

**Oteco Inc. Houston, Texas**  
**Model 72 Gate Valve Operation**  
Issued: HK      Date: 5/13/94

Manual: **OS-041 Rev.B**  
Revision Date: 10/6/11  
Approved: HK      Date: 5/16/94

**OTECO INC.**  
**MODEL 72 GATE VALVE**  
**OPERATION & MAINTENANCE**  
**MANUAL**

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## 1.0 OPERATION

- 1) Oteco gate valves are the rising stem type. It can be determined if the valve is open or closed by the position of the stem.
- 2) The valve should be fully open or closed. Fluid flowing through the valve with the gate in the partial open position (throttling) should be avoided, as this will greatly accelerate wear of the packing and gate.
- 3) The valve is closed by turning the hand wheel in the clockwise direction. The hand heel should be “bumped” several times to ensure complete closure.
- 4) To open the valve, turn the hand wheel in the counterclockwise direction.

## 2.0 LUBRICATION

- 1) Stem nut and bearing assembly should be lubricated with a universal type grease through the hydraulic grease fitting located on one side of split bonnet (item 4). Lubricate as needed so that the bearing and stem nut threads are coated with grease when valve is operated.
- 2) The valve body should be lubricated with a universal type grease through the hydraulic grease fitting near the top of the body (item 9). The body should be lubricated as required to prevent cement or drilling fluid solids from accumulating which would prevent upward motion of the gate.

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## 3.0 REPAIR

- 1) Oteco supplies minor and major repair kits for servicing the gate valves. The minor kit includes the following parts: two O-rings (item 12), two wear plates (item 11) and gate packing (item 10) or a gate packing with integral wear plates. The major kit includes, in addition to the minor kit, a gate (item 3) and a stem packing (item 7).
- 2) One or two hammer union seals (item 19) may be required for union type valves.

## 4.0 DISASSEMBLY

- 1) Remove all pressure from valve.
- 2) Open valve slightly by turning hand wheel (item 1) in the counterclockwise direction.
- 3) Remove four body stud nuts (item 16).
- 4) Turn hand wheel in clockwise direction to close valve until body is loose from body cap.
- 5) Remove hand wheel by lifting up on hand wheel while pulling pin in side of hand wheel outward.
- 6) Remove nuts and bonnet bolts (items 6 & 5). Remove split bonnet (item 4).
- 7) Remove stem nut and bearing assembly (item 2) by rotating stem nut clockwise.
- 8) Remove stem packing (item 7) from body. Remove stem packing from gate by screwing stem packing clockwise over threads. Remove stem packing ring (item 7) and gate (item 8).

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- 9) Remove gate packing (item 10) and wear plates (item 11).
- 10) Remove O-rings (item 12) from body subs. Remove hammer union seal or seals (item 19) from sub ends if applicable.
- 11) Body subs (item 13) are tack welded to body cap (item 14) at the factory and do not require removal unless they need replacing. If replacement of subs is required, grind off tack weld carefully such that minimal material is removed from sub and body cap. Remove body cap and subs.
- 12) Clean all parts and inspect for wear, corrosion, wash out etc. Replace parts as needed.

## 5.0 ASSEMBLY

- 1) Insert gate stem (item 3) through valve body stem packing bore (item 9).
- 2) Install stem packing ring (item 8) with flat end of ring in the bottom of stem packing bore.
- 3) Lubricate threads of gate stem (item 3) with universal type grease. Screw stem packing (item 7) counterclockwise over gate stem threads. Install stem packing in stem packing cavity of valve body (item 9).
- 4) Lubricate the stem nut threads (item 2) with a universal type grease. Screw stem nut counterclockwise over threads of gate stem (item 3).
- 5) Install split bonnet (item 4) over body neck and stem nut bearing. Install bolts (item 5) and nuts (item6).
- 6) Install hand wheel (item 1) onto stem nut (item 2). Turn hand wheel until paddle end of gate extends past body approximately one inch.

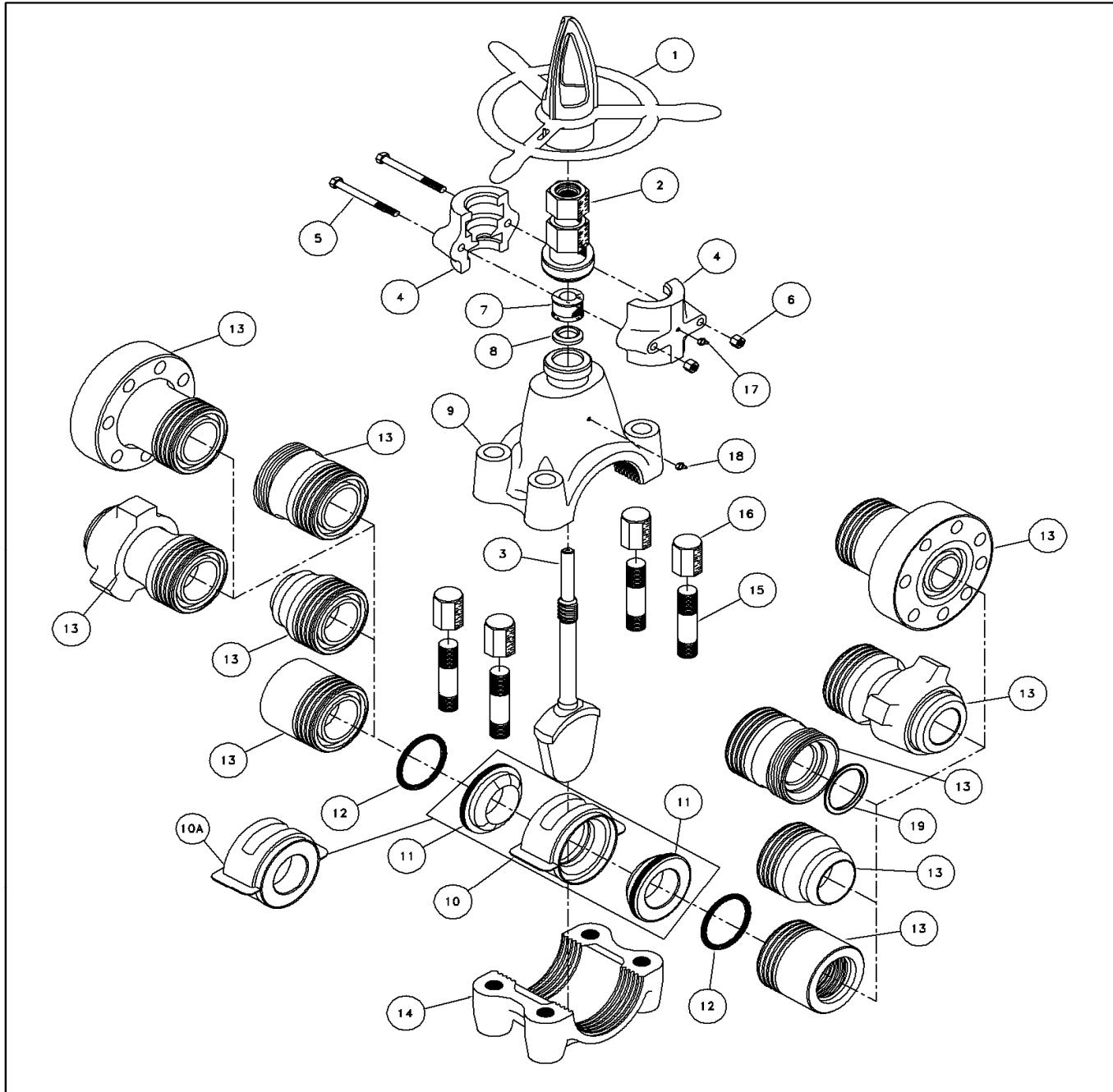
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- 7) Go to step 10 if body studs (item 15) and subs (item 13) are already installed, otherwise continue.
- 8) Lubricate body stud threads in body cap (item 14) with thread lubricant. Install body studs.
- 9) Lubricate circular grooves in body cap (item 14) and subs (item 13) with universal type grease. Install sub into grooves of body cap. Lubricate sub O-ring grooves and O-rings (item 12) with universal type lubricant. Install O-rings into grooves. Install hammer union seal or seals (item 19) into sub ends if applicable.
- 10) Install wear plates (item 11) into gate packing (item 10) (for integral type gate packing the wear plates are already installed in gate packing). Lubricate outside of gate packing and cavity of gate packing with universal type lubricant. Install gate packing with wear plates into body cap (item 14) and between body subs (item 13). O-rings (item 12) must stay in proper position in body sub grooves during installation of gate packing. A soft mallet may be used to install the gate packing. Ensure that the lips on both sides of the gate packing are equally spaced in the body cap.
- 11) Install body (item 9) over body studs (item 15). Tighten body stud nuts (item 16) evenly using a crossing pattern. Insure that gate is not in the fully closed position before tightening nuts. Tighten nuts to torques given in chart below.
- 12) Valve should be lubricated with a universal type lubricant through the hydraulic grease fittings located on the side of the split bonnet (item 4) and valve body (item9)
- 13) Fully open and close valve to ensure valve operates correctly.

<b>BODY STUD NUT TORQUE</b>			
<b>VALVE</b>	<b>2,000 P.S.I. W.P.</b>	<b>3,000 P.S.I. W.P.</b>	<b>5,000 P.S.I. W.P.</b>
<b>SIZE</b>	<b>Torque ft-lbs. (Kg-m)</b>		
2"	110 (15)	185 (25)	360 (50)
3"	185 (25)	385 (53)	725 (100)
4"	275 (38)	525 (73)	975 (135)

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## 6. Revision History

Signatures Date:

Harry Kujawa 5/14/94 Revision: A ECN1156

David Wu	10/6/11	Revision: B ECN2072