

## **INSTALLATION AND MAINTENANCE INSTRUCTIONS**

### **FIGURE C33**

### **FABRI-VALVE<sup>®</sup> PORTED SLIDE GATE VALVE**

**CAUTION: IF THE VALVE IS TO BE STORED FOR AN EXTENDED 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**

This valve is double-seated and bi-directional. It may be installed in either direction.

The seats form a seal between the mating flange and the valve flange. The seats will extend the face-to-face of the valve by approximately 1/8 to a 1/4 of an inch. If the seats extend beyond this or come completely out, verify that no obstructions are preventing the seat face from reaching the valve gate. **NO FLANGE GASKETS SHOULD BE USED WHEN INSTALLING THE VALVE.** Use of flange gaskets will decrease the life of the seats and increase the actuator thrust requirements of the valve. **FULLY OPEN OR FULLY CLOSE THE VALVE BEFORE THE SEATS ARE INSTALLED.** This will prevent the liners from being pushed into the gate port and causing actuation problems. **Note: When rubber lined pipe and flanges are used, do not tighten the flange connection more than 25% of the rubber flange thickness or 1/16 of an inch maximum. For example if the rubber lining is 1/8 of an inch thick, do not compress the flange connection more than 1/32 of an inch.** Over-tightening the rubber lined flange connection will decrease the life of the seats and increase the actuator thrust requirements of the valve.

**WARNING: THESE SEATS ARE LOOSE PIECES AND NOT ATTACHED TO THE VALVE BODY. THE VALVE MUST BE INSTALLED BETWEEN TWO MATING FLANGES BEFORE PRESSURIZING. FAILURE TO DO THIS MAY CAUSE DAMAGE OR INJURY. IF THE VALVE IS INSTALLED ON THE DISCHARGE END OF A PIPELINE, A COMPANION FLANGE MUST BE BOLTED TO THE OUTLET FLANGE OF THE VALVE TO RETAIN THE REPLACEABLE SEAT.**

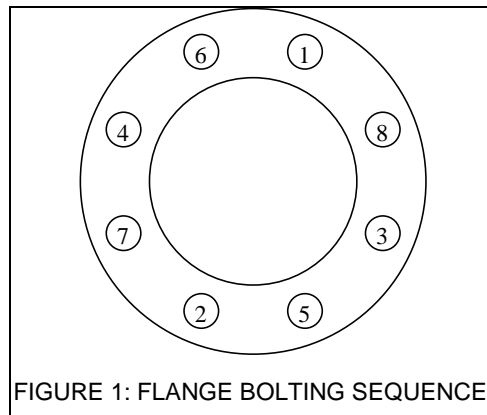
**NOTE: BOTH SEATS OF THE VALVE MUST BE FULLY SUPPORTED BY THE MATING FLANGES OF THE PIPE. IF THE INTERNAL DIAMETER (I.D.) OF THE MATING FLANGE IS 1/2" (13mm) OR GREATER THAN THE I.D. OF THE RUBBER SEATS, A LOAD DISTRIBUTION RING IS REQUIRED. CONSULT FACTORY FOR PRICING AND AVAILABILITY.**

For Metal to Metal Flange Connections:

To ensure even loading on the flanges and the replaceable seat; tighten the bolts using the sequence shown in Figure 1. The sequence is to tighten the first bolt then move 1/2 of the way around the flange to tighten the second bolt, then move 1/4 of the way around the flange for the third bolt, then 1/2 of way around the flange for the fourth. Continue this sequence (1/4 of the way, 1/2 of the way) until all the bolts are tightened and the mating flanges have metal to metal contact. The line pressure, the type of bolt, and the bolt lubrication determine the amount of torque required.

For Rubber Lined Flange Connections:

To ensure even loading on the flanges and the replaceable seat; tighten the bolts using the sequence shown in Figure 1. The sequence is to tighten the first bolt then move 1/2 of the way around the flange to tighten the second bolt, then move 1/4 of the way around the flange for the third bolt, then 1/2 of way around the flange for the fourth. Continue this sequence (1/4 of the way, 1/2 of the way) until all the bolts are tightened and the two flanges have a firm and even contact. Tighten the connection to seal between the flanges. **Do not tighten the flange connection more than 25% of the rubber flange thickness or 1/16 of an inch maximum.** Over-tightening gaskets will decrease the life of the seats and increase the actuator thrust requirements of the valve.



All valves are hydrostatically seat tested before shipment. Each is seat tested at 15 PSI and 150 PSI for seat and body leakage. Figure C33 valves will be drip tight in the open and closed positions at the above conditions. The packing gland may require some adjusting after line pressure is up to normal. Tighten just enough to stop leakage. Over tightening the packing gland 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.

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

Supply all air-operated valves with clean, dry, regulated air.

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

Installation and maintenance instructions for cylinders, electric motors, and other accessories are available from the factory.

**OPERATION:**

**GENERAL:**

In the open or closed positions, the seats provide all sealing. In the event of use with media that is hot, corrosive, or otherwise dangerous; this valve will discharge dangerous media during cycling. Do not operate this valve

unless qualified, and certain that protective measures are in place. Failure to follow the forgoing instructions may result in serious injury or death. If containment is required, order a Figure 133 that includes a bonnet and packing, which forms a secondary pressure boundary.

**CAUTION: A GATE GUARD MUST BE IN PLACE BEFORE CYCLING ALL FIGURE 33 VALVES WITH POWER ACTUATORS TO AVOID INJURY OR DAMAGE (EXCEPT THE 2" DIAMETER).**

**LOCKOUT DEVICE:**

The lockout device will work in both the open and closed positions. The locking pin is designed to lock the full operating force of the operator. To lock out the valve, cycle the valve to the fully open or closed position. Place the lockout pin assembly through the upper or lower hole located in the yoke leg depending on the position requiring lockout. The upper hole should be used to lockout the valve in the open position and the lower hole should be used to lockout the valve in the closed position. A lock can be placed on the end of the lockout pin assembly to guard against the pin being removed.

Valve diameters 2 inch - 4 inch: For lockout in the closed position, place the pin through the lower hole in both the yoke legs and the hole in the gate. For lockout in the open position, place the pin through the upper hole in both the yoke legs and the hole in the gate.

Valve diameters 6 inch - 24 inch: For lockout in the closed position, place the pin through the hole in both the yoke legs and over the top of the gate. For lockout in the open position, place the pin through the hole in both the yoke legs and the hole in the gate.

**MAINTENANCE**

**REPACKING THE STUFFING BOX:**

**DANGER: PREVENT THE VALVE FROM CYCLING BEFORE REPACKING TO AVOID INJURY.**

1. Cycle the valve open and then prevent the gate from cycling.
2. Remove the gland nuts and raise the packing gland.
3. Remove the old packing and clean the packing chamber.
4. Install the new packing per Table 2 below. There are two rows of packing required for each valve. Cut length to fit around the gate, cutting each end of the packing at a 45 degree bevel. Stagger the joints on opposite sides of the gate at a position about 1/3 of the length of the gate.

<b><u>Table 2: Required Packing Sizes and Lengths</u></b>		
<b>Valve Diameter (IN)</b>	<b>Packing Size (IN)</b>	<b>Packing Length (IN)</b>
2"	0.25	8.88
3"	0.25	10.88
4"	0.25	12.88
6"	0.375	18.25
8"	0.375	22.63
10"	0.375	27.88
12"	0.375	32.88

5. Install the packing gland and replace the packing nuts. Tighten nuts just to the point that the gland contacts and sets the packing. Tighten just enough to stop leakage. Do not over tighten. Over

tightening the packing gland may cause undue pressure against the gate making the valve difficult to operate and cause rapid packing wear.

### **LUBRICATION:**

The stem and stem nut are lubricated at the factory before shipment. To lubricate the stemnut on hand wheel operated valves, a grease fitting is provided on the yoke hub. To lubricate the stem on hand wheel or bevel gear operated valves, the rod boot or the stem cover can be removed. 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.

### **REPLACING SEATS:**

**DANGER: PREVENT THE VALVE FROM CYCLING BEFORE REPLACING SEATS TO AVOID INJURY.**

1. Move the gate to at least 1/2 way open. Remove the valve from the pipeline.
2. The seat ring is retained by the liner and may be removed by hand from the valve. If necessary, drive the seat ring out with a piece of soft material, such as wood, from the opposite side.
3. Clean the recess where the seat ring fits.
4. FULLY OPEN OR FULLY CLOSE THE VALVE BEFORE THE SEATS ARE INSTALLED. This will prevent the liners from being pushed into the gate port and causing actuation problems.
5. Install the new seat.
6. Install the valve using the installation instructions found in this document.

### **VALVE DISASSEMBLY AND ASSEMBLY:**

**DANGER: PREVENT THE VALVE FROM CYCLING BEFORE REMOVING THE VALVE FROM THE PIPELINE TO AVOID INJURY.**

#### **DISASSEMBLY:**

1. Remove the valve from the pipeline.
2. Break the valve apart to clean or replace the components.

#### **ASSEMBLY (HANDWHEEL & BEVEL GEAR ACTUATED):**

1. Install both liners through the bottom of the valve into the recess around the valve port and then place the gate into the valve body. Leave the gate in the fully closed position.
2. [Handwheel] Install the yoke. Place the rod boot (large diameter flange end up) under the yoke and pull the flange of the rod boot through the hole located in the yoke mount plate. Install the hose clamp over the rod boot and push the stem through the rod boot and yoke mount plate. Place the gate clamp over the gate and install the gate clamp bolts. Install the handwheel stem nut onto the stem and place the yoke hub over the stem nut. Turn the yoke hub until the position is just above the yoke mount plate. Align the yoke hub mounting holes over the holes in the yoke mount plate. Bolt the

yoke hub onto the yoke mount plate. Install the handwheel, retainer washer, stop nut assembly, and 2 piece stop collar.

3. [Bevel gear] Install the yoke. Place the rod boot (large diameter flange end up) under the yoke and pull the flange of the rod boot through the hole located in the yoke mount plate. Install the hose clamp over the rod boot and push the stem through the rod boot and yoke mount plate. Place the gate clamp over the gate and install the gate clamp bolts. Install the bevel gear stem nut onto the stem and place the bevel gear over the stem nut. Turn the bevel gear until the position is just above the yoke mount plate. Align the bevel gear mounting holes over the holes in the yoke mount plate. Bolt the bevel gear onto the yoke mount plate.
4. Install the seats into the flanges. The gate must be in the fully closed position or the fully open position to prevent the liners from being pushed into the gate port and causing actuation problems.
5. Move the gate to the fully open position. The stop nut assembly will set the “open” position. Make sure that the stop nut assembly is against the stem nut. Be sure the lockout pin can be easily installed through the yoke leg and through the hole in the gate while valve is in the open position.
6. Install the new packing per Table 2. There are two rows of packing required for each valve. Cut length to fit around the gate, cutting each end of the packing at a 45 degree bevel. Stagger the joints on opposite sides of the gate at a position about 1/3 of the length of the gate.
7. Install the packing gland and the packing nuts. Tighten the nuts just to the point that the gland contacts and sets the packing. Do not tighten completely.
8. Cycle the valve to the closed position and check the "closed" lockout. The lockout pin should go through the yoke legs and over the top of gate, **not through the hole in gate**. Verify that the gate port is located just past the seat and support ring as shown in Figure 2. Adjust the 2 piece stop collar to locate this position.

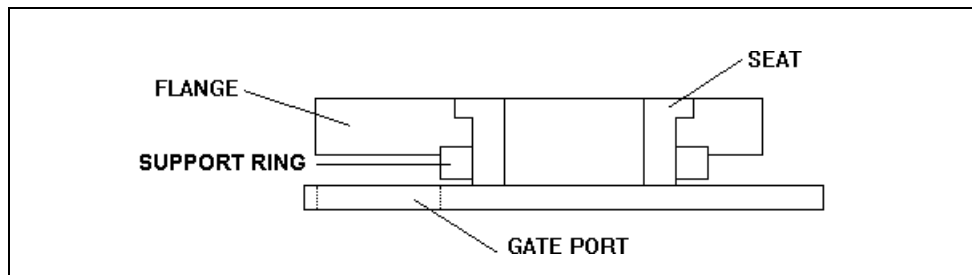


Figure 1

FIGURE 2: LOCATION OF GATE PORT IN CLOSED POSITION

**WARNING:**

Valves and valve actuators supplied by 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.

### PARTS LIST

ITEM	DESCRIPTION
1	BODY
2	SUPPORT RING
3	YOKE ASSEMBLY
4	REPLACEABLE SEAT
5	GATE
7	HANDWHEEL
8	STEM ASSEMBLY
9	PACKING
10	PACKING GLAND
11	LOCKOUT BAR
15	YOKE FASTENERS
17	STEM NUT ASSEMBLY
18	GREASE FITTING
19	PACKING GLAND FASTENERS
21	LANYARD
23	PIN ASSEMBLY (LOCKOUT)
25	ROD BOOT (OPTIONAL)
26	WARNING TAG (SEE DETAIL)
27	STOP NUT ASSEMBLY
28	STOP NUT
29	CLAMP FASTENERS
30	STEM COVER (OPTIONAL)
34	DANGER DECAL

