



INSTALLATION, OPERATION & MAINTENANCE FOR SVF SERIES 41C (41Rev3) BALL VALVES



GENERAL

SVF Ball valves have 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 41 Rev3 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.

If requested, valves can be shipped from the factory containing a silicon based lubricant which aids in the assembly of the valve. This may be removed with a solvent if found intolerable.

Certain ferrous valves are phosphate and oil dipped during the course of manufacture, but they are completely non-toxic and the valves are quite safe to use for edible or potable products.

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.

!!!CAUTION! Safety Precautions!!!

Before removing valve from pipeline NOTE that:

Media flowing through a valve may be corrosive, toxic, flammable, 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.

By checking line gauges ensure that no pressure is present at the valve.

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

These valves, when installed, have body connectors which form an integral part of the pipeline and the valve cannot be removed from the pipeline without being dismantled.

Valves and accessories must not be used as a sole support of piping or human weight. Safety accessories such as safety relief (overpressure) valves 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 either direction. Carefully exclude pipe sealants from the valve cavity. When installing, use standard gaskets suitable for the specific service. Tighten flange bolts or studs evenly.

OPERATION

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

SVF valves have ¼ turn operation closing in a clockwise direction. It is possible to see when the valve is open or closed by the position of the wrench handle. When the wrench is in line with the pipeline, the valve is open.

Any media which might solidify, crystallize or polymerize should not be allowed to stand in the ball valve cavities unless regular maintenance is provided. If minimal maintenance is required, SVF offers steam jacketed ball valves.

TORQUE REQUIREMENTS

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, line pressure and type of valve seat.

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 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 gland nut. Further maintenance necessitates dismantling of the valve.

LEAKAGE AT END CAP JOINT

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

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 close position, a seat or ball sealant surface may be damaged and it will be necessary to disassemble the valve.

NOTE: If Stem leakage and leakage at the end cap joint are not cured by simple means described above, it is necessary to dismantle the valve. If there is no stem leakage the stem assembly should not be touched.



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REBUILDING

Before rebuilding, check that all the correct components are available and that they are 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 disassembly by relieving the line pressure and flushing the line with the valve in the partially open position. Protective clothing, face shields, gloves, etc., MUST BE USED for this operation.

A DISASSEMBLY OF VALVE (Removed from line)

- 1.) Remove the End Cap (#2) by using the Plug Remover.
- 2.) Once the End Cap (#2) has been separated from the Body (#1), remove the Body Seal (#6) along with the Seat (#5).
- 3.) Make sure the Ball is in the closed position, thus the Ball (#3) can be taken out easily from the body.
- 4.) Once the Ball (#3) is removed from the Body (#1), take out the remaining Seat (#5).

B REMOVING STEM ASSEMBLY – 1-1/2” to 2”

- 1.) Remove Handle (#13) by removing Handle Nut (#14).
- 2.) Remove Tab Lock (#12), Stem Nut (#11), Belleville Washers (#10), Gland (#9), Bushing (#8), and Stem Seals (#7)
- 3.) Push the Stem (#4) down into the body cavity to remove, once removed take off the Thrust Washer (#16) from the Stem.

B-1 REMOVING STEM ASSEMBLY - 3” to 4”

- 1.) Loosen Set Screw (#21) on Handle Adapter (#22) to remove the Pipe Handle (#23) and Triangular Stopper (#18).
- 2.) Remove Tab Lock (#12), Stem Nut (#11), Belleville Washers (#10), Gland (#9), Bushing (#8), and Stem Seal (#7).
- 3.) Push the Stem (#4) down into the body cavity to remove, once removed take off the Thrust Washer (#16).

C INSPECTION

- 1.) The ball and the surfaces of the seats should be free of pit 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 and body surfaces, which the thrust washer and Stem Seals make contact with, 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 Ball (#3), Seats (#5), Body Seal (#6), Stem (#4), and Thrust Washer (#16).
- 2.) For stem reassembly, disassembly procedure should be followed in reverse order.
- 3.) When stem assembly is complete, tighten Stem Nut (#11) according to the values in Table A.
- 4.) Insert a Seat (#5) into the Body (#1). With the Stem (#4) in the close position, insert the Ball (#3) into Body (#1) so that stem slot engages with the tang at the base of the stem.
- 5.) Make sure Body Seal (#6) rests squarely on center seal surface of the body. Insert and tighten End Cap (#2).
- 6.) Insert the remaining seat onto the End Cap (#2). Make sure Seats (#5) rest firmly on back surface of each recess.
- 7.) In the final assembly step ensure that the End Cap is tightened to torque values according to Table A.



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TABLE A: TORQUE REQUIREMENTS (in-lbs)

| Valve Size | End Cap Torque Stainless Steel or Carbon Steel | Stem Nuts | |
|------------|--|----------------|-----------------|
| | | Torque To Open | Torque To Close |
| 1-1/2" | 3582 | 160 | 140 |
| 2" | 4733 | 160 | 140 |
| 3" | 5426 | 200 | 180 |
| 4" | 7206 | 270 | 250 |
| 6" | 12391 | 445 | 355 |

REPAIR KITS

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

When repairing a valve use only SVF Flow Controls, Inc. authorized spare parts including; bolts and nuts, etc. In addition to maintenance kits, spare parts are available from SVF Flow Controls, Inc. They are: balls, stems and glands. If additional parts are required (body and ends) it is normally recommended that the complete valve be replaced.

Components from a different valve series should not 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, Inc.

NOTES:

TABLE B: GENERAL REPAIR KIT

| Part | Quantity |
|--------------------|----------|
| Thrust Washer | 1 |
| Stem Seals | 3 |
| Belleville Washers | 2 |
| Seats | 2 |
| Body Seal | 1 |



MATERIALS OF CONSTRUCTION FOR SVF SERIES 41C (41Rev3) BALL VALVES

| Item # | Part Name | Materials | | Recommended Spare | Wetted |
|--------|-------------------------------|-----------|-----------|-------------------|--------|
| 1 | Body | A351-CF8M | A216-WCB | - | X |
| 2 | End Cap | A351-CF8M | A216-WCB | - | X |
| 3 | Ball | A351-CF8M | | - | X |
| 4 | Stem | SUS316 | | - | X |
| 5 | Seats | TFM1600™ | SupraLon™ | X | X |
| 6 | Body Seal | GRAFOIL® | PTFE | X | X |
| 7 | Stem Seals | GRAFOIL® | PTFE | X | - |
| 8 | Bushing | SUS304 | | X | - |
| 9 | Gland | SUS316 | | X | - |
| 10 | Belleville Washers | SUS301 | | X | - |
| 11 | Stem Nut | A194-8 | | - | - |
| 12 | Tab Lock | SUS304 | | - | - |
| 13 | Handle (1-1/2" ~ 2") | A351-CF8M | | - | - |
| 14 | Handle Nut | A194-8 | | - | - |
| 15 | Locking Device (1-1/2" ~ 2") | SUS304 | | - | - |
| 16 | Thrust Washer | SupraLon™ | | X | X |
| 17 | Anti-Static Device | SUS316 | | - | - |
| 18 | Triangular Stopper (3"~6") | SUS304 | | - | - |
| 19 | Stop Bolt | A193-B8 | | - | - |
| 20 | Stop Washer | SUS304 | | - | - |
| 21 | Adapter Set Screw (3"~6") | A193-B8 | | - | - |
| 22 | Pipe Handle Adapter (3"~6") | A351-CF8 | | - | - |
| 23 | Pipe Handle (3"~6") | SUS304 | | - | - |
| 24 | Pipe Handle Set Screw (3"~6") | A193-B8 | | - | - |

