Flo-Tite Multi-Port
Transflo Series
Model MPF15/MPF30
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 Flanged 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 Flanged Series are designed as 3 seats designed construction, which maintains proper ball position. This line of valves utilizes the Trunnion Support Design. This precise ball positioning is often not possible in more common multi-piece stem ball design. This allows all sides to be used as an inlet or block port without leakage.

Sizes ¾" thru 12" offer a three seat design as standard. A fourth seat can be added to aid in balancing the ball for optional control during modulation. Our valves are bi-directional, meaning upstream or downstream could be at either end of the valve.

NOTE: Please note that Models MPF15 and MPF30 are supplied in two size ranges, ½" to 2" and 2 ½" and larger. Instructions and components may be different by size range. Please ensure that the correct size range instructions and drawing reference is used for the valve being serviced.

The weight of the valve must be properly supported by means other than the connected pipelines. The valve end connection and the pipeline forms an integral sealing zone. If the weight of the valve is entirely distributed to the joint area, the valve can cause leakage.

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 pipe support or structural member.

B2. Installation of the Flo-Tite Multi-Port Transflo MPF15 / MPF30 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 the ball valve stem. The illustration on the last page shows the standard valve position at the time of shipment.

C2. Flo-Tite model MPF 15 / MPF30 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 MPF 15 / MPF30 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 degrees, 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 flange bolts and nuts and lift the valve from the line for service. Note – care should be taken to avoid scratching or damaging the flange gaskets. Damaged gaskets must be replaced prior to reinstalling in the line.
D2. Safely place the valve on a clean, secure and stable work surface. Protect the flange faces when handling to prevent scratching and damage.
D3. Match mark the body and body end to ensure correct alignment when the valve is reassembled.
D4. Unscrew handle bolt.
D5. Remove Lever from Handle T-Bar.
D6. Take handle T-bar off the Ball & Stem.
D7. Unscrew off the Packing Nut, Belleville Washer and Gland Sleeve.
D8. Remove Seats and Gaskets. Use caution to prevent damage to metal parts.
D9. Unscrew Bonnet Bolts, and Bonnet will be loose.
D10. Separate bonnet away from valve body, and remove Bonnet Gasket. Use caution to prevent damage to metal parts.
D11. Take O-Ring and Stem Packing out of packing chamber on the bonnet. D12. 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 Stem Bushing in the bottom center hole inside valve Body
2. Slide the trunnion of the Ball & Stem into the stem bushing
3. Screw the Bonnet Studs into the threaded holes on top of the valve body
4. Place the Bonnet Gasket onto the gasket groove on top of the body
5. Install Bonnet onto the valve body, using Bonnet Nuts
   NOTE: Be careful not to damage bonnet gasket when putting bonnet into the body.
6. Tighten nuts in a "star" pattern to the torque specified in the chart. WARNING: There should be at least one stud thread exposed
7. Screw the End Cap Studs into the threaded holes on side of the valve body
8. Place gasket onto each of the 4 end caps. Push the gasket all the way down to the sealing surface of each end cap.
9. 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) and line up end flange. Because the body flange bolt pattern is different from the line flange bolt pattern, it is possible to assemble the valve such that the bolt holes in the line flanges don't line up. Be certain to align end flanges bolt holes to straddle valve center lines.

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

12. Tighten nuts in a "star" pattern to the torque specified in the chart Tighten one end piece in a similar fashion as tightening the opposite end piece. Do not tighten one end piece fully until the opposite end piece is fully tightened.

    Note: Valve must be in the 100% full open position.
    WARNING: There should be at least one stud thread exposed.

13. Install O-Ring, and then slide the Stem Packing onto the stem until it is seated against the upper bottom of the stem hole.
14. Put packing gland onto the stem, on top of the stem packing; lightly tighten gland bolt to secure the gland.
15. Install Stop Plate and Stop Ring.
16. Install Handle Head and 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						

Valve Torque Information:

unit: in-lb

Model	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"	10"	12"
MPF15 3way	110	200	310	480	868	1555	1900	3100	6748	12000	19000	31000
MPF30 3way	132	240	372	576	1042	1866	2280	3720	8098	14400	22800	37200
MPF15 4way	146	266	412	638	1154	2068	2527	4123	8975	15960	25270	41230
MPF30 4way	176	319	495	766	1385	2482	3032	4948	10770	19152	30324	49476

Note: Torques are for clean liquid media only

Torque for packing

	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"
MPF15				345	345	450	450	550	550	550	1400	1400	1400

Change of Flow Plan

1. Remove snap ring and then stop plate.
2. Turn the valve to the required position 1.
3. Now place the stop plate in a position enabling position 2 can be achieved. Just in case if you put the stop plate in a wrong position just flip the stop plate.
4. Put the snap ring back.

Flo-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

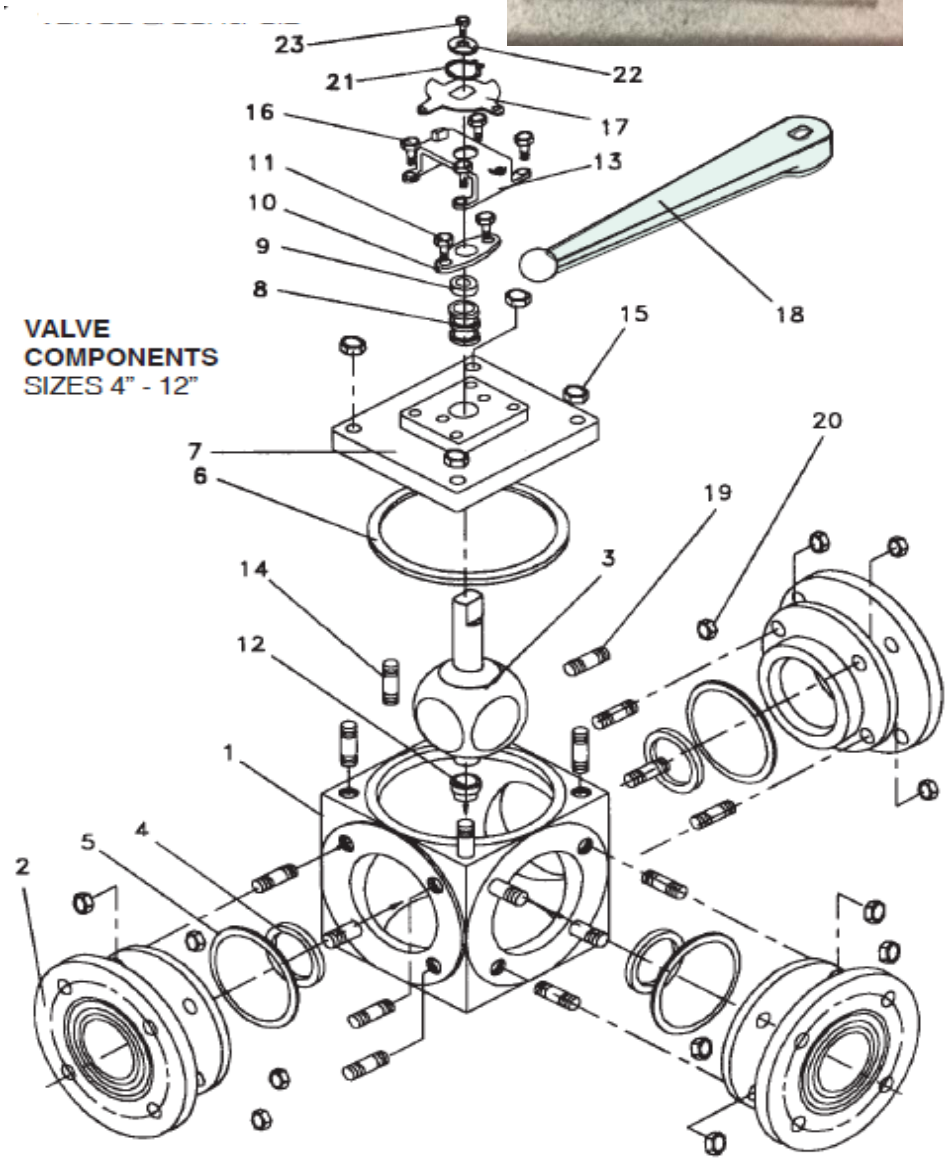
Valve Side A

Valve Side B

Flo-Tite Name

Valve Model

Body Material

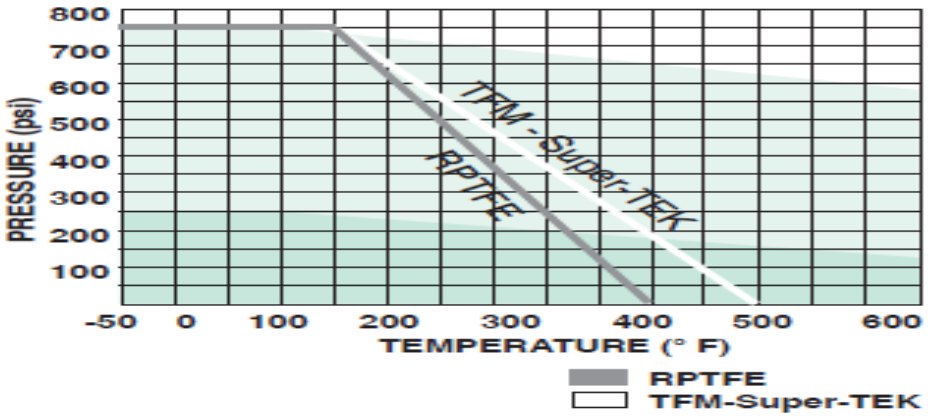


BILL OF MATERIALS:

ITEM	NAME	MPF15-SS
1	BODY	A351 GR CF8M
2	END CONNECTOR	A351 GR CF8M
3	BALL	A351 TYPE316
4	SEAT *	TFM Super-Tek
5	END GASKET *	50/50
6	COVER GASKET *	50/50
7	COVER	A351 GR CF8M
8	STEM PACKING	TFM Super-TEK
9	GLAND RING	A167 TYPE304
10	GLAND	A167 TYPE304
11	GLAND BOLT	B8
12	THRUST BEARING *	50/50
13	STOP HOUSING	A351 GR CF8M
14	COVER STUD	B8
15	COVER NUT	A167 TYPE304
16	HOUSING BOLT	B8
17	TRAVEL STOP	A167 TYPE304
18	LEVER	DUCTILE IRON
19	BODY STUD	B8
20	BODY NUT	A167 TYPE304
21	SNAP RING	SK5 CR PLATE
22	PORT SIGN	A167 TYPE304
23	SIGN NUT	A167 TYPE304

* Repair Parts

PRESSURE AND TEMPERATURE DATA:



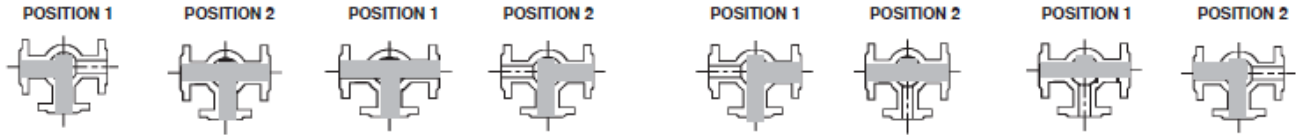
Rating Curve applies to both "L" and "T" port configurations.
All Values conform to ANSI Class pressure ratings. They are rated for a maximum differential pressure of 275 psi, and a maximum temperature of up to 550 °F . WCB - 285 psi Max. Complies with ANSI B16.5 and B16.34 standards.

Tri-Clamp Ends

FLOW PATTERNS

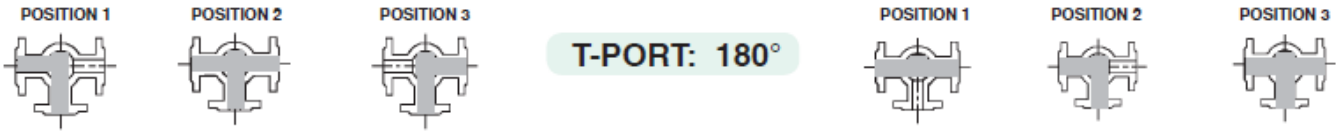
All T-Port Flow Patterns can be changed in the field without disassembling valve

T-PORT: 90°

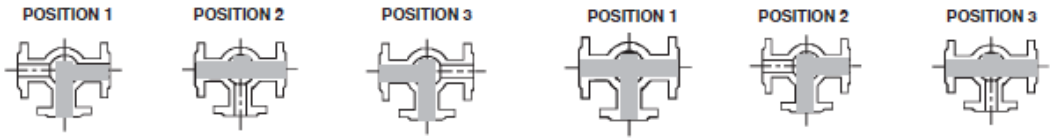


FLOW PLAN D | FLOW PLAN E | FLOW PLAN F | FLOW PLAN G

T-PORT: 180°

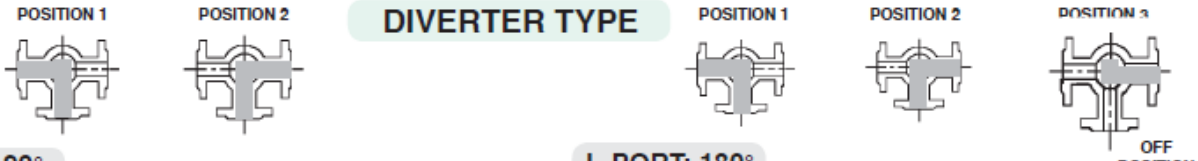


FLOW PLAN H



FLOW PLAN I | FLOW PLAN K | FLOW PLAN J

DIVERTER TYPE

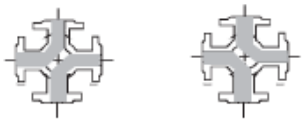


L-PORT: 90° — FLOW PLAN A

L-PORT: 180° — FLOW PLAN B

4-WAY VALVES

FLOW PLAN M - 4-WAY LL PORT 90° TURN



Optional Plans Available Using T, L, and Standard Ball Consult Factory

FLOW PLAN N - 4-WAY L PORT 180° TURN

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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