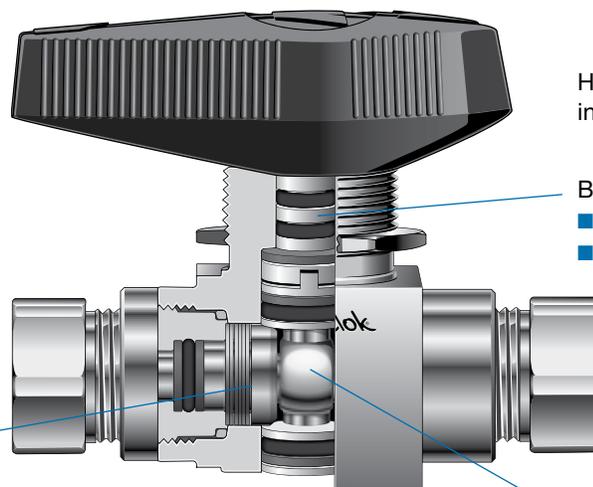


Trunnion Ball Valves—Special Alloy Materials

83 Series

- Alloy 625, alloy 825, and Alloy 2507 super duplex stainless steel materials
- Working pressures up to 6000 psig (413 bar)
- 1/4 to 1/2 in. Swagelok® tube fitting or NPT end connections
- Compact, maximum-flow design
- Flow coefficient (C_v) 0.75 to 1.6
- Low operating torque
- 2-way and 3-way flow pattern
- Panel mounting
- Pneumatic and electric actuators available



Heavy-duty handle indicates flow direction.

Bottom-loaded stem:

- prevents stem blowout
- enhances system safety.

Spring-loaded seats:

- provide leak-tight integrity in both low- and high-pressure systems
- contribute to low operating torque
- reduce seat wear from pressure surges.

Trunnion-style ball:

- prevents ball blowout
- contributes to low operating torque.

Pressure-Temperature Ratings

Pressure-temperature ratings for 83 series valves are based on listed seat materials, fluorocarbon FKM O-rings, and reinforced PTFE backup rings.

Low-temperature L83 series ball valves are available. See page 4.

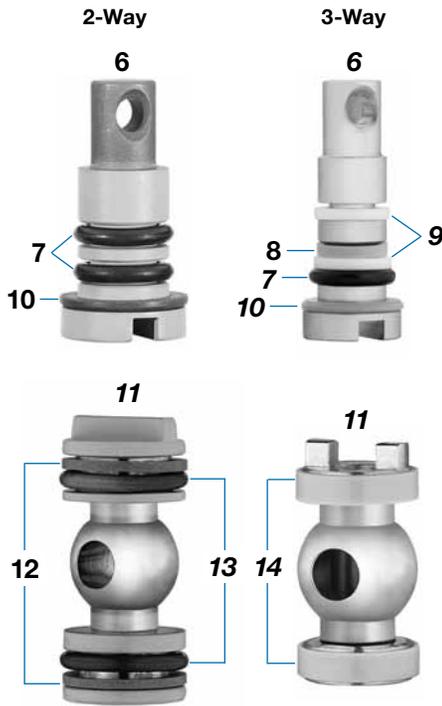
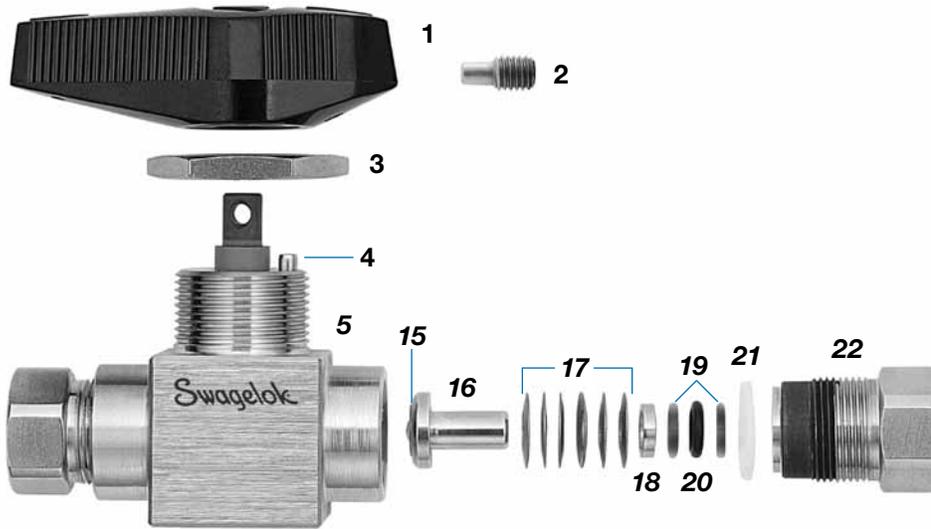
Material	Alloy 625, Alloy 825, Alloy 2507	
Seat Material	PCTFE	PEEK
Temperature, °F (°C)	Working Pressure, psig (bar)	
0 (-17) to 100 (37)	6000 (413)	6000 (413)
150 (65)	3000 (206)	5800 (399)
200 (93)	2000 (137)	5000 (344)
250 (121)	—	4100 (282)
300 (148)	—	3200 (220)
350 (176)	—	2300 (158)
400 (204)	—	1400 (96.4)
450 (232)	—	500 (34.4)

Important Information About Ball Valves

⚠ Swagelok ball valves are designed to be used in a fully open or fully closed position.

⚠ Valves that have not been cycled for a period of time may have a higher initial actuation torque.

Materials of Construction



Component	Valve Body Material		
	Alloy 625	Alloy 825	Alloy 2507
	Material Grade/ASTM Specification		
1 Handle	Phenolic with brass insert		
2 Set screw	S17400 SS		
3 Panel nut	316 SS/B783		
4 Stop pin (2-way—2; 3-way—1)	Stainless steel		
5 Body	<i>Alloy 625/B446</i>	<i>Alloy 825/B425</i>	<i>Alloy 2507/A479</i>
6 Stem	<i>Alloy 625/B446</i>	<i>Alloy 825/B425</i>	<i>Alloy 2507/A479</i>
7 Stem O-rings (2-way—2; 3-way—1)	<i>Fluorocarbon FKM</i>		
8 Primary stem backup ring (3-way)	PEEK		
9 Secondary stem backup ring (3-way)	PTFE/D1710		
10 Stem bearing	2-way—Reinforced PTFE; 3-way—PEEK		
11 Ball ^①	<i>Alloy 625/B446</i>	<i>Alloy 825/B425</i>	<i>Alloy 2507/A479</i>
12 Trunnion backup rings (2) (2-way)	Reinforced PTFE		
13 Trunnion O-rings (2) (2-way)	<i>Fluorocarbon FKM</i>		
14 Trunnion bearings (3-way)	PEEK		
15 Seats (2)	<i>PCTFE/AMS 3650 or PEEK</i>		
16 Seat carriers (2)	<i>Alloy 625/B446</i>	<i>Alloy 825/B425</i>	<i>Alloy 2507/A479</i>
17 Seat springs (12)	<i>Alloy X-750/AMS 5542</i>		
18 Seat carrier guides (2)	<i>Alloy 625/B446</i>	<i>Alloy 825/B425</i>	<i>Alloy 2507/A479</i>
19 Seat carrier backup rings (4)	Reinforced PTFE		
20 Seat carrier O-rings (2)	<i>Fluorocarbon FKM</i>		
21 End screw seals (2)	PTFE/D1710		
22 End screws (2)	<i>Alloy 625/B446</i>	<i>Alloy 825/B425</i>	<i>Alloy 2507/A479</i>
<i>Lubricants</i> Wetted components listed in <i>italics</i> .		<i>Fluorinated-based (all valves); tungsten disulfide additive (valves with PEEK seats)</i>	

① Ball trunnions are PTFE coated in all 2-way valves.

Testing

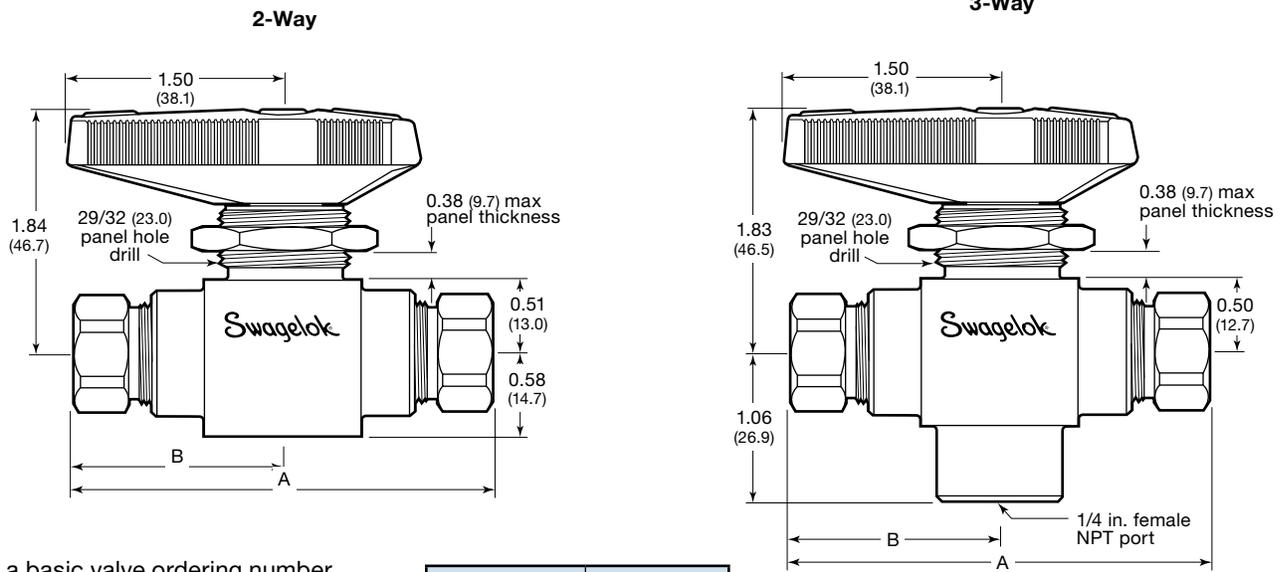
Every Swagelok trunnion ball valve is factory tested with nitrogen at 1000 psig (69 bar). Seats have a maximum allowable leak rate of 0.1 std cm³/min. Shell testing is performed to a requirement of no detectable leakage with a liquid leak detector.

Cleaning and Packaging

All Swagelok trunnion ball valves are cleaned and packaged in accordance with Swagelok *Standard Cleaning and Packaging (SC-10)*, MS-06-62.

Ordering Information and Dimensions

Dimensions, in inches (millimeters), are for reference only and are subject to change. Dimensions shown with Swagelok tube fitting nuts finger-tight.



Select a basic valve ordering number from the table below. Add the material designator from the table to the right.

Example: **625-83KF4**

Valve ordering numbers specify a PCTFE seat. To order valves with PEEK seat, replace **K** in the ordering number with a **P**.

Example: **625-83PF4**

Material	Designator
Alloy 625	625
Alloy 825	825
Alloy 2507	2507

End Connections		Flow Coefficient (C _v)	Basic Ordering Number	Dimensions, in. (mm)	
Type	Size			A	B
2-Way Valve, 0.187 in. (4.75 mm) Orifice					
Female NPT	1/4 in.	1.0	SS-83KF4	2.94 (74.7)	1.47 (37.3)
	1/2 in. ^①	1.2	SS-83KF8	4.25 (108)	2.13 (54.1)
Fractional Swagelok tube fitting	1/4 in.	1.6	SS-83KS4	4.14 (105)	2.07 (52.6)
	3/8 in.	1.4	SS-83KS6	4.39 (112)	2.19 (55.6)
	1/2 in. ^①	1.0	SS-83KS8	4.60 (117)	2.30 (58.4)
3-Way Valve, 0.187 in. (4.75 mm) Orifice					
Female NPT ^②	1/4 in.	0.75	SS-83XKF4	2.94 (74.7)	1.47 (37.3)
	1/2 in. ^①		SS-83XKF8	4.25 (108)	2.13 (54.1)
Fractional Swagelok tube fitting ^②	1/4 in.		SS-83XKS4	4.14 (105)	2.07 (52.6)
	3/8 in.		SS-83XKS6	4.39 (112)	2.19 (55.6)
	1/2 in. ^①		SS-83XKS8	4.60 (117)	2.30 (58.4)

For more information about pressure ratings of valves with tube fitting end connections, see Swagelok *Tubing Data*, MS-01-107.

① Not recommended for panel mounting.

② Bottom port of all 3-way valves is 1/4 in. female NPT.

Options and Accessories

83 Series Handles

Black phenolic handles are standard. Colored phenolic and 316 stainless steel bar handles are available. To order, add a handle designator to the valve ordering number.

Example: 625-83KF4-**RD**

Handle	Designator
Black phenolic	-BK
Blue phenolic	-BL
Green phenolic	-GR
Orange phenolic	-OG
Red phenolic	-RD
Yellow phenolic	-YW
Stainless steel bar	-SH

Handle Kits

Handle kits contain a handle and set screw.

Standard black phenolic handle kit ordering number:

PH-5K-83-BK

To order handles in other colors, replace **-BK** in the kit ordering number with a handle designator.

Example: PH-5K-83-**RD**

Stainless steel bar handle kit ordering number: **SS-5K-83**

83 Series Seal Kits

Seal kits contain components of the same materials as new components. See **Materials of Construction**, page 2, or **Low-Temperature Service**, this page.

For a complete ordering number, add a special alloy material designator and a seat material designator to a basic seal kit ordering number.

Examples: **625-9K-83K**
825-9K-L83P

Special Alloy Material	Designator
Alloy 625	625
Alloy 825	825
Alloy 2507	2507

Seat Material	Designator
PEEK	P
PCTFE	K

Valve Series	Basic Seal Kit Ordering Number	Kit Contents
83 2-way	-9K-83	Instructions, O-rings, stem bearing, ball, seat subassemblies (seats and seat carriers), seat springs, end screw seals, lubricant, and lubricant Material Safety Data Sheet (MSDS)
Low-temperature 83 2-way	-9K-L83	
83 3-way	-9K-83X	Instructions, stem, O-rings, backup rings, bearings, ball, seat subassemblies (seats and seat carriers), seat springs, end screw seals, lubricant, and lubricant MSDS
Low-temperature 83 3-way	-9K-L83X	

Safe Product Selection

When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

Caution: Do not mix or interchange parts with those of other manufacturers.

Low-Temperature Service Options

Trunnion ball valves for low-temperature service, with a temperature rating of -40 to 200°F (-40 to 93°C), are available. Low-temperature valves have low-temperature Buna C O-rings. All other materials and ratings are the same as those of standard valves.

To order a valve for low-temperature service, insert **L** into the valve ordering number.

Example: 625-**L83KF4**

L83 Series Pressure-Temperature Ratings

Material	Alloy 625, Alloy 825, Alloy 2507	
Seat Material	PCTFE	PEEK
Temperature, $^{\circ}\text{F}$ ($^{\circ}\text{C}$)	Working Pressure, psig (bar)	
-40 (-40) to 100 (37)	6000 (413)	6000 (413)
150 (65)	3000 (206)	5800 (399)
200 (93)	2000 (137)	5000 (344)

Pneumatic Actuators

Pneumatic actuators are available for the special alloy, 83 series trunnion ball valves. See the Swagelok *Trunnion Ball Valves—83 Series and H83 Series* catalog, MS-01-166.



Options for Pneumatic Actuators

Swagelok can provide factory assemblies with pneumatic actuators, solenoid valves, limit switches, and position sensors, as well as kits for field assembly. For more information, see the *Swagelok Ball Valve Actuation Options* catalog, MS-02-343.

Mounting bracket kits for ISO 5211-compliant actuators are available. See the *Actuated Ball Valve Selection Guide—ISO 5211-Compliant Actuator Mounting Bracket Kits*, MS-02-136.



Electric Actuators

Electric actuators are available. See the Swagelok *Electric Actuators, 141 and 142 Series* catalog, MS-01-35.

Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit swagelok.com or contact your authorized Swagelok representative.