DEMCO®
DM 7500 Gate Valve
Installation, Operation and Maintenance Manual
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PREFACE

The procedures included in this book are to be performed in conjunction with the requirements and recommendations outlined in API Specifications. Any repairs to the equipment covered by this book should be done by an authorized Cameron service representative. Cameron will not be responsible for loss or expense resulting from any failure of equipment or any damage to any property or death or injury to any person resulting in whole or in part from repairs performed by anyone other than authorized Cameron personnel. Such unauthorized repairs shall also serve to terminate any contractual or other warranty, if any, on the equipment and may also result in equipment no longer meeting applicable requirements.

File copies of this manual are maintained. Revisions and/or additions will be made as deemed necessary by Cameron. The drawings in this book are not drawn to scale, but the dimensions shown are accurate.

This book covers Cameron products.

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TABLE OF CONTENTS

Base Part Numbers .............................................................................................................7
Standard Bill of Materials ..................................................................................................9
Installation ..........................................................................................................................10
Operating Instructions for 7500 DM Gate Valves .............................................................11
DEMCO DM 7500 Gate Valve Overview ............................................................................12
Name Plate Information ....................................................................................................13
Storage ................................................................................................................................13
Assembly .............................................................................................................................15
  I.  2" Series DM 7500 Gate Valve .......................................................................................15
  II. 3" Series DM 7500 Gate Valve .....................................................................................17
  III. 4", 5" and 6" Series DM 7500 Gate Valve .................................................................20
Routine Maintenance ..........................................................................................................23
Troubleshooting ................................................................................................................24
Metric Weight, Torque and Dimension Tables ..................................................................25
Figure 1: Base Part Numbers Diagram

### DM 7500 Butt Weld End

<table>
<thead>
<tr>
<th>Size</th>
<th>2”</th>
<th>3”</th>
<th>4”</th>
<th>5”</th>
<th>6” x 5”</th>
</tr>
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<tbody>
<tr>
<td>Base Part Number</td>
<td>24993</td>
<td>25051</td>
<td>24967</td>
<td>24994</td>
<td>24981</td>
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<tr>
<td>Weight (lb)</td>
<td>76</td>
<td>256</td>
<td>310*</td>
<td>506</td>
<td>506</td>
</tr>
<tr>
<td>Wear Ring ID (Min)</td>
<td>1.97”</td>
<td>2.98”</td>
<td>3.97”</td>
<td>5.17”</td>
<td>5.17”</td>
</tr>
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</table>

### DM 7500 Flanged End

<table>
<thead>
<tr>
<th>Size</th>
<th>2”</th>
<th>3”</th>
<th>4”</th>
<th>5”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Part Number</td>
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<td>25051</td>
<td>24967</td>
<td>24994</td>
</tr>
<tr>
<td>Weight (lb)</td>
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<td>372</td>
<td>475*</td>
<td>761</td>
</tr>
<tr>
<td>Wear Ring ID (Min)</td>
<td>1.97”</td>
<td>2.98”</td>
<td>3.97”</td>
<td>5.17”</td>
</tr>
</tbody>
</table>

Other weld preps available.

**Note:** Refer to page 25 for metric Minimum ID and Weight tables.

Optional materials are available upon request. Contact your Cameron representative.
Figure 2: Standard Bill of Materials
# STANDARD BILL OF MATERIALS

<table>
<thead>
<tr>
<th>No.</th>
<th>Component</th>
<th>Material</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Handwheel</td>
<td>Ductile Iron</td>
<td>ASTM A536 Grade 65-45-12</td>
</tr>
<tr>
<td>2</td>
<td>Lock Screw</td>
<td>Carbon Steel</td>
<td>AISI 1213</td>
</tr>
<tr>
<td>3</td>
<td>Std Hd Cap Screw</td>
<td>Alloy Steel</td>
<td>ASTM B18.3</td>
</tr>
<tr>
<td>4</td>
<td>Gate Clip</td>
<td>Stainless Steel</td>
<td>AISI 302</td>
</tr>
<tr>
<td>5</td>
<td>Stem Packing Assy.</td>
<td>Elastomeric/Bronze</td>
<td>BUNA-N Seals/Bronze Bushing</td>
</tr>
<tr>
<td>6</td>
<td>Stem</td>
<td>Stainless Steel</td>
<td>AISI 410 HRC 22 Max</td>
</tr>
<tr>
<td>7</td>
<td>Bonnet</td>
<td>Alloy Steel</td>
<td>ASTM A487 Grade 4 Class C</td>
</tr>
<tr>
<td>8</td>
<td>Bonnet Stud</td>
<td>Alloy Steel</td>
<td>ASTM A193 Grade B7M</td>
</tr>
<tr>
<td>9</td>
<td>Bonnet Nut</td>
<td>Alloy Steel</td>
<td>ASTM A194 Grade 2H</td>
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<td>10</td>
<td>Bonnet Seal</td>
<td>Elastomeric</td>
<td>BUNA-N</td>
</tr>
<tr>
<td>11</td>
<td>Body</td>
<td>Alloy Steel</td>
<td>ASTM A487 Grade 4 Class C</td>
</tr>
<tr>
<td>12</td>
<td>Seat Insert</td>
<td>Stainless Steel/Elastomeric</td>
<td>AISI 410/BUNA-N</td>
</tr>
<tr>
<td>13</td>
<td>Gate</td>
<td>Alloy Steel</td>
<td>AISI 4130</td>
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<tr>
<td>14</td>
<td>Grease Seal</td>
<td>Elastomeric</td>
<td>BUNA-N</td>
</tr>
<tr>
<td>15</td>
<td>Wear Ring</td>
<td>Alloy Steel</td>
<td>AISI 4142</td>
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<tr>
<td>16</td>
<td>Wear Ring Seal</td>
<td>Elastomeric</td>
<td>BUNA-N</td>
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<tr>
<td>18</td>
<td>Stem Screw Assy.</td>
<td>Carbon Steel</td>
<td>AISI 1022</td>
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<tr>
<td>18A</td>
<td>Bearing</td>
<td>Steel</td>
<td>Roller Thrust</td>
</tr>
<tr>
<td>19</td>
<td>Screw Housing</td>
<td>Carbon Steel</td>
<td>AISI 1022</td>
</tr>
<tr>
<td>20</td>
<td>Grease Seal</td>
<td>Elastomeric</td>
<td>BUNA-N</td>
</tr>
<tr>
<td>21</td>
<td>Packing Retainer</td>
<td>Carbon Steel</td>
<td>AISI 1022</td>
</tr>
<tr>
<td>22</td>
<td>Hex Cap Screw</td>
<td>Alloy Steel</td>
<td>ASTM A307 Grade 2</td>
</tr>
<tr>
<td>23</td>
<td>Stem Protector</td>
<td>Plastic</td>
<td>Clear Acrylic</td>
</tr>
<tr>
<td>24</td>
<td>Stem Cap</td>
<td>Ductile Iron</td>
<td>ASTM A536 Grade 65-45-12</td>
</tr>
<tr>
<td>25</td>
<td>Grease Fitting</td>
<td>Commercial</td>
<td>-</td>
</tr>
<tr>
<td>26</td>
<td>Grease Vent</td>
<td>Commercial</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note: Individual drawings of each size 7500 DM are provided with assembly steps in manual.*
INSTALLATION

A. Handling of Valves

The valves should be lifted such that the body supports the load. The end connection necks are suitable places to attach lifting slings. Never use handwheels or other protruding parts or actuators not designated for this purpose. If the valve is equipped with lining lugs, these should be used for handling.

The end protector covers should be kept in place on the end connections during all handling and removed only during final installation of the valve.

During handling, end connection faces and fittings shall be protected against damage from the lifting devices.

B. Flanged End Valves

Boxed end wrenches are preferred for bolting the valve into the line, however, open-end wrenches may be used where there is insufficient clearance.

Threads of flange bolts and nuts should be lubricated to obtain maximum loading of bolts.

Finger-tighten all nuts first.

When tightening bolts, use the crisscross method and torque each bolt to API Specifications or the gasket manufacturer’s recommendations.

C. Weld End Valves

**Caution:** This valve has a resilient seat and seals. Remove bonnet, seat, bonnet seal and wear rings before welding into line.

Use solvent to clean grease or rust inhibitor, if present, from the bore and welded area of the valve.

Use a qualified weld procedure compatible with the body material listed in the valve bill of material. Electric welding equipment is preferred for all installations, however, if only oxygen-acetylene welding equipment is available, extreme caution should be taken regarding excess welding temperature.

Avoid rapid application of excess welding material. Weld each end of valve with a continuous bead using a 1/8” maximum diameter electric welding rod. Thoroughly clean weld slag from valve bore and line before reassembling the valve.

Follow applicable assembly section of this publication for instructions to reassemble the valve.

D. Hydrostatic Testing

When DEMCO® DM 7500 gate valves are installed in a piping system that requires hydrostatic testing of the adjoining pipe, the following procedure should be utilized to minimize any damage that could occur to the sealing surfaces and seat seals inside the valve.

The valve should be in the fully open position when the injection of test fluid begins. This will allow any pipeline debris to be flushed through the valve bore and out of the piping.
Once the piping system has been purged of debris and the system has been filled completely with the test fluid, the valve is ready for line testing. Make sure the valve is in the open position to prevent over pressuring of the seat seal. Please see valve nameplate information for maximum test pressure.

When testing the seats with the valve in the closed position, do not exceed the valve’s cold working pressure rating.

OPERATING INSTRUCTIONS FOR 7500 DM GATE VALVES

The 7500 DM gate valve should be either in fully OPEN or fully CLOSED position while in service.

**Caution:** *Never leave the valve partially open while handling flow as this will result in erosion to the gate and seat and could adversely affect the performance of the valve.*

1. Open the valve by turning the handle counterclockwise until the stem head back seats against the bonnet.
2. Close the valve by turning the handle clockwise until the gate is firmly seated against the bottom of the gate slot in the seat.

**Note:** *You will know the gate is firmly seated by the sharp increase in the operating torque as the gate makes contact.*

**Caution:** *Never back the handle off a fraction of a turn, as may be customary on other valves. Backing off the handle a fraction of a turn will result in leakage and erosive damage to the 7500 DM gate valve.*

Closing torque will depend on the condition of the valve, the operating pressure and the nature of the flow media.

Approximate torque values for closing a “new” 7500 DM gate valve against full-rated differential pressure for water are shown below.

<table>
<thead>
<tr>
<th>Chart 1: Closing Ft-Lbs Torque Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ft. Lbs. of Torque Required vs Valve Size and Internal Pressure for DEMCO DM7500 Valves</td>
</tr>
<tr>
<td>Valve Size</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>2”</td>
</tr>
<tr>
<td>3”</td>
</tr>
<tr>
<td>4”</td>
</tr>
<tr>
<td>5”</td>
</tr>
</tbody>
</table>

Refer to page 25 for Metric Torque Required vs Valve Size and Internal Pressure table.
DEMCO DM 7500 GATE VALVE OVERVIEW

The DEMCO Series DM 7500 gate valve is designed to meet the 7500 psi working pressure demands of deep well drilling. The DM 7500 gate valve is chosen for the following drilling applications:

- Standpipe manifolds
- Pump manifolds
- Pump manifold block valves
- High pressure drilling system block valves
- High pressure frac service

The DEMCO DM 7500 gate valve is available in sizes 2” to 6” with butt weld end or flanged end connections. The bonnet is easily removed for internal parts inspection and/or replacement without removing the valve from the line. This design permits fast and easy service without the need for special tools. When special tools or lubricants are required, this manual will name them.

Throughout this manual, you will find notes for CAUTION and WARNING. Failure to perform actions outlined in a CAUTION note could result in damage to the valve. Failure to perform actions outlined in a WARNING note could result in personal injury to the operator or other personnel.

Refer to page 25 for metric Dimensions Table.
NAME PLATE INFORMATION

You must have complete nameplate information when ordering parts from your Cameron representative.

STORAGE

The DEMCO 7500 gate valve should be stored off the ground, preferably on a pallet, and should remain covered until ready for installation. All provisions are made by Cameron personnel to protect the end connections of each valve from damage and to prevent the entry of dirt or debris into the valve during handling and shipping. Inspect the valve for chips, burrs, nicks or other damage that may have occurred during shipment that may cause malfunction. Pay particular attention to the valve gate and stem. Take care to keep the exterior of the valve protected and as clean as possible until ready for use.

All valves should remain in the OPEN position until installed.
Figure 5: 2” Series DM 7500 Gate Valve
ASSEMBLY

I. 2” SERIES DM 7500 GATE VALVE

Note: *If Lubricant is needed, use Chevron Ultra Duty #2 or its equivalent.*

Caution: *Keep lubricant and all valve parts free of chips, dirt and other debris. Failure to do so could cause damage to the valve and could result in valve malfunction.*

1. Install two stem screw housing studs (23) in the bonnet (16).
2. Lubricate the stem (9) and packing bore in the bonnet.
3. From the underside, gently slide the threaded end of the stem through the bonnet stem hole.

Caution: *Be careful not to scratch the sealing area of the stem while threading the end of the stem through the bonnet stem hole. Scratching the sealing area of the stem could result in loss of sealing capability.*

Stem Seal Assembly

The stem seal subassembly (12) consists of a bottom adapter ring, a soft rubber (special) seal ring, a fiber-reinforced seal ring, a flat-backed follower ring, and a bushing. These parts must be assembled over the stem (in the order listed) with the hollow side down as shown (see figure 5).

1. Apply lubricant to seal rings.
2. Gently work the seal rings down over the stem threads.
3. Work the seal rings individually into the bonnet bore.
4. Install the flat backed follower ring (flat side up) on top of the seal rings.
5. Slide bushing over stem and down to follower ring.

Caution: *Use care to avoid cutting or folding back the inside or outside edges of the seal rings. Failure to do so could damage the seal rings and may cause stem leakage.*

Do not use metal tools when working with the seal rings, use plastic tools when installing seal rings. Using metal tools could cause scratches on the stem or bonnet bore which could result in stem leakage.

4. Lubricate secondary seal O-ring (10) and place in groove in retainer (11). Work retainer and O-ring down gently over the stem threads and down on top of the bonnet.
5. Install O-ring (7) into groove in stem screw housing (8). Lubricate threads on stem screw and in stem screw housing. Assemble stem screw into the stem screw housing and engage six turns.
6. Lubricate stem threads. Set stem screw/stem screw housing into the stem and engage six turns. Do not let stem screw turn relative to stem screw housing during this operation.
7. Place stem screw housing down over studs.
8. Install two nuts (24) onto the studs. Torque to approximately 170 ft-lb.

9. Using the lock handle (4) and cotter pin (22) to secure, attach handwheel (2) to stem screw (6).

10. Install the gate clip (13) over the stem T-head and attach the gate (19) to the T-head of the stem. Bend the gate clip down (parallel with the gate) to lock the gate/stem together.

11. Lubricate bonnet O-ring seal (18) and install the O-ring seal onto the bonnet groove.

**Caution:** Make sure the groove is clean. Failure to keep groove clean of dirt or debris could cause damage to the valve.

12. Lubricate the body wear ring counter bores in the body (20) before installing O-rings (15) onto the wear ring (14) hub grooves.

**Note:** Two wear rings are required.

13. Install the wear rings (14) with the O-ring seals into the body (20) counter bores.

**Caution:** Use a wood or plastic bar to fully seat the wear rings. Using a metal tool to seat the wear rings could cause damage to these valve parts.

14. Lubricate the seat insert (21) and then align the lock shell button with the mailing hole in the bottom of the body cavity.

15. Squeeze the top of the seat insert (21) while installing it into the body cavity until the seat insert ring lock shoulders engage the mating wear ring access.

16. Lubricate the short ends of the body studs (25) or the tapped holes and thread them into the body (20) until the last run out thread on the stud is flush with the top of the body.

17. Turn the handwheel (1) clockwise until the handwheel contacts the top of the stem screw housing (8).

18. Now turn the handwheel counterclockwise for ten and . . . turns.

19. Rotate the gate and stem counterclockwise until the stem shoulder contacts the back seat in the bonnet.

20. Adjust to align the gate perpendicular to the axis of the stem screw housing studs (23).

**Caution:** Make sure the top of the seat insert (21) is fully open to allow insertion of the gate. Attempting to insert the gate when the seat insert is not fully open will cause damage to the valve.

21. Insert the bonnet assembly into the body until the body and bonnet are face-to-face.

22. Lubricate the body stud threads (25), thread on four nets (26) and evenly tighten to pull the bonnet down until it is flush with the body.

23. Torque nuts to approximately 550 ft-lb.

24. Close and open the valve while observing the gate position to make sure the valve will close and open fully.
Note: A clearance of 0.2” should exist between the handwheel and the top of the stem screw housing when the gate is fully closed.

Caution: If the valve is difficult to operate, the cause should be determined and the problem should be corrected before the valve is placed in operation. Always leave the valve in the OPEN position until the problem is corrected. If cause of problem cannot be determined, contact your Cameron Representative.

II. 3” SERIES DM 7500 GATE VALVE

Note: If lubricant is needed, use Chevron Ultra Duty #2 or its equivalent.

Caution: Keep lubricant and all valve parts free of chips, dirt and other debris. Failure to do so could cause damage to the valve and could result in valve malfunction.

1. Lubricate the stem (9) and packing bore in the bonnet (16).
2. From the underside, gently slide the threaded end of the stem through the bonnet stem hole.

Caution: Be careful not to scratch the sealing area of the stem while threading the end of the stem through the bonnet stem hole. Scratching the sealing area of the stem could result in loss of sealing capability.

Stem Seal Assembly
The stem seal subassembly (12) consists of a bottom adapter ring, a soft rubber (special) seal ring, a fiber-reinforced seal ring, a flat-backed follower ring, and a bushing. These parts must be assembled over the stem (in the order listed) with the hollow side down as shown (see figure 6).

1. Apply lubricant to seal rings.
2. Gently work the seal rings down over the stem threads.
3. Work the seal rings individually into the bonnet bore.
4. Install the flat backed follower ring (flat side up) on top of the seal rings.
5. Slide bushing over stem and down to follower ring.

Caution: Use care to avoid cutting or folding back the inside or outside edges of the seal rings. Failure to do so could damage the seal rings and may cause stem leakage.

Do not use metal tools when working with the seal rings; use plastic tools when installing seal rings. Using metal tools could cause scratches on the stem or bonnet bore which could result in stem leakage.

3. Lubricate secondary seal O-ring (10) and place in groove in retainer (11). Position the retainer with 1-5/8” counterbore toward the bonnet. Work retainer and O-ring down gently over stem threads.
4. Lubricate and install one thrust washer (13) on top of retainer (11).
5. Lubricate the stem (9) and stem screw (6) threads and turn stem screw counterclockwise on stem until it seats against the thrust washer. Install second thrust washer over the top of stem screw.
Figure 6: 3” Series DM 7500 Gate Valve
Caution: The packing may be damaged if the stem threads are allowed to fall below the retainer (11).

6. Install one O-ring (7) into the ID groove in screw housing (8).
7. Lubricate screw housing bore and stem screw (6) and install housing over studs (23).

Note: Lubricate screw threads to prevent galling.

8. Draw housing down with hex nuts (24) and torque hex nuts (24) to approximately 319 ft-lbs.
9. Install lube fitting (1) in the housing.
10. Install the handwheel (2) and key (5) onto the stem screw (6).
11. Install clear acrylic tube (3) and stem cap (4) over the stem and tighten snugly against the handwheel, making sure the acrylic tube is centered in its groove in the upper part of the stem cap.
12. Install the gate clip (14) over the stem T-head and attach the gate (19) to the T-head of the stem. Bend the gate clip down (parallel with the gate) to lock the gate/stem together. Now turn the handwheel counterclockwise to draw the gate up into the bonnet.
13. Lubricate bonnet O-ring seal (18) and install the O-ring seal onto the bonnet groove.

Caution: Make sure the groove is clean. Failure to keep groove clear of dirt or debris could cause damage to the valve.

14. Lubricate the body wear ring counter bores in the body (20). Install O-rings (17) onto the wear ring (15) hub grooves.

Note: Two wear rings are required.

15. Install the wear rings (15) with the O-ring seals into the body (20) counter bores.

Caution: Use a wood or plastic bar to fully seat the wear rings. Using a metal tool to seat the wear rings could cause damage to these valve parts.

16. Lubricate the seat insert (21) and then align the lock shell button with the mating hole in the bottom of the body cavity.
17. Squeeze the top of the seat insert (21) while installing it into the body cavity until the seat insert ring lock shoulders engage the mating wear ring recess.
18. Lubricate the short ends of the body studs (25) or the tapped holes and thread them into the body (20) until the last run out thread on the stud is flush with the top of the body.
19. Turn the handwheel (1) clockwise until the top of the stem is aligned with closed indicator on the stem cap (4).

Caution: Make sure the top of the seat insert (21) is fully open to allow insertion of the gate. Attempting to insert the gate when the seat insert is not fully open will cause damage to the valve.
20. Install the bonnet (16) assembly on the body (20) making sure that the gate (19) is aligned with the seat insert (21) and that the bonnet bolt holes are aligned with the body studs (25).

21. Drive the gate into the seat insert and turn the handwheel (1) counterclockwise a few turns to the partially OPEN position to fully seat the bonnet into the body.

22. Lubricate the body stud threads (25).

23. Thread the nuts (26) on and tighten evenly all around to pull the bonnet down flush with the body. Torque should be approximately 360 ft-lbs.

24. Close and open the valve while observing the gate position to make sure the valve will close and open fully.

Caution: If the valve is difficult to operate, the cause should be determined and the problem should be corrected before the valve is placed in operation. Always leave the valve in the open position until the problem is corrected. If cause of problem cannot be determined, contact your Cameron representative.

III. 4”, 5” AND 6” SERIES DM 7500 GATE VALVE

Note: If lubricant is needed, use Chevron Ultra Duty #2 or its equivalent.

Caution: Keep lubricant and all valve parts free of chips, dirt and other debris. Failure to do so could cause damage to the valve and could result in valve malfunction.

1. Lubricate the stem (6) and packing bore in the bonnet (7).

2. From the underside, gently slide the threaded end of the stem through the bonnet stem hole.

Caution: Be careful not to scratch the sealing area of the stem while threading the end of the stem through the bonnet stem hole. Scratching the sealing area of the stem could result in loss of sealing capability.

Stem Seal Assembly
The stem seal subassembly (5) consists of a bottom adapter ring, a soft rubber (special) seal ring, two fiber-reinforced seal rings, flat-backed follower ring, and a bushing. These parts must be assembled over the stem (in the order listed) with the hollow side down as shown (see figure 7).

1. Apply lubricant to seal rings
2. Gently overwork the seal rings down over the stem threads.
3. Work the seal rings individually into the bonnet bore.
4. Install the flat back follower ring (flat side up) on top of the seal rings.
5. Slide bushing over stem and down to follower ring.

Caution: Use care to avoid cutting or folding back the inside or outside edges of the seal rings. Failure to do so could damage the seal rings and may cause stem leakage.

Do not use metal tools such as screwdrivers when working with the seal rings; use plastic tools when installing seal rings. Using metal tools could cause scratches on the stem or bonnet bore which could result in stem leakage.
3. Lubricate secondary seal O-ring (20) and place in groove in retainer (21). Work retainer and O-ring gently down stem threads until flush with bonnet.

**Caution:** *When working in and around the stem, be sure to protect the stem from wrench damage.*

4. Lubricate the screw threads to prevent galling.

5. Draw the retainer packing down against the bonnet with four screws (3) spaced 90° apart.

6. Torque the cap screw (3) to approximately 112 ft-lbs.

7. Lubricate and install one bearing and two thrust washers (18a) on top of retainer. *(Bearing sets between two thrust washers).*

8. Lubricate the stem (6) and stem screw (18) threads and turn stem screw counter-clockwise on stem until it seats against the thrust washer. Install second set of bearings and thrust washers over top of stem screw.

**Caution:** *The packing may be damaged if the stem threads are allowed to fall below the retainer (21).*

9. Install one O-ring (14) into the ID groove of the screw housing (19).

10. Lubricate housing bore and stem screw and install housing over the stem screw, making sure that the large holes in the housing fill over the heads of the screws (3).

**Note:** *Lubricate screw threads to prevent galling.*

11. Draw housing down with hex bolts (22).

12. Torque hex bolts (22) to approximately 133 ft-lb on the 4” valve and 225 ft-lb on the 5” and 6”x 5” valves.

13. Install lube fitting (25) and relief fitting (26) in the housing.

14. Attach handwheel (1) to stem screw (18) with handwheel screw (2). Before tightening, make sure the end of the screw is aligned with the drilled hole in the stem screw.

15. Install clear acrylic tube (23) and stem cap (24) over the stem and tighten snugly against the handwheel, making sure the acrylic tube is centered in its groove in the upper part of the stem cap.

16. Install the gate clip (4) over the stem T-head and attach the gate (13) to the T-head of the stem.

17. Bend the gate clip down parallel with the gate to lock the gate/stem together.

18. Lubricate bonnet O-ring seal (10) and install onto the bonnet groove.

**Caution:** *Make sure the groove is clean. Failure to keep groove clear of dirt or debris could cause damage to the valve.*

19. Install O-rings (16) onto the wear ring (15) hub grooves.

20. Lubricate the body wear ring counter bores in the body (11).

**Note:** *Two wear rings are required.*
21. Install the wear rings (15) with O-ring seals into the body (11) counter bores.

**Caution:** *Use a wood or plastic bar to fully seat the wear rings. Using metal tools could cause damage to the rings.*

22. Lubricate the seat insert (12) and then align the lock shell button with the mating hole in the bottom of the body cavity.

23. Squeeze the top of the seat insert (12) while installing it into the body cavity until the seat insert ring lock shoulders engage the mating wear ring access (15).

24. Lubricate the short ends of the body studs (8) or the tapped holes and thread them into the body (1) until the last run out thread on the stud is flush with the top of the body.

25. Turn the handwheel (1) clockwise until the stem thread is aligned with the closed indicator on the stem cap (24).

**Caution:** *Make sure the top of the seat insert (12) is fully open to allow insertion of the gate. Attempting to insert the gate when the seat insert is not fully open will cause damage to the valve.*

26. Install the bonnet (7) assembly on the body (11) making sure that the gate (13) is aligned with the seat insert (12) and that the bonnet bolt holes are aligned with the body studs (8).

27. Drive the gate into the seat insert and turn the handwheel (1) counterclockwise as necessary to draw the bonnet into the body.

28. Lubricate the body stud threads (8) and thread the nuts (9) on and tighten evenly all around to pull the bonnet down flush with the body. Torque should be approximately 600 ft-lb on the 4” valve and 950 ft-lb on the 5” and 6” x 5” valves.

29. Close and open the valve while observing the gate position to make sure the valve will close and open fully.

**Caution:** *If the valve is difficult to operate, the cause should be determined and the problem should be corrected before the valve is placed in operation. Always leave the valve in the open position until problem is corrected. If cause of problem cannot be determined, contact your Cameron representative.*
ROUTINE MAINTENANCE

DEMCO Series 7500 gate valves are designed and manufactured for long service life and are virtually maintenance free. Valves should be cycled on a routine schedule, at least every three months. There is one grease fitting on the stem. This should be lubricated every six months with Chevron Ultra Duty #2 or its equivalent.

TROUBLESHOOTING

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Probable Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard to operate.</td>
<td>Material trapped in bonnet cavity or seal area.</td>
<td>Remove bonnet assembly and inspect bonnet cavity and seal area for debris. Refer to Assembly section. See pages 15 - 23 to disassemble the bonnet.</td>
</tr>
<tr>
<td></td>
<td>Bent stem; thread damage to stem or stem screw.</td>
<td>Inspect the stem and bonnet threads and replace, as needed. Always install new stem seal and bonnet seals when replacing any parts in the bonnet assembly.</td>
</tr>
<tr>
<td></td>
<td>Broken or gullled bearings.</td>
<td>Replace bearings.</td>
</tr>
<tr>
<td>Leaking between bonnet and body.</td>
<td>Bonnet seal is damaged.</td>
<td>Remove bonnet assembly and replace bonnet seal. See Assembly section, pages 15 - 23. Avoid tilting bonnet while lowering into the body to prevent damage to the bonnet seal.</td>
</tr>
<tr>
<td>Leaking through the valve bore.</td>
<td>Valve is not fully closed.</td>
<td>Make sure the gate is fully closed into the seat.</td>
</tr>
<tr>
<td></td>
<td>Gate or seat has been damaged.</td>
<td>Remove bonnet assembly to inspect gate for cuts or scratches in the metal. See Assembly section, pages 15 - 23. Also inspect the seat for damage on sealing surfaces or on bottom of seat. Replace with new parts and bonnet seal.</td>
</tr>
<tr>
<td>Leaking from the stem.</td>
<td>Stem seal assembly has damage.</td>
<td>Remove bonnet from valve. Refer to Assembly section. See pages 15 - 23, to disassemble the bonnet and replace stem seal assembly.</td>
</tr>
</tbody>
</table>
# METRIC WEIGHT, TORQUE AND DIMENSION TABLES

## Minimum ID and Weights

<table>
<thead>
<tr>
<th>DM 7500 Butt Weld End</th>
<th>50.8 mm</th>
<th>76.20 mm</th>
<th>101.60 mm</th>
<th>127.00 mm</th>
<th>152.40x127.00 mm</th>
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</thead>
<tbody>
<tr>
<td>Base Part Number</td>
<td>24993</td>
<td>25051</td>
<td>24967</td>
<td>24994</td>
<td>24961</td>
</tr>
<tr>
<td>Weight (Kg)</td>
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<td>116.23</td>
<td>140.74*</td>
<td>229.73</td>
<td>229.73</td>
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<tr>
<td>Wear Ring ID (mm)</td>
<td>50.04</td>
<td>75.7</td>
<td>100.84</td>
<td>131.32</td>
<td>131.32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DM 7500 Flanged End</th>
<th>50.8 mm</th>
<th>76.20 mm</th>
<th>101.60 mm</th>
<th>127.00 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Part Number</td>
<td>24993</td>
<td>25051</td>
<td>24967</td>
<td>24994</td>
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<tr>
<td>Weight (Kg)</td>
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<td>168.89</td>
<td>215.65*</td>
<td>345.50</td>
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<tr>
<td>Wear Ring ID (mm)</td>
<td>50.04</td>
<td>75.7</td>
<td>100.84</td>
<td>131.32</td>
</tr>
</tbody>
</table>

## Newton Meters (N•m) of Torque vs Valve Size and Internal Pressure

### Newton Meters (N•m) of Torque Required vs Valve Size and Internal Pressure for DEMCO DM 7500 Valves

<table>
<thead>
<tr>
<th>Valve Size</th>
<th>0 kg/Cm2</th>
<th>70.30 kg/Cm2</th>
<th>140.60 kg/Cm2</th>
<th>210.90 kg/Cm2</th>
<th>281.20 kg/Cm2</th>
<th>351.50 kg/Cm2</th>
<th>421.80 kg/Cm2</th>
<th>527.25 kg/Cm2</th>
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</thead>
<tbody>
<tr>
<td>50.80 mm</td>
<td>24 N•m</td>
<td>33 N•m</td>
<td>65 N•m</td>
<td>98 N•m</td>
<td>132 N•m</td>
<td>164 N•m</td>
<td>197 N•m</td>
<td>245 N•m</td>
</tr>
<tr>
<td>76.20 mm</td>
<td>43 N•m</td>
<td>57 N•m</td>
<td>115 N•m</td>
<td>172 N•m</td>
<td>230 N•m</td>
<td>287 N•m</td>
<td>344 N•m</td>
<td>431 N•m</td>
</tr>
<tr>
<td>101.60 mm</td>
<td>39 N•m</td>
<td>53 N•m</td>
<td>106 N•m</td>
<td>159 N•m</td>
<td>212 N•m</td>
<td>284 N•m</td>
<td>317 N•m</td>
<td>396 N•m</td>
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<tr>
<td>127.00 mm</td>
<td>69 N•m</td>
<td>92 N•m</td>
<td>186 N•m</td>
<td>278 N•m</td>
<td>370 N•m</td>
<td>462 N•m</td>
<td>556 N•m</td>
<td>694 N•m</td>
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DEMCO DM 7500 Dimensions

Figure 3: DEMCO DM 7500 (For Reference)

<table>
<thead>
<tr>
<th></th>
<th>50.80 mm</th>
<th>76.20 mm</th>
<th>101.60 mm</th>
<th>127.00 mm</th>
<th>154.40 mm</th>
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<tr>
<td><strong>Weld</strong></td>
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<td>A</td>
<td>228.60</td>
<td>466.65</td>
<td>330.20</td>
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<td>406.40</td>
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<tr>
<td>B</td>
<td>331.22</td>
<td>331.22</td>
<td>624.84</td>
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<tr>
<td>C</td>
<td>66.55</td>
<td>100.08</td>
<td>134.87</td>
<td>134.87</td>
<td>111.76</td>
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<tr>
<td>D</td>
<td>162.05</td>
<td>162.05</td>
<td>266.70</td>
<td>266.70</td>
<td>298.45</td>
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<tr>
<td>E</td>
<td>352.55</td>
<td>352.55</td>
<td>579.37</td>
<td>579.37</td>
<td>508.00</td>
</tr>
</tbody>
</table>
HSE Policy Statement
At Cameron, we are committed ethically, financially and personally to a working environment where no one gets hurt, nothing gets harmed.