

MOTORS

Repair Instructions

HB 300, 320, 330 Series



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Chapter 1

HB 300 Series Diagram

HB 300 Exploded View

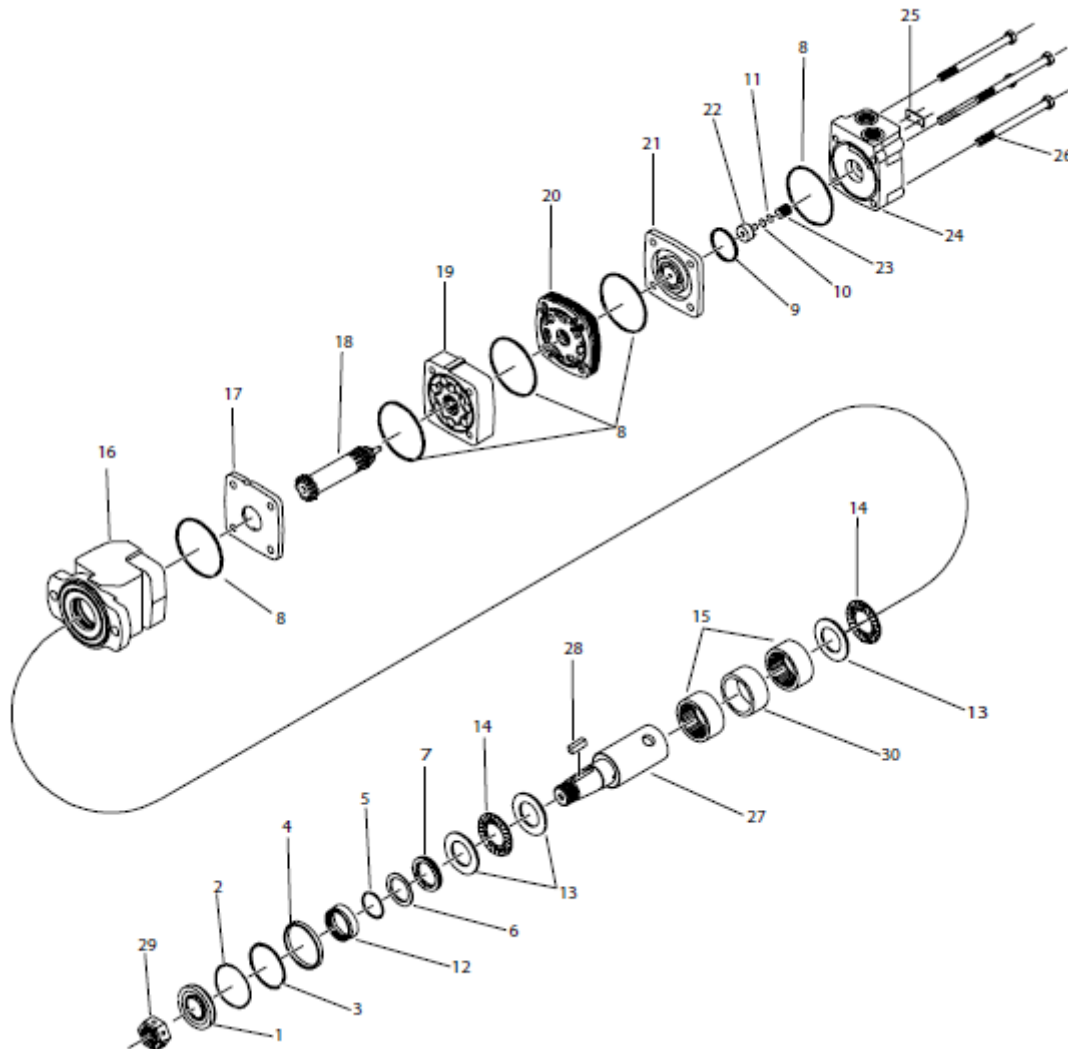


Figure 1: HB 300 Exploded View

Description	Component number
Dust seal	1
Wire ring	2
Metal backup shim	3
High pressure seal	4
Metal backup shim	5
Backup seal	6
Shaft seal	7
Body seal	8
Commutator seal	9
O-ring seal	10

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Backup seal	11
Seal carrier	12
Thrust washer	13
Thrust bearing	14
Roller bearing	15
Housing	16
Wear plate	17
Drive link	18
Rotor assembly	19
Manifold	20
Commutator assembly	21
Piston	22
Piston spring	23
Endcover	24
I.D. tag assembly	25
Assembly bolts	26
Shaft	27
Shaft key	28
Shaft nut	29
Bearing spacer	30


Table 1: Components list

HB 300 Seal Kit Installation

dimensions: mm [in]

1. Remove all shaft related components from shaft (27) (i.e. keys, wire rings, nuts).
 - 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.
 - b) With shaft facing down, secure motor in vise by clamping on to housing (16).
 - c) Loosen and remove four bolts (26) holding motor assembly together.
 - d) Remove endcover (24) from motor making sure not to drop endcover piston (22).
 - e) Using needle nose pliers or two small screwdrivers, lift endcover piston (22) out of endcover (24).
 - f) Remove white seal (11) and O-ring seal (10) from endcover piston (22) and discard.
 - g) Remove the piston spring (23) from endcover (24) and lay aside.

2. Lift commutator container and commutator (21) from motor and lay aside.
 - a) Place the commutator on a flat, clean surface with the seal (9) facing up.
 - b) Place the tip of a small screwdriver on the seal (9) and gently tap until the opposite side of seal lifts from groove. Remove seal (9) and discard.

3. Remove manifold (20), rotor assembly (19) and wear plate (17) from motor.
 - a) Remove all seals (8) from components and discard.
 -  **Caution:** Do not allow rolls to drop from rotor assembly when removing rotor assembly for motor
 - b) Remove drive link (18) from motor and lay aside.
 - c) Remove the thrust bearing (14) and thrust washer (13) from the housing (16) and lay aside.
 - d) From the front of housing, gently tap shaft (27) upwards and remove through rear of housing.

4. Remove housing (16) from vise and lay on flat surface with dust seal (1) facing up.
 - a) Using a small thin screwdriver, carefully pry the dust seal (1) from the seal carrier (12) and discard.
 - b) Using an arbor press and a sleeve, press the seal carrier (12) down into the housing (16) approximately 6.4 [.250] until the wire ring (2) in the front of the housing (24) can be removed.

5. Using a small thin screwdriver, pry the wire ring (2) from the groove in the front housing (16).
 - a) Also pry the backup shim (3) and the high pressure seal (4) from the groove.
 - b) Remove the seal carrier (12) from the housing bore and carefully pry the shaft seal (7), backup seal (6) and backup shim (5) from the seal carrier (12) and discard the items (5,6 & 7).
 - c) Remove two thrust washers (13) and thrust bearing (14) from housing and lay aside.

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.

6. Install backup shim (5), backup seal (6) and shaft seal (7) into the seal carrier (12). See *Figure 2* for correct seal orientation.
 - a) Place side of seal carrier (12) with seal down on a flat surface and press down to seat seals in seal carrier (12).
 - b) Install the dust seal (1) in the opposite side of the seal carrier (12).
 - c) Make certain that shaft seal and dust seal are coated with oil to provide start-up lubrication.

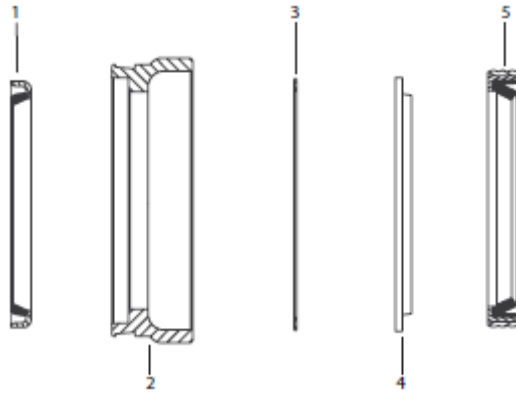


Figure 2: Correct seal orientation

7. With the flange side of the housing face up, place one thrust washer (13), then thrust bearing (14) and second thrust washer (13) against roller bearing in housing.
 - a) Install the seal carrier assembly (5-7, 12) into the housing (16) making sure that the large O.D. side faces down.
 - b) Install the high pressure seal (4) into the housing groove.
 - c) To install the metal backup shim (3), slightly squeeze the shim between the thumb and forefinger to bow the shim.
 - d) While maintaining the bow, start the shim into the groove and use a small screwdriver to push the shim into the groove.
 - e) Install the wire ring (2) into the groove making sure that the ends are butted.

8. Place the housing in an arbor press with the mounting flange side facing down. Press down on the rear housing bearing until it is 4.2 mm - 5.2 mm [.164 in - .205 in] below the surface of the housing.
This distance allows for the placement of the thrust washer and thrust bearing to be installed later.

9. With output end of shaft facing up, insert shaft into housing and press seal carrier down until it is seated against the wire ring in the front groove.
 - a) Remove shaft from housing.
There should be 2.0 mm - 2.5 mm [.080 in - .100 in] clearance between the rear-most thrust washer (13) and the front shaft bearing (15). See *Figure 3*
 - b) If the front shaft bearing is against the thrust washer, it must be pushed back into the housing to provide the necessary clearance.

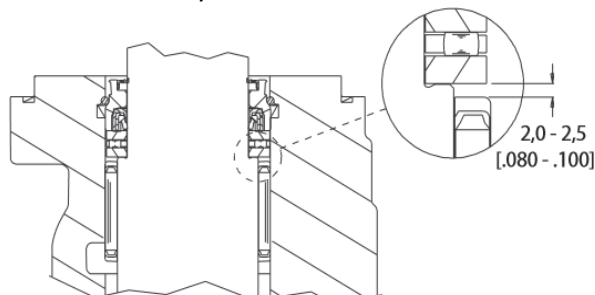


Figure 3: Necessary clearance

10. Mount the housing in a vise with the mounting flange side facing down.
 - a) If a 1-1/4" or 32mm shaft is being installed, liberally coat the output end of the shaft with STP.

Note: Make sure the area around key slot is thoroughly coated before installing shaft into housing.

- b) With the output end of the shaft facing down, insert into the housing.
- c) Place the remaining thrust washer (13) against the shaft end followed by the remaining thrust bearing (14).

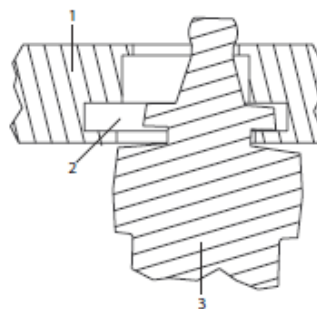
11. Place a body seal (8) into the groove in the rear face of the housing.

- a) Insert the drive link (18) into the shaft with the tapered end facing up. Place the wear plate (17) over the drive link (18) and onto the housing making sure to use the alignment marks as a guide to assure correct orientation of the wear plate (and the remaining components).

12. Place a body seal (8) into the groove in the face of the rotor assembly (19). With the seal side of the rotor assembly (19) facing the wear plate, line up the splines of the drive link (18) and the rotor assembly (19) and lower the rotor assembly onto the housing (16).

13. Place a body seal (8) into the groove in each face of the manifold (20).

- a) Lift the drive link (18) approximately 2.5 mm [.100 in] and place the tip of a small screwdriver under the disk-shaped portion of the drive link to hold it up.
- b) Making sure that the notch in the manifold is aligned with the notch in the rotor and that the side with the largest holes faces down.
- c) Lower the manifold (20) onto the motor and engage the disk-shaped portion of the drive link (18) into the groove in the manifold (20) See *Figure 4*.
- d) Remove the screwdriver and lower the manifold (20). If the disk is engaged in the groove, the end of the drive link will protrude above the surface of the manifold. If it doesn't, remove the manifold and repeat this step.
- e) Using bolts or line up pins align the components assembled thus far.
- f) Make sure that components are matching the "V" shape that you drew earlier and that the bolt holes are all aligned.
- g) Once everything is aligned make sure that the drive link is still engaged in the manifold. (The motor will not operate if the drive link is not engaged in the manifold).



1	Manifold
2	Groove
3	Drive link

Figure 4: Necessary clearance

14. Install the commutator seal (9) into the commutator (21) with the metal side facing up.
 - a) Use finger pressure to press the seal down flush with the surface of the commutator.
 - b) Place the commutator container (21) onto the manifold (20) and then place the commutator onto the protruding end of the drive link (18) making sure that the seal side faces up.

15. Install the remaining body seal (8) in the groove in the face of the endcover (24).
 - a) Install the piston spring (23) into the endcover (24), then the white seal (11), followed by the O-ring seal (10).
 - b) Lining up the alignment pin, press the piston (22) into the endcover (24).
 - c) While holding the endcover piston (22) into the endcover (24), lower the endcover assembly onto the motor.

16. Install the four assembly bolts (26) and pre-torque to 13.6 Nm [10 ft. lb.] Final torque all bolts to 67.8 Nm [50 ft.lb.].

HB 300 Series Parts Listing

Available Parts Kits

Note: Refer to the *HB 300 Exploded View* for item numbers

Description	Exploded View Item Number	Qty. In Kit	Order Number
Dust seal	1	1	PB333900 (Includes item numbers 1-12 with Viton shaft seal)
Wire ring	2	1	
Metal backup shim	3	1	
High pressure seal	4	1	
Metal backup shim	5	1	
Backup seal	6	1	
Shaft seal	7	1	PB333900B (Includes item numbers 1-11 with Buna shaft seal)
Body seals	8	5	
Commutator seal	9	1	
O-ring seal	10	1	
Backup seal	11	1	
Seal carrier	12	1	

Table 2: Seal kit

Description	Exploded View Item Number	Order Number
Thrust washer	13	HB018054
Thrust bearing	14	HB018052
Roller bearing	15	HB018053
Bearing spacer	30	HB018096
Wear plate	17	HB012012
Manifold	20	HB015008
Commutator assembly	21	HB012013
Midmount commutator assembly	Not shown	HB012011
Endcover piston	22	HB018056 not sellable
Piston spring	23	HB018059 not sellable
1000 psi relief valve	Not shown	RE018228
2000 psi relief valve	Not shown	RE018231
3000 psi relief valve	Not shown	RE018221
1.00-20 UNEF slotted nut	29	RE018108
1.00-20 UNEF solid nut	29	RE018998
Port plug ("AB" option)	Not shown	RE018186 not sellable
1.00-20 UNEF lock nut	29	CE018007 not sellable

Table 3: Miscellaneous kits

When changing motor displacements, a matching rotor and bolt set kit must be ordered. A new drive link kit may be necessary.

Exploded View Item Number	19	19	18	26	26
Displacement	Standard Rotor Kit	Freeturn Rotor Kit	Drive Link Kit	Bolt Set Kit	Bolt Set Kit For Endcovers With Offset Ports
050	HB037001	HB037002	HB014028	300334005	300334004L
080	HB047008	HB047009	HB014028	300334008	300334012

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090	HB067008	HB067009	HB014028	300334008	300334014
110	HB087008	HB087009	HB014029	300334010	300334014
125	HB097002	HB097003	HB014029	300334003L	300334018
160	HB107008	HB107009	HB014030	300334012	300334012L
200	HB127009	HB127010	HB014030	300334014	300335110
250	HB147003	HB147004	HB014027	300334018	300334018L
300	HB187009	HB187010	HB014027	300335014	300335016
320	IDWS20004	IDWS20002	HB014031	300335114	300334024L
400	IDHB24001	IDHB24002	HB014031	300335114	300334024L

Table 4: Rotors, drive links, and bolts

Exploded view item #16

Housing kits include the front & rear bearings (#15), 2 thrust washers & 1 bearing (#'S 13 & 14), & spacer (#30) installed in the housing. The rear thrust washer and thrust bearing are included in the housing kit.

Description	Housing Kit
#M2 & M8- 4-hole square mount (midmount)	No kit PB130055(F2 & F8) + 300012011(midmount Commutator)
#B0 & B7- 2-hole SAE B mount	PB130050
#F2 & F8- 4-hole square mount	PB130055
#A0 & A7- 2-hole SAE "A" style mount	PB130056
#W2 & W8- 4-hole wheel mount	PB130057
#A2 & A8- 4-hole SAE "A" style mount	PB130058
#A4 & A9- 6-hole SAE "A" style mount	PB130059

Table 5: Housing kits

Shaft kits come with related shaft components (i.e. keys, nuts, etc.) to order individual shaft components (i.e. keys, nuts, bolts, washers or wire rings) use the kit number for each individual part.

Exploded View Item Number	27	28	29	Not Shown	Not Shown	Not Shown
Description	Shaft Kit	Key Kit	Nut Kit	Bolt Kit	Washer Kit	Wire Ring Kit
#01- 13 Tooth spline	HB011701	-	See Table 3: Miscellaneous kits on page 10-11	-	-	-
#02- 6-B spline	HB011603	-		-	-	-
#22- 1-1/4" tapered	300110053	300339101 20pcs		-	-	-
#20- 1-1/4" straight	300110054	300339106 need list 20pcs		RE018087 component, kit in progress	300339302 20pcs	RE018049 component, kit in progress
#23- 14 tooth spline	300110055	-		-	-	RE018049 component, kit in progress
#10- 1" straight	300110056	200229100 20 pcs		-	-	-
#12- 25mm straight	300110057	300339104 20pcs		-	-	-
#21- 32mm straight	300110059 need list price	No Kit		-	-	RE018049 component, kit in progress
#07- 1-1/4" straight speed sensor	300110084	300339106 20pcs		RE018087 component, kit in progress	300339302 20pcs	RE018049 component, kit in progress
#15- 1" straight speed sensor	300110086	200229100 20 pcs		-	-	-
#08- 32mm straight speed sensor	300110086	200229100 20 pcs		RE018087 component, kit in progress	300339302 20pcs	RE018049 component, kit in progress

Table 6: Shafts and related components kits

Exploded view item #24

Endcover kits come assembled with exploded view items # 10, 11, 22 & 23. To order a relief valve for the valve cavity endcovers, see *Table 3: Miscellaneous kits* on page 10-11 for relief valve kit numbers.

Description	Standard Endcover Kit	Valve Cavity Endcover Kit	Internal Drain Endcover Kit	Valve Cavity & Internal Drain Endcover Kit
#6- 1-1/16" O-ring side ports	300160001	-	300160001D	-
#7- 1/2" BSP.F side ports	No Kit	-	No Kit	-
#2- 1/2" BSP.F rear ports	300160003	-	No Kit	No Kit
#9- 3/8" BSP.F side ports	No Kit	-	No Kit	-
#1- 7/8" O-ring offset ports	300160006	-	300160006D	300160006DR
#1- 7/8" O-ring rear ports	300160007	300160007R	300160007D	300160007DR
#2- 1/2" BSP.F offset ports	No Kit	-	300160008D	-
#3- 1/2" BSP.F offset manifold ports	300160009	-	300160009D	-
#5- 9/16" O-ring side ports	300160000	300160000R	11284763	-

Table 7: Endcover kits

Chapter 2

HB 320 Series Diagram

For use with seal kit(s): PB333700, PB333700B
 dimensions: mm [in]

- A) Remove all shaft related components from shaft (20) (i.e. keys, wire rings, nuts). To aid in reassembly of 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 the housing (10). Loosen and remove four bolts (19) holding motor assembly together. Remove endcover (17) from motor making sure not to drop endcover piston (15). Using needle nose pliers or two small screwdrivers lift endcover piston (15) out of the endcover (17). Remove white Teflon seal (5) and O-ring seal (4) from endcover piston and discard seals. Remove piston spring (16) from endcover (17) and lay aside.
- B) Lift commutator container and commutator (14) from motor and lay aside. Place commutator on clean, flat surface with seal side facing up. Place the tip of a small screwdriver on the commutator seal (3) and gently tap until the opposite side of seal lifts from groove. Remove seal and discard.
- C) Remove manifold (13) and rotor assembly (12). Remove all body seals (2) from components and discard seals. (Caution - Do not allow rolls to drop from rotor assembly (12) when removing rotor assembly from motor.) Remove drive link (11) from motor and lay aside.
- D) Remove motor from vise and place on a clean flat surface with shaft facing up. With snap ring pliers, remove snap ring (6). Turn housing on its side and place drive link (11) back into shaft. Using a mallet, gently tap on drive link (11) until dust/shaft seal (1) is free from housing. Remove drive link (11) and lay aside. Remove shaft (20) from housing (10). Remove dust/shaft seal (1), two thrust washers (7) and thrust bearing (8) from shaft. Discard dust/shaft seal (1).

At this point, all parts should be cleaned in an oil-based solvent and dried using compressed air (For safety, observe all OSHA guidelines). All new seals should be lightly coated in clean oil prior to installation. Also check internal housing bearings for excessive wear.

- E) Place housing (10) on a clean flat surface with mounting flange facing up and place shaft (20) into housing (10). Place one thrust washer (7) onto shaft (20), then place thrust bearing (8) onto shaft (20) and second thrust washer (7) onto shaft. Liberally coat dust/shaft seal (1) with clean oil on inside and outside diameters of seal. With flat side of seal facing up, slide dust/shaft seal (1) down shaft, being careful not to cut seal on spines or keyway. Use a sleeve and arbor press to seat the dust/shaft seal down against thrust washer (7). Use snap ring pliers to install snap ring (6) into groove in housing. While holding shaft in housing, place housing (10) in vise with shaft (20) facing down.
- F) Place drive link (11) into shaft (20) with tapered end facing up. Place body seal (2) in groove in rotor assembly (12). Position rotor assembly (12) over drive link (11) with seal side contacting housing (10). Check alignment marks for correct orientation.

- G)** Place a body seal (2) into the groove in each face of the manifold (13). Lift the drive link (11) approximately 3 mm [.10 in] and place the tip of a small screwdriver under the disk-shaped portion of the drive link to hold it up. Making sure that the notch in the manifold is aligned with the notch in the rotor and that the side with the largest holes faces down, lower the manifold, (13) onto the motor and engage the disk shaped portion of the drive link (11) into the groove in the manifold (13) (See Figure 1). Remove the screwdriver and carefully lower the manifold (13) onto the rotor assembly (12). If the disk is properly engaged in the groove, the end of the drive link (11) will protrude above the surface of the manifold (13). If it does not, remove manifold (13) and repeat this step. (Using bolts or pins align the bolt holes in the motor and make sure the “V” you drew earlier also lines up. Make sure, after doing this that the drive link is still engaged in the manifold. Motor will not run if drive link is not engaged.)
- H)** Install the commutator seal (3) into the commutator (14) with the metal side facing up. Use finger pressure to press the seal down flush with the surface of the commutator (14). Place the square commutator container (14) onto the manifold (13) and then place the commutator (14) onto the protruding end of the drive link (11) making sure that the seal side faces up.
- I)** Install remaining body seal (2) in the groove in the face of the endcover (17). Install the piston spring (16) into the endcover (17), then the white Teflon backup seal (5), followed by the O-ring seal (4). Lining up the alignment pin, press the piston (15) into the endcover (17). Holding the piston (15) into the endcover (17), lower the endcover assembly onto the motor. Check alignment marks for correct endcover port position.
- J)** Install the four bolts (19) and pre-torque to 13.6 Nm [10 ft. lbs.] Final torque all bolts to 67.8 Nm [50 ft. lbs.]

HB 320 Exploded View

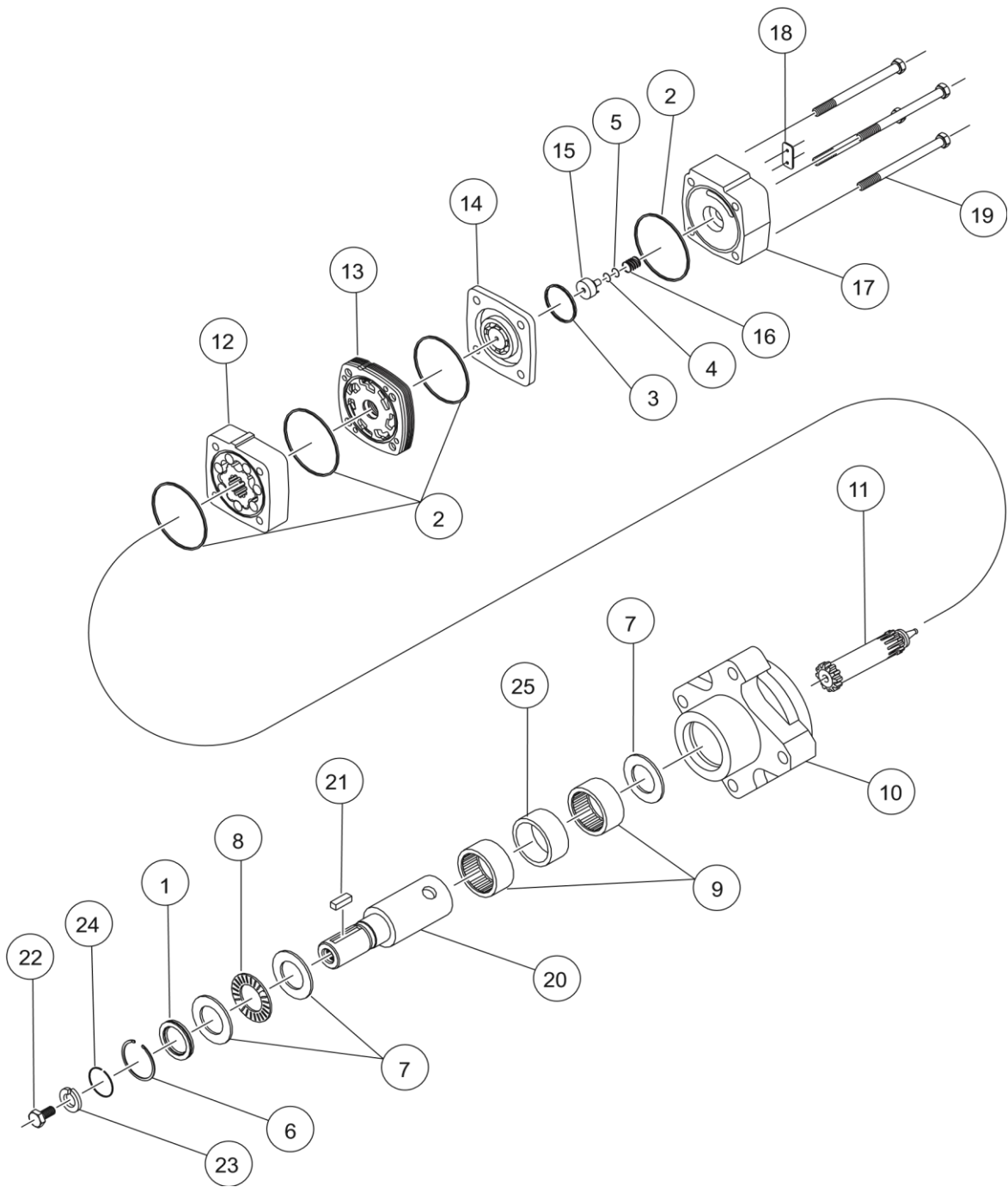


Figure 5: Exploded view

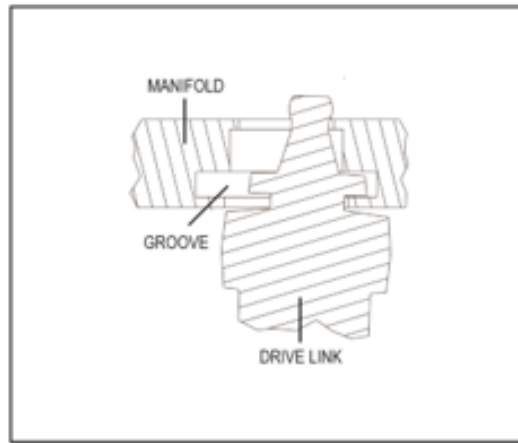


Figure 6: Drive link – Manifold connection

Component number	Description
1.	* Dust/Shaft Seal
2.	* Body Seals (4)
3.	* Commutator Seal (2)
4.	* O-Ring Seal
5.	* Backup Seal
6.	Snap Ring
7.	Thrust Washers (3)
8.	Thrust Bearing
9.	Housing Bearings (2)
10.	Housing
11.	Drive Link
12.	Rotor Assembly
13.	Manifold
14.	Commutator Assembly
15.	Endcover Piston
16.	Piston Spring
17.	Endcover
18.	I.D. Tag Assembly
19.	Assembly Bolts (4)
20.	Shaft
21.	Shaft Key
22.	Shaft Bolt
23.	Lock Washer
24.	Wire Ring
25.	Bearing Spacer

Table 8: HB 320 Component list

* Items contained in Seal Kits PB333700, PB333700B

Chapter 3

HB 330 Series Diagram

For use with seal kit(s): PB333850
 dimensions: mm [in]

- A) Remove nut (31) from shaft (28). 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 (15).
- B) You will need an industrial strength bearing puller to remove the hub from the brake. Once the hub has been removed set it aside and loosen and remove the four bolts and lock washers holding the brake to the motor, and set that aside.
- C) At this point flip the housing over and secure in a vise with the four endcover bolts face up. Loosen and remove four bolts (27) holding motor assembly together. Remove endcover (25) from motor making sure not to drop endcover piston (23). Using needle nose pliers or two small screwdrivers, lift endcover piston (23) out of endcover (25). Remove backup seal (8) and O-ring seal (7) from endcover piston (23) and discard. Remove the piston spring (24) from endcover (25) and lay aside.
- D) Lift commutator container and commutator (22) from motor and lay aside. Place commutator on a flat, clean surface with the seal (6) facing up. Place the tip of a small screwdriver on the seal (6) and gently tap until opposite side of seal lifts from groove. Remove seal (6) and discard.
- E) Remove manifold (21), rotor assembly (20) and mid-mount plate (18) from motor. Remove all seals (5) from components and discard. **(Caution - Do not allow rolls to drop from rotor assembly when removing rotor assembly for motor.)** Remove drive link (19) from motor and lay aside. Remove the thrust bearing (17) from the housing (15) and lay aside.
- F) Remove housing (15) from vise and lay on flat surface with shaft (28) facing up. Remove the key (29) from the shaft and set aside. Remove the retaining ring (10) from the front of the housing. Pry the dust seal (1) from the bearing (12) and discard.
- G) At this point the shaft can be pulled through the front of the housing (15). Carefully remove the bearing (12) from the shaft, making sure not to drop any rolls from the bearing. Once the bearing is removed, remove the remaining components from the shaft. The metal backup ring (2) may have remained in the bearing (it is not necessary to remove). Remove backup shim (2a), the backup seal (3), shaft seal (4), and washer (13), bearing (14) washer (13) from the shaft (28). Discard items 2a, 3, and 4. Remove the housing seal (9) from the inner groove in the housing and discard.
- H) 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.
- I) With shaft upright, place a washer (13), then bearing (14) then washer (13) onto the shaft. Then using Figure 7 for correct orientation, install metal backup ring (2) if it fell out of the

bearing, backup shim (2a) backup seal (3) and shaft seal (4) into the Bearing (12). Place side of bearing (12) with seal down on a flat surface and press down to seat seals in bearing (12). Place the bearing over the shaft (seal side down) Install the dust seal (1) in the opposite side of the bearing (12) using Figure 7 for correct seal lip orientation. Gently tap dust seal (1) down into top of bearing. Make certain that shaft seal and dust seal are coated with oil to provide start-up lubrication.

- J) Place housing seal (9) into the groove in the housing before shaft is placed in the housing. Place bearing spacer (11) onto the shaft and drop shaft into the front of the housing. Insert retaining ring (10) into top groove in housing.
- K) At this point, flip housing over, and secure in vise. Place thrust bearing (17) into rear housing bearing (16).
- L) Place a body seal (5) into the groove in the rear face of the housing. Insert the drive link (19) into the shaft with the tapered end facing up. Place the mid-mount plate (18) over the drive link (19) and onto the housing making sure to use the alignment marks as a guide to assure correct orientation of the mid-mount plate (and the remaining components).
- M) Place a body seal (5) into the groove in the face of the rotor assembly (20). With the seal side of the rotor assembly (20) facing the mid-mount plate, line up the splines of the drive link (19) and the rotor assembly (20) and lower the rotor assembly onto the housing (16).
- N) Place a body seal (5) into the groove in each face of the manifold (21). Lift the drive link (19) approximately .100 in and place the tip of a small screwdriver under the disk-shaped portion of the drive link to hold it up. Making sure that the notch in the manifold is aligned with the notch in the rotor and that the side with the largest holes faces down. Lower the manifold (21) onto the motor and engage the disk shaped portion of the drive link (19) into the groove in the manifold (21) (See Figure 6). Remove the screwdriver and lower the manifold (21). If the disk is engaged in the groove, the end of the drive link will protrude above the surface of the manifold. If it doesn't, remove the manifold and repeat this step. Using bolts or line up pins align the components assembled thus far. Make sure that components are matching the "V" shape that you drew earlier and that the bolt holes are all aligned. Once everything is aligned make sure that the drive link is still engaged in the manifold. ***(The motor will not operate if the drive link is not engaged in the manifold).***
- O) Install the commutator seal (6) into the commutator (22) 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 (22) onto the manifold (21) and then place the commutator onto the protruding end of the drive link (19) making sure that the seal side faces up.
- P) Install the remaining body seal (5) in the groove in the face of the endcover (25). Install the piston spring (24) into the endcover (25), then the backup seal (8), followed by the O-ring seal (7). Lining up the alignment pin, press the piston (23) into the endcover (25). While holding the endcover piston (23) into the endcover (25), lower the endcover assembly onto the motor.
- Q) Install the four assembly bolts (27) and pre-torque to 10 ft. lbs. Final torque all bolts to 50 ft. lbs.

- R) At this point flip the motor over with shaft side up. Place brake (30) on housing in the same direction as it was before it was removed. Bolt it down using the four remaining lock washers and bolts. Release tension on the brake and lower the hub onto the brake. Install lock nut (34) and torque to 250 - 350 ft.lb.

- S) Adjust tension in the brake by pulling the lever several times until the brake starts to hold.

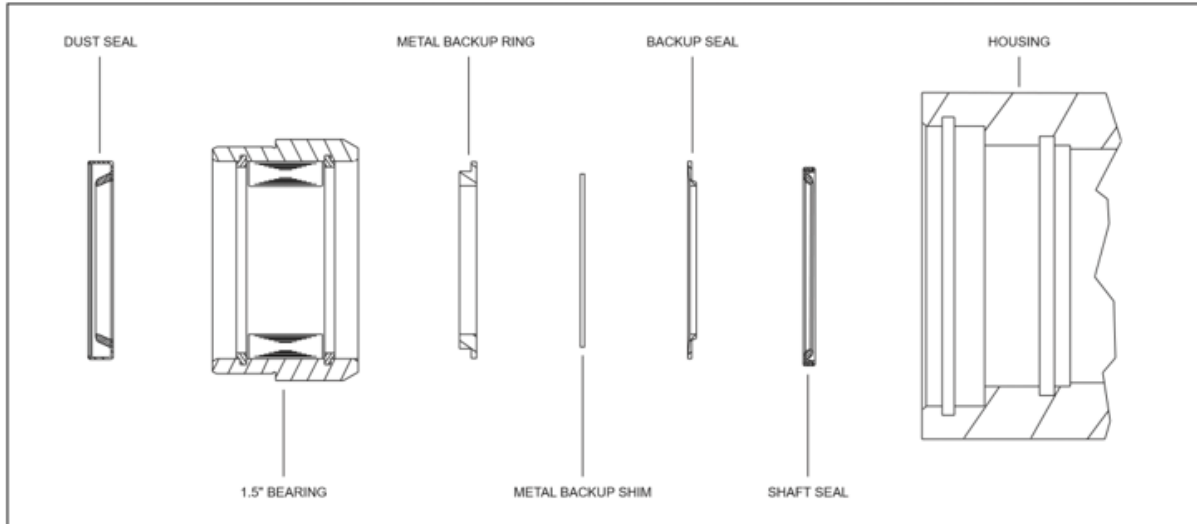


Figure 7: Correct orientation

HB 330 Exploded View

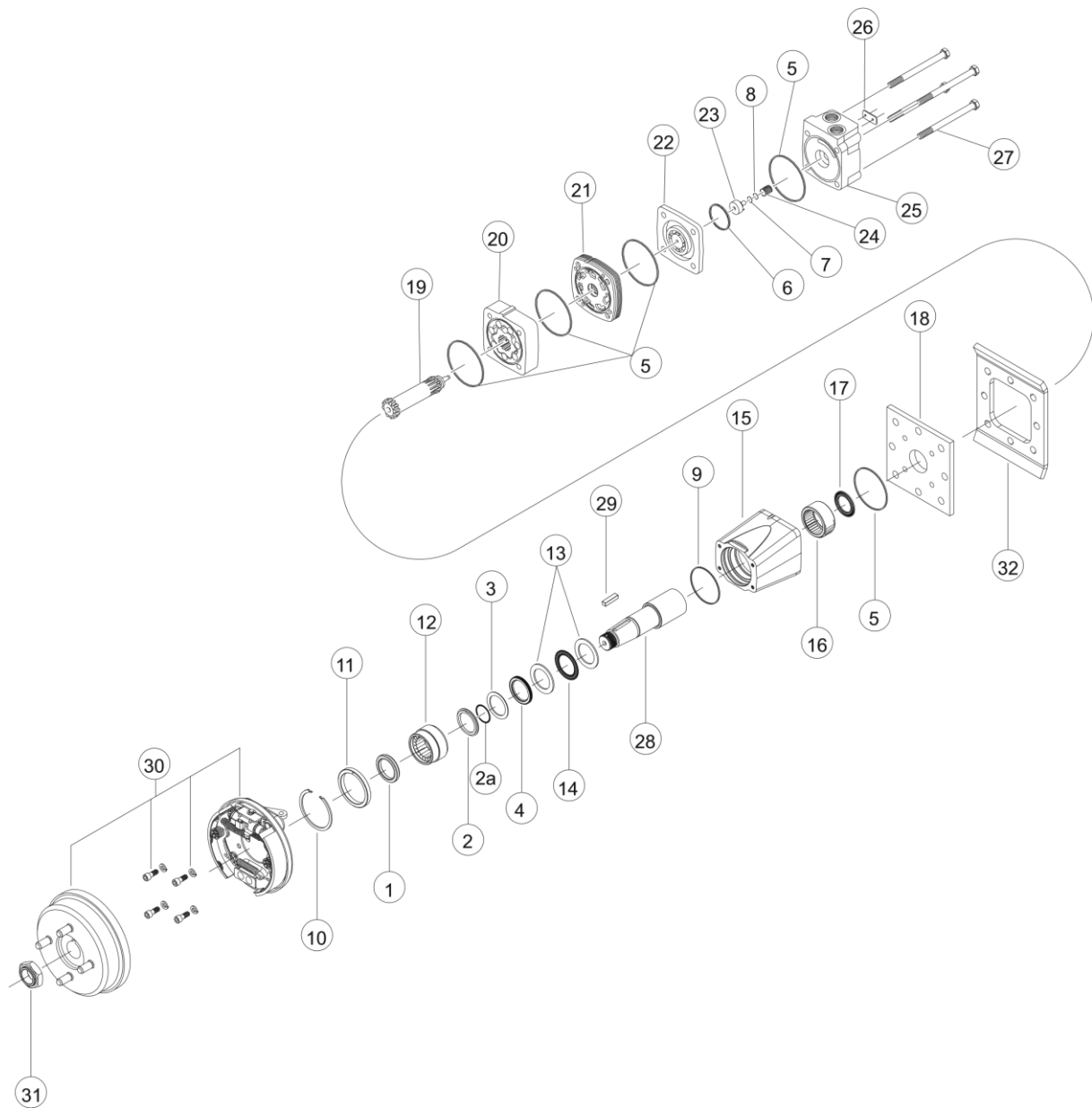


Figure 8: HB 330 Exploded view

Component number	Description
1.	* Dust Seal
2.	* Metal Backup Ring
2a.	* Metal Backup Shim
3.	* Backup Seal
4.	* Shaft Seal
5.	* Body Seal (5)
6.	* Commutator Seal (2)
7.	* O-Ring Seal
8.	* Small Backup Seal
9.	* Housing Seal
10.	Retaining Ring
11.	Bearing Spacer
12.	Front Housing Bearing
13.	Thrust Washer (2)
14.	Front Thrust Bearing
15.	Housing
16.	Rear Housing Bearing
17.	Rear Thrust Bearing
18.	Mid-mount Plate
19.	Drive Link
20.	Rotor Set
21.	Manifold
22.	Commutator Assembly
23.	Piston
24.	Piston Spring
25.	Endcover
26.	I.D. Tag Assembly
27.	Assembly Bolts (4)
28.	Shaft
29.	Shaft Key
30.	Brake Kit
31.	Lock Nut
32.	Wheel Mount Bracket

Table 9: HB 330 Component list

* Contained in seal kit PB333850



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