FLOWSERVE

McCANNA Valves

IM002G

E-Series Unibody Flanged End Ball Valves

Models EFP1: ½" – 1½"; ERP1: 2" – 4"; ERP3: 1½" – 4"

Installation, Operation and Maintenance Instructions

1. Installation

These valves may be installed in any position. The installation of these flanged end valves require no special instruction—just the use of good pipe fitting practices. Flanges conform to ANSI Standards B16.5 1988 Class 150 (ERP1 or EFP1) or Class 300 (ERP3).

2. Stem Seal Adjustment

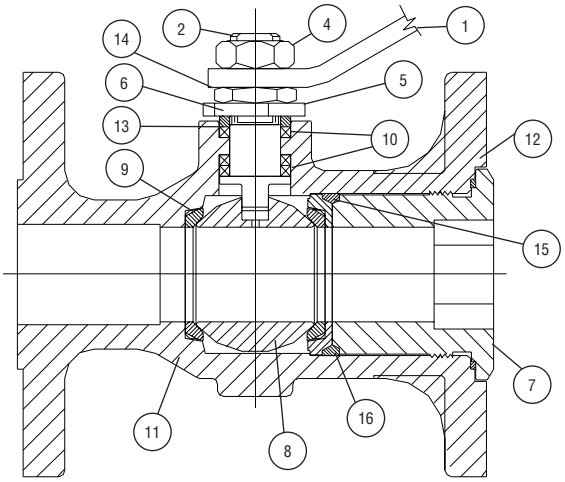
If leakage is evident in stem packing area, tighten the adjusting nut ¼ turn. If leak still persists, repeat above. Replacement of stem seals (10) is indicated if the leak is still apparent after ½ turn.

3. Disassembly for Seal Replacement

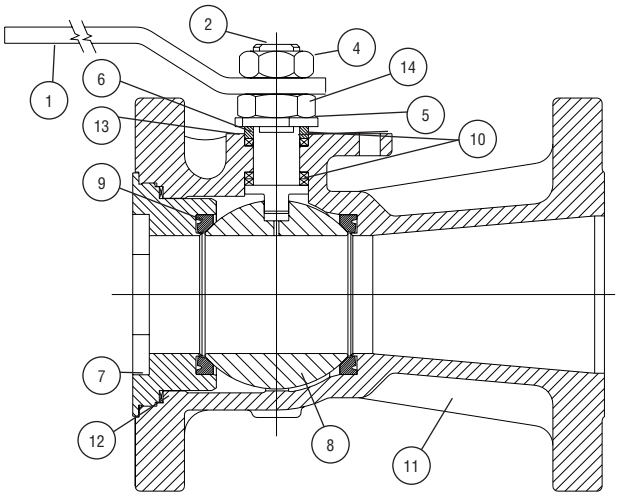
⚠WARNING: Begin with the valve partially open in a depressurized line.

A. Remove flange bolts and nuts (not provided) and lift body (11) from line for servicing.

Item	Description
1	Handle
2	Stem
3	Stop Pin (not shown)
4	Handle Retainer Nut
5	Travel Stop (1" and larger only)
6	Gland Ring
7	End Adaptor
8	Ball
9	Seat (2)
10	Stem Seals
11	Body
12	End Seal
13	Grounding Washer
14	Adjusting Nut
15	Seat Socket (½" – 1½" EFP1 & 2" ERP1 only)
16	Spacer Seal (½" – 1½" EFP1 & 2" ERP1 only)



Sizes ½" – 1½" — Full Port CLASS 150 - EFP1



Sizes 2" – 4" — Regular Port CLASS 150 - ERP1

Sizes 2" – 4" — Regular Port CLASS 300 - ERP3

NOTE: *Care should be taken to avoid scratching or damaging gasket surface on flange face.*

B. Unscrew end adaptor (7) from body (11) by using hex nut or hexagon bar (See TABLE 1). One seat (9) should come out with the end adaptor (7), except on the ½" – 1-½" EFP1.

Valve Size	Hex Size (Across Flats)
½" EFP1	11/16"
¾" EFP1	13/16"
1" EFP1	1 1/16"
1½" EFP1/ERP3	1½"
2" ERP1/ERP3	1⅞"
3" ERP1/ERP3	2⅝"
4" ERP1/ERP3	3½"

TABLE 1

⚠WARNING: Valve must be properly secured to withstand the high loads imposed during disassembly.

C. **(1)** (½" – 1½" EFP1 & 2" ERP1 only). Remove spacer seal (6) with a packing hook, taking care not to damage body and spacer surfaces, then remove seat socket (15) and seat (9).

(2) (All other unibody valves) Remove end seal (12).

D. To take out the ball (8), rotate stem (2) so that ball (8) is in fully closed position, and insert wooden dowel (not metal) in port opposite threaded end. Tap gently on ball (8), thereby rocking it out of engagement with the stem (2). **NOTE:** Extreme caution should be taken to avoid damage to the ball (8). Remove the ball (8).

E. Take out the other seat (9).

F. Remove the handle retainer nut (4), handle (1), adjusting nut (14), travel stop (5) (part of the handle on sizes ½" and ¾") and the gland ring (6). Push the stem (2) down through the body (11) and out the open end of the body (11). Remove the upper and lower stem seals (10) and the grounding washer (13). Grounding washer (13) is not used with FIRE-GARD valves. Save the grounding washer (13) for reassembly.

G. Flowserve strongly recommends replacement of all soft parts whenever the valve is disassembled for reconditioning. This is the surest protection against subsequent leakage after valve assembly. The replacement parts can be ordered in kit form.

4. Reassembly

NOTE: *Prior to reassembly, all metallic sealing faces must be carefully cleaned and inspected for damage. A smooth nick-free surface is required for effective sealing.*

A. Put one seat (9) in body (11). **NOTE:** Seats (9) are to be installed with spherical surface positioned toward the ball.

B. Place stem seal (10) on stem (2) and insert stem into body (11) from the inside.

C. Lightly grease the stem seals (10) and the seal area and threads of the stem (2). Insert stem seal(s) (10) into the lower stem seal cavity with the raised outer edge facing into the counterbore. (The ½" size and the FIRE-GARD seals are square cut seals.) Insert stem (2) thru the installed stem seals (10) and the body (11). Place the travel stop (5) on the stem (2) so that it rests on the top surface of the body (11). Thread the adjusting nut (14) on the stem (2) and torque to ¾ of the final torque value for the stem nut. Remove the adjusting nut (14) and the travel stop (5) without moving the stem (2). Place the grounding washer (13) into the upper seal cavity with the raised fingers pointing up. Push the upper stem seal(s) (10) into the counterbore with the raised outer edge pointing into the valve. Add the gland ring (6), the travel stop (5) and the handle retainer nut (4). Make sure the travel stop (5) is installed so that the valve can close in a clockwise direction and open counterclockwise. If the rotation is not correct, the travel stop (5) must be inverted. Torque the adjusting nut (14) to the valve shown in TABLE 2. Cycle several times and check the adjusting nut torque.

Stem Nut Torques	(lb-ft)	Number of Seals	
SIZE	TORQUE	UPPER	LOWER
½"	5	1	1
¾" to 2"	10	1	2
3" & 4"	15	3	3

TABLE 2

D. Turn the stem (2) to a position with the lower stem tang flats parallel to the pipeline axis of the body. (Stem and ball should stay in this position through steps **E**, **F**, and **G**).

E. Install the ball (8), being careful not to damage it. A sling through the waterway can aid insertion. **NOTE:** Ball should be carefully examined for nicks, scratches, pitting or corrosion, and replaced as necessary.

F. Temporarily thread the end adaptor (7) into the body (11) using a hex nut or hexagonal bar (dimensions are given in TABLE 1), until the internal shoulder bottoms metal-to-metal. The raised face of the end adaptor (7) should be approximately 1/16" above the flange surface of the body (11) for later reference in step **I**. Remove the end adaptor (7).

G. Place second seat (9) onto ball (8), centering carefully. Spherical surface of seat must be positioned against the ball. Take care during steps **H** and **I** to assure that the seat (9) slips into the mating portion of the seat socket (15) or end adaptor (7).

H. Put end seal (12) or seat socket (15) and spacer seal (16) into shoulder counterbore at flange in valve body (11).

I. Screw end adapter (7) back into body (11) using appropriate hex nut or hexagonal bar (See TABLE 1) until end adaptor comes to a complete stop (approximately 1/16" from body flange), with the marks from step **F** aligned. **NOTE:** On FIRE-GARD valves 3" and larger only, wrap the end adaptor threads with graphite tape prior to final insertion of end adaptor (7) into body (11).

⚠WARNING: Valve must be properly secured to withstand the high loads imposed during reassembly.

J. Install handle (1), and handle retainer nut (4).

5. Testing

Prior to placing the valve back into line position, test as follows:

⚠WARNING: If not properly secured, the valve can separate from the pressure source resulting in possible injury. Always join the valve to companion flanges of same pressure rating as valve and secure with a full set of flange bolts.

A. Secure valve to a test fixture by means of a mating flange with full bolting and a suitable gasket. Orient valve so seat to be tested is facing up.

B. Introduce 50 to 100 psig air into the end of the closed valve which is attached to the fixture. Pour water into the upper port to cover the ball and visually check for bubbles. If bubbles appear, pour the water out cycle the valve several times and recheck. To check for leakage in the other port, reverse the valve and repeat the process.

C. In the event of stem seal leakage, adjust as described under Paragraph 2, “Stem Seal Adjustment”.

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For more information about Flowserve Corporation, contact www.flowserve.com or call USA 1 800 225 6989.

FLOWSERVE CORPORATION
FLOW CONTROL DIVISION
1978 Foreman Drive
Cookeville, Tennessee 38501 USA
Phone: 931 432 4021
Facsimile: 931 432 3105
www.flowserve.com

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