

Live-Loaded 40 Series Ball Valves

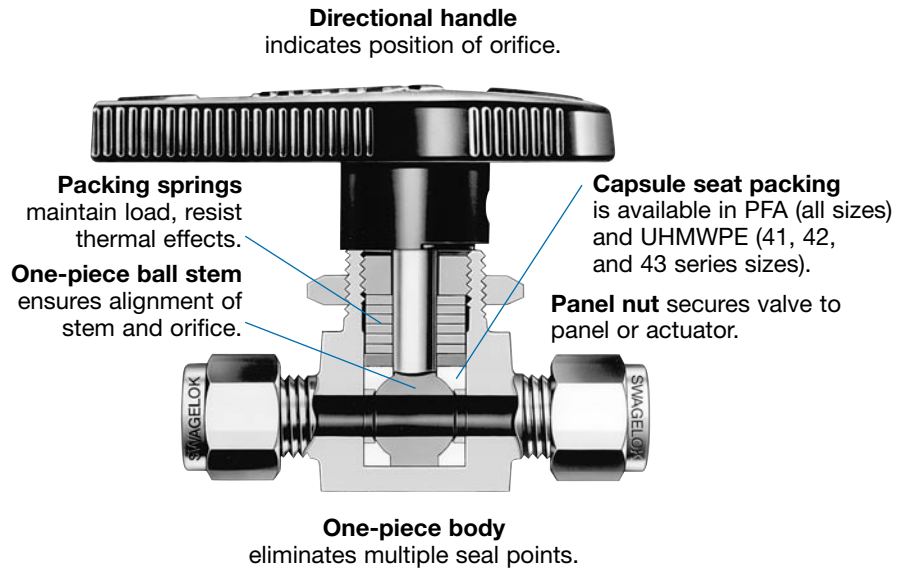
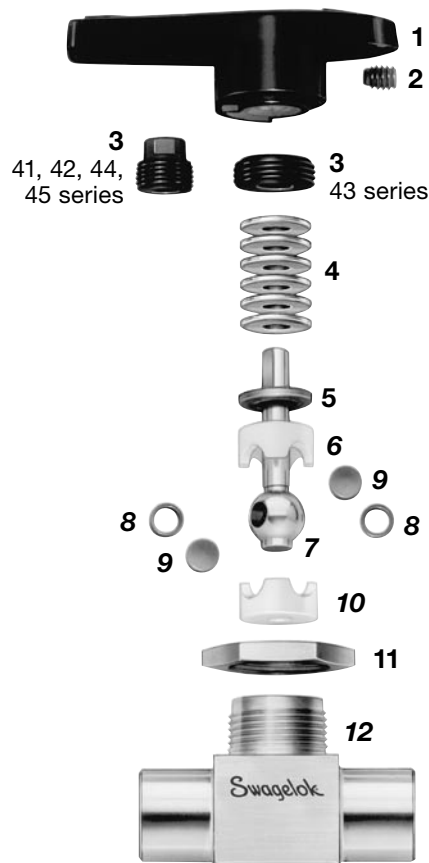
For Low-Temperature Service

Features

Live-loaded 40 series ball valves can be used in temperatures from -65 to 150°F (-53 to 65°C). They are available in:

- Brass and alloy 400 on-off (2-way) and on-off switching (3-way) flow patterns in 41, 42, 43, 44, and 45 series sizes.
- Stainless steel on-off (2-way) and on-off switching (3-way) flow patterns in 44 and 45 series sizes. For live-loaded stainless steel 41G, 42G, and 43G series valves, see the Swagelok *Instrumentation Ball Valves—40G Series and 40 Series* catalog, MS-02-331.
- All materials in switching (5-way and 7-way) and crossover (4-way and 6-way) flow patterns.

Materials of Construction



Component	Valve Body Materials		
	Stainless Steel	Brass	Alloy 400
	Material Grade/ ASTM Specification		
1 Handle	Nylon with brass insert		
2 Set screw	S17400 SS/A564		
3 Packing bolt	Powdered metal 300 series SS or 316 SS/A276, A479	Brass CDA 360/B16	Alloy 400/B164
4 Springs ^①	Molybdenum disulfide-coated S17700 SS/A693		
5 Gland	Powdered metal 300 series SS		
6 Upper packing	40T: PFA/D3307; 40E: UHMWPE/D4020		
7 Ball stem	316 SS/A276 and A479		Alloy 400/B164
8 Side rings	40T: fluorocarbon-coated powdered metal 300 series SS/B783;		Fluorocarbon-coated alloy 400
9 Side discs	40E: 300 series powdered metal SS/B783		powdered metal
10 Lower packing	40T: PFA/D3307; 40E: UHMWPE/D4020		
11 Panel nut	Powdered metal 300 series SS/B783	Brass CDA 360/B16	Powdered metal 300 series SS/B783
12 Body ^②	316 SS/A276, A479	Brass CDA 360/B16	Alloy 400/B164
Wetted lubricant	40T: hydrocarbon- and silicone-based ^③ ; 40E: hydrocarbon-based		
Nonwetted lubricant	Molybdenum disulfide with hydrocarbon binder coating		

Wetted components listed in *italics*.

① 41 and 42 series—8 springs; 43 series—6 springs; 44 and 45 series—4 springs.

② 40T body with VCO fittings has fluorocarbon FKM O-rings; 40E body with VCO fittings has ethylene propylene O-rings.

③ 44T and 45T—hydrocarbon-based and silicone- and fluorinated-based.

Important Information About Swagelok Instrumentation 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.**
- ⚠ **Packing adjustment may be required during the service life of the valve to prevent leakage.**
- Service instructions are shipped with each live-loaded 40 series ball valve.
- Live-loaded 40 series ball valves are adjusted for factory testing with nitrogen at 1000 psig and 70°F (69 bar and 20°C), or the rated pressure if lower than 1000 psig (69 bar). Packing *must be readjusted* for service at higher than test pressure.
- Valves exposed to dynamic temperature conditions before installation may lose their initial packing load. Packing adjustment may be needed.
- Live-loaded 43 series ball valves require an adapter to adjust the packing bolt. Ordering number: **MS-WK-43**

Pressure-Temperature Ratings

Pressure ratings are the same as those listed in the Swagelok *Instrumentation Ball Valves—40G Series and 40 Series* catalog, MS-02-331.

Live loading extends the low-temperature rating for 40T and 40E series valves cleaned in accordance with Swagelok *Standard Cleaning and Packaging (SC-10)*, MS-06-62, to -65°F (-53°C). Special cleaning of live-loaded valves in accordance with Swagelok *Special Cleaning and Packaging (SC-11)*, MS-06-63, changes the low-temperature rating from -65°F (-53°C) to -30°F (-34°C).

Cleaning and Packaging

All live-loaded 40 series valves are cleaned in accordance with Swagelok *Standard Cleaning and Packaging (SC-10)*, MS-06-62. Special cleaning and packaging in accordance with Swagelok *Special Cleaning and Packaging (SC-11)*, MS-06-63, to ensure compliance with product cleanliness requirements stated in ASTM G93 Level C, is available as an option.

To order, add **-SC11** to the valve ordering number.

Example: B-42S4-**SC11**

Flow Data, Testing, and Options

See the Swagelok *Instrumentation Ball Valves—40G Series and 40 Series* catalog, MS-02-331.

Oxygen Service Hazards

For more information about hazards and risks of oxygen-enriched systems, see the Swagelok *Oxygen System Safety* technical report, MS-06-13.

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.

Ordering Information

1. Select a 40 series basic ordering number from the Swagelok *Instrumentation Ball Valves—40G Series and 40 Series* catalog, MS-02-331.

2. Add a material designator.

Examples:
B-42S4
SS-44XS6

Material	Valve Series	Designator
316 SS	44, 45	SS
Alloy 400	41, 42, 43, 44, 45	M
Brass	41, 42, 43, 44, 45	B

3. Add a seat packing material designator.

Examples:

B-42**ES4** for a brass, 2-way, live-loaded 42 series ball valve with UHMWPE packing

SS-44**XTS6** for a stainless steel, 3-way, live-loaded 44 series ball valve with PFA packing.

Material	Valve Series	Designator
PFA	41, 42, 43, 44, 45	T
UHMWPE	41, 42, 43	E

Pneumatic Actuators

Live-loaded 40 series ball valves can be mounted to spring-return or double-acting pneumatic actuators in single (one valve) or dual (two valve) configurations. To order, see the Swagelok *Instrumentation Ball Valves—40G Series and 40 Series* catalog, MS-02-331.

Actuator Pressure at Maximum System Pressure

Valve Series ^①	Actuator Model	Spring Return		Double Acting	
		Single	Dual	Single	Dual
		Minimum Actuator Pressure, psig (bar)			
41, 42	31 (90°)	65 (4.5)	80 (5.6)	25 (1.8)	45 (3.2)
41X, 42X	51 (180°)	65 (4.5)	—	25 (1.8)	45 (3.2)
43, 43Y	31 (90°)	—	—	60 (4.2)	100 (6.9)
	33 (90°)	70 (4.9)	85 (5.9)	25 (1.8)	40 (2.8)
43X	51 (180°)	—	—	60 (4.2)	100 (6.9)
	53 (180°)	65 (4.5)	75 (5.2)	25 (1.8)	40 (2.8)
44	33 (90°)	80 (5.6)	—	40 (2.8)	75 (5.2)
44X	53 (180°)	75 (5.2)	—	40 (2.8)	75 (5.2)
45, 45Y	33 (90°)	—	—	65 (4.5)	—
45X	53 (180°)	—	—	65 (4.5)	—

① **X** designates switching (3-way) valve; **Y**-designates crossover (4-way) valve.

For information about ISO 5211-compliant actuators, see the *ISO 5211-Compliant Actuators for Swagelok Ball Valves* catalog, MS-02-337.

Warranty Information

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