Lower Top Drive Valve

Preventive Maintenance Service Video
Disassembly and Assembly Procedures

Global Manufacturing, Inc.
Lafayette, Louisiana USA 70508
Ph (337) 237-1727
Fax (337) 232-9353

Return to Table of Contents

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 Global Lower Top Drive 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. valves only.

These written procedures are to be used in conjunction with Global Manufacturing, Inc.'s Lower Top Drive Valve Preventive Maintenance Service Video.

VALVE DISASSEMBLY

FIGURE 1

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

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

FIGURE 2

3. Remove the spiral wound retainer ring and the solid retainer ring through the maintenance end of the valve.

4. Slide the four segments of the split ring toward the valve bore and remove.

5. Remove the spacer and upper seat.

6. Remove the ball from the body.

7. Rotate the valve stem 45° toward the open position and remove from body.

8. Remove the stop ring, lower seat, spring insert and nested spring from the body.

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 seats for burrs or scratches.

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

12. Thoroughly clean the inside of the valve including the stem counterbore, and split ring groove.

13. Inspect the valve bore, seat bore, and stem bore, to ensure that there are no internal scratches or excessive wear. Inspect all seal areas on the ball, seats, stem and body 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 returned to Global Manufacturing for repair.

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

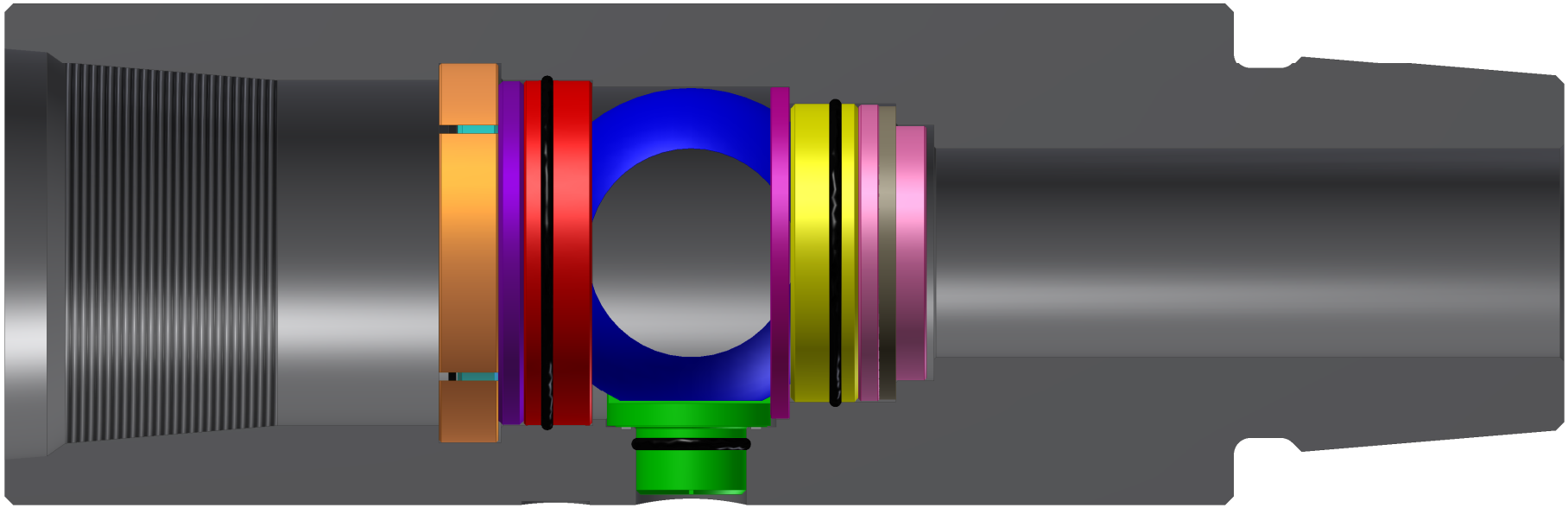


Figure 1

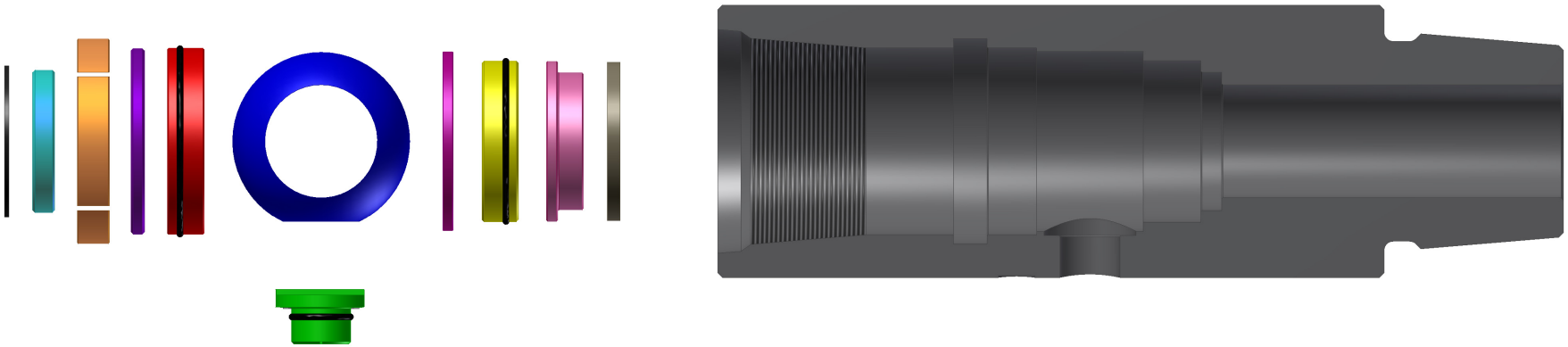


Figure 2

VALVE ASSEMBLY

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

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

FIGURE 3

3. Apply a high grade lithium based grease to the inside bore of the valve. Install nested spring on the shoulder inside the body. The spring should slide freely into bore.

4. Install spring insert into the body against the nested spring.

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

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

7. Install the stop ring on the shoulder inside the body. The stop ring should slide freely into the bore.

FIGURE 4

8. Apply grease to the operating stem, o-rings, and the Teflon anti-friction ring. Install the o-rings and the Teflon anti-friction ring on the stem.

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

FIGURE 5

10. Note the proper orientation of the valve stem in the closed position.

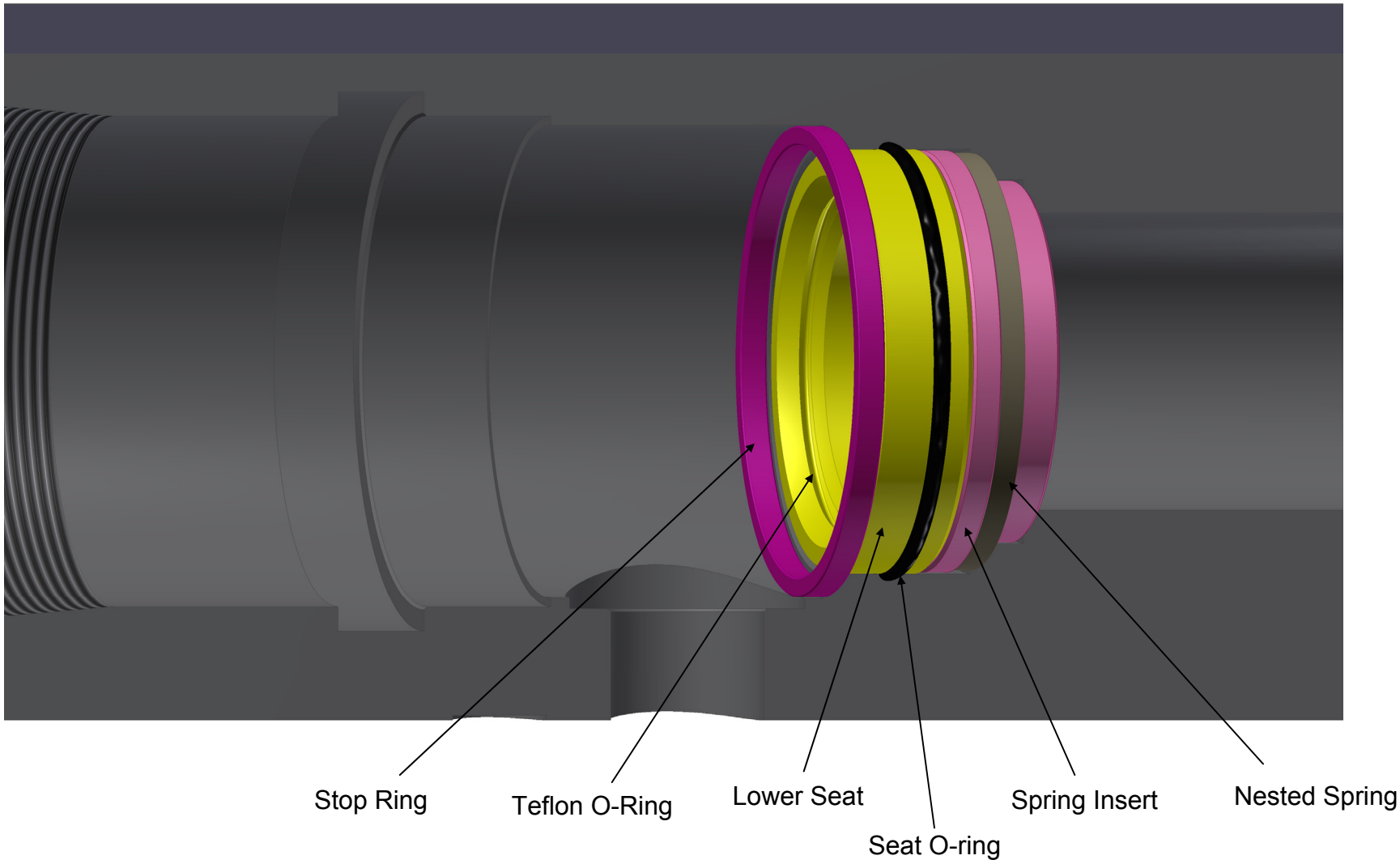

Stop Ring
Teflon O-Ring
Lower Seat
Seat O-ring
Spring Insert
Nested Spring

Figure 3

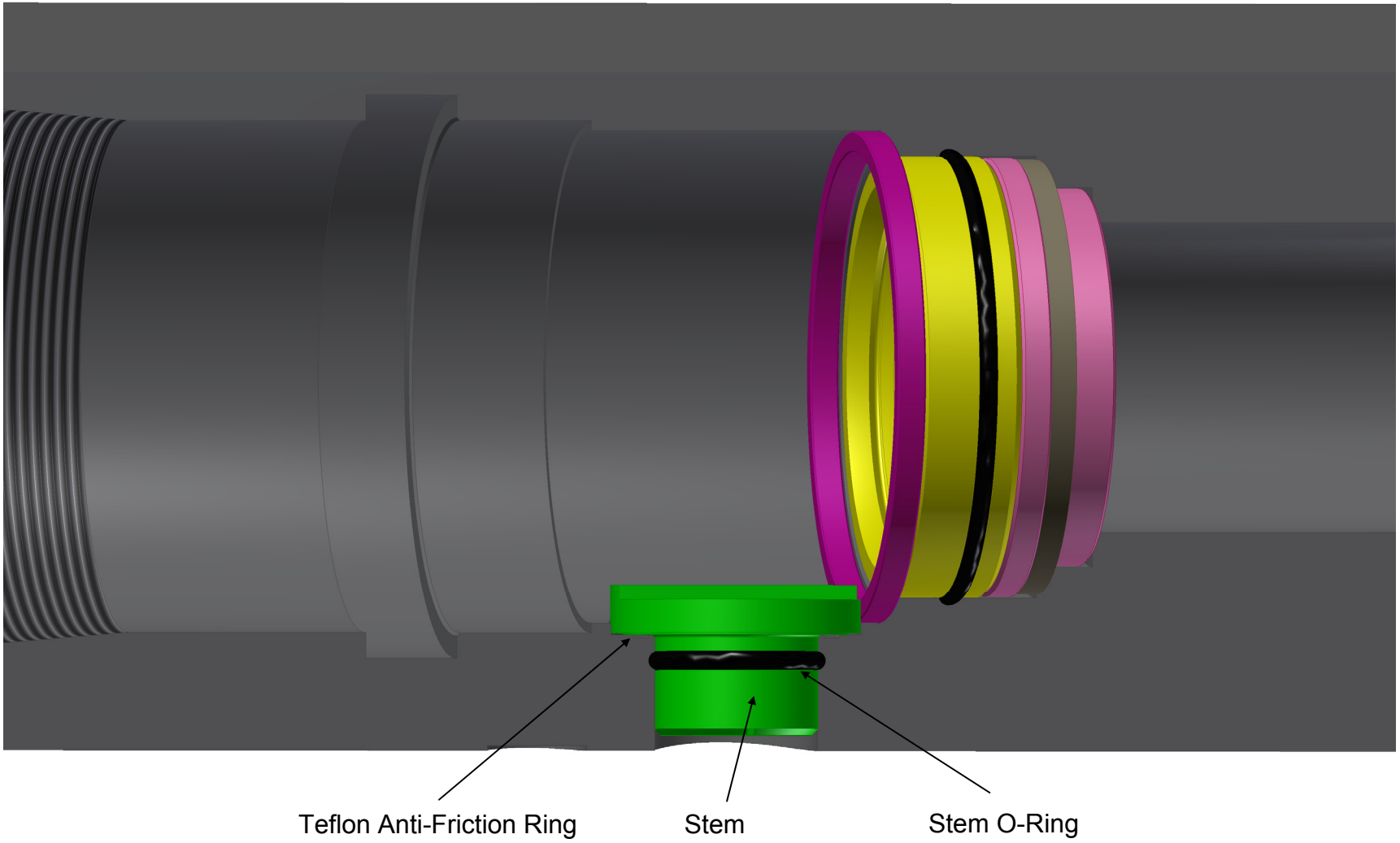


Figure 4

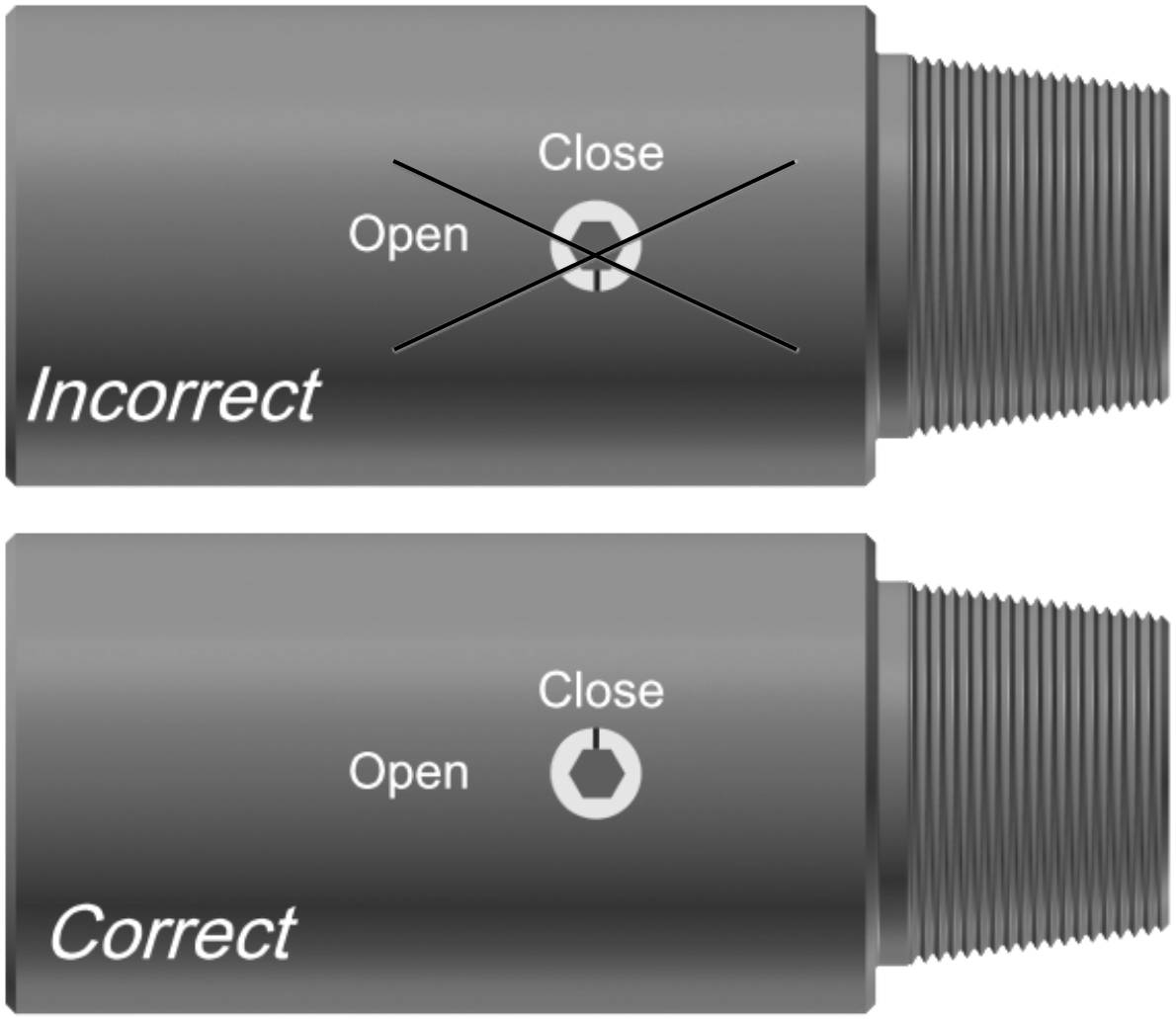


Figure 5

FIGURE 6

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

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

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

FIGURE 7

14. Install the spacer ring. Open the valve and use a pulling tool to pull the spacer ring to the bottom of the split ring groove.

15. Install the split ring segments into the groove.

FIGURE 8

16. Release the pulling tool. Install the retainer ring into the bore of the split ring.

16. Install the spiral retainer ring.

17. Check for smooth operation of the valve by opening and closing the valve with the operating stem.

FIGURE 9

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

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

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

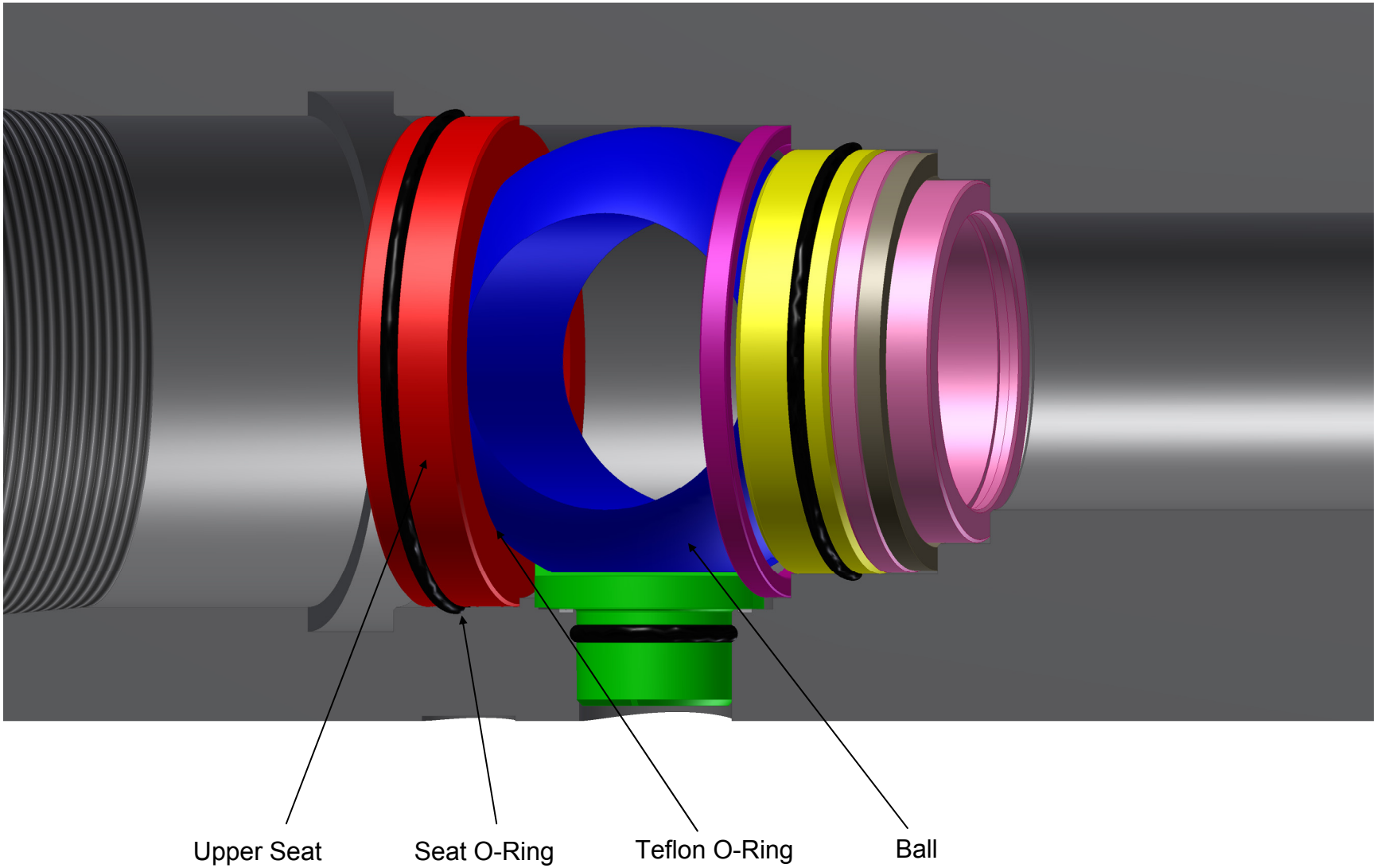


Figure 6

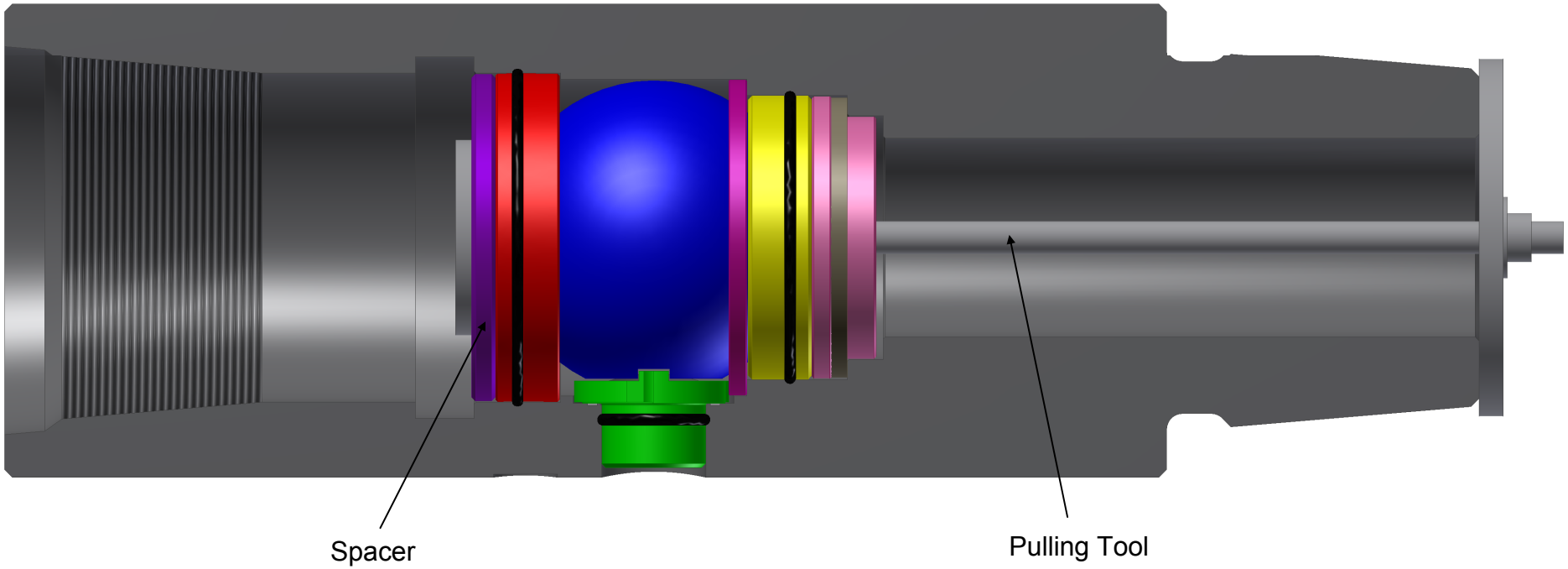


Figure 7

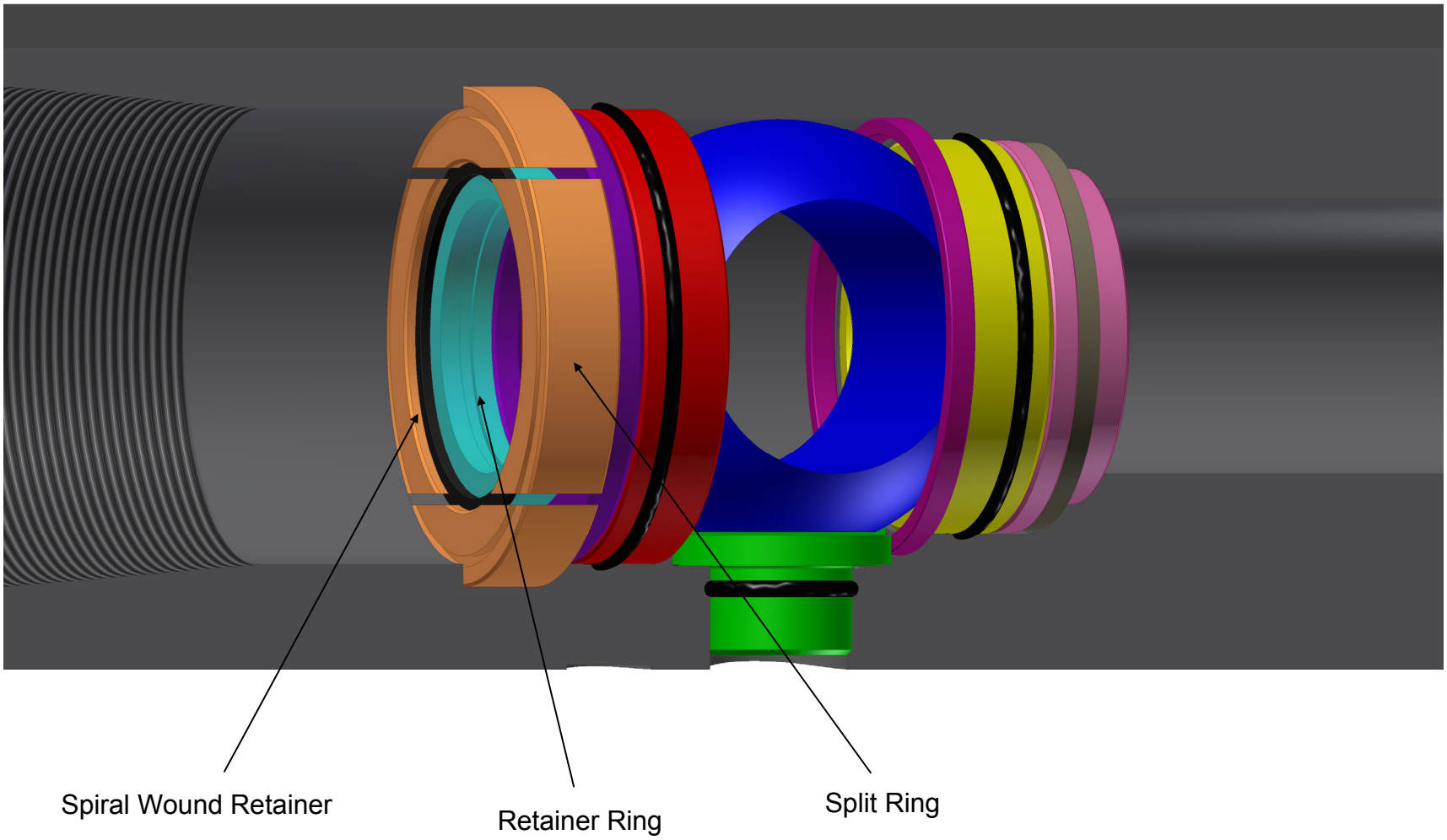
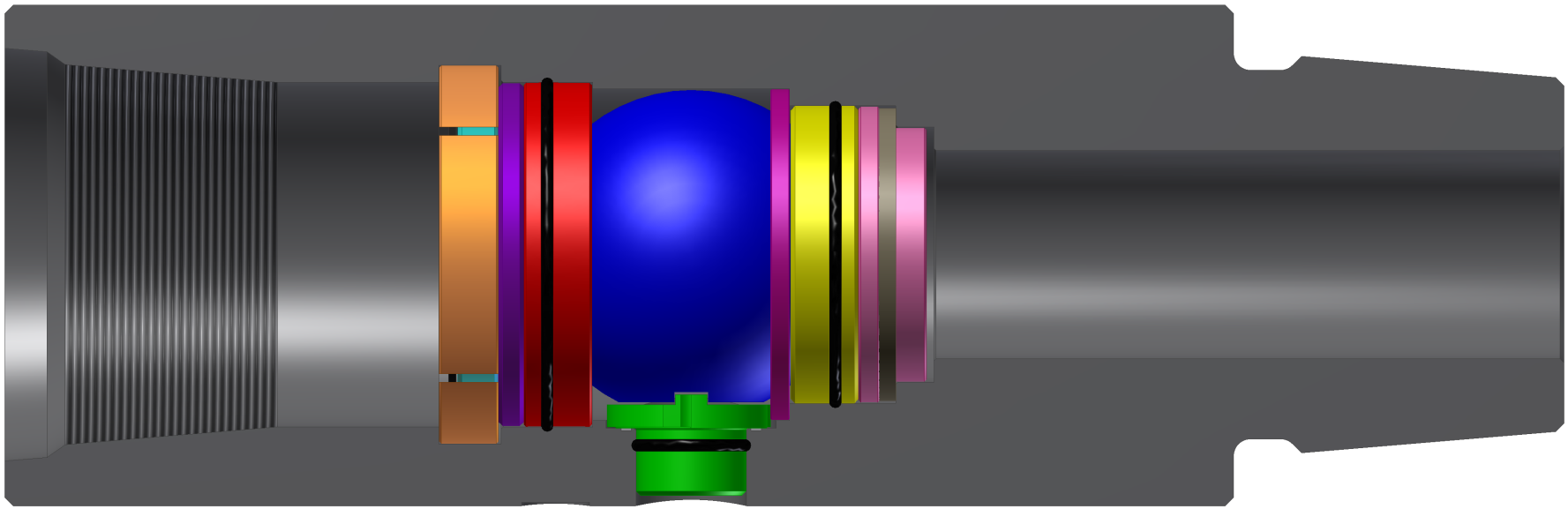


Figure 8



Return to Table of Contents

Figure 9