



Engineered Valves
1110 Bankhead Avenue
Amory, MS 38821
Tel: (662) 256-7185
Fax: (662) 256-7932

INSTALLATION AND MAINTENANCE INSTRUCTIONS
Figure HD300
FABRI-VALVE® HEAVY DUTY BI-DIRECTIONAL KNIFE GATE VALVE

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1. GENERAL

This instruction manual contains important information regarding the installation, maintenance, and operation of the ITT Fabri-Valve HD300 knife gate valve. The valve should be thoroughly cleaned prior to any maintenance or disposal. Please read the instructions carefully and save them for future reference.

2. CAUTION

Please review the following CAUTION statements before installing and placing the valve in service:

CAUTION: Do not walk on the valve or use it as a step

CAUTION: Do not use an unapproved lock-out device on this valve. An approved lock-out pin can only be purchased from the factory

CAUTION: Do not install an unapproved actuation device on this valve. Approved actuators are only available from the factory

CAUTION: Do not use a "cheater" bar on a handwheel actuated valve.

CAUTION: Do not hang items off this valve. Any accessories must be firmly or permanently attached

3. 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. HD300 valves are available with components of various materials, and they should be used only in appropriate services. Misapplication of the product may result in injuries or property damage. It is important to select the proper materials for each component to obtain the maximum performance for the specific application. Examples of misapplication or misuse of a valve or valve actuator includes use in an application that exceeds the pressure / temperature rating, failure to maintain the equipment as recommended, or the use of unapproved components.

SAFETY FIRST! For your safety ask the following questions before removing the valve from the pipeline, and before any disassembly:

▪ **DISCONNECT AIR OR ELECTRICAL POWER**

Disconnect all actuation power (air, hydraulic or electric) to the valve prior to installation or removal. If the optional valve lockout pin is present, insert it in the appropriate position to further insure that the gate will not move during removal.

▪ **WHAT'S IN THE LINE?**

Be sure you know what fluid is in the line. If there is any doubt, double check with the proper supervisor.

▪ **ARE YOU PROTECTED?**

Wear protective clothing and equipment normally required to avoid injury from the particular fluid in the line.

▪ **IS THE LINE DEPRESSURIZED?**

Depressurize the line and drain the system fluid before you open a pipeline.

- **CHECK THE TAG.**

Refer to the tag attached to each valve for the pressure-temperature rating. DO NOT use a valve at service conditions that exceed the rating on the nameplate.

- **BE AWARE.**

Fingers and hands can be pinched valve during installation, removal and maintenance.

Be aware that the following could cause possible injury:

- **CAUTION:** Never grasp the handwheel in any place other than the rim. Grasping the spokes of the handwheel could create a pinch point between the handwheel and the yoke.
- **CAUTION:** Do not place hands or fingers on the valve flanges unless the valve is secured to a mating flange. Using the actuator (handwheel, cylinder, etc) to align the valve with a mating flange is an acceptable practice
- **CAUTION:** NEVER place hands or fingers inside of the valve port until the topworks section is removed as described in the maintenance section.
- **CAUTION:** Do not reach into the yoke while the valve is connected to either electrical power or air.
- Refer to maintenance section 6.2 for proper lifting practices.

4. STORAGE

If the valve is to be stored for an extended period of time before installation, the valve should be stored in accordance with ITT's Long Term Storage Procedure.

In general, the valve should be stored in a vertical position and in a cool, clean area to prevent damaging effects on the chest, gate seal, liner and mating flange o-ring.

5. RECEIVING

The HD300 valve should be thoroughly inspected upon receipt.

- **CAUTION:** Lubricants and adhesives were used in the fabrication of this valve. Gloves and eyewear should be used to prevent these materials from coming in contact with the skin or eyes.
- **CAUTION:** The proper mating flange fasteners should be identified from Table #1 of this manual. Failure to use the proper mating flange fasteners could lead to damage to the valve.

6. INSTALLATION

IMPORTANT: Read the **WARNING** Section.

NOTE: Any flange or pipeline welding should be done prior to installation of the valves. The liner and mating flange o-ring can not tolerate the high heat imparted to the area during welding. It is essential that all weld slag, rods, debris, tools, etc., be removed from the pipeline before valves are installed or cycled.

6.1 The valve can be installed in either orientation.

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

Bolt the valve to the mating flange using proper sized bolts.

The stud lengths are based on the following:

- 1.) 1/16" allowed for compressed gasket thickness.
- 2.) Mating flange thickness based on ASME B16.5 CL300/ASME B16.47 Series A CL300.
- 3.) It is recommended that studs be used to insure the full thread engagement required by ASME B16.34.

WARNING: If a machine bolt, which has "bottomed out", is tightened further to obtain proper gasket compression, the machine bolt may yield a portion of the valve body. The result may be body contact with the gate and cycling problems.

RECOMMENDED STUD LENGTHS

Valve Size (inches)	Port ID (inches)	Studs	Quantity per Flange	Stud Length (inches)
26	25.25	1.625-8UN	28	7.25
28	27.25	1.625-8UN	28	7.5
30	29.25	1.75-8UN	28	8
32	31.25	1.875-8UN	28	8.5
36	35.25	2-8UN	32	9
42	41.25	1.625-8UN	32	8.75
48	47.25	1.875-8UN	32	9.75

WARNING: THESE VALVES HAVE REPLACEABLE METAL AND ELASTOMER SEATS. 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. THE GATE MUST BE SLIGHTLY OPEN WHEN INSTALLING.

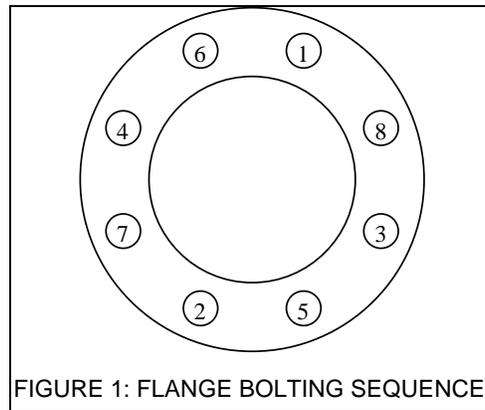
Double seated valves may require special flushports if solids materials are present in the pipeline and can collect between the seats. Consult the factory for technical advice.

If the valve is installed in 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.

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

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

6.2 When tightening flange bolts, work from side to side in an alternating sequence to ensure even compression of the o-ring. The type of o-ring, line pressure, type of bolt and bolt lubrication, determines the torque required. See Figure 1



6.3 The packing gland may require some adjustment after line pressure is up to normal. If there is seepage past the packing upon installation, the valve may have been subject to wide temperature variations during shipment. Leak tight performance can be restored by the simple packing adjustment procedure in the Maintenance Section. Tighten just enough to stop leakage. Over-tightening 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. These valves are seat-tested drip tight at 450 psi. Extremely low pressures across a closed gate, below 5 psi, may result in higher leakage rates.

NOTE: All valves are pressure and seat tested before shipment.

6.4 If the valve is installed in horizontal position and an actuator is included with the valve, support of the actuator may be required. Consult the factory for technical advice.
Valves larger than 12" can not be mounted in a horizontal position in a horizontal pipe.

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

CAUTION: VALVES THAT ARE SUPPLIED WITH CYLINDERS ARE SIZED FOR A SPECIFIED AIR PRESSURE. EXCESSIVE AIR PRESSURE MAY CAUSE DAMAGE TO THE VALVE AND/OR CYLINDER. AIR REGULATORS AND AIR FILTERS ARE AVAILABLE FROM YOUR ITT DISTRIBUTOR.

CAUTION: THE "CLOSED POSITION" STOP IS SET AT THE FACTORY TO PROVIDE TIGHT SHUTOFF. DO NOT OVERRIDE. "OVER-CLOSING" THE VALVE MAY CAUSE THE GATE TO OVER-COMPRESS THE SEAT AND DAMAGE THE SEAT.

7. MAINTENANCE

IMPORTANT: Read the **WARNING** Section.

7.1 TO REPACK STUFFING BOX – It is recommended that the packing be replaced any time the valve is removed from service.

DANGER: DO NOT REPACK VALVE UNDER PRESSURE

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 assembly in the following manner: scraper-packing-packing-packing-scraper-packing-packing-packing-scraper. Cut the braided packing to fit around the gate, cutting each end at a 45-degree bevel. Stagger the joints on opposite sides of the gate.
5. Reseat the packing gland and replace the packing nuts, making sure the gate is centered and against the valve body seat. Tighten 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.

7.2 LUBRICATION:

The stem and stem-nut 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

The elastomer seat is lubricated prior to installing the metal seat. Recommended lubricants are:

DOW CORNING 111

7.3 VALVES WITH REPLACEABLE SEATS:

REPLACEABLE METAL SEATS

1. Remove the valve from the pipeline and open gate.
2. Seat ring is loose and may be removed from outlet flange of valve. If necessary, it may be driven out with a piece of wood from the inlet side.
3. Inspect the seat surface of the ring. If wear appears on only a small area the seat ring may be rotated to put wear point towards the top of the port and further service obtained.
4. Clean the recess where the seat ring fits.
5. Install the new or rotated ring with a new, 1/16" thick gasket between the body and seat ring.

L-RING SEALS– the elastomer seats should be replaced any time the valve is removed from service

1. Remove valve from line and disassemble.

2. Remove old seal from groove. The groove must be clean and dry before installing new seal.
3. Make a 45-degree cut on one end of the new seal.
4. Wrap the seal around the outside of the replaceable metal seat. Place a mark where the end overlaps. Remove the seal from the replaceable metal seat and make a 45-degree cut at the mark. Use a thin layer of adhesive to bond the two ends together.
5. Lay seal ring on flat surface. Apply a thin layer of adhesive to the surfaces indicated in Figure #1 (.003 to .005 thick or like a sheet of paper).
6. **Note:** Black Max adhesive #38050 is available from factory under part no. 137-900.
7. Press seal into the groove starting at the top and then move to the bottom, and then to the sides as illustrated in Fig #2. All rings must be stretched slightly to fit and care must be taken to keep ring smooth and flat.
8. Wipe off any excess adhesive.
9. Allow adhesive to dry for a minimum of 8 hours for full bond strength.
10. Reassemble valve and repack per instructions above.

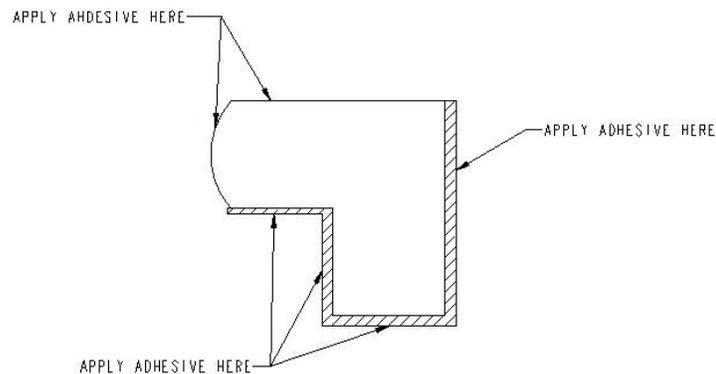


Figure #1: Lubricant and Adhesive Application

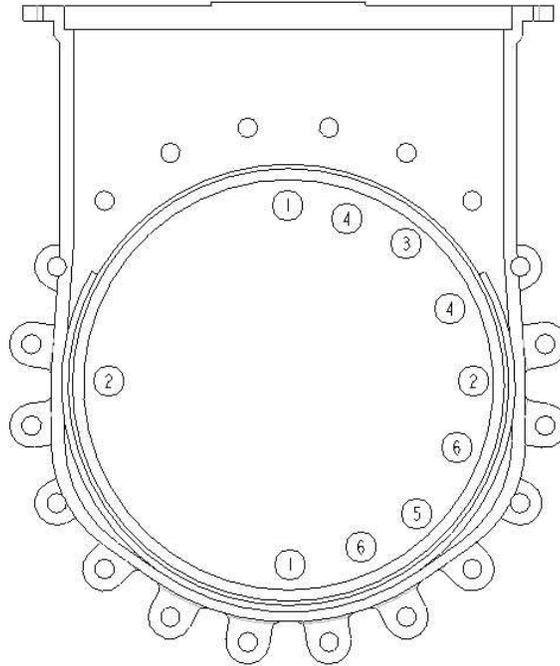


Figure #2: Seal Installation Sequence

7.4 VALVES WITH ELECTRIC ACTUATORS

Valves with electric motors should be set up torque closed, position open if valve is single seated and position closed, position open if valve is double seated.

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

7.5 LIFTING

Valves larger than 4" should be lifted using mechanical assistance (i.e., a crane or hoist). The accepted method for lifting the valve is to use nylon slings attached to the yoke of the valve (handwheel actuated) or by attaching lifting eyes to the tie rod extensions (cylinder operated valves). NEVER attach a sling to the handwheel for lifting a valve out of the line.