

SERVICE INSTRUCTIONS FOR THE DT [700] SERIES MOTORS

For Use With Seal Kits: 700666251, 700666251P, & 700666251PY

dimensions: mm [in]

NOTE: In January 1994, a change was made to the 700 Series motors with 2.5" bearing to change to a high pressure shaft seal. This change included the use of a backup seal (3), metal backup shim (2) and a revision to the pilot ring to allow use of the new seals. To allow conversion of low pressure shaft seal motors to high pressure shaft seal motors, three kits are available:

- 1.) PT018064- New revision pilot ring (can be used with this kit for conversion)
- 2.) PT666251P- Includes new revision pilot ring and complete seal kit.
- 3.) PT666251PY- Includes new revision 125mm pilot ring and complete seal kit.

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.

HOUSING/SHAFT DISASSEMBLY AND ASSEMBLY

- A)** Remove all shaft related components (i.e. keys, wire rings, nuts) from shaft (29). To aid in reassembly of the motor, make a "V" shaped set of lines from the endcover (26) to the housing (19) using either paint or a marker. With shaft facing up, secure motor in vise by clamping on to housing (19).
- B)** Remove seven pilot ring bolts (10) and lay aside. If motor uses either a 2-1/4" straight shaft (#40 shaft) or 60mm tapered shaft (#45 shaft), the pilot ring must be removed from the rear of the shaft. Skip to step C for this disassembly procedure. If motor has any other shaft, remove pilot ring (11) by pushing down on shaft (29) to hold in housing and use an upward, twisting motion to pull pilot ring (11) off of shaft (29). It is not necessary to remove the shaft assembly from the motor unless component inspection is desired. To remove seals from pilot ring, go to step D.
- C)** Using a rag to grasp output end of shaft (29), lift shaft/bearing assembly from motor. Remove retaining washer (14) from motor end of shaft (29) (NOTE: Retaining washer (14) may remain in housing (19)). Using snap ring pliers, remove snap ring (15) from shaft (29). Remove two thrust washers (16) and thrust bearing (17) from shaft (29). Push second retaining washer (14) towards output end of shaft (29) until second snap ring (15) is visible. Using snap ring pliers, remove second snap ring (15) from shaft (29). If bearing spacer (13) is used, remove it and lay aside. Remove roller bearing (12) from shaft (29). Using a twisting motion, remove pilot ring (11) from rear of shaft (29).
- D)** Using a small, thin screwdriver, carefully pry dust seal (1) and shaft seal (4) from pilot ring (11). (NOTE: some motors have a backup seal (3) and metal backup shim (2). If so, remove and discard at this time). Remove high pressure seal (5) from groove in front of housing (19) and discard.

CAUTION: It is not possible to use the backup seal (3) and metal backup shim (2) with the old revision pilot ring (11). The new revision pilot ring is thicker and has a small groove to accept the metal backup shim (2). Use of the old revision pilot ring with the backup seal (3) and metal backup shim (2) could cause motor components to bind when assembled.

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.

- E)** Place pilot ring on a clean, flat surface with large O.D. side facing down. Using Figure 1 as a reference, use a seal driver to install dust seal (1) into pilot ring making sure lip on seal faces up. Turn pilot ring (11) over. If repairing a motor with high pressure shaft seal or converting to high pressure shaft seal, the correct metal backup shim must be installed. If the motor has a 2-1/4" straight shaft (#40 & #47 shaft) or a 60mm tapered shaft (#45 shaft), the split metal backup shim included in the kit must be used. If the motor uses any other shaft, the unsplit metal shim must be used. After determining which metal backup shim (2) to use, install in the groove in the pilot ring (11). Place backup seal (3) into pilot ring (11) making sure lip on seal faces up. Using a seal driver, install shaft seal (4) into pilot ring (11). Place a high pressure seal (5) into the groove in the front of the housing (19).
- F)** If shaft assembly required disassembly to remove pilot ring (11), go to step H. To reassemble shaft components. If shaft assembly did not have to be disassembled to remove pilot ring (11), replace pilot ring (11) down over shaft (29) using a slight twisting motion until it contact housing (29). Align bolt holes and install seven pilot ring bolts (10). Using bolt torque sequence shown in Figure 2, torque bolts to $69,8 \pm 7,5$ Nm [51.5 ± 5.5 ft. lb.]. Go to step I.
- G)** To reassemble shaft assembly, place pilot ring (11) over rear of shaft (29) with large O.D. side facing rear of shaft (29). Using a slight twisting motion, push pilot ring (11) down over grooves in shaft (29) until it reaches step in shaft. (NOTE: It may be helpful to place tape over grooves in shaft and thoroughly coat shaft with oil to aid in installing pilot ring onto shaft).

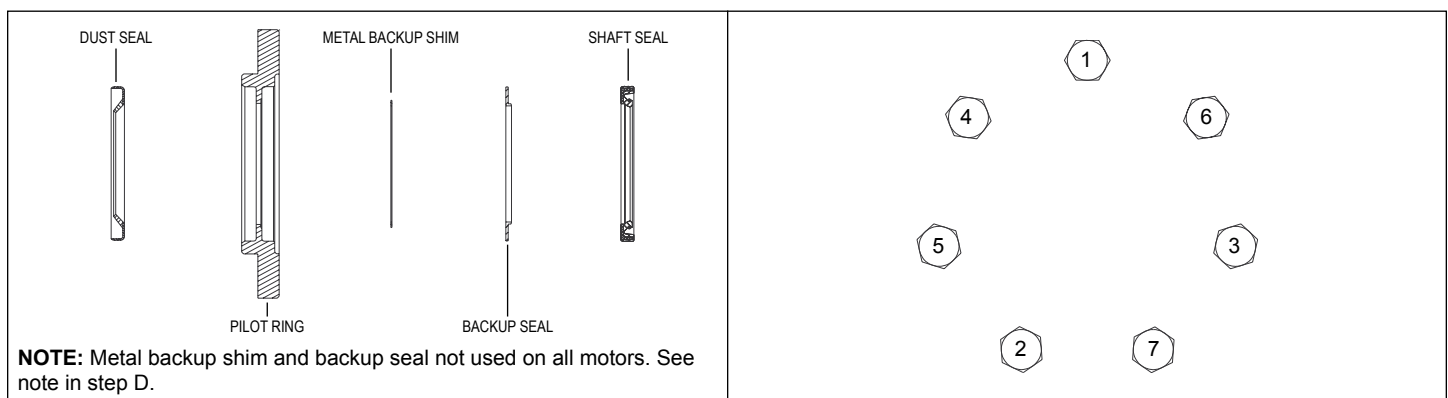
- H) Reassemble shaft components in reverse order that components were removed from shaft (29). If shaft (29) used bearing spacer (13), it is necessary for spacer (13) to be replaced in correct position. After shaft components are assembled onto shaft (29), place retaining washer (14) in housing (19). Place high pressure seal (5) in groove in front of housing (19). Grasping output end of shaft (29), lower shaft assembly into housing (19). Rotate pilot ring (11) to align bolt holes and install seven pilot ring bolts (10). Pre-torque bolts to 13.6 Nm [10 ft. lb.]. Using the bolt torque sequence shown in Figure 2, final torque all bolts to 69.8 ± 7.5 Nm [51.5 ± 5.5 ft. lb.].

MOTOR SECTION DISASSEMBLY/ASSEMBLY

- I) To aid in reassembly of the motor, make a "V" shaped set of lines from the endcover (26) to the housing (19) using either paint or a marker. With shaft facing down, secure motor in vise by clamping on to housing (19).
- J) Loosen and remove seven bolts (28) holding motor assembly together. Remove endcover (26) carefully as piston (24) and spring (25) may fall out. If piston does not come out, carefully pry piston (24) out of endcover (26) and lay aside. Remove O-Ring seal (9) and backup seal (8) from endcover and discard seals. Remove spring (25) and lay aside.
- K) Lift commutator container and commutator (23) from motor and lay aside. Place commutator on a flat, clean surface with the seal (7) facing up. Place the tip of a small screwdriver on the seal (7) and gently tap until opposite side of seal lifts from groove. Remove seal (7) and discard.
- L) Remove manifold (22) and rotor set (21). Remove all seals (5,6) from components and discard. (Caution - Do not allow rolls to drop from rotor assembly (21) when removing rotor assembly from motor.) **If the motor utilizes a wear plate, remove wear plate (37) and housing seal (36) and discard housing seal.** Remove drive link (20) from motor and lay 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.

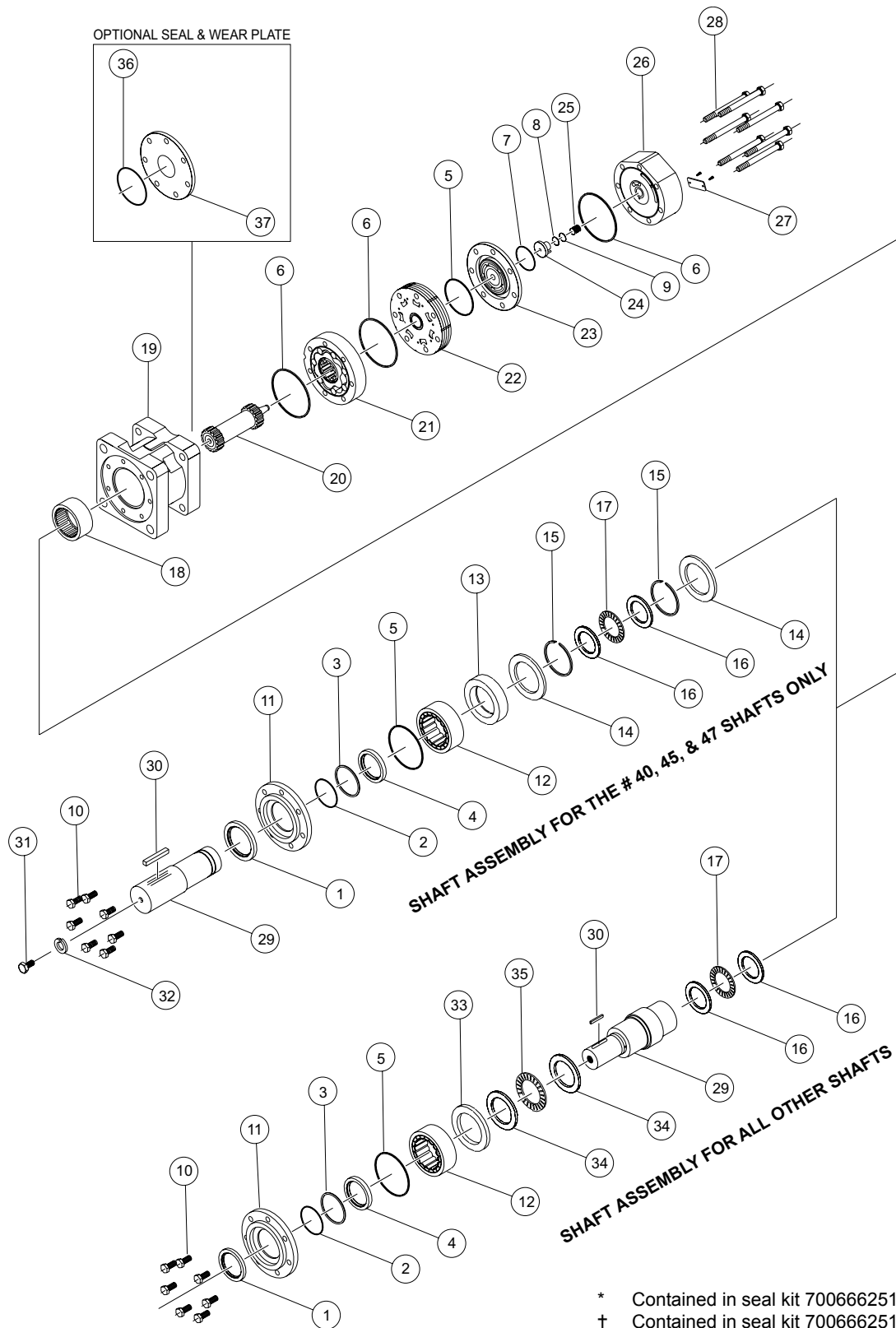
- M) Install drive link (20) into end of shaft with tapered end facing up. **If the motor utilizes a wear plate, place housing seal (36) in groove in housing (19) and place wear plate (37) over drive link (20) and onto housing.** Place body seals (6) in grooves in both sides of rotor (21). Place rotor (21) onto housing (19) with side of rotor with chamfer in splines facing housing (19). Place manifold (22) over rotor (21) with seal groove side up. Install manifold seal (5).
- N) Install the commutator seal (7) into the commutator (23) 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 (22) and then place the commutator onto the protruding end of the drive link (20) making sure that the seal side faces up.
- O) Install the remaining body seal (6) in the groove in the face of the endcover (26). Install piston spring (25) into endcover (26), then the white backup seal (9) followed by the O-Ring seal (8). Lining up the alignment pin with the hole in the endcover, press piston (24) into the endcover (26). While holding the piston (24) in the endcover, lower the endcover assembly onto the motor. Check to make sure that the endcover ports are in their original position.
- P) Install the seven assembly bolts (28) into endcover (26) and pre-torque to 13.6 Nm [10 ft. lb.]. Using the bolt torque sequence shown in Figure 2, final torque all bolts to 69.8 ± 7.5 Nm [51.5 ± 5.5 ft. lb.].



NOTE: Metal backup shim and backup seal not used on all motors. See note in step D.

FIGURE 1

FIGURE 2



SHAFT ASSEMBLY FOR THE # 40, 45, & 47 SHAFTS ONLY

SHAFT ASSEMBLY FOR ALL OTHER SHAFTS

- | | | | |
|-------------------------------|---------------------------|-------------------------|--------------------------|
| 1. *† Dust Seal | 11. † Pilot Ring | 21. Rotor Assembly | 31. Shaft Bolt |
| 2. *† Metal Backup Shim | 12. 2.5" Roller Bearing | 22. Manifold | 32. Lock Washer |
| 3. *† Backup Seal | 13. Bearing Spacer | 23. Commutator Assembly | 33. Spacer |
| 4. *† Shaft Seal | 14. Retaining Washers (2) | 24. Endcover Piston | 34. Front Thrust Washer |
| 5. *† High Pressure Seals (2) | 15. Snap Rings (2) | 25. Piston Spring | 35. Front Thrust Bearing |
| 6. *† Body Seals (3) | 16. Thrust Washers (2) | 26. Endcover | 36. * Housing Seal (OPT) |
| 7. *† Commutator Seal | 17. Thrust Bearing | 27. I.D. Tag Assembly | 37. Wear Plate (OPT) |
| 8. *† O-Ring Seal | 18. Rear Housing Bearing | 28. Assembly Bolts (7) | |
| 9. *† Backup Seal | 19. Housing | 29. Shaft | |
| 10. Pilot Ring Bolts (7) | 20. Drive Link | 30. Shaft Key | |

(OPT) These components may or may not be used in the motor configuration.