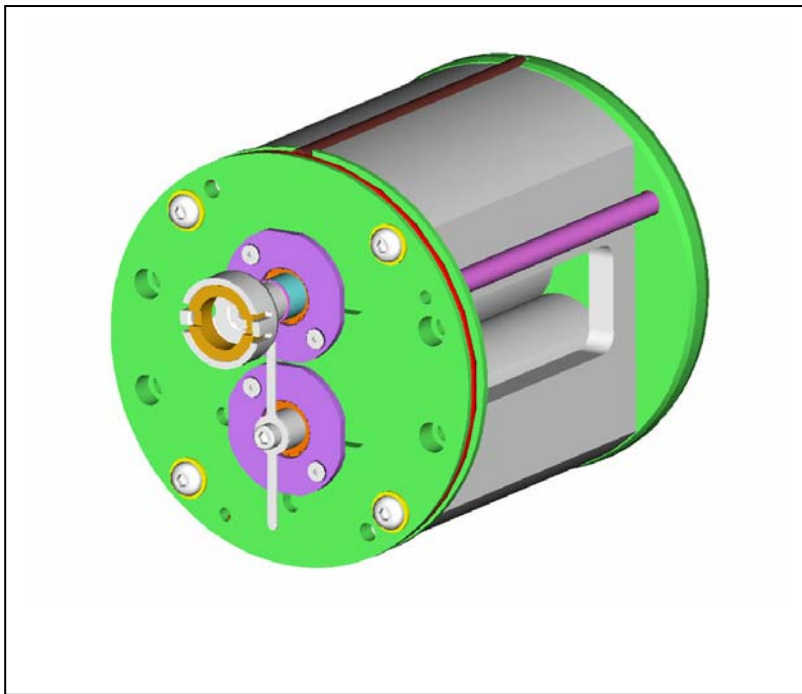


Dresser™ Meters and Instruments

Field Installation:

Cartridge Replacement & Conversion; 1M/3M740/1480 HPC



REVISIONS					
REV	ECO	DATE	REV	ECO	DATE
A	7640	05OCT98	F	Update	26JUL06
B	7788	18OCT99	G	9113	14MAY08
C	7856	22MAY00	H	9790	14JAN14
D	7950	19FEB01	J	9817	10MAR14
E	8234	12MAR03			

Drawn	Date	Checked	Designed	Approved	Released
DDW	13APR98	NBF	SMM	RDB	11SEP98

Cartridge Replacement and Conversion 1M and 3M740 & 1480 HPC

Tools Required

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- (2) Large screwdrivers or crowbars
- Allen® wrench sizes: 3/32, 5/32, ¼, and 3/8
- (2) 740/1480 Cartridge Removal/Installation Studs
- (2) 7/8-9 Threaded rods
- (2) ¾ -10 x 2" set screws
- ½" open end wrench
- 5/8" open end wrench
- Small container (4 oz) of multipurpose grease
- 40-in-lb ¼" drive torque wrench
- ¾" 12-point ¾" drive impact socket
- 600-ft-lb ¾" drive torque wrench

C



CAUTION: PROTECT THE TIMING GEARS FROM DAMAGE WHEN REMOVING OR INSTALLING A CARTRIDGE ASSEMBLY. DO NOT SET THE ASSEMBLY DOWN ONTO THE TIMING EAR END. DAMAGE TO THE TIMING GEARS/CARTRIDGE ASSEMBLY MAY AFFECT METER ACCURACY. RESULTING DAMAGE DUE TO A FAILURE TO OBSERVE THIS WARNING WILL VOID ALL WARRANTY.

1. **DANGER:** Slowly depressurize and vent all pressure from the meter set before working on the meter.

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2. Remove the four screws holding the accessory unit on using the 5/32" Allen wrench. Reference Figure 1. *Slowly* pull the accessory unit off the meter. Remove the O-ring. Refer to "Installing the Accessory Unit on the Meter" in the Installation, Operation and Maintenance manual for additional guidance.

3. Remove the oil drain plug from the bottom of the meter using the ¼" Allen wrench. Replace and tighten the plug after the oil has finished draining.

4. Loosen the 10 cover bolts (ferry head) using the ¾" impact socket. Remove from the meter. Reference Figure 2.

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5. Using a 3/32" Allen wrench, remove the four screws holding the Cartridge Data nameplate and replace with new one. Reference Figure 3.

6. Screw in the two 740/1480 Cartridge Removal/Installation Studs as shown in Figure 4. Do not tighten more than *hand* tight.

7. Using a 3/8" Allen, screw in the two 3/4 -10 set screws as shown in Figure 4.
8. Screw in the 7/8-9 threaded rods as shown in Figure 4.
9. Using a 5/8" open end wrench, begin turning the threaded rods to remove the cover and Cartridge assembly from the meter housing. Alternate between the two rods to prevent binding. Reference Figure 5.
10. Remove the threaded rods once the cartridge is out of the meter housing. Place the cover and cartridge assembly down with the Cartridge/timing gears pointing upward.
11. Remove and discard the two O-ring seals from within the rear of the housing. Reference Figure 6. Remove the 3/4 -10 set screws.
12. Remove the four 1/4" button head screws using a 5/32" Allen wrench, including their respective sealing washers, from the cover and Cartridge assembly. Reference Figure 7. C
13. Pull the Cartridge off of the four standoffs.
14. Remove and discard the two O-rings from the cover.
WARNING: NEVER REUSE THE COVER O-RINGS AFTER THE COVER HAS BEEN REMOVED FROM THE HOUSING. THESE O-RINGS ARE THE PRIMARY SEALS OF THE PRESSURE VESSEL.
15. Remove the 4 existing standoffs from the cover and set aside. G
16. Using the RTV supplied in the kit, apply a coating to the entire circumference of the standoffs where they fit into the headplate (see Figure 7 for detail) H G
17. Install the 4 new standoffs enclosed in the conversion kit onto the cover where the old standoffs had been. Torque to 6 to 9 ft-lbs. using a 1/2" open wrench.
NOTE: STANDOFFS FOR A 1M ARE LONGER THAN A 3M. MAKE SURE THE STANDOFFS ARE THE CORRECT ONES FOR THE METER YOU ARE INSTALLING.
18. Mount the new cartridge on the newly installed standoffs. C
19. Replace the four screws with their respective sealing washers. C
20. Tighten the screws to 30 to 40-in•lb.
21. Spin impellers to verify they spin freely. Make sure they slowly stop rotating without a sudden stop.

22. Put a light film of grease on the two new housing O-rings. Place both O-rings into the grooves inside the back of the housing.
23. Put a light film of grease on the two new cover O-rings. Place the O-rings on the cover into their respective groove (one is a gland seal, the other is a face seal). Put a light film of grease on the cartridge O-ring and the plenum seals. Put a light film of grease on the machined surfaces inside the meter housing.
24. Align the cover and cartridge assembly with the meter housing, the two studs, and the alignment dowel pin. Carefully slide the assembly onto the studs, then *slowly* slide it into the housing.

WARNING: DO NOT DAMAGE THE TIMING GEARS DURING INSTALLATION.

25. Continue to push the cover and cartridge assembly all the way into the housing. Remove the two studs and screw in the ten cover bolts.
26. Tighten the ten cover bolts to 375-ft•lb in a cross or star-like pattern.
27. Replace the O-ring removed in Step 2. Install the accessory unit onto the meter. Use the 5/32" Allen wrench. Tighten the screws to 20 to 25-in•lb. Refer to "Installing the Accessory Unit on the Meter" in the Installation, Operation and Maintenance manual.
28. Remove the oil fill plug from the side of the meter housing using a ¼" Allen wrench. While visually monitoring the oil sight gauge, slowly add oil to the housing. Fill to the center of the sight gauge, being careful not to overfill. Refer to "INSPECTION AND MAINTENANCE, Lubrication System." Reference Figure 8 for sight glass and drain plug locations.

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NOTE: There are two sight gauges, one for side inlet and one for top inlet. Monitor the lowest sight gauge in the center of the meter housing.

29. Wait approximately five minutes to let the oil flow evenly between the two meter oil sumps. If required, add oil to bring the level up to the center of the sight gauge.
30. Reinstall the oil fill plug and tighten until snug.
31. Replace Cartridge Data Nameplate and reinstall the four screws. H

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32. After completion, leak test the meter per your organizational procedures or industry standards.

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33. Ensure the meter oil is properly maintained to prevent bearing damage. Check once a month until a practical interval is determined. Contact the factory if there is a pattern of repeatable or excessive oil loss.

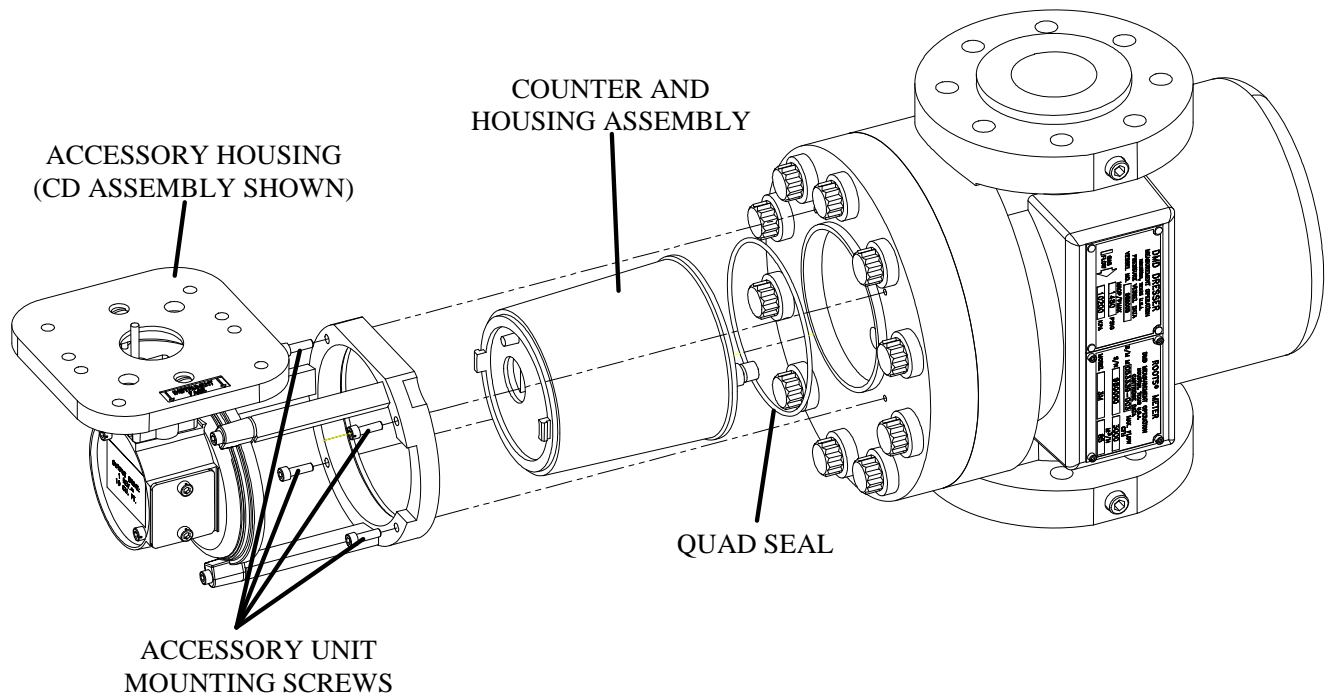


Figure 1. Accessory Housing.

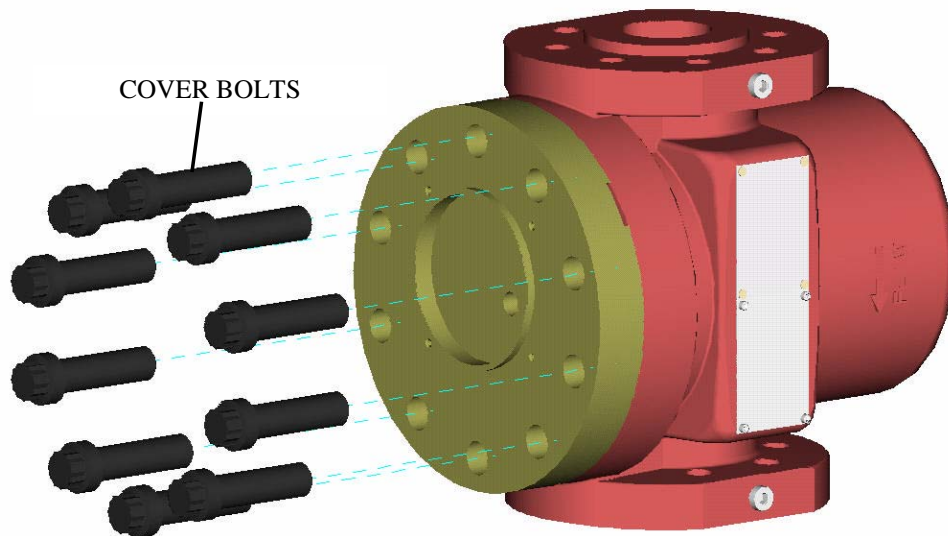


Figure 2. Meter Cover Bolts.

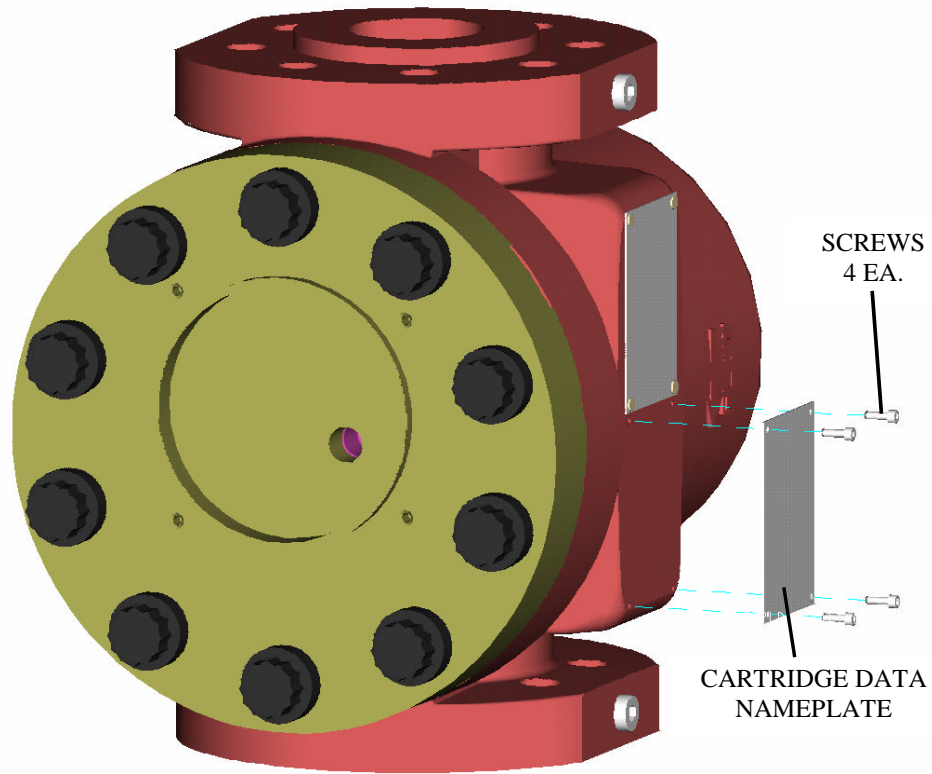


Figure 3. Cartridge Data Nameplate.

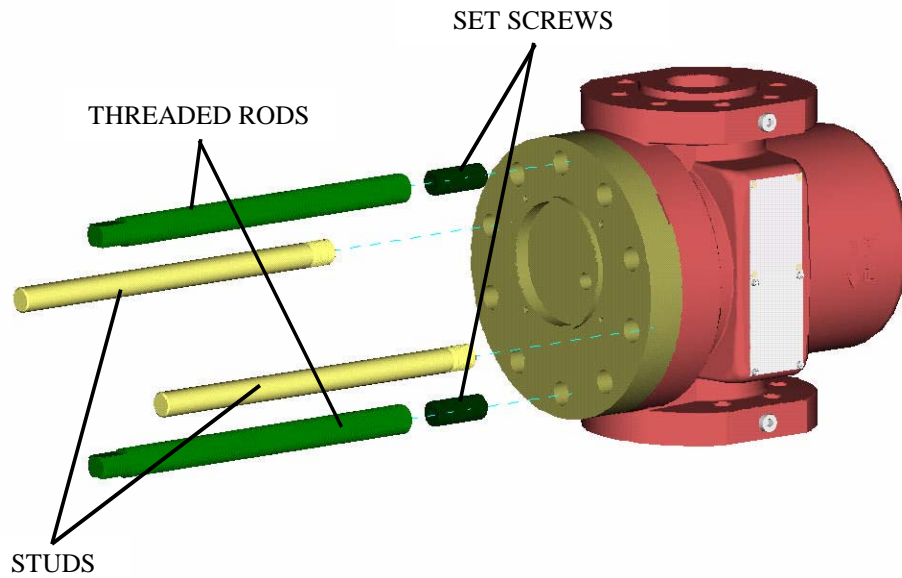


Figure 4. Removal/Installation Equipment.

TURN THREADED RODS
CLOCK-WISE TO PULL
CARTRIDGE FROM THE
METER HOUSING.

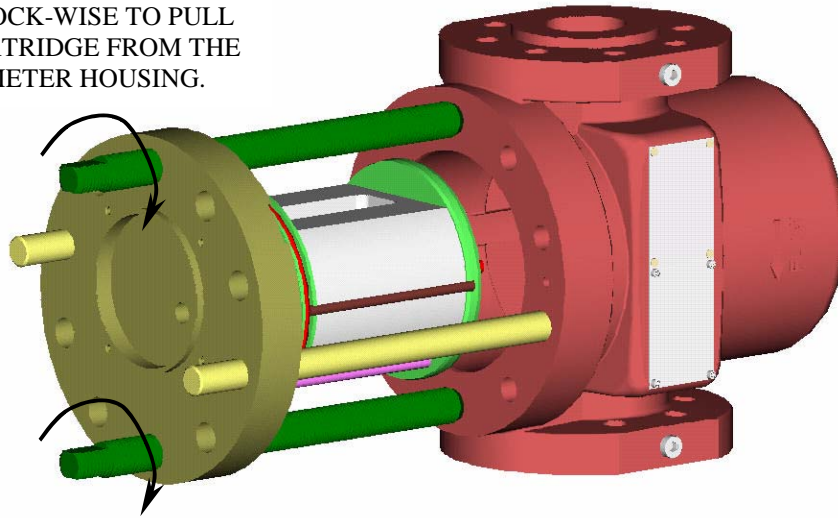
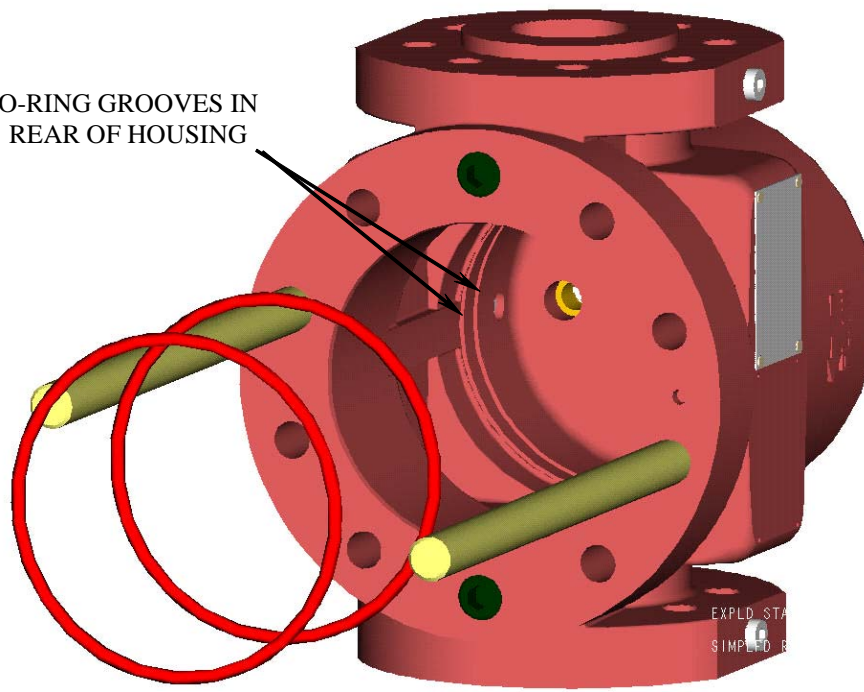


Figure 5. Cover & Cartridge Assembly.

O-RING GROOVES IN
REAR OF HOUSING



HOUSING O-RINGS
#055C

Figure 6. Housing O-Rings.

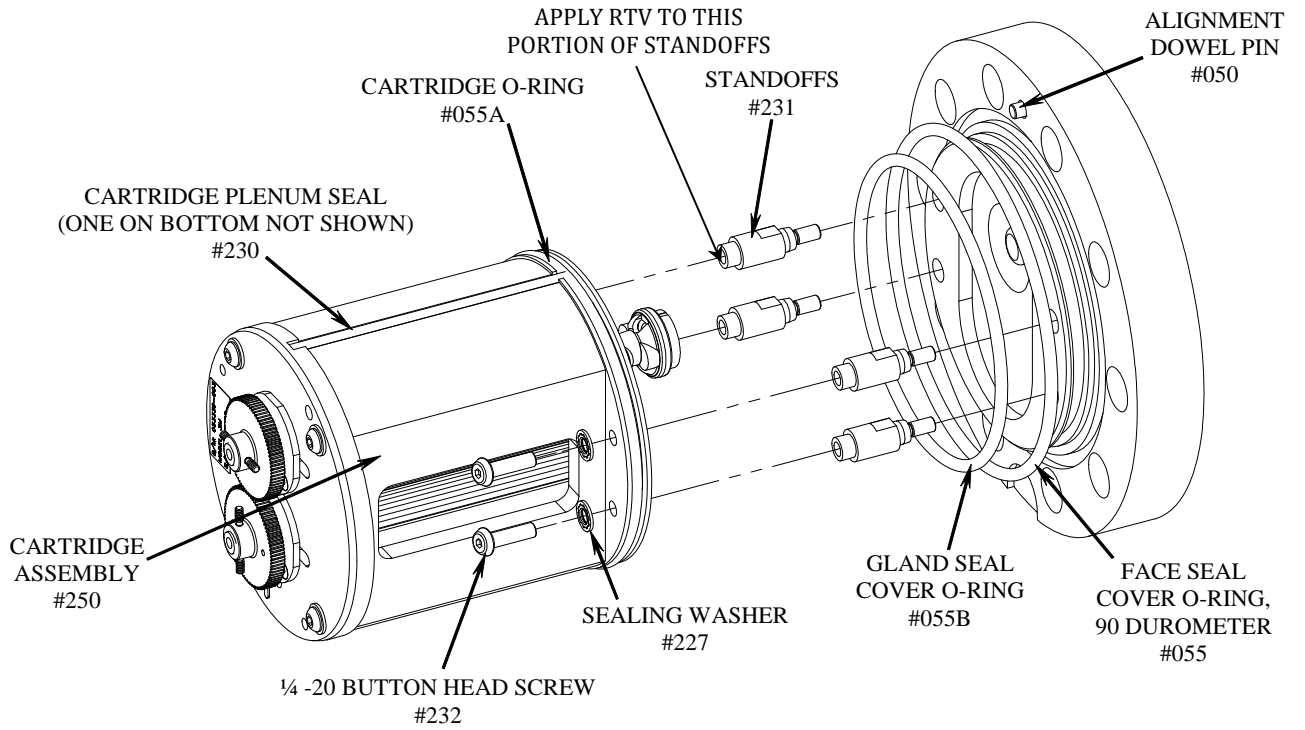


Figure 7. Cover & Cartridge Assembly.

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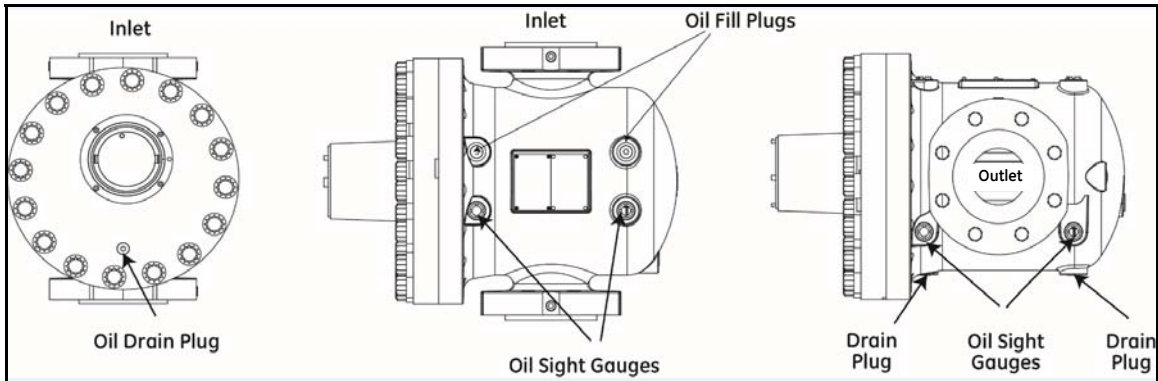


Figure 8. Sight Glass & Drain Plug Locations.