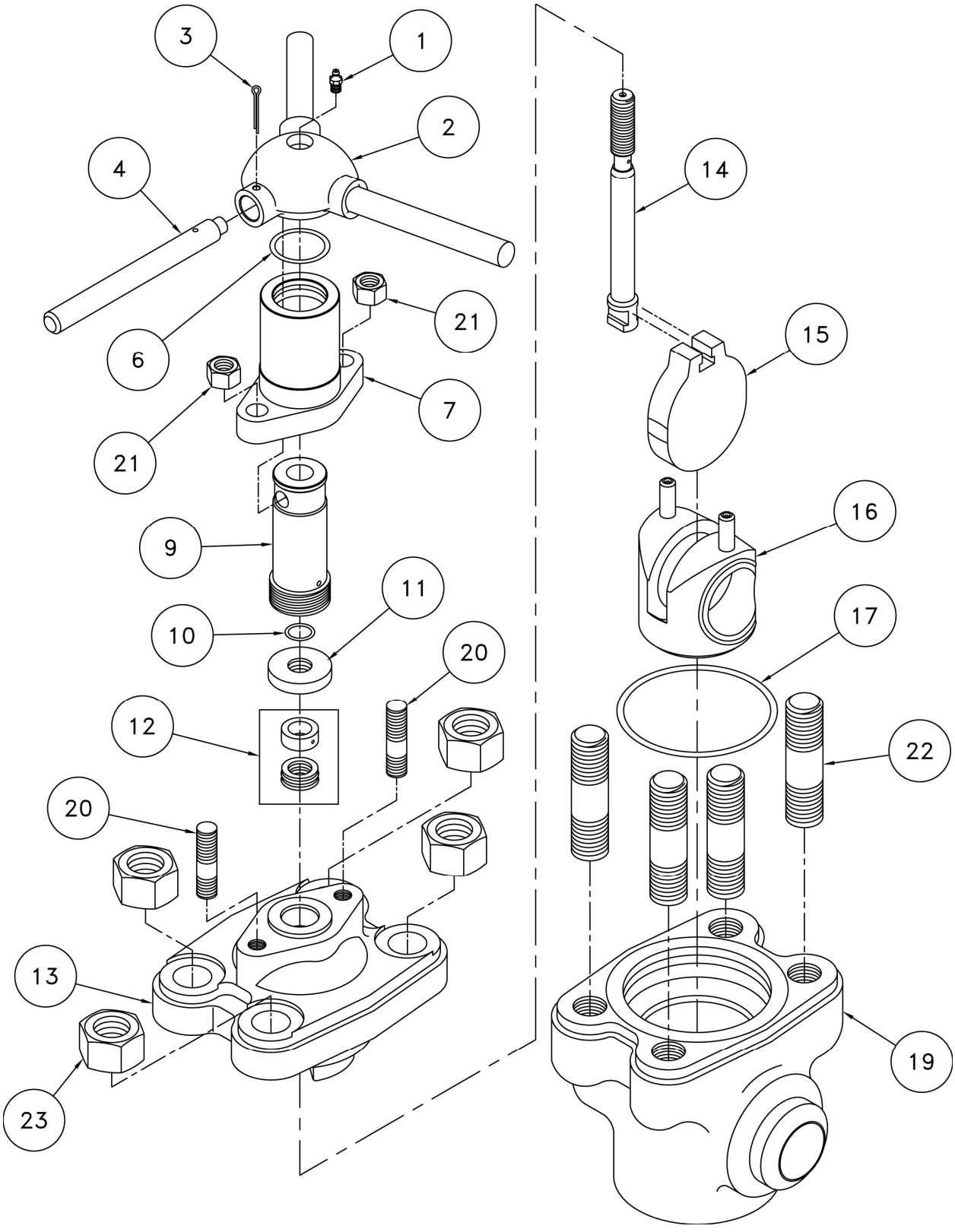
Oteco Inc. Houston, Texas	Manual: **OS-152800 Rev.A**
2" 7.5K DM Gate Valve Maintenance	Revision Date: 11/27/12
Issued: BH Date: 11/27/12	Approved: BH Date: 11/27/12

OTECO INC.
MODEL 28
2" 7,500 PSI
3" PORT
DM GATE VALVE
MAINTENANCE MANUAL

TABLE OF CONTENTS

Oteco Inc. Houston, Texas	Manual: **OS-152800 Rev.A**
2" 7.5K DM Gate Valve Maintenance	Revision Date: 11/27/12
Issued: BH Date: 11/27/12	Approved: BH Date: 11/27/12



REPAIR KIT CONTENTS

MINOR REPAIR KIT

1. GATE (15)
2. SEAT (16)
3. BONNET SEAL (17)

MAJOR REPAIR KIT

1. GATE (15)
2. SEAT (16)
3. BONNET SEAL (17)
4. STEM (14)
5. STEM SEAL ASSEMBLY (12)
6. STEM SCREW (9)
7. STEM SCREW SEAL (6)
8. RETAINER SEAL (10)

TECHNICAL SPECIFICATIONS

1. Grease – Molybdenum Disulfide base
2. Bonnet Nut (21) torque – 150 ft-lbs
   A. 3/4" stud - 1-1/4" socket or wrench
3. Body Nut (23) torque – 1,200 ft-lbs
   B. 1-3/8" stud - 2-3/16" torque or impact socket

TOOLS REQUIRED

Rawhide hammer – Large
1-1/4" socket or wrench
2-3/16" torque or impact socket
Pliers
Grease gun & brush
"O"-Ring pick

DISASSEMBLY

1. Release line pressure to zero. Turn Handle (2) counterclockwise to fully open the Gate Valve. Remove four right hand Body Nuts (23). Remove Bonnet assembly (items 1-13, 20, 21) from Valve Body (19) taking care not to damage Bonnet sealing surface on Studs (22). Collapse Seat (16) by pressing metal inserts together and remove from Body. Remove Bonnet Seal (17) from Body.

2. Turn Handle (2) clockwise until Gate (15) is in the fully closed position. Rotate Gate 90 degrees and slide off Stem (14). Inspect Gate, Stem & Bonnet sealing surface for wear & scratches.

3. Minor repair kit can be installed at this point by skipping to section 4 of the reassembly directions. For Major repair kit rebuild continue with disassembly procedures.

4. Once in the fully closed position using pliers remove Cotter Pin (3) from Handle (2). Pull Lock Handle (4) from Handle. Lift Handle from Stem Screw (9). Remove two right hand Bonnet Nuts (21). Lift Screw Housing (7) and internal components upward until flange clears Bonnet Studs (20). If flange does not clear Bonnet Studs use Lock Handle to turn Stem Screw (9) clockwise until clearance is obtained. Once Screw Housing flange clears Bonnet Studs rotate Screw Housing and Stem Screw clockwise until removed from assembly. While holding Screw Housing, rotate Stem Screw clockwise and remove. Remove Stem Screw Seal (6) from Screw Housing. Pull Retainer (11) off Stem (14). Remove Retainer Seal (10) from Retainer. Pull brass ring from Stem Seal Assembly (12) off Stem. Stem Seals may currently be left in place. Pull Stem out through bottom of Bonnet. Remove Stem Seals (12) from Bonnet. Degrease and check parts for wear or damage.

5. Major repair kit can be installed during reassembly along with any non repair kit parts that necessitate replacement.

REASSEMBLY

1. Slide Stem (14) threaded end first into Bonnet (13) from the underside. Place grease on Stem threads, sealing surface and Bonnet seal bore. Rotate Stem (14) on underside of Bonnet (13) and pull downward until Gate (15) can be slotted onto Stem. Place Stem Seal Assembly (12) over Stem and onto Bonnet top face. Seals may need to be threaded over Stem threads due to tight fit. Slide stem seal brass ring over Stem onto face of Stem Seals. Grease I.D. of Retainer (11) and place new Retainer Seal (10) into I.D. of Retainer groove. Slide Retainer with seal over Stem onto brass ring. Press Stem Seal Assembly into Bonnet by pressing down on both sides of Retainer.

2. Grease I.D. groove of Screw Housing (7). Insert new Screw Seal (6) into Screw Housing. Grease O.D. threads on Stem Screw (9). Insert Stem Screw into Screw housing and rotate counterclockwise until top face of Stem Screw is approximately 2.96" from Screw Housing face. Place assembly onto Stem (14) threads and rotate counterclockwise until Stem end is approximately 1.18" from face of Stem Screw. Line up Screw Housing flange holes with Bonnet Stud threads. Insert Bonnet Studs (20) through Screw Housing into Bonnet. Grease Bonnet Studs and Bonnet Nut (21) faces. Fasten Bonnet Nuts onto Bonnet Studs then torque to 150 ft-lbs.

3. Special consideration is to be given to the setting of the Stem Screw, Stem and Screw Housing. At this point using the Lock Handle (4) rotate the assembly to the fully open condition and place Seat (16) over Gate (15) and insert the metal Seat inserts into locator holes in Bonnet tabs. Gate should not extrude into Seat bore. Then rotate assembly until in the fully closed condition. With a marker mark Gate at bottom of Seat bore. Turn assembly clockwise until mark can be measured. The distance from mark to bottom of Gate should be approximately 7/16". If distance measured is insufficient redo section 2 rotating Screw Housing counterclockwise until proper stroke is achieved. Once Stroke is set place Handle (2) onto Stem Screw (9) lining up the holes. Insert Lock Handle (4) into Handle and

Stem Screw. Line up Lock Handle hole and insert Cotter Pin (3). Bend Cotter Pin to finish assembly. Turn Handle clockwise to the partially closed position and place Seat onto Gate and insert into Bonnet tab holes. Enough surface friction should exist to keep Seat on Gate for final assembly.

4. Grease I.D. groove and bore of Body (19). Place new Bonnet Seal (17) into Body I.D. groove. Place grease on Body Studs (22) and Body Nut faces (23) Using lift raise assembled Bonnet and Seat over Body and line up holes of Bonnet (13) with Body Studs (22). Slowly lower assembly into Body. Once Seat is in the Body and Body Studs extrude through Bonnet holes fasten Body Nuts (23) onto Body Studs. Evenly compress Bonnet assembly into Body using a cross bolt pattern of tightening nuts until Body face is touching metal to metal with Bonnet. Torque Body Nuts to 1,200 ft-lbs using the cross bolt method. Do not torque Bonnet assembly onto valve with Gate in fully closed position.

5. Using grease gun pack Bonnet assembly with grease using Grease Fitting (1) on top of Handle (2).