



**MB51 - INSTALLATION, OPERATION & MAINTENANCE MANUAL**



**!!!CAUTION! Safety Precautions!!!**

**Before removing valve from pipeline NOTE that:**

Media flowing through a valve may be corrosive, toxic, flammable, or of a contaminant or harmful nature. Where there is evidence of harmful fluids having flowed through the valve, the utmost care must be taken. It is suggested that the following minimal safety precautions be taken when handling valves.

1. Always wear eye shields.
2. Always wear gloves and overalls.
3. Wear protective footwear.
4. Wear protective headgear.
5. Ensure that running water is readily accessible.
6. Have a suitable fire extinguisher ready if media is flammable.
7. Be sure that you are aware of the fluid that has been passing through the valve before opening or dismantling any valve. Require MSDS information.

**GENERAL**

The MB51 has been designed and engineered to provide long lasting and trouble free service when used in accordance with the instructions and specifications herein.

The following instructions refer only to SVF Series MB51 Multi-Port Flange Ball Valves.

Keep protective cover in place until moment of installation. Valve performance depends upon preventing of damage to ball surface. Upon removal of cover, make sure that the valve is completely open and free of obstruction.

**STORAGE:**

All manual valves are shipped in the fully open position with protective end caps (covers). Keep all protective packaging, flange covers, or end caps attached to the valves during storage. To avoid damage to the seat due to contact with the balls edge, leave the valve in the fully open or closed position during storage. It is recommended to keep the valves in a clean and dry environment until ready for use.

Ensure that no pressure is present at the valve (i.e. by checking the line gauges).

Ensure that any media is released by operating valve slowly to the 45 degree position. Ideally, the valve should be decontaminated when the ball is in the 45 degree position.

Valves and accessories must not be used as a sole support of piping or human weight. Safety accessories such as safety relief (overpressure) valve are the responsibility of the system designer.

It is the user / system designer's responsibility to use insulation in high temperature applications. Refer to OSHA documents for more details.



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**INSTALLATION**

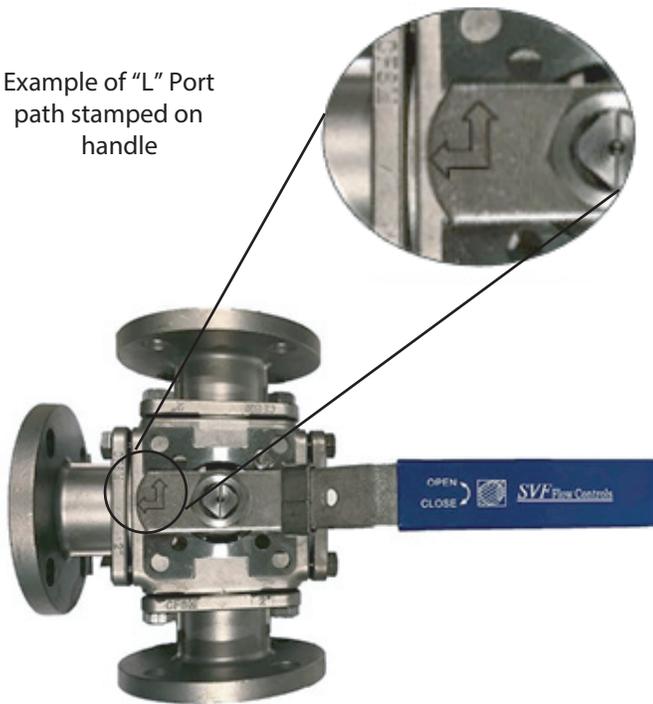
The valve may be installed for flow or vacuum in any direction. When installing, use standard industry methods suitable for the specific service. Do not allow pipe sealant to enter valve cavity.

**OPERATION**

SVF valves provide tight shut off when used under normal conditions and in accordance with SVF's published pressure and temperature chart. If these valves are used in a partially open (throttled) position, seat life may be reduced.

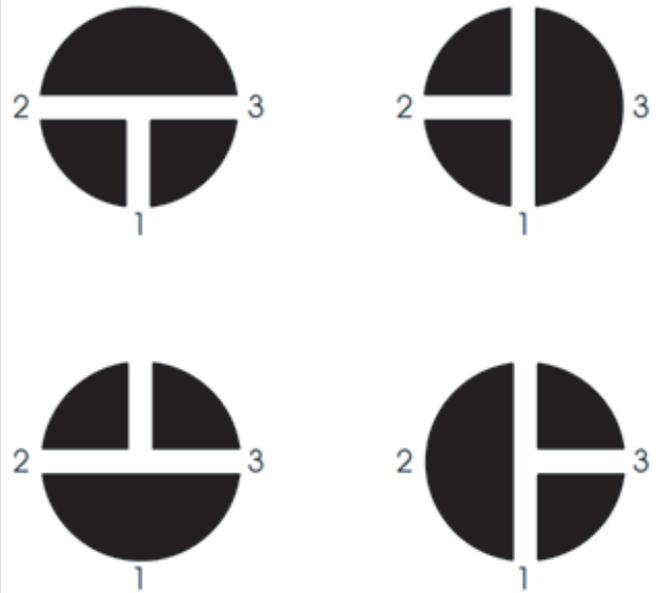
SVF MB51 multi-port ball valves are classified as either an "L" Port or "T" Port flow path. "L" Port flow consists of two flow ports shaped as the letter "L". "T" Port flow consists of three flow ports shaped as the letter "T". These ball valves operate on a 360° basis. The flow direction indicator is stamped on the handle.

Example of "L" Port path stamped on handle

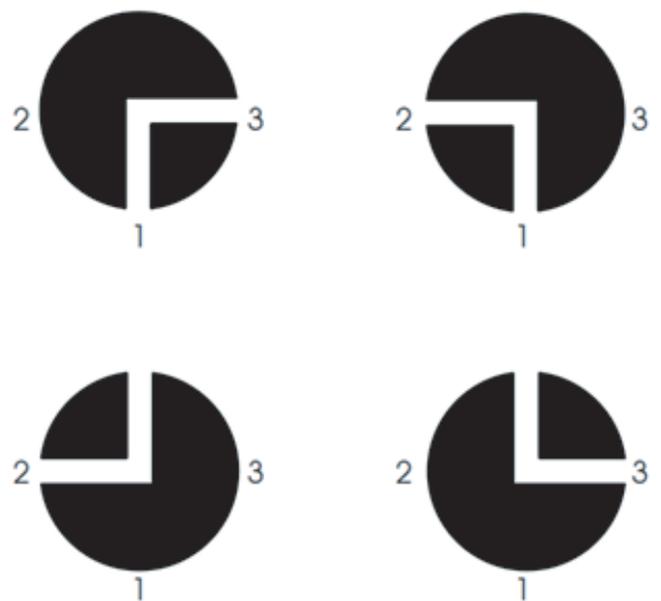


Any media which might solidify, crystallize or polymerize should not be allowed to stand in the ball valve cavities unless regular maintenance is provided.

**T-PORT FLOW PATHS:**



**L-PORT FLOW PATHS:**





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### TORQUE REQUIREMENT

Torque ratings are subject to variations depending on the length of time between cycles and the media in the system.

Breakaway torque is that force which must be exerted to cause the ball to begin to open. Operating torque requirements will vary depending on the length of time between cycles, media in the system and line pressure.

### MAINTENANCE

With self-wiping ball / seats, SVF valves have a long, trouble free life, and maintenance is seldom required. But, when necessary, valves may be refurbished, using a small number of components, none of which require machining.

SVF valves are designed for easy service and assembly in the field. The following checks will help to extend valve life, or reduce plant problems.

SVF Ball Valves utilize live-loaded stem seals featuring Belleville washers (disk springs) that maintain constant pressure on the Stem Seal area even under a wide range of pressure and temperature fluctuations. If stem leakage is evident, proceed as follows:

### STEM LEAKAGE

Examine the disk springs (Belleville washers) for damage. If in good condition, tighten the gland nut until disk springs are firmly compressed, then back the nut off 1/16th of a turn. If damaged, dismantle the stem down to the gland, fit new disk springs with their outer edges touching, replace and retighten using the gland nut. Further maintenance necessitates dismantling of the valve.

### LEAKAGE AT END CAP JOINT

Check for tightness at the End Cap connectors. If loose, tighten End Cap. Excessive force will damage the End Cap. (Table A)

If there is still leakage, it will be necessary to dismantle the valve and replace the body seals.

### IN-LINE LEAKAGE

Check that the valve is fully closed. If leakage occurs while the valve is in the closed position, a seat or ball sealant surface may be damaged and it will be necessary to disassemble the valve.

\*NOTE: Stem leakage and leakage at the end cap joint, if not cured by simple means described above, may necessitate dismantling the valve. If there is no stem leakage, the stem assembly should not be touched.

### REBUILDING

Before rebuilding, check that all the correct components are available and that they fit for reassembly. When rebuilding, cleanliness is essential to allow long valve life and provide cost effective maintenance. CAUTION: NO BODY OR STEM SEALS ARE REUSABLE. Care must be taken to avoid scratching the seats and seal during installation.

Note: Caution must be taken with valves that have been in hazardous media. They must be decontaminated before assembly by relieving the line pressure and flushing the line with the valve in the partially open position. Protective clothing and face shields, gloves, etc. MUST BE USED for this operation.

#### A DISASSEMBLY OF VALVE (Remove from line)

- 1.) With the valve in the open position, undo Body Bolt Nuts (#17) to separate valve Body (#1) and Ends (#2).
- 2.) Once the Body (#1) and Ends (#2) have been separated, remove the Body Seal (#6).
- 3.) Make sure the Ball is in the closed position, thus the Ball (#3) can be taken out easily from the Body (#1).
- 4.) Once the Ball (#3) is removed from the Body (#1), take out the Seats (#5).

#### B REMOVING STEM THE ASSEMBLY

- 1.) Remove Handle (#15) by removing the Handle Nut (#16).
- 2.) Remove Stem Nut (#16), Belleville Washers (#11), Gland (#9), Stem Packing (#10) and Stem Gaskets (#8).
- 3.) Push the Stem (#4) down into the body cavity to remove. Once removed, take off the O-Ring (#12) and Thrust Washer (#7).



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**C INSPECTION**

- 1.) The ball and the surfaces of the seats should be free of pits marks and scratches. Light marring from the action of the ball against the seats is normal and will not affect the operation of the valve.
- 2.) The stem, thrust bearing, stem seal and the surrounding body surfaces should be free of pit marks and scratches.

**D REASSEMBLY**

- 1.) Apply an adequate amount of lubricant, compatible with the media being handled, around the Body Bolts (#16) and Stem (#4).
- 2.) For stem assembly, disassembly procedure should be followed in reverse order.
- 3.) When stem assembly is complete, tighten Stem Nut (#16) according to the values in Table A.
- 4.) Insert a Seat (#5) into the Body (#6) followed by the Ball (#3) making sure the Stem (#4) is in the close position so that the stem slot engages with the tang at the base of the stem.
- 5.) Make sure the Body Seal (#6) rests squarely on the recess of the ends.
- 6.) Make sure the seats rest firmly on the back surface of each recess.
- 7.) Insert and tighten Body Bolts (#16) accordance with the cross pattern procedure.
- 8.) In the final assembly step, ensure that the body bolts are tightened accordingly to the torque values in Table A.

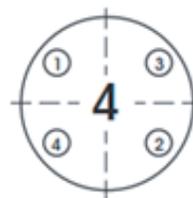
**TORQUE SPECS**

Certain precautions need to be followed when tightening bolts down to their corresponding torques to prevent bolt galling. There are two passes each bolt has to undergo during the process, first pass and the final pass. Once every bolt has met the first pass requirement, the final pass can be initiated. When tightening down bolts, it is necessary to follow the corresponding bolt pattern shown below.

**TABLE A: TORQUE REQUIREMENTS (in-lbs.)**

Valve Size	Bolt Pattern	Body Bolts		Stem Nuts
		First Pass	Final Pass	
1"	4	96	160	100
1-1/2"	4	240	400	160
2"	4	240	400	160
2-1/2"	4	348	580	200
3"	4	348	580	200
4"	4	348	580	270

**BOLT TIGHTENING SEQUENCE**





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**REPAIR KITS**

Repair Kits are available from SVF Flow Controls. Table B shows what the kits consist of. When ordering a Repair Kit, please be sure to specify type and size of the valve.

When repairing a valve, use only SVF Flow Controls authorized spare parts including bolts and nuts. If additional items are required, (body and ends) it is normally recommended to replace the complete valve. Components from different valve series should never be used with the repair of any other valve. If the valve is altered in any way, no liability can be accepted by SVF Flow Controls.

**TABLE B: GENERAL REPAIR KIT**

Part	Quantity
Thrust Washer	1
Stem Seals	3
Bushing	1
Seats	4
Body Seals	4
O-Ring	1

MATERIAL OF CONSTRUCTION		
Item #	Description	Material Specification
1	Body	Stainless Steel ASTM A351 CF8M Carbon Steel
2	Ends	Stainless Steel ASTM A351 CF8M Carbon Steel
3	Ball	Stainless Steel ASTM A182 316
4	Stem	Stainless Steel ASTM A27G 31G
5	Seat	RPTFE
6	Seal	PTFE
7	Thrust Washer	SS201
8	Stem Gasket	PTFE
9	Packing Gland	Stainless Steel ASTM A276 304
10	Stem Packing	PTFE
11	Belleville Washers	Stainless Steel ASTM A276 304
12	O-Ring	Viton
13	Stop Pin	SS201
14	Screw Nail	Stainless Steel ASTM A193-B8
15	Handle	Stainless Steel ASTM A276 304
16	Stem Nut	SS304
17	Body Bolts	Stainless Steel ASTM A193-B8

