



BONNEY FORGE

## GATE VALVE “O.S.” & “Y”

### 1.0 Periodic Inspections

**1.1** The valve stem packing should be inspected at least monthly. If the stem packing shows signs of leakage, simply tighten the adjusting nuts to compress the packing. Do not over-tighten the adjusting nuts as this will make operation of the valve more difficult. If, after tightening the adjusting nuts to their fullest extent, the leakage does not stop, it is then necessary to replace the stem packing. It is not recommended that additional packing rings be added to the stuffing box as this may cause damage to the stem sealing system. Please contact Bonney Forge or its distributor for new stem packing sets. For packing replacement see paragraphs 2.2 and 2.3.

**1.2** The lubrication of the yoke nut should be inspected at least monthly. A high pressure grease gun should be used for valves supplied with ball type grease fittings. For valves supplied with a Stauffer type grease cup, the cup should be checked to assure that it is full so that the grease can be injected by turning the screw cap. The valve stem threads should also be given a coating of lubricant.

**1.3** Bonnet bolt tension should be checked periodically when valves are used in high temperature applications where creep may occur. Although leaks through ring joints are rare, erosion or corrosion could cause rings to fail. In these cases, a new ring gasket is required.

### 2.0 Extraordinary Maintenance or Replacement of Damaged Parts

**2.1 Stem.** If the stem locks or “freezes”, causes can generally be attributed to worn packing, a dry yoke nut or dry stem threads. In either of these cases, the following service is required:

- a\*) Unscrew gland nuts, remove the gland flange and bushing to expose stem packing and lantern ring. Replace stem packing if it is damaged.
- b) Check lubrication of yoke nut. If it is dry, remove the yoke nut and determine if there is evidence of seizure marks. If so, replace it with a new yoke nut. Also check the nut and stem threads.

### 2.2 Disassembly of Stem Packing.\*

- a) In those cases where the valve can not be removed from the piping system, it is important that prior to servicing, the valve be opened to its fullest extent. Partially unscrew nuts to reduce the compression load on the stuffing box. Remove the stem packing and then replace with new set(s) of packing. Finally, tighten nuts sufficiently while allowing the stem to operate smoothly.
- b) To replace the stem when the valve is completely disassembled for general maintenance follow this procedure:
  - Open the valve half way and remove bonnet bolts and nuts.
  - Lift up the bonnet to remove the wedge.
  - With the bonnet removed, unscrew the gland bolts and lift up the gland flange exposing the stem packing.
  - Remove the stem packing.
  - Remove the stem through the stuffing box.

\*CAUTION: Always be sure that the valve is de-pressurized and isolated prior to performing any maintenance work.



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## GATE VALVE “O.S.” & “Y” (CONTINUED)

### 2.3 The procedure to re-assembly the valve is as follows:

Re-insert the stem through the stuffing box taking special care to reassemble parts in sequence. Insert the remaining packing rings into the stuffing box and compress using the gland and flange. Then, reassemble nuts and tighten. Note, the stem must slide freely through the stuffing box without applying excessive force. Finally, install the bonnet gasket making sure it is not damaged. The gasket should be replaced if there is any question as to its performance.

**2.4** Raise the bonnet, making sure the stem is in a half open position, then connect disc to stem. Lower bonnet on to the valve body making sure that the disc fits exactly into body guides and the bonnet gasket is properly seated. Align holes and tighten bonnet nuts taking care that excessive force is not used, possibly damaging the gasket. Hydrostatically test the valve to assure that there is no leakage.

### 2.5 Disassembly of yoke nut

When necessary use the following procedure for disassembling and replacing yoke nut:

- a) direct hand-operated valves (handwheel)
  - remove set screw;
  - unscrew handwheel nut;
  - remove handwheel;
  - unscrew yoke nut retaining nut, removing spot welds if necessary;

Reverse the procedure for re-assembly.

- b) bevel gear operated valves
  - to remove the bevel gear from the valve, unscrew nuts and turn the handwheel in the open direction indicated by the arrow until the drive nuts are disengaged from the stem.
  - to check the condition of the drive nut or bearing, unscrew the retainer ring and remove the drive nut and bearing. If damaged, a new drive nut or bearing is necessary.

### 2.6 Wedge and Seats

Leakage through seats and wedges is not always easy to spot when valves are in service. However, when leaks are identified, immediate action is necessary. Any delay can permanently damage seat or wedge seal surfaces.

To repair or replace wedges or seats, the valve must be removed from the line and the following procedure should be applied:

- make sure that the valve is not under pressure before unscrewing bonnet nuts;
- remove the bonnet, being careful not to damage the gasket;
- remove the bonnet when the wedge is in the half open position;
- lift up the bonnet until the wedge is disconnected from the guides;
- release the wedge from the stem.

If seat surfaces show signs of seizing, pitting, grooves or other defects not deeper than 0.8 mm (1/32") it is possible to repair seating surfaces to its original conditions by relapping the surface with fine grain abrasive paste, creating a perfect tightness once again.

Defects having a depth exceeding 0.8 mm (1/32") cannot be repaired by lapping. In this case, parts must be replaced.

It is recommended that the face of the disc be blued to check for contact of seating surface after final lapping. For re-assembly of valves use the procedure outlined under para. 2.4.

# GLOBE VALVE “O.S.” & “Y”

## 1.0 Periodic Inspections

**1.1** The valve stem packing should be inspected at least monthly. If the stem packing shows signs of leakage, simply tighten the adjusting nuts to compress the packing. Do not over-tighten the adjusting nuts as this will make operation of the valve more difficult. If, after tightening the adjusting nuts to their fullest extent, the leakage does not stop, it is then necessary to replace the stem packing. It is not recommended that additional packing rings be added to the stuffing box as this may cause damage to the stem sealing system. Please contact Bonney Forge or it's distributor for new stem packing sets. For packing replacement see paragraphs 2.2 and 2.3.

**1.2** The lubrication of the yoke nut should be inspected at least monthly. A high pressure grease gun should be used for valves supplied with ball type grease fittings. For valves supplied with a Stauffer type grease cup, the cup should be checked to assure that it is full so that the grease can be injected by turning the screw cap. The valve stem threads should also be given a coating of lubricant.

**1.3** Bonnet bolt tension should be checked periodically when valves are used in high temperature applications where creep may occur. Although leaks through ring joints are rare, erosion or corrosion could cause rings to fail. In these cases, a new ring gasket is required.

## 2.0 Extraordinary Maintenance or Replacement of Damaged Parts

**2.1 Stem.** If the stem locks or freezes, causes can generally be attributed to worn packing, a dry yoke nut or dry stem threads. In either of these cases, the following service is required:

- a\*) Unscrew gland nuts, remove gland flange and bushing to expose stem packing and lantern ring.  
Replace stem packing if it is damaged.
- b) Check lubrication of yoke nut. If it is dry, remove the yoke nut and determine if there is evidence of seizure marks.  
If so, replace it with a new yoke nut. Also check the nut and stem threads.

### 2.2 Disassembly of Stem Packing.\*

- a) In those cases where the valve cannot be removed from the piping system, it is important that prior to servicing, the valve be opened to its fullest extent. Partially unscrew nuts to reduce the compression load on the stuffing box. Remove the stem packing and then replace with new set(s) of packing. Reassemble plug and gland flange. Finally, tighten nuts sufficiently while allowing the stem to operate smoothly.
- b) To replace the stem when the valve is completely disassembled for general maintenance follow this procedure:
  - Open the valve and remove the bonnet bolts and nuts.
  - With the bonnet removed, unscrew the gland bolts and lift up the gland flange exposing the stem packing.
  - Remove the stem packing.
  - Remove handwheel, then turn stem to release it from yoke nut and remove from stuffing box.
  - Check condition of back-seat bushing for seizure marks. If apparent, order replacement parts.

\*CAUTION: Always be sure that the valve is de-pressurized and isolated prior to performing any maintenance work.



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## GLOBE VALVE “O.S.” & “Y” (CONTINUED)

### 2.3 The procedure to re-assembling the valve is as follows:

Re-insert the stem through the stuffing box, taking special care to reassemble parts in sequence. Insert the remaining packing rings into the stuffing box and compress using the gland ring and flange. Then, reassemble nuts and tighten. Note, the stem must slide freely through the stuffing box without applying excessive force. Finally, install the bonnet gasket making sure it is not damaged. The gasket should be replaced if there is any question as to its performance.

**2.4** Raise the bonnet assembly, making sure the stem is in the fully open position. Lower bonnet on to the valve body making sure that the disc fits exactly into body guides and the bonnet gasket is properly seated. Align holes and tighten bonnet nuts taking care that excessive force is not used, possibly damaging the gasket. Hydrostatically test the valve to assure that there is no leakage.

### 2.5 Disassembly of yoke nut

When necessary use the following procedure for disassembling and replacing yoke nut:

- a) direct hand-operated valves (handwheel)
  - remove set screw;
  - unscrew handwheel nut;
  - remove handwheel;
  - unscrew yoke nut retaining nut, removing spot welds if necessary;
  - Reverse the procedure for re-assembly.
  
- b) bevel gear operated valves
  - to remove the bevel gear from the valve, unscrew nuts and turn the handwheel in the open direction indicated by the arrow until the drive nuts are disengaged from the stem.
  - to check the condition of the drive nut or bearing, unscrew the retainer ring and remove the drive nut and bearing. If damaged, a new drive nut or bearing is necessary.

### 2.6 Disc and Seats

Leakage through disc and seats is not always easy to spot when valves are in service. However, when leaks are identified, immediate action is necessary. Any delay can permanently damage seat or wedge seal surfaces.

To repair or replace the disc or seats, the valve must be removed from line, then use the following procedure:

- make sure that the valve is not under pressure before unscrewing bonnet nuts;
- remove bonnet, being careful not to damage the gasket;
- remove bonnet when disc is in full open position;
- lift up bonnet

If seat surfaces show signs of seizing, pitting, grooves or other defects not deeper than 1.5 mm (1/16") it is possible to repair seating surfaces to its original conditions by relapping the surface with fine grain abrasive paste, creating a perfect tightness once again. Defects having a depth exceeding 1.5 mm (1/16") cannot be repaired by lapping. In this case, parts must be replaced.

It is recommended that the face of the disc be blued to check for contact of seating surface after final lapping. For re-assembly of valves use the procedure outlined under para. 2.4.

## SWING CHECK VALVES

No periodic maintenance is necessary. If gasket leaks are detected, correct using the following procedure.

- 1** - Disassemble all cover bolts and nuts.
- 2** - For check valves in sizes 16" and larger, lift up the cover by using a lever inserted into the drilled and tapped cover hole. For valves in sizes 14" and smaller, use one or two bolts and nuts inserted into cover holes and, using adequate force, move the cover upwards.
- 3** - Check that the hinge, nut, and pin are in good condition and firmly connected. Replace damaged parts as necessary.
- 4** - Lift and remove the disc-hinge assembly. Movement should be free and not hindered by any malfunction of the hinge pin. Where disc travel is not sufficiently smooth, remove plugs or blind flanges and then remove hinge pin. Check surface for seizure marks. If marks are deeper than 1.5 mm (1/16"); re-machine hinge pin and re-assemble. If defect depth is greater than 1.5 mm (1/16") a new hinge pin is necessary. When reassembling hinge pin, it is recommended that the disc be removed by loosening nut.
- 5** - When leakage is due to deterioration of seal surfaces caused by corrosion or foreign substances, it must be determined whether the disc or seat seal are the cause.

a) Deterioration of disc surfaces:

Disassemble disc by removing nut and washer. Repair surface by grinding and relapping using fine grain abrasive paste.

b) Deterioration of seat seal surfaces:

When seal surfaces are damaged and defects are confined to a small area but are not deeper than 0.8 mm (1/32"), the seal surface can be repaired. The recommended method is to use a cast iron strap with an outside diameter matching the valve's raceway. Then using a fine grain abrasive paste between the strap and raceway, it is rotated on the seat to restore original tightness. When defects are deeper than 0.8 mm (1/32") and found on the entire seal surface, a new seat is required. To replace the new seat, use preferably a pneumatic tool with a shape to match the dimensions of the valve seat. It is recommended that an anti seizing compound be used when installing the replacement seat to make threading it in to the body easier.

**CAUTION:** Always be sure that the valve is de-pressurized and isolated prior to performing any maintenance work.

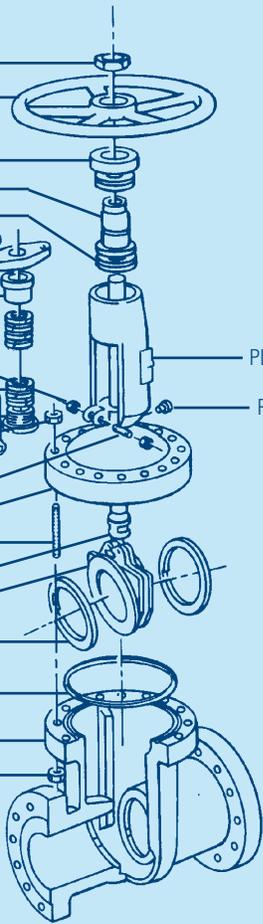


BONNEY FORGE

# STORAGE, INSTALLATION AND MAINTENANCE PROCEDURES

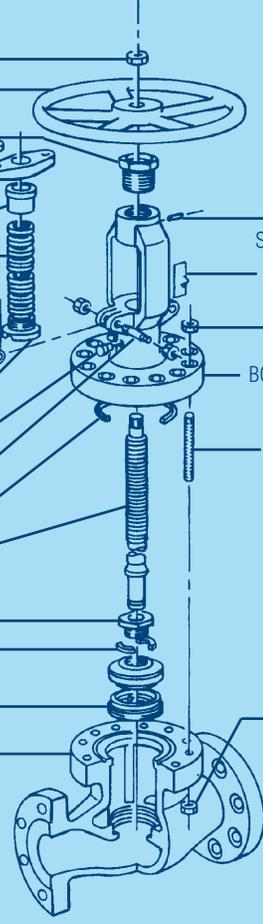
- HANDWHEEL NUT
- HANDWHEEL
- YOKE SLEEVE RETAINING NUT
- YOKE SLEEVE
- YOKE SLEEVE BEARING
- NUT
- GLAND FLANGE
- GLAND
- NUT
- PACKING
- BACK SEAT BUSHING
- NUT
- EYE BOLT
- PIN
- BONNET
- STUD BOLT
- STEM
- WEDGE
- SEAT RING
- BONNET GASKET
- BODY
- NUT
- PLATE
- PLUG

## GATE VALVE COMPONENTS



- HANDWHEEL NUT
- HANDWHEEL
- YOKE SLEEVE RETAINING NUT
- NUT
- GLAND FLANGE
- GLAND
- PACKING
- EYE BOLT
- BACK SEAT BUSHING
- PLUG
- PIN
- BONNET
- STUD BOLT
- STEM
- DISC NUT
- HALF RING
- BONNET GASKET
- BODY
- SET SCREW
- PLATE
- NUT
- BONNET
- STUD BOLT
- NUT

## GLOBE VALVE COMPONENTS



- PIN
- BONNET
- STUD BOLT
- GASKET
- PLUG
- PLUG GASKET
- NUT
- BODY
- PLUG
- PLUG GASKET
- HINGE PIN
- PIN
- NUT
- DISC WASHER
- HINGE DISC
- DISC
- SEAT RING

## SWING CHECK VALVE COMPONENTS

