



KTM SERIES EF1 FLOATING BALL VALVES

INSTALLATION AND MAINTENANCE MANUAL

Before installation these instructions must be fully read and understood



1 USE

Long life of valves can be maintained under normal working conditions and in accordance with pressure/temperature and corrosion data chart.

2 MANUAL OPERATIONS

The opening and closing of the valve is done by turning the handle one quarter turn (90° turn).

A. Valve in open position

The handle is in line with the valve or pipeline.

B. Valve in closed position

The handle is perpendicular with the pipeline.

3 AUTOMATED OPERATIONS

Alignment between actuator and valve is extremely important. Misalignment will result high operational torque, create the stem side loading and cause early stem leakage.

4 GENERAL INFORMATION FOR ON-SITE INSTALLATION

- 4.1 Remove plastic end flanges protection covers.

- 4.2 The valve may be fitted in any position on the pipeline.
- 4.3 Before installing the valves, the pipes must be flushed clean of dirt, burrs and welding residues to prevent damage to the seats and ball surface.
- 4.4 The pipeline must be free of tension.

5 DISASSEMBLY AND CLEANING PROCEDURES

CAUTION

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

- 5.1 If the valve has been used to control hazardous media, it must be decontaminated before disassembly. It is recommended that the following steps be taken for safe removal and reassemble.
 - 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, and apron, etc.
- 5.2 Remove both counter flanges studs and nuts and lift valve from line for maintenance.
- 5.3 Remove handle (item 18) or actuator set, stem nut (item 16), lock saddle (item 15), belleville washers (item 14), gland (item 13), thrust washer (item 12) and stem packing (item 11).
- 5.4 Remove body stud (item 7) and nuts (item 7a) to allow end cap (item 2) separated from body (item 1). The ball seat (item 5) in the end cap should come out. Remove body gasket (item 6).
- 5.5 Rotate the stem to "close" position, thus, the ball (item 3) can be taken out easily from body.
- 5.6 Take out the ball seat (item 5) from body seat pocket.
- 5.7 Pull out stem (item 4) and remove the stem seal (item 8 and 10) compress ring (item 9). At this stage, all the parts are in "Loose condition" and ready for inspection.

6 VISUAL INSPECTION

Clean and inspect metal parts. It is not necessary to replace the ball and stem unless the ball seating surfaces have been damaged by abrasion or corrosion. Full replacements of all soft parts are strongly recommended. The replacement parts can be ordered in "Repair kit" form.

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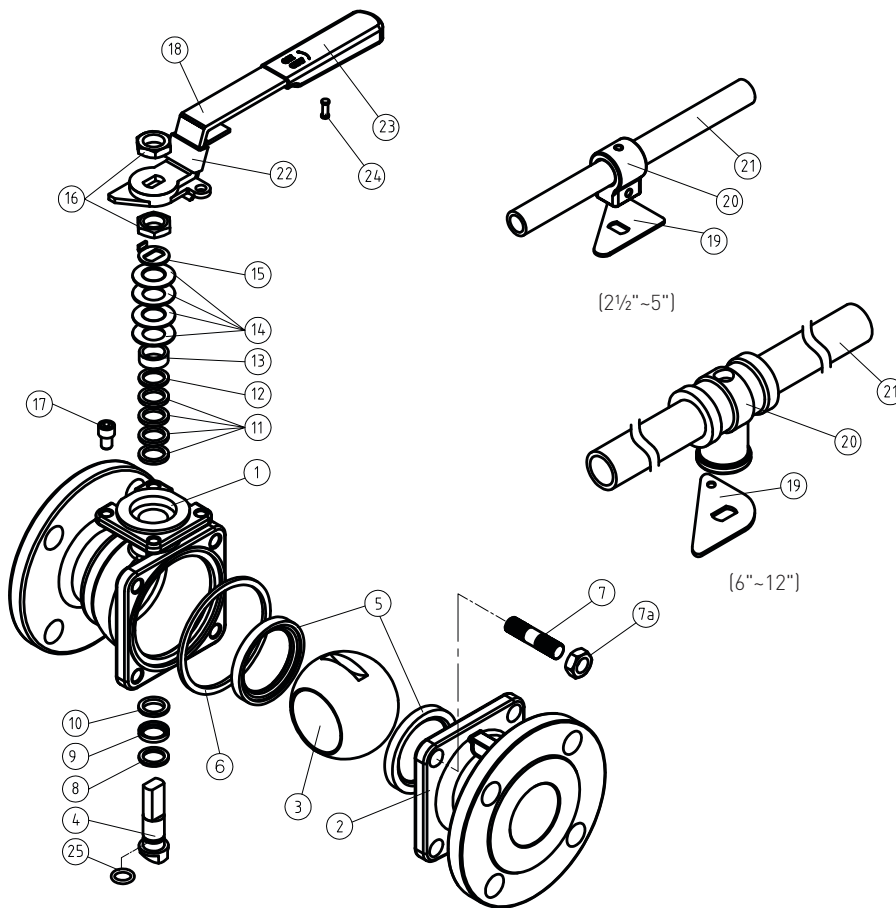
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7 PROCEDURE TO CHANGE PARTS AND ASSEMBLY

- 7.1 Install ball seat (item 5) to body (item 1) seat pocket and make sure the spherical curvature facing the ball.
- 7.2 Put lower stem seal (item 8), compressing ring (item 9) and upper stem seal (item 10) to stem (item 4) and slide the stem up through the body. Install stem packing (item 11) and top with thrust washer (item 12), gland (item 13), Belleville washer (item 14), lock saddle (item 15) and drive stem nut (item 16) per the stem torque data to ensure the whole stem seals have been properly compressed. Turn the lock saddle to engage it with stem nut - this is to prevent stem nut from unthreading.

- 7.3 Put the handle (item 18) on stem and secure it with handle nut (item 16).
- 7.4 Turn the handle to "close" position. Line up the ball slots with stem tang and slides ball (item 3) into the position. Turn the handle to "open" position to prevent the ball from falling out.
- 7.5 Install the body gasket (item 6) into the shoulder of the end cap (item 2), put the ball seat (item 5) into seat pocket.
- 7.6 Put the end cap (item 2) into body with all the holes line up between or end cap holes guided by body studs and engaged.
- 7.7 Finger tight the body stud and nuts and tighten one side snugly, then the one diagonally across. Repeat for other bolts or nuts until the torque is observed per bolting torque data.

- 7.8 Cycle the valve slowly with gentle back and forth motion to build gradually to full quarter turn. By cycling slowly, the seat lips will assume a permanent seal shape against the ball.
- 7.9 If possible, test the valve before placing it back to line for service to ensure "No" through and external leakage is observed.



STANDARD REPAIR KIT

No.	Part Name	Material by Configuration			Quantity
		Series EF1 - Standard	Series EF1 - Firesafe	Series EF1 - FE Compliant	
5	Ball seat	PTFE	PTFE	PTFE / RPTFE	2
6	Body seal	PTFE	Graphite (DN 15 - 100 (NPS 1/2 - 4)) 316 SS spiral wound graphite (DN 125 - 300 (NPS 5 - 12))	Inner seal: PTFE Outer seal: 316 SS spiral wound graphite	1 set
8	Lower thrust washer	50% SS powder / 50% PTFE	50% SS powder / 50% PTFE	50% SS powder / 50% PTFE	1
10	Upper thrust washer	TFM 1600	Graphite	TFM 1600	1
11	Stem packing	PTFE	Graphite	Graphite	1 set
12	Thrust washer	50% SS powder / 50% PTFE	50% SS powder / 50% PTFE	50% SS powder / 50% PTFE	1

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BOLTING TORQUE DATA FOR SERIES EF1

Valve size		For body nut			For stem nut*		For stem extension bolt or nut		
DN	NPS	Size	lbf-in	Nm	lbf-in	Nm	Size	lbf-in	Nm
15	½	M8	195	22	53	6	M5	53	6
20	¾	M8	195	22	53	6	M5	53	6
25	1	M10	399	45	133	15	M6	80	9
32	1¼	M10	399	45	133	15	M6	80	9
40	1½	M12	700	79	177	20	M8	177	20
50	2	M12	700	79	177	20	M8	177	20
65	2½	M12	700	79	195	22	M10	354	40
80	3	M12	700	79	195	22	M10	354	40
100	4	M12	700	79	266	30	M10	354	40
100 •	4	M16	1222	138	266	30	M10	354	40
125	5	M12	700	79	407	46	M10	354	40
125 •	5	M16	1222	138	407	46	M10	354	40
150	6	M16	1222	138	549	62	M12	575	65
200	8	M16	1222	138	655	74	M12	575	65
200 •	8	M20	3479	393	655	74	M12	575	65
250	10	M16	1222	138	859	97	M16	1097	124
250 •	10	M22	4514	510	859	97	M16	1097	124
300	12	M20	3479	393	1053	119	M16	1097	124
300 •	12	M22	4514	510	1053	119	M16	1097	124

NOTES

- * DN 100 (NPS 4) and smaller stem nut are inch system.
DN 125 (NPS 5) and larger stem nut are metric system.
- For flange end ASME Class 300 and EN PN 25 / 40

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