whitedriveproducts

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. THIS SET OF INSTRUCTIONS WILL AID IN THE DISASSEMBLY AND ASSEMBLY FOR BOTH DESIGNS. PLEASE REFER TO THE EXPLODED VIEW DRAWING TO DETERMINE WHICH DESIGN IS BEING REPAIRED AND THEN FOLLOW THE APPROPRIATE INSTRUCTIONS FOR THAT DESIGN.

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.

E) Housing/Shaft Disassembly And Assembly (Design That Utilizes A Seal Carrier (14))
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 <u>NOT</u> 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) 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.

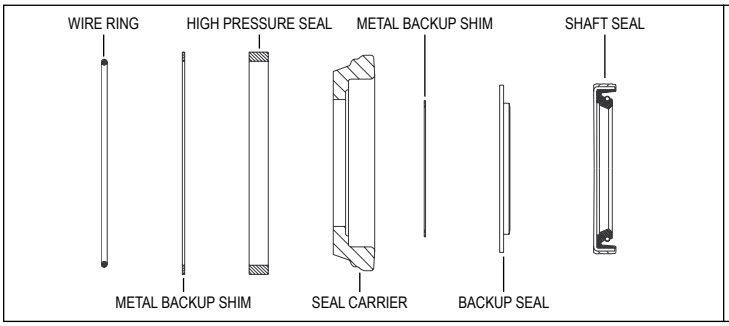


FIGURE 1

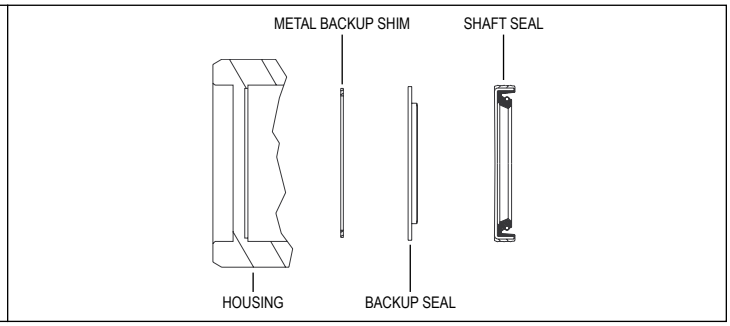


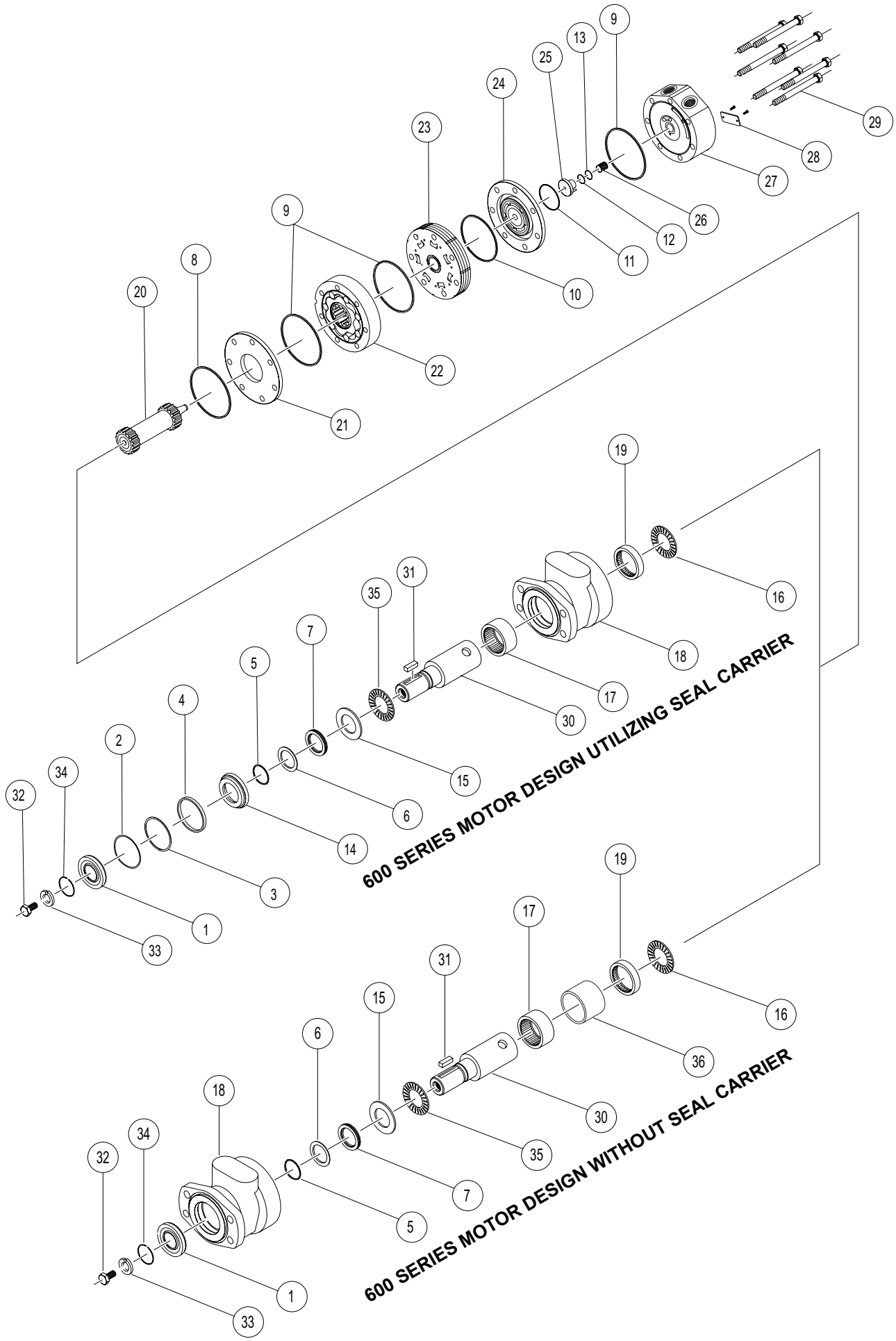
FIGURE 2

EXPLODED VIEW PARTS DESCRIPTION

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

* 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.


600 SERIES MOTOR DESIGN UTILIZING SEAL CARRIER
600 SERIES MOTOR DESIGN WITHOUT SEAL CARRIER

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SERVICE INSTRUCTIONS FOR THE DR [620] SERIES MOTORS

For Use With Seal Kit: 600555000

dimensions: mm [in]

NOTE: IN DECEMBER 2006, THE 620 SERIES INCORPORATED A DESIGN CHANGE. THIS SET OF INSTRUCTIONS WILL AID IN THE DISASSEMBLY AND ASSEMBLY FOR BOTH DESIGNS. PLEASE REFER TO THE EXPLODED VIEW DRAWING TO DETERMINE WHICH DESIGN IS BEING REPAIRED AND THEN FOLLOW THE APPROPRIATE INSTRUCTIONS FOR THAT DESIGN.

A) Motor Section Disassembly (Same Instructions For Both Designs)
Remove all shaft related components from shaft (31) (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 (19).

B) Loosen and remove seven bolts (30) holding motor assembly together. Remove endcover (28) carefully as piston (26) and spring (27) may fall out. If piston does not come out, carefully pry piston (26) out of endcover (28) and lay aside. Remove O-Ring seal (12) and backup seal (13) from endcover and discard seals. Remove spring (27) and lay aside.

C) Lift commutator container and commutator (25) 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 (24), rotor set (23) and divider plate (22) from motor. Remove all seals (8, 9, & 10) from components and discard. (Caution - Do not allow rolls to drop from rotor assembly (23) when removing rotor assembly from motor.) Remove drive link (21) and thrust bearing (18) from motor and lay aside. Gently tap shaft (31) upward from housing (19) and remove through rear of housing and lay aside.

Housing/Shaft Disassembly And Assembly (Design That Utilizes A Seal Carrier (13))

E) Turn housing over and remove retaining snap ring (16) from inner core of housing. Turn housing over again. Using a drift punch through the rear of the housing, tap against the inner race of the 72mm bearing (17) to remove the bearing through the top of the housing. Pry dust seal (1) from bearing (17). Then turn housing over again and push the seal carrier (14), thrust washer (15) and thrust bearing (18) down until you can get to the wire ring (2).

F) Remove wire ring (2), steel backup shim (3) and high pressure seal (4) from inner bore groove with a small screwdriver. Lift the seal carrier (14), thrust washer (15) and thrust bearing (18) from the housing bore. Carefully pry shaft seal (7), backup seal (6), and metal backup shim (5) from seal carrier (14) and discard. Lay seal carrier (14), thrust washer (15) and thrust bearing (18) aside. (NOTE: If a new thrust washer (15) and seal carrier (14) is included in kit, old items may be discarded).

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.

G) Place shaft (31) on a clean flat surface with output end facing up. Place thrust bearing (18) (NOTE: If thrust bearing has integral washer, make sure washer surface faces down) over the shaft. 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 (31) 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 (31) 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 seal into the carrier.

H) With pilot side facing up, place housing (19) on spacers to raise housing approximately 6,4 [.250] above work surface (NOTE: Spacers should allow shaft to contact work surface). Place shaft/seal carrier assembly into housing (19). 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. Making sure that end of drive link (21) with crowned splines goes into shaft end, install drive link (21) into shaft and tap lightly to seat the seal carrier against the wire ring (2). Place thrust bearing (18) over drive link (21). If seal carrier (14) is properly seated against wire ring (2), thrust bearing (18) will be flush with rear surface of housing.

Housing/Shaft Disassembly And Assembly (Design That Does NOT Utilizes A Seal Carrier (13))

J) Position the housing (19) in vise and use a slide and hammer type bearing puller to remove the rear housing bearing (20). Remove the thrust washer (15) and thrust bearing (18) 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) Turn housing over and remove retaining snap ring (16) from inner core of housing. Turn housing over again. Using a drift punch through the rear of the housing, tap against the inner race of the 72mm bearing (17) to remove the bearing through the top of the housing. Pry dust seal (1) from bearing (17) 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 (19) in vice with the seven bolt assembly holes facing up. Place metal shim (5) in the smallest diameter recess in the housing (19). Install the backup seal (6) into the housing (19) with the flat side down and the seal lip facing up. Insert shaft seal (7) down into housing (19) 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 (19), then place the thrust bearing (18) into housing.

M) Place the rear housing bearing (20) onto the rear housing bore and press to a depth of 3,6 [.14] from the rear surface of the housing (19) to the top of the bearing (20). Place the shaft (31) down into housing (19) and place thrust bearing (18) on top of shaft (31). If shaft seals are properly seated against the housing (19), thrust bearing (18) 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 (19). Place divider plate (22) onto housing (19) aligning bolt holes. Place body seals (9) in grooves in both sides of rotor (23). Place rotor (23) onto divider plate (22) with side of rotor with chamfer in splines facing divider plate (22). Place manifold (24) over rotor (23) with seal groove side up. Install manifold seal (10).

O) Install the commutator seal (11) into the commutator (25) 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 (24) and then place the commutator onto the protruding end of the drive link (21) making sure that the seal side faces up.

P) Install the remaining body seal (9) in the groove in the face of the endcover (28). Install piston spring (27) into endcover (28), 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 (26) into the endcover (28). While holding the piston (26) in the endcover, lower the endcover assembly on to the motor. Check to make sure that the endcover ports are in their original position.

Q) Install the seven assembly bolts (30) and pre-torque to 13,6 Nm [10 ft. lbs.] Final torque all bolts to 67,8 Nm [50 ft. lbs.]

R) Install dust seal (1) flush with the pilot face of the housing (19) making sure that the lip side of the seal faces out.

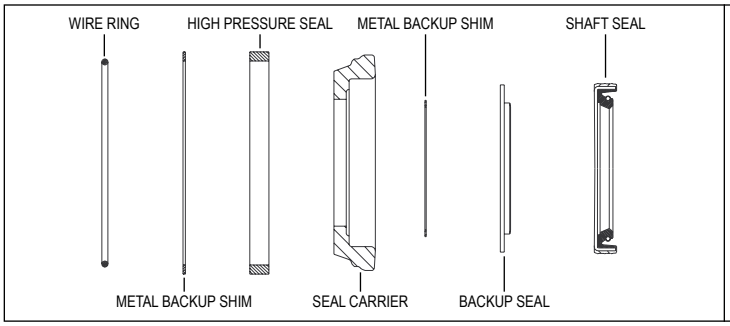


FIGURE 1

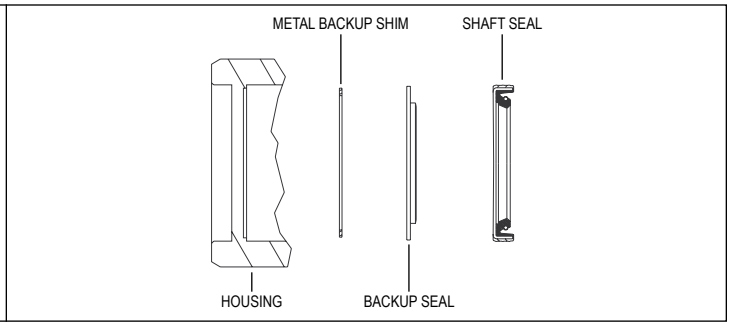
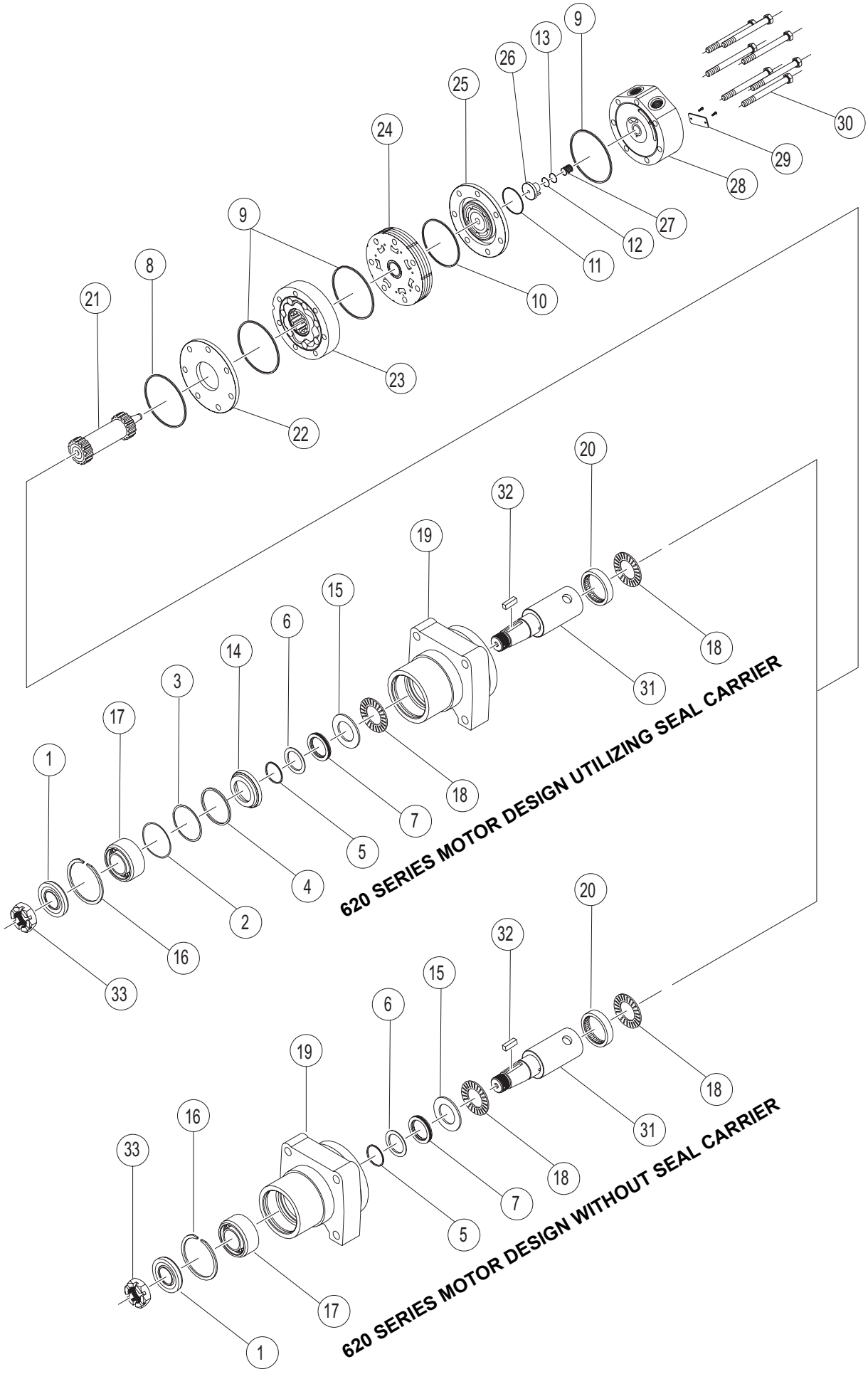


FIGURE 2

EXPLODED VIEW PARTS DESCRIPTION

1.	* Dust Seal	13.	* Backup Seal	25.	Commutator Assembly
2.	* Wire Ring	14.	Seal Carrier	26.	Piston
3.	* Metal Backup Shim	15.	Thrust Washer	27.	Piston Spring
4.	* High Pressure Seal	16.	Bearing Retaining Ring	28.	Endcover
5.	* Metal Backup Shim	17.	72mm Bearing	29.	I.D. Tag Assembly
6.	* Backup Seal (2)	18.	Thrust Washer	30.	Assembly Bolts
7.	* Shaft Seal (2)	19.	Housing	31.	Shaft
8.	* Rear Housing Seal	20.	Rear Housing Bearing	32.	Shaft Key
9.	* Body Seals (3)	21.	Drive Link	33.	Shaft Nut
10.	* Manifold Seal	22.	Wear Plate		
11.	* Commutator Seal	23.	Rotor Assembly	*	Contained in Seal Kit 600555000
12.	* O-Ring Seal	24.	Manifold		

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


620 SERIES MOTOR DESIGN UTILIZING SEAL CARRIER
620 SERIES MOTOR DESIGN WITHOUT SEAL CARRIER

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SERVICE INSTRUCTIONS FOR THE DR [630] SERIES MOTORS

For Use With Seal Kit: 600555100

dimensions: mm [in]

A) Remove all shaft related components from shaft (31) (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 up, secure motor in vise by clamping on to housing (18).

B) Using a small screwdriver, pry dust seal (1) from front of housing (18). Remove retaining snap ring (12) from groove in pilot of housing (18). Remove motor from vise. Reposition motor with shaft facing down and secure motor in vise.

C) Loosen and remove seven bolts (30) holding motor assembly together. Remove endcover (28) carefully as piston (26) and spring (27) may fall out. If piston does not come out, carefully pry piston (26) out of endcover (28) and lay aside. Remove O-ring seal (10) and white backup seal (11) from endcover and discard seals. Remove spring (27) and lay aside.

D) Lift commutator container and commutator (25) from motor and lay aside. Place commutator on a flat, clean surface with the seal (9) facing up. Place the tip of a small screwdriver on the seal (9) and gently tap until opposite side of seal lifts from groove. Remove seal (9) and discard.

E) Remove manifold (24), rotor set (23) and divider plate (22) from motor. Remove all seals (7 & 8) from components and discard. (Caution - Do not allow rolls to drop from rotor assembly (23) when removing rotor assembly from motor.)

F) Using a clean rag, grasp output end of shaft (31) as close to housing as possible. While maintaining grasp on shaft, use a rubber mallet to gently tap downwards on drive link (21) until shaft (31) comes free from housing (18). Remove drive link (21) from shaft (31) and lay aside. Without changing grip on shaft (31), set shaft onto a clean, flat surface with output end of shaft facing up. Remove thrust bearing (20) from rear of housing.

Caution: Although shaft bearing (14) can be removed from shaft for inspection, the rollers are not held in place by the bearing cage. If bearing is removed from shaft, the rollers will come out of the race. If no bearing problems are suspected, it is recommended that shaft bearing and thrust bearings (17) and thrust washers (16) be left on shaft.

G) Remove seal carrier (13) from shaft (31). Using a thin, flat bladed screwdriver, carefully pry shaft seal (5), backup seal (4) and metal backup shim (3) from seal carrier (13) and discard. Remove high pressure seal (2) from housing (18) 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 with clean oil prior to installation.

H) Place housing (31) on a clean, flat surface with shaft end of housing facing up. Install high pressure seal (2) into groove in pilot of housing (18). Place shaft on a clean, flat surface with output end facing up. NOTE: If bearings were not removed from shaft, go to next step. Place thrust washer (16), thrust bearing (17) and second thrust washer (16) onto shaft (31). Place bearing spacer (15) onto shaft. Coat all parts of shaft bearing (14) in bearing grease and reassembly rollers into bearing (14). Making sure that side of bearing with snap ring faces up, lower bearing (4) onto shaft (31).

I) Being careful not to cut seal on keyway, place shaft seal (5) over shaft (31) making sure that lip on seal faces down (See Figure 1). Repeat process for backup seal (4) making sure that lip faces down. Place metal backup shim (3) over shaft (31). With flat side facing up, place seal carrier (13) down over shaft. Using an arbor press, carefully press down on seal carrier (13) to press seal assembly (3-5) into seal carrier (13).

J) Place shaft (31) assembly into housing (14). If necessary, gently tap downward on shaft with a rubber mallet. Install retaining snap ring (12) into groove in housing pilot (18). (NOTE: It may be necessary to lightly tap the retaining snap ring (12) to allow it to seat properly.) Using a clean rag, grasp shaft (31) and lift housing form work surface. Position housing/shaft assembly in vise with shaft facing down and secure motor in vise by clamping on to housing.

K) Install housing seal (6) into groove in housing (18). Place drive link (21) into end of shaft (31) and gently tap downwards with rubber mallet to seat seal carrier (13) against retaining ring (12). Place thrust bearing (20) over drive link (21) and onto end of shaft (31). Place divider plate (22) onto housing (18) aligning bolt holes. Place body seals (7) in grooves in both sides of rotor (23). Place rotor (23) onto divider plate (22) with side of rotor with chamfer in splines facing divider plate (22). After engaging drive link splines, it may be necessary to rotate rotor (23) to align bolt holes. Place manifold (24) over rotor (23) with seal groove side up. Install manifold seal (8).

L) Install the commutator seal (9) into the commutator (25) 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 (24) and then place the commutator onto the protruding end of the drive link (21) making sure that the seal side faces up.

M) Install the remaining body seal (7) in the groove in the face of the endcover (28). Install piston spring (27) into endcover (28), then the white backup seal (11) followed by the O-ring seal (10). Lining up the alignment pin with the hole in the endcover, press piston (26) into the endcover (28). While holding the piston (26) in the endcover, lower the endcover assembly onto the motor. Check to make sure that the endcover ports are in their original position.

N) Install the seven assembly bots (20) and pre-torque to 13,6 Nm [10 ft. lb.]. Using the bolt torque pattern in Figure 2 final torque all bolts to to 69,8 ± 7,5 Nm [51.5 ± 5.5 ft. lb.]. Remove motor from vise and place on work surface with shaft facing up. Install dust seal (1) into bore in housing pilot. Replace shaft related components (i.e. keys, wire rings, nuts).

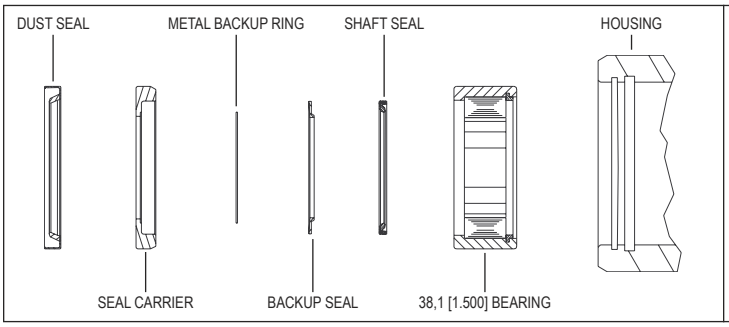


FIGURE 1

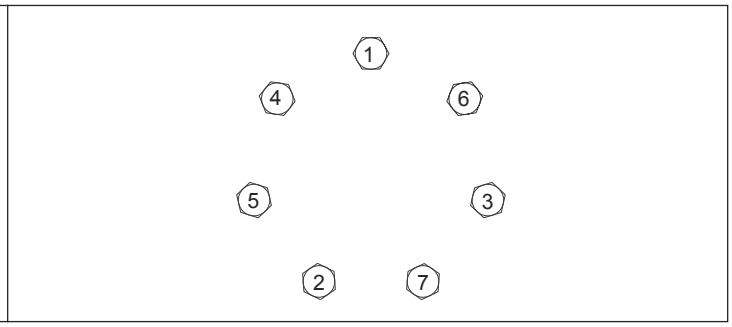
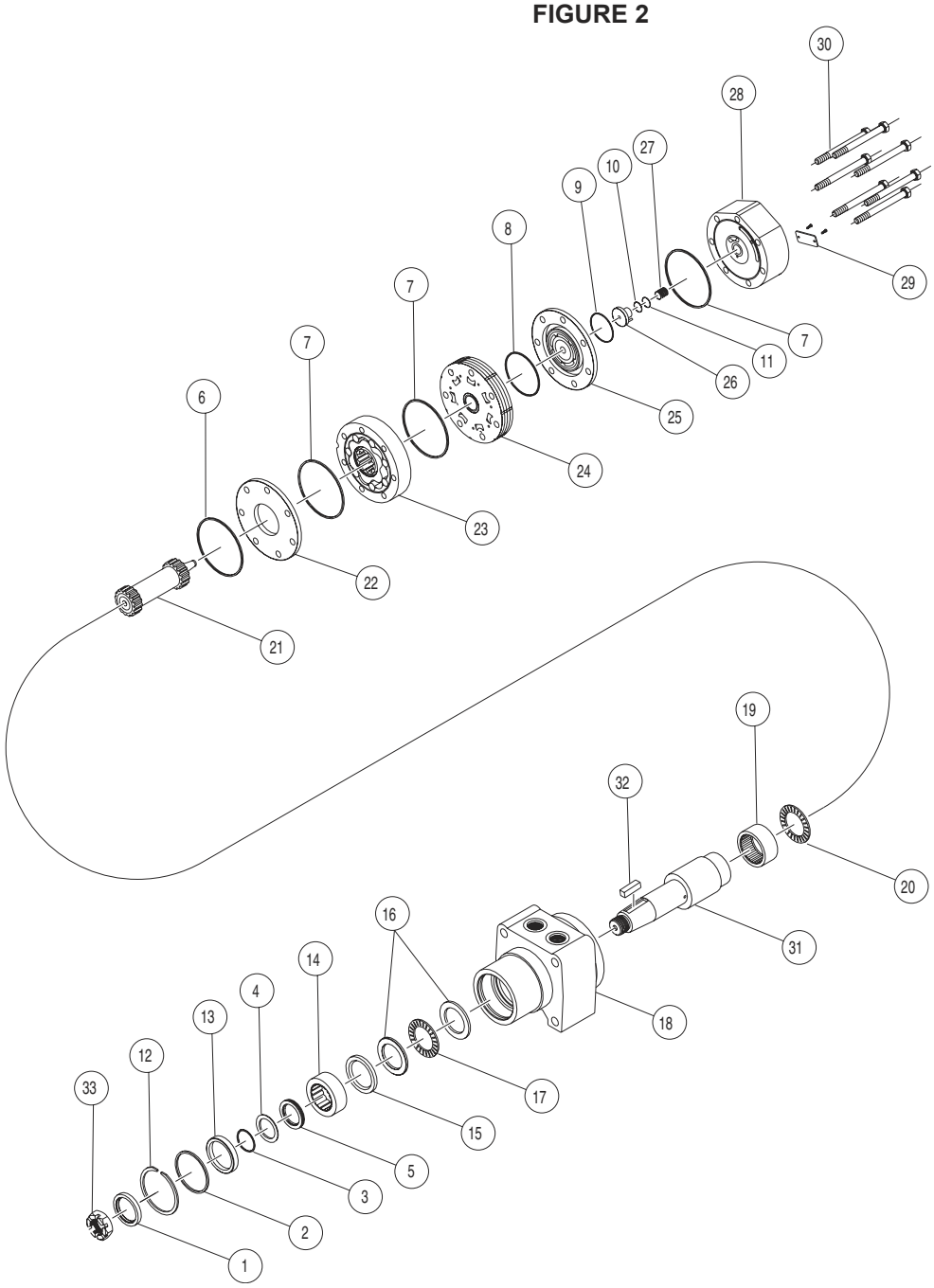


FIGURE 2

1. * Dust Seal
2. * High Pressure Seal
3. * Metal Backup Shim
4. * Backup Seal
5. * Shaft Seal
6. * Rear Housing Seal
7. * Body Seals (3)
8. * Manifold Seal
9. * Commutator Seal
10. * O-Ring Seal
11. * Backup Seal
12. Retaining Snap Ring
13. Seal Carrier
14. 1.5" Bearing
15. Bearing Spacer
16. Thrust Washers (2)
17. Front Thrust Bearing
18. Housing
19. Rear Housing Bearing
20. Rear Thrust Bearing
21. Drive Link
22. Divider Plate
23. Rotor
24. Manifold
25. Commutator Assembly
26. Endcover Piston
27. Piston Spring
28. Endcover
29. I.D. Tag Assembly
30. Bolts (7)
31. Shaft
32. Key
33. Shaft Nut

* Contained in Seal Kit 600555100



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SERVICE INSTRUCTIONS FOR THE DR [640] SERIES MOTORS

For Use With Seal Kit: 700666252

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 O below.

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.

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.

E) Remove shaft (29) up through housing (28). 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) (NOTE: Shaft seals for 1-1/4" and 1-1/2" shafts are included in this kit. To determine which new seal to use for servicing, refer to old shaft seal). 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).

K) 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).

L) 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.

M) 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.

N) Install the seven assembly bolts (39) and pre-torque to 13,6 Nm [10 ft. lb.]. Using bolt torque sequence shown in Figure 2, final torque all bolts to 69,8 ± 7,5 Nm [51.5 ± 5.5 ft. lb.].

O) 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 3. 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.].

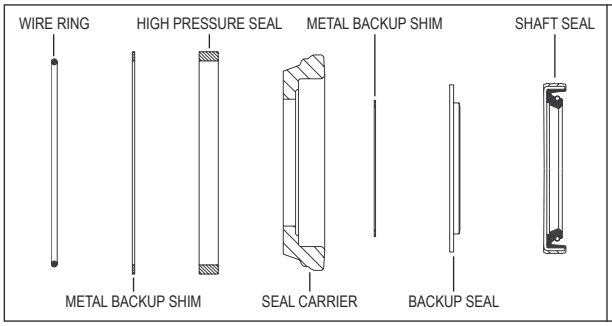


FIGURE 1

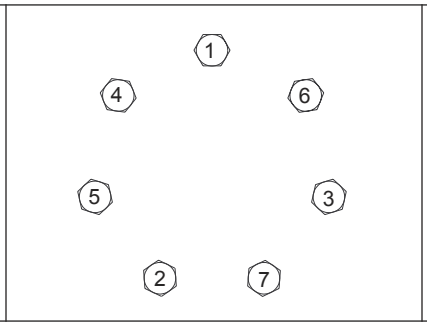


FIGURE 2

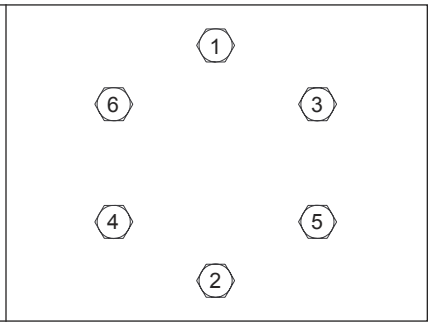
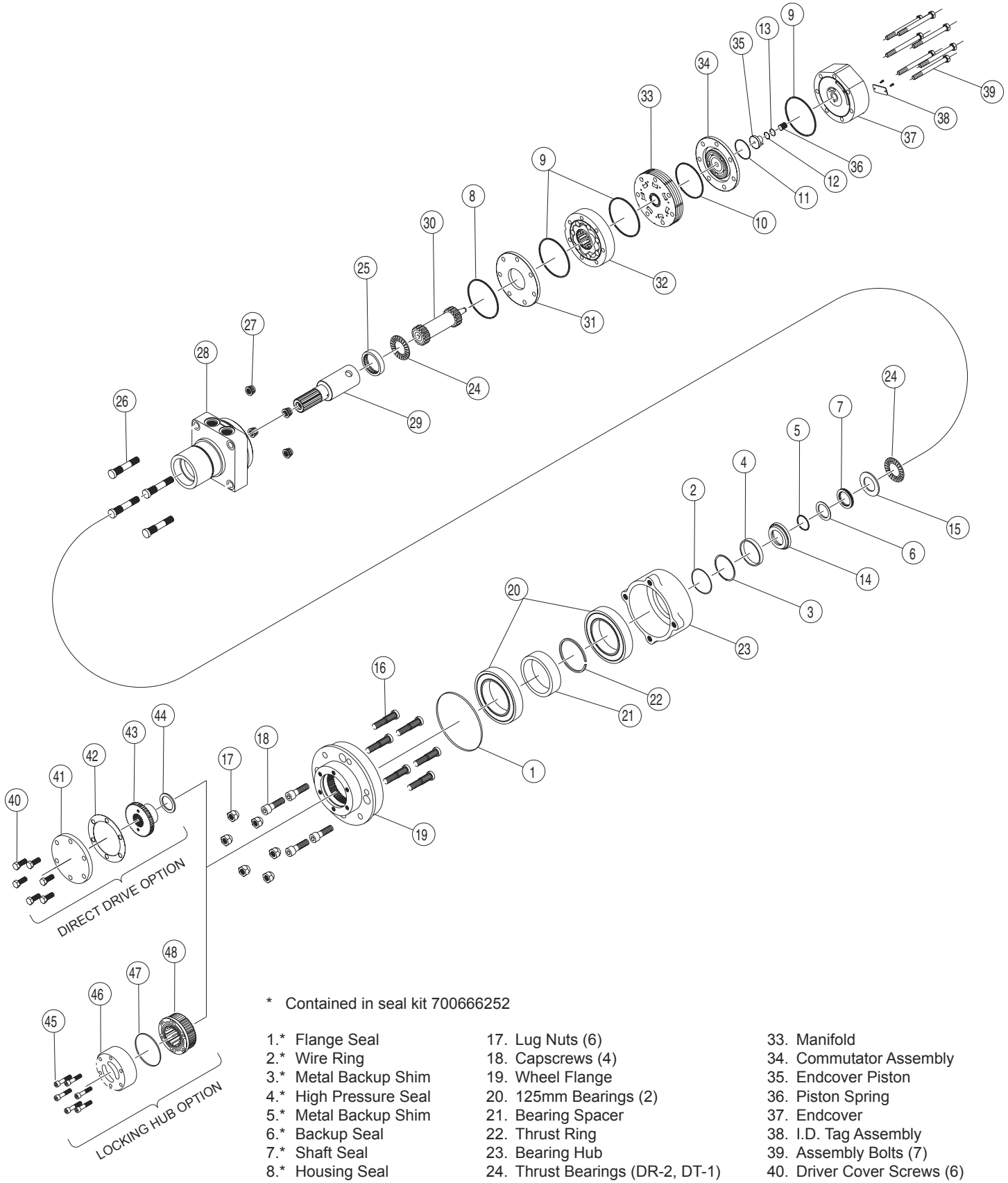


FIGURE 3



* Contained in seal kit 700666252

1.* Flange Seal
2.* Wire Ring
3.* Metal Backup Shim
4.* High Pressure Seal
5.* Metal Backup Shim
6.* Backup Seal
7.* Shaft Seal
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