

**Oteco Inc. Houston, Texas**  
**2" 2K-5K DM Gate Valve Maintenance**  
Issued: BH      Date: 10/15/10

Manual: **OS-152000 Rev.A**  
Revision Date: 10/15/10  
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**OTECO INC.**  
**MODELS 22, 23 & 25**  
**2" 2,000 – 5,000 PSI**  
**2" PORT**  
**DM GATE VALVE**  
**MAINTENANCE MANUAL**

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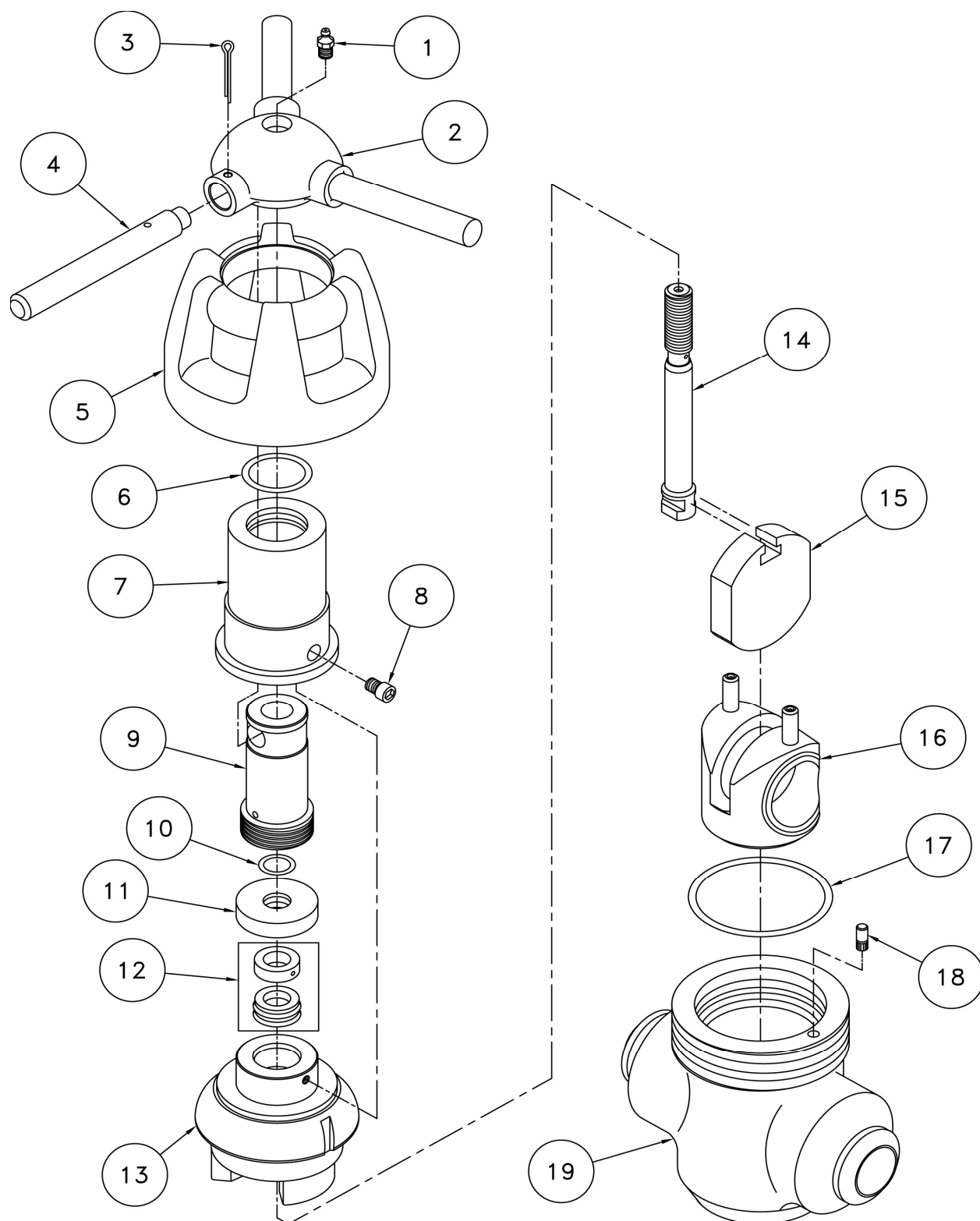
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## **REPAIR KIT CONTENTS**

### **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. Coupling (5) – use 3 lb. Engineer Hammer

## **TOOLS REQUIRED**

Rawhide hammer – any size  
3 lb Engineer's hammer  
Pliers  
¼" Allen wrench  
Grease gun & brush  
"O"-Ring pick

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## **DISASSEMBLY**

1. Release line pressure to zero. Turn Handle (2) counterclockwise to fully open the Gate Valve. Pull Cotter Pin (3), remove Lock Handle (4). Pull off Handle (2). Use 3lb engineer hammer to hammer the Coupling (5) tabs counterclockwise till loose then unscrew and remove. Remove the Bonnet assembly (items 6 through 15) from the Body (19). Inspect Gate, Stem & Bonnet sealing surface for wear & scratches.
2. 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.
3. Remove right hand Lock Screw (8). Then unscrew Stem Screw (9) with Stem Screw Housing (7) by turning clockwise. Unscrew Stem Screw from Screw Housing. Remove Stem Screw Seal (6) from Screw Housing. Pull Retainer (11) off Stem (14). Remove Retainer Seal (10) from Retainer. Remove brass ring from Stem Seal assembly (12). Stem Seals may currently be left in place. Pull Stem (14) and Gate (15) out through bottom of Bonnet. Remove Stem Seals (12) from Bonnet. Degrease and check parts for wear or damage.
4. Major repair kit can be installed during reassembly along with any non repair kit parts that necessitate replacement.

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## REASSEMBLY

1. Insert Stem (14) threaded end first into Bonnet (13) from the underside. Place grease on Stem threads, sealing surface and Bonnet seal bore. 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 over Stem onto brass ring. Press Stem Seal assembly into Bonnet seal bore by pressing down on both sides of Retainer. Pull Stem downward and rotate until Gate (15) can be slotted onto Stem end. Rotate Gate and push inward until Gate is recessed between Bonnet tabs while holding the compressed Stem Seal assembly in Bonnet.
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 2.085" from Screw Housing face. Place assembly onto Stem (14) threads and rotate counterclockwise until Stem end is approximately 0.750" from face of Stem Screw. Line up the hole in the side of the Screw Housing with the tapped hole in the Bonnet. Press assembly downward until Screw housing hole is over Bonnet tapped hole and fasten with Lock Screw (8).
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 counterclockwise to the fully open condition and place Seat (16) over Gate (15) and insert the metal Seat inserts into locator holes in Bonnet tabs. Metal Seat inserts should be bottomed out in Bonnet locator holes. Gate should not extrude into Seat bore. Then rotate assembly clockwise until in the fully closed condition. The base of the slotted Stem (14) should not enter the Seat. If Stem enters the seat and creates a gap this will prohibit the valve from sealing properly. Redo section 2 using less depth from Stem end to Stem Screw face setting until proper stroke is achieved. Then proceed to section 4.

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4. Grease the I.D. groove and bore of Body (19). Insert new Bonnet Seal (17) into Body I.D. groove. Grease faces of Gate (15) and place new Seat (16) onto Gate and insert the metal Seat inserts into locator holes in Bonnet tabs. If assembly is in partially closed condition enough surface friction should exist to hold Seat onto assembly. Insert assembly into Body and line up the milled slot on the Bonnet with the Index Pin (18). Using a rawhide hammer tap assembly into Body while keeping it lined up with the Index Pin. Grease external Body threads. Place Coupling (5) over assembly and rotate clockwise until tight. Using Lock Handle (4) rotate Bonnet Assembly counterclockwise into the partially open position. Using a 3 lb engineer's hammer, strike the tapered ribs on the Coupling until it stops tightening. Do not hammer coupling with gate in fully closed position. Using a rawhide or light weight hammer may fail to generate enough torque to properly secure the valve. 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.
5. Using grease gun pack Bonnet assembly with grease using Grease Fitting (1) on top of Handle (2).