2.70 (68.6)	1.35 (34.3)	0.89 (22.6)	2.35 (59.7)	4.50 (114)
BHSS-FNS8-R13	1/2 Female NPT	1/2 Female NPT							
BHSS-FNS8-P13	1/2 NPT Female	1/2 Female NPT							
BHSS-FL12-13	3/4" FITOK	3/4" FITOK		13.6	4.04 (103)	2.02 (51.3)			
BHSS-FL12-R13	3/4" FITOK	3/4" FITOK							
BHSS-FL12-P13	3/4" FITOK	3/4" FITOK							
BHSS-ML16-13	16 mm FITOK	16 mm FITOK							
BHSS-ML18-13	18 mm FITOK	18 mm FITOK							
BHSS-PB8-13	1/2×SCH80 Pipe Butt Weld	1/2×SCH80 Pipe Butt Weld							

B-20 Ball Valves

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in. (mm)				
	Connection 1	Connection 2/3			A	B	C	D	E
BHSS-FNS12-22	3/4 Female NPT	3/4 Female NPT	0.88 (22.2)	31.0	3.59 (91.2)	1.80 (45.7)	1.25 (31.8)	2.94 (74.7)	6.00 (152)
BHSS-FNS12-R22	3/4 Female NPT	3/4 Female NPT							
BHSS-FNS12-P22	3/4 Female NPT	3/4 Female NPT							
BHSS-FNS16-22	1 Female NPT	1 Female NPT	0.88 (22.2)	38.0	3.59 (91.2)	1.80 (45.7)	1.25 (31.8)	2.94 (74.7)	6.00 (152)
BHSS-FNS16-R22	1 Female NPT	1 Female NPT							
BHSS-FNS16-P22	1 Female NPT	1 Female NPT							
BHSS-FL16-22	1" FITOK	1" FITOK		40.0	5.36 (136)	2.68 (68)			
BHSS-FL16-R22	1" FITOK	1" FITOK							
BHSS-FL16-P22	1" FITOK	1" FITOK							
BHSS-ML25-22	25 mm FITOK	25 mm FITOK							
BHSS-PS16-22	1" Pipe Socket Weld	1" Pipe Socket Weld		42.0	3.59 (91.2)	1.80 (45.7)			
BHSS-FNS20-32	1 1/4 Female NPT	1 1/4 Female NPT	1.25 (31.8)	90.0	4.39 (112)	2.19 (55.6)	1.53 (38.9)	4.03 (102)	9.14 (232)
BHSS-FNS24-32	1 1/2 Female NPT	1 1/2 Female NPT		100.0					
BHSS-FNS32-38	2 Female NPT	2 Female NPT	1.50 (38.1)	130.0	4.94 (125)	2.47 (62.5)	1.74 (44.2)	4.16 (106)	9.14 (232)

1. FITOK means FITOK double ferrule tube fittings, TS means fractional tube socket weld, MTS means metric tube socket weld, TB means fractional tube butt weld, MTB means metric tube butt weld, PS means pipe socket weld, and PB means pipe butt weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with tube fitting nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ball Valves for Special Applications

Fire safe applications

API 607 and ISO 15848-1 certified.

Patented stem packing design and seat design.

Working temperature: -40°F to 400°F (-40°C to 204°C).

Working pressure up to: 1500 psig (103 bar).

Orifice size: 0.19" (4.8 mm) to 1.25" (31.8 mm).

Helium leak rate/stem diameter $\leq 1.78 \times 10^{-6}$ std cm³/s.

To order a fire safe valve, add -IE to the valve ordering number.

For example: BHSS-FL16-22-IE

To order a FDA-compliant fire safe valve, add -FDA-IE to the valve ordering number.

For example: BHSS-FL16-22-FDA-IE



Structure Features

Live-loaded disc spring

Elastic compensation effect

Graphite stem packing

Maintain good sealing performance under fire conditions

PTFE stem packing

Maintain good sealing performance under normal conditions

Metal seal design

Reduce the risk of leakage under fire conditions by reducing the active gap between the spherical surface and the sealing surface

PTFE flange seal

Maintain good sealing performance under normal conditions

PTFE seat

Maintain good sealing performance under normal conditions

Graphite flange seal

Maintain good sealing performance under fire conditions

Anti-static device

Grounding spring to provide anti-static protection

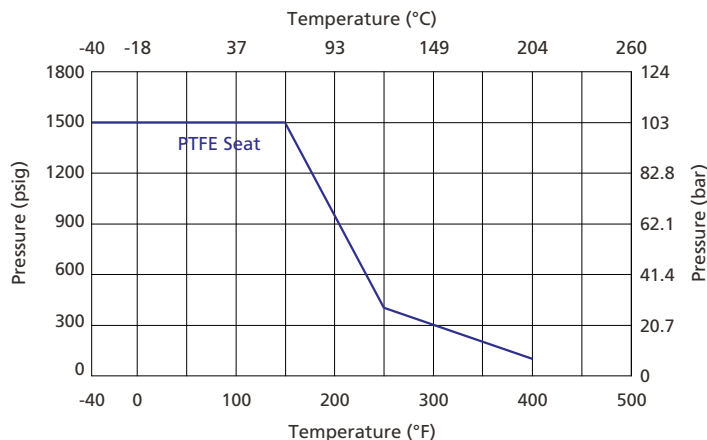
Special bolt construction

Maintain body seal during rapid temperature changes resulting from fire exposure and water quenching

Vented ball

Allow pressure to equalize between the valve body and the upstream port, preventing overpressurization and potential seal blowout under fire conditions

Pressure vs. Temperature



Standard Materials of Construction

Component	Material/ ASME Specification
<i>Disc Spring</i>	<i>Alloy X-750/AMS 5542</i>
Flange Seal	Graphite
Stem Packing	Graphite
<i>Packing Support</i>	<i>316 SS/A479</i>
<i>Stem Lower Bearing</i>	<i>316 SS/A479</i>
<i>Stem Upper Bearing</i>	<i>PEEK</i>
Body Bolt	SS

Notes: Wetted components are listed in italics. Other components not listed are in the same material as components of general service ball valves. For other materials, please contact FITOK Group or our authorized distributors.

Low-Temperature Service

Working Temperature Range: -65°F to 250°F (-54°C to 121°C).

Working Pressure: Up to 3000 psig (207 bar).

Orifice Sizes: 0.19" (4.8 mm) to 0.88" (22.2 mm).

Valves for low-temperature service are equipped with low-temperature EPDM O-rings.

All other materials are the same as those of standard valves.

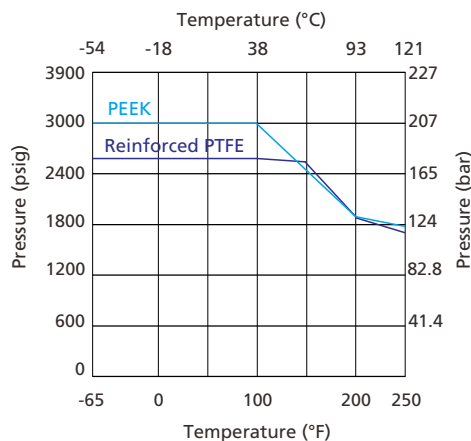
To order a valve for low-temperature service, add **-LT** to the valve ordering number.

For example: BHSS-FL4-P05-LT

BHSS-FL4-P05-3-LT

Seal kits for field replacement are available (see "Seal Kits" section).

Pressure VS Temperature



Materials of Construction

Component	Material/Specification
Seat	<i>PEEK/Reinforced PTFE</i>
Flange Seal	<i>Low Temperature EPDM</i>
Upper/Lower Packing	<i>Reinforced PTFE</i>

Note: Wetted components are listed in italics. Other components are same as standard materials of construction.

Seal Kits

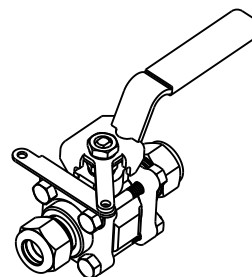
Valve Orifice	Flow Pattern	Special Application	Basic Seal Kit Ordering Number	Content
05/07	2-way and 3-way	None	BHSS-□4-RK	Seat, disc spring, stem bearing, lower packing, upper packing, stem spring, packing support, flange seal, instructions
		Low-temperature service	BHSS-□4-LT-RK	
10/13		None	BHSS-□8-RK	
		Low-temperature service	BHSS-□8-LT-RK	
22		None	BHSS-□16-RK	
		Low-temperature service	BHSS-□16-LT-RK	
29/32		None	BHSS-□24-RK	
		Low-temperature service	—	
38		None	BHSS-□32-RK	
		Low-temperature service	—	

Seat Material	Designator
PTFE	-
Reinforced PTFE	R
PEEK	P

1. Seal kit components are the same materials and grades listed in materials of construction.
2. The default seat material in the seal kit for BH series valves is PTFE. To order seats with other materials, add a seat material designator to "□" in the basic seal kit ordering number to get a complete ordering number.
Example: BHSS-8-RK
 BHSS-P8-LT-RK
3. The listed basic seal kit ordering numbers specify 316 material.
To order kits with other materials, such as Alloy C-276, replace "SS" with "HC" in the ordering number.
Example: BHHC-8-RK

Locking Device

- ⦿ Lock BH series 2-way or 3-way valves, locking hole diameters of the whole series of valves are 0.20 in (5.0 mm).
- ⦿ To order a ball valve with locking device, add -L to the valve ordering number.
Example: BHSS-FL16-22-L/BHSS-FL16-22-3L



Ball Valve without Handle

- ⦿ Ball Valve without handle can be directly connected to the FITOK actuator assembly.
- ⦿ To order, please add -AM to the valve ordering number.
Example: BHSS-FL4-P05-AM

Ordering Number Description

BHS4 - FNS8 - FRT8 - FL8 - P13G - OHQ3L - SCEF2															
Series	Body Material	Connection 1 Type	Connection 1 Size	Connection 2/3 Type	Connection 2/3 Size	Seat Material	Orifice Size	Packing Material	Handle/Actuator	For Actuator	Flow Pattern	Locking Device	Special Application	Cleaning and Packaging	
BH	SS S4	CF8M CF8	FNS Female NPT NS Male NPT FRT Female BSPT RT Male BSPT FRP Female BSPP (for RP) BP Male BSPP (for RG) FMS Female Metric Thread (for RG) MS Male Metric Thread (for RG) MTS Metric Tube Socket TS Fractional Tube Socket MTB Metric Tube Butt Weld TB Fractional Tube Butt Weld PS Pipe Socket Weld PB Pipe Butt Weld FL Fractional Tube Fitting ML Metric Tube Fitting UFB Rotatable Fractional Tube Butt Weld UMB Rotatable Metric Tube Butt Weld UPB Nut + Gasket + Pipe Bulged Nipple FO Male FO Fitting FR Male FR Fitting	2 1/8" 4 1/4" or 1/4xSCH80 5 5/16" 6 3/8" or 6 mm or 3/8xSCH80 8 1/2" or 8 mm or 1/2xSCH80 10 10 mm 12 3/4" or 12 mm or 3/4xSCH80 14 14 mm or M14x1.5 16 1" or 16 mm or 1xSCH80 18 18 mm 20 1 1/4" or 20 mm or M20x1.5 or 1 1/4xSCH80 22 22 mm or M22x1.5 24 1 1/2" or M24x1.5 or 1-1/2xSCH80 25 25 mm 27 M27x2 28 28 mm 32 2" or 2xSCH80	Same as Connection 1 Specified in the same way as Connection 1 type and size	PTFE R Reinforced PTFE P PEEK	05 0.19" (4.8 mm) 07 0.28" (7.1 mm) 10 0.41" (10.4 mm) 13 0.52" (13.1 mm) 22 0.88" (22.2 mm) 29 1.13" (28.6 mm) 32 1.25" (31.8 mm) 38 1.50" (38.1 mm)	Reinforced PTFE G Graphite	I Yellow Handle Sleeve Red Handle Sleeve GR Green Handle Sleeve J Blue Handle Sleeve EL Oval Handle with Orange Sleeve AM Without Handle C 90°Normally Closed Pneumatic Actuator O 90°Normally Open Pneumatic Actuator D 90°Double Acting Pneumatic Actuator LX 180° Left End Normally Open Pneumatic Actuator RX 180° Right End Normally Open Pneumatic Actuator DX 180° Double Acting Pneumatic Actuator E 90° Electric Actuator EX 180° Electric Actuator	H None Mechanical Limit Switch N Inductive Limit Switch Q Solenoid Valve HQ Mechanical Limit Switch and Solenoid Valve NQ Inductive Limit Switch and Solenoid Valve	None Straight 3 3-way	No L Yes	None S NACE MR0175 SI Inert Silicon Coated CE CE Certification LT Low-Temperature Service	FC-01 F2 FC-02	

1. Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
M27 and above: 2 mm
Standard thread pitch should be omitted in the ordering number, others should be specified.

2. If you need a port with orbital welding, please contact FITOK Group.

3. FO means FITOK O-ring face seal fittings.
FR means FITOK metal gasket face seal fittings.

4. For oxygen-enriched environment or hazardous media service, contact FITOK Group or our authorized distributors.

5. Cleaning and Packaging:
FC-01: Standard cleaning and packaging for general industrial procedures.
FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirements of ASTM G93 Level C.

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. All combinations are available.

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.