



Service Bulletin 1516-001-M1/USA

## Parker Motors

Effective: October 2022

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## BG/BH Integral Brake Motor Service Bulletin



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NOTE:

**REFER TO SERVICE MANUAL 1512-XXX FOR TG SERIES STANDARD MOTOR PARTS LIST, DISASSEMBLY AND ASSEMBLY INSTRUCTIONS.**

Warning:

Protective eye wear should be worn during all maintenance procedures. Springs and seals should be serviced at or before 1/2 million brake cycles.



**WARNING**

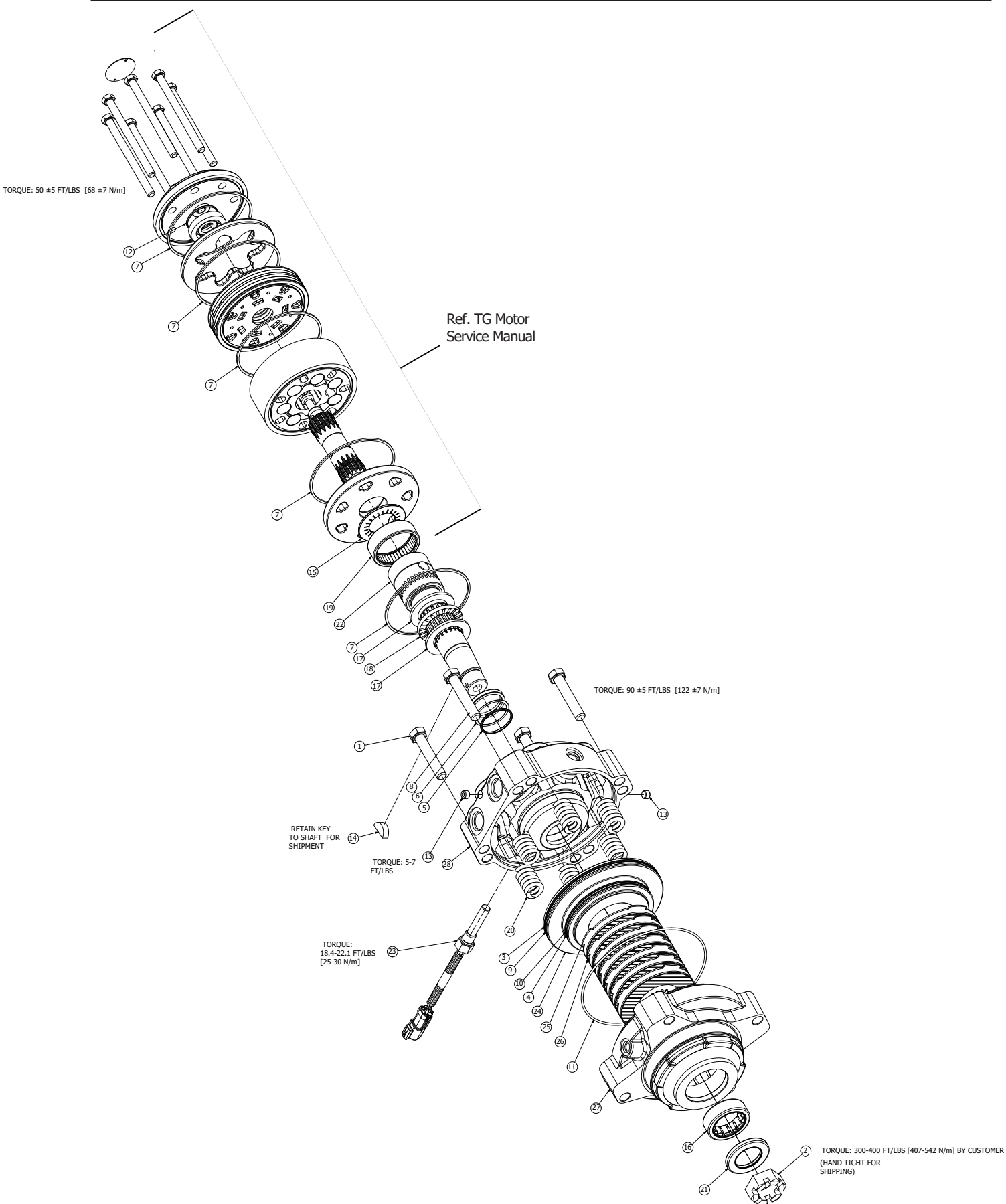
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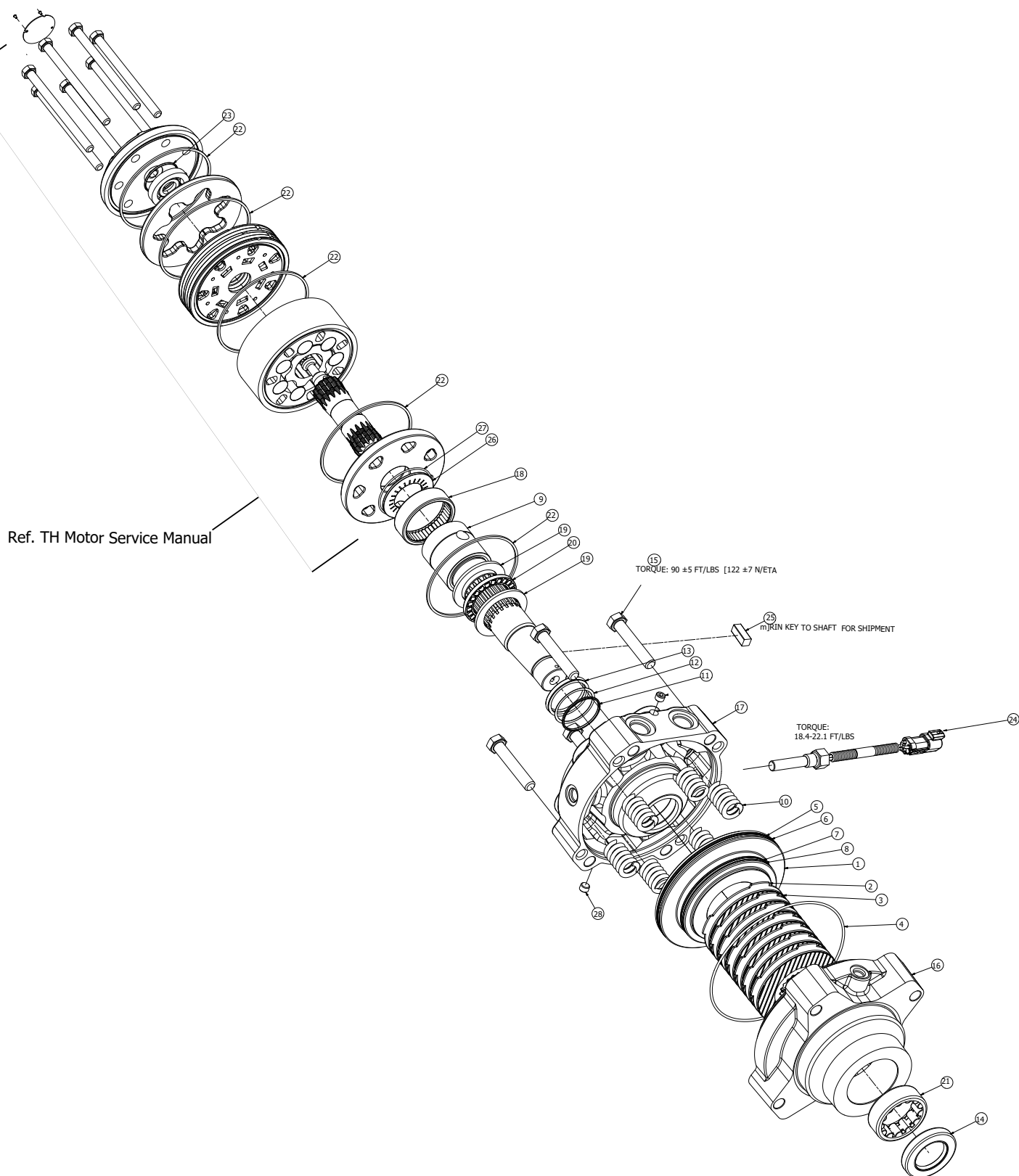
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ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	021466	BOLT 1/2-13 UNC - 2A x 2.750
2	1	025126	STD PATCH NUT, 1.25" SHAFT
		025138	STD PATCH NUT, 1.38" SHAFT
		025113	STD CASTLE NUT, 1.25" SHAFT
		025139	STD CASTLE NUT, 1.38" SHAFT
3	1	028519 SEAL KIT	BACK-UP RING (POLYMITE)
4	1	028520 SEAL KIT	BACK-UP RING
5	1	028537 SEAL KIT	BACK-UP RING
6	1	028538 SEAL KIT	BACK-UP WASHER
7	5	032819 SEAL KIT	SEAL RING (BUNA)
8	1	032836 SEAL KIT	SHAFT SEAL (Ø40mm)
9	1	032846 SEAL KIT	O-RING
10	1	032847 SEAL KIT	O-RING
11	1	032853 SEAL KIT	O-RING (Ø5.987)
12	1	032861 SEAL KIT	
13	2	037006	PLUG 1/8-27 PTF
14	1	039028	KEY, SQUARE
		038016	KEY, WOODRUFF
15	1	068024	THRUST BEARING
16	1	068027	BEARING
17	2	069010	THRUST WASHER (I.D. 40MM)
18	1	069022	THRUST BEARING
19	1	071031	BEARING, RADIAL
20	6	401993	9,000 in-lb SPRING
		401704	12,000 in-lb SPRING
		401707	16,000 in-lb SPRING
21	1	478035 SEAL KIT	DIRT & WATER SEAL
22	1	ME019039	1.25" Straight Keyed, 5/8 Tap (03)
		ME019044	1.38" Tapered, 1.125-18 Thread (19)
		ME019038	1 1/4 Tapered, 1-20 Thread (08)
		ME019040	1 1/4 14 Tooth Spline (12/24 P.), 5/8 Tap (05)
		BG019344	1.38" Tapered, 1.125-18 Thread (Speed Sensor) (19)
		BG019338	1.25" Tapered, 1-20 Thread (Speed Sensor) (08)
23	1	455077	SPEED SENSOR (OPTION)
24	1		BRAKE MOTOR PISTON
25	7	REF. PLATE KIT CHART	SEPARATOR PLATE
26	7	REF. PLATE KIT CHART	FRICTION PLATE
27	1		BRAKE MOTOR FRONT HOUSING
28	1		BRAKE MOTOR REAR HOUSING

SERVICE KITS: SK000298

Seal Kit Part Number: (consist of items 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 21)



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1		BRAKE MOTOR PISTON
2	7	REF. PLATE KIT CHART	SEPARATOR PLATE
3	7	REF. PLATE KIT CHART	FRICTION PLATE
4	1	032853 SEAL KIT	O-RING (Ø5.987)
5	1	028519 SEAL KIT	BACK-UP RING (POLYMITTE)
6	1	032846 SEAL KIT	O-RING
7	1	028520 SEAL KIT	BACK-UP RING
8	1	032847 SEAL KIT	O-RING
9	1	MJ019005	1.50" Tapered, 1.25-18 Thread (31)
		MJ019008	1.50" Straight Keyed, 7/8 Tap (32)
		BH019305	1.50" Tapered, 1.25-18 Thread (Speed Sensor) (31)
10	6	401993	9,000 in-lb SPRING
		401704	12,000 in-lb SPRING
		401707	16,000 in-lb SPRING
11	1	032851 SEAL KIT	BACK-UP RING
12	1	028549 SEAL KIT	BACK-UP WASHER
13	1	032854 SEAL KIT	SHAFT SEAL (STD)
		032850 SEAL KIT	SHAFT SEAL (HIGH TEMP)
14	1	478081 SEAL KIT	SEAL
15	4	021466	BOLT 1/2-13 UNC - 2A x 2.750
16	1		BRAKE MOTOR FRONT HOUSING
17	1		BRAKE MOTOR REAR HOUSING
18	1	071020	REAR RADIAL BEARING
19	2	069032	THRUST WASHER
20	1	069031	THRUST BEARING
21	1	068028	BEARING
22	5	032819 SEAL KIT	SEAL RING (BUNA)
23	1	032045 SEAL KIT	SEAL RING (STD)
		032861 SEAL KIT	SEAL RING (HIGH TEMP)
24	1	455077	SPEED SENSOR
25	1	039046	KEY 3/8 SQUARE
		039040	WOODRUFF KEY
26	1	068024	THRUST BEARING
27	1	032788	O-RING
28	2	037006	PLUG 1/8-27 PTF
29	1	025131	PATCH NUT (NOT SHOWN)
		025133	CASTLE NUT (NOT SHOWN)

SERVICE KITS: SK000205 (Standard)  
SK000299 (High Temp)

Seal Kit Part Number: (consist of items 4, 5, 6, 7, 8, 11, 12, 13, 14, 22, 23)

## BG New Design (Julian date 28322 and later)

Qty	Part #	Description BG	Service Kit
7	490246	Friction Disk	SK000466
7	490244	Separator Plate	

6	401993	9,000 in-lb Spring	*
6	401704	12,000 in-lb Spring	*
6	401707	16,000 in-lb Spring	*

## BH New Design (Julian date 28322 and later)

Qty	Part #	Description BG	Service Kit
7	490245	Friction Disk	SK000467
7	490244	Separator Plate	

6	401993	9,000 in-lb Spring	*
6	401704	12,000 in-lb Spring	*
6	401707	16,000 in-lb Spring	*

## BG Legacy Design (Julian date earlier than 28322)

Qty	Part #	Description BH	Service Kit
5	490107	Friction Disk	SK000464
5	490129	Separator Plate	

4	401704	6,000 in-lb Spring	*
6	401704	9,000 in-lb Spring	*
8	401704	12,000 in-lb Spring	*
8	401707	16,000 in-lb Spring	*

## BH Legacy Design (Julian date earlier than 28322)

Qty	Part #	Description BH	Service Kit
6	490121	Friction Disk	SK000465
6	490129	Separator Plate	

4	401704	6,000 in-lb Spring	*
6	401704	12,000 in-lb Spring	*
8	401704	16,000 in-lb Spring	*

\* Springs ordered separately according to holding capacity desired

**Required Tools**

- Soft-faced hammer
- Small pry bar or flat tip screwdriver
- 1/2 in. 12 pt. socket
- Snap ring pliers
- O-ring lubricant
- Bearing installation tool
- A stable work platform (i.e. a vice or four 2 x 6 wood blocks)
- SAE 30 Wt Motor Oil

**For release pressure testing:**

Hydraulic hand pump or port-a-power with a pressure gauge and 7/16-20 UNF-2A straight thread o-ring fitting on the pump hose.

**Disassembly**

**NOTE:** Cleanliness is important when working with hydraulics. Make sure that the working area is clean before starting disassembling of brake motor. Always remove the motor from the application.

1. Position the brake motor assembly with the shaft down. Make sure the unit is secured in a vice or other suitable device. SEE FIGURE D1
2. Make an alignment mark on the motor and brake assembly prior to disassembly. SEE FIGURE D2
3. Remove the key and/or nut from the end of the shaft.
4. Remove the seven hex bolts from the hydraulic motor and disassemble motor. Inspect motor components for abnormal wear or damage. Replace any worn or damaged parts. SEE FIGURE D3

**See Service Manual 1527-002 for TG Series  
Standard Motor Disassembly Instructions.**

5. Tap up on end of shaft and remove shaft from brake assembly. Inspect the shaft for abnormal wear or damage. Replace shaft if worn or damaged. SEE FIGURE D4



Figure D1



Figure D2



Figure D3



Figure D4

**Disassembly**

6. Remove the four brake housing bolts. *The bolts are under spring load and should be loosened gradually and uniformly. Remove rear brake housing assembly. SEE FIGURE D5*



Figure D5

7. The internal components of the brake will now be exposed. *The case seal o-ring will be attached to the motor flange pilot. SEE FIGURE D6*



Figure D6

8. Remove springs from brake housing. *Inspect springs and replace springs if damaged, broken, or discolored from heat. SEE FIGURE D7*



Figure D7

9. **DANGER.** Use extreme caution when removing the piston. Remove the piston from the brake assembly, cover the piston with a rigid restraint and apply low pressure air (10 - 20 psi) to the brake release port. The piston will slide up until released. To much pressure could cause the piston to blow out of its bore causing personal harm. SEE FIGURE D8 & FIGURE D9



Figure D8



Figure D9

10. Note arrangement of friction discs and separator plates. There should be seven of each in alternating order with a friction disc first in the bottom of the case and separator plate will be last. Separator plate on top. SEE FIGURE D10
11. Remove friction discs and separator plates. Replace any friction discs or separator plates that are damaged, warped, or excessively worn. Friction disc serviceable limit is .105" minimum. Separator plate serviceable limit is .075" minimum.



Figure D10

12. Remove and discard o-rings and back up rings from piston. *Note position of o-rings and back up rings. Install new o-rings and back up rings on piston in the same order as removed. SEE FIGURE D11*



Figure D11

13. Inspect radial needle bearing, thrust bearing, and thrust washers in rear housing. *The radial bearing must be removed to replace thrust bearing and thrust washers. Use a bearing puller to remove the bearing. If original bearing is removed a new bearing must be used during reassembly. SEE FIGURE D12*

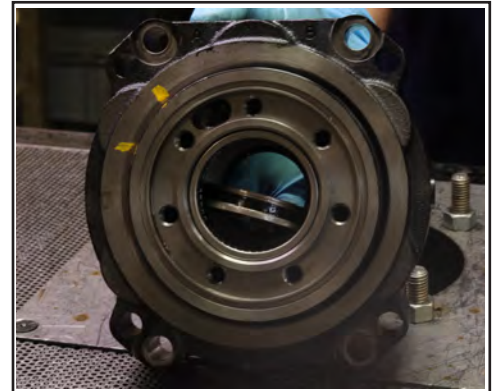


Figure D12

14. Remove lip seal package from rear housing. SEE FIGURE D13

**NOTE:** Remove shaft seal, back up washer, back up ring in this order. Inspect for any abnormal wear. If abnormal wear is indicated replace with a new seal kit (BG) #SK000298, (BH) #SK000205, or (BH High-temp) #SK000299.

**CAUTION:** Do not scratch seal bore when removing the seal as this will create a leak path.



Figure D13

## Assembly

**NOTE:** Parts must be clean and dry before assembly. Visually inspect components for damage and abnormal wear. Do not use damaged or worn parts.

1. Place front brake housing case (front half) on a suitable work platform with the needle bearing down. Support the case in such a way that it allows room for the shaft to protrude out the bottom. Make sure that the unit is secured. If radial bearing is not being replaced skip to step 3. SEE FIGURE A1
2. If bearing replacement is necessary, press new bearing into the case with the bearing part number against the arbor.
3. Press the dirt and water seal in flush to .020 inch below surface with the flat side facing out. (Item 5) SEE FIGURE A2

4. Install the separator (metal tab plates) plates and friction discs in exactly the same order they were removed. There should be a separator plate on the top and a friction disc on the bottom of the stack. Use the shaft to align the splines of the friction discs. Be careful not to contaminate the friction disc or separator plate surfaces with dirt, grease, or fluid other than what the brake was designed to use. SEE FIGURES A3 & A4



Figure A1



Figure A2

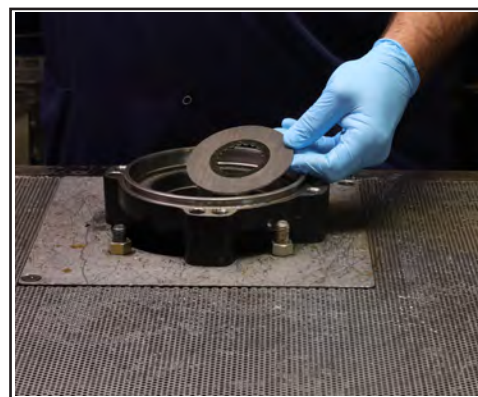


Figure A3



Figure A4

**Assembly**

**NOTE:** Use shaft for alignment of friction discs. After alignment remove shaft and continue on to step 5.

5. Always replace the piston o-rings and piston back-up rings, be sure the o-rings are nearest each other with back up rings to the outside of the O-Rings. Lightly lubricate piston bores and o-rings with SAE 30 Wt oil. SEE FIGURE A6



Figure A6

6. Gently slide piston into case until larger o-ring is against the case. Using a light duty press, push the piston completely into the bore (be careful not to damage seals or back-up rings). This will squeeze the o-rings and back-up rings and set the piston against the friction pack. Use shaft as an alignment tool for spline disk. Remove the shaft. SEE FIGURE A7

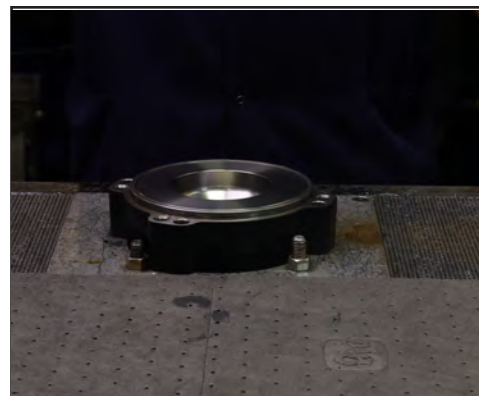


Figure A7

7. Place rear housing on a suitable work surface with seal side down.

8. Install back-up ring, back-up washer, and shaft seal (seal lip facing inwards) FIGURE A8. See Cross Section View. Place thrust washers and thrust bearing in the bottom of case. SEE FIGURE A9

**NOTE:** Thrust washer, thrust bearing and thrust washer should be in order. Make sure of this order.

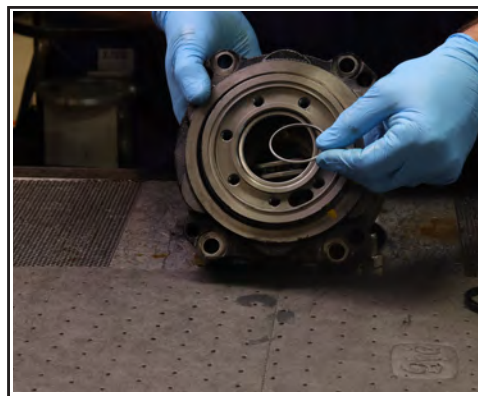


Figure A8



Figure A9

9. If input bearing was removed, press a new bearing into the case with the bearing part number against the arbor. SEE FIGURES A10 & A11

**NOTE:** Dimension below surface:

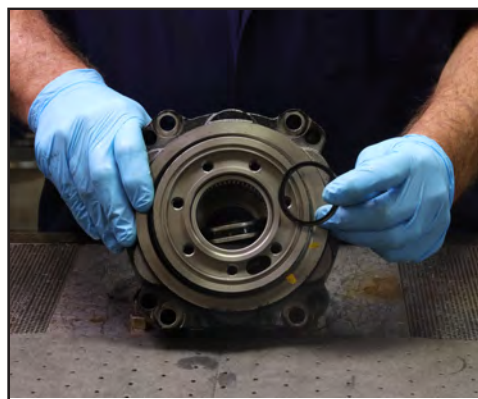
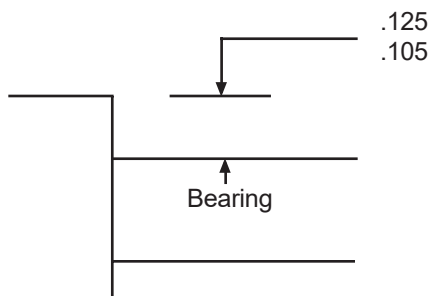


Figure A10



Figure A11

10. Invert rear housing so that the spring pockets are facing up. Place springs into the pockets. Add approximately 165 cc of SAE 30 motor oil around spring pockets. SEE FIGURES A12 & A13



Figure A12



Figure A13

11. Install o-ring on piston housing. Ensure item #14, o-ring, is in place. Make sure O-Ring lays flat against flange. SEE FIGURE A14



Figure A14

12. Place front housing on top of rear housing and install brake housing bolts. Torque brake housing bolts in a uniform sequence. Align the brake release port to the front housing. Finish torque on 4 bolts is 90 ft. lbs. SEE FIGURE A15



Figure A15

13. Pressurize brake release port with 350 psig to release brake. Install shaft from bottom side of brake housing assembly. (Note: shaft must pass through all spines of friction discs and then push into the shaft seal.) Lightly tap with a rubber hammer to seat shaft. SEE FIGURES A16 & A17

**IMPORTANT: Rotate shaft while inserting it into place.**

14. Invert brake assembly so that the motor is facing up. Keep PSI on brake assembly so rotor set can be aligned easily. SEE FIGURE A18

15. Assemble the hydraulic motor components as a regular assembly procedure. Refer to Service Manual 1527-002 for these instructions.

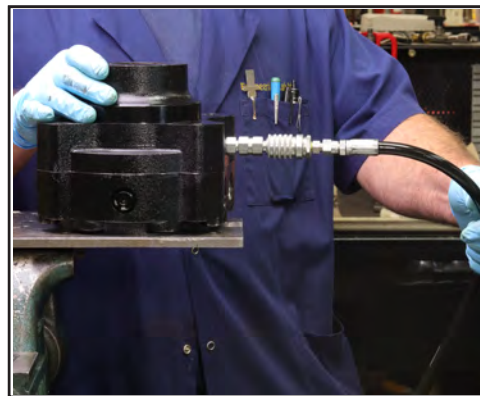


Figure A16



Figure A17



Figure A18

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**2. Payment:** Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

**3. Delivery:** Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

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**7. Special Tooling:** A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer, in no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the

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If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, buyer shall defend and indemnify Seller for all costs, expenses of or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

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FPG 9-91-P



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