



Service Bulletin 1516-M1/USA

Parker Motors

Effective: August, 1999



Integral Brake Motor Service Bulletin

TG Series Integral Brake Motor Exploded View 3

TG Series Integral Brake Motor Parker Section 4

TG Series Integral Brake Motor Parts List 5

Tool Required 6

Disassembly 6 - 9

Assembly 10- 14

Offer of Sale 15

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

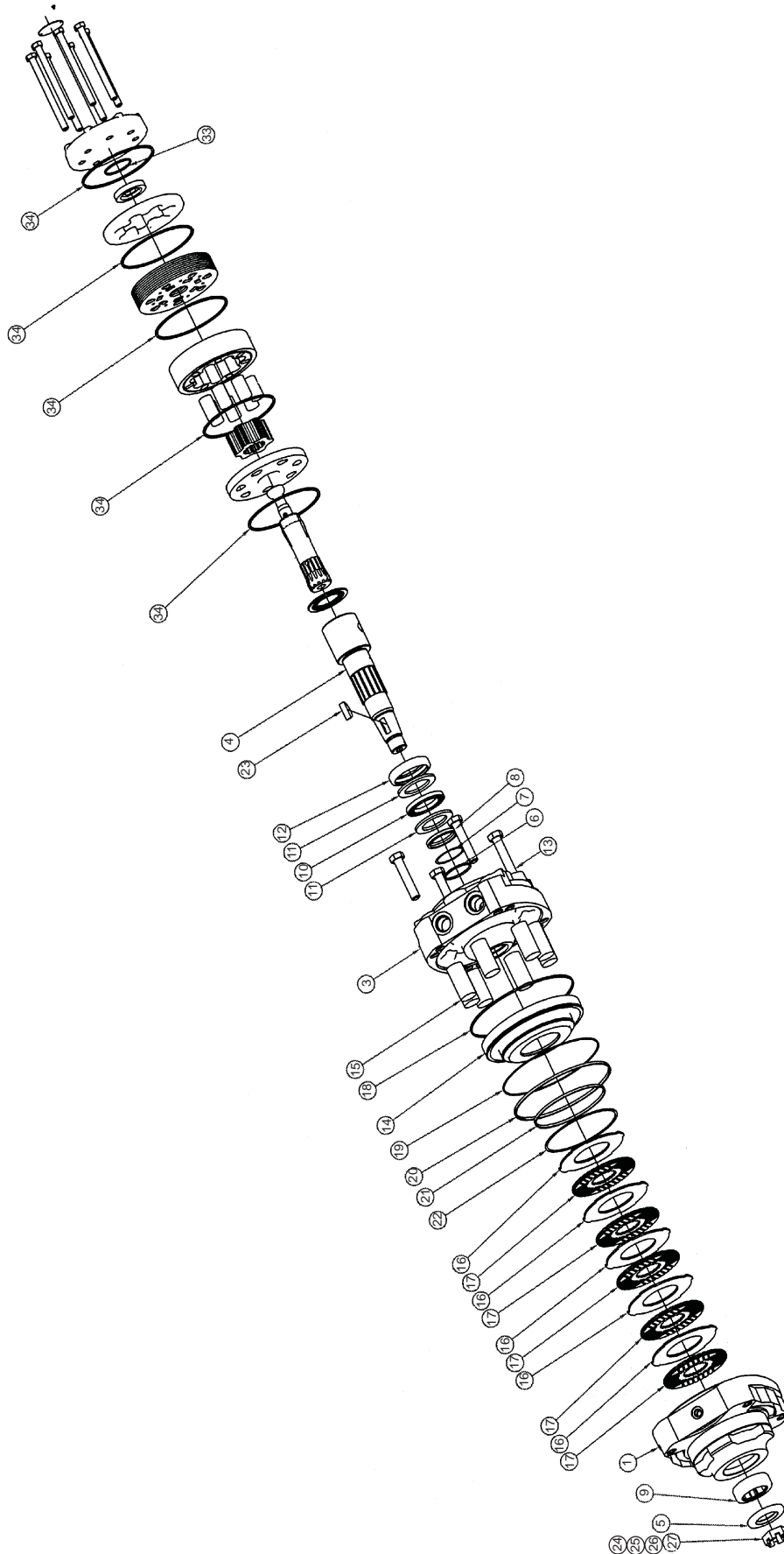
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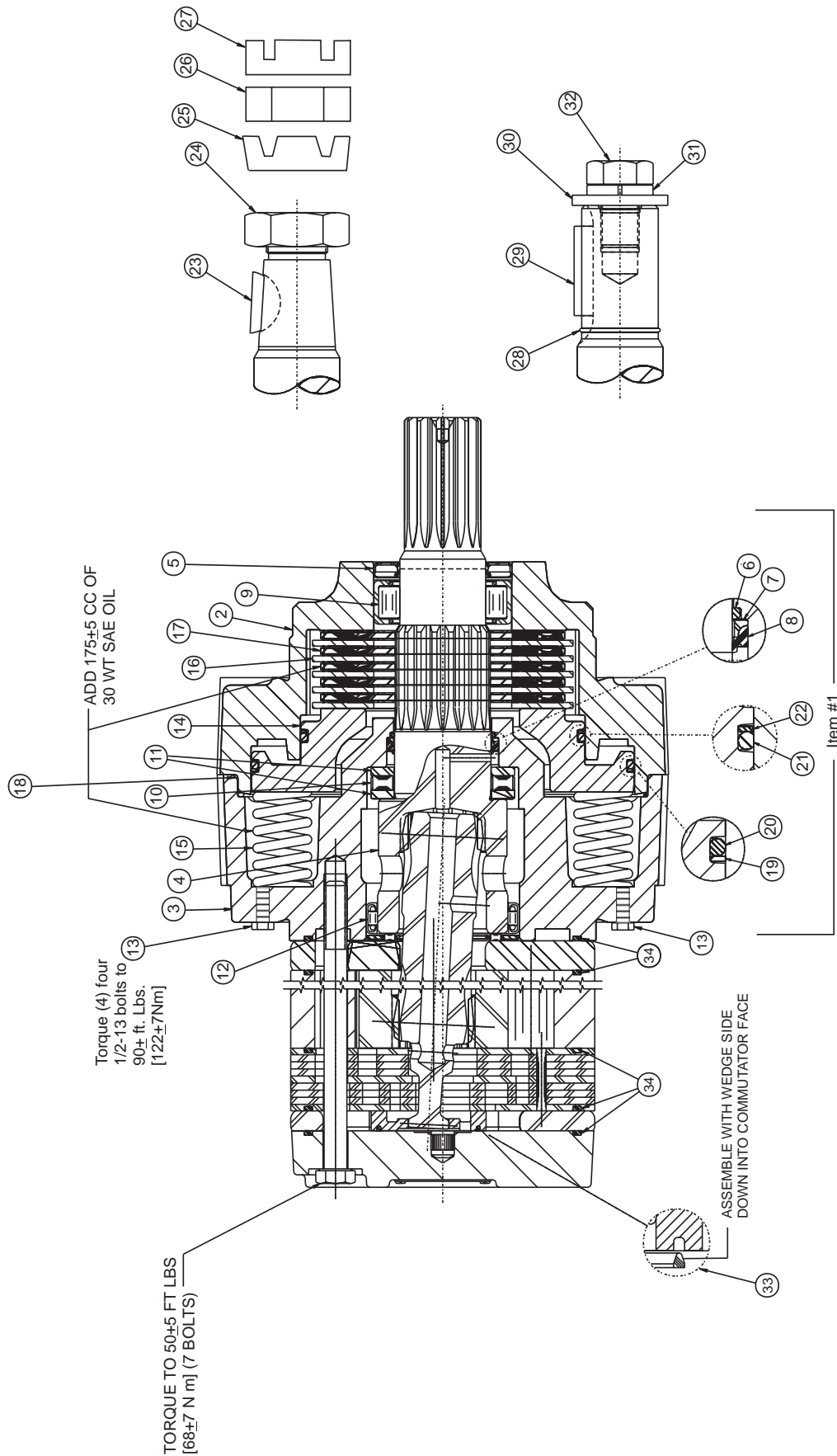
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ALL DIMENSIONS ARE FOR REFERENCE ONLY

Standard Seal Kit # 3644



Service Parts List**Parker Motors
Integral Brake Motor Service Bulletin**

ITEM #	PART NUMBER	QTY	DESCRIPTION
1	ME012062B2	1	Front Brake Assembly (need port size 7/16-20 relief port)
1	ME012062B1	1	Front Brake Assembly (thru mount holes)
2	ME012062A1	1	Front Housing Assembly (7/16-20 with thru mount holes)
3	ME012063A1	1	Rear Housing Assembly (9/16-18 with tap mount holes)
3	ME012065A1	1	Rear Housing Assembly (7/8-14 with thru mount holes)
3	ME012066A1	1	Rear Housing Assembly (7/8-14 with tap mount holes)
4	ME019038	1	1 1/4 Taper Coupling Shaft
4	ME019044	1	1 3/8 Taper Coupling Shaft
4	ME019039	1	1 1/4 Straight Keyed Coupling Shaft
4	ME019040	1	1 1/4 14 Tooth Spline Coupling Shaft
5	478035 Kit Only	1	Dirt & Water Seal
6	028537 Kit Only	1	Back Up Ring
7	028538 Kit Only	1	Back Up Washer
8	032836 Kit Only	1	Shaft Seal
9	068027	1	Bearing
10	069022	1	Bearing
11	069023	2	Washer
12	071019	1	Bearing
13	021466	4	1/2-13 Bolts
14	490109	1	Piston
15	401704	8	Gold Springs
16	490108	5	Separator Plate
17	490107	5	Friction Plate
18	032305	1	O-Ring (Housing)
19	028519	1	Back Up Ring (Piston)
20	032846	1	O-Ring (Piston)
21	032847	1	O-Ring (Piston)
22	028520	1	Back Up Ring (Piston)
23	G124554	1	Woodruff Key (for ME019038)
24	025126	1	Standard Patch Nut (for ME019038)
25	025152	1	Standard Castle Nut (for ME019038)
26	025113	1	Zinc Patch Nut (for ME019038)
27	025154	1	Zinc Castle Nut (for ME019038)
28	401333	1	Retaining Ring (for ME019039)
29	039028	1	Straight Key (for ME019039)
30	028413	1	1 Flat Washer (for ME019039)
31	028992	1	Lock Washer (for ME019039)
32	G223734	1	Screw (for ME019039)
33	032435	1	Commutator Seal
34	032819	5	Seal Ring

SERVICE KITS:

Seal Kit Part Number: 3644
(consist of items 5, 6, 7, 8, 18, 19, 20, 21, 22, 33 and 34)

Required Tools & Disassembly**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 1512-XXX 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

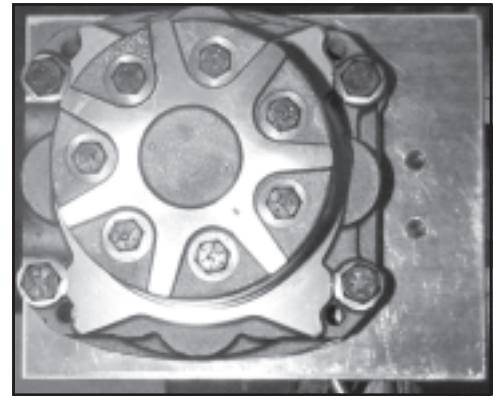


Figure D1

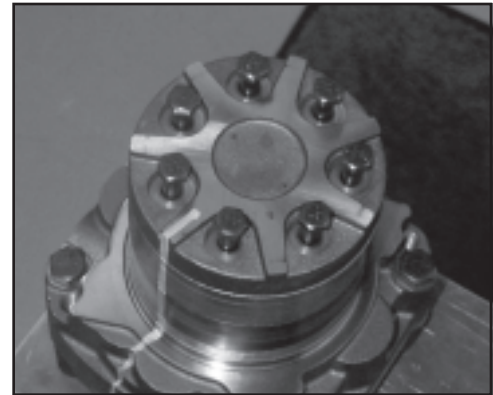


Figure D2

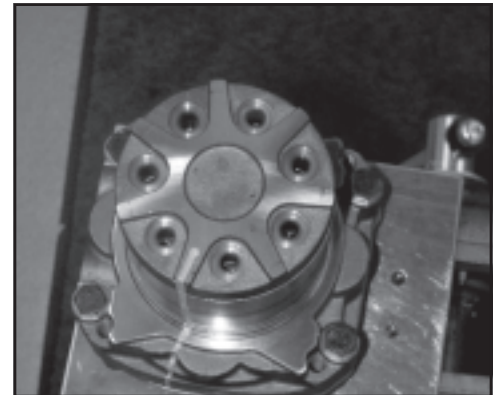


Figure D3

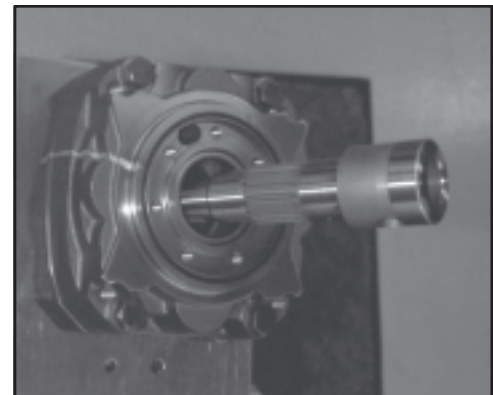


Figure D4

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*

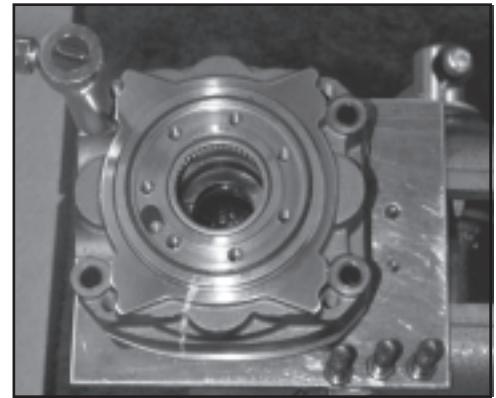


Figure D5

- 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*

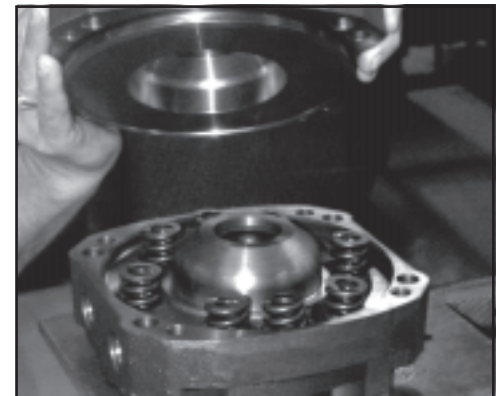


Figure D6

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

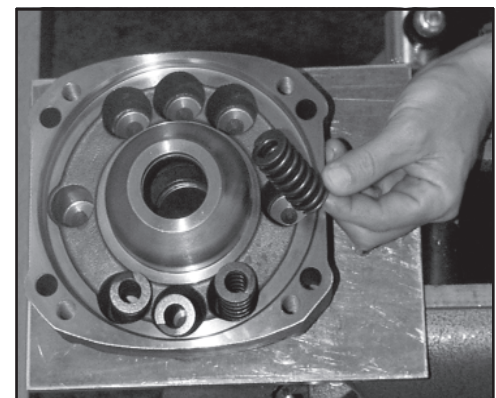


Figure D7

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

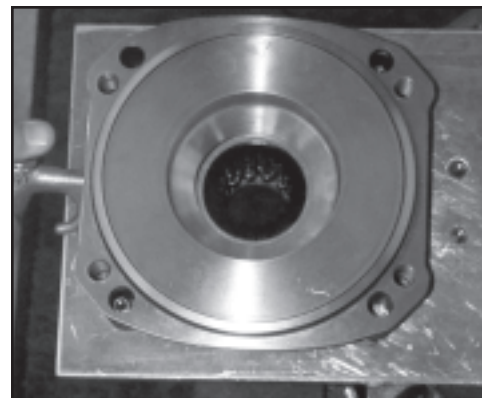


Figure D8

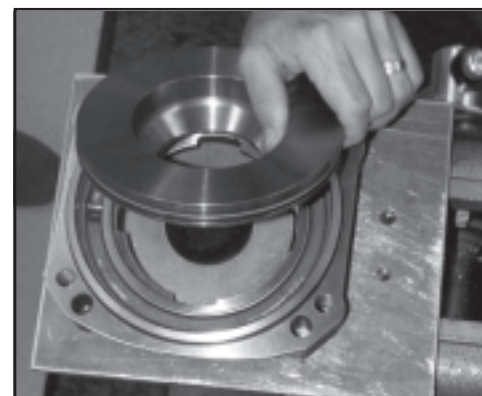


Figure D9

10. Note arrangement of friction discs and separator plates. There should be five of each in alternating order with a friction disc first in the bottom of the case and friction 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 .142" minimum. Separator plate serviceable limit is .093" minimum.

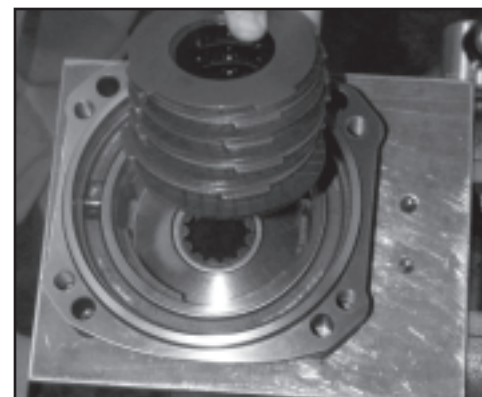


Figure D10

Disassembly

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*

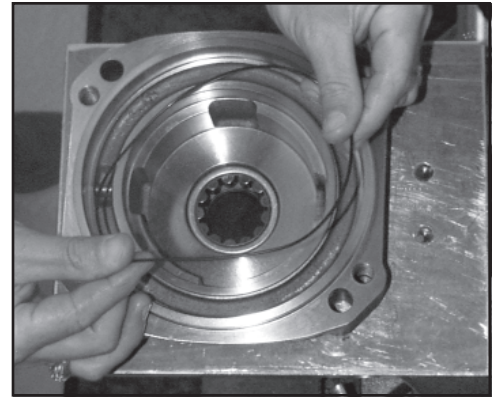


Figure D11

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*

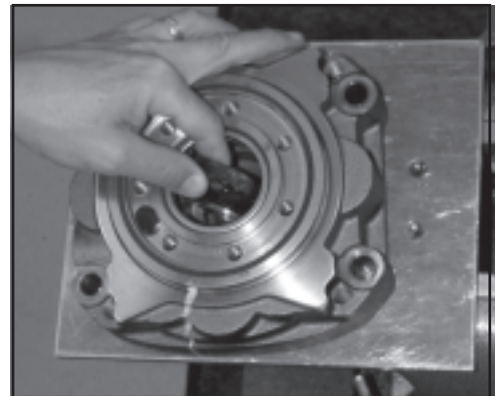


Figure D12

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 #3644.

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

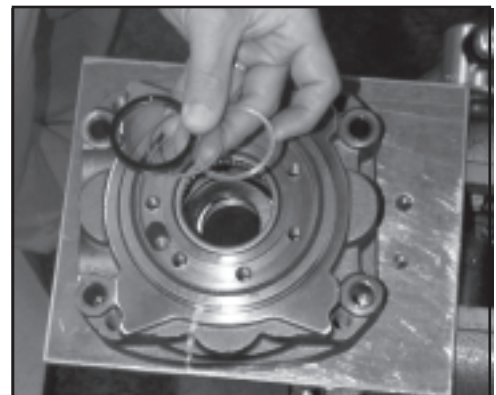


Figure D13

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

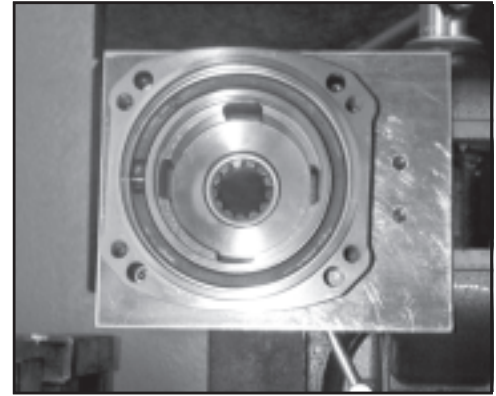


Figure A1

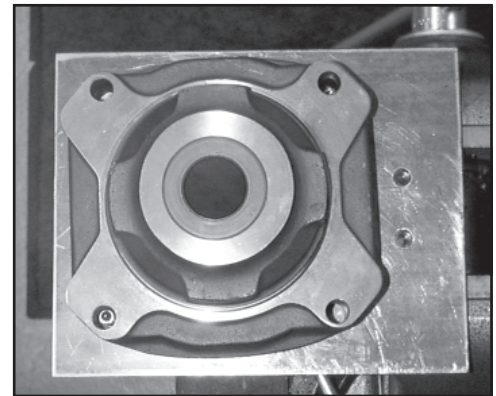


Figure A2

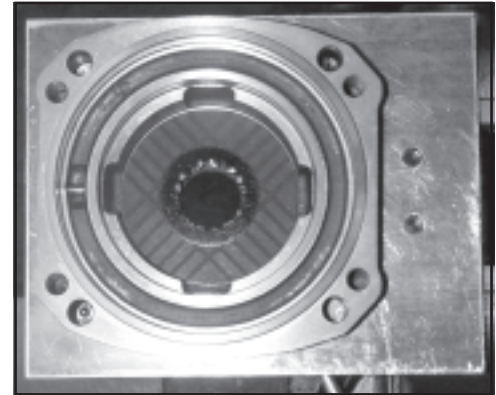


Figure A3

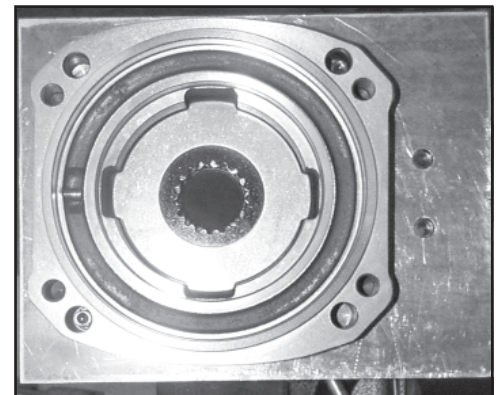


Figure A4

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. After alignment of disk, both piston and sea, then remove the shaft. SEE FIGURE A7

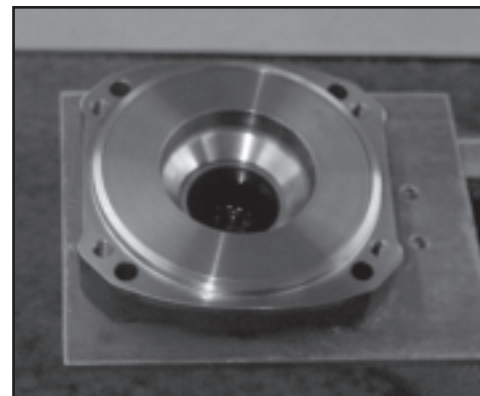


Figure A7

Assembly

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.

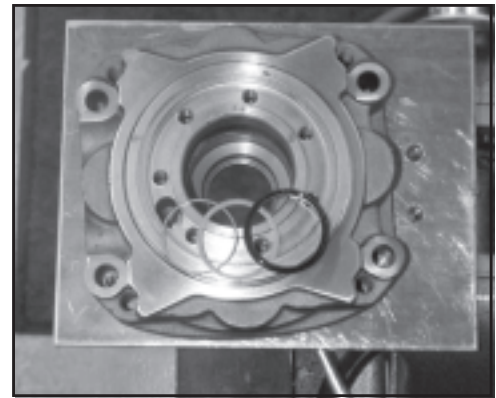


Figure A8

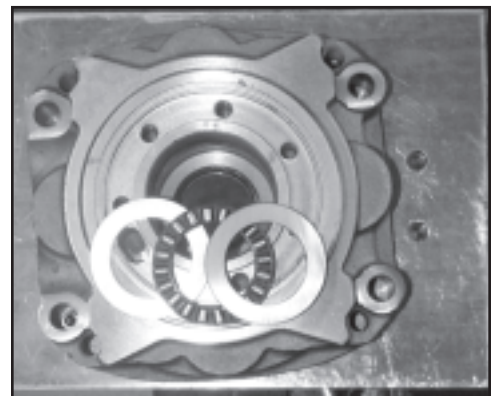


Figure A9

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:

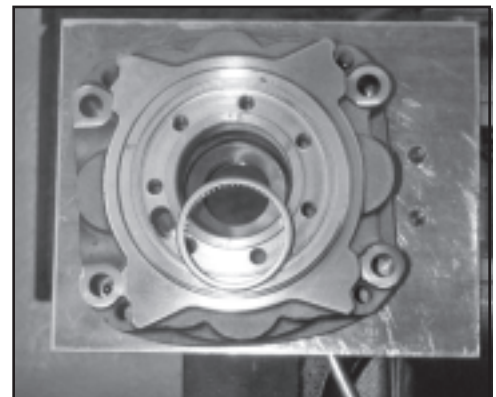
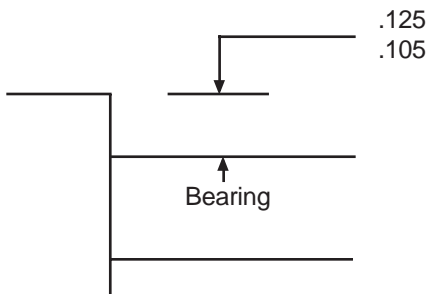


Figure A10

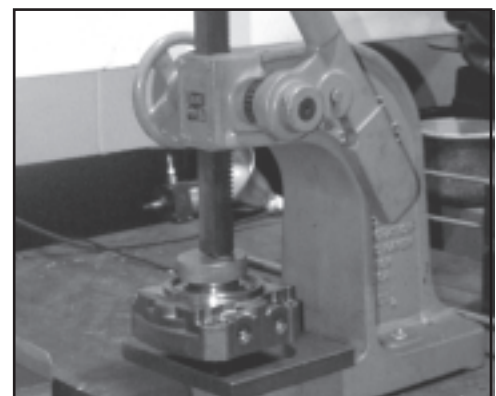


Figure A11

10. Invert rear housing so that the spring pockets are facing up. Place springs into the pockets. Brake may have 4, 6, or 8 springs, arrange springs in a symmetrical pattern. Add approximately 175 cc (ml) of SAE 30 motor oil around spring pockets. SEE FIGURES A12 & A13

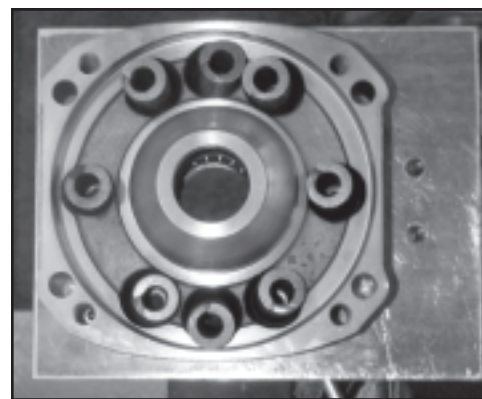


Figure A12



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

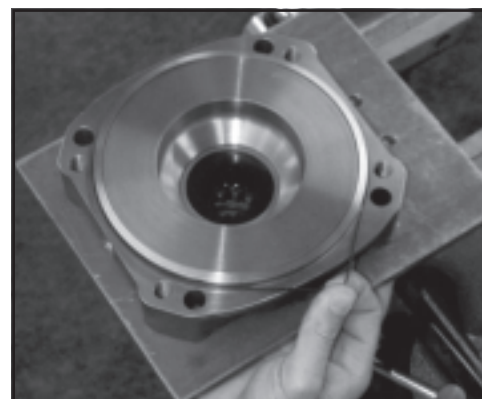


Figure A14

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

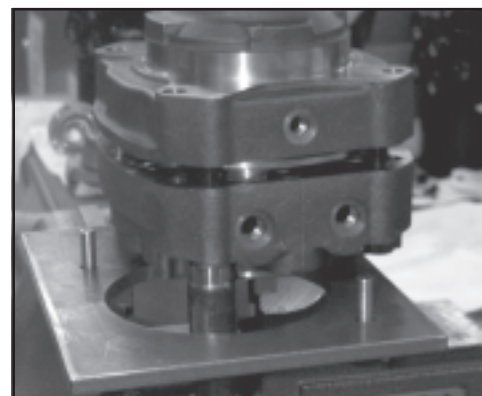


Figure A15

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 1512-XXX for these instructions.

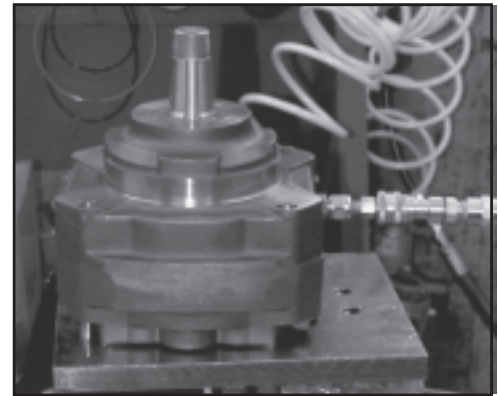


Figure A16

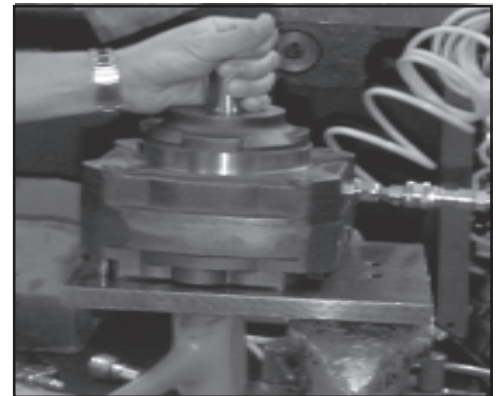


Figure A17

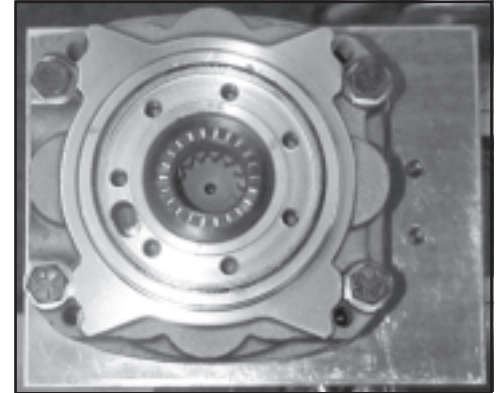


Figure A18

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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.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 18 months from date of shipment from Parker Hannifin Corporation. **THIS WARRANTY COMPROMISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED.**

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6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specification for items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between buyer and Seller unless accepted by Seller in written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

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

right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's property: Any designs, tools, patterns, materials, drawings, Confidential information or equipment furnished by buyer, or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount hereof shall be in addition to amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property

Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. Trademarks, copyrights, trade dress and trade secrets (hereinafter "Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

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.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation, accidents, acts of god, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carries or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representation or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

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Parker Hannifin Corporation
Hydraulic Pump/Motor Division
2745 Snapps Ferry Road
Greeneville, TN 37745 USA
Tel. (423) 639-8151
FAX (423) 787-2418
www.parker.com/pumpmotor

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