Repair Instructions
HB 300 Series

Contents

Chapter 1

HB 300 Series Diagram

Topics:

HB 300 Exploded View

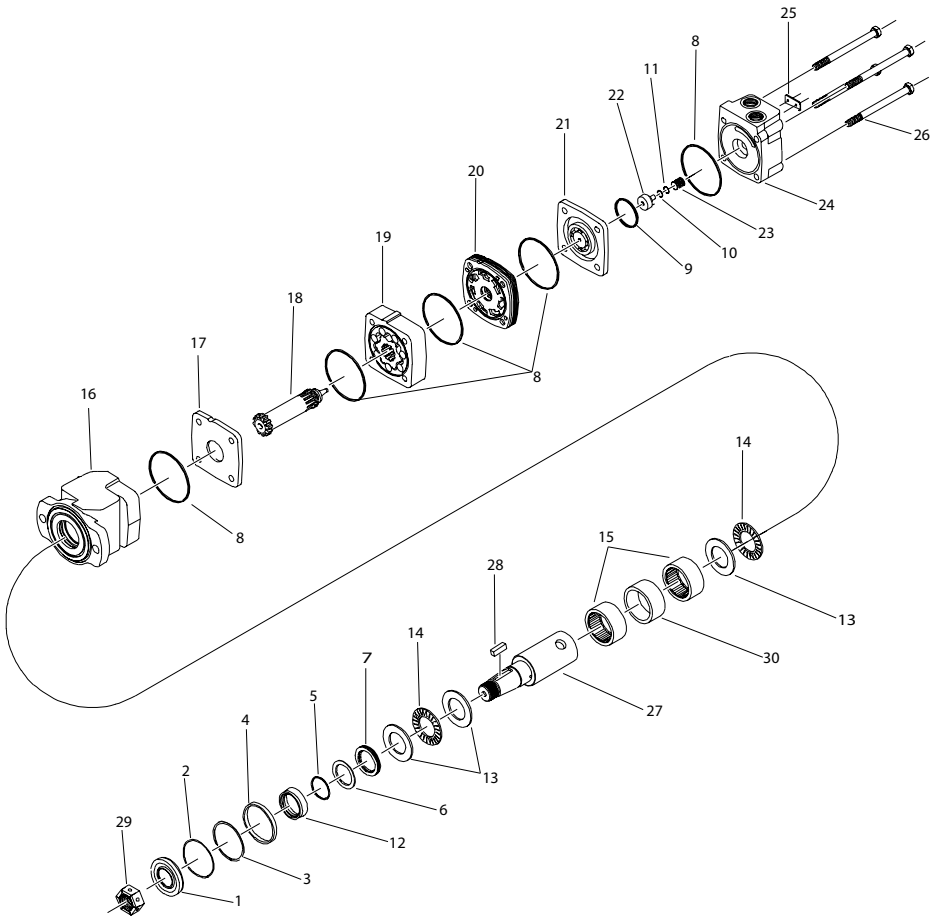

Figure 1: Exploded View Diagram

Component List

Description	Item 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

Description	Item Number
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
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I.D. tag assembly	25
Assembly bolts	26
Shaft	27
Shaft key	28
Shaft nut	29
Bearing spacer	30

Chapter 2

HB 300 Series Service Instructions

Topics:

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 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 opposite side of seal lifts from groove.
   c) 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.

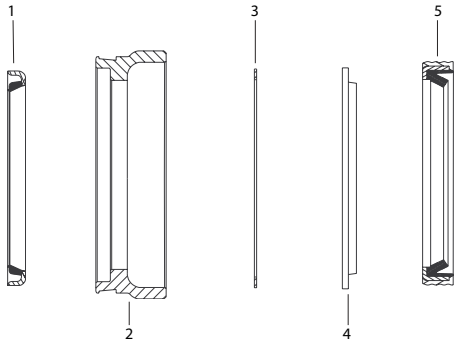
      Caution: Do not allow rolls to drop from rotor assembly when removing rotor assembly for motor
   b) Remove drive link (18) from motor and lay aside.
   c) Remove the thrust bearing (14) and thrust washer (13) from the housing (16) and lay aside.
   d) From front of housing, gently tap shaft (27) upwards 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: Figure 1* on page 11 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.



1	Dust seal
2	Seal carrier
3	Metal backup shim
4	Backup seal
5	Shaft seal

Figure 2: Figure 1

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 - 5.2 [.164 - .205] 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 - 2.5 [.080 - .100] clearance between the rear-most thrust washer (13) and the front shaft bearing (15). See *Figure 3: Figure 2* on page 11
   b) If the front shaft bearing is against the thrust washer, it must be pushed back into the housing to provide the necessary clearance.

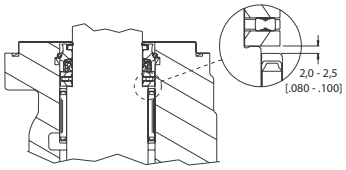


Figure 3: Figure 2

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 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.

b) 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 [.100] 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)

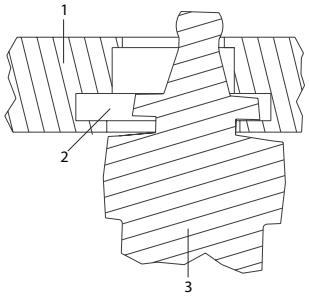
See *Figure 4: Figure 3* on page 12.

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 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: Figure 3

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.].

Chapter 3

HB 300 Series Parts Listing

Topics:

HB 300 Series Replacement Kits

Available Parts Kits

Note: Refer to the *HB 300 Exploded View* on page 6 for item numbers

Table 1: Seal Kit

Description	Exploded View Item Number	Qty. In Kit	Order Number
Dust seal	1	1	300333900 (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	300333900B (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: Miscellaneous kits

Description	Exploded View Item Number	Order Number
Thrust washer	13	300018054
Thrust bearing	14	300018052
Roller bearing	15	300018053
Bearing spacer	30	300018096
Wear plate	17	300012012
Manifold	20	300015008
Commutator assembly	21	300012013
Midmount commutator assembly	Not shown	300012011
Endcover piston	22	300018056
Piston spring	23	300018059
1000 psi relief valve	Not shown	500018228
2000 psi relief valve	Not shown	500018231
3000 psi relief valve	Not shown	500018221
1.00-20 unef slotted nut	29	500449304

Description	Exploded View Item Number	Order Number
1.00-20 unef solid nut	29	500449303
Port plug ("???AB" option)	Not shown	500018186
1.00-20 unef lock nut	29	300339303P

Rotors, drive links, and bolts

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	300332003	300332003F	300014028	300334005	300334004L
080	300332004	300332004F	300014028	300334008	300334012
090	300332005	300332005F	300014028	300334008	300334014
110	300332006	300332006F	300014029	300334010	300334014
125	300332008	300332008F	300014029	300334003L	300334018
160	300332010	300332010F	300014030	300334012	300334012L
200	300332012	300332012F	300014030	300334014	300335110
250	300332014	300332014F	300014027	300334018	300334018L
300	300332018	300332018F	300014027	300335014	300335016
320	355337020	300332020F	300014031	300335114	300334024L
400	300332024	300332024F	300014031	300335114	300334024L

Housing kits

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)	300130055
#B0 & B7- 2-hole SAE B mount	300130050
#F2 & F8- 4-hole square mount	300130055
#A0 & A7- 2-hole SAE "A" style mount	300130056
#W2 & W8- 4-hole wheel mount	300130057
#A2 & A8- 4-hole SAE "A" style mount	300130058
#A4 & A9- 6-hole SAE "A" style mount	300130059

Shafts and related components 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	300110050	-	See *Table 2: Miscellaneous kits* on page 14	-	-	-
#02- 6-B spline	300110052	-		-	-	-
#22- 1-1/4" tapered	300110053	300339101		-	-	-
#20- 1-1/4" straight	300110054	300339106		300339301	300339302	500449201
#23- 14 tooth spline	300110055	-		-	-	500449201
#10- 1" straight	300110056	300339100		-	-	-
#12- 25mm straight	300110057	300339104		-	-	-
#21- 32mm straight	300110059	300339103		-	-	500449201
#07- 1-1/4" straight speed sensor	300110084	300339106		300339301	300339302	500449201
#15- 1" straight speed sensor	300110086	300339100		-	-	-
#08- 32mm straight speed sensor	300110089	300339103		-	-	500449201

Endcover 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 2: Miscellaneous kits* on page 14 for relief valve kit numbers.

Description	**Standard Endcover Kit**	**Valve Cavity Endcover Kit**	**Internal Drain Endcover Kit**	**Valve Cavity & Internal Drain Endcover Kit**
#5- 9/16" O-ring side ports	300160000	300160000R	300160000D	-

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	300160002	-	300160002D	-
#2- 1/2" BSP.F rear ports	300160003	-	300160003D	300160003DR
#9- 3/8" BSP.F side ports	300160004	-	300160004D	-
#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	300160008	-	300160008D	-
#3- 1/2" BSP.F offset manifold ports	300160009	-	300160009D	-