



## **Flo-Tite DIRECT-MOUNT AUTOMATION Series**

### **Models DM51 / DM52**

### **2PC DIRECT MOUNT FULL PORT**

### **Installation, Operation and Maintenance Manual**



Note: Before using a valve, read the entire IOM carefully and make sure you have a clear understanding of all information included.

This manual describes the procedures for the safe and efficient installation, operation, and maintenance of Flo-Tite Direct-Mount Automation Series Ball Valves. **Failure to follow the procedures in this manual may result in Flo-Tite warranties being voided.** Problems with the operation and maintenance of these valves should be directed to the nearest Flo-Tite Representative.

The Flo-Tite DM51 / DM52 is designed as a split body, two-piece construction, to allow ease of access for maintenance of the valve ball and seat without special tools. This line of valves utilizes the “free floating” ball principle. The ball is not fixed but is free to move with the line pressure. As a result, these valves are capable of tight shut-off with the flow in either direction or dead-ended, regardless of the position of the valve in the line. The downstream seat, which is opposite the pressurized side, of a closed valve, must carry 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 useful seat life by turning the valve end-for-end in the pipeline.

#### **NOTE:**

Please note that Model DM51 / DM52 is supplied in one size ranges, 1/2” to 2”.

## **INSTALLATION:**

### **A. Receiving and Preparation Procedure**

- A1. Remove shipping protection
- A2. Inspect the valve(s) for transportation damage\*
- A3. Inspect the valve bore and remove any debris
- A4. Cycle the valve and inspect the valve for smooth operation, size permitting
- A5. As shipped from the factory, valves may contain a silicone based lubricant. This is for break-in and may be removed if it is objectionable for a particular application by disassembling and solvent washing.

\*If transportation damage is found, immediately take pictures for record purposes and contact the inbound carrier to submit a claim.

### **B. Installation Procedure**

**B1. General** – The valve may be fitted in any position in the pipeline. Prior to installing the valve, the pipe on either side of the intended installation should be checked to be free of dirt, debris, weld slag, etc. to prevent damage to the seats, seals, and surface of the ball. The piping must also be free of tension or compression.

**WARNING** – **Never use the valve as a pipe support or structural member.**

**B2. Installation of DM51 / DM52 valve** is accomplished by inserting the valve between the mating threads of piping specified by industry standards.

**Caution** – Ensure that mating threads are of the same size and thread standard.

**B3.** Valves with actuators should be checked for actuator-valve alignment. Angular or linear misalignment will result in high operational torque. Electric and/or pneumatic connections should be made in accordance with the correct actuator IOM instructions.

### C. OPERATION:

**C1.** Manual operation of the valve is accomplished by turning the handle ¼ turn (90 degrees).

\*The valve is open when the handle is “in-line” with the valve or pipeline. The valve is closed when the handle is “across” or perpendicular to the valve or pipeline.

**C2.** Flo-Tite Direct-Mount Automation Series valves can be operated with either electric or pneumatic actuators. Please consult factory for installation.

**C3.** Flo-Tite Direct-Mount Automation Series valves may include one of several different styles of limit switches and positioners. Please refer to the appropriate IOM for each device.

### MAINTENANCE:

**CAUTION** – Ball valves can trap fluid in the ball cavity when closed. Be prepared to capture and manage any liquid retained in the valve body when disassembling the valve.

**WARNING** – **If the valve has been in hazardous fluid service, review applicable MSDS sheet and decontaminate the valve before disassembly. All persons involved with the disassembly should wear personal protection equipment such as aprons, gloves, face shield, etc. to prevent personal injury.**

Access to the valve internals starts with relieving pressure in the pipeline. Turn the valve handle to the 45 degrees, half open, position and flush the line, when applicable, to remove any hazardous material from the line. Repair kits can be ordered from the local Flo-Tite Representative. This should be done prior to any disassembly work.

**CAUTION** - Valves with actuators, limit switches or positioners should have these devices disassembled from the valve prior to disassembling of the valve.

**WARNING-** **Use extreme caution disconnecting any electrical and/or pneumatic sources to the valve to protect against personal injury. Isolate the valve actuator prior to disconnecting.**

### **D. Valve Disassembly-**

**WARNING** – **Use extreme caution when removing the valve from the pipeline to prevent personal injury.**

**CAUTION** – valves shall be adequately supported prior to unfastening the studs and nuts that hold the valve in line and secured with lifting straps or slings to hold the weight of the valve.

- D1. Mark end cap and body with a sharpie.
- D2. Remove endcaps.
- D3. Remove seat and o ring in threaded end cap.
- D4. Remove ball from the body, care should be taken not to scratch the ball during disassembly.
- D5. Remove stem into the body, taking care not to pinch or nick stem packing
- D6. Remove the thrust washer, o-ring, packing protector on stem O.D.
- D7. Remove seat in the rear of the body cavity with the spherical curvature facing the mating ball.
- D8. Safe and proper bench testing is required before re-installing to service. Ensure that the valve operates smoothly.

**CAUTION** – Use extreme care in handling the ball to avoid damage.

The stem must be removed from the inside of the body. Gently tap the top of the stem with a non-metallic mallet. The thrust washer should come out with the stem. Stem packing can now be removed. If a packing pick is used to remove packing, care must be taken not to scratch any surface.

### **Visual Inspection-**

Clean and inspect all metal parts. It is not necessary to replace the ball and stem unless the seating surfaces have been damaged by abrasion or corrosion. Flo-Tite strongly recommends that all seats, seals, and packing be replaced whenever a valve is disassembled for reconditioning. This is the surest protection against subsequent leakage after reassembly. No repair kit for this particular series. When valve fails discard the valve buy new one:

- a. Line size
- b. Model designation
- c. Seat/seal materials

### **Valve Reassembly -**

**Note- the valve may be reassembled and operated dry when no lubricants are allowed in the system; however, a light lubricant on the ball and stem will aid in assembly or reduce initial operating torque. The lubricant used must be compatible with the intended system fluid.**

Install one new seat and o-ring in the body cavity with the spherical curvature facing the ball. Replace the stem in the reverse order from above based on valve size. Use a wrench to bring valve to closed position. This will align the stem and the ball slot. Slide the ball into position. Turn the valve to the open position to help hold the ball in place. Install the second o-ring and seat into the body endcap.

**Note: Make sure ball is in closed position before tightening up the end connections. Realign the marks on the body and end caps and then cycle the valve slowly, with a gentle back and forth motion to build gradually to a full quarter turn. By cycling slowly, the new seat lips will conform to the seal shape against the ball. An initial fast turning motion, at this point, may cut the seats before they have a chance to form the proper seal. When possible and practical, test the valve prior to reinstalling into the pipeline.**

### **Reinstallation**

Carefully inspect the faces of both the valve and the mating threads to ensure they are clean and undamaged. Place the valve in the preferred position and support it from moving.



## Two Piece Direct-Mount Automation Series



### FEATURES:

**Brass Full Port**  
**Low Torque Design**

**Pressure:**  
**600 WOG - 150 WSP**

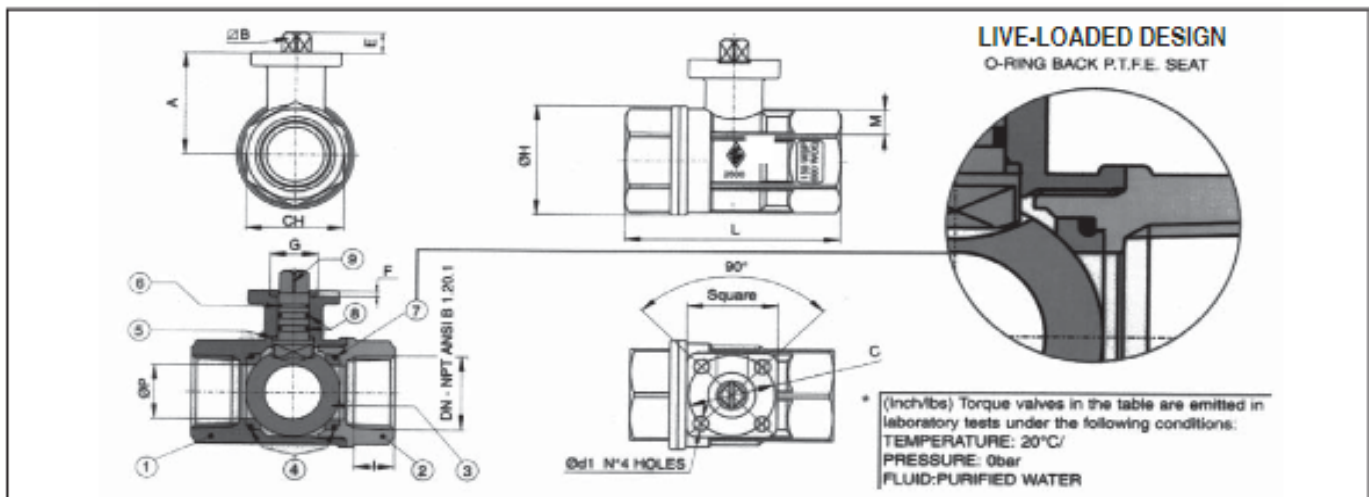
**Temperature:**  
**to 366°F**

**Sizes Range:**  
**1/4" thru 4"**



### MODELS:

**DM51 - Brass-Plated Ball**  
**DM52 - 316SS Ball / Stem**



| No. Pos. | Part Name       | Materials                 | N PCS | SIZE   | SQUARE | A    | ∅B   | C    | ∅d1  | E    | F    | ∅G   | ∅H   | I    | L    | CH   | M    | ∅P   | PSI | Lbs   | Inch/lbs | ISO 5211 |
|----------|-----------------|---------------------------|-------|--------|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-------|----------|----------|
| 1        | Body            | Brass CW617N UNI EN 12165 | 1     | 1/4"   | 1.49   | 1.28 | 0.35 | 1.42 | 0.24 | 0.35 | 0.08 | 0.88 | 1.32 | 0.39 | 2.64 | 1.08 | 0.22 | 0.39 | 800 | 0.82  | 53.10    | F03      |
| 2        | End Cap         | Brass CW617N UNI EN 12165 | 1     | 3/8"   | 1.49   | 1.28 | 0.35 | 1.42 | 0.24 | 0.35 | 0.08 | 0.88 | 1.32 | 0.40 | 2.64 | 1.08 | 0.22 | 0.39 | 800 | 0.79  | 53.10    | F03      |
| 3        | Ball            | Brass CW617N UNI EN 12165 | 1     | 1/2"   | 1.49   | 1.28 | 0.35 | 1.42 | 0.24 | 0.35 | 0.08 | 0.88 | 1.32 | 0.53 | 2.64 | 1.08 | 0.22 | 0.58 | 800 | 0.88  | 53.10    | F03      |
| 4        | Seals #         | P.T.F.E.                  | 2     | 3/4"   | 1.49   | 1.28 | 0.35 | 1.42 | 0.24 | 0.35 | 0.08 | 0.88 | 1.57 | 0.55 | 3.00 | 1.28 | 0.22 | 0.75 | 800 | 0.91  | 53.10    | F03      |
| 5        | Thrust Washer # | P.T.F.E.                  | 1     | 1"     | 1.49   | 1.79 | 0.35 | 1.42 | 0.24 | 0.35 | 0.12 | 0.88 | 1.93 | 0.88 | 3.35 | 1.81 | 0.24 | 0.95 | 800 | 1.55  | 53.10    | F03      |
| 6        | Stem Seal #     | P.T.F.E.                  | 1     | 1 1/4" | 1.49   | 1.83 | 0.35 | 1.42 | 0.24 | 0.35 | 0.12 | 0.88 | 2.30 | 0.88 | 3.88 | 1.97 | 0.24 | 1.18 | 800 | 2.14  | 53.10    | F03      |
| 7        | O-Rings #       | FKM (Viton)               | 2     | 1 1/2" | 1.98   | 2.52 | 0.43 | 1.97 | 0.27 | 0.43 | 0.12 | 1.38 | 2.87 | 0.88 | 4.13 | 2.18 | 0.39 | 1.49 | 800 | 3.71  | 150.45   | F05      |
| 8        | O-Rings #       | FKM (Viton)               | 2     | 2"     | 1.98   | 2.88 | 0.43 | 1.97 | 0.27 | 0.43 | 0.12 | 1.38 | 3.80 | 0.70 | 4.80 | 2.75 | 0.31 | 1.97 | 800 | 5.52  | 150.45   | F05      |
| 9        | Stem            | Brass CW617N UNI EN 12165 | 1     | 2 1/2" | 2.75   | 3.48 | 0.55 | 2.78 | 0.35 | 0.59 | 0.12 | 2.18 | 4.51 | 0.93 | 6.10 | 3.54 | 0.35 | 2.52 | 800 | 8.83  | 274.35   | F07      |
|          |                 |                           |       | 3"     | 2.75   | 3.85 | 0.55 | 2.78 | 0.35 | 0.59 | 0.12 | 2.18 | 5.35 | 1.01 | 6.89 | 4.13 | 0.35 | 3.00 | 800 | 13.29 | 274.35   | F07      |
|          |                 |                           |       | 4"     | 2.75   | 4.58 | 0.87 | 2.78 | 0.35 | 0.89 | 0.12 | 2.18 | 6.53 | 1.08 | 8.03 | 5.12 | 0.33 | 3.74 | 800 | 21.54 | 848.05   | F07      |

# Parts included in repair kits

Flo-Tite's "DM" design eliminates mounting brackets and all their possible related problems. Ideally designed for low profile, cost effective industrial applications.

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