Flo-Tite Multi-Port Series
Model DM MPT100SS
Standard Port Threaded End 800 WOG
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 Multi Port 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 DM MPT100SS 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.

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 the Flo-Tite Multi-Port DM MPT100 valve is accomplished by inserting the valve between flanges attached to piping and supplied by others and attaching the valve to the mating flanges with fasteners of the size and type specified by industry standards. Fasteners should be tightened in a "star" pattern.

Caution – Ensure that mating flanges are of the same size, type and pressure rating as the valve and that fasteners are of the size and type approved for the flange.

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. Valve Flow Path is indicated by markings on the top of ball valve stem. The illustration on the last page shows standard valve position at the time of shipment.

C2. Flo-Tite model DM MPT100 valves can be operated with either electric or pneumatic actuators. For instructions on installation and operation, refer to the IOM for the correct actuator. Prior to actuator installation, please check the flow path of the valve as indicated by marking on the top of ball valve stem as shown in the illustrations on the last page. After actuator installation, the valve should be check for valve stem alignment. Axial misalignment will result in high operational torque and unnecessary wear on the stem seal.

C3. Flo-Tite model DM MPT100 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 protective 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 degree, half open, position and flush the line, when applicable, to remove any hazardous material from the line. Consult the metal tag attached to the valve body to determine the correct seat and seal materials. 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.
Stem Packing
Stem seal leakage may be corrected without disassembly. Tighten the packing gland nuts one flat at a time alternating between nuts, until leakage stops. If leakage continues, or the valve's operating torque becomes excessive, the seals are worn and replacement of the packing will be necessary.

WARNING-
Do not remove packing gland while the line is under pressure. Personal injury could occur.

D. Valve Disassembly-

WARNING
Use extreme caution when removing the flanged valve from the pipeline to prevent personal injury that may be caused by "cold springing" of the piping.

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. Remove the threaded end caps and lift the valve from the line for service. Note – care should be taken to avoid scratching or damaging the threaded end caps. Damaged gaskets must be replaced prior to Reinstalling in the line.
D2. Loosen handle nut and remove handle. Remove spring washer as well.
D3. Mark each threaded end cap to the body joint. This is to allow ease of alignment in re-installation.
D4. Safely place the valve on a clean, secure and stable work surface.
D5. Protect the end caps when handling to prevent scratching and damage.
D6. EXTREME CARE should be taken upon ball removal as not to scratch seating surface or the stem, which will result in leakage after reassembly.
D7. Remove Seats and Gaskets. Use caution to prevent damage to metal parts.
D8. Remove lock washer, stem nut, packing follower, stem packing & thrust bearing.
D9. Take ball & stem out of valve body, remove Stem Bushing.

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. Replacement parts are sold in kit form. Refer to the metal tag attached to the side of the valve body to identify the specific sealing materials used. Kits can be obtained via the local Flo-Tite Distributor. Replacement parts should be purchased prior to valve disassembly. Required information to purchase replacement parts include:

a. Line size
b. Model designation
c. Seat/seal materials – see stamping on metal tag attached to the valve body.

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. Lubricant used must be compatible with the intended system fluid.

1. Install the thrust bearing on stem O.D.
2. Install stem packing in valve body.
3. Slide the Ball & Stem into the stem bushing.
4. Install the seats inside each seat pocket of the end caps make sure the spherical curvature side of the seat will face the ball.
10. Turn the ball so that the ball opening is parallel to the port centerline.
11. Assemble the end cap onto the valve body, loosely tighten End Cap Nuts. Place remaining seats to correct end caps and gradually tighten all three end caps in rotation, using a crisscross pattern on each end. Do not fully tighten one end cap, bring them all up gradually.

NOTE:
Be careful not to damage gasket when putting end cap into the body.

12. Tighten packing gland, ensure valve operates smoothly

Note:
Valve must be in the 100% full open position.

13. Install, lock washer, stem nut, packing follower, stem packing & thrust bearing.
14. Install Lever.

Note:
Make sure ball is in closed position before tightening up the end connections.

WARNING
Extreme care must be exercised during tightening of the body end nuts to make sure that complete engagement of studs with the body flange is maintained. There should be at least one stud thread exposed on each side.
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 flanges and the mating flanges to ensure they are clean and undamaged. Place the valve in the preferred position and support it from moving. Install a sealing gasket between each pair of flanges and reinsert the bolting and hand tighten. Secure the bolting to the recommended torque values in a star pattern to ensure that the gasket is compressed evenly around the entire circumference.

Repair Kits –

Repair kits typically consist of replaceable seats, body seals, and packing seals. Refer to the unit nameplate, as shown below, to confirm what materials are currently installed. Contact your local Flo-Tite Representative to order and receive the kits prior to any maintenance work.

VALVE - SOFT PARTS							
SEAT		STEM SEALS		BODY SEAL		O-RINGS	
TFM	F	TFM	F	TFM	F	VITON	V
CTFM	Y	CTFM	Y	CTFM	Y	EPDM	E
PTFE	T	RTFM	X	PTFE	T	PTFE	T
RPTFE	R	PTFE	T	RPTFE	R	BUNA	B
50/50	S	RPTFE	R	50/50	S	NONE	N
UHMWPE	U	50/50	S	UHMWPE	U		
PEEK	P	UHMWPE	U	PEEK	P		
Cavity Filled	C	PEEK	P	Graphite	G		
Metal	M	Graphite	G	Kel-F	K		
Kel-F	K						

F lo-Tite's marking system follows MSS SP-25-1998

Valve Markings- Casted into valve bodies include the following; Flo-Tite Name, Model Numbers, Body Material, Valve Size, & WOG Pressure Rating
All Flo-Tite valves have metal name plates spot welded to the valve body.

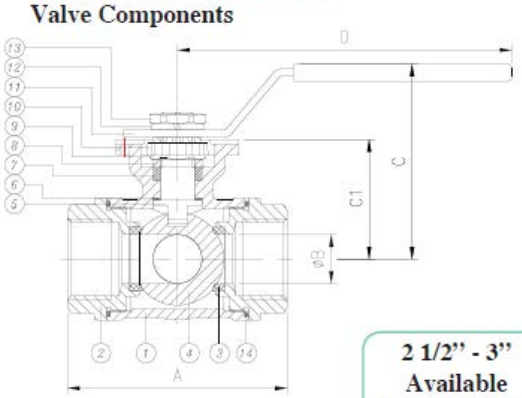
Standard Trim Soft Parts

Flo-Tite Name →
Valve Size →

Valve Side A

MODEL DM-MPT 100

Valve Components

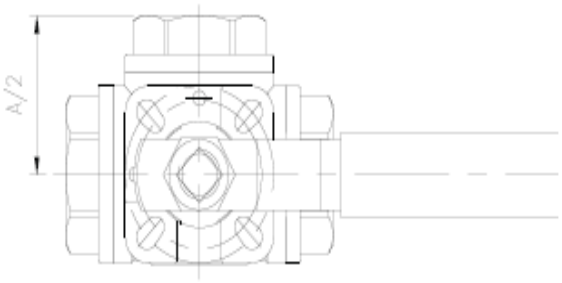


2 1/2" - 3" Available in 316SS Only

BILL OF MATERIALS:

Item	Part Name	Qty	Material	
			1/2" - 2"	2 1/2" - 3"
1	Body	1	A351 CF8 / SS304	A351 CF8M / SS316
2	End Cap	3	A351 CF8 / SS304	A351 CF8M / SS316
3	Seat *	4	PTFE	PTFE
4	Ball	1	Stainless Steel	Stainless Steel
5	Stem	1	Stainless Steel	Stainless Steel
6	Thrust Bearing *	1	PTFE	PTFE
7	Stem Packing *	1	PTFE	PTFE
8	Packing Follower	2	Stainless Steel	Stainless Steel
9	Stem Nut	1	Stainless Steel	Stainless Steel
10	Lock Washer	1	Stainless Steel	Stainless Steel
11	Handle	1	Stainless Steel	Stainless Steel
12	Spring Washer	1	Stainless Steel	Stainless Steel
13	Handle Nut	1	Stainless Steel	Stainless Steel
14	Gasket *	1	PTFE	PTFE

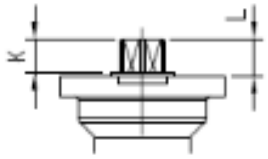
*Recommended Spare Parts



ATTENTION

MAWP/WOG is a do-not exceed pressure at normal ambient Npt & Weld End Models

Mounting Dimensions



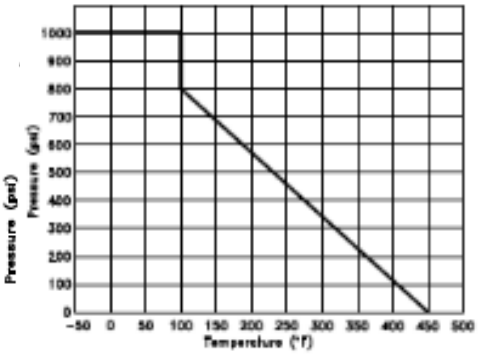
SPECIFICATIONS:

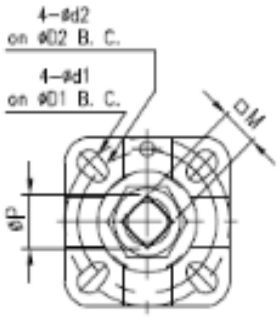
Pressure Rating: 1000 MAWP/WOG

Valves Stem Seals and Seats 100% tested by 100 psig air under water for bubble tight integrity

Threaded End Connections Meet ANSI B1.20.1

Pressure Temperature Rating





Size	A	B	C	C1	D	D1	D2	d1	d2	K	L	M	P	ISO	Torque in-lb	Weight Lbs	Cv 90°	Cv 180°
1/2"	2.80	0.47	2.80	1.46	5.71	1.65	1.42	0.24	0.24	0.30	0.33	0.35	0.47	F03/F04	62	1.4	4.5	7.0
3/4"	3.19	0.59	2.91	1.57	5.71	1.65	1.42	0.24	0.24	0.51	0.55	0.35	0.47	F03/F04	89	1.7	10	14
1"	3.54	0.67	3.27	1.81	6.10	1.97	1.65	0.28	0.24	0.47	0.51	0.43	0.55	F04/F05	212	2.5	16	27
1 1/4"	4.92	0.98	3.70	2.24	6.10	1.97	1.65	0.28	0.24	0.39	0.43	0.43	0.55	F04/F05	266	5.2	31	43
1 1/2"	5.43	1.26	4.45	2.76	7.72	2.76	1.97	0.35	0.28	0.69	0.73	0.55	0.71	F05/F07	310	8.2	49	72
2"	5.98	1.50	4.72	3.03	7.72	2.76	1.97	0.35	0.28	0.69	0.73	0.55	0.71	F05/F07	443	10.6	82	113
2 1/2"	7.87	1.97	C/F	3.74	9.06	4.02	2.76	0.43	0.35	C/F	C/F	0.67	0.87	F07/F10	885	23.1	130	180
3"	9.45	2.56	C/F	4.25	10.24	4.02	2.76	0.43	0.35	C/F	C/F	0.67	0.87	F07/F10	1328	38.4	190	270

Please carefully review all important procedures in this manual. If anything is unclear, please feel free to contact Flo-Tite directly.

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