

SERVICE INSTRUCTIONS FOR THE DR [600] SERIES MOTORS

For Use With Seal Kit: 600555000

dimensions: mm [in]

NOTE: In December 2006, the 600 series incorporated a design change. Refer to the exploded view drawing to determine which model is being serviced and follow the appropriate instructions.

Housing and body seals on products manufactured after July 1, 2016 are o-ring seals. Prior to this date these seals were square cut seals. It is recommended that if the product being serviced has square seals to replace with the square seals in this kit, likewise if the product has o-ring seals, replace with the o-ring seals in this kit.

Motor Section Disassembly (Same Instructions For Both Designs)

- A) Remove all shaft related components from shaft (30) (i.e. keys, wire rings, nuts). To aid in reassembly of the motor, make a "V" shaped set of lines from the endcover to the housing using either paint or a marker. With shaft facing down, secure motor in vise by clamping on to housing (18).
- B) Loosen and remove seven bolts (29) holding motor assembly together. Remove endcover (27) carefully as piston (25) and spring (26) may fall out. If piston does not come out, carefully pry piston (25) out of endcover (27) and lay aside. Remove O-Ring seal (12) and backup seal (13) from endcover and discard seals. Remove spring (26) and lay aside.
- C) Lift commutator container and commutator (24) from motor and lay aside. Place commutator on a flat, clean surface with the seal (11) facing up. Place the tip of a small screwdriver on the seal (11) and gently tap until opposite side of seal lifts from groove. Remove seal (11) and discard.
- D) Remove manifold (23), rotor set (22) and divider plate (21) from motor. Remove all seals (8, 9, & 10) from components and discard. (Caution - Do not allow rolls to drop from rotor assembly (22) when removing rotor assembly from motor.) Remove drive link (20) and thrust bearing (16) from motor and lay aside. Gently tap shaft (30) upward from housing (18) and remove through rear of housing and lay aside.

Housing/Shaft Disassembly And Assembly (Design That Utilizes A Seal Carrier (14))

- E) Remove housing (18) from vise and turn over. Pry dust seal (1) from housing. Push the seal carrier (14), thrust washer (15) and thrust bearing (35) down until they make contact with the roller bearing (17) located in the housing bore.
- F) Remove snap ring (2), steel backup shim (3) and high pressure seal (4) from inner bore groove with a small screwdriver. Lift out seal carrier (14), thrust washer (15) and thrust bearing (35) from the housing bore. Using a small screwdriver, carefully pry shaft seal (7), backup seal (6) and metal backup shim (5) from seal carrier (14) and discard. Lay seal carrier, thrust washer and thrust bearing aside.

At this point, all parts should be cleaned in an oil-based solvent and dried using compressed air (For safety, observe all OSHA safety guidelines). All new seals should be lightly coated in clean oil prior to installation.

- G) Place shaft (30) on a clean flat surface with output end facing up. Place thrust bearing (35) (NOTE: If thrust bearing has integral washer, make sure washer surface faces down.) Then thrust washer (15) on shaft (See Technical Bulletin PI444004 to determine correct thrust washer to use). Lightly coat seal area of shaft with clean oil and place plastic installation sleeve with shaft seal (7) down onto shaft covering all splines, keyways and wire ring grooves. Slide shaft seal (7) down onto shaft (30) making sure that lip on seal faces down (See Figure 1 for correct seal orientation) until it contacts thrust washer (15). Remove plastic installation sleeve. Carefully install the backup seal (6) onto the shaft (30) with the flat side up and the seal lip facing the shaft seal (7). Place the metal backup shim (5) onto the shaft and against the backup seal (6). Place the seal carrier (14) onto the shaft (large end down) and carefully press the seal carrier (14) down onto the seal assembly using an arbor press and sleeve to compress the seals into the carrier.
- H) With pilot side facing up, place housing (18) on spacers to raise housing approximately 6 [.25] above work surface (NOTE: Spacers should allow shaft to contact work surface). Place shaft/seal carrier assembly into housing (18). Install high pressure seal (4) into groove in housing. Install metal backup shim (3) against high pressure seal (4) in groove in housing bore by squeezing the shim (3) between thumb and forefinger to bow shim. While maintaining bow in shim, start the shim into the groove and use a small screwdriver to push the shim into groove. Install wire ring (2) into the groove making sure that the ends are butted.
- I) While holding shaft into housing, place housing/shaft assembly in vise with shaft end down. Install drive link (20) into shaft and tap lightly to seat the seal carrier assembly against the wire ring (2). Place thrust bearing (16) over drive link (20). If shaft is properly seated against wire ring, thrust bearing (16) will be flush with rear of housing.

Housing/Shaft Disassembly And Assembly (Design That Does NOT Utilizes A Seal Carrier (14))

- J) Position the housing (18) in vise and use a slide and hammer type bearing puller to remove the rear housing bearing (19), the bearing spacer (36), and the front housing bearing (17). Remove the thrust washer (15) and thrust bearing (35) and set aside. Using a small screwdriver carefully pry the shaft seal (7), backup seal (6) and metal shim (5) from housing bore and discard.

- K) Remove the housing from vise and turn over and pry the dust seal (1) from housing and discard.

At this point, all parts should be cleaned in an oil-base solvent and dried using compressed air (For safety, observe all OSHA safety guidelines). All new seals should be lightly coated in clean oil prior to installation.

- L) Place housing (18) in vice with the seven bolt assembly holes facing up. Place metal shim (5) or excluder seal (not shown) in the smallest diameter recess in the housing (18). Install the backup seal (6) into the housing (18) with the flat side down and the seal lip facing up. Insert shaft seal (7) down into housing (18) making sure that lip on seal faces up (See Figure 2 for correct seal orientation). Install thrust washer (12) into housing and using an arbor press, seat the shaft seal (7) into housing (18), then place the thrust bearing (35) into housing.
- M) Place front housing bearing (17) onto housing and press bearing into housing to a depth of 60,1 [2.37] from the rear surface of the housing (18) to the top of the bearing. Insert the bearing spacer (36) into the housing. Place the rear housing bearing (19) onto the rear housing bore and press to a depth of 3,6 [14] from the rear surface of the housing (18) to the top of the bearing (19). Place the shaft (30) down into housing (18) and place thrust bearing (16) on top of shaft (30). If shaft seals are properly seated against the housing (18), thrust bearing (16) will be flush with rear surface of housing.

Motor Section Assembly (Same Instructions For Both Designs)

- N) Install housing seal (8) into groove in housing (18). Place divider plate (21) onto housing (18) aligning bolt holes. Place body seals (9) in grooves in both sides of rotor (22). Place rotor (22) onto divider plate (21) with side of rotor with chamfer in splines facing divider plate (21). Place manifold (23) over rotor (22) with seal groove side up. Install manifold seal (10).
- O) Install the commutator seal (11) into the commutator (24) with the metal side facing up. Use finger pressure to press the seal down flush with the surface of the commutator. Place the commutator container onto the manifold (23) and then place the commutator onto the protruding end of the drive link (20) making sure that the seal side faces up. Install the remaining body seal (9) in the groove in the face of the endcover (27). Install piston spring (26) into endcover (27), then the white backup seal (13) followed by the O-Ring seal (12). Lining up the alignment pin with the hole in the endcover, press piston (25) into the endcover (27). While holding the piston (25) in the endcover, lower the endcover assembly on to the motor. Check to make sure that the endcover ports are in their original position.
- P) Install the seven assembly bolts (29) and pre-torque to 13,6 Nm [10 ft. lbs.] Final torque all bolts to 67,8 Nm [50 ft. lbs.]
- Q) Install dust seal (1) flush with the pilot face of the housing (18) making sure that the lip side of the seal faces out.

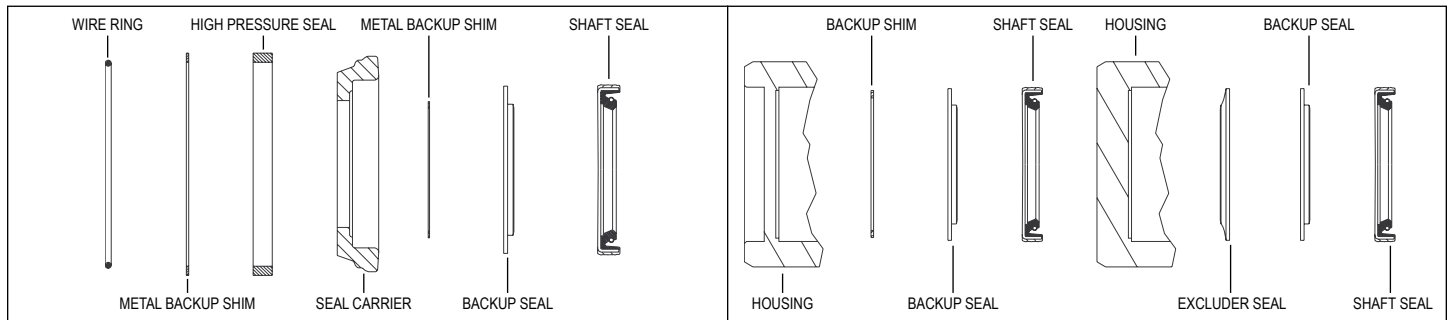


FIGURE 1

FIGURE 2

EXPLODED VIEW PARTS DESCRIPTION

- | | | |
|-------------------------|---------------------------|--------------------------|
| 1. * Dust Seal | 14. Seal Carrier | 27. Endcover |
| 2. * Wire Ring | 15. Thrust Washer | 28. I.D. Tag Assembly |
| 3. * Metal Backup Shim | 16. Rear Thrust Bearing | 29. Assembly Bolts |
| 4. * High Pressure Seal | 17. Front Housing Bearing | 30. Shaft |
| 5. * Metal Backup Shim | 18. Housing | 31. Shaft Key |
| 6. * Backup Seal (2) | 19. Rear Housing Bearing | 32. Shaft Bolt |
| 7. * Shaft Seal (2) | 20. Drive Link | 33. Lock Washer |
| 8. * Rear Housing Seal | 21. Wear Plate | 34. Wire Ring |
| 9. * Body Seals (3) | 22. Rotor Assembly | 35. Front Thrust Bearing |
| 10. * Manifold Seal | 23. Manifold | 36. Bearing Spacer |
| 11. * Commutator Seal | 24. Commutator Assembly | |
| 12. * O-Ring Seal | 25. Piston | |
| 13. * Backup Seal | 26. Piston Spring | |
- * Contained in seal kit 600555000

NOTE: The motor design that utilizes a seal carrier will use the larger O.D. backup seal and shaft seal.

