SERVICE GUIDE
DR [640] SERIES MOTORS

ENGINEERING TOMORROW

For Use With Seal Kits: 700666252

AX00000338en-US0101 | PI666252

dimensions: mm [in]

NOTE: The DR (640) series is available with either a direct drive option or a locking hub option. After determining which option you have, use the appropriate instruction in steps A and S below.

In December 2006, the 640 series incorporated a design change. Refer to the exploded view drawing to determine which design is being serviced and follow the appropriate instructions for that design.

Housing and body seals on products manufactured after July 1, 2016 are o-ring seals. Prior to this date the 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.

A) DIRECT DRIVE OPTION (USES ITEMS 40-44)

Remove six bolts (40) from end cap (41). Lift end cap (41) off of wheel flange (19). Peel or scrape paper gasket (42) off of end cap and/or wheel flange (19). If grease is between end cap (41) and driver (43), remove grease. Screw a 1/4-20 bolt (not included) into one of the two threaded holes in the driver (43) and lift the driver out of the wheel flange (19). If grease is between driver (43) and housing pilot (28), remove grease. If spacer (44) did not come out with driver (43), remove it at this time and lay aside.

LOCKING HUB OPTION (USES ITEMS 45-48)

Remove six screws (45) from locking hub (46). Lift locking hub (46) off of wheel flange (19). Remove wire ring (47). Install two screws (45) in opposite holes in the locking hub splined assembly (48) and use to lift locking hub spline assembly (48) out of wheel flange (19). If grease is between locking hub spline assembly (48) and housing (28) pilot, remove grease. Lay parts aside.

NOTE: The two bearings (20) are Loc-tited to bearing hub (23), wheel flange (19) and housing pilot (28). The four capscrews (18) are also Loc-tited. It is not necessary to remove these components to install this seal kit in the motor. Unless the bearings are damaged, White Drive Products does not recommend disassembly of these components. If damage has occurred to the bearings, White Drive Products recommends returning the unit to the factory for service.

Motor Section Disassembly (Same Instructions For Both Designs & Drive Options)

B) To aid in reassembly of the motor, make a "V" shaped set of lines from the endcover (37) to the housing (28) using either paint or a marker. With hub facing down, secure motor in vise by clamping on to housing (28). Loosen and remove seven bolts (39) holding motor assembly together. Remove endcover (37) carefully as piston (35) and spring (36) may fall out. If piston does not come out, carefully pry piston (35) out of endcover (37) and lay aside. Remove O-Ring seal (12) and backup seal (13) from endcover and discard seals. Remove spring (36) and lay aside.

C) Lift commutator container and commutator (34) 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 and discard.

D) Remove manifold (33), rotor set (32) and divider plate (31) from motor. Remove all seals (8, 9, & 10) from components and discard. **(Caution - Do not allow rolls to drop from rotor assembly (32) when removing rotor assembly from motor.)** Remove drive link (30) and thrust bearing (24) from motor and lay aside. Remove shaft (29) from housing (28).

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

E) Remove housing (28) from vise and place on a clean flat surface with hub end facing up. Using shaft (29) and a rubber mallet, tap seal carrier (14) down to expose wire ring (2). Using a long, narrow shaft screwdriver pry out wire ring (2), metal backup shim (3) and high pressure seal (4) and discard. Remove seal carrier (14), thrust washer (15) and thrust bearing (24) and lay aside.

F) Using a small, flat bladed screwdriver, carefully pry shaft seal (7), backup seal (6) and metal backup shim (5) from seal carrier (14) and lay aside. Lay seal carrier (14), thrust washer (15) and thrust bearing (24) 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 on a clean surface with output end facing up. Install thrust bearing (24) and then thrust washer (15) onto shaft. After coating shaft seal (7) with a light coat of oil, place installation sleeve over shaft and push shaft seal onto shaft (lip facing down) until it contacts thrust washer. Remove installation sleeve and lightly coat backup seal (6) with clean oil. Install backup seal (6) with lip facing down followed by metal backup shim (5) (See Figure 1 for correct seal position). Install seal carrier (14) onto shaft with large end facing down. Using a sleeve and press, gently press seal carrier (14) down to compress seal assembly (5-7) into seal carrier (14).

H) Place housing (28) on clean, flat surface with pilot facing up. Place spacer under housing (28) to prevent shaft (29) from dropping to work surface. Spacer should allow shaft to be about 13 [.50] below rear surface of housing.

I) Place shaft/shaft seal assembly into housing (28) with output end facing up. Install high pressure seal (4) into groove in inner bore of housing (28). Install metal backup shim (3) against high pressure seal (4) 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 groove making sure that the ends are butted.

J) While holding shaft into housing, secure housing/shaft assembly in vise with shaft end down. Install drive link (30) into shaft and gently tap drive link (30) down to seat seal carrier (14) against wire ring (2). Place thrust bearing (24) over drive link and onto rear surface of shaft (29). If shaft (29) is seated properly against wire ring (2), the thrust bearing (24) should be flush with rear surface of housing (28).

Housing/Shaft Disassembly And Assembly (Design That Does NOT Utilizes A Seal Carrier (11))

K) Position the housing (28) in vise and use a slide and hammer type bearing puller to remove the rear housing bearing (25). Remove the thrust washer (15) and thrust bearing (24) 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.

L) 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-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.

M) Place housing (28) in vice with the seven bolt assembly holes facing up. Place metal shim (5) in the smallest diameter recess in the housing (28). Install the backup seal (6) into the housing (28) with the flat side down and the seal lip facing up. Insert shaft seal (7) down into housing (28) making sure that lip on seal faces up (See Figure 2 for correct seal orientation). Install thrust washer (15) into housing and using an arbor press, seat the shaft seal (7) into housing (28), then place the thrust bearing (24) into housing.

N) Place the rear housing bearing (25) onto the rear housing bore and press to a depth of 58.4 [2.3] from the rear surface of the housing (28) to the top of the bearing (25). Place the shaft (29) down into housing (28) and place thrust bearing (24) on top of shaft (29). If shaft seals are properly seated against the housing (25), thrust bearing (21) will be flush with rear surface of housing.

Motor Section Assembly (Same Instructions For Both Designs & Drive Options)

O) Install housing seal (8) into groove in housing (28). Place divider plate (31) onto housing (28) aligning bolt holes. Place body seals (9) in grooves in both sides of rotor (32). Place rotor (32) onto divider plate (31) with side of rotor with chamfer in splines facing divider plate (31). Place manifold (33) onto rotor (32) with seal groove side up. Install manifold seal (10).

P) Install the commutator seal (11) into the commutator (34) 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 (33) and then place the commutator onto the protruding end of the drive link (30) making sure that the seal side faces up.

Q) Install the remaining body seal (9) in the groove in the face of the endcover (37). Install piston spring (36) into endcover (37), 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 (35) into the endcover (37). While holding the piston (35) in the endcover (37), lower the endcover assembly onto the motor. Check to make sure that the endcover ports are in their original position.

R) Install the seven assembly bolts (39) and pre-torque to 13.6 Nm [10 ft. lb.]. Using bolt torque sequence shown in Figure 3, final torque all bolts to 69.8 ± 7.5 Nm [51.5 ± 5.5 ft. lb.].

S) DIRECT DRIVE OPTION (USES ITEMS 40-44)

Place spacer (44) over shaft (29). Place driver (43) over shaft (29) while rotating wheel flange (19) slightly to allow splines to mate. Place paper gasket (42) onto wheel flange (19). Reapply grease between driver (43) and end cap (41) (Only if end cap (41) does not have grease fitting). Place end cap (41) onto wheel flange (19). Install six bolts (40) and torque to 69.8 ± 7.5 Nm [51.5 ± 5.5 ft. lb.] using the bolt torque sequence shown in Figure 4. If end cap (41) has grease fitting, apply grease.

LOCKING HUB OPTION (USES ITEMS 45-48)

Place locking hub spline assembly (48) into wheel flange (19) while rotating wheel flange (19) slightly to allow splines to mate. Install wire ring (47). Align screw holes of locking hub (46) with screw holes in locking hub spline assembly (48) and gently press together. Install six screws (45) into locking hub (46) and torque to 3.3 ± 0.2 Nm [29 ± 2 in. lb.].

SERVICE GUIDE
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ENGINEERING
TOMORROW

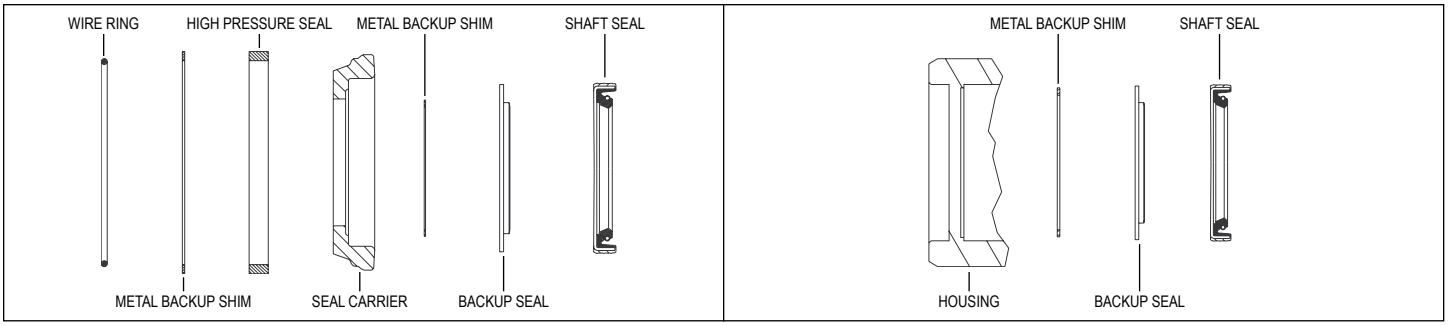

FIGURE 1

FIGURE 2

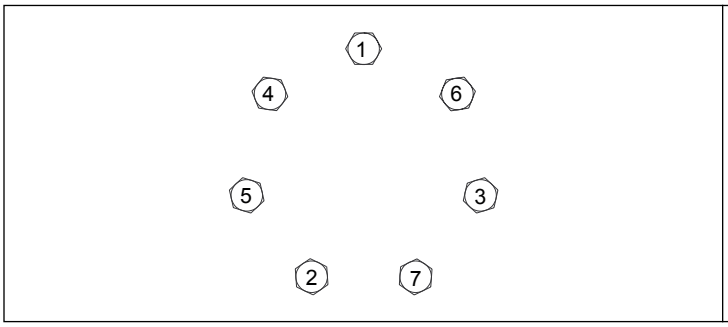

FIGURE 3

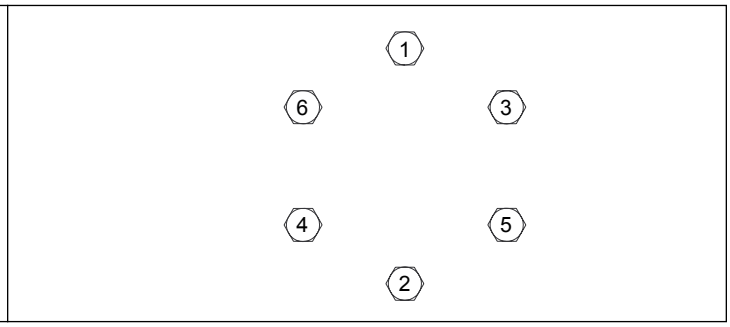

FIGURE 4

EXPLODED VIEW PARTS DESCRIPTION

1.* Flange Seal
2.* Wire Ring
3.* Metal Backup Shim
4.* High Pressure Seal
5.* Metal Backup Shim
6.* Backup Seal (2)
7.* Shaft Seal (2)
8.* Housing Seal
9.* Body Seals (4)
10.* Manifold Seal
11.* Commutator Seal
12.* O-Ring Seal
13.* Backup Seal
14. Seal Carrier
15. Thrust Washer
16. Studs (6)
17. Lug Nuts (6)
18. Capscrews (4)
19. Wheel Flange
20. 125mm Bearings (2)
21. Bearing Spacer
22. Thrust Ring
23. Bearing Hub
24. Thrust Bearings (DR-2, DT-1)
25. Rear Housing Bearing
26. Planetary Mount Studs (4)
27. Mounting Nuts (4)
28. Housing
29. Shaft
30. Drive Link
31. Divider Plate
32. Rotor Assembly
33. Manifold
34. Commutator Assembly
35. Endcover Piston
36. Piston Spring
37. Endcover
38. I.D. Tag Assembly
39. Assembly Bolts (7)
40. Driver Cover Screws (6)
41. Driver Cover
42.* Paper Gasket
43. Driver
44. Spacer
45. Screws (6)
46. Locking Hub
47. Wire Ring
48. Locking Hub Spline Assembly

* Contained in seal kit 700666252

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

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TOMORROW

EXPLODED VIEW DIAGRAM