

MCV500 Series High-Performance Control Valves

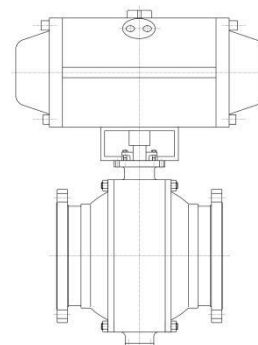
MCV-502(Y) O-Port Trunnion-Mounted Ball Shutoff Valve

The MCV-502(Y) is a straight-through, on-off ball valve with high flow capacity and low resistance for gas or liquid service.

Its trunnion-mounted ball suits large sizes, high pressure and high shutoff differential pressure. Soft seats serve normal-duty applications; metal seats suit high temperatures or entrained solids. The metal-seated version carries the suffix (Y).

Pneumatic version: M8300-series rack-and-pinion piston actuator, with single- or double-acting configurations.

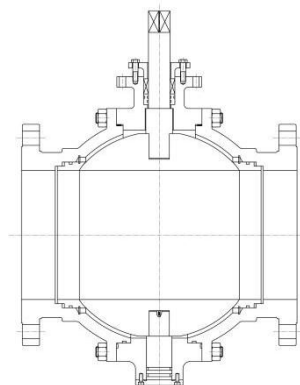
Electric version: compact DCL quarter-turn electric actuator with high torque and accurate on-off control.



Pneumatic trunnion ball valve

□ Main Technical Specifications

Nominal size	DN 50-450 (2-18 in.)
Pressure class	PN 16/25/40/63/100; Class 150/300/600/900/1500/2500
Flange standard	GB/T 9113; HG/T 20592/20615; ASME B16.5; JB/T 79
Face-to-face	GB/T 12221; ASME B16.10
Connection/facing	RF; MFM; RJ; socket weld (SW); butt weld (BW)
Quarter-turn travel	90°
Flow characteristic	Quick opening
Seat leakage	Class V/VI (soft seat); ASME B16.104; GB/T 4213



Trunnion ball valve section

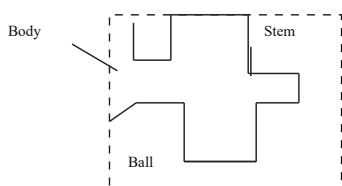
□ Valve Construction

- Cast-steel body: two or three pieces; forged-steel body: three pieces.

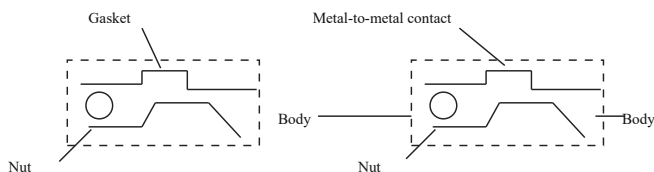
A graphite-filled stainless spiral-wound body gasket seals the joint.

An auxiliary metal-to-metal joint helps limit external leakage if the gasket fails in a fire.

- Bottom-entry, blowout-proof stem resists pressure ejection.

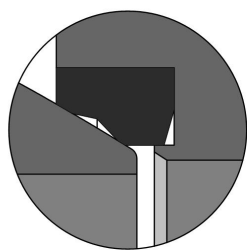


Blowout-proof stem

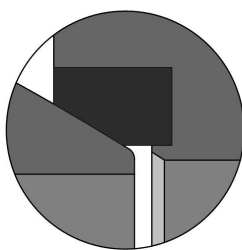


Fire-safe body seal

- Soft-seat sealing: a narrow contact area provides high seat stress at low pressure; seat deflection increases the area at higher pressure.

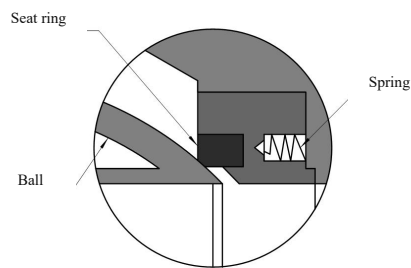


Low pressure



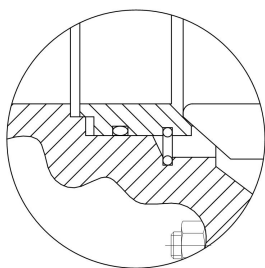
High pressure

Dual-bevel resilient seat

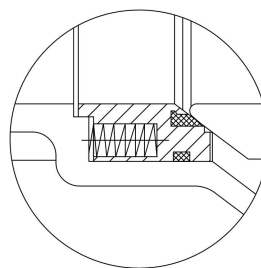


Spring-loaded seat

- Metal seat: a resilient preload element self-centers the seat to maintain shutoff over the specified differential pressure.



Standard metal-seated construction

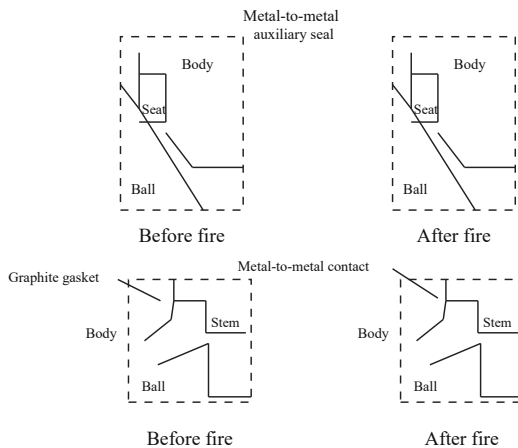


Standard soft-seated construction

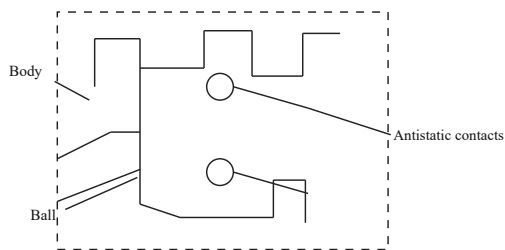
- Spiral-wound body gasket resists over-compression and binding.
- Fire-safe metal-to-metal auxiliary seals limit internal and external leakage if nonmetallic seats or gaskets are damaged by fire.

Fire-test references: API 607, API 6FA and JB/T 6899.

- Antistatic device: spring-loaded stainless contacts provide electrical continuity from ball through stem to body and ground, helping prevent static discharge in flammable service.



Fire-safe sealing



Antistatic device

□ Actuators

● Pneumatic actuator

Model: M8300 compact pneumatic piston actuator.

Type: twin-piston rack-and-pinion quarter-turn actuator.

Materials: extruded aluminum body, die-cast pistons, alloy-steel pinion.

Features: hardened bore and low-friction PTFE guides;

smooth drive, reversible action and corrosion-resistant finish.

Cylinder sizes: 75, 83, 92, 105, 125, 140, 160, 190, 210, 240,

270, 300, 350, 400, 500, 600 mm; output torque 24-40,600 N·m.

Travel: 90° +5° or 60° +5°.

● Electric actuator

Type: DCL electronic quarter-turn actuator.

Control circuit options: Types A, B, C, D, E, F, G and H.

Insulation: 100 MΩ at 250 VDC (24 V); 100 MΩ at 500 VDC (110-380 V).

Dielectric withstand: 500 VAC/1 min (24 V); 1,500 VAC/1 min

(110/220 V); or 1,800 VAC/1 min (380 V).

Power: 24 VDC; 24/110/220/380 VAC (24 VAC to 600 N·m).

Rated torque: 20, 50, 100, 200, 400, 600, 1,000, 1,600, 2,500 N·m.

Enclosure: IP67; G1/2 watertight cable gland; manual lever.

Options: overtorque protection, anti-condensation heater,

raised position indicator and handwheel.

Ambient temperature: -25 to +55°C.

□ Principal Component Materials

Component	Material	Component	Material
Body	WCB / CF8 / CF8M / CF3M	Metal seat	304/316/316L + nitriding / hardface / WC
Ball	304 / 316 / 316L	Packing	PTFE / reinforced PTFE / graphite
Stem	2Cr13 / 304 / 316 / 316L	Gasket	PTFE / spiral-wound metal
Soft seat	PTFE / PPL / RTFE	Spring	60Si2Mn / 1Cr18Ni9Ti

☐ Face-to-Face Dimension L

● Cast-steel ball valve

mm

DN (mm)		50	65	80	100	125	150
L	PN 16 / Class 150	203	222	241	305	356	394
	PN 25/40 / Class 300	216	241	283	305	381	403
	PN 64	292	330	356	432	508	559
	PN 100 / Class 600	178	190	203	229	356	394
	PN 160 / Class 900	216	241	283	305	381	403
	PN 250 / Class 1500	292	330	356	432	508	559

● Cast-steel ball valve

mm

DN (mm)		200	250	300	350	400	450
L	PN 16 / Class 150	457	533	610	686	762	864
	PN 25/40 / Class 300	502	568	648	762	838	914
	PN 64	660	673	762	826	902	991
	PN 100 / Class 600	457	533	610	686	762	864
	PN 160 / Class 900	502	568	648	762	838	914
	PN 250 / Class 1500	660	787	838	889	991	1130

● Forged-steel ball valve

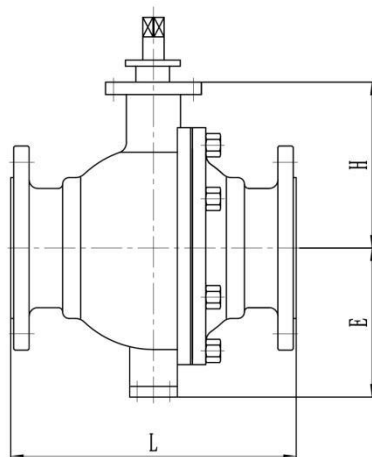
mm

DN (mm)		50	65	80	100	125	150
L	PN 16 / Class 150	178	191	203	229	356	394
	PN 25/40 / Class 300	216	241	283	305	381	457
	PN 64	292	330	356	406	457	495
	PN 100 / Class 600	292	330	356	432	495	559
	PN 160 / Class 900	368	381	419	457	559	610
	PN 250 / Class 1500	368	419	470	546	660	705
	PN 420 / Class 2500	451	508	578	673	832	914

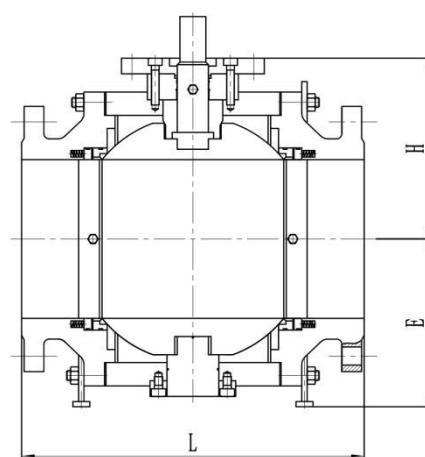
● Forged-steel ball valve

mm

DN (mm)		200	250	300	350	400	450
L	PN 16 / Class 150	457	533	610	686	762	864
	PN 25/40 / Class 300	502	568	648	762	838	914
	PN 64	597	673	762	826	902	978
	PN 100 / Class 600	660	787	838	889	991	1092
	PN 160 / Class 900	737	838	965	1092	1130	1219
	PN 250 / Class 1500	832	991	1130	1257	1384	1537
	PN 420 / Class 2500	1022	1270	1422			



Cast-steel trunnion-mounted ball valve



Forged-steel trunnion-mounted ball valve

Overall Dimensions

● Cast-steel ball valve

mm

DN (mm)	PN 16 / Class 150		PN 25/40 / Class 300		PN 64		PN 100 / Class 600		PN 160 / Class 900		PN 250 / Class 1500	
	H	E	H	E	H	E	H	E	H	E	H	E
50	115	85	115	85	103	100	105	100	105	110	105	105
65	135	98	135	98	115	112	135	115	135	118	138	120
80	165	117	165	117	129	130	165	130	165	130	165	130
100	220	141	220	141	147	151	210	162	210	167	215	167
125	245	186	245	186	188	180	238	186	242	206	240	210
150	260	193	260	193	194	201	253	203	260	251	260	270
200	300	240	300	240	252	254	290	257	305	280	300	300
250	350	293	350	293	303	308	333	310	368	340	365	360
300	370	340	370	340	424	368	380	350	405	390	420	423
350	400	372	400	372	450	382	395	360	425	442	440	460
400	450	412	450	412	528	453	433	413	470	490	480	510
450	510	462	510	462	564	489	470	430	505	500	550	600

● Forged-steel ball valve

mm

DN (mm)	PN 16 / Class 150		PN 25/40 / Class 300		PN 64		PN 100 / Class 600		PN 160 / Class 900		PN 250 / Class 1500		Class 2500	
	H	E	H	E	H	E	H	E	H	E	H	E	H	E
50	105	100	105	100	105	100	105	100	105	110	105	105	120	125
65	130	110	130	110	135	115	135	115	135	118	138	120	140	160
80	155	125	155	125	165	130	165	130	165	130	165	130	175	200
100	200	160	200	160	210	162	210	162	210	167	215	167	225	230
125	230	175	230	178	232	178	232	178	235	206	235	215	235	260
150	250	185	250	203	253	203	253	203	260	251	260	270	260	280
200	278	222	278	235	285	257	290	257	295	280	300	300	380	340
250	323	280	333	298	323	310	333	310	345	340	365	360	450	425
300	340	303	360	333	370	350	380	350	384	390	420	423	515	480
350	375	330	395	350	385	360	395	360	400	442	440	460	-	-
400	410	355	433	398	428	413	433	413	440	490	480	510	-	-
450	440	390	460	410	465	430	470	430	482	500	550	600	-	-



☐ Valve Body Weight — Cast and Forged Steel

kg

DN	PN 16 / Class 150		PN 25/40 / Class 300		PN 64		PN 100 / Class 600		PN 160 / Class 900		PN 250 / Class 1500		Class 2500
	Cast	Forged	Cast	Forged	Cast	Forged	Cast	Forged	Cast	Forged	Cast	Forged	Forged
50	10	28	15	29	33	25	33	33	39	50	44	53	90
65	14	39	24	40	47	35	47	43	55	61	63	63	152
80	22	49	30	57	58	56	58	64	68	76	95	98	200
100	35	88	55	97	75	90	83	124	98	150	180	200	385
125	58	120	70	140	115	186	122	195	135	225	265	286	596
150	75	160	90	185	162	249	180	255	220	367	400	485	778
200	111	248	201	287	325	458	340	487	500	600	750	827	1352
250	217	379	350	507	440	676	530	760	942	1027	1165	1507	2537
300	385	571	510	740	735	939	960	984	1200	1558	1725	2272	3667
350	457	759	720	1038	985	1166	1250	1266	1655	1765	2080	2880	-
400	739	1150	1330	1452	1440	1397	1549	1532	1998	2157	3718	4120	-
450	930	1192	1602	1648	1710	1960	1830	2097	2415	2860	5065	6260	-

☐ Available Accessories

- Solenoid valve
- Air filter regulator
- Limit switch
- Quick-exhaust valve
- Lock-up valve
- Handwheel mechanism

☐ Selection and Ordering Information

Please specify:

- Valve model and nominal size
- Pressure class, connection and flange standard
- Body/trim materials and hardfacing
- Actuator type and supply pressure
- Electric-actuator voltage and control signal
- Required fail position on signal/air loss
- Fluid, temperature, entrained liquid or solids
- Operating pressure and max. shutoff ΔP
- Accessories, signal and hazardous-area needs
- Special cleaning: oil/copper/water-free
- Special inspection, material testing or NDE