Small O.D. Two Piece Valves

Including:
3 5/8” O.D. (GM47) Kelly Valves,
3 7/8” O.D. (GM24) Kelly Valves,
4 1/4” O.D. (G271) Kelly Valves,
and 4 1/4” O.D. (G270) Safety Valves

Disassembly and Assembly Procedures

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SAFETY CONSIDERATIONS

- Safety glasses should be worn along with other protective clothing as required.

- Proper tools and restraining devices (vises, clamps, etc.) should be used to secure the valve in a safe manner.

- Valve maintenance should be performed in a safe and suitable work area as designated by your supervisor.

- Personnel performing these operations should be familiar with small O.D. two piece valves and their uses.

- If unsure of any part of the operation, check with the valve manufacturer before proceeding.

These instructions are intended for disassembly and assembly of Global Manufacturing, Inc. small O.D. two piece valves only.

These written procedures are to be used in conjunction with Global Manufacturing, Inc.'s Small O.D. Two Piece Valve Preventive Maintenance Service Video.

VALVE DISASSEMBLY

FIGURE 1

1. Remove the valve from the drillstring. Clean the outside and inside in preparation for disassembly.

2. Ensure that the valve is in the closed position before beginning disassembly.

3. Break the service connection and separate the valve body and bottom sub.

FIGURE 2

4. Remove the ball from the body.

5. Rotate the stem to the full open position and remove the seat from the body.

6. Remove the stem from the body.

7. Remove the seat from the bottom sub.

8. Remove the spring from the bottom sub.

9. Remove all seals and o-rings. Remove the Teflon anti-friction ring (if equipped; used only on Low Torque Valves).

10. Inspect the o-ring and seal ring grooves on the seat for burrs or scratches.

11. Inspect the ball and stem to ensure that there are no scratches or excessive wear.

12. Inspect all seal areas on the ball, seats, stem, valve body and bottom sub to ensure that there is no pitting (or other forms of corrosion damage), washing, rounded corners or mechanical damage. Any parts found with damage shall be replaced or sent to Global Manufacturing for repair.

13. Inspect the valve body and bottom sub to ensure that there are no scratches or excessive wear.

14. Inspect the box & pin threaded connections for excessive wear, galling damage and shoulder damage. Any valves with connection damage shall be sent to Global Manufacturing for repair.

Disassembly and Assembly Procedures for Global Manufacturing, Inc.
Small O.D. Two Piece Valves

Figure 1

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Disassembly and Assembly Procedures for Global Manufacturing, Inc.
Small O.D. Two Piece Valves

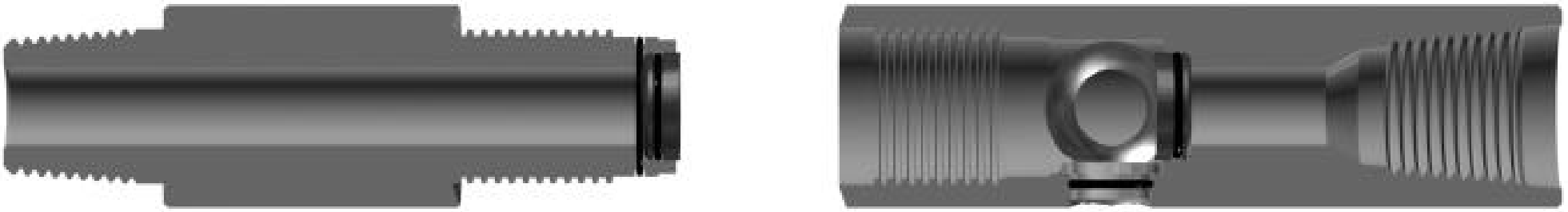

Figure 2

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VALVE ASSEMBLY

1. Replace all seals, o-rings and any worn or damaged parts (ball, seats, body, bottom sub, etc.)

FIGURE 3

2. Install the body o-ring on the bottom sub and apply grease to the inside ridge of the sub.

3. Install the spring on the shoulder inside the sub. The spring should slide freely into the bore.

4. Apply high grade lithium based grease to the seat, o-ring, seal ring and Teflon anti-friction ring (if equipped). Install the o-ring and Teflon seal ring and anti-friction ring on the seat.

FIGURE 4

5. Gently place the seat in the bottom sub (Teflon seal side out) and tap into place with a rubber mallet using caution not to damage the Teflon o-ring.

6. Apply pipe dope (containing 40 to 60% by weight of finely powdered metallic zinc and less than 0.3% active sulfur) to the service connection threads.

7. As necessary, use emery cloth to remove any sharp edges from the operating stem hole.

8. Apply grease to the valve bore, stem hole, stem, and o-ring. Install o-ring on the operating stem.

FIGURE 5

9. Install the operating stem using caution to properly orient cam flats to allow the valve to fully open and close.

10. Rotate the stem to the full open position.

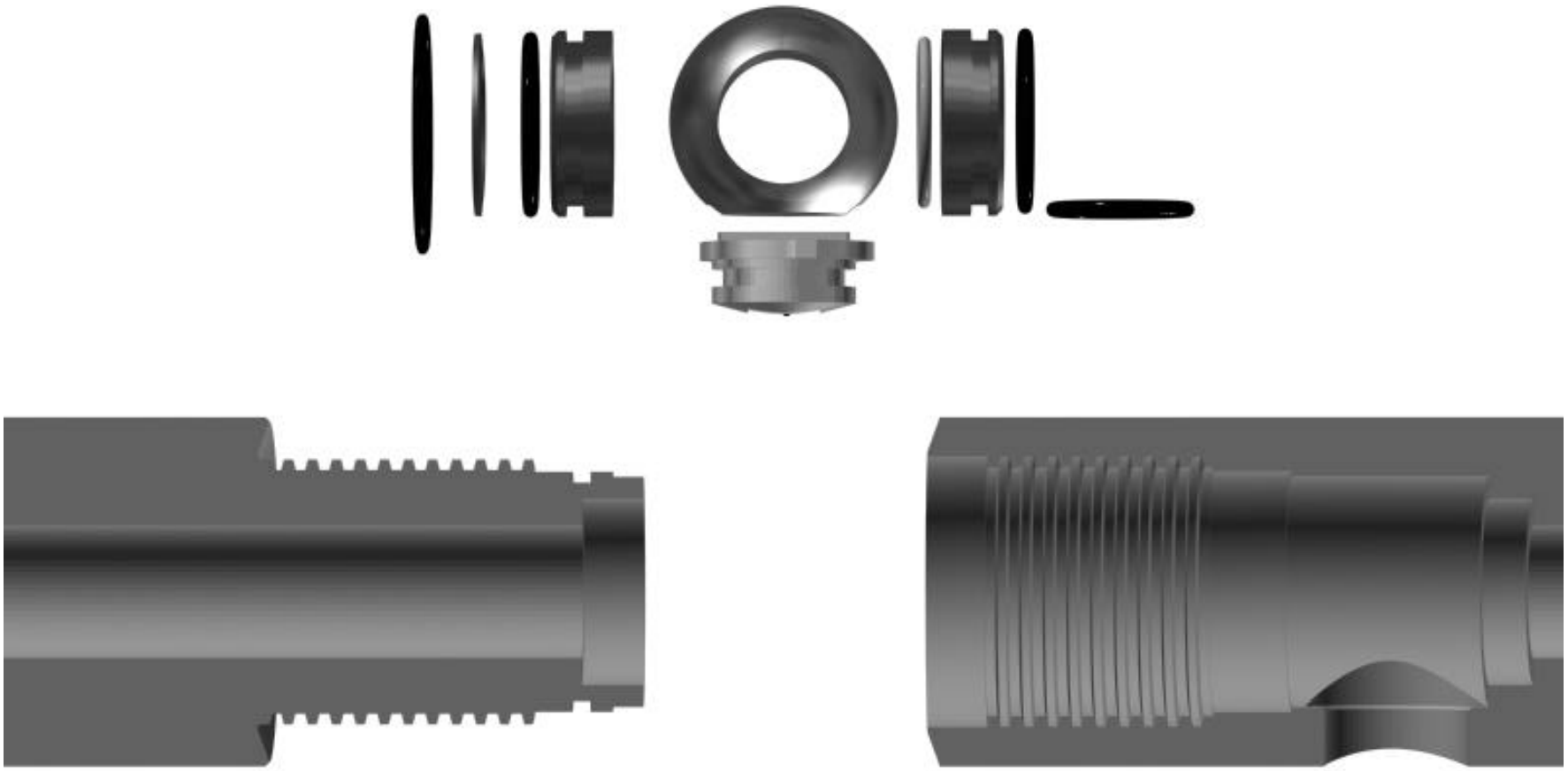

Figure 3

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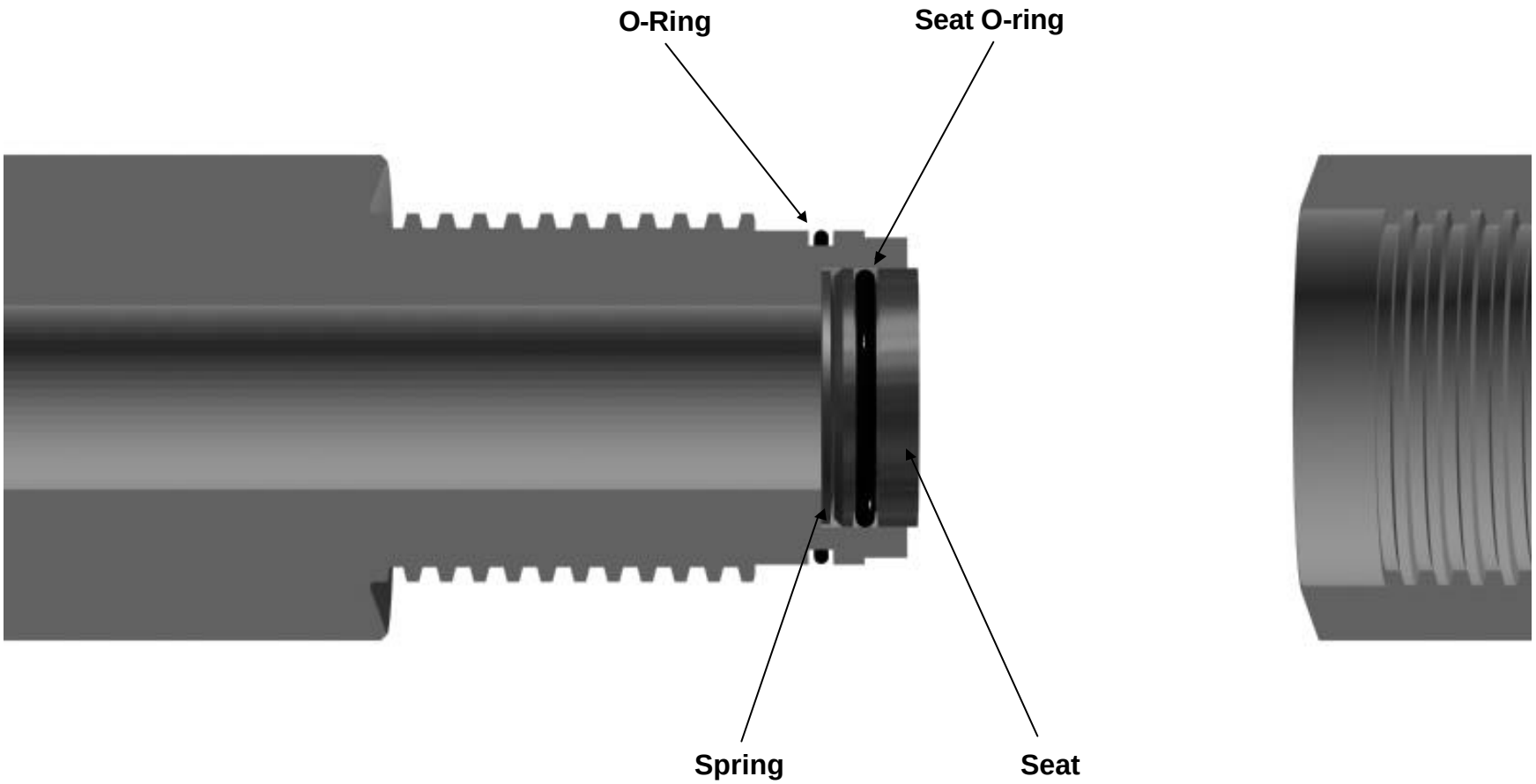

Figure 4

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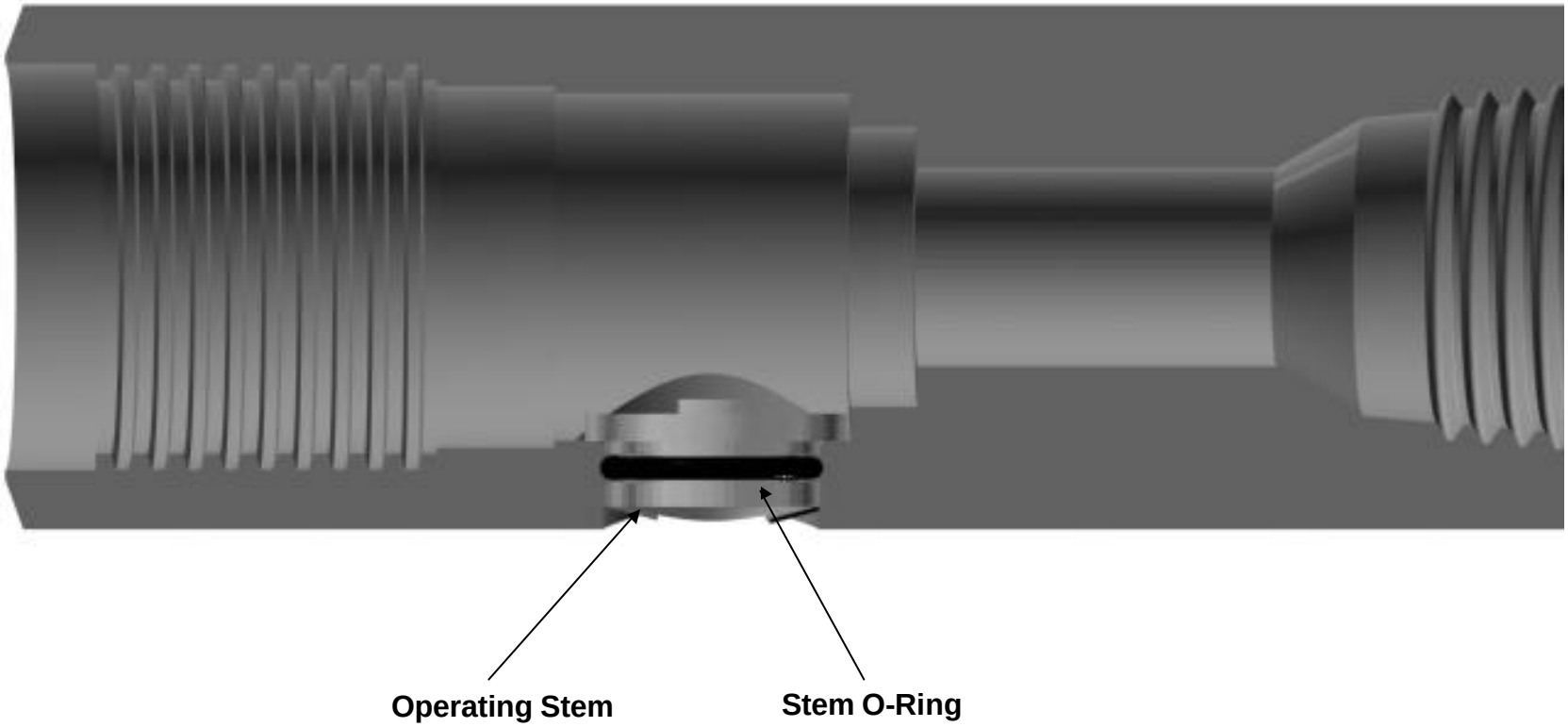

Figure 5

11. Apply grease to the seat, o-ring, and seal ring. Install o-ring and Teflon seal ring on the seat.

FIGURE 6

12. Gently place the seat in the body (Teflon seal side out) and tap into place with a rubber mallet using caution not to damage the Teflon o-ring.

13. Note the proper orientation for the valve stem in the open position.

14. Rotate the stem to the closed position.

15. Apply grease to the ball. Insert until resting on the seat with the operating stem key in the ball groove.

FIGURE 7

16. Note the proper orientation of the seats (Teflon seal rings toward the ball).

17. Apply pipe dope to the service connection threads.

FIGURE 8

18. Screw the bottom sub back onto the valve body until drag is felt. At this point, rotate the ball and stem 5° to 7° toward full open and hand tighten the service connection.

19. Check for smooth operation of the valve by opening and closing the valve.

20. Fully open the valve and ensure that there is no offset between the bore and the open ball.

21. Fully close the valve. Rotate the ball and stem 5° to 7° toward full open to prevent damage to the stem during make up.

22. Make up the service connection to the manufacturer's recommended torque.

23. Test the valve to the manufacturer's specifications to ensure no leakage.

FIGURE 9

24. Store the valve in the full open position until installed in the drillstring.

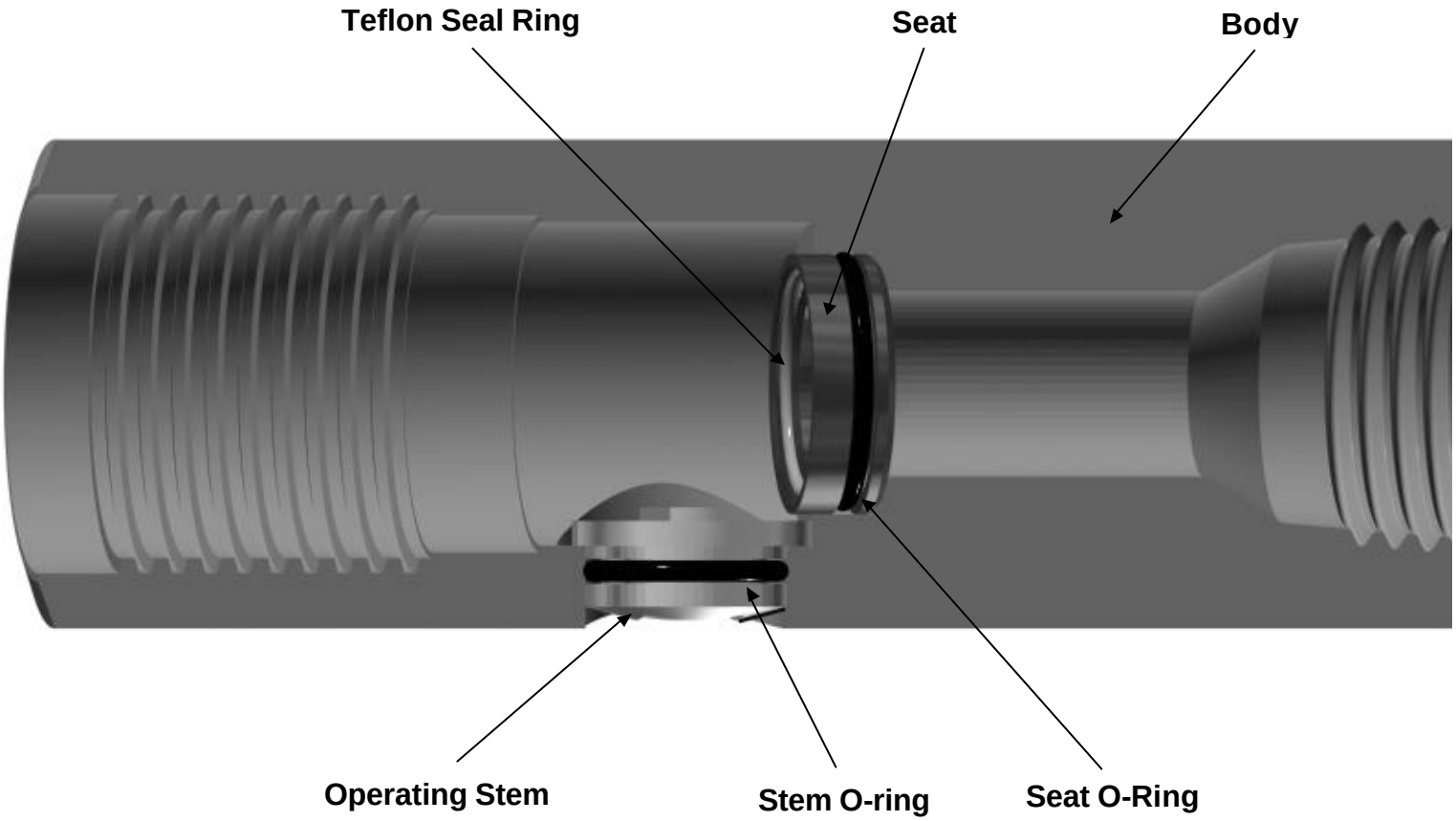

Figure 6

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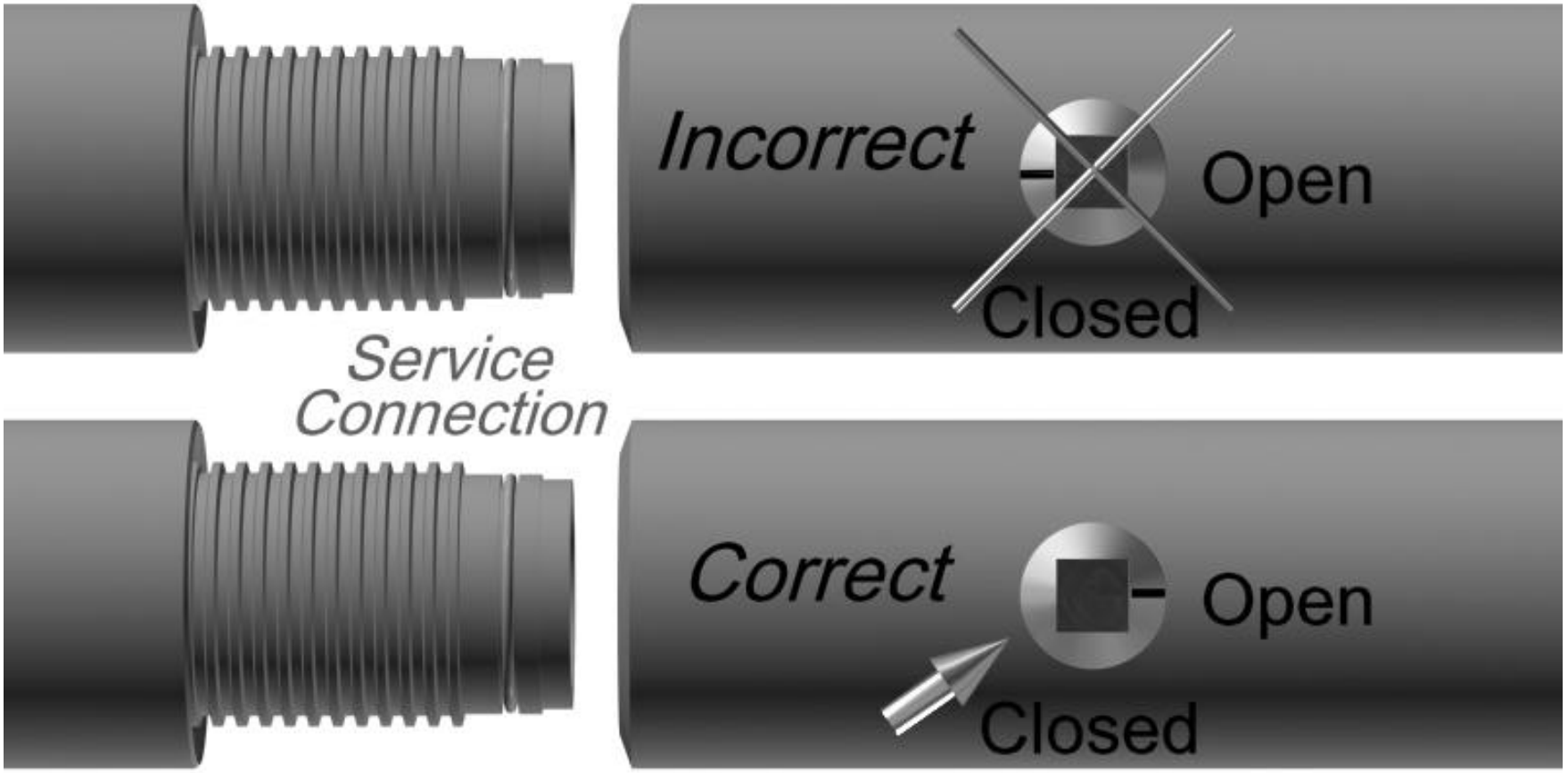

Figure 7

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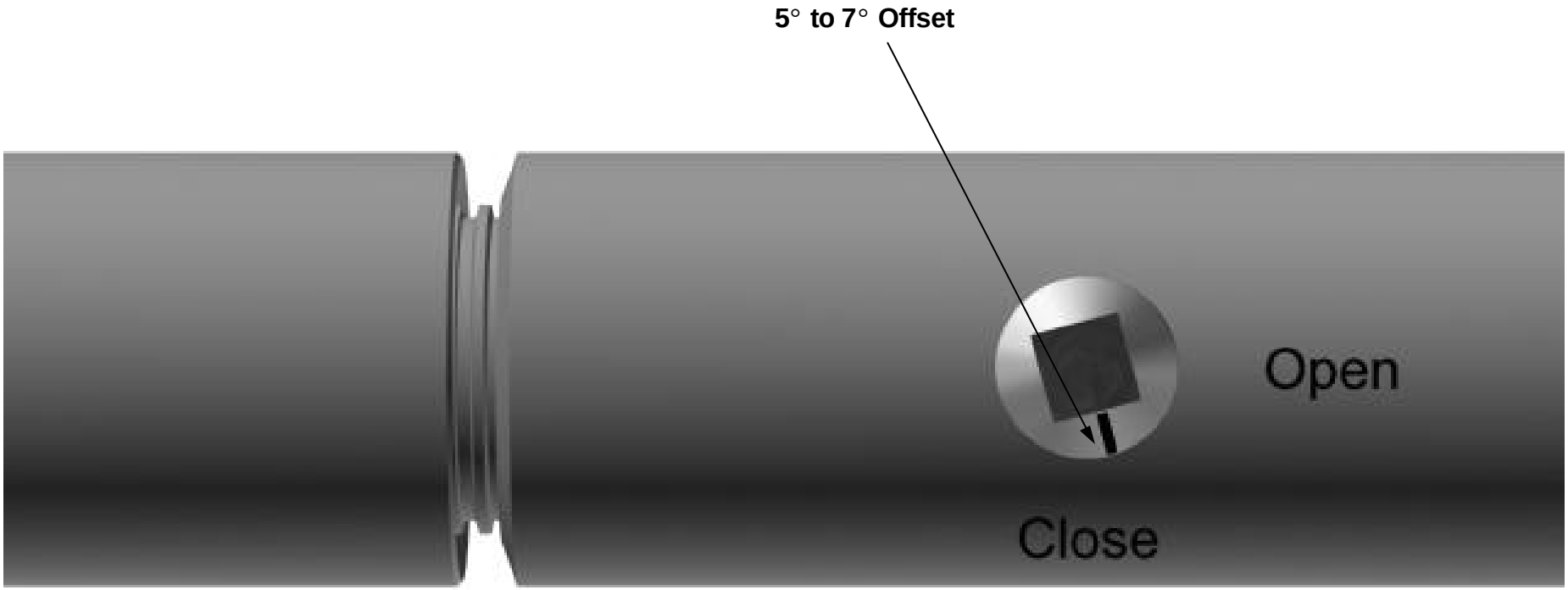

Figure 8

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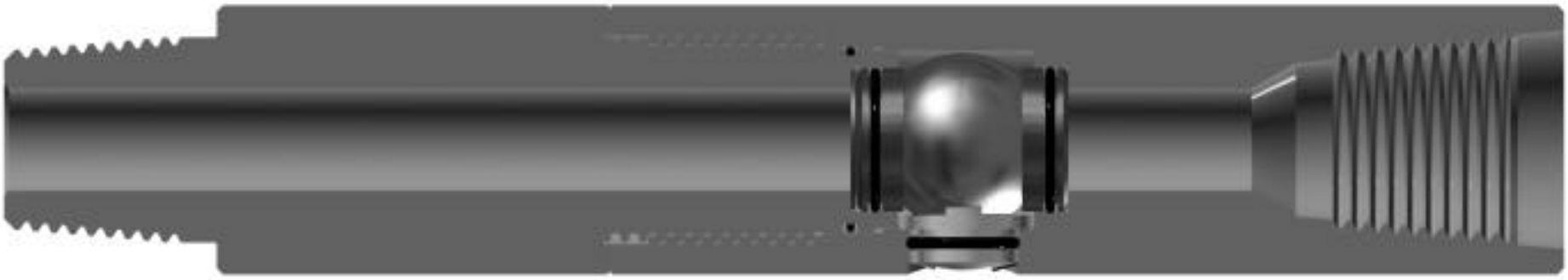

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Figure 9