AIRCRAFT WHEEL & BRAKE DIVISION
PARKER HANNIFIN CORPORATION
AVON, OHIO

PARTS LIST

199-80A CONVERSION KIT

ROCKWELL COMMANDER MODELS

AS LISTED IN NOTE 3

PART NUMBER	DRAWING REVISION	DESCRIPTION	QUANTITY
30-107D	Rev. B dated 04-29-1988	Brake Assembly	2
40-107A	Rev. J dated 06-13-2005	Wheel Assembly	2
103-22100	----------	Bolt (AN5-10A)	24
095-10500	----------	Washer (AN960-516)	48
094-10400	----------	Nut (MS21044-N5)	24

Publication Package (P/N PP199-08001)

50-52	Rev. H dated 12-14-1984	Installation Drawing
40-107 / 30-107	Rev. G dated 02-01-2002	Maintenance Manual
SA497GL	Last amend date 1-8-86	Supplemental Type Certificate
PRM14A	----------	Metallic Brake Lining Conditioning Procedure
PRM69	----------	General Maintenance Information
-------		Product Registration Card

NOTES:

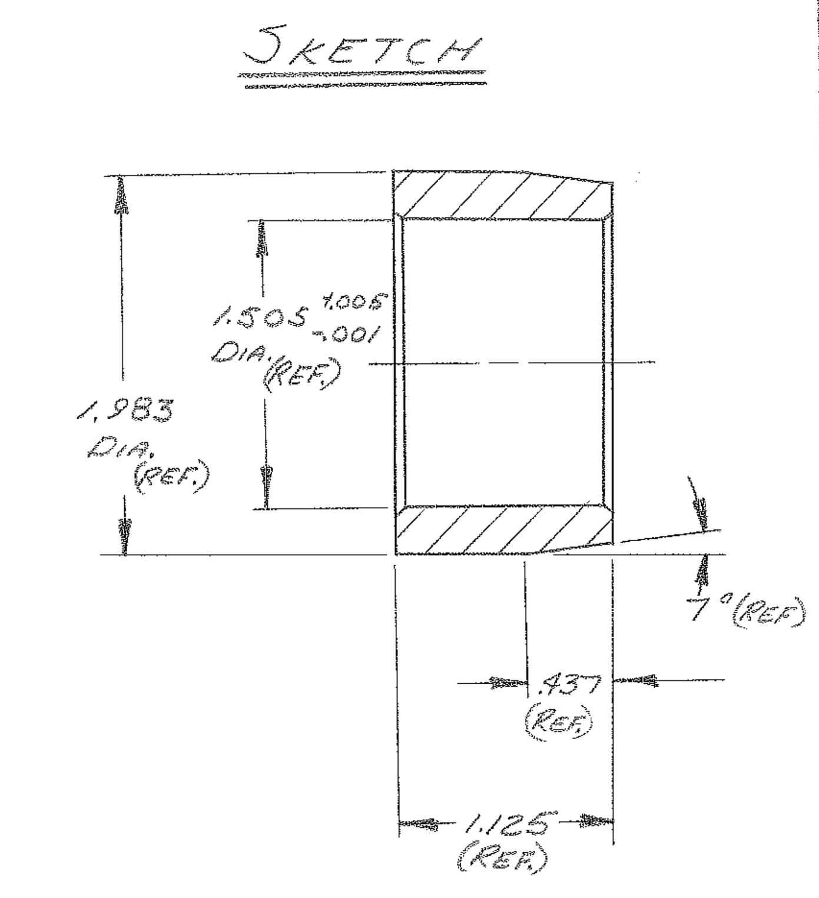
1. This kit will convert one aircraft to Cleveland Wheels and Brakes.
2. For use with Phosphate Ester (Skydrol) Brake Fluid only.
3. Rockwell Commander Models:
   - 690-11001 thru 11099
   - 690A-11100 thru 11194
   - 680F-871-1, 680F-920-2 to 680F-1447-152
   - 680FL-1553-107, 680FL-1261 thru 1853-157
   - 560F-951-1 to 560F-1496-73
   - 680FLP-1559-25 and up
   - 680FLP-1471-2 thru 1854-38
   - 680T-1473, 680T-1519, 680T-1532, 680T-1536, 680T-1550-11 and up
   - 680V-1550 thru 680V-1725
   - 680V-1473 thru 1760 and up
   - 680W-1721 thru 1850
   - 681-6001 thru 6072

199-80A	REV. NC	REV. A	REV. B	REV. C	REV. D	REV. E	REV. F
	07-17-1978	07-23-1979	11-21-1980 (266-30)	12-10-1980	05-18-1981 (267-60)	12-14-1984 (275-39)	04-18-2007 (0374-53)

DO NOT SCALE

ED 10314 ROCKWELL SPACER

SKETCH



INSTRUCTIONS

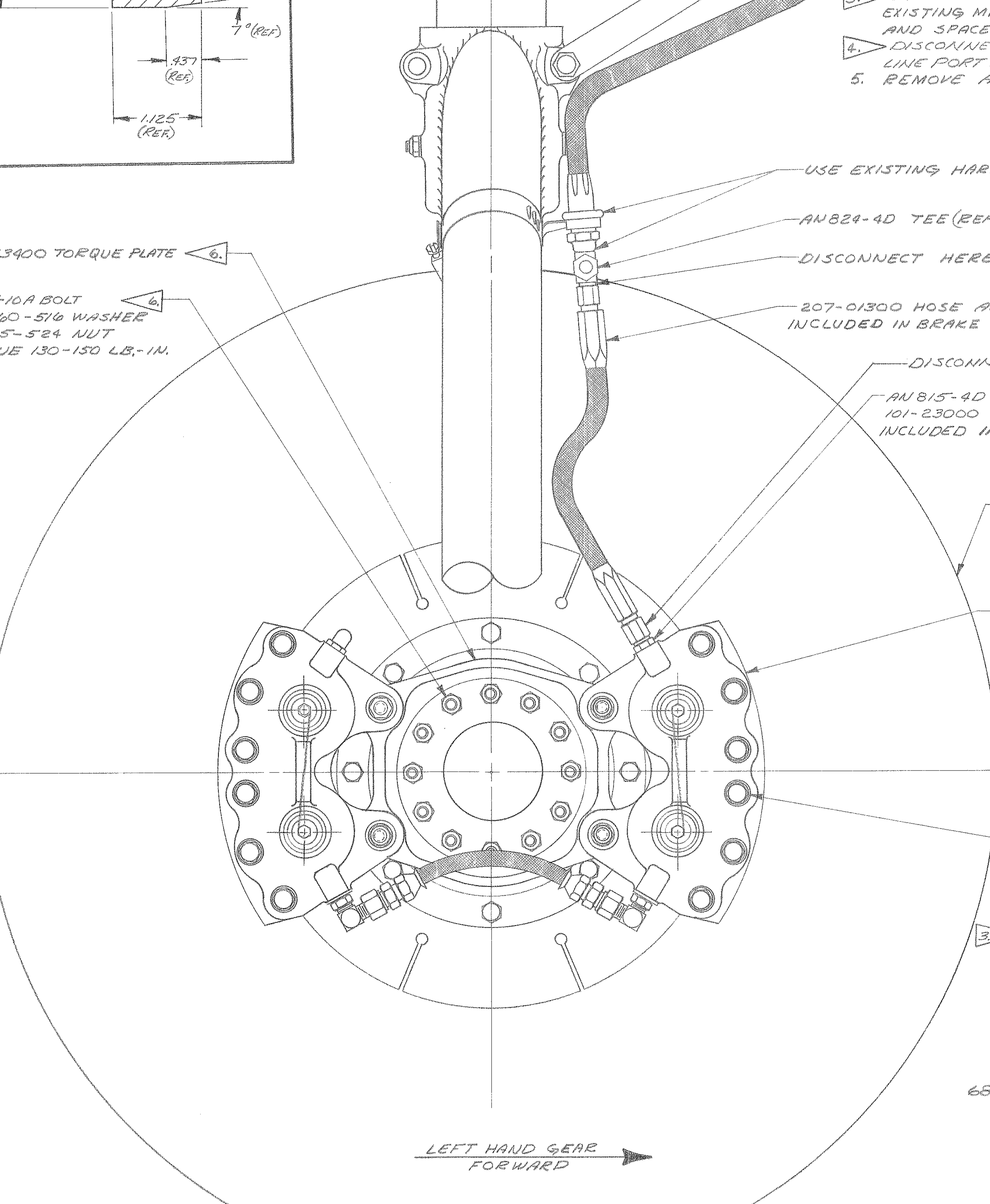
1. KIT 199-80A APPLIES TO THE FOLLOWING MODELS OF AERO COMMANDER USING SKYDROL:

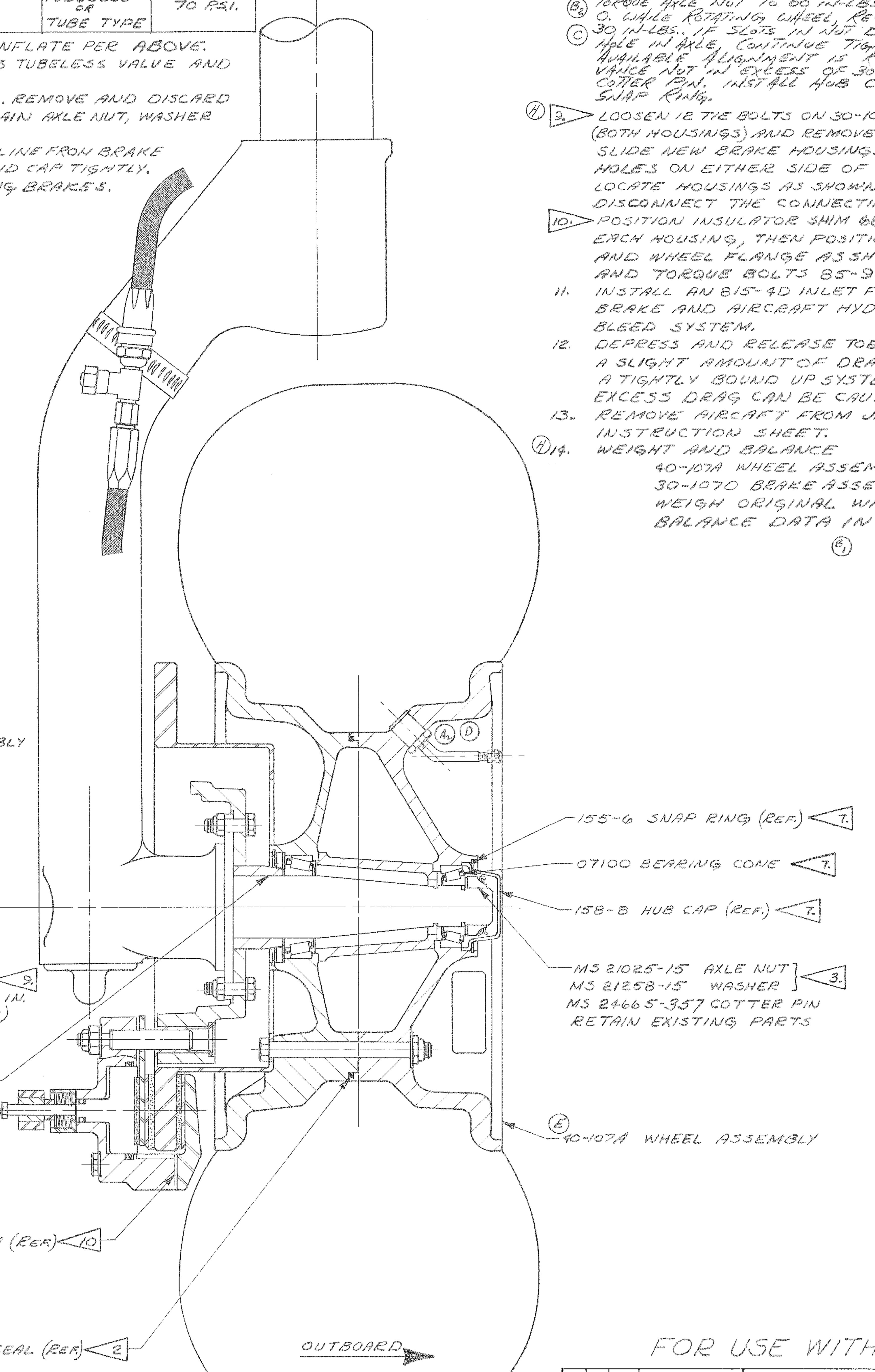
MODEL	TIRE SIZE	PLY RATING	TYPE	PRESSURE
560F, 680F, 680FL, 680FLP, 680T, 680V, 680W	8.50-10 TYPE III	6 OR 8	TUBELESS OR TUBE TYPE	41/55 P.S.I.
690, 690A, 681	8.50-10 TYPE III	10	TUBELESS OR TUBE TYPE	70 P.S.I.

2. MOUNT TIRES ON WHEELS AND INFLATE PER ABOVE. WHEEL ASSEMBLY 40-107A INCLUDES TUBELESS VALVE AND WHEEL SEAL.
3. JACK UP AIRCRAFT PER MANUAL. REMOVE AND DISCARD EXISTING MAIN GEAR WHEELS. RETAIN AXLE NUT, WASHER AND SPACER.
4. DISCONNECT LOWER HYDRAULIC LINE FROM BRAKE LINE PORT AND AN 824-4D TEE AND CAP TIGHTLY.
5. REMOVE AND DISCARD EXISTING BRAKES.
6. INSTALL TORQUE PLATE 075-13400 LOCATED AS SHOWN. TORQUE MOUNTING BOLTS 130-150 POUND-INCHES.
7. REMOVE 155-6 SNAP RING, 158-8 HUB CAP 07100 OUTER BEARING CONE FROM 40-107A WHEEL ASSEMBLY AND STORE ON A CLEAN SURFACE.
8. INSTALL WHEEL ASSEMBLY ON AXLE. INSTALL OUTER BEARING CONE, WASHER AND AXLE NUT. WHILE ROTATING WHEEL, (B2) TORQUE AXLE NUT TO 60 IN-LBS., THEN BACK OFF TO 0. WHILE ROTATING WHEEL, RE-TORQUE AXLE NUT TO (C) 30 IN-LBS.. IF SLOTS IN NUT DO NOT LINE UP WITH HOLE IN AXLE, CONTINUE TIGHTENING UNTIL FIRST AVAILABLE ALIGNMENT IS REACHED, BUT DO NOT ADVANCE NUT IN EXCESS OF 30°. INSTALL MS 24665-357 COTTER PIN. INSTALL HUB CAP IN WHEEL WITH SNAP RING.
9. (H) LOOSEN 12 TIE BOLTS ON 30-1070 BRAKE ASSEMBLY (BOTH HOUSINGS) AND REMOVE ALL 4 BACK PLATES. SLIDE NEW BRAKE HOUSINGS IN THE 2 MOUNTING HOLES ON EITHER SIDE OF THE TORQUE PLATE. LOCATE HOUSINGS AS SHOWN. DO NOT LOOSEN OR DISCONNECT THE CONNECTING HOSE.
10. POSITION INSULATOR SHIM 68-33 OVER THE 6 TIE BOLTS IN EACH HOUSING, THEN POSITION BACK PLATES BETWEEN DISC AND WHEEL FLANGE AS SHOWN. ALIGN BACK PLATE WITH BOLTS AND TORQUE BOLTS 85-90 POUND-INCHES.
11. INSTALL AN 815-4D INLET FITTING AND 207-01300 HOSE ASSEMBLY BETWEEN BRAKE AND AIRCRAFT HYDRAULIC LINE. CHECK RESERVOIR FLUID LEVEL AND BLEED SYSTEM.
12. DEPRESS AND RELEASE TOE PEDALS SEVERAL TIMES. ROTATE WHEELS BY HAND. A SLIGHT AMOUNT OF DRAG IS NORMAL, HOWEVER A TIGHTLY BOUND UP SYSTEM SHOULD BE INVESTIGATED AND CORRECTED. EXCESS DRAG CAN BE CAUSED BY AN IMPROPERLY SEATED LINING.
13. REMOVE AIRCRAFT FROM JACK AND CONDITION LINING PER THE ENCLOSED INSTRUCTION SHEET.
14. (H) WEIGHT AND BALANCE
    40-107A WHEEL ASSEMBLY WEIGHS 24.7 POUNDS
    30-1070 BRAKE ASSEMBLY WEIGHS 14.9 POUNDS
    WEIGH ORIGINAL WHEELS AND BRAKES AND REVISE WEIGHT AND BALANCE DATA IN LOG BOOK. (B1)

50-52

CHANGE NOTICE	LETTER	DESCRIPTION OF CHANGE	CHG. BY	DATE	CHK'D. BY
263/90	A	1. ADD NOTE 15. 2. REVISE TIRE VALVE	LES	9.12 79	
—	—	REDRAWN	RS	11.2 79	
264/18	B	1. DELETE NOTE 15 2. AXLE NUT TORQUE WAS 40/20 LB-IN 3. ADD INFLATION PRESSURE	RS	11.6 79	
264/71	C	REVISED NOTE #8	P.H.	1.31 80	
265/65	D	SHOW NEW AIR VALVE	RR	[illegible]	
266/30	E	SEE C/N	RS	11.25 80	
266/97	F	SEE C/N	RS	12.11 80	
267/60	G	ADDED MODELS 681, 680T, 680V, 680W	OM	5.15 81	
275/39	H	30-1070 WAS 30-107A PICTORIALLY REVISED TO SHOW NEW RETRACTS	AB	12.14 84	





FOR USE WITH PHOSPHATE ESTER BRAKE FLUID

QTY	QTY	ITEM	PART NO.	DESCRIPTION	MATERIAL & SPEC.	HEAT TREAT & SPEC.	FINISH & SPEC.	WGT.

NEXT ASSEMBLY | QTY | FINAL ASSEMBLY | QTY | PATTERN, CASTING OR BLANK NO.

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ZYGLO PER MIL-I-6866 STAMP M ON PART

MAGNAFLUX PER MIL-I-6868 STAMP P ON PART

√ MACHINED SURFACES PER MIL STD 10 UNLESS OTHERWISE NOTED

UNLESS NOTED ALL THREADS PER MIL-S-7742

WORK TO DIMENSIONS — DO NOT SCALE
TOLERANCE FOR .XXX ± .010
TOLERANCE FOR .XX ± .030
TOLERANCE FOR ANGULAR DIMS. ± 1/2°
TOLERANCE FOR FRACTIONAL DIMS. ± .030

BREAK SHARP EDGES .010 UNLESS NOTED. REMOVE ALL BURRS BEFORE PLATING. DRILL PER INSP. PROCEDURE NO. 114.

DRAWN BY Richard S. 9.30 78
CHECKED BY LES 8.31 78
SCALE 1/2 SIZE

Cleveland Wheels & Brakes
1160 Avon Center Road, Avon, Ohio 44011
a division of VanSickle Industries, Inc.
"the brake people"

NAME INSTALLATION OF KIT 199-80A AERO COMMANDER

50-52

Parker Aerospace

Technical Publication

Component Maintenance Manual With Illustrated Parts List

MM40-107/30-107

Wheel & Brake Assembly

Main Wheel Assembly
- Part No. 40-107
- Part No. 40-107A

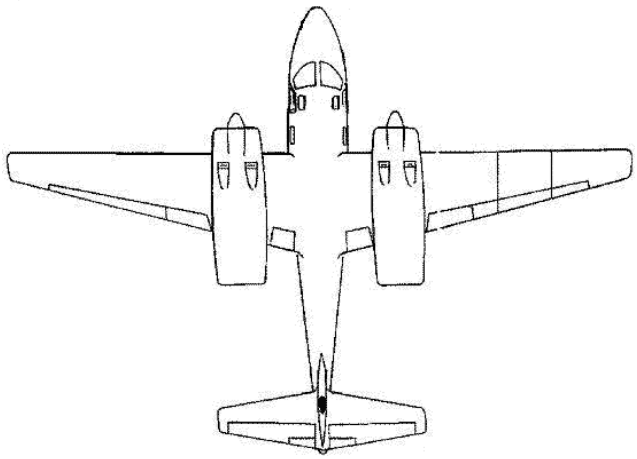
Main Brake Assembly
- Part No. 30-107
- Part No. 30-107A
- Part No. 30-107B
- Part No. 30-107C
- Part No. 30-107D
- Part No. 30-107E

Cleveland Wheels & Brakes

Technical Publication

Component Maintenance Manual With Illustrated Parts List

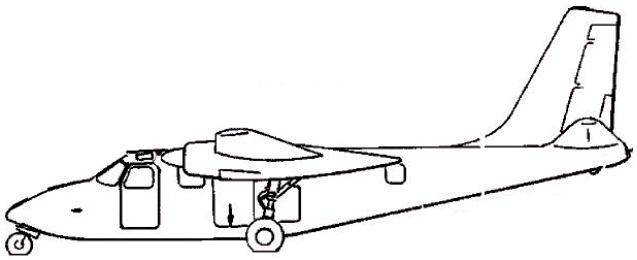
MM40-107/30-107



Wheel & Brake Assembly

Main Wheel Assembly
- Part No. 40-107
- Part No. 40-107A

Main Brake Assembly
- Part No. 30-107
- Part No. 30-107A
- Part No. 30-107B
- Part No. 30-107C
- Part No. 30-107D
- Part No. 30-107E



Used On
Rockwell 690, 695, 840, 980 Series

Initial Issue January 23, 1978

Cleveland Wheels & Brakes

Parker Hannifin Corporation
Aircraft Wheel & Brake
Avon, Ohio 44011 Cage Code 33269

LIST OF REVISIONS

REV	DATE	PAGE	DESCRIPTION	APPROVAL
A	5-5-82	7.1	B,2) & B,5)…Changed to call out removal and installation of stud assembly from piston instead of bolt from stud. Added "torque stud assembly at 60-70 in-lbs."	B.B.
		7.2	…Added call out of 110-04900 stud assy.	
B	7-29-83	4	5.2.0…Changed to call out removal and installation of center rivet. Delete application of glue to backside of lining.	B.B.
		7.1	…"SERIES" was "/30-107A" …Added line B,2A) B,5)…Added "(or bolt and spring guide, if used)." Added "(or bolt P/N 103-15300, is used)."	
		7.2	…Added footnote * …Added footnote **	
C	9/27/84	7.3	…Added Section 7.3, Maintenance Instructions, 30-107C Brake Assembly	B.B.
D	12/10/84	7.3	…Added 30-107D Para. 7.3, 1.: Added "199-13001" and "38". Para. 7.2, 1.< 16): "30-40" was "60-70".	B.B.
E	3/18/87	6	".492" was ":.502"	B.B.
F	1/10/89	2	Sec. 3.1.2 Add "…300 in-lb."	B.B.
G	02/01/02	ALL	Add instructions for 30-107E and Update formatting	B.B.

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INTRODUCTION

This manual is published for the guidance of personnel who are responsible for the maintenance functions of the Parker Wheel & Brake Assembly(ies) covered in this publication. The instructions published herein contain the necessary information to perform maintenance checks “on aircraft” as well as complete shop repair of the assemblies.

NOTE: For information not specifically covered in this manual, refer to the Component Maintenance Manual, AWBCMM0001, current issue. It is a reference publication generically written to address the common practices and procedures used to inspect, troubleshoot and overhaul most General Aviation external type wheels and brakes.

While Parker Hannifin Corporation represents that information contained in this manual was current at the time of publication of this issue, the user is cautioned to inquire as to whether a more recent revision is in existence before proceeding with maintenance operations. To accomplish this, users can contact Parker directly at the following:

Parker Hannifin Corporation
Aircraft Wheel and Brake
1160 Center Road
Avon, Ohio 44011 U.S.A. Attn: Customer Service
1-800-272-5464 (Phone)
(440) 937-5409 (Fax)

NOTICE

The procedures outlined in this manual may be altered if better and/or more economical methods can be employed by the individual facilities. However, the alternate procedures must not lessen the efficiency of operation of the assembly, and all torque and specific limits or values contained herein must be strictly observed. If deviations are questionable, contact Parker Engineering at the above number.

1. MAIN WHEEL

Refer to IPL Figure 8 for identification of wheel assembly components.

1.1 Disassembly

1.1.1 Properly jack up aircraft and fully deflate tires.

1.1.2 Remove bolts and washers from brake assembly to remove back plates.

1.1.3 Remove wheel from axle.

CAUTION: DO NOT USE TIRE IRONS.

1.1.4 Double check to make sure tire is fully deflated and break tire bead from wheel flange. Use a mallet or non-metallic instrument.

1.1.5 Remove nuts (8-15 or 8-15A), washers (8-10 or 8-10A), and bolts (8-5 or 8-5A) to separate wheel halves.

1.1.6 Remove and discard the O-ring (8-20).

1.1.7 Remove brake disc (8-65) from inner wheel half (8-35). If the disc sticks, use a non-metallic instrument and pry it out.

1.1.8 Remove snap rings (8-60, 8-95) grease seal felt (8-55) grease seal rings (8-50) and hubcap (8-90 or 8-90A) from inner and outer wheel halves (8-35, and 8-75 or 8-75A).

1.2 Cleaning, Inspection and Repainting

1.2.1 Degrease all metallic parts and dry thoroughly.

1.2.2 Visually inspect bearing cups (8-40, 8-80) and cones (8-45, 8-85) for damage or wear, but do not remove the cups from the wheel half unless replacement is necessary.

1.2.3 If a bearing cup is to be replaced, the wheel half must be heated either in boiling water for 30 minutes, or in an oven not to exceed 149°C (300°F) before attempting to remove or install a cup. If the cup does not drop out, tap the cup evenly from the axle bore, using a fiber drift pin, or a suitable arbor press.

CAUTION: NEVER EXCEED 500 WHEEL MILES BETWEEN REPACKING INTERVALS.

1.2.4 Inspect bearing cones for grease contamination and/or solidification at every periodic inspection. Repack wheel bearings with Aeroshell grease 22, conforming to MIL-G-81322.

CAUTION: NEVER PAINT WORKING SURFACES OF THE BEARING CUPS.

1.2.5 Inspect wheel halves for cracks or damage. If casting is cracked, or shows excessive corrosion, it should be replaced. Small nicks or gouges in the castings should be blended out and polished with (400 grit) sandpaper. Inspect O-ring (8-20) seating areas for nicks or distortion. Nicks may be lightly blended with a fine grit sandpaper. badly distorted sections in this area will hamper O-ring sealing Characteristics, and is cause for wheel half replacement. Areas from which the protective coating has been removed, or that show slight corrosion, should be thoroughly cleaned and repainted with one coat of zinc chromate primer, and one coat of aluminum (color) polyurethane.

1.2.6 Inspect snap rings and grease seal rings for distortion. Replace grease seal felts if badly worn or contaminated. Lightly saturate new or reused grease seal felts with SAE 10 oil before installation (DO NOT SOAK).

1.2.7 Inspect brake disc (8-65) for cracks, corrosion, excessive wear, scoring or warpage. Rust may be removed by hand wire brushing and finishing with a medium grit sandpaper or emery.

1.2.8 Inspect wheel bolts for cracks and corrosion. Cracked bolts are to be replaced with a new bolt of corresponding part number. Inspect metallic self-locking nuts. If the nut can be turned onto the bolt by hand, so that the bolt will protrude past the end of the nut, it is to be replaced.

1.3 Reassembly

1.3.1 Place inner wheel half (8-35) with brake disc (8-65) and bolts (8-5 or 8-5A) installed on a flat surface, with register portion of the wheel half up. Place new O-ring (8-20) on register portion of wheel half.

Place tire over inner wheel half, and then place outer wheel half in tire, making sure to properly align male and female registers. Install nuts (8-15 or 8-15A) and washers (8-10 or 8-10A). Torque nuts to limits listed on decal affixed to outer wheel half. When all nuts have been torqued, torque a second time to make sure that the required value has been achieved; sometimes O-ring compression will give false initial readings. Inflate tire to desired pressure.

1.3.2 To complete wheel re-assembly, reverse steps 1.1.2 through 1.1.7 and torque wheel nuts (8-15 or 8-15A) per limits listed on decal affixed to outer wheel half (8-75 or 8-75A): 300 in-lb.

2. MAIN BRAKE

Refer to IPL Figure 9 and Figure 10 for identification of brake assembly components.

NOTE: It is not necessary to remove the wheel from the aircraft to disassemble and service brake.

2.1 Disassembly

2.1.1 Remove and cap hydraulic line.

2.1.2 Remove the cylinder bolts (9-5 or 10-5) and remove back plate assemblies (9-85 or 10-85).

2.1.3 Remove the brake cylinder assemblies (9-15, -15A, -15B or 10-15, -15A, -15B, -15C) from the torque plate (the torque plate will remain mounted to the axle).

2.1.4 Remove the pressure plate assembly (9-60 or 10-60), inlet fitting (9-175 or 10-215), and bleeder fitting (9-155 or 10-195).

NOTE: It will be necessary to remove the retracts prior to piston removal.

2.1.5 Refer to section 5. and 6. for removal of the retracts prior to removing the pistons.

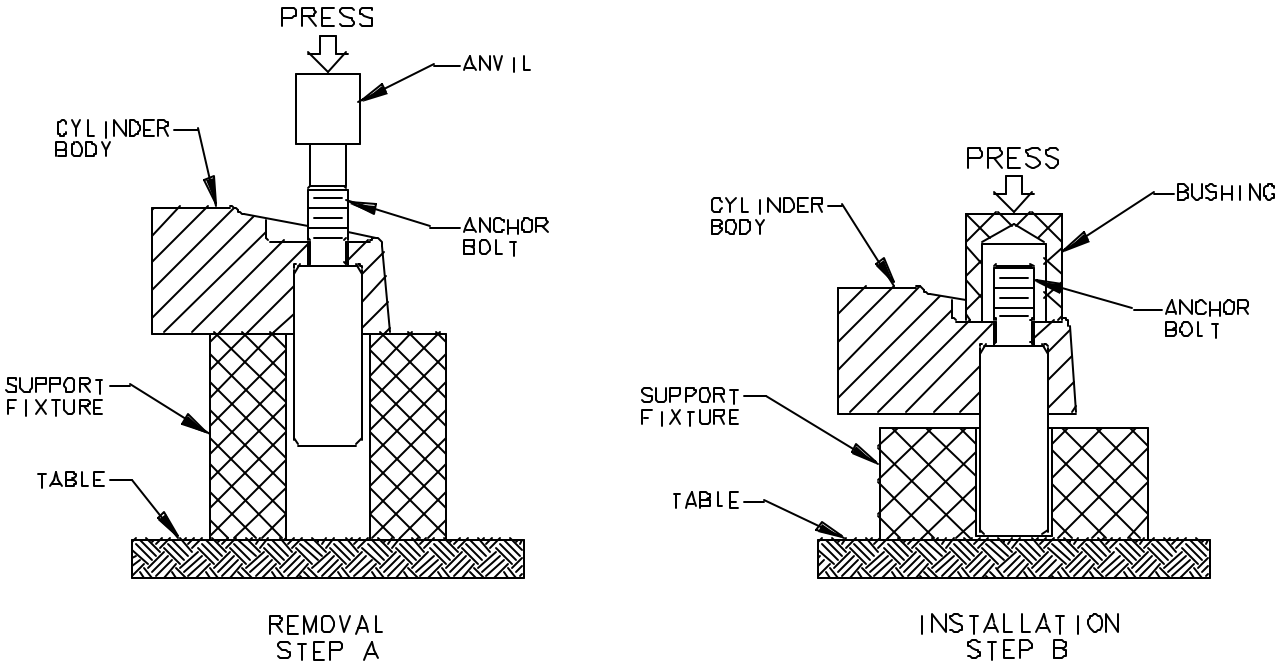
CAUTION: MARK EACH PISTON AND BORE TO ENABLE CORRECT REASSEMBLY.

2.1.6 The pistons (9-40 or 10-40) may be removed by threading one of the back plate attachment bolts (9-5 or 10-5) into each piston in succession, and with hand pressure, push each piston out of the brake cylinder.

2.1.7 Remove the O-rings (9-55, -55A or 10-55, -55A) from cylinder.

2.1.8 If necessary, the anchor bolts (9-100 or 10-100) may be removed by using a holding fixture and arbor press. Place the anchor bolts into the holding fixture so that the anchor bolt is piloted while being removed.

CAUTION: CYLINDER MUST BE SQUARE WITH ARBOR IN STEPS “A” AND “B” SO THAT THE ANCHOR BOLTS DO NOT COCK.



Anchor Bolt Removal and Installation
Figure 1

2.2 Cleaning, Inspection and Repainting

2.2.1 Clean all metal parts in alcohol or suitable solvent.

2.2.2 Replace O-rings.

2.2.3 Inspect brake cylinder (9-20 or 10-20) for cracks, especially in the lug area around the anchor bolts. Cracks in this area necessitate cylinder replacement.

CAUTION: THE LARGE DIAMETER PISTON BORE AND O-RING GROOVE **SHOULD NOT** BE POLISHED WITH ABRASIVE MATERIAL.

CAUTION: NICKS AND BURRS IN THE PILOT BORE AREA CAN PREVENT THE PISTONS FROM PROPERLY RETRACTING, RESULTING IN BRAKE DRAG.

2.2.3.1 Piston bores and O-ring grooves should have foreign material loosened and flushed from all surfaces.

2.2.3.2 Small nicks and light corrosion may be blended and removed with emery or sandpaper.

2.2.3.3 Inspect the fitting ports and piston bores for contamination. Light scratches or nicks in the piston bores, pilot bores, or on the chamfered surfaces within these bores may be polished out with 600 grit emery, but the final piston bore small diameter shall not exceed ∅0.565.

CAUTION: DO NOT PAINT INTERNAL SURFACES OF PISTON BORES.

2.2.3.4 Thoroughly clean cylinder of all residue upon completion of any reworking with available solvent applicable to aluminum. Any external surfaces from which the protective coating has been removed, should be cleaned, and painted with one coat of zinc chromate primer and one coat of aluminum (color) polyurethane.

CAUTION: DO NOT PAINT INTERNAL SURFACES OF PISTON BORES.

2.2.4 Inspect pistons (9-40 or 10-40) for nicks or burrs. Remove nicks or burrs by polishing with 600 grit emery. The final piston large diameter must not be smaller than ∅2.121 inch. Thoroughly clean using available solvent applicable to aluminum before re-installation.

2.2.5 Inspect brake lining for edge chipping and surface deterioration. See section **3. WEAR LIMITS**.

2.2.6 Lining replacement can be accomplished by using a center punch to remove the center rivet. Then pry the old segments off of the carrier with a screwdriver. To install new pads, snap the new pad onto the three carrier pins (9-80 or 10-80), and then attach with new center rivet (9-75 or 10-75).

NOTE: If the linings are changed, but the pistons are not removed from the cylinder, clean the exposed surfaces of the pistons before displacing the pistons back into the cylinder.

2.2.7 Inspect pressure plate (9-65, 10-65) and back plates (9-90, 10-90) for cracks or warpage. Replace if cracked or severely deformed. Inspect pins for looseness. If loose, tighten with Parker Hannifin Wheel & Brake rivet set and anvil, P/N 199-1A and 199-1B, or replace back plate and pressure plate assembly.

NOTE: Slightly warped pressure plates with relief slots can be fixtured in a vise and straightened when laid on a flat surface; flatness should be less than .015 inches TIR. Warped pressure plates can cause brake drag.

2.2.8 Inspect anchor bolt holes in torque plate for internal corrosion or contamination. If present, clean with emery and apply a light coat of dry lube.

NOTE: For best service life, the cylinders must slide freely in the torque plate.

Check the anchor bolt hole and mounting bolt hole areas for elongation or cracks. Badly elongated or cracked parts should be replaced with new parts or corresponding part number. Minor corrosion on the torque plates may be removed with 600 grit emery.

NOTE: Surfaces from which the protective coating is removed, should be painted with one coat of zinc chromate primer, and one coat of aluminum (color) polyurethane.

2.2.9 Inspect bolts for cracks, thread damage or corrosion, and replace, if necessary.

2.3 Reassembly

2.3.1 If removed, press anchor bolts (9-100 or 10-100) (see Figure 1) into brake and install washers (9-30, -30A or 10-30) and nuts (9-25 or 10-25). Torque nuts to 90 in-lbs.

2.3.2 Install inlet and bleeder fittings.

2.3.3 Lay the cylinder on a firm surface.

2.3.4 For piston installation, lubricate the piston, O-ring, and piston bore with a small amount of MIL-H-5606 hydraulic fluid. Place piston in bore and rotate to seat drag ring and insure that piston and seal are in proper alignment.

2.3.5 Install O-rings into cylinder O-ring grooves.

2.3.6 Insert the pistons until the O-rings (9-55, -55A or 10-55, -55A) prohibit further insertion. While applying pressure with your thumbs, rotate the piston in a clockwise direction. After O-ring squeeze is overcome, the piston will slide freely into the bore. Push piston flush to cylinder face.

NOTE: If considerable effort is required, remove piston and inspect bore and pilot bore area for damage. If the bore is damaged, check the corresponding area of the piston for damage. Repair, if necessary, and repeat the above procedure.

2.3.7 Install pressure plate assembly by aligning anchor bolt holes with anchor bolts and slide onto cylinder. The pressure plate must float freely on the anchor bolts.

2.3.8 Install brake assembly to torque plate by aligning anchor bolts with torque plate holes and sliding brake assembly onto torque plate (it must slide freely).

2.3.9 Install washers, cylinder tie-bolts, and insulator shim. Install back plate assemblies between brake disc and wheel flange, and align with tie-bolts. Torque bolts to 85-90 in-lbs.

2.3.10 Reconnect hydraulic lines and bleed system. Check pedal for proper feel and travel.

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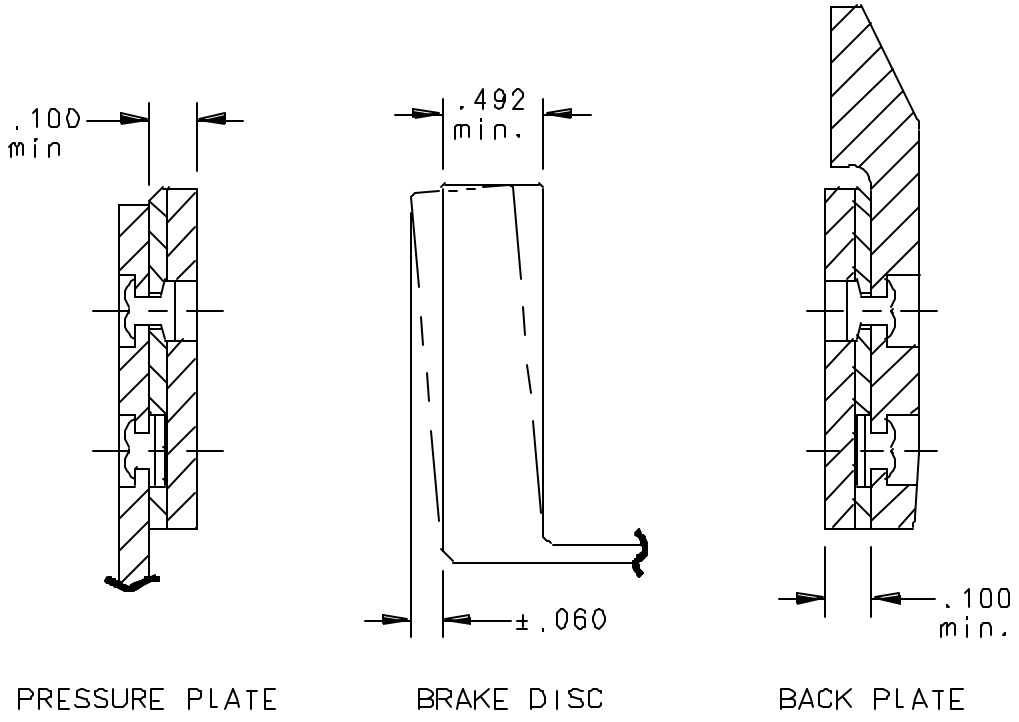
3. WEAR LIMITS

3.1 Maximum wear limits for brake linings and discs are shown in the following figure. Disc warpage should not exceed .060 inch.



Wear Limits
Figure 2

4. AXLE NUT TORQUE REQUIREMENTS & PROCEDURE

4.1 While rotating wheel, torque axle nut to 60 in-lbs., then back off to 0 in-lbs. While rotating wheel, re-torque axle nut to 30 in-lbs. If slot in nut does not align with hole in axle, continue tightening until first available alignment is reached but do not advance nut in excess of 30° (1/2 castellation).

5. SERVICING RETRACT SPRING STACK (30-107, 30-107A, 30-107B)

Refer to IPL Figure 9 for identification of brake assembly components.

With the exception of piston removal, corrosion or damage caused by external (foreign objects), the spring stacks should not require service and/or replacement.

If removal is required, caution must be taken and eye protection worn to avoid injury since we are dealing with a preloaded spring stack.

5.1 Apply a slight amount of pressure to the brake system to prevent piston rotation.

5.2 For brake assemblies equipped with stud assembly (9-125):

WARNING: USE EXTREME CAUTION WHEN REMOVING THE STUD ASSEMBLY (9-125). THE DISC SPRINGS (9-120) ARE UNDER LOAD.

5.2.1 Loosen and slowly remove the stud assembly (9-125) from each piston.

5.2.2 Slide the disc springs (9-120) from each stud assembly. At this point, check to see if the bolt (9-140) in the stud assembly has loosened. If so, re-tighten the bolt into the stud at 80-90 in-lbs.

5.2.3 Inspect the springs (9-120) for nicks or other damage caused by stones or other foreign objects. Damage of this nature is cause for replacement.

5.2.4 Inspect parts for corrosion. Lightly corroded parts may be polished with a fine grit emery and coated with a light film of oil or lubricant. Parts that are deeply corroded and/or pitted must be replaced.

5.2.5 Refer to Figure 3. After inspection, slide disc springs (9-120) onto the stud (9-130). Re-attach to each piston as shown in Figure 3. Torque stud assembly (9-125) at 60-70 in-lbs.

5.2.5 Actuate brake 2-3 times and visually inspect each assembly to insure that everything appears normal and seat properly.

5.3 For brake assemblies equipped with retract spring guide (9-115), washer (9-110), washer (9-10A [30-107 and 30-107A only]) and bolt (9-105 or 9-105A):

WARNING: USE EXTREME CAUTION WHEN REMOVING THE BOLT (9-105 OR 9-105A). THE DISC SPRINGS (9-120) ARE UNDER LOAD.

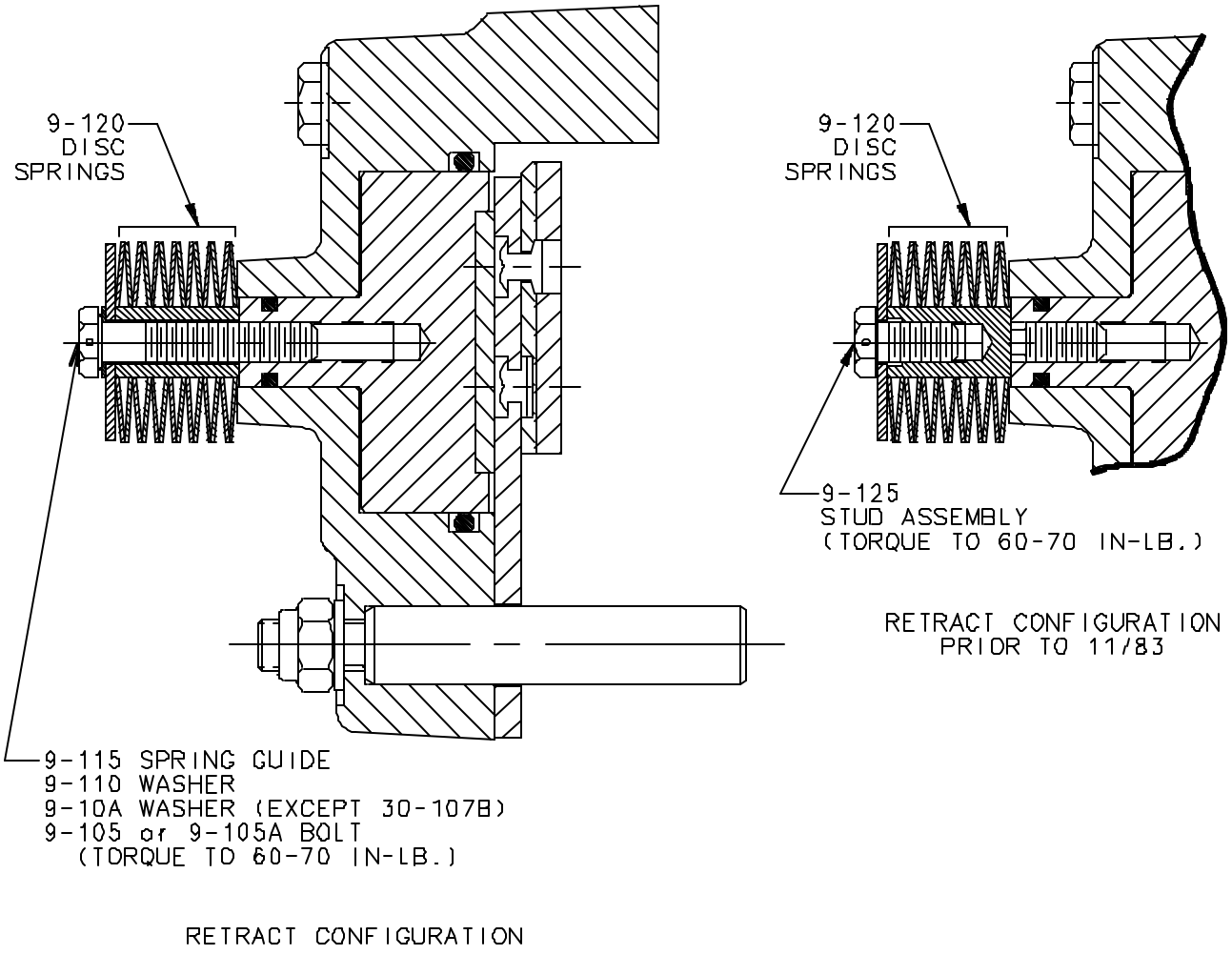
5.3.1 Loosen and slowly remove the bolt (9-105 or 9-105) and spring stack from each piston, and slide the disc springs (9-120) from each spring guide (9-115).

5.3.2 Inspect the springs (9-120) for nicks or other damage caused by stones or other foreign objects. Damage of this nature is cause for replacement.

5.3.3 Inspect parts for corrosion. Lightly corroded parts may be polished with a fine grit emery and coated with a light film of oil or lubricant. Parts that are deeply corroded and/or pitted must be replaced.

5.3.4 Refer to Figure 3. After inspection, slide disc springs (9-120) onto the bolt (9-105 or 9-105A) and spring guide (9-115). Re-attach to each piston as shown in Figure 3. Torque bolt (9-105 or 9-105A), at 60-70 in-lbs.

5.3.5 Actuate brake 2-3 times and visually inspect each assembly to insure that everything appears normal and seat properly.



30-107 / 30-107A / 30-107B
Figure 3

6. SERVICING RETRACT MECHANISM (30-107C, 30-107D, 30-107E)

Refer to IPL Figure 10 for identification of brake assembly components.

With the exception of piston removal, corrosion or damage caused by external (foreign objects), the retract mechanisms should not require service and/or replacement.

If removal is required, caution must be taken and eye protection worn to avoid injury since we are dealing with a preloaded spring stack.

6.1 Apply a slight amount of pressure to the brake system to prevent piston rotation.

6.2 Remove safety wire (10-160) from retract mechanisms.

6.3 Remove retract mechanisms.

6.3.1 For Brake Assemblies equipped with retract stud assembly (10-135):

6.3.1.1 Using a suitable wrench (3/8 inch [0.375]), loosen and remove the retract mechanisms (10-135).

6.3.1.2 Remove spacer (10-130).

6.3.1.3 Inspect parts for corrosion. Lightly corroded parts may be polished with a fine grit emery and coated with a light film of oil or lubricant. Parts that are deeply corroded and/or pitted must be replaced.

6.3.2 For Brake Assemblies equipped with retract stud assembly (10-165):

6.3.2.1 Using a suitable allen wrench (5/32 inch [0.156]), loosen and remove the retract mechanisms (10-135).

6.3.2.2 Inspect parts for corrosion. Lightly corroded parts may be polished with a fine grit emery and coated with a light film of oil or lubricant. Parts that are deeply corroded and/or pitted must be replaced.

6.4 Remove retract cup assembly (10-105) and disassemble in accordance with the following procedures:

WARNING: USE EXTREME CAUTION WHEN REMOVING THE SNAP RING (10-125). THE DISC SPRINGS (10-115) ARE UNDER LOAD.

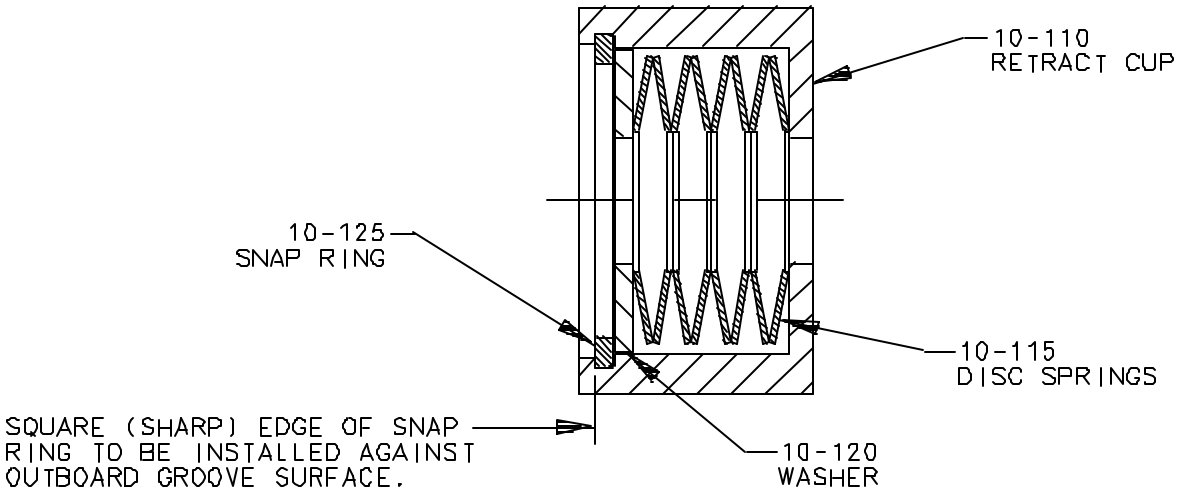
6.4.1 Using an arbor press, apply and maintain a compression load to washer (10-120) and remove snap ring (10-125).

6.4.2 Slide the washer (10-120) and disc springs (10-115) from the retract cup (10-110).

6.4.3 Inspect the springs (10-115) for nicks or other damage caused by stones or other foreign objects. Damage of this nature is cause for replacement.

6.4.4 Inspect parts for corrosion. Lightly corroded parts may be polished with a fine grit emery and coated with a light film of oil or lubricant. Replace parts that are deeply corroded and/or pitted.

6.4.5 Reassemble per Figure 4.



Retract Cup Assembly
Figure 4

6.5 Install retract mechanisms.

6.5.1 Prior to installation, the position of the friction sleeves (10-145, 10-150) on retract stud assembly (10-135) or friction ring and collar spring retainer (10-175, 10-180) on retract stud assembly (10-165) must be reset in accordance with the following procedures.

NOTE: Laboratory tests show that this reset procedure may be accomplished 8 times without degradation of the components function. It is recommended that after 8 reset procedures, that the entire retract mechanism be discarded and replaced. If there is suspicion that the unit is worn prior to accomplishing 8 reset procedures, the retract stud assembly (10-135 or 10-165) must be checked in accordance with the following procedure:

6.5.1.1 Use a spring tester. Set the friction sleeve on a suitable fixture having a hole through which the stud (10-140) or pin (10-170) can pass and apply a load of 215 lbs. to either end of the stud or pin. If the stud slips, prior to withstanding a load of 215 lbs., replacement if necessary.

6.5.2 Resetting and installing retracts for Brake Assemblies equipped with retract stud assembly (10-135): (See Figure 5)

6.5.2.1 Using a suitable bench press, reset the friction sleeves (10-145, 10-150) position on the retract stud (10-140) to attain a dimension of 0.690 inch.

6.5.2.2 Verify bolt (10-155) torque of 50 to 60 in-lb.

NOTE: Torquing may require a slight amount of thumb pressure be applied to the piston face to prohibit piston rotation.

6.5.2.3 After setting the retract mechanism, screw one each into the back of each piston and tighten with suitable 3/8 inch [0.375] wrench or socket. Final torque stud assembly (10-135) 30 to 40 in-lb.

6.5.2.4 Install brakes on aircraft. Apply and release parking brake. Push cylinder inboard to its full extent. Check retract stud torque to verify adjuster pin has fully engaged the piston. Inboard force on cylinder may be required to prohibit piston rotation.

6.5.2.5 Safety wire as required.

6.5.2.6 Return aircraft to service.

6.5.3 Resetting and installing retracts for Brake Assemblies equipped with retract stud assembly (10-165): (See Figure 6)

6.5.3.1 Using a suitable bench press, reset the friction ring and collar spring retainer (10-175, 10-180) position on the friction pin (10-170) to attain a dimension of 0.400 inch.

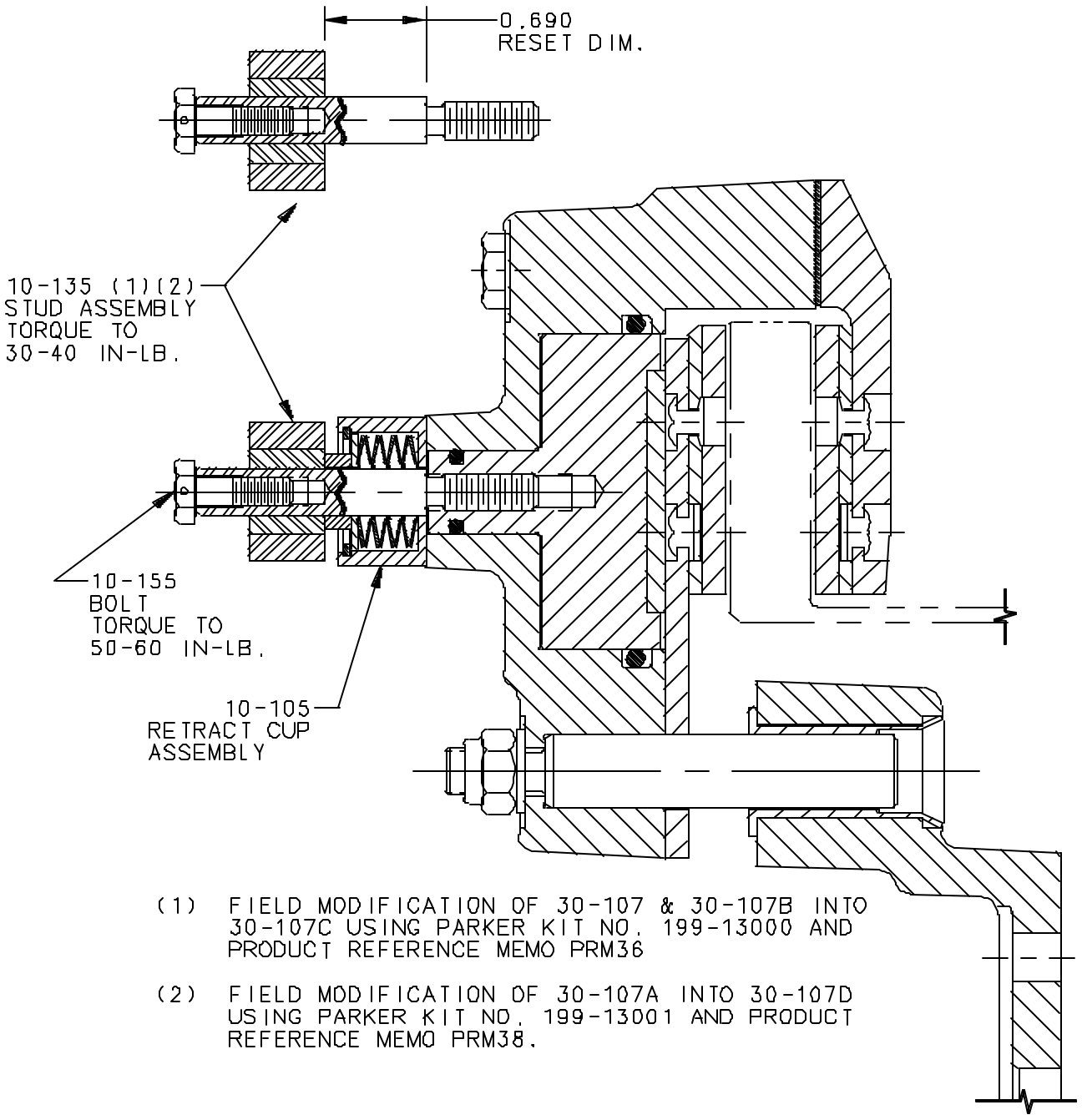
NOTE: Torquing may require a slight amount of thumb pressure be applied to the piston face to prohibit piston rotation.

6.5.3.2 After setting the retract mechanism, screw one each into the back of each piston and tighten with suitable 5/32 inch [0.156] allen wrench. Final torque pin (10-170) 50 to 60 in-lb.

6.5.3.3 Install brakes on aircraft. Apply and release parking brake. Push cylinder inboard to its full extent. Check retract stud torque to verify adjuster pin has fully engaged the piston. Inboard force on cylinder may be required to prohibit piston rotation.

6.5.3.4 Safety wire as required.

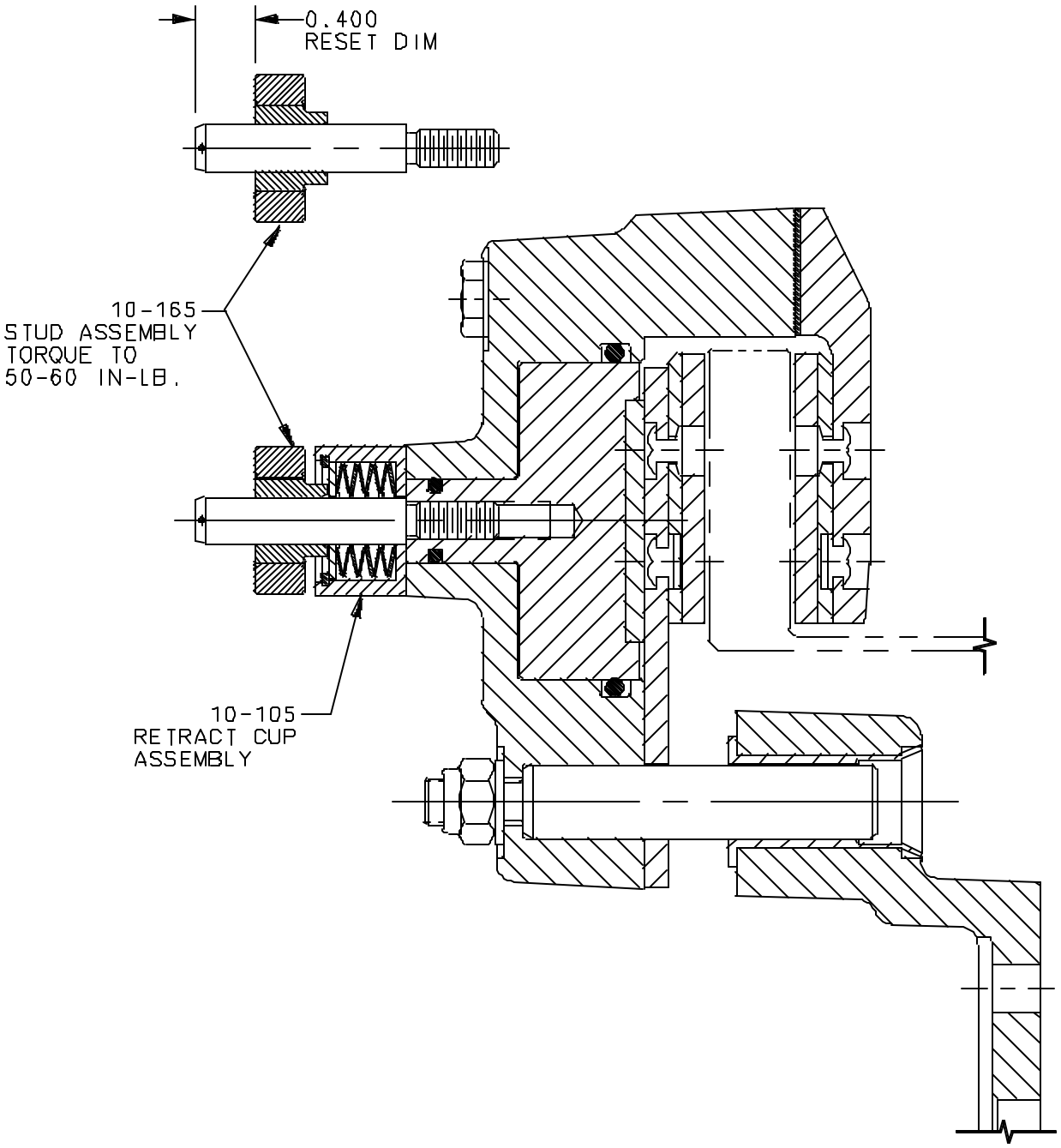
6.5.3.5 Return aircraft to service.



(1) FIELD MODIFICATION OF 30-107 & 30-107B INTO 30-107C USING PARKER KIT NO. 199-13000 AND PRODUCT REFERENCE MEMO PRM36

(2) FIELD MODIFICATION OF 30-107A INTO 30-107D USING PARKER KIT NO. 199-13001 AND PRODUCT REFERENCE MEMO PRM38.

30-107C / 30-107D
Figure 5



30-107E
Figure 6

6.6 Wear limit indicator (30-107C, 30-107D, 30-107E)

The retract mechanism may be used as a visual indicator relative to brake lining pad (10-70) and brake disc (8-65) wear.

6.6.1 For brake assemblies equipped with retract stud assembly (10-135): Refer to Figure 7A.

6.6.1.1 When the bottom surface on the head of the retract stud bolt (10-155) comes within 0.025 inches of the friction sleeves (10-145, 10-150), inspection/replacement of the brake linings (10-70) and brake disc (8-65) is required. Refer to section **3. WEAR LIMITS**.

6.6.2 For brake assemblies equipped with retract stud assembly (10-165): Refer to Figure 7B.

6.6.2.1 When the top of the friction pin (10-170) comes within 0.031 inches of the collar spring retainer/friction ring (10-180/10-175), inspection/replacement of the brake linings (10-70) and brake disc (8-65) is required. Refer to section **3. WEAR LIMITS**.

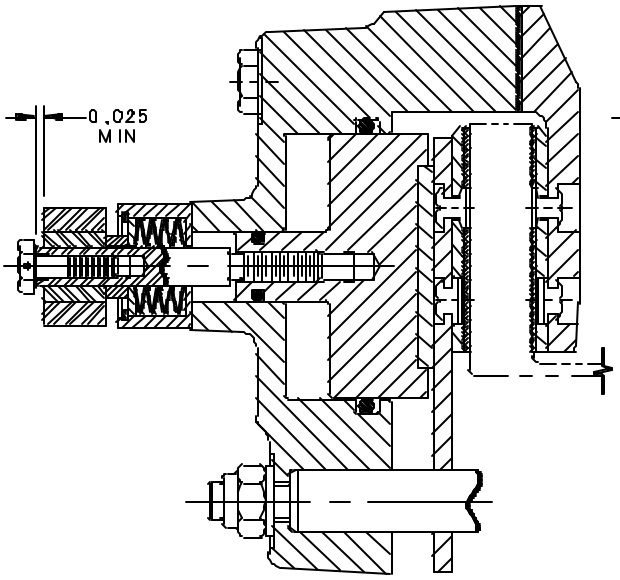


FIGURE 7A
BRAKE ASSEMBLIES EQUIPPED WITH
(IPL 10-135) RETRACT STUD ASSEMBLY

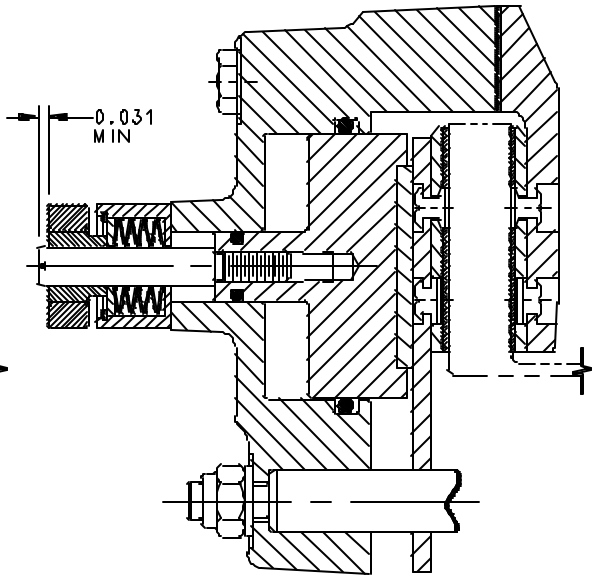


FIGURE 7B
BRAKE ASSEMBLIES EQUIPPED WITH
(IPL 10-165) RETRACT STUD ASSEMBLY

Wear Limit Indicator
Figures 7A and 7B

7. ILLUSTRATED PARTS LIST

The illustrated parts list describes and illustrates the detail parts of the assembly.

All parts of the equipment are listed, except parts which lose their identities by being permanently fastened to other parts of assemblies and are not subject to disassembly.

7.1 Explanation of Columns

7.1.1 Figure/Item column: The figure and item numbers key the parts breakdown list to the applicable illustration. The first number represents the figure number of the illustration. The item numbers are arranged in sequence and generally reflect the order of disassembly.

7.1.2 Part Number column: This column contains the assigned Parker Hannifin Aircraft Wheel and Brake part number for the individual item.

7.1.3 Nomenclature column: This column identifies the parts being listed by noun name followed by modifiers when applicable. The indenture system used in the parts list shows the relationship of the parts to their subassemblies and to the assembly:

1 2 3 4
Assembly
Attaching Parts for Assembly
Detailed Parts for Assembly
Subassembly
Attaching Parts for Subassembly
Detailed Parts for Subassembly

7.1.4 Effect column: Shows the difference in parts within various configurations of the units or assemblies. These units or assemblies shall be assigned reference letters such as A, B, C, D, etc. Parts which are not common to all configurations, but are associated with one or more of the coded lead items, shall carry the letter or letters assigned to the lead item with which it is associated. If a part is common to all lead items, the Effect Code column shall be blank

7.1.5 Units Per Assembly column: This column indicates the total number required per assembly or per subassembly as applicable. These abbreviations may appear in the Units Per Assembly column:

AR .....As Required (for bulk items)
NP .....Item is Nonprocurable (listed for reference only)
RF .....Reference (item listed for reference only)

7.2 Part Numbering System

Parker Hannifin Aircraft Wheel & Brake has assigned a part number to all purchased and government standard off-the-shelf parts. They are defined and used as follows:

When a purchased part is listed, the assigned Parker Hannifin AWB part number shall be used in the part number column. If required by contract or if the original manufacturer of a purchased part has FAA manufacturing approval then; the original manufacturer's part number along with the manufacturer's federal supply code will be shown in parentheses following the part nomenclature. The federal supply code will be preceded by the letter "V".

Unless otherwise specified by contract, all government standard off-the-shelf parts (such as MS, AN, NAS, etc.) will be identified by the assigned Parker Hannifin AWB part number which will be used in the part number column.

7.3 Parts Replacement Data

The interchangeability relationship between parts is identified in the Nomenclature column of the parts list. A list of the terms used to show interchangeability and their definition is as follows:

Term	Abbreviation	Definition
Optional	OPT	This part is optional to and interchangeable with other parts in the same item number variant group or other item number if designated.
Superseded By	SUPSD BY	The part in the part number column is replaced by and is not interchangeable with the item number shown in the notation.
Supersedes	SUPSDS	The part in the part number column replaces and is not interchangeable with the item number shown in the notation.
Replaced by By	REPLD BY	The part in the part number column is replaced by and interchangeable with the item number shown in the notation.
Replaces	REPLS	The part in the part number column replaces and is interchangeable with the item number shown in the notation.
Vendor	V	Federal Supply Code for vendors.

7.4 Items Not Illustrated

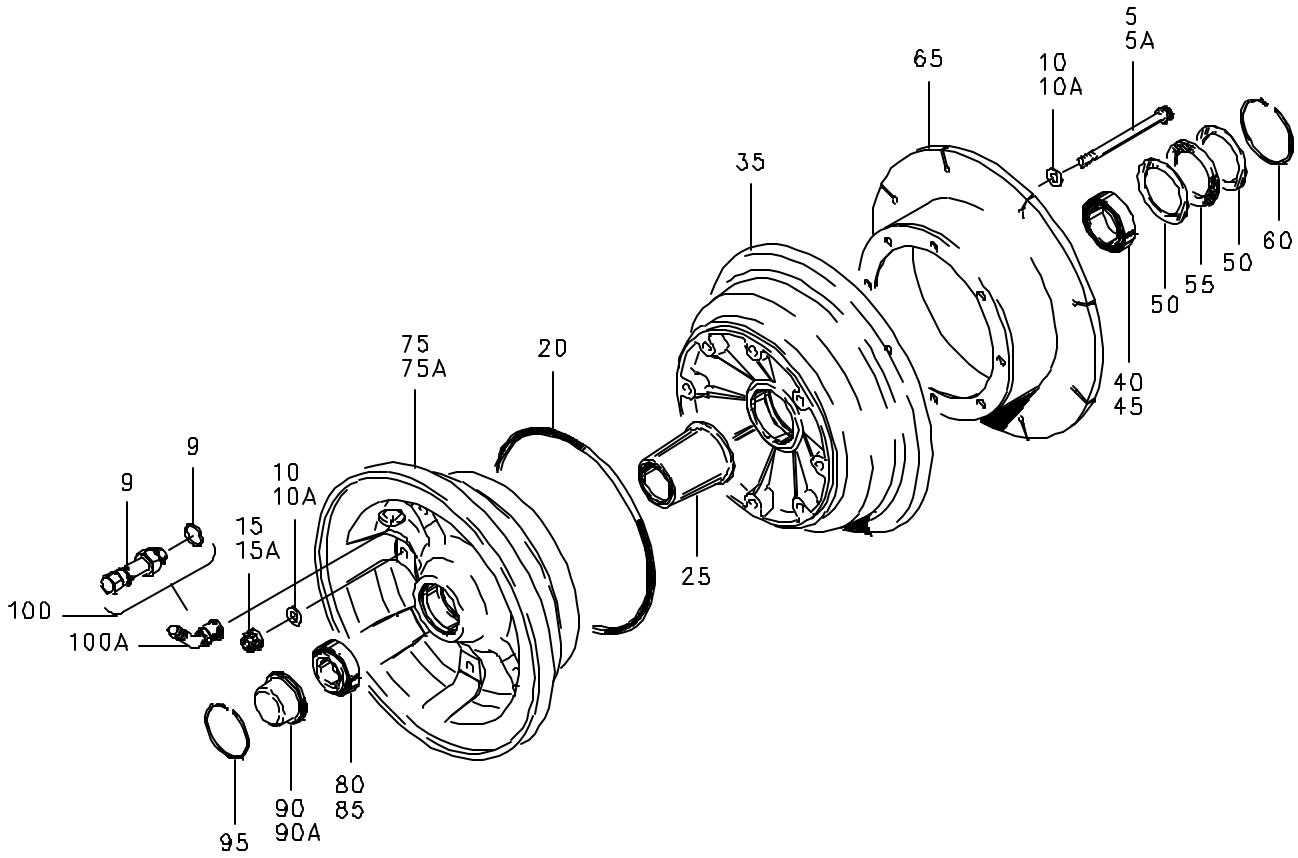
Items not illustrated are indicated by a dash (-) ahead of the item number in the Figure/Item number column.

7.5 Alpha Variant Item Numbers

Alpha variants A through Z (except I and O) are assigned to existing numbers when necessary to show:

(1) Added items
(2) Modification or configuration differences
(3) Optional parts

Alpha variant item numbers are not shown on the exploded view when the appearance and location of the alpha variant item is the same as the basic item.



Main Wheel Assembly
40-107 / 40-107A
IPL Figure 8

8. DETAILED PARTS LIST – MAIN WHEEL (40-107, 40-107A)

FIG. ITEM	PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	EFFECT CODE	UNITS PER ASSY.
8 -1	40-107 (1)	MAIN WHEEL ASSEMBLY (SUPSD BY 40-107A)	A	RF
8 -1A	40-107A (1)	MAIN WHEEL ASSEMBLY (SUPSDS 40-107)	B	RF
		WHEEL ATTACHING PARTS		
5	103-31000	BOLT (AN6-40A)	A	8
5A	103-32500	BOLT (MS21250-06056)	B	8
10	095-10600	WASHER (AN960-616)	A	16
10A	095-03100	WASHER (MS20002C6)	B	16
15	094-10400	NUT (MS21044-N5)	A	8
15A	094-15800	NUT (NAS1804-6N))	B	8
		* * *		
20	101-24100	. O-RING		1
25	067-04100	. SPACER		1
– 30	161-07600	. ASSEMBLY, WHEEL HALF, INBOARD		1
35	151-07200	. . WHEEL HALF, INBOARD		1
40	214-01300	. . CUP, BEARING		1
45	214-01400	. CONE, BEARING, INBOARD		1
50	153-01600	. RING, GREASE SEAL		2
55	154-01600	. FELT, GREASE SEAL		1
60	155-00100	. RING, SNAP, INBOARD		1
65	164-07200	. DISC		1

– Item Not Illustrated

(1) Wheel qualified for usage with the following tires:
8.50-10, 10 ply; tubeless.
24 x 7.7, 16 ply, tubeless (90 PSI max. inflation).

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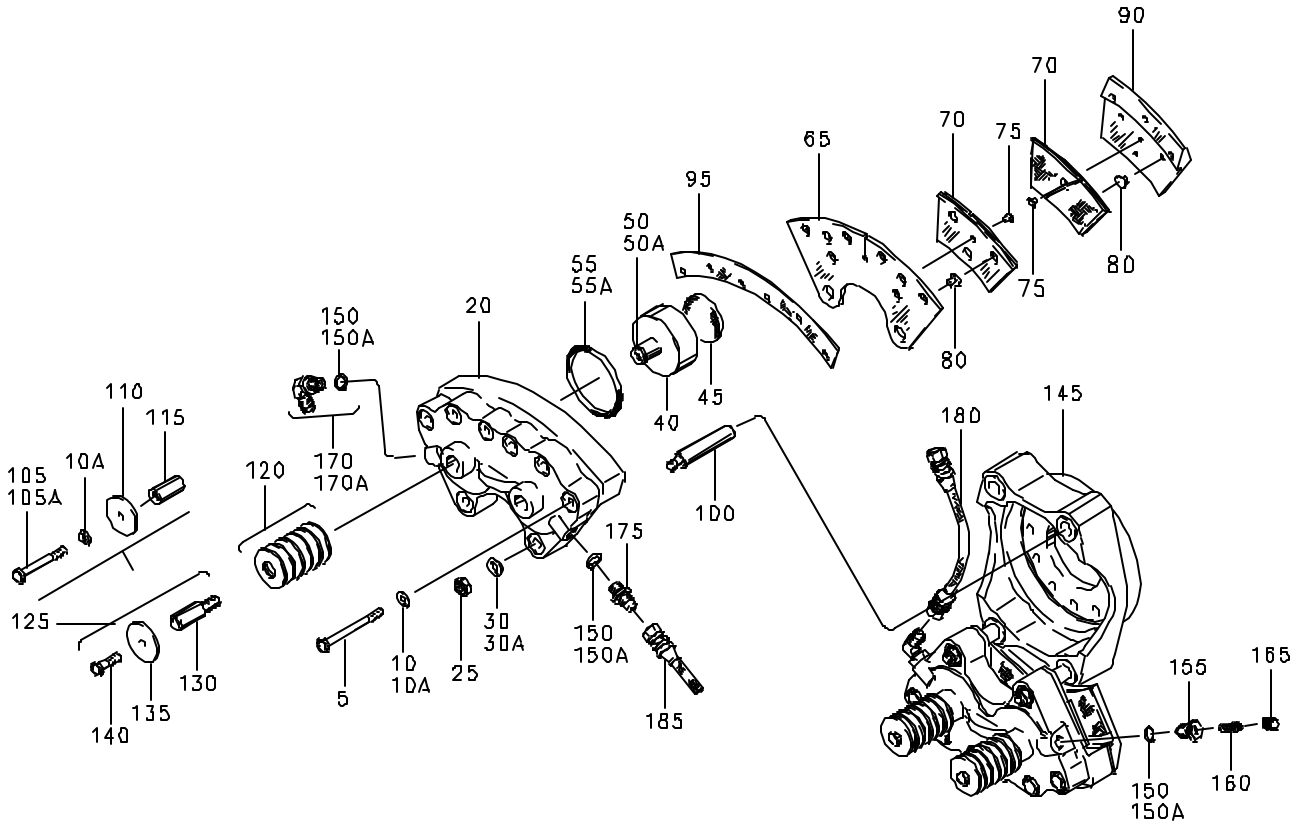
FIG. ITEM	PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	EFFECT CODE	UNITS PER ASSY.
– 70	162-07100	. ASSEMBLY, WHEEL HALF, OUTBOARD	A	1
– 70A	162-09100	. ASSEMBLY, WHEEL HALF, OUTBOARD	B	1
75	152-07100	. . WHEEL HALF, OUTBOARD	A	1
75A	152-09400	. . WHEEL HALF, OUTBOARD	B	1
80	214-03400	. . CUP, BEARING		1
85	214-01000	. CONE, BEARING, OUTBOARD		1
90	158-00800	. CAP, HUB	A	1
90A	158-01900	. CAP, HUB	B	1
95	155-00600	. RING, SNAP, OUTBOARD		1
100	160-00900	. ASSEMBLY, AIR VALVE	A	1
100A	160-01100	. . ASSEMBLY, AIR VALVE	B	1

– Item Not Illustrated



Main Brake Assembly
30-107 / 30-107A / 30-107B
IPL Figure 9

9. DETAILED PARTS LIST – MAIN BRAKE (30-107, 30-107A, 30-107B)

FIG. ITEM	PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	EFFECT CODE	UNITS PER ASSY.
9 -1	30-107	MAIN BRAKE ASSEMBLY (SUPSD BY 30-107C)	A	RF
9 -1A	30-107A (1)	MAIN BRAKE ASSEMBLY (SUPSD BY 30-107D)	B	RF
9 -1B	30-107B	MAIN BRAKE ASSEMBLY (SUPSD BY 30-107C)	C	RF
		BRAKE ATTACHING PARTS		
5	103-14500	BOLT (ABP4-24AM)		12
10	095-10400	WASHER (AN960-416)	AC	12
10A	095-10200	WASHER (AN960-416L)	AB	16
		* * *		
– 15	091-11400	ASSEMBLY, CYLINDER	A	1
– 15A	091-09900	ASSEMBLY, CYLINDER	B	1
– 15B	091-14100	ASSEMBLY, CYLINDER	C	1
20	061-09000	. CYLINDER		2
25	094-10400	. NUT (MS21044-N5)		4
30	095-10500	. WASHER (AN960-516)	AC	4
30A	095-10700	. WASHER (AN960-516L)	B	4
– 35	092-04500	. PISTON ASSEMBLY	AC	4
– 35A	092-04800	. PISTON ASSEMBLY	B	4
40	062-04700	. . PISTON		4
45	088-00100	. . INSULATOR		4
50	101-24900	. . O-RING	AC	4
50A	101-25000	. . O-RING	B	4
55	101-24200	. O-RING	AC	4
55A	101-24500	. O-RING	B	4

– Item Not Illustrated

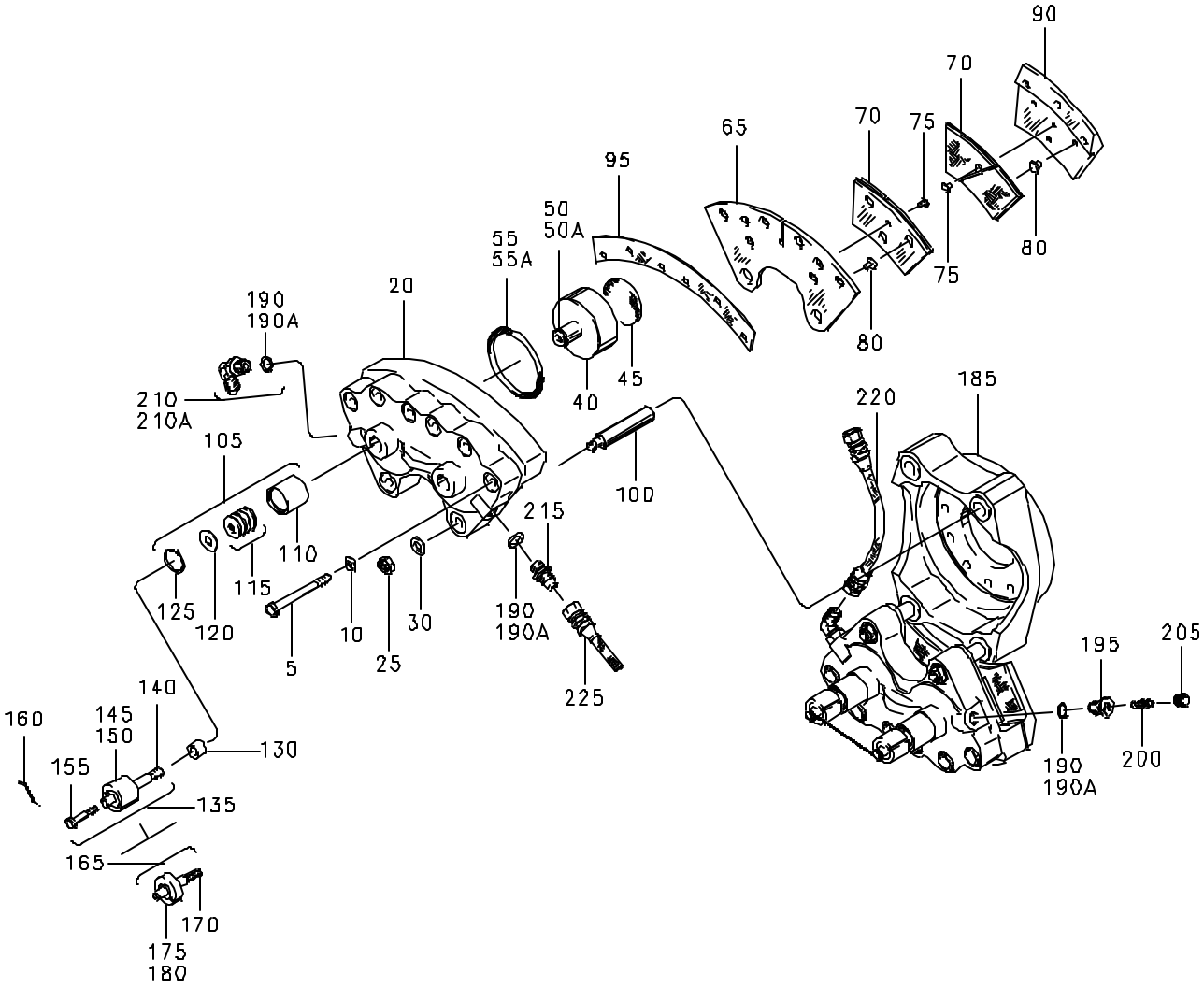
(1) Uses Skydrol fluid.

FIG. ITEM	PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	EFFECT CODE	UNITS PER ASSY.
– 60	073-06200	. ASSEMBLY, PLATE, PRESSURE		2
65	063-03500	. . PLATE, PRESSURE		1
70	066-09000	. . LINING		2
75	105-00200	. . RIVET		2
80	177-01600	. . PIN		6
– 85	074-04700	. ASSEMBLY, PLATE, BACK		4
90	063-03500	. . PLATE, BACK		1
70	066-09000	. . LINING		1
75	105-00200	. . RIVET		1
80	177-01600	. . PIN		3
95	068-03300	. SHIM, INSULATOR		4
100	069-01200	. BOLT, ANCHOR		4
105	103-11500	. BOLT	AB	4
105A	103-15300	. BOLT	C	4
110	095-16900	. WASHER		4
115	200-01300	. GUIDE, SPRING		4
120	095-16800	. SPRING, DISC	AB C	56 44
125	110-04900	. ASSEMBLY, STUD (SUPSD BY Items 10A [30-107 & -107A only] 105 or 105A, 110, 115)		NP
130	139-05500	. . STUD		NP
135	095-16900	. . WASHER		NP
140	103-10100	. . BOLT (AN4H-5A)		NP
145	075-13400	. ASSEMBLY, PLATE, TORQUE		1

– Item Not Illustrated

FIG. ITEM	PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	EFFECT CODE	UNITS PER ASSY.
150	101-24600	. O-RING	AC	4
150A	101-23000	. O-RING	B	4
155	081-00200	. SEAT, BLEEDER		1
160	079-00300	. SCREW, BLEEDER		1
165	183-00100	. CAP, BLEEDER		1
170	104-03100	. ASSEMBLY, FITTING	AC	2
170A	104-05500	. ASSEMBLY, FITTING	B	2
175	104-04900	. FITTING, INLET		1
180	207-01100	. ASSEMBLY, HOSE, LINK		1
185	207-01300	. ASSEMBLY, HOSE, INLET		1

– Item Not Illustrated



Main Brake Assembly
30-107C / 30-107D / 30-107E
IPL Figure 10

10. DETAILED PARTS LIST – MAIN BRAKE (30-107C, 30-107D, 30-107E)

FIG. ITEM	PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	EFFECT CODE	UNITS PER ASSY.
10 -1	30-107C	MAIN BRAKE ASSEMBLY (SUPSDS 30-107 and 30-107B)	A	RF
10 -1A	30-107D (1)	MAIN BRAKE ASSEMBLY (SUPSDS 30-107A)	B	RF
10 -1B	30-107E	MAIN BRAKE ASSEMBLY	C	RF
		BRAKE ATTACHING PARTS		
5	103-14500	BOLT (ABP4-24AM)		12
10	095-10400	WASHER (AN960-416)		12
		* * *		
– 15	091-16600	ASSEMBLY, CYLINDER	A	1
– 15A	091-17000	ASSEMBLY, CYLINDER	B	1
– 15B	091-22000	ASSEMBLY, CYLINDER, LEADING	C	1
– 15C	091-22001	ASSEMBLY, CYLINDER, TRAILING	C	1
20	061-09000	. CYLINDER		2
25	094-10400	. NUT (MS21044-N5)		4
30	095-10500	. WASHER (AN960-516)	AC	4
– 35	092-04500	. PISTON ASSEMBLY	AC	4
– 35A	092-04800	. PISTON ASSEMBLY	B	4
40	062-04700	. . PISTON		4
45	088-00100	. . INSULATOR		4
50	101-24900	. . O-RING	AC	4
50A	101-25000	. . O-RING	B	4
55	101-24200	. O-RING	AC	4
55A	101-24500	. O-RING	B	4
– 60	073-06200	. ASSEMBLY, PLATE, PRESSURE		2
65	063-03500	. . PLATE, PRESSURE		1

– Item Not Illustrated

(1) Uses Skydrol fluid.

FIG. ITEM	PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	EFFECT CODE	UNITS PER ASSY.
70	066-09000	. . LINING		2
75	105-00200	. . RIVET		2
80	177-01600	. . PIN		6
– 85	074-04700	. ASSEMBLY, PLATE, BACK		4
90	063-03500	. . PLATE, BACK		1
70	066-09000	. . LINING		1
75	105-00200	. . RIVET		1
80	177-01600	. . PIN		3
95	068-03300	. SHIM, INSULATOR		4
100	069-01200	. BOLT, ANCHOR		4
105	139-13300	. ASSEMBLY, CUP, RETRACT		4
110	139-13400	. . CUP, RETRACT		4
115	095-03700	. . SPRING, DISC		32
120	095-03600	. . WASHER		4
125	155-08200	. . RING, SNAP		4
130	067-08000	. SPACER	AB	4
135	139-13100	. ASSEMBLY, STUD, RETRACT	AB	4
140	139-12900	. . STUD, RETRACT	AB	4
145	139-12800	. . SLEEVE, FRICTION	AB	4
150	139-12700	. . SLEEVE, FRICTION	AB	4
155	103-01300	. . BOLT	AB	4
160	139-16600	. LOCKWIRE (MS20995-C32)		AR
165	111-11600	. ASSEMBLY, STUD, RETRACT	C	4
170	177-04400	. . PIN, FRICTION	C	4
175	203-00500	. . RING, FRICTION	C	4
180	200-02300	. . COLLAR, SPRING RETAINER	C	4

– Item Not Illustrated

FIG. ITEM	PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	EFFECT CODE	UNITS PER ASSY.
185	075-13400	. ASSEMBLY, PLATE, TORQUE		1
190	101-24600	. O-RING	AC	4
190A	101-23000	. O-RING	B	4
195	081-00200	. SEAT, BLEEDER		1
200	079-00300	. SCREW, BLEEDER		1
205	183-00100	. CAP, BLEEDER		1
210	104-03100	. ASSEMBLY, FITTING	AC	2
210A	104-05500	. ASSEMBLY, FITTING	B	2
215	104-04900	. FITTING, INLET		1
220	207-01100	. ASSEMBLY, HOSE, LINK		1
225	207-01300	. ASSEMBLY, HOSE, INLET		1

– Item Not Illustrated

Cleveland
Wheels & Brakes

Parker Hannifin Corporation
Aircraft Wheel & Brake
1160 Center Road
Avon, Ohio 44011 USA
1-800-BRAKING (272-5464)
216-937-1272 ● FAX 216-937-5409

PRODUCT REFERENCE MEMO

METALLIC BRAKE LINING CONDITIONING PROCEDURE

The brake lining material used in this brake assembly is an iron based metallic composition. This material must be properly conditioned (glazed) in order to provide optimum service life.

Dynamometer tests have shown that at low braking energies, unglazed linings experience greater wear and the brake discs can become severely scored.

Conditioning may be accomplished as follows:

1. Perform two (2) consecutive full stop braking applications from 30 to 35 kts. Do not allow the brake discs to cool substantially between stops.

2. On aircraft with tail wheels, exercise caution during stopping to prevent tail lifting. Due to the efficiency of these brakes, extremely hard braking could result in lifting the tail from the ground.

This conditioning procedure will wear off high spots and generate sufficient heat to glaze the linings. Once the linings are glazed, the braking system will provide many hours of maintenance free service.

Visual inspection of the brake disc will indicate the lining condition. A smooth surface, without grooves, indicates the linings are properly glazed. If the disc is rough (grooved), the linings must be reglazed. The conditioning procedure should be performed whenever the rough disc condition is evident.

Light use, such as in taxiing, will cause the glaze to be worn rapidly.

Use caution in performing this procedure, as higher speeds with successive stops could cause the brakes to overheat resulting in warped discs and/or pressure plates.

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PRODUCT REFERENCE MEMO

AVAILABILITY OF GENERAL MAINTENANCE INFORMATION AND TORQUING PROCEDURES

EFFECTIVITY: All Parker Hannifin (Cleveland Wheels & Brakes) External Disc Design wheel & brake assemblies.

APPLICABILITY: Aircraft converted per STC approved kits to use Cleveland External Disc Design wheel & brake assemblies.

REASON: This PRM is issued to inform Wheel & Brake Conversion Kit users and installers that information regarding general maintenance and proper bolt / nut torquing procedures is available. This information is contained in the Cleveland Wheels & Brakes Component Maintenance Manual (CMM) and in the Cleveland Technicians Service Guide, PRM64. Most Cleveland Conversion Kits were designed prior to creation of the CMM. Parker Hannifin is in process of upgrading kit paperwork to include a requirement to use the CMM and PRM64 as wheel & brake service information. This PRM serves the same purpose for kits whose paperwork has not yet been upgraded.

DESCRIPTION: The Cleveland Wheels & Brakes Component Maintenance Manual and PRM64, Technician's Service Guide shall be used as service information when performing general maintenance on Cleveland External Disc Design wheels & brakes. Particular attention should be paid to instructions regarding wheel bolt torquing procedures.

NOTE: Refer to the CMM or PRM64 to determine the required torque procedure (Dry or Lubtork). While using the required torque procedure, observe the torque required to turn the nut (free running torque). This value must be added to the value stated on the casting or nameplate (or in the CMM or PRM64) to obtain a true torque value. Proper torque is imperative to prevent premature bolt or mating component failure.

COMPLIANCE: Highly Recommended.

APPROVAL: The engineering contents of this Product Reference Memo are FAA DER approved.

WEIGHT & BALANCE: Not applicable.

PUBLICATIONS: Cleveland Wheels & Brakes Component Maintenance Manual and PRM64 are available from:

Customer Support
Parker Hannifin Corporation
Aircraft Wheel & Brake
1160 Center Road
Avon, Ohio

Phone: 1-800- BRAKING (272-5464)
FAX: 216-937-5409

REGISTRO AERONAUTICO ITALIANO

DIREZIONE CERTIFICAZIONE MATERIALE AERONAUTICO

Federal Aviation Administration
Department of Trasportation
U.S. Embassy
27, Blvd. du Regent
BRUXELLES BELGIUM

Aircraft Wheel & Brake Division
Parker Hannifin Corporation
1160 Center Road
Avon, Ohio 44011
U.S.A.

Our Ref.:96/3446/MAE
August 21, 1996

Subject: FAA STC SA497GL - Installation of Aircraft Wheel & Brake Conversion Kits 199-80/199-80A
Italian Validation.

Dear Sirs,

according to the existing Bilateral Airworthiness Agreement between USA and Italy, and following satisfactory accomplishment of RAI evaluation, we hereby confirm RAI validation of the FAA STC SA497GL. This validation is limited to the following models already certified in Italy:

Rockwell Commander 680F, 680FL(P), 680T, 680V, 690A, 690B.

Will you please consider RAI in the mailing list for continuous airworthiness information for the related STC installation.

Yours faithfully

MAE Director
Ing. Filippo De Florio

CE/tc

c.c.: DD.TT. RAI

Parker Hannifin Corporation
Aerospace/Aircraft Wheel & Brake
1160 Center Road
Avon, OH 44011

Date: _ _/_ _/20_ _

Subject: Letter of Authorization for Installation of STC'd Conversion Kits

To whom it may concern:

Parker Hannifin Corporation, Aircraft Wheel & Brake Division, hereby states that the following item(s):

KIT NUMBER: 199-_____

FAA APPROVAL: 1) STC # _____

NO OTHER APPROVALS NECESSARY

AUTHORIZATION TO INSTALL: With the sale of this STC KIT, OWNER of the Supplemental Type Certificate agrees to permit the buyer or buyer's agent or agency to use the certificate to alter the product under the terms and conditions of this STC.

A/C MAKE: _____

A/C MODEL_____

TAIL # _____

Regards,

Technical Support Team
Technical Hotline (800) 272-5464
Clevelandwbhelp@parker.com
Web-site: www.clevelandwheelandbrake.com
Manufacturer of Cleveland Wheels & Brakes

United States of America

Department of Transportation — Federal Aviation Administration

Supplemental Type Certificate

Number SA497GL

This certificate, issued to Aircraft Wheel & Brake Division
Parker Hannifin Corporation
1160 Center Road
Avon, Ohio 44011

certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 3 *of the* Civil Air *Regulations.* See Type Certificate Data Sheet 2A4 for complete certification basis.

Original Product — Type Certificate Number 2A4
Make Rockwell Commander
Model 560F, 680F, 680FL(P), 680T, 680V, 680FL, 680W, 681, 685, 690, 690A, 690B, 690C, 690D, 695, 695A, and 695B

Description of Type Design Change
Install Aircraft Wheel & Brake Conversion Kit 199-80, revision H, dated December 16, 1985 (MIL-H-5606 System) in accordance with Cleveland Wheels & Brakes Installation Drawing 50-51, revision K, dated December 16, 1985, or 199-80A, revision E, dated December 14, 1984, (Skydrol System) in accordance with Cleveland Wheels & Brakes Installation Drawing 50-52, revision H, dated December 14, 1984, or other FAA approved revisions of Kits 199-80 and 199-80A, and installation drawings 50-51 and 50-52.

Limitations and Conditions
This STC approval should not be incorporated in any aircraft of these specific models on which other approved modifications are incorporated, unless it is determined that the interrelationship between this change and any of those previously incorporated approved modifications will not introduce any adverse effect upon the airworthiness of the aircraft.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application December 16, 1980
Date of issuance January 23, 1981
Date reissued
Date amended April 1, 1981, June 17, 1981
February 6, 1985, January 8, 1986

By direction of the Administrator

W. F. Horn *(Signature)*
Manager, Chicago Aircraft Certification Office
Central Region, ACE-115C
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21 47

FAA Form 8110-2 (10-68)