

# PROCESS DEVELOPMENT & CONTROL LLC

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## OPERATION AND MAINTENANCE OF SERIES 27 RUBBER SEATED BUTTERFLY VALVES

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## ENGINEERING INSTRUCTION BULLETIN

EIB.: 1.8.7.1 ORIGINAL DATE: 6/22/2001 PAGE: 1 of 2 REVISION: 1 DATE: 8/11/2006

### TITLE: OPERATION AND MAINTENANCE OF SERIES 27 RUBBER SEATED BUTTERFLY VALVES

#### 1. INSPECTION PROCEDURE

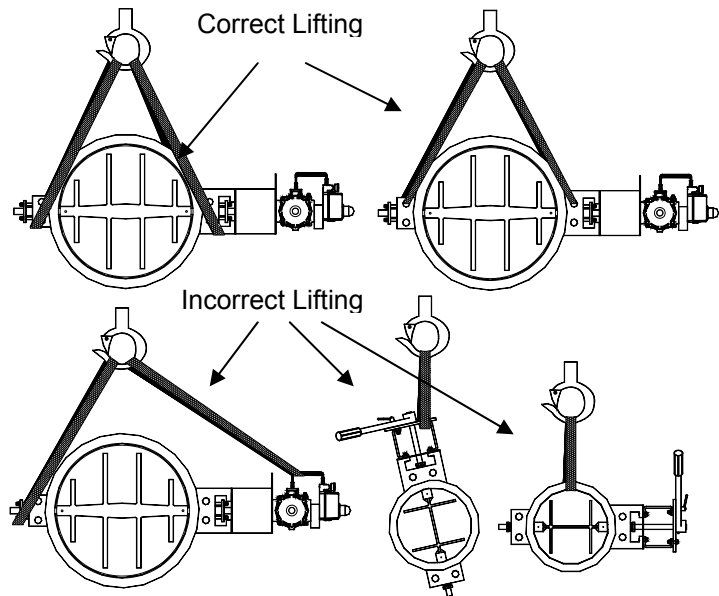
2.1 Valve assemblies should be inspected upon receiving and prior to installation. Carefully remove the valve assembly from its shipping crate or box. Valve and accessories should be inspected for damage. The valve sealing surfaces should be inspected for scratches.

#### 2. HANDLING PROCEDURE

2.1 Never lift or move the valve assembly using the disc, valve seat (bore), shafts or packing follower / nut as a pressure point.

2.2 Never lift or move the valve assembly by using the actuator, positioner, tubing or other attached accessories.

2.3 It is recommended that lifting straps (instead of chains or hooks) be used around the valve stem neck and thru the flange bolt holes for pressure points.



#### 3. STORAGE PROCEDURE

3.1 Valve assemblies should be kept in a clean, heated, weather tight (dry), well-ventilated, storage facility with flooring that seals against dust and dirt and will not be subject to flooding. **Climate controlled storage of valve assemblies is highly recommended due to the exposed bare metal surfaces necessary for operation and due to the electronics and controls many times included.** If outdoor storage is unavoidable for short periods of time, support the valve assembly off of the ground and protect with a watertight cover on all sides.

3.2 Valve assemblies should be stored off of the floor on suitable skids, pallets or racks and protected from dirt, debris and exposure to direct sunlight, particularly to elastomer sealing surfaces.

3.3 Valve assemblies should be protected from rodents, insects or other creatures which can cause damage.

3.4 The proper use of racks, pallets, and handling equipment shall be used. The assemblies should be arranged so as to prevent damage to protruding accessories during storage.

3.5 Valve assemblies with electrical components, pneumatic tubing, positioners, actuators, and other accessories should be protected from impact.

3.6 Rubber seated valves should be stored with the disc slightly opened, (about 5°), if practical.

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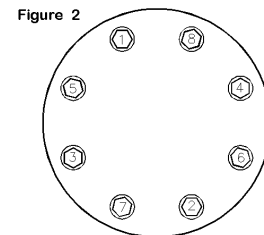
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### 4. INSTALLATION PROCEDURE

- 4.1 Prior to installation inspect the valve (see section 1). In addition, inspect the seat for dirt, debris or possible obstruction of the disc and remove.
- 4.2 For valves not manually operated, which are received in the full open position, it will be necessary to disconnect the power linkage and rotate the disc to the closed position. **Take note of the position and placement of accessories** (linkage, brackets, actuators etc.) **and valve stem**, if the accessories must be removed for installation.
- 4.3 Valves can be installed with the flow moving in either direction thru the valve. Valves can be installed with shafts in any orientation. Valve flange gaskets are not required. **DO NOT USE GASKETS**. See Figure 1 / Table 1 for stud bolt specifications.
- 4.4 Check the alignment of the pipe flanges to each other, before installation of the valve. Poor alignment may cause installation and operation difficulties.
- 4.5 Spread the flanges apart far enough to allow the valve to slip easily between the flanges. Position the valve against the flanged piping (if welded, the temperature must have returned to normal). Center the valve in the pipeline being careful not to damage the liner. Align the mounting holes of the valve to the pipe flange holes. Allow the flanges to return to their unspread state. Insert the bolts and snug them gently, but **DO NOT TIGHTEN**.
- 4.6 Verify the alignment of the valve and disc within the pipeline by slowly opening the valve. The disc must be in the center of the pipeline or the valve will not operate properly. If no obstruction is encountered leave the valve disc in the fully opened position.
- 4.7 Tighten the bolts using a criss-cross pattern (see Figure 2 for example) to evenly load the sealing surfaces. This will help prevent leaks and avoid damage. Do not over tighten the bolts as this can cause waves in the sealing face and leaks to occur.
- 4.8 Verify that the valve disc rotates fully open and fully closed. A check for leak tightness is recommended by pressurizing the installation.
- 4.9 Rotate the disc to the position it was received. Replace any accessories making sure that they are in the exact position they were in prior to their removal.
- 4.10 Any adjustments to accessories should not be made without consulting the manufacturer's instructions.



### 5. OPERATION PROCEDURE

- 5.1 PDC rubber seated butterfly valves are designed to provide long, dependable service with no maintenance. No spare parts are suggested.
- 5.2 Routine check-up of flange bolt tightness is recommended.
- 5.3 To help determine the position of the disc while the valve is in the pipeline, the shaft has been marked.
  - Hexed drive shafts will have a saw cut parallel to the disc edge.
  - Flats of flatted drive shafts will be parallel to the disc edge.

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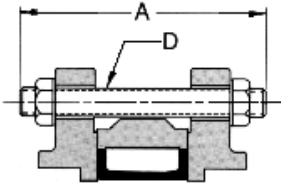
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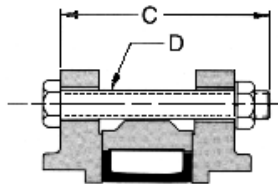
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- Plain round shafts will have a saw cut parallel to the disc edge.
- Keyways on keyed shafts will be parallel to the disc edge. (If multiple keyways are at angles to each other, a saw cut parallel to the disc edge will be placed on the shaft.)

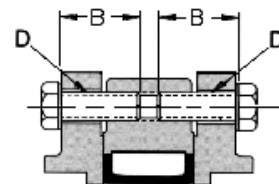
Figure 1 Stud / Bolt Specification



STUD  
WAFER TYPE BUTTERFLY VALVE



SINGLE BOLT  
WAFER TYPE BUTTERFLY VALVE



TWO BOLTS  
LUG TYPE BUTTERFLY VALVE

Table 1

<sup>1</sup> Recommendation is made without warranty, and applies to steel weld-neck or slip-on flanges. Lubrication or the use of lock washers will affect these values.

		VALVE SIZE													
DIM.	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	
A	5	5 1/2	5 1/2	5 3/4	6	6-1/2	7	7 1/2	8	8 1/2	9 1/2	10 1/2	11	12 1/2	
B	1 1/2	1 1/2	1 1/2	1 3/4	1 3/4	2	2 3/4	2 1/4	2 1/2	2 3/4	3 1/4	3 1/2	4	5	
C	4	4 1/2	4 1/2	5	5	5	5 1/2	6	7	7 1/2	8	9	9 1/2	11	
D	5/8-11 UNC	5/8-11 UNC	5/8-11 UNC	5/8-11 UNC	3/4-10 UNC	3/4-10 UNC	3/4-10 UNC	7/8-9 UNC	7/8-9 UNC	1-8 UNC	1-8 UNC	1-1/8- (7) UNC	1-1/8- (7) UNC	1-1/4- (7) UNC	
RECOMMENDED INSTALL TORQUE <sup>1</sup> FT./LBS.	15 - 60	15 - 60	15 - 60	15 - 60	25 - 100	25 - 100	25 - 100	50 - 200	50 - 200	70 - 300	70 - 300	100- 400	100- 400	150- 500	