

# **INSTALLATION OPERATION MAINTENANCE**

**FOR**

**FORGED/CAST  
BALL VALVE**



**PREPARED BY**

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## 1. INTRODUCTION

When properly installed in applications for which they were designed, EXCEL branded valves will give long reliable service. This instruction is only a guide for installation and operation on standard service and covers general maintenance and minor repairs.

### **Note:**

- We recommend that this entire document be read prior to proceeding with any installation or repair. Take no responsibility for damage or injury to people, Property or equipment. It is the sole responsibility of the user to ensure only specially trained valve repair experts perform repairs under the supervision of a qualified supervisor.

## 2. RESPONSIBILITY FOR VALVE APPLICATION:

The User is responsible for ordering the correct valves. The user is responsible for ensuring valves are selected and installed in conformance with the current pressure rating and design temperature requirements. Prior to installation, the valves and nameplates should be checked for proper identification to ensure the valve is of the proper type, material and is of a suitable pressure class and temperature rating to satisfy the requirements of the service application.

### **CAUTION:**

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

### 2.1 RECEIVING INSPECTION AND HANDLING:

Valves should be inspected upon receipt to ensure:

- \* Conformance with all purchase order requirements.
- \* Correct type, pressure class, size, body and trim materials and end connections.

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\* Any damage caused during shipping and handling to end connections, hand wheel or stem.

**CAUTION:**

- The user is advised that specifying an incorrect valve for application may result in injuries or property damage. Selecting the correct valve type, rating, material and connections, in conformance with the required performance requirements is important for proper application and is the sole responsibility of the user.

### **3. SAFETY INFORMATION:**

The following general safety information should be taken in account in addition to the specific warnings and cautions specified in this manual. They are recommended precautions that must be understood and applied during operation and maintenance of the equipment covered in this I.O.M.

**CAUTION:**

- Never attempt to disassemble a valve while there is pressure in the line. Ensure both upstream and downstream pressure are removed. Disassemble with caution in case all pressures are not relieved. Even when replacing stem packing, caution is necessary to avoid possible injury.
- To prevent valve bending, damage, inefficient operation, or early maintenance problems, support piping on each side of the valve. When handling gases/fluids that could cause damage to human health, the environment or property, the necessary safety precautions to prevent risk must be taken.
- A valve is a pressurised mechanism containing energised fluids under pressure and consequently should be handled with appropriate care
- Valve surface temperature may be dangerously too hot or too cold for skin contact. Upon disassembly, attention should be paid to the possibility of releasing dangerous and or ignitable accumulated fluids. Ensure adequate ventilation is available for service.

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This manual provides instructions for storing, general servicing, installation and removal of ball valves. SAKTHI INDUSTRIES refuse any liability for damage to people, property or plant as well as loss of production and loss of income under any circumstances but especially if caused by: incorrect installation or utilisation of the valve or if the valve installed is not fit for the intended purpose. It is the sole responsibility of the user to ensure the valve type and materials are correctly specified.

## **4. STORAGE:**

### **4.1 Temporary Storage:**

If Valves are to be stored before installation, the following should be observed

- A) Keep valves wrapped and protected as shipped from the manufacture
- B) Do not remove the protective end covering until the valve is ready for installation. This will reduce possibility of foreign material damaging the internal valve components.
- C) Valves stored outdoors should be positioned such that water does not accumulate in the valve body.

### **4.2 Long Term Storage:**

If Valves to be stored more than a year, they should be prepared in the following manner

- A) Remove the packing and apply a preservative to the packing chamber.
- B) Do not remove the protective end covering.
- C) Do not store valves outside.

## **5. INSTALLATION:**

The following procedure is required to be followed for correct installation.

(a) Before installation confirm the marking (rating, size and material) on the valve body and nameplate. Ensure the valve is suitable for the service which it is being used.

(b) Body bolts and nuts on valve shall be checked and retightened if necessary in case loosened during installation.

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- (c) Remove valve end protectors and ensure gasket faces are free from damage. Tighten all bolts between mating flanges and valve equally paying carefully attention to properly tighten bolts. Ensure you rotate tightening procedure (opposing bolts sequentially) gradually increasing torque.
- (d) Prior to installation of valve, ensure the line is completely flushed to remove any debris as soft seated valves.
- (e) Valves will operate at any angle horizontally or vertically, although it is recommended you install valves in a vertical position with stem pointing upwards for ease of operations, inspection and accessibility.

## **5.1 INSATALLATION POSITIONS:**

Ball valves usually bi-directional and therefore may be installed in either direction

### **5.1.1 Preparation for installation:**

- Remove protective end caps or plugs and inspect valve ends for damage to threads, weld ends or flange faces.
- Thoroughly clean adjacent piping systems to remove any foreign material that could cause damage to seating surfaces during valve operation.
- Verify that the space available for installation is adequate to allow the valve to be installed and to the operated.

## **5.2 END CONNECTIONS:**

### **5.2.1 Threaded Ends:**

Check the condition of thread on mating pipe. Apply joint compound to the male end of joint only. This will prevent compound from entering the valve flow path.

### **5.2.2 Flanged Ends:**

Check to see that mating flanges are dimensionally compatible with the flanges on the valve body ensures sealing surfaces are free of debris. Install the correct studs and nuts for the application and place the gasket between the flange facings.

Note:

Stud nuts should be tightened in an opposing criss-cross pattern in equal increments to ensure even gasket compression

### 5.2.3 Socket Weld Ends:

Remove all debris, grease, oil, paint, etc., from the pipe that is to be welded into the valve and from the valve end connections. Insert the pipe into the valve end connection until it bottoms out in the socket weld bore. Withdraw the pipe 1/16" So that a gap remains between the pipe and the bottom of the socket weld bore to prevent cracks (ASME B16.11). Tack the pipe into the valve and complete the fillet weld.

## 6. OPERATION:

### 6.1 Manual Operation:

Valve adjustment is clockwise turning of stem. Lever operated and gear operated valves have a position indicator to indicate open /closed on stem (see Figure).

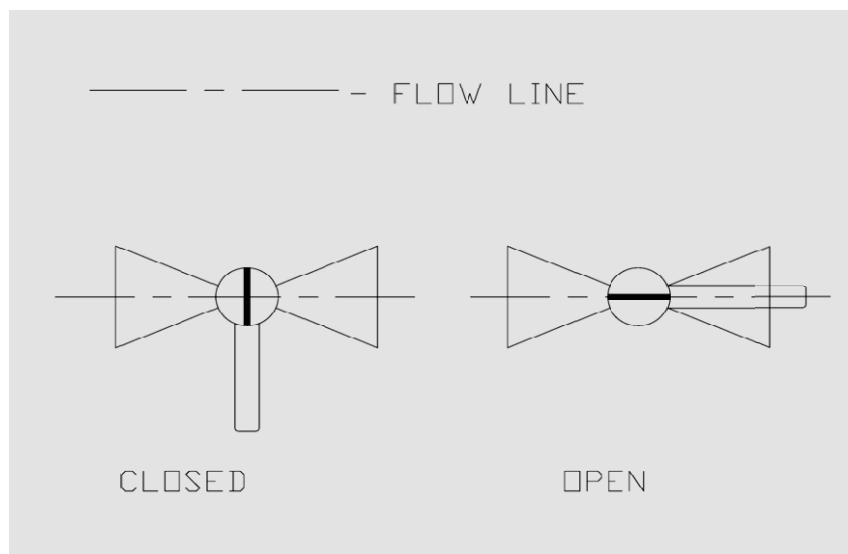


Fig. 6.1: Indication of open / close

Ball Valves must not be used for throttling. Do not leave part open, or seats will be damaged. Valve must be fully closed or open.

## 7. MAINTENANCE:

Valves Should be periodically checked at least once every 3 months, but depending on service, criticality and frequency of use, more regular checking may be required.

### **Caution:**

**Packing leakage could result in personal injury. Valve Packing is tightened prior to shipping but may require adjustment to meet specific service conditions. If valve does not fully close, damage to the seat and body will result due to the venturi effect resulting in high pressure erosion. Flush or remove the valve at next opportunity.**

A good program of inspection and maintenance cannot be overstressed It is recommended that the valve be periodically and atleast partially stroked/function tested to ensure the valve functions and prevent seizure/ sticking of any mating surfaces. Duration depends on service, criticality etc. However it also must be factored in that if there are impurites or particulates in the line each operation could reduce the seat life proportionately. Periodic inspection of critical leak path areas such as body/bonnet joint, end connections, seating surfaces, and around the stem packing should be a requirement.

The most common area for leaking is around the stem packing, this usually due to wear and can normally be stopped by adjusting the packing. This procedure is performed by turning gland bolts or nuts ½ turn at a time until leakage stops. Once leakage stops, continue tightrning gland plate nuts an additional ½ turn. If leakage cannot be halted by adjusting packing, repacking of the valves is indicated

### **7.1 Gland Packing:**

In case of slight leakage from the gland, lock nut can be lightly tightenend up without torque.

**Caution: Do not attempt to repack or replace stem while the valve is in service! Only graphite packing is to be used for firesafe service, PTFE is not Firesafe, PTFE is firesafe only when fitted with graphite packing and graphite or spiral wound graphite filled body gasket.**



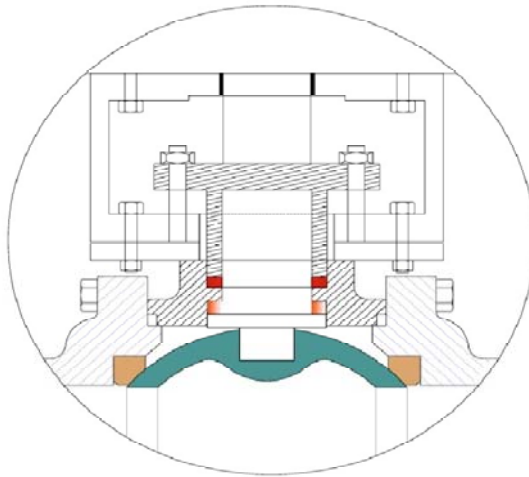


Fig.7.1: Gland type adjustable packing for Actuator Ball Valve

## 7.2 Stem Leaking- Stem Packing Replacement:

The most common point for leakage is around the stem and packing this leakage can normally be stopped by adjustment of the packing gland. If this does not stop the valve leakage, the valve will have to be repacked.

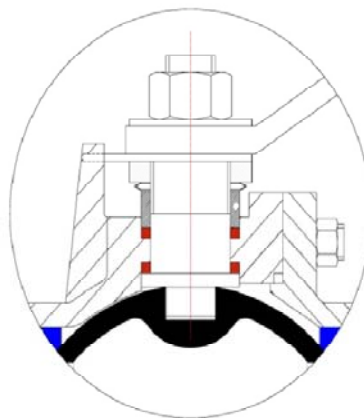


Fig. 7.2: Locknut type adjustable packing for Manual Ball Valve

**Caution:**

Personal injury may be result from sudden release of any process pressure . Sakthi Industries recommends the use of protective clothing, gloves and eye wear When performing any installation or maintenance. Isolate the valve from the system and relieve the pressure prior to performing maintenance. Disconnect any operating lines providing air pressure, control signals or electricals power to actuators.

**7.3 Body Seal:**

Sealing between two body segments is provided with a gasket and both valve segment surfaces also provide metal sealing. In case of slight leakage the fastening bolts can be lightly tightened up.

**Caution:**

If a gasket seal is disturbed while removing or adjusting gasketed parts. Sakthi Industries recommends installing a new gasket while reassembling a proper seal is required to ensure optimum operation.

Manufactured and packed by:

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