

Live-Loaded 40 Series Ball Valves

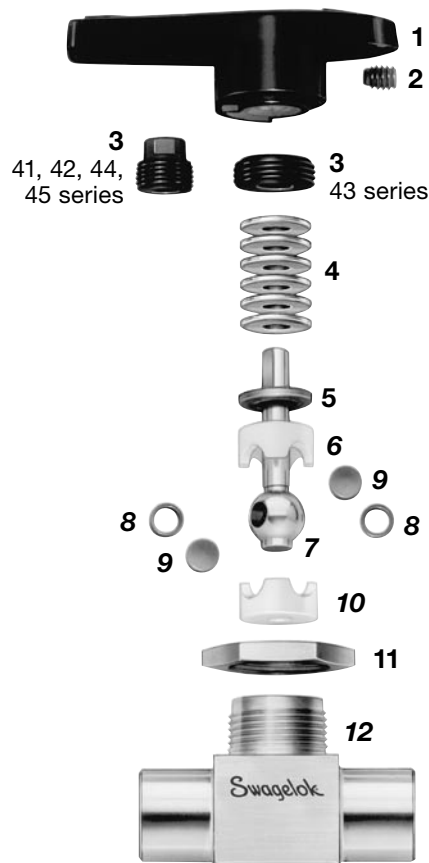
For Low-Temperature Service

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



Directional handle
indicates position of orifice.

Packing springs
maintain load, resist thermal effects.

One-piece ball stem
ensures alignment of stem and orifice.

Capsule seat packing
is available in PFA (all sizes) and UHMWPE (41, 42, and 43 series sizes).

Panel nut secures valve to panel or actuator.

One-piece body
eliminates multiple seal points.

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 powdered metal
9 Side discs	40E: 300 series powdered metal SS/B783		
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

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

- 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

- 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.