

SERVICE INSTRUCTIONS FOR THE RE [500 & 501] SERIES MOTORS

For Use With Seal Kits: 500444001, 500444002, 500444112B, 500444222B

dimensions: mm [in]

NOTE: In December 2006 and again mid 2010, the 500 series incorporated design changes. Please refer to the exploded view drawings on pages 3 and 4 to determine which design is being serviced and follow instructions for that design type.

All internal seals on products manufactured after July 1, 2016 are o-ring seals. Prior to this date the internal 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 (27) (i.e. keys, wire rings, nuts). To aid in reassembly of the motor, make a "V" shaped set of lines from the endcover (24) to the housing using either paint or a marker. With shaft facing down, secure motor in vise by clamping on to housing (15).
- B)** Loosen and remove seven bolts (26) holding motor assembly together. Remove endcover (24) and endcover seal (10). Discard seal. Remove balance plate (22) taking care not to drop the three steel balls (23) located in the three holes in the balance plate (22). Remove rotor assembly (21), manifold (19), drive link spacer (20) (NOTE: Some motors do not use spacer), drive link (18) and thrust bearing (17). Remove body seals (9) from rotor assembly (21) and housing seal (8) from housing (15) and discard seals. (NOTE: Compare old housing seal (8) to the two housing seals included in kit to determine which one to use.) Gently tap shaft (27) upward from housing (15) and remove through rear of housing and lay aside.

Housing/Shaft Disassembly And Assembly (Design That Utilizes A Seal Carrier (11))

- C)** Remove housing (15) from vise and turn over. Pry dust seal (1) from housing. Push the seal carrier (11), thrust washer (12) and thrust bearing (13) down until they make contact with the roller bearing (14) located in the housing bore.
- D)** Remove wire ring (2), steel backup shim (3) and high pressure seal (4) from inner bore groove with a small screwdriver. Lift seal carrier (11), thrust washer (12) and thrust bearing (13) from the housing bore. Using a small screwdriver, carefully pry shaft seal (7), backup seal (6), and metal backup shim (5) from seal carrier (11) and discard. Lay seal carrier (11), thrust washer (12) and thrust bearing (13) aside. (NOTE: If a new thrust washer (12) and seal carrier (11) 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.

- E)** Place shaft (27) on a clean flat surface with output end facing up. Place thrust bearing (13) (NOTE: If thrust bearing has integral washer, make sure washer surface faces down.) Then thrust washer (12) 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 (27) making sure that lip on seal faces down (See Figure 1 for correct seal orientation) until it contacts thrust washer (12). Remove plastic installation sleeve. Carefully install the backup seal (6) onto the shaft (27) 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 (11) onto the shaft (large end down) and carefully press the seal carrier (11) down onto the seal assembly using an arbor press and sleeve to compress the seal into the carrier.
- F)** With pilot side facing up, place housing (15) 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 (15). 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.
- G)** While holding shaft into housing, place housing/shaft assembly in vise with shaft end down. Making sure that end of drive link (18) with crowned splines goes into shaft end, install drive link (18) into shaft and tap lightly to seat the seal carrier against the wire ring (2). Place thrust bearing (17) over drive link (18). If seal carrier (11) is properly seated against wire ring (2), thrust bearing (17) will be flush with rear surface of housing.

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

- H)** Position the housing (15) in vise and use a slide and hammer type bearing puller to remove the rear housing bearing (16). Then remove the bearing spacer (32). To remove the front housing bearing (14), flip the housing over and place a screwdriver or small chisel in between a roller in the bearing and rest it on the bottom of the bearing cage. Strike the chisel or screwdriver with a hammer just until the cage stretches or chips enough to allow the rollers to fall out. Clear away all rollers, then replace the housing in vise upside down and use the slide and hammer to remove bearing making sure that no finger of the puller is pulling on the weak point caused when removing the roller bearings. Remove the thrust washer (12) and thrust bearing (13) and set aside. Using a small screwdriver carefully pry the shaft seal (7), backup seal (6), and metal shim (5) from housing bore if present and discard. Also remove excluder seal (33) if the motor design uses this seal and discard. (See Figure 4 for additional information.)

- I) Remove the housing from vise and turn over and pry the dust seal (1) from housing and discard (external dust seal is not used on models that use an internal excluder seal).
- J) 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. Place housing (15) in vice with the seven bolt assembly holes facing up. If model uses an excluder seal (33), place it in the recess of housing, if not, place the metal shim (5) in recess. Install the backup seal (6) into the housing (15) with the flat side down and the seal lip facing up. Insert shaft seal (7) down into housing (15) 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 (15), then place the thrust bearing (13) into housing.
- K) Place front housing bearing (14) onto housing and press bearing into housing to a depth of 60,1 [2.37] from the rear surface of the housing (15) to the top of the bearing. Insert the bearing spacer (32) into the housing. Place the rear housing bearing (16) onto the rear housing bore and press to a depth of 3,6 [.14] from the rear surface of the housing (15) to the top of the bearing (16). Place the shaft (27) down into housing (15) and place thrust bearing (17) on top of shaft (27). If shaft seals are properly seated against the housing (15), thrust bearing (17) will be flush with rear surface of housing.

Motor Section Assembly (Same Instructions For Both Designs)

- L) Install housing seal (8) into groove in housing (15). Place manifold (19) onto housing, (15) side with only seven holes facing housing (15). Place body seals (9) in grooves in both sides of rotor (21). Place rotor (21) onto manifold (19) with side of rotor with chamfer in splines facing manifold (19).
- M) Install balance plate (22) onto rotor (21) making sure holes for steel balls (23) faces up. Install three steel balls (23) in holes in balance plate (22). Install endcover seal (10) into groove in endcover (24) and place endcover onto balance plate (22). Install seven assembly bolts (26) and pre-torque to 13,6 Nm [10 ft. lbs.] Using the bolt torque sequence shown in Figure 3, final torque all bolts to 67,8 Nm [50 ft. lbs.]
- N) Remove motor from vise and place on work surface with shaft (27) facing up. Making sure that lip on seal (1) faces up, place dust seal (1) over shaft (27). Using a sleeve and a hammer, carefully drive dust seal (1) into place.

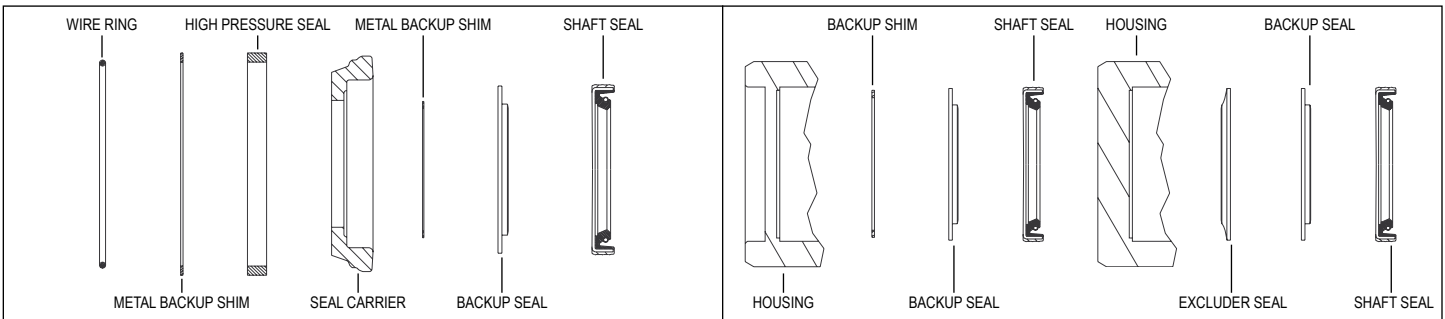


FIGURE 1

FIGURE 2

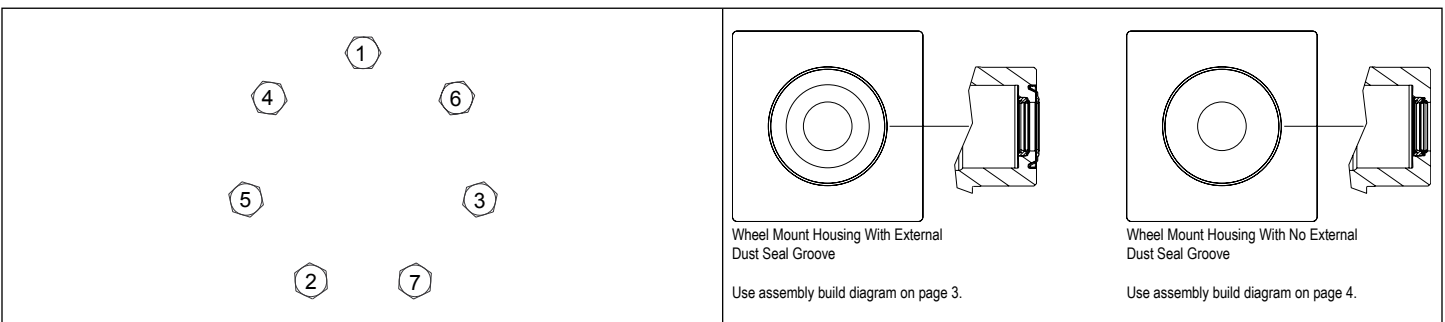
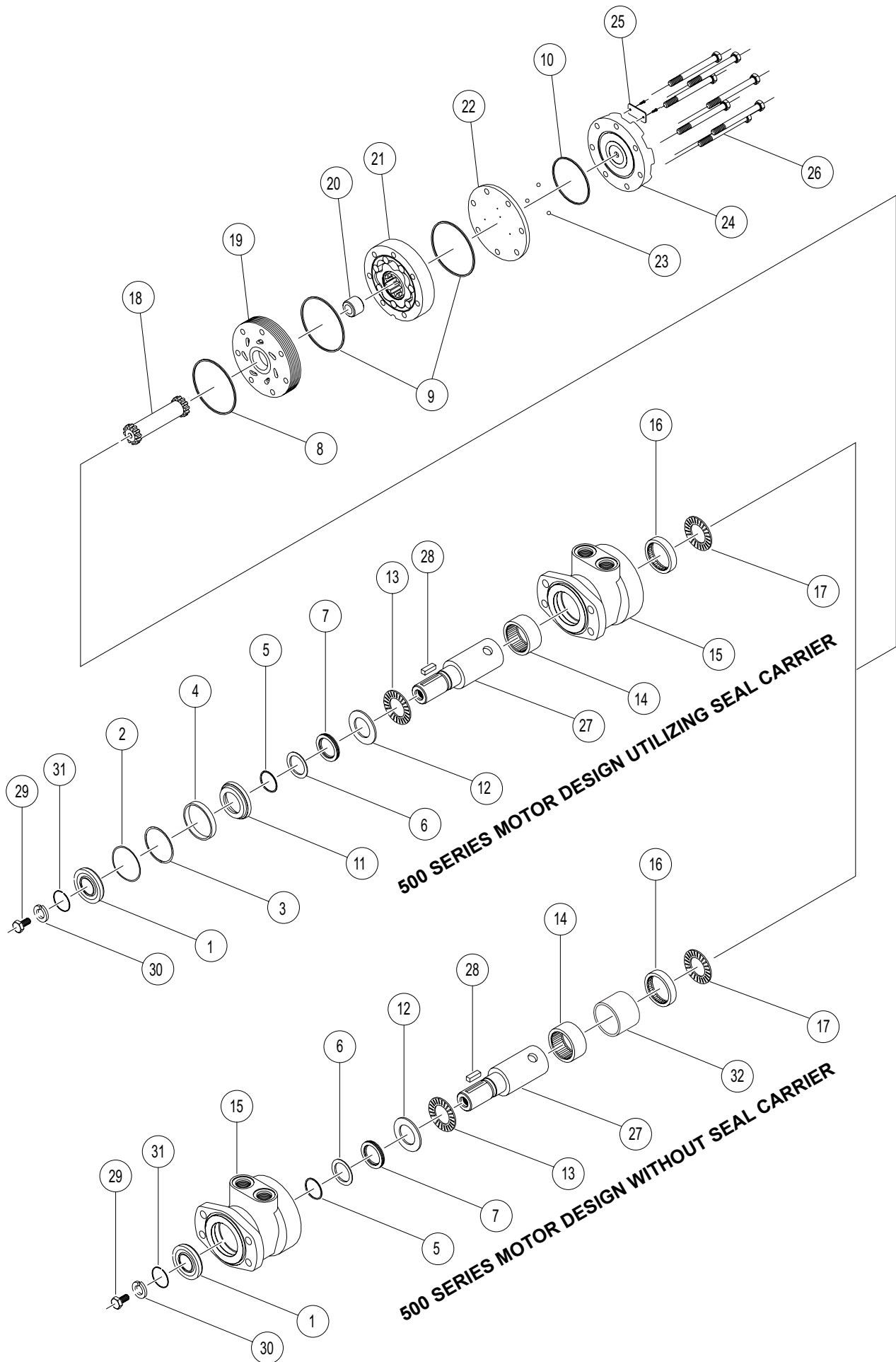


FIGURE 3

FIGURE 4

EXPLODED VIEW PARTS DESCRIPTION

- | | | | |
|------------------------------------|--|--------------------------------------|---|
| 1. ¹ Dust Seal | 12. ² Thrust Washer | 23. Steel Balls (3) | ¹ Included in seal kit(s):
500444001, 500444002, 500444112B, 500444222B |
| 2. ¹ Split Wire Ring | 13. ³ Front Thrust Bearing | 24. Endcover | ² Included in seal kit(s):
500444001 |
| 3. ¹ Metal Backup Shim | 14. ⁴ Front Housing Bearing | 25. I.D. Tag Assembly | ³ Included in seal kit(s):
500444222B |
| 4. ¹ High Pressure Seal | 15. Housing | 26. Assembly Bolts (7) | ⁴ Included in seal kit(s):
500444112B, 500444222B |
| 5. ¹ Metal Backup Shim | 16. ⁴ Rear Housing Bearing | 27. Shaft | ⁵ Included in seal kit(s):
500444002, 500444112B, 500444222B |
| 6. ¹ Backup Seal (2) | 17. ³ Rear Thrust Bearing | 28. Shaft Key | |
| 7. ¹ Shaft Seal (2) | 18. Drive Link | 29. Shaft Bolt | |
| 8. ¹ Housing Seal | 19. Manifold | 30. Lock Washer | |
| 9. ¹ Body Seals (2) | 20. Drive Link Spacer | 31. Wire Ring | |
| 10. ¹ Endcover Seal | 21. Rotor Assembly | 32. Bearing Spacer | |
| 11. ² Seal Carrier | 22. Balance Plate | 33. ⁵ Excluder Shaft Seal | Note: The motor design that utilizes a seal carrier will use the larger O.D. backup seal and shaft seal. |



**500 SERIES MOTOR DESIGN WITH EXCLUDER SEAL
(REFER TO FIGURE 4)**

