FLOWSERVE

McCANNA/MARPAC Valves

MMAIM2003

Tri-Pac Three-Piece In-line Maintainable Ball Valves

Models E325/E525

Installation, Operation and Maintenance Instructions

1. Installation

These valves may be installed in any position utilizing normal pipe fitting practices.

Socket-Weld End Valves

To keep from destroying soft parts of the valve, loosen two bolts and remove six bolts as shown in Figures 1A, 1B, and 1C and swing out the body as for servicing. Take care that the end seals are not damaged. Note that, for the FIRE-GARD® valves with socket weld ends, extra end seals are included with the valve. Seals are to be replaced during the reassembly after welding. Prior to removing the bolts to allow the body to swing out, the valve may be tack welded in the line to facilitate line-up.

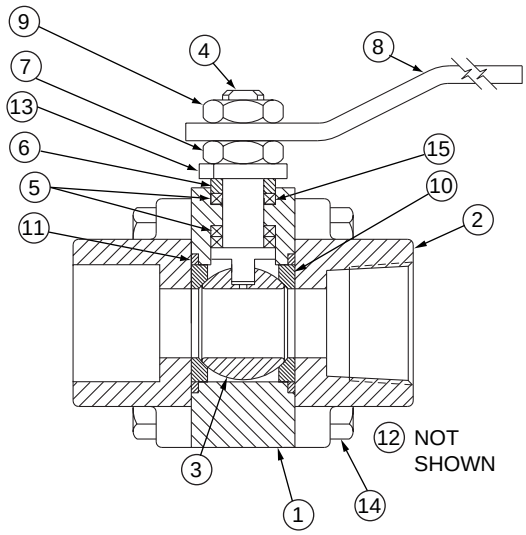
The base material of valve covered by this procedure conforms to the following:

- Carbon Steel - ASTM A105 (Forged)
- 316 Stainless Steel - ASTM A182
- GRF316 (Forged)

Before welding, push pipe snugly into end adapters and then back off approximately 1/16". The socket and at least one inch of the pipe (at the joint) must be free of all foreign material which might prove detrimental to the weld.

Use the smallest electrode and minimum amperage consistent with efficient welding to minimize warpage. Tacks should be ground out before completing the root pass in that area. Weld stringer beads with no weaving and stagger all starts and stops.

Carbon steel ends should be allowed to cool slowly. The valve ends may be covered with a welding blanket to promote slow cooling.



Part No.	Description
1	Body
2	End Adapters
3	Ball
4	Stem
5	Stem Seal Set
6	Gland Ring
7	Adjusting Nut
8	Handle
9	Handle Nut
10	Seat
11	Body Seals
12	Stop Pins (not shown)
13	Travel Stop
14	Bolts
15	Grounding Washer

2. Stem Packing Adjustment

If leakage is evident in stem packing area, tighten the adjusting nut (7) 1/8 turn. If leak still persists, repeat above.

Replacement of the stem seals (5) is indicated if leak is still apparent.

3. Seal Replacement

⚠ WARNING: Begin with the valve partially open in a depressurized line. Valve should be cycled once to ensure there is no media trapped behind the ball.

A. Turn ball (3) to open position and remove handle nut (9), handle (8), adjusting nut (7), travel stop (13), (part of the handle on sizes 1/4" – 3/4") and gland ring (6).

B. Loosen two bolts (14) (one per side in line with each other) and remove remaining six bolts (Figures 1A and 1B). The center body section of the valve will swing out (Figure 1C) for access to the ball (3), stem (4), seats (10) and body seals (11).

NOTE: *Valve must be in open position in order to swing out body section.*

C. Remove body seals (11) by using a sharp instrument such as pocket knife. Care should be taken to avoid damage to the surfaces of the seal groove.

D. To take out one seat (10) and the ball (3), rotate the stem (4) so ball (3) is in fully closed position and insert wooden dowel (not metal) in port and tap gently on ball (3) thereby forcing it out of body (1).

NOTE: *Extreme caution should be taken to avoid damage to the ball (3).*

E. Take out other seat (10).

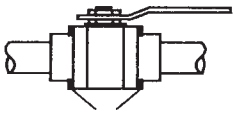


Figure 1A: Loosen two bolts

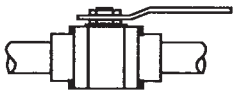


Figure 1B: Remove remaining six bolts

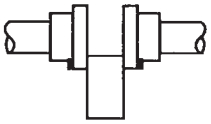


Figure 1C: Swing body section and service

F. Push the stem (4) down thru the body (1) and out the open end of the body (1). Remove the upper and lower stem seals (5) and the grounding washer (15). Grounding washer is not used with the FIRE-GARD valves. Save the grounding washer (15) for reassembly.

Flowserve recommends replacement of all soft parts whenever the valve is disassembled for reconditioning. Replacement parts can be ordered in kit form.

4. Reassembly

A. Put one seat (10) in body (1).

NOTE: *Seats (10) are to be installed with concave surfaces positioned against the ball (3).*

B. Lightly grease the stem seals (5) and the seal area and the threads of the stem (4). Insert stem seal(s) (5) into the lower stem seal cavity with the raised outer edge facing into the counterbore (FIRE-GARD seals are square cut seals). Insert stem (4) through the installed stem seals (5) and the body (1). Place travel stop (13) on the stem (4) so that it rests on the top surface of the body (1). Thread the adjusting nut (7) on the stem (4) and torque to ¾ of the final torque value for the adjusting nut (7) (see Table 1).

Table 1: Adjusting Nut Torques

SIZE	(lb-ft) TORQUE	Number of Seals UPPER	LOWER
¼" to ½"	5	1	1
¾" to 2"	10	1	2

Remove the adjusting nut (7) and the travel stop (13) without moving the stem. Place the grounding washer (15) into the upper seal cavity with the raised fingers pointing up. Push the upper stem seal(s) (5) into the counterbore with raised outer edge pointing into the valve. Add the gland ring (6), the travel stop (13) and the adjusting nut (7). Make sure the travel stop (13) is installed so that the valve can close in a clockwise direction and open counterclockwise. If the rotation is not correct, the travel stop (13) must be inverted. Torque the adjusting nut to the value shown in Table 1. Cycle several times and check the adjusting nut torque.

C. Turn the stem (4) to a position with the stem tang flats parallel to the cavity. (Ball will be in closed position and stay in this position through steps D and C).

D. Install the ball (3). NOTE: Ball should be carefully examined for nicks, scratches, pitting or corrosion and replaced as necessary.

E. Put other seat (10) into body, being certain that spherical surface of the seat is positioned against the ball.

F. Press body seals (11) into grooves on face of body.

G. Turn ball to open position and swing valve body section back into position

H. Turn ball back to full closed position. External stem flats positioned perpendicular to run of valve.

I. Install and tighten all bolts (14) finger tight.

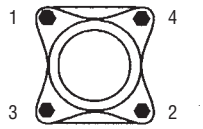
J. Evenly tighten bolts (14) going around three or four times, alternating sides and in sequence shown in Figure 2. Bolts should be tightened until body (1) and end adapter (2) mating surfaces are metal to metal, but do not exceed torque values listed in Table 2. Do not substitute for original bolts. Replacements may be ordered if necessary.

K. Install handle (8) and handle nut (9).

Table 2

Valve Size	Bolt Torque (ft-lbs.)
¼", ⅜", ½"	9
¾"	17
1"	31
1¼", 1½"	48
2"	1

Figure 2



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