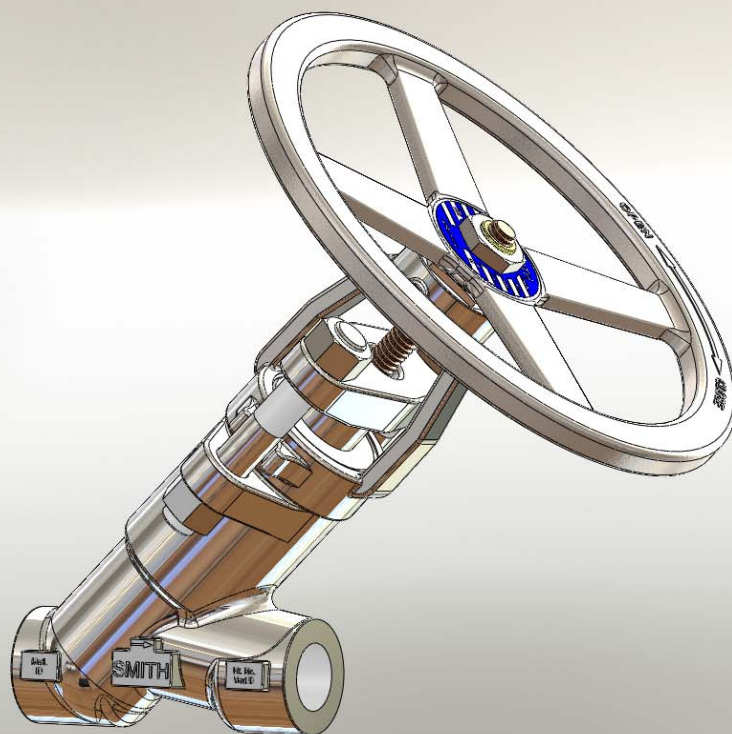


SMITH VALVES



Installation, Operation, and Maintenance Manual

Y-Pattern Bonnetless Globe Valves

TNC Doc EDC 308, Revision 0, Issued February 2010



1.0 Safety Precautions and Warnings

This manual is provided as general guide for the repair and maintenance of this valve. It provides the general safety precautions and warnings to conduct an accident free repair. However, it is not possible to describe all configurations or maintenance situations. We do recommend that this entire document be read prior to proceeding with any work.

Installation, maintenance, adjustment, repair and or testing of any valve is a dangerous job. This work should only be conducted by qualified technicians having the necessary skills and adequate training. At all times, proper safety gear or personal protective equipment shall be worn when servicing a valve.

The End User is advised that misapplication of this product may result in injuries or property damage. A selection consistent with a particular performance requirement is important for proper application.

A valve is a pressurized device containing energized fluids and should be handled with appropriate care. Valve surface temperature may be dangerously too hot or too cold to the skin.

Do not use any valve in applications where either the pressure or temperature is higher than the allowable working values. Also, valves should not be used in fluids if not compatible with the valve material of construction, as this will cause chemical attacks.

Upon disassembly, attention should be paid to the possibility of releasing dangerous and or ignitable accumulated fluids. Adequate ventilation should be available for service.

2.0 Installation

Piping should be properly aligned and supported to reduce mechanical loading on the end connections. Flange stud nuts should be tightened in a criss-cross pattern in equal

increments to ensure proper gasket compression.

Insufficient clearance for the stem in the fully open position may cause the valve to be inoperable. Inadequate clearance for valves may add mechanical loading to valve ends. Sufficient clearance should be allowed for threaded valves to be “swung” during installation.

Y-pattern globe valves are uni-directional and may be installed in any position or orientation.

When welding in-line, valves should be lightly closed to prevent damage to the seating surfaces and stem due to thermal expansion.

Furnace heating of a complete valve assembly for Post Weld Heat Treatment (PWHT) is not recommended as supplied valve trim part material conditions can be adversely impacted and the packing and gasket may be damaged or destroyed.

3.0 Operation

This valve should not be used continuously at openings less than 25%.

A cool valve may leak through the gland when opened to hot fluid. Wait before tightening the packing as the problem may go away.

Over tightening of packing gland bolts will cause the packing to fail prematurely as well as increasing the force required to operate the valve.

The valves should not be left in the fully back seated position under normal operating conditions. The packing may dry out under these conditions and leak as the valve is closed.

Back seating the valve and attempting to repack under pressure is hazardous and is not recommended. Rather than attempting to repack under pressure, it is preferable to use the backseat to control the stem leakage until a shutdown provides safe repacking conditions.

4.0 Maintenance and Repair

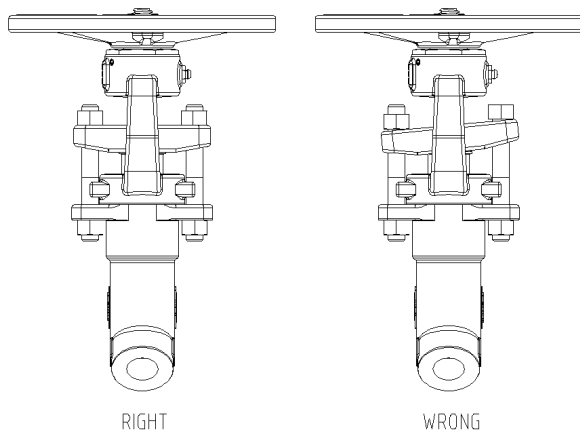
4.1 Tools Required

Aside from standard wrenches, the only tool needed for Smith valve maintenance is the torque tool and the re-finishing tool kit.

4.2 Packing

Special care is to be placed in the tightening of gland nuts during maintenance, in order to get the proper packing adjustment and functionality.

The packing gland should be checked periodically in service and tightened as necessary to stop leakage around the stem. Tighten in a manner to develop uniform loading on the gland. Tighten only enough to stop the leak.



If the leak cannot be stopped by tightening the gland nuts, it may be necessary to add additional packing rings or completely repack the valve.

The factory installed graphite packing rings are die formed and unflexible for installation in an assembled valve. As a result, these rings cannot be replaced without removing the valve yoke. If the valve is to be repacked without removing the yoke (see re-packing the valve in line below), care must be taken when removing the original packing not to scratch the valve stem or stuffing box sealing surfaces.

For valve sizes ≤ 1 " , remove the yoke and use a wrench on the stem flats to unthread the backseat bushing. Then pull entire assembly out of the valve body.

For valve sizes > 1 " , remove the yoke and use picker to remove all packing material. Utilize

threaded rods into the packing ring 10-24UNC threaded holes to pull and remove it and expose the backseat bushing key. Use the torque tool to unthread the backseat bushing from the body.

Where it is necessary to repack the valve in line, a compatible ribbon packing system or equivalent braided packing stock should be used. The joints in the packing rings should be diagonally cut. When installing the rings, care should be taken to stagger the ring joints.

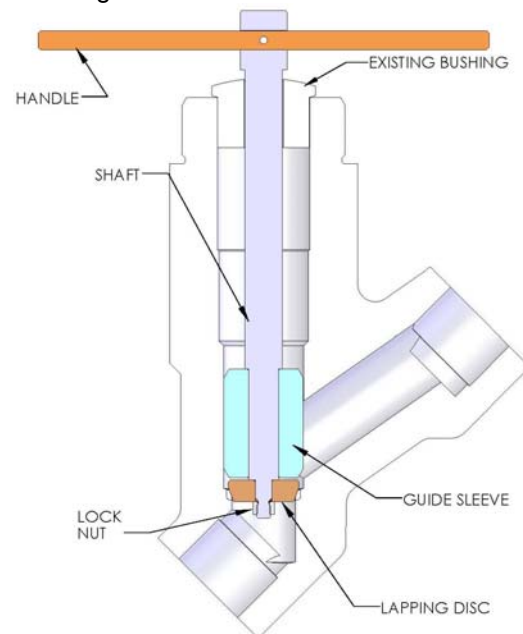
Other specialty packing such as V ring Teflon will require that the valve be disassembled if repacking is required.

4.3 Stem Thread Lubrication

The Smith Y-Pattern globe valve yoke nut and thrust bearing chamber requires lubrication for a smooth valve operation. Should it be necessary to re-lubricate the bearing in service, use the grease fitting to add more lubrication.

4.4 Seat re-finishing

The Smith Y-Pattern Globe valve seat is integral to the valve body and may be refinished using a fast and easy in line repair tool. Completely isolate the valve to be repaired from any pressure or temperature source. Repair in line or remove valve for a remote repair. Disassemble the valve in reverse order given below and utilize the re-finishing tool as shown.





5.0 Maintenance and Repair

1. Insert bottom end of Item 5 Stem into Item 4 Disc.
2. Line up wire groove and insert Item 34 Disc Wire into Disc/Stem.
3. Insert Item 29 Back Seat Ring over Item 5 Stem back seat angle.
4. Insert Item 32 Back Seat Bushing over Item 5 Stem Hex. Lubricate Item 32 Back Seat Bushing threads with light oil or Teflon spray. Insert assembly into Item 1 Body and thread Item 32 Back Seat Bushing into Item 1 Body. To do this best, push on top of Item 32 Back Seat Bushing as you rotate Item 5 Stem. (For valve sizes <= 1", utilize Item 5 Stem flats to thread and torque Item 32 Back Seat Bushing to values given in Table 1. Then skip to Step 8).
5. For valve sizes > 1", insert Torque tool over Item 5 Stem and engage torque slot and key.
6. Utilize a hand drill to torque to given value in Table 1. Remove Torque tool.
7. Insert Item 20 Packing Ring, Item 8 Packing set or individual rings, and Item 9 Gland Bushing over and around Item 5 in body.
8. Insert Item 10 Gland Flange between both Item 30 Yoke arms.
9. Pull Item 5 Stem through center of both Item 10 Gland Flange and Item 30 Yoke.
10. Thread Item 30 Yoke all the way down into Item 1 Body.
11. Make sure Item 30 Yoke ears are aligned with Item 1 Body and Item 10 Gland Flange holes. Re-adjust if necessary.
12. Lubricate both sets of Item 35 Thrust Bearing/washer assemblies with bearing grease.
13. Place first set of Item 35 Thrust Bearing/washer assemblies on Item 30 Yoke.
14. Also lubricate Item 5 Stem threads with bearing grease..
15. Thread Item 31 Yoke Nut over Item 5 Stem threads. This is a Left Hand thread.
16. Place second set of Item 35 Thrust Bearing/washer assembly over and on top of Item 31 Yoke Nut.
17. Add lubrication over Item 35 Thrust Bearing/washer assembly to fill cavity up to the bottom of Item 5 Stem threads.
18. Thread Item 33 Yoke Nut Retainer unto Item 30 Yoke.
19. Place Item 16 Handwheel over Item 31 Yoke Nut.
20. Place Item 17 Nameplate over Item 16 Handwheel.
21. Thread Item 19 Handwheel Nut unto Item 31 Yoke Nut threads.
22. Thread first Item 13 Gland Stud Nut on short threaded end of Item 11 Gland Stud.
23. Insert from bottom Stud/Nut assembly through Item 1 Body, Item 30 Yoke, and Item 10 Gland Flange.
24. Secure the second Item 13 Gland Stud Nut on top of Item 10 Gland Flange.
25. Repeat steps 23 - 25 for the second gland stud/nut assembly.
26. After a successful API 598 test, tack weld Item 1 Body to Item 30 Yoke. Install Item 36 grease fitting into Item 30 Yoke. Thread and lock Item 37 Set Screws into Item 19 Handwheel Nut and Item 30 Yoke.

TABLE 1

VALVE SIZE	BUSHING TORQUE	TORQUE TOOL #	RE-FINISHING KIT #
1/2-3/4"	105 ft-lbs	(Note 1)	Y162-075-KIT
1"	178 ft-lbs	(Note 1)	Y162-100-KIT
1 1/2"	550 ft-lbs	Y162-150-TRK	Y162-150-KIT
2"	604 ft-lbs	Y162-200-TRK	Y162-200-KIT

Note 1: Use Flats below the threads on Item 5 Stem.



6.0 Valve Components

ITEM #	PART DESCRIPTION	PART NUMBER	QTY.
1	BODY	Y162-###-16--F	1
3	INTEGRAL SEAT	-	-
4	DISC	Y162-###-15--F	1
5	STEM	Y162-###-05--F	1
8	PACKING SET	Y162-###-11A--F	1 SET
9	GLAND BUSHING	Y162-###-08--F	1
10	GLAND FLANGE	Y162-###-07--F	1
11	GLAND STUD	Y162-###-09--F	2
13	GLAND STUD NUT	Y162-###-06--F	4
16	HANDWHEEL	Y162-###-010#-F	1
17	NAMEPLATE	Y162-P#0-####-F	1
19	HANDWHEEL NUT	Y162-###-240--F	1
20	PACKING RING	Y162-###-10#--F	1
29	BACK SEAT RING	Y162-###-42#--F	1
30	YOKE	Y162-150-12#-F	1
31	YOKE NUT	Y162-###-04#--F	1
32	BACK SEAT BUSHING	Y162-###-43#--F	1
33	YOKE NUT RETAINER	Y162-###-460--F	1
34	DISC WIRE	Y162-###-410--F	1
35	THRUST BEARING	Y162-###-470--F	4
	THRUST WASHER	Y162-###-480--F	2
36	GREASE FITTING	Y162-200-400--F	1
37	SET SCREW	Y162-200-450--F	2
38	TORQUE TOOL	Y162-###-TRK	1
39	RE-FINISHING KIT	Y162-###-KIT	1 SET

