

Installation, Maintenance & Operating Instructions for IBBM Solid Wedge Gate Valves

Forward

The following instructions are offered as a reference aid to the valve user when installing, maintaining or operating gate valves. This document consisting of basic information, should be of interest to the layman as well as the experienced valve user; however it does not replace the need for an understanding of the particular application, and it is not intended to be a complete instruction to the inexperienced valve user.

1. RECEIVING AND HANDLING

Upon receipt of valves at destination, they should be inspected for shipping damage. The areas to inspect are the pressure retaining shell, valve ends and valve operating mechanisms such as hand wheel, actuator, stem, etc.

If valves show no sign of shipping damage, they should be stored in a sheltered area to protect them from weather, dirt and damage. Materials attached to protect valves during shipment should not be removed until time of installation in the line.

Each valve should be handled only with apparatus that will safely support the valve assembly weight. Valve body and bonnet have lifting lugs for ease of support. Slings should not be placed around the hand wheel, stem or gland adjustment parts. Protect valve ends by leaving end protectors in place until their removal is necessary. Valves are shipped in the open or closed position, depending on the valve type, to protect seating surfaces and should be left in these positions, if possible, until completion of installations.

2) PREPARATION FOR INSTALLATION

Prior to installing the valve, clean out all the dirt and foreign matter from inside the piping system. Wherever possible, the line should be blown out with clean compressed air or flushed out with water to remove all dirt and grit. The valve should be cleaned out in a similar manner.

Check for adequate clearance around the valve to insure that it may be operated properly and that enough free space is available for maintenance of the valve. Valves installed with the wheel handle facing down present a head hazard if not placed at a proper elevation. Care should be taken to provide adequate head room below the handwheel when it is in full open position. A clearance of 6-Foot 6 Inches above the operating floor is usually sufficient.

Valves with actuators will require additional clearance around them for making service connections and maintenance to the actuator.

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3) PRECAUTIONS

- a) The valve body is a rugged structure but it is not intended to be a means of aligning improperly fitted pipe. Care must be taken to ensure that any stresses caused by improper alignment are relieved elsewhere in the piping system. Piping should be supported by hangers placed on either side of the valve and large heavy valves should be independently supported
- b) The following general rules should be followed when installing the valve in the pipe line.
- c) Handle valve only with apparatus that will adequately support it, using a safe and proper technique.
- d) Install the valve using good piping practices as governed by the applicable code or specification.
- e) Pipe Line and valve must be cleaned of all foreign water.
- f) Flanged End Valves
 - Do check and align pipe flanges. Use proper type and size fasteners.
 - Do use a proper type and size gasket - use 1/8" hick full face grade 1 rubber gasket.
 - Do not attempt to fit two flanges that are not alike together. Plain face with plain face or raised face with raised face are the proper procedure. Bolting together flanges of two different materials requires special instructions. Refer to engineering section of manufacturers catalog.
 - Do not tighten bolts in rotation: They must be tightened in a crossover pattern to load the bolts evenly.

4) POST INSTALLATION

- a) After installation of the valve, and prior to start up, the line should be flushed or blown out to remove dirt and foreign objects that may have accumulated since installation.
- b) Check for tightness of body/bonnet joint and adjustment of packing gland.

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- c) Operate the valve to make sure that nothing is preventing its proper operation. Valve should be opened and closed twice with no pressure in line.
- d) Pressure Test the joint to prove quality of flange bolting, and tightening, etc.

NOTE: Use of caustics or other chemical agents to flush pipe and valve may require the removal of the valve packing and gasket based on compatibility of flushing agent, gasket and packing material.

5) MAINTENANCE AND TROUBLE SHOOTING

Valves do not need much attention, but to assure the best operating life and a lower incidence of maintenance, a program for periodic inspection should be established.

Items to check on a periodic basis:

- a) Gland should be kept tight to avoid leakage. Avoid over tightening stuffing nuts or stuffing box packing. This unduly compresses the packing which considerably shortens its life and increases operating torque. The gland should be only as tight as is necessary to seal
- b) Observe valve for leakage taking special note of the body/bonnet joint area, the end connections and the pressure retaining shell. If leakage at the body/bonnet joint is evident, check tightness of bolts in a bolted bonnet valve, bonnet or union nut in a threaded or union bonnet valve.
- c) Lubrication and cleanliness of exposed stems. Valve stems should be lubricated with a Mobil Mobilith AWO Multipurpose grease.
- d) Gears are lubricated at the factory and covers should not be disturbed. No additional lubrication is necessary. Every two years grease should be inspected and lubricant should be added. Use Mobil grease NIG1 Grade #2.

NOTE: Use of a tacky lubricant on exposed threads can pick up abrasive particles in the atmosphere. Dry film lubricants are preferred.

- e) Open and Close valve to check for possible obstruction to travel.
- f) Check tightness of yoke or operator bolting.

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6) REPAIRS

The following general instructions are offered to make limited repairs to the valve. For major repairs contact the authorized representative for special instructions. Always give the information shown on the identification plate affixed to the valve.

- a) When holding a valve in a vise to work on it, always put the valve ends against the vise jaws. Never hold the valve with the vise jaws pressing against the valve sides since this will cause distortion.
- b) Repacking - Isolate and depressurize valve prior to attempting to and packing or repack valve. Although valve is designed for repacking under pressure, there may be foreign material on the backseat so it is good practice to repack only when valve is depressurized. Loosen and remove packing retainer, remove all sets of packing from stuffing box. Clean out stuffing box and inspect stem for signs of damage wear or roughness of the stem can make repacking futile.
- c) Install new packing and reassemble packing retainer to valve. Installing the packing alternating seem to prevent leakage.
- d) Replacing Bonnet Gasket - Isolate and depressurize valve prior to attempting to disassemble valve. Note: Valve must be in mid point of travel. Never disassemble or assemble fully closed valve.

On bolted bonnet valves, mark the body and bonnet flanges so they may be mated in the same position when reassembled.

Valves having large or heavy top works will require the use of a hoist or crane to support and lift the top works away from the valve body.

Loosen bonnet joint and lift bonnet and top works away from the body in a direct straight line. On gate valves, the wedge should be marked so that it goes back against the same seat rings when reassembled.

Reassemble in reverse order of above instructions. If valve has not been repacked recently, it should be done prior to placing the valve back into service.

Prior to repressurizing the valve, recheck the tightness of the body/bonnet joint.

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7) TOOLS AND EQUIPMENT

Standard wrenches and tools are generally suitable for servicing the valves.

They are:

- (a) One Set Box, Open End or Socket Wrenches
- (b) One set Allen type hex key wrenches
- (c) Standard packing tool or blunt hook to remove packing rings.
- (d) Combination oilstone, coarse and fine grit, to polish wedge and seat ring faces.
- (e) Hammer and punches to drive out pins.
- (f) Hoist to lift large or heavy valves.

8) OPERATION

The following are general hints on the operation of the valves:

- a) Open and close valves slowly whenever possible, when the valve has been fully opened, rotate the hand wheel one quarter turn in closed position so as not to leave the valve jammed open.
- b) Never put excessive leverage on the handwheel to stop leakage as this may damage the stem and could ruin the valve.
- c) A gate valve should not be used for throttling purposes.

