

## Installation, Operation & Maintenance (IOM) for SVF HIGH PRESSURE Three-Piece Series "H7" Ball Valves

SVF Flow Controls, Inc. 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.

This document includes information for SVF Series "H7" Three-Piece, High Pressure Ball Valves.

### !!! 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.

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 (See "DISMANTLING" – page 2).

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.

### TOOLS

No special tools are required for maintenance of SVF Flow Controls, Inc. valves. NOTE: Valve nuts and bolting are Metric.

The following instructions refer to SVF H7 series High Pressure ball valves.

### UPON RECEIPT

Prior to installation, inspect the valve for shipping damage. Keep protective covers in place until installation of valve to pipe line. During installation check to insure the handle is in the fully open position in order to prevent possible damage to the ball. After installation cycle the valve before putting into service. Do not leave the valve in the partially open position. All standard valves may be installed for flow in either direction.

## DISMANTLING

Valves with screwed ends should be treated as a single unit, and should not be dismantled when installing to pipeline. Regular joining material in correct quantities should be used. The valve should be screwed on to the pipeline using a standard pipe wrench or spanner. Avoid excessive tightening.

When "back-welding" is required on screwed valves, they must be dismantled and treated as weld-end valves. Carbon Steel valves may have a "black oxide" and oil dipped finish. This non-toxic process is performed to retard rusting. Stainless steel valves have their natural finish.

## OPERATION

Valve operation works by operating the valve handle 90° turn counter-clockwise to open, and 90° turn clockwise to close. On manually operated valves the valve is open when the handle is parallel with the pipe line and closed when the handle is perpendicular to the pipe line.

A silicone based lubricant is applied to assist valve break in. The lubricant, if unacceptable, may be removed by a solvent wash.

## MAINTENANCE

SVF valves have a long and trouble free life, and maintenance is seldom required. When maintenance is necessary, valves can be refurbished on site.

To extend valve performance and reduce possible plant problems, the following procedures should be followed. Handle all parts carefully and clean before reassemble. Check ball, stem, and body bolts for wear, corrosion or damage.

## PRIOR TO DISMANTLING VALVE

If leakage is noticed at the stem area, tighten the gland nut 1/6 turn at a time, until leakage ceases. Should the leakage continue, the valve body will require to be disassembled to replace faulty stem seals.

Valves that exhibit through seat leakage or high operating torque's may be damaged.

The media flowing through a pipeline may be toxic, corrosive, flammable or of a contaminant nature.

Utmost care has to be taken when there is harmful media flowing through the valve.

The following safety precautions are recommended when dismantling valves with hazardous media:

## SAFETY PRECAUTIONS:

1. Always wear eye shield.
2. Always wear protective head gear.
3. Always wear protective clothing & gloves.
4. Wear protective footwear.
5. Have a suitable fire extinguisher when media is flammable.

## REFURBISHING

When a valve requires to be refurbished rather than serviced, only SVF's authorized spare parts should be used.

Refurbishing kits from SVF consist of the following:

1. Seat ring x 2
2. Gland packing x 2 or 3
3. Stem thrust ring x 1
4. Body seals x 2

In addition to refurbishing or maintenance kits, spare parts available from SVF are:

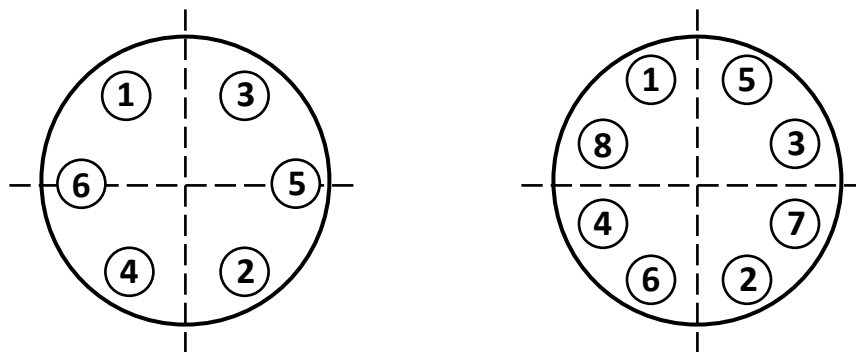
Valve balls, stems, glands, bolts, screws and nuts. Should additional parts be required, it is generally recommended that the complete valve be replaced.

When ordering repair kits, give the valve size, the seat ring material required.

**Follow the instructions below for refurbishing:**

1. Cycle the valve with the line pressure fully relieved before attempting to remove the valve from the pipeline, to insure pressure has also been discharged from the valve cavity.
2. Bring the valve handle to the open position.
3. With the valve in the open position, remove body connector bolts.
4. Remove the body from between the end connectors. (½" H7 valve cannot be removed from line without separating the end connectors).
5. Remove and discard the seat rings and body seals.
6. Support the ball to prevent it from falling out of body and turn handle to the closed position for its removal. Set the ball aside in clean secure area for reuse.
7. Stem assembly - remove the wrench nut, serrated washer, handle, locking clip, gland nut, disk springs, gland and gland packing. Care being taken not to scratch or nick the packing bore area of the body.
8. Place all components removed, in clean secure area.
9. Push the stem down into the body and remove it to clean secure area. Discard the stem thrust ring from the stem.
10. Clean the stem and packing bore area, taking care not to damage them.
11. Lubricate the new stem thrust ring and packing, with appropriate lubricant (Molycote 33 - thin film).
12. Place the stem thrust ring on the stem and insert the stem up into the center body.
13. Insert the new packing over the stem and into the body bore. Place the gland and two disk springs onto the stem. The first spring concave side up and the second spring concave side down. (See valve illustration).
14. Thread the gland nut onto the stem. Tighten the gland nut to the torque figures (table 2).
15. Place the locking clip on the gland nut by adjusting the orientation of the nut (in the clockwise direction).
16. Place the handle, serrated washer and thread the wrench nut on the stem.
17. Bring the handle to the closed position to insert the ball.
18. Place the ball in the center body until the stem tang is engaged and bring the valve to the open position to prevent the ball from falling out.
19. Place the new body seals and new seat rings in the body.
20. Ease body assembly between body connectors, taking care not to score faces or damage seals, and reinstall body bolts and nuts.
21. Tighten the body bolts according to the bolt tightening sequence (Figure 1) and according to the torque tables (Table 1).
22. Leave the valve in the open position for flushing the line.

**Figure1 – Bolt Tightening Sequence**



IOM for SVF "H7" Series Three-Piece Ball Valves – Doc #IOM-H7-06/2010 Updated June, 2010

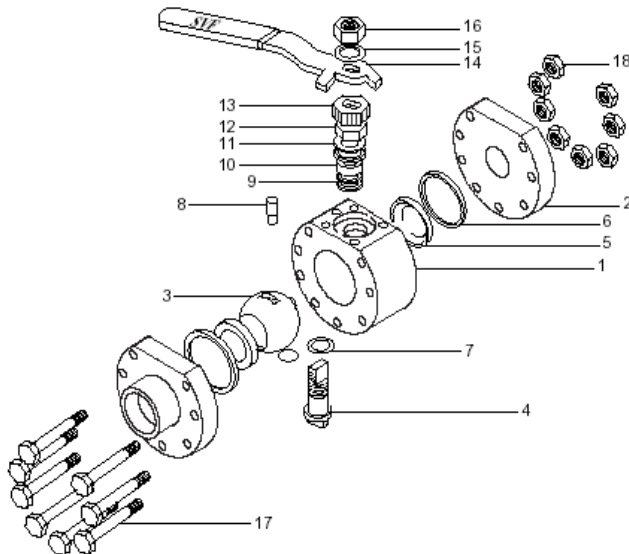
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Table 1 – Torque Requirements (in-lbs)

H7 Body Bolts						
Valve Size	Bolt Pattern	Stainless Steel		Carbon Steel		Stem Nut
		First Pass	Final Pass	First Pass	Final Pass	
1/4"	6	156	260	156	260	35
3/8"	6	156	260	156	260	35
1/2"	6	156	260	156	260	35
3/4"	6	156	260	156	260	35
1"	6	213	355	213	355	80
1-1/4"	6	348	580	348	580	80
1-1/2"	8	450	750	450	750	120
2"	8	450	750	450	750	120
2-1/2"	8	792	1320	792	1320	270
3"	8	792	1320	792	1320	530
4"	8	1410	2350	1410	2350	530

**Materials of Construction**



No.	Description	Material	
		Carbon Steel	Stainless
1	Body	ASTM A-105	316L SS
2	End Connector	ASTM A-105	316L SS
3	Ball	*316 SS	*316 SS
4	Stem	17-4PH SS	17-4PH SS
5	Seat	Delrin, PEEK	Delrin, PEEK
6	Seal	NBR	NBR
7	Stem Thrust Seal	Nylatron, PEEK	Nylatron, PEEK
8	Stop Pin	316	316
9	Gland Packing	**PTFE	**PTFE
10	Gland	316 SS	316 SS
11	Disc Spring	17-7PH SS	17-7PH
12	Gland Nut	C. Steel Zinc Plate	316 SS
13	Tab Washer	SS	SS
14	Wrench	C. Steel Zinc Plate	316 SS
15	Serrated Washer	SS	SS
16	Wrench Nut	C. Steel Zinc Plate	316 SS
17	Body Bolt	C. Steel Zinc Plate	316 SS
18	Body Nut	C. Steel Zinc Plate	316 SS

\*17-4PH for sizes 1/2" - 3/4"

\*\* 25% carbon filled, graphite