



**Engineered Valves
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INSTALLATION AND MAINTENANCE INSTRUCTIONS FIGURE C67 FABRI-VALVE® BI-DIRECTIONAL KNIFE GATE VALVE

CAUTION: IF THE VALVE IS TO BE STORED FOR A LONG PERIOD OF TIME BEFORE INSTALLATION IT SHOULD BE STORED IN A VERTICAL POSITION AND IN A COOL, CLEAN AREA TO PREVENT DAMAGING EFFECTS ON THE PACKING.

INSTALLATION:

Use a gasket material suitable for the pressure, temperature, and media and cut to fit raised face of the valve.

Bolt the valve to the mating flange using proper size bolts. If stainless bolts are used, lubricate threads to prevent galling. It is recommended that studs be used in the tapped holes in the chest area. If bolts are used select lengths that will not cause bolt to bottom out in flange hole before sealing gasket.

When tightening flange bolts work from side to side to ensure even compression of the gasket. The amount of torque required is determined by the type of gasket, line pressure, type of bolt and bolt lubrication.

All valves are pressure and seat tested before shipment. The packing gland may require some adjusting after line pressure is up to normal. Tighten just enough to stop leakage. Overtightening may cause undue pressure against the gate making the valve difficult to operate and cause rapid packing wear. If possible, stroke the valve a few times before setting packing bolts. Each valve is seat tested at 40 psi and maximum working pressure for seat leakage.

If the valve is installed in horizontal position and a powered actuator is included with the valve, support of the actuator may be required. Consult the factory for technical advice.

Air operated valves must be supplied with clean, dry, regulated air.

CAUTION: THE VALVES ARE SUPPLIED WITH CYLINDERS SIZED FOR A SPECIFIED AIR PRESSURE AND PRESSURES EXCEEDING THIS MAY CAUSE DAMAGE TO THE VALVE. AIR REGULATORS AND AIR FILTERS ARE AVAILABLE FROM YOUR ITT SALES REPRESENTATIVE.

CAUTION: CLOSED POSITION STOP IS SET AT THE FACTORY TO PROVIDE SHUTOFF. DO NOT OVERRIDE. TOO MUCH COMPRESSION OF THE GATE INTO THE SEAT WILL DAMAGE THE RUBBER

MAINTENANCE:

TO REPACK STUFFING BOX:

DANGER: RELIEVE THE PRESSURE ON THE INSIDE OF THE VALVE BODY AND PREVENT THE VALVE FROM CYCLING BEFORE REPACKING TO AVOID INJURY.

1. Disconnect stem from gate. Raise stem.
2. Remove gland nuts and raise the packing gland.
3. Remove old packing and clean the packing chamber.
4. Install new packing per table below. Cut to length to fit along each side of the gate. The ends must be square cut. Wrap the ends with TFE tape to prevent fraying. Note that a packing support bar is placed on the bottom of the stuffing box and the packing is placed on the bar. The orientation of the bar should minimize the gap between the body chest and the gate.

Valve Size	Number Rows (per side)	Packing Size	Packing Length
2	3	1/4	2 1/4
3	3	1/4	3 1/4
4	3	1/4	4 1/4
6	3	3/8	6 5/8
8	3	3/8	8 5/8
10	3	3/8	10 5/8
12	3	3/8	12 5/8
14	3	1/2	14
16	3	1/2	16
18	4	1/2	18
20	4	1/2	20
24	4	1/2	24
30	4	1/2	31
36	4	3/4	37

5. Reseat the packing gland and replace the packing nuts, making sure the gate is centered. Tighten the nuts just to the point that the gland contacts and sets the packing. Do not tighten completely.
6. Lower the stem and reconnect to the gate.
7. Pressurize the valve to the working pressure and tighten the gland nuts evenly from side to side until leakage is stopped. Do not over tighten.

LUBRICATION:

The stem and stemnut are lubricated at the factory before shipment. However, these parts should be lubricated periodically to prevent wear and to minimize operating forces. Some recommended lubricants are:

- CHEVRON INDUSTRIAL GREASE-MEDIUM
- TEXACO MOLYTEX GREASE #2
- MOLY XL 47-F2-75
- FEL-PRO C5-A COMPOUND

VALVES WITH ELECTRIC ACTUATORS

Valves with electric motors should be set up as positioned closed.

SEAL REPLACEMENT:

1. Remove the entire valve (including topworks from the pipeline).
2. Secure the valve in the vertical position to a fixture, workbench, or table that is anchored to the floor. Do not block valve port when anchoring valve. **Note:** an overhead hoist is helpful especially on larger size valves.
3. Remove topworks by removing yoke fasteners and gate clamp fasteners.
4. Remove packing gland by removing gland fasteners.
5. Remove the gate from the valve. Clean the gate and smooth out any marred or rough surfaces by using a scotch-brite pad. Set gate aside until reassembly.
6. Remove the old seal by seizing a portion at the top of the valve and pulling the seal out the top of the valve. This is best done by using lockable pliers that can be locked to the seal. A chain can then be connected to one end under the pliers on the rubber. The other end of the chain can be secured to the hoist.
7. Clean and inspect the body interior for any damage or abnormalities, particularly sharp edges that may cut the seal. Smooth out as necessary.
8. Inspect the new seal and be sure it is cut to a minimum length, shown as Dimension A in table 1.
9. Cut a taper and drill a hole at both ends of the seal as shown in Fig. 1.
10. Saturate the body seal groove with liquid soap or any good water-soluble lubricant that will not harm the seal or process. Also saturate both ends of the seal.
11. Mark the center of the seal and the positions noted as Dimension C in Table 1 and Fig. 1 with a marker. The center is $\frac{1}{2}$ of the pre-cut minimum length. Also mark the bottom center of the port on the body at the 6 o'clock position.
12. Starting inside the port, at centerline (either the 3 or 9 o'clock position) as shown in Fig 3a, place one end of the seal into the seal groove as shown in Fig.2 and into the indentations cast into the inside of the port at the 3 and 9 o'clock positions, and force into groove as shown in Fig. 3b.
13. Place a hooked rod, which can be manufactured or purchased from ITT (contact factory), down through the chest opening as shown in Fig. 4. Secure the seal in the drilled hole by tapping in place with a rubber mallet. By applying constant pressure on the hook, pull the seal up the groove inside the chest as shown in Fig. 4. Continue to pull the seal until the center mark on the seal is in line with the bottom center mark on the body (6 o'clock position).
14. Repeat steps 12 and 13 for the other side of the valve body.
15. Work the seal into the bottom of the body as shown in Fig. 2 by using pliers and /or mallet. Use care not to mar the body. When the seal is in place, use a rubber mallet and tap downward on the seal to help relax it. The 'C' dimension points marked in Step 11 must be level with the top of the body to be sure seal is not overstretched.
16. Install the gate and operator topworks. Do not fasten the gate clamp to the gate. Using the operator to push the gate into the seal.
17. Stroke the gate into the seat and over stroke slightly to seat the seal into the bottom groove. This can be accomplished on handwheel actuated valves by loosening the stroke adjuster and on cylinder actuated valves by turning the gate clamp perpendicular to the gate. The reason for this is so gate pushes the seal fully into the groove. With the seal being forced fully into the seal groove, cut each end of the seal off to the required extended length given as Dimension D in table 1 (see fig. 5).
18. While leaving the gate in the closed position, retract the actuator to the open position.
19. Repack the valve by using the above packing replacement procedures.
20. On handwheel actuated valves, reconnect the gate clamp back to the gate by using the gate clamp fasteners. Adjust the stroke limiter to allow compression of the seal at the bottom of the port as follows: 1/16" for 2" through 4" valves, 3/16" for 6" through 24" valves, 1/8 for 30" valve and 3/16" for 36" valve. On cylinder actuated valves, insert the gate clamp bolt (s) through the gate clamp to secure the gate into place (do not install the gate clamp nut (s)). Close the valve and inspect the seal compression at the bottom of the port. This compression should be the same as on handwheel actuated valves. Adjustments

to seal compression can be made by either screwing the gate clamp in or out of the cylinder rod. When the compression is set install the gate clamp nut (s) on bolt (s) and tighten.

CAUTION: FAILURE TO ADJUST CLOSED POSITION PROPERLY MAY CAUSE LEAKAGE, DAMAGE, OR PREMATURE FAILURE OF SEAL.

21. Adjust the packing for tight shutoff when the valve is installed and pressurized to operating pressure.

Maintenance manuals for cylinders, electric motors, and other accessories are available from the factory.

TABLE 1

VALVE SIZE	OVERALL LENGTH A	IN BODY LENGTH B	FROM CENTERLINE TO TOP OF CHEST C	ABOVE CHEST D
2"	18"	11.8"	5.9"	1.250"
3"	21"	14.9"	7.4"	1.250"
4"	24"	18.0"	9.0"	1.250"
6"	33"	26.2"	13.1"	1.812"
8"	40"	32.9"	16.4"	1.875"
10"	47"	40.1"	20.0"	1.875"
12"	56"	47.6"	23.8"	1.875"
14"	62"	54.0"	27.0"	2.125"
16"	70"	61.0"	30.5"	2.250"
18"	77"	68.1"	34.0"	2.250"
20"	84"	74.9"	37.4"	2.250"
24"	99"	89.1"	44.5"	2.250"
30"	125"	110.88"	55.44"	3.000"
36"	169"	135.56"	67.8"	4.000"

Figure 1

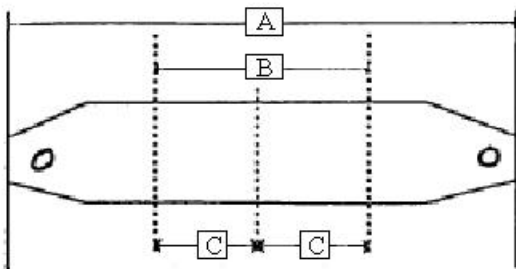
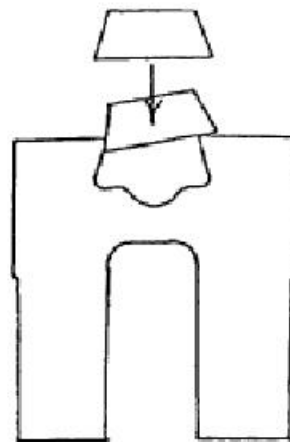
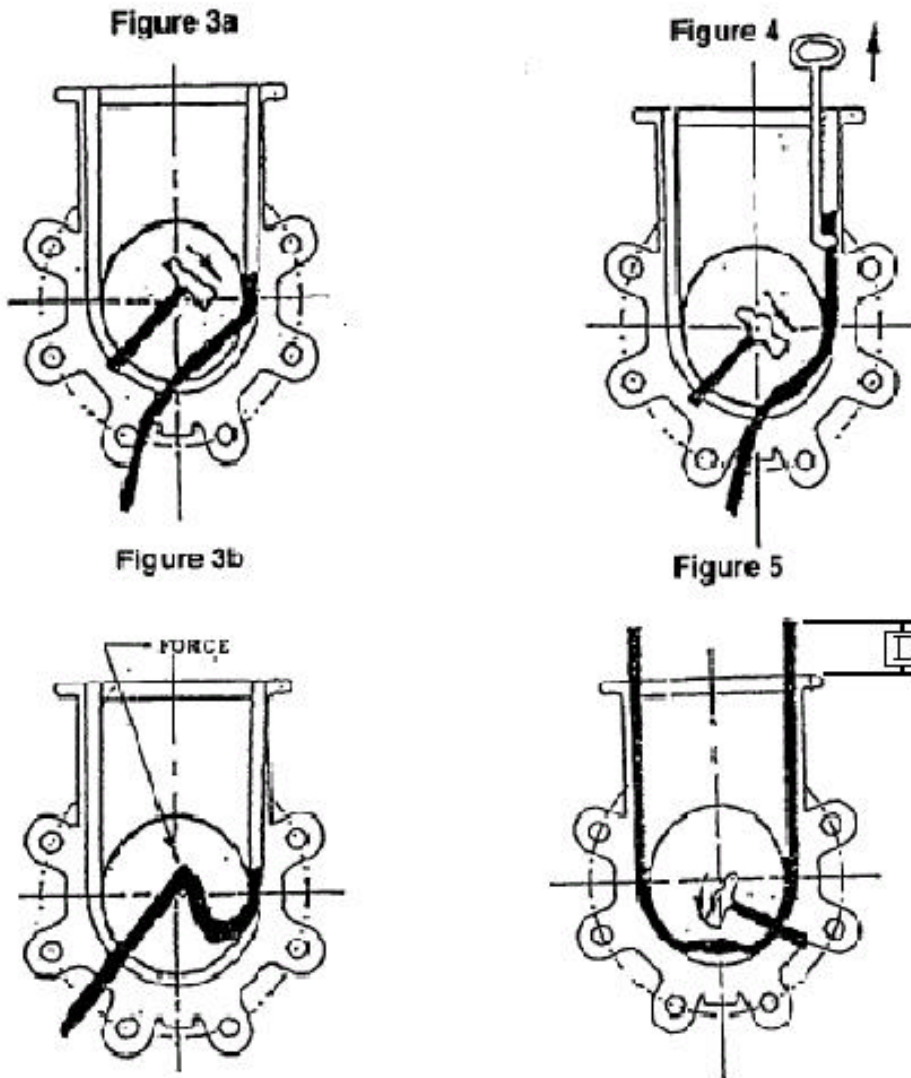


Figure 2





WARNING:

Valves and valve actuators supplied by ITT Engineered Valves are designed and manufactured using good workmanship and materials, and they meet the applicable industry standards. These valves are available with components of various materials, and they should be used only in services recommended herein or by a company valve engineer. Misapplication of the product may result in injuries or property damage. A selection of valve components of the proper material consistent with the particular performance requirement is important for proper application.

Examples of the misapplication or misuse of a valve or valve actuator includes use in an application that exceeds the pressure / temperature rating, or failure to maintain the equipment as recommended.