



INSTALLATION & MAINTENANCE MANUAL

SERIES 50

3-PIECE FULL OR REDUCED PORT BALL VALVES



Brief Introduction

Three-piece ball valve allows easy replacement of gasket, seal, and seats without special tools. Series 50 ball valves use a "floating ball" design. Induced by the line pressure, the ball is free to move horizontally inside the valve body. The valve is capable of tight shutoff with flow in either direction or dead-end, regardless of the position of the valve in the line. The downstream seat, opposite the pressurized side of a closed valve, carries the load exerted by the line pressure on the ball, while the upstream seat is subject to little load or wear. For this reason, it is sometimes possible to increase seat life by turning the valve end-for-end in the pipeline.

1. USE:

1.1 Life of valve can be maximized if the valve is used within the rated range, in accordance with pressure, temperature, and corrosion data.

2. MANUAL OPERATION:

2.1 To open or close the valve, turn the handle ¼ turn (90 degrees).

A. Valve in Open Position – the handle is in parallel (in-line) with the valve or pipeline.

B. Valve in Closed Position – the handle is perpendicular (crossed) with the valve or pipeline.

3. DISASSEMBLING & CLEANING THE VALVE:

3.1 Ball valves can trap fluids in ball cavity when it is in closed position.

3.2 If the valve has been used in hazardous media, it must be decontaminated before disassembly.

A. Relieve the line pressure.

B. Place valve in half-open position and flush the line to remove any hazardous material from valve.

C. All persons involved in the removal and disassembly of the valve should wear the proper protective clothing, such as face shield, glove, apron, etc.

4. REPLACING THE THRUST WASHER, PACKING, AND SEATS

4.1 Before replacing the thrust washer and the packing, the pipeline must be de-pressurized.

4.2 Maintenance of parts is easy, even if the valve is installed in the line

By removing one body bolt and loosening the other three, valve body can be swung out. Seats, gaskets and ball can be replaced without disturbing pipe alignment.

5. GENERAL INFORMATION FOR ON-SITE INSTALLATION:

5.1 The valve may be fitted in any position on the pipeline.

5.2 To prevent damage to the seats and ball surface, the pipeline must be flushed, free of dirt, burrs, and welding residues before installing the valve.

6. INSTALLATION OF THREADED VALVES

6.1 Use conventional sealant, such as pipe dope, Teflon, etc. on the threads.

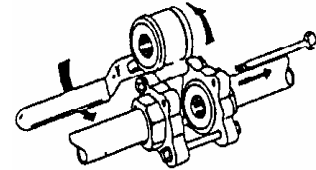
6.2 Apply wrench on the hexagon end of the valve only. Tightening by using the valve body or handle can seriously damage the valve.

6.3 For applications where screwed end valves are back-welded on site, these valves must be dismantled according to

instructions for weld end valves.

7. INSTALLATION OF WELD-END VALVES

- 7.1 Tack-weld the valve on the pipe in four points on both end caps.
- 7.2 With the valve in open position (lever to be parallel to the axis of the pipe), loosen all nuts on the body bolts. Remove all the bolts except one. Swing the body outside the pipe.
- 7.3 Turn the handle to the half open position to assist in the removal of the seats.
- 7.4 Turn handle in closed position and remove ball.
- 7.5 Place all removed parts in a clean and secure place.
- 7.6 Replace the body and the removed bolt. Tighten all nuts slightly. To prevent any leakage to the body joints after welding, make sure that the body and the end caps remain perfectly parallel.
- 7.7 Finish welding both end caps onto the pipe.
- 7.8 After the pipeline and valve cools, clean end caps then remove the previous replace bolt. Swing out the body. Turn the valve to closed position, and then replace the ball. Turn valve in open position and replace seats.
- 7.9 After the seats and the ball are replaced, swing back the body, replace the removed bolt, and tighten the bolt according to the following chart.



BOLT TIGHTENING SPECIFICATIONS:

The body bolts of the valve should be tightened evenly. Tighten one-side snugly, and then tighten the one diagonal across. Repeat for the other bolts, bringing them all down tightly in sequence to the torque shown below:

Valve Size	BreakAway Torque(Nm)	BreakAway Torque(IN-LBS)	Cv U.S.GPM
1/4"	7	60	8
3/8"	7	60	8
1/2"	7	60	12
3/4"	9	80	32
1"	16	140	56
1 1/4"	17	150	82
1 1/2"	29	260	120
2"	36	320	240
2 1/2"	59	520	320
3"	85	700	580
4"	130	1160	1020

30% safety factor included.

IN-LBS

3-pc Ball Valve Series 50	
1/4"	75 ~ 90
3/8"	75 ~ 90
1/2"	95 ~ 115
3/4"	105 ~ 125
1"	115 ~ 140
1.1/4"	175 ~ 220
1.1/2"	290 ~ 320
2"	310 ~ 355
2.1/2"	370 ~ 425
3"	440 ~ 490
4"	460 ~ 505

NM

3-pc Ball Valve Series 50	
1/4"	8.5 ~ 10
3/8"	8.5 ~ 10
1/2"	11 ~ 13
3/4"	12 ~ 14
1"	13 ~ 16
1.1/4"	20 ~ 25
1.1/2"	33 ~ 36
2"	35 ~ 40
2.1/2"	42 ~ 48
3"	50 ~ 55
4"	52 ~ 57

Torque of Body Bolt

Torque of Gland Nut

MATERIALS LIST

NO.	PART NAME	MATERIAL	QTY
1	Body	CF8M WCB	1
2	End Cap	CF8M WCB	1
3	Ball	SUS316	1
4	Stem	SUS316	1
5	Handle Nut	SUS304	1
6	Stem Washer	SUS304	1
7	Handle	SUS304	1
8	Seat	PTFE	2
9	Gland Nut	SUS304	1
10	V-Ring Packing	PTFE	8
11	Stem Seal	PTFE	1
12	Bolt Washer	SUS304	↑
13	Joint Gasket	PTFE	2
14	Bolt	SUS304	▼
15	Locking Device	SUS304	1
16	Handle Sleeve	Vinyl	1
17	Bolt Nut	SUS304	↑

§ For 1/4" & 3/8"-1pcs, For 1/2" & 3"-2pcs, For 4"-3pcs.
 † For 1/4" to 2"-4pcs; For 2 1/2" & 3"-8pcs; For 4"-12pcs
 ▼ For 1/4" to 2"-4pcs of studs.
 † For 2 1/2" to 3"-4pcs of studs.
 † For 4"-6pcs of studs.

