MOTORS

Repair Instruction

DR 610 Series Motor Brake

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White is a leading global provider of motor and steering solutions that power the evolution of mobile and industrial applications around the world.

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- *Exploded view*
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Exploded view

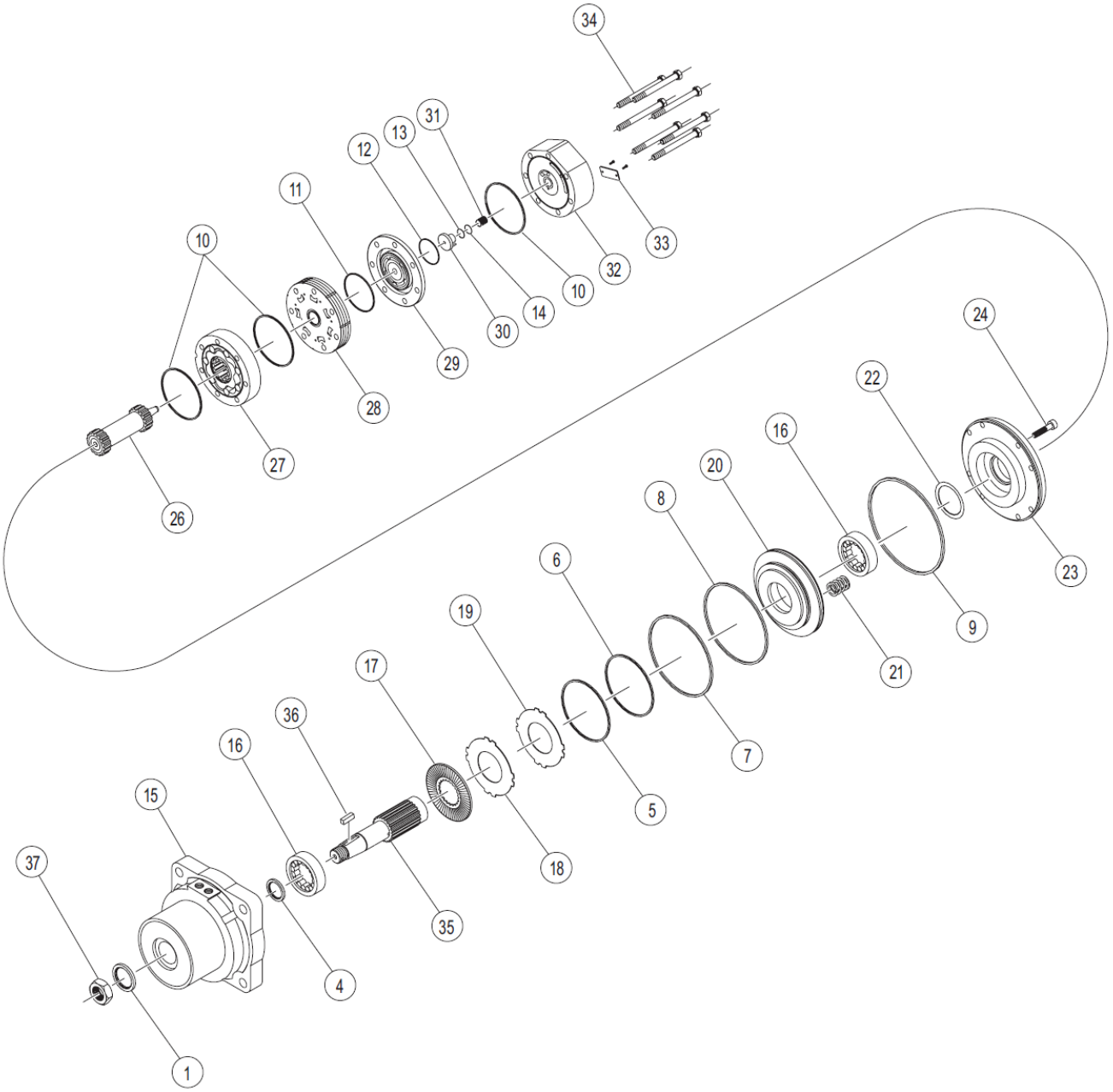

Figure 1 Exploded view

Parts list

Pos.	Part name
1*	Dust Seal
4*	Shaft Seal
5*	Small Piston O-Ring Seal
6*	Small Piston Seal
7*	Large Piston O-Ring Seal
8*	Large Piston Seal
9*	O-Ring Seal
10*	Body Seals (3)
11*	Manifold Seal
12*	Commutator Seal
13*	O-Ring Seal
14*	Backup Seal
15	Housing
16*	Shaft Bearing (2)
17	Friction Disks (10)
18	Disk Stampings (9)
19	Thick Disk Stampings (2)
20	Piston
21	Springs (25)
22	Spacer Shims (1-3)
23	Rear Housing
24	Capscrews (8)
26	Drive Link
27	Rotor Assembly
28	Manifold
29	Commutator Assembly
30	Endcover Piston
31	Piston Spring
32	Endcover
33	I.D. Tag Assembly
34	Assembly Bolts (7)
35	Shaft
36	Shaft Key
37	Shaft Nut
* Contained in seal kit 610555750	

Table 1 Parts list

Chapter 2
Disassembly and assembly

Topics:

- *Disassembly*
- *Assembly*

Note

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.

dimensions: mm [in]

Disassembly

A. 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 (15).
B. Loosen and remove seven bolts (34) holding motor assembly together. Remove endcover (32) carefully as piston (30) and spring(31) may fall out. If piston does not come out, carefully pry piston (30) out of endcover (32) and lay aside. Remove O-Ring seal (13) and backup seal (14) from endcover and discard seals. Remove spring (31) and lay aside.
C. Lift commutator container and commutator (29) from motor and lay aside. Place commutator on a flat, clean surface with the seal (12) facing up. Place the tip of a small screwdriver on the seal (12) and gently tap until opposite side of seal lifts from groove. Remove seal (12) and discard.
D. Remove manifold (28) and rotor set (27). Remove all seals (10 & 11) from components and discard. (Caution- Do not allow rolls to drop form rotor assembly (27) when removing rotor assembly from motor.) Remove drive link (26) from motor and lay aside.
E. Put the housing assembly into an arbor press with the shaft facing down. Lower the press to apply downward pressure on the rear housing (23) and lock the press in place. Loosen and remove the eight capscrews (24) holding the rear housing (23) to the front housing (15). Slowly release the press to allow spring pressure to push the rear housing (23) from the front housing (15). Remove the rear housing (23) and lay aside. (NOTE: Bearing (16) and spacer shim(s) (22) may fall out of rear housing (23).)
F. Remove springs (21) from front housing (15) and lay aside. Remove housing (15) from arbor press and place on a clean, flat sur- face with output end of shaft (35) facing up. To remove piston (20), friction disks (17) and disk stampings (18 & 19), firmly grasp output end of shaft with a rag. Raise housing assembly a few inches above work surface and firmly strike housing assembly on work surface until piston and disks drop from housing assembly. Lay piston (20) and disks (17, 18 &19) aside. Remove shaft (35) from housing (15) and lay aside. (NOTE: If possible, maintain disk stackup to aid it reassembly)
G. Remove front housing bearing (16) from housing and lay aside. Pry shaft seal (4) and backup seal from front housing (15) and discard. Remove metal backup shim from front housing (15) and discard. Remove dust seal (1) from housing and discard.

Note

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.

Assembly

A. Place housing (15) on a flat surface with pilot of housing facing up. Install dust seal (1) making sure that lip on seal faces up. Place front housing (15) in vise with pilot on housing facing down. Install shaft seal (4) into housing bore making sure that lip on seal faces up. For correct seal orientation, see Figure 2.

B. Install front housing bearing (16) into housing making sure that the snap ring that retains bearing rolls faces up. Making sure not to cut seal lip with shaft keyway, install shaft (35) into housing (15).

C. Install one disk stamping (18) into housing making sure that lugs or splines engage those in housing (15). Install one friction disk engaging splines on disk with those on shaft. Alternate disk stampings and friction disks until all disks except thick disk stamping (19) are installed. Install thick disk stamping (19) lastly on top of disk assembly.

D. Install small O-Ring seal (5) and large O-Ring seal (7) into corresponding grooves in piston (20). Install small seal (6) and large seal (8) in corresponding grooves over O-Ring seals. Thoroughly coat seals and sealing surfaces of housing (15) with clean oil. With large O.D. side of piston (20) facing up, install piston (20) into housing (15) and evenly press piston down making sure not to pinch seals. (If the disks and disk stampings are going to be replaced, the stack up on the new disks must be between 15,7 - 16,0 [.620 - .630]. Use Figure 3 for measuring reference.)

E. Install springs (21) on top of piston. Install O-Ring Seal (9) in groove in rear surface of housing (15). If rear shaft bearing (16) and spacer shim(s) (22) came out of rear housing (23), reinstall at this time by placing spacer shim(s) (22) into rear housing (23). Install rear shaft bearing (16) making sure that snap ring that retains bearing rolls faces out. Place rear housing (23) onto front of housing (15) lining up bolt holes. While holding motor assembly together, remove motor assembly from vise and place in arbor press. Press down on rear housing (23) until it contacts front housing (15) and lock press. Install eight capscrews (24) and torque to 61,0 Nm [45 ft. lbs.].

F. Install drive link (26) into end of shaft with tapered end facing up. Place body seals (10) in grooves in both sides of rotor (27). Place rotor (27) onto housing (15) with side of rotor with chamfer in splines facing housing (15). Place manifold (28) over rotor (27) with seal groove side up. Install manifold seal (11).

G. Install the commutator seal (12) into the commutator (29) with the metal side facing out. Use finger pressure to press the seal down flush with the surface of the commutator. Place the commutator container onto the manifold (28) and then place the com- mutator onto the protruding end of the drive link (26) making sure that the seal side faces up.

H. Install the remaining body seal (10) in the groove in the face of the endcover (32). Install piston spring (31) into endcover (32), then the white backup seal (14) followed by the O-Ring seal (13). Lining up the alignment pin with the hole in the endcover, press piston (30) into the endcover (32). While holding the piston (30) in the endcover, lower the endcover assembly onto the motor. Check to make sure that the endcover ports are in their original position.

I. Install the seven assembly bolts (34) and pre-torque to 13.6 Nm [10 ft. lb.]. Using the bolt torque pattern in Figure 4, final torque all bolts to 69.8 ± 7.5 Nm [51.5 ± 5.5 ft. lb.].

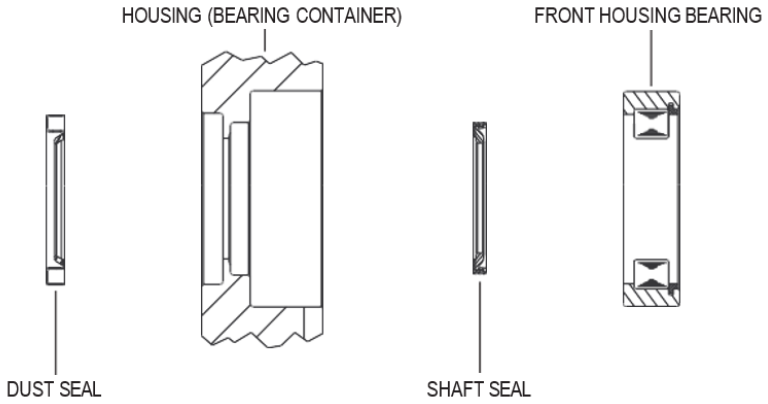

Figure 2 Seal orientation

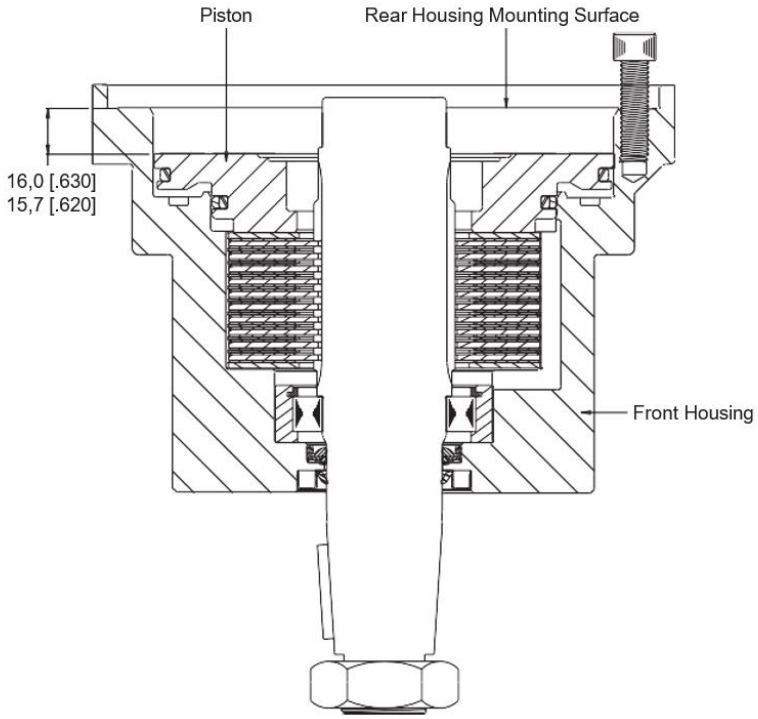

Figure 3 Piston assembly

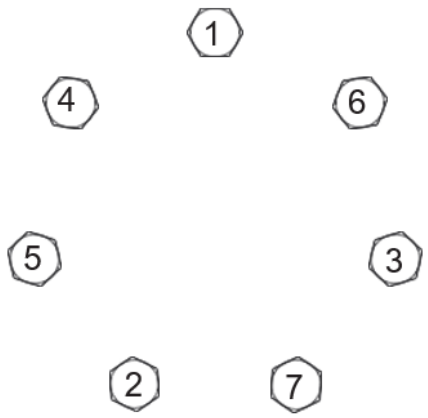

Figure 4 Bolts sequence

Figures

Tables

White Drive Motors & Steering, LLC
110 Bill Bryan Blvd, Hopkinsville, Kentucky, 42240

White Drive Motors and Steering sp. z o.o.
ul. Logistyczna 1, Bielany Wrocławskie, 55-040 Kobierzyce

whitedriveproducts.com