AIRCRAFT WHEEL & BRAKE DIVISION **FAA-PMA**

PARKER HANNIFIN CORPORATION

AVON, OHIO

PARTS LIST

199-115 CONVERSION KIT

Cessna Conquest Model 441

PART NO.	CODE NO.	DRAWING REVISION	DESCRIPTION	QUANTITY
30-143 LH	030-14300	Rev.E dated 04-11-2000	Brake Assembly (Left)	1
30-143 RH	030-14350	Rev.E dated 04-11-2000	Brake Assembly (Right)	1
40-169	040-16900	Rev.B dated 03-19-1987	Wheel Assembly	2
10-69	010-06900	Rev.D dated 05-05-2004	Master Cylinder Assembly	2
AN4-7A	103-14700	----------	Bolt	16
AN960-416	095-10400	----------	Washer	32
AN365-428	094-10300	----------	Nut	16

Publication Package (P/N PP199-115)

IM199-115	Rev.D dated 01-29-2004	Installation Manual	1
50-84	Rev. B dated 03-19-1987	Drawing	1
SA644GL		Supplemental Type Certificate	1
		Warranty Registration Card	1
		Flight Manual & POM Revisions	1

NOTES:

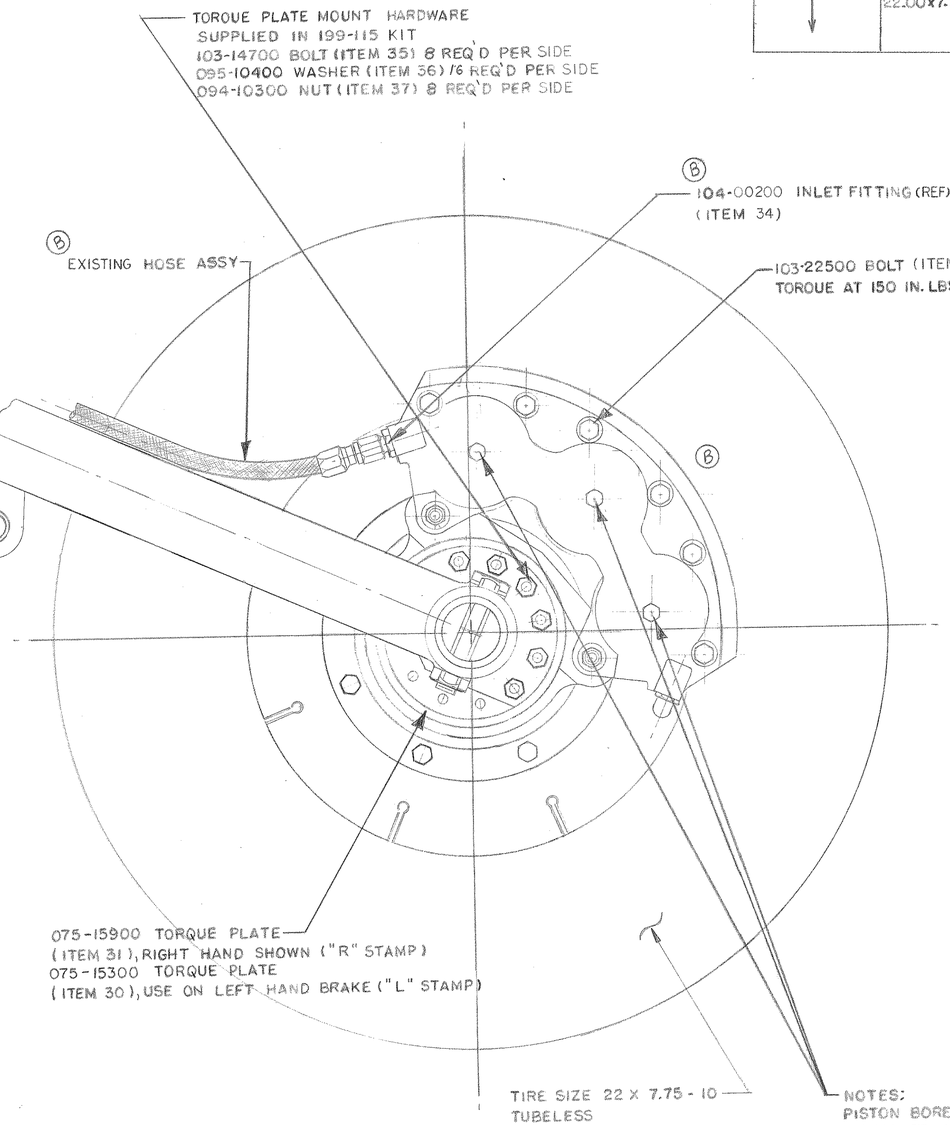
1. This kit will convert one aircraft to Cleveland Wheels and Brakes.
2. The brake assemblies are designed for use with MIL-H-5606 hydraulic fluid.
3. The wheel assembly is designed for use with a 22 x 7.75-10 8 or 10PR tubeless bias ply tire.

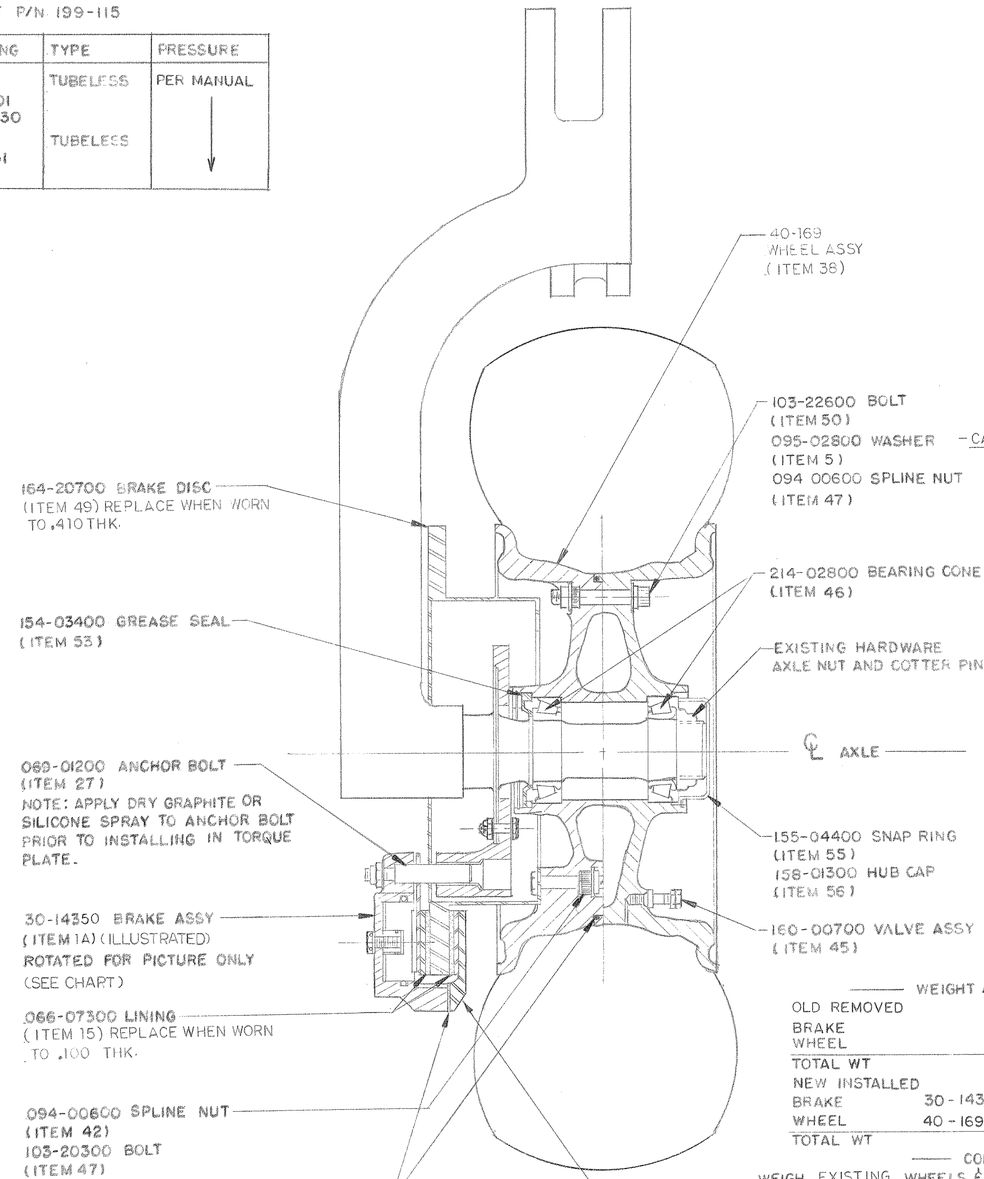
199-115
Rev. A 08-24-1982 (0270-54)
Rev. B 01-26-1983 (0271-64)
Rev. C 09-02-1986 (0279-37)
Rev. D 03-19-1987 (0282-56)
Rev. E 10-07-1988 (0292-91)
Rev. F 05-15-1989 (0296-47)
Rev. G 09-16-1992 (0306-73)
Rev. H 01-29-2004 (0359-69)
Rev. J 06-17-2004 (0361-73)

50-84					B
CHANGE NOTICE	LETTER	DESCRIPTION OF CHANGE	CHG. BY	DATE	CHK'D BY
219-37	A	REVISED & REDRAWN FOR "MANDAU" FORMAT	NA	9-2-86	BB
282-86	B	SEE CHANGE NOTICE	BB	3-19-87	BB

APPLICABILITY OF AIRCRAFT INSTALLATION
CLEVELAND KIT P/N 199-115

MODEL	TIRE SIZE	PLY RATING	TYPE	PRESSURE
CESSNA CONQUEST, MODEL 441	22.00X7.75-10	8 S/N 0001 THRU 0130	TUBELESS	PER MANUAL
↓	22.00x7.75-10	10 S/N 0131 AND ON	TUBELESS	↓





WEIGHT AND BALANCE DATA

OLD REMOVED		
BRAKE		LBS
WHEEL		LBS
TOTAL WT		LBS
NEW INSTALLED		
BRAKE	30-143	11.5 LBS
WHEEL	40-169	23.0 LBS
TOTAL WT		34.5 LBS

COMPARISON WEIGHT

WEIGH EXISTING WHEELS & BRAKES, SUBTRACT FROM NEW WEIGHTS TO DERIVE WEIGHT INCREASE CREATED BY 199-115 KIT INSTALLATION. MULTIPLY WEIGHT CHANGE BY MOMENT (APPLICABLE AIRCRAFT) AND REVISE WEIGHTS AND BALANCE INFORMATION IN LOG BOOK

FOR USE WITH MIL-H-5606 BRAKE FLUID

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

NEXT ASSEMBLY — QTY — FINAL ASSEMBLY — QTY

ZYGLO PER MIL-I-6866 STAMP P ON PART

MAGNAFLUX PER MIL-I-6868 STAMP M ON PART

√ MACHINED SURFACES PER MIL STD 10 UNLESS OTHERWISE NOTED

UNLESS NOTED ALL THREADS PER MIL-S-7742

PATTERN, CASTING OR BLANK NO.

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

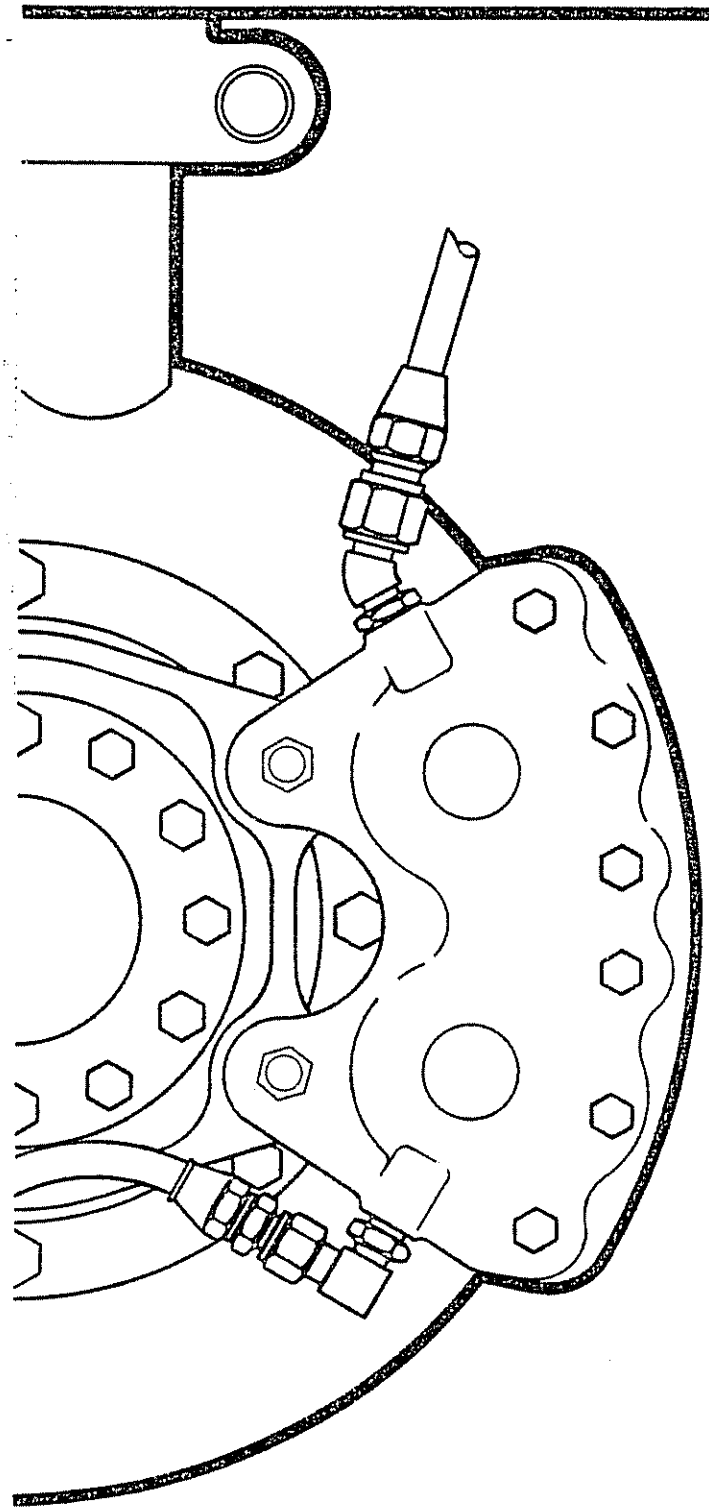
BREAK SHARP EDGES .010 UNLESS NOTED. REMOVE ALL BURRS BEFORE PLATING. DRILL PER INSP. PROCEDURE NO. 114.

DRAWN BY VR 9-26-86
CHECKED BY
SCALE 1/2=1

Cleveland Wheels & Brakes
Aircraft Wheel and Brake Division
Parker Hannifin Corporation
1160 Center Road
Avon, Ohio 44011

NAME 199-115 CONVERSION KIT INSTALLATION DRAWING — 50-84

Cleveland
Wheels & Brakes



Conversion Kit
Installation Manual

Kit Number 199-115

For

Cessna Aircraft

Conquest 441

Parker
General Aviation

Parker Hannifin Corporation
Aircraft Wheel & Brake Division
1160 Center Road
Avon Ohio 44011 USA
(216) 934 5221 871 6424

LIST OF REVISIONS

REVISION / DCN	DATE	PAGE	DESCRIPTION	APVD
Initial Release (279-37)	09/02/1986	---	Installation Instructions Cleveland Wheels & Brakes Conversion Kit 199-115	BB
Rev A 282-56	03/19/1987	3	Sec 6.2 was: "Disconnect and remove Lower Hydraulic Line and cap fitting on strut . . ."	BB
		4	Sec 6.17 was: "Install Inlet Fitting Item #59, then slide . . . "	
			Sec 6.20 was: "Install new Hydraulic Hose Assembly Item #60 between Strut Fitting and Brake Inlet Fitting Item #59."	
		21 & 22	Item 25, Qty 2 was 1	
			ADD Item #34	
			DELETE: First Call-out of Item #15 as part of Pressure Plate Assembly,	
			Remaining Call-out OK. Item#15 revised to no longer be part of Back Plate Assembly, and Qty 6 was 3.	
		23	ADD Items 34 & 25	
		26	DELETE "Item 59, 104-47, 104-04700, Fitting (4-V50X), Qty 2"	
			DELETE "Item 60, 207-3, 207-00300, Hose Assembly, Qty 2"	
Rev B 296-47	05/15/1989	18	Sect 12.3.3.4: "Lock-Tite 609" was "Lock-Tite 601"	BB
Rev C 306-73	09/16/1992	24	Add Item 84: "155-69 155-06900 Retaining Ring" Qty 1	BB
		25	Add Item Number: "84"	
Rev D 0359-69	01/29/2004	24	Item 75: "102-202 102-20200 Screw" -was "111-43 111-04300 Screw & Washer Assembly"	BB
			ADD Item 75A "95-103 095-10300 Washer" Qty 1	
			Item 82: "166-198 166-19800" was "166-16 166-01600"	
			ADD "(REF) 199-577 199-57700 Seal Repair Kit"	
		25	ADD Call-out for Item 75A	

INSTALLATION INSTRUCTIONS
Cleveland Wheels & Brakes Conversion Kit 199-115

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INSTALLATION INSTRUCTIONS
Cleveland Wheels & Brakes Conversion Kit 199-115

1. INTRODUCTION.

1.1 This manual is published for the guidance of personnel responsible for the installation of Cleveland Conversion Kit 199-115.

1.2 Each kit contains all materials and instructions needed to replace existing equipment with Cleveland wheels and brakes. Kit 199-115 will completely retrofit the aircraft to Cleveland wheels and brakes.

2. TSO NOTICE.

2.1 The wheels and brakes used in this conversion kit carry a "TSO" marking which identifies them as having been fully laboratory tested and qualified to meet the applicable Federal Aviation Agency (FAA) specifications and requirements.

2.2 After final certification, substitution of critical parts or changes of processes or materials are not permitted without requalification of the assemblies and resubmittal of the test data to the FAA for approval.

2.3 FAA regulations subject both Parker Hannifin, Aircraft Wheel and Brake Division and the user to constant surveillance to assure that uncompromising Quality Assurance materials and processing controls are maintained in order to provide replacement parts that are the same as the parts originally certified in the assembly.

3. APPLICABILITY.

3.1 "KIT 199-115":

MAKE	MODELS
Cessna	441

4. ORDER INFORMATION.

4.1 To order spare parts, contact the nearest Parker Hannifin, Aircraft Wheel & Brake distributor in your area, or call Parker Hannifin, Aircraft Wheel & Brake Division, Customer Service at 1-800-BRAKING for assistance.

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5 DESCRIPTION.

5.1 The brake is a single caliper, 3 piston external disc design, with sintered metallic lining. It is suitable for use with MIL-H-5606 brake fluid, and is composed of the following parts listed on page 21.

5.2 The wheel is cast magnesium and conforms to all Tire and Rim Association standards for a 6.50-10 divided type wheel, suitable for use with all 22 x 7.75-10 tires. The wheel is designed for tubeless tires only. A rubber lip seal on the inner wheel half protects the bearings. It is composed of the following parts listed on page 19.

5.3 The master cylinder is a reservoir type, push actuated design. Piston bore diameter is .875 inch and stroke is 1.44 inch. It is suitable for use with MIL-H-5606 brake fluid,and is composed of the following parts listed on page 24.

6. INSTALLATION.

6.1 Jack aircraft in accordance with Cessna Service Manual, deflate main wheels completely, and remove and retain axle nut. Remove existing main gear wheels.

6.2 Disconnect lower hydraulic line at brake and cap. Next, disconnect existing brake assemblies from axle and remove.

6.3 The brakes are shipped from the factory as a complete assembly.

6.4 The wheel assemblies are shipped from the factory as a complete assembly. The bearings are packed with grease and installed in the wheel halves.

-NOTE-

Extended storage of lubricated bearings
may require relubrication.

6.5 Remove snap ring Item #55, hub cap Item #56, and bearing cone Item #46 from the outboard side of wheel assembly Item #38 and place on a clean surface to avoid contamination.

6.6 Remove all eight (8) bolts Item #50, and washers Item #51 to separate wheel halves.

6.7 Position disc Item #49 and inner wheel half Item #39 on a flat surface with the register side up.

6.8 Place serviceable tire over inner wheel half Item #39 and then place outer wheel half Item #43 in tire making sure to properly align inner and outer registers.

6.9 Slide tie bolts Item #50, and washers Item #51 through wheel assembly, engage to spline nuts Item #42 in inner wheel half and torque to 150 in-lbs.

6.10 Inflate tire to proper pressure in safety cage.

6.11 Inspect bearing cone Item #46 for contamination and/or solidification at every periodic inspection. Repack wheel bearings with Mobilgrease 77, Mobilux EP2 or equivalent if required.

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6.12 Check for burrs or rough threads on axle and axle nut.

6.13 Mount torque plate Item #30 (left side) or Item #31 (right side) to axle flange using new bolts Item #35, nuts Item #37 and washers Item #36. Torque at 150 in-lbs.

-NOTE-

Bolt head to be towards the wheel. Orientation as shown on view A. Right and Left Torque Plates are marked "L" and "R" for identification purposes.

6.14 Mount wheel and tire assembly on axle as shown in Installation Drawing 50-84, View B.

6.15 Apply a thin coat of bearing grease on axle nut and threads. Install bearing cone Item #46, in wheel. Install axle nut on axle. Tighten axle nut to 150 to 200 in-lbs of torque while rotating the wheel to insure proper seating of the bearings. Back off the axle nut to zero torque, then retorque the nut to 40 in-lbs while rotating the wheel. If the holes do not align, tighten the nut to the next available key position. Install a cotter pin. Install hubcap, Item #56 and snap ring, Item #55.

-NOTE-

Axle nut torque to be 40 in-lbs minimum of torque

6.16 Loosen six (6) tie bolts Item #20 on 30-143 brake assembly, and remove all three (3) back plates Item #18.

6.17 Slide new brake cylinder Item #2 into torque plate.

6.18 Install insulator shim Item #19 over tie bolts in housing.

6.19 Install back plates Item #18 between brake disc and inner wheel flange. Align back plate with bolts, and torque at 150 in-lbs.

6.20 Connect hydraulic hose assembly to brake inlet fitting Item #34.

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6.21 Remove existing Master Cylinders as detailed in Cessna 441 Maintenance Manual.

-NOTE-

Requires removal of pilot seat, carpet, scuff plate and access covers

6.22 Install new Master Cylinders Item #65 per Cessna Maintenance Manual using existing mounting hardware and fittings.

6.23 Refill fluid reservoirs and bleed brake system.

6.24 Install as required access covers, carpet, scuff plate and pilot seat.

6.25 Depress and release toe pedals several times. Rotate wheels by hand to check for excessive drag. A slight amount of drag is acceptable, however a severely bound-up system should be investigated and corrected. Drag could be caused by cocked lining, or air in hydraulic system.

6.26 Remove aircraft from jacks and condition linings per Section 9.

7. WEIGHT AND BALANCE COMPUTATIONS

Weight: 34.5 lbs. per wheel and brake assembly.

Complete Form 337 and make appropriate log book entries.

8. FLIGHT MANUAL INSERTS (Located in front cover pocket)

8.1 Attach label listed "Item installed in airplane" in flight manual as close as possible to the original section labeled Main Wheel Assembly. Enter the correct arm and moment in blocks provided. Zero items out for the original main wheel and brake assemblies that have been removed.

9. METALLIC BRAKE LINING CONDITIONING PROCEDURE

9.1 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.

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

9.3 Conditioning may be accomplished as follows:

9.3.1 Perform two (2) full stop braking applications from 30 to 35 knots, allowing the brake discs to cool between each stop.

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

9.3.3 Avoid light use, such as taxiing, which will cause the glaze to be worn rapidly.

10. WARRANTY REGISTRATION

10.1 Completely fill out enclosed warranty card and return promptly. Postage is prepaid.

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11. MAINTENANCE

11.1 Wheel Maintenance

11.1.1 Inspect wheel half flanges for cracks and corrosion.

11.1.2 Inspect brake disc assembly for cracks, excessive wear or scoring, rust and corrosion. Disc should be replaced when worn to a thickness of .410 in. See Figure 4.

11.1.3 Check for loose bolts and nuts and retighten or replace if necessary.

-NOTE-

No repair or replacement is recommended while equipment is on aircraft.

11.2 Brake Maintenance

11.2.1 Visually check the brake for hydraulic leakage.

11.2.2 If brake pedal is not firm, bleed brakes again.

11.2.3 Check for loose bolts and nuts and retighten or replace as necessary.

11.2.4 Visually check lining for excessive wear or edge chipping. Linings should be replaced when worn to a thickness of .100 in. See Figure 4.

11.2.5 Recommended wear limits for discs and linings - See Section 12.2.5.

12. OVERHAUL

12.1 Wheel Overhaul

-NOTE-

Should be accomplished only while wheel is removed from aircraft.

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12.1.1 Dismounting

12.1.1.1 Deflate tire. Back plates must be removed from brake before wheel removal. Remove hubcap and axle nut. Remove wheel and tire assembly from axle as a unit. Remove snap ring Item #55, grease seal Item #53 and bearing cones Item #46 from both wheel halves Items #39 and #43.

12.1.1.2 Break tire beads away from wheel flange with a bead breaker or pneumatic tire dismounter.

-CAUTION-

DO NOT USE TIRE IRONS.
THEY MAY DAMAGE THE WHEEL FLANGES OR TIRE BEADS.

12.1.1.3 Remove eight (8) bolts (disc att.) Item #47 from the inner wheel assembly and remove brake disc. Remove eight (8) bolts Item #50 and washers Item #51 to seperate the wheel halves.

12.1.1.4 Separate the wheel halves and remove the tire.

-NOTE-

Bearing cups Item #41 are shrunk fit into the wheel halves and should not be removed unless replacement is necessary. If a bearing cup is to be replaced, heat the wheel half to 149 degrees C (300 degrees F) maximum for 20 minutes before trying to remove the cup. Support the wheel hub while removing the bearing cup as shown in the following Figure 1.

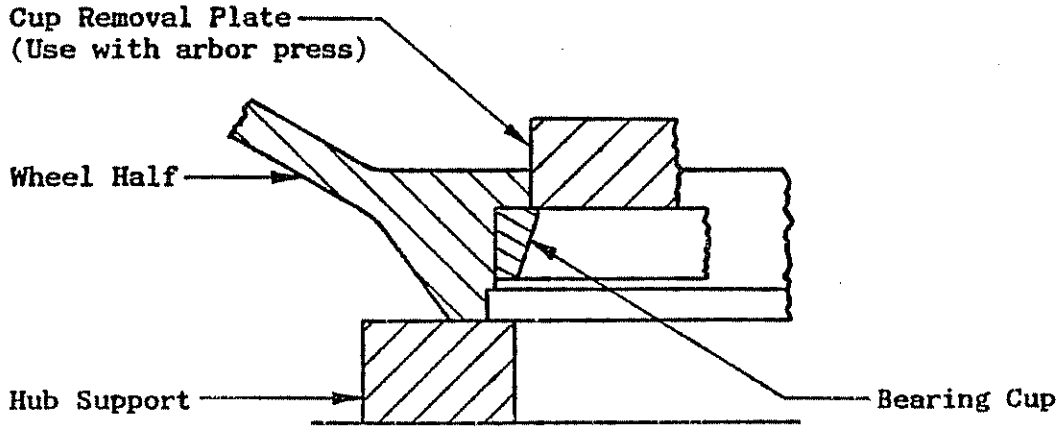

Figure 1 Supporting Wheel Hub

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12.1.2 Cleaning

12.1.2.1 Clean all metal parts in a suitable solvent and dry with a lint free cloth.

12.1.2.2 Wipe bearing grease seal clean with dry cloth. Do not use cleaning solvents on rubber components used in this wheel assembly.

12.1.2.3 Wash bearing cones in uncontaminated cleaning solution, rotate the bearing cones by hand while submerged in the solution. Repack bearings with grease immediately after inspection to prevent corrosion and place in a clean, closed container.

-CAUTION-

DO NOT SPIN DRY BEARINGS OR HANDLE BEARINGS WITH BARE HANDS.

12.1.2.4 Parts requiring fluorescent inspection are to be completely stripped using acetone or equivalent. Air dry parts after stripping is completed.

12.1.3 Inspection

-NOTE-

Inspect bolts Item #50 and wheel halves Item #40 & Item #43 after the fifth tire change, and then after the third subsequent tire change, for a total of twenty tire changes, and then at each and every tire change thereafter.

12.1.3.1 Magnaflux bolts Item #50 for cracks and breaks.

12.1.3.2 With dye penetrant, inspect wheel halves for cracks and breaks. Note in particular the bead seat, tube well, and web junction areas.

12.1.3.3 Visually inspect all metal parts for pitting, corrosion, cracks, breaks, uneven wear, and other surface defects.

12.1.3.4 Inspect bearing grease seal Item #53 for pits, cuts, and other defects. Replace as necessary.

12.1.3.5 Remove and replace O-ring Item #58.

12.1.4 Repair and Replacement

12.1.4.1 Repair scratches, nicks, corrosion, and other surface blemishes on wheel halves by sanding with emery cloth, removing as little material as possible. Polish repaired surfaces with 400 grit emery cloth.

12.1.4.2 Paint repaired areas with one coat of zinc chromate primer, and one coat of white lacquer.

-CAUTION-

NEVER PAINT WORKING SURFACES OF BEARING CUPS.

12.1.4.3 Replace all parts worn or damaged beyond limits of repair.

12.1.4.4 To replace bearing cups, proceed as follows:

12.1.4.4.1 Heat wheel halves to 149 degrees C (300 degrees F) maximum and cool cups to -18 degrees C (0 degrees F).

12.1.4.4.2 Support wheel hub and paint the ID of the hub with zinc chromate primer. Then press cup into wheel half as shown in Figure 2.

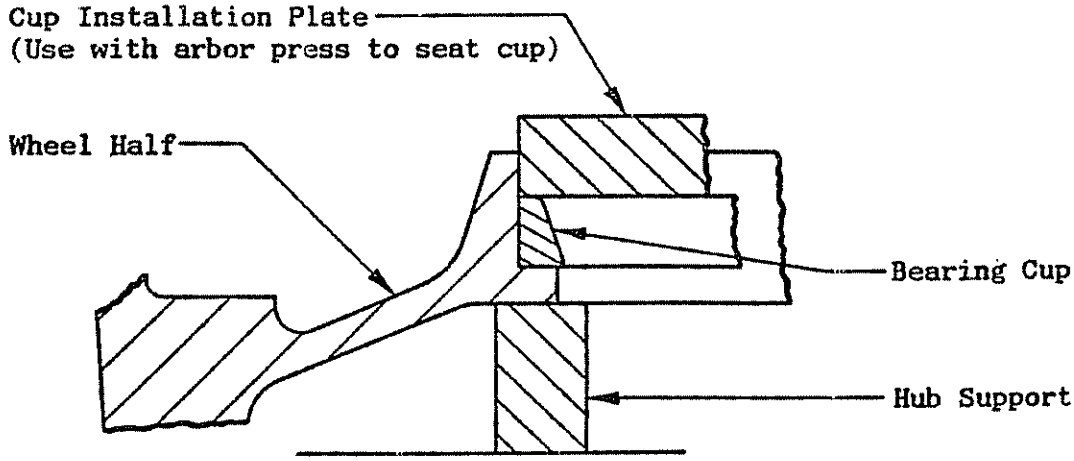

Figure 2 Supporting Wheel Hub

-NOTE-

The wet zinc chromate primer lubricates the parts to be pressed together and protects against galvanic corrosion

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12.1.5 Lubrication

12.1.5.1 Pack Mobilux EP2 or equivalent into bearing cones and smear grease on ends of rollers. Do not over lubricate. Spread a thin coat of grease on the surface of the bearing cups.

12.1.5.2 Lubricate threads of bolts and nuts and face of washers with thread compound.

12.1.6 Reassembly

12.1.6.1 Mount Disc Item #40 to inner wheel half Item #39 using eight (8) bolts (disc att.) Item #47. Torque at 150 in-lbs. Position disc and inner wheel half on a flat surface with register side up. Coat O-ring Item #58 with Dow Corning Molycoat 55M and install on inner wheel half.

-CAUTION-

Seal should not be twisted, but
Fully aligned in groove.

12211622 Place a serviceable tire over inner wheel half and then place outer wheel half Item #43 in the tire, making sure to properly align inner and outer wheel registers.

12.1.6.3 Using tie bolts Item #50 and washers Item #51, attach outer and inner wheel halves. Torque to 150 in-lbs.

12.1.6.4 Inflate tire to proper pressure in a safety cage.

12.1.6.5 Install bearing cone Item #46, grease seal Item #53 and snap ring Item #55 into inner wheel half. Install bearing cone Item #46, hubcap Item #56 and snap ring Item #55 into outer wheel half.

12.2 Brake Overhaul

12.2.1 Dismounting

12.2.1.1 Remove and cap hydraulic line.

12.2.1.2 Remove the cylinder tie bolts Item #20 and remove shim Item #19 and back plates Item #18. Slide cylinder housing from torque plate. (the torque plate will remain mounted to the axle).

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12.2.1.3 Remove the pressure plate assemblies, hydraulic inlet fitting and bleeder fitting.

12.2.1.4 The pistons may be removed by applying a slight amount of air pressure to the inlet or outlet ports of the cylinder.

-CAUTION-

PISTON MAY EXIT CYLINDER AT HIGH SPEED AND FORCE.
FACE CYLINDER BORES TOWARDS BENCH, AND
CUSHION PISTON TRAVEL WITH A SHOP RAG.

12.2.1.5 Remove the O-rings from cylinder.

12.2.1.6 If necessary, the anchor bolts may be removed by using a holding fixture and arbor press. If possible, place the anchor bolts into the holding fixture so that the anchor bolt is piloted while being removed. Assure that cylinder is square with arbor so that the anchor bolts do not cock.

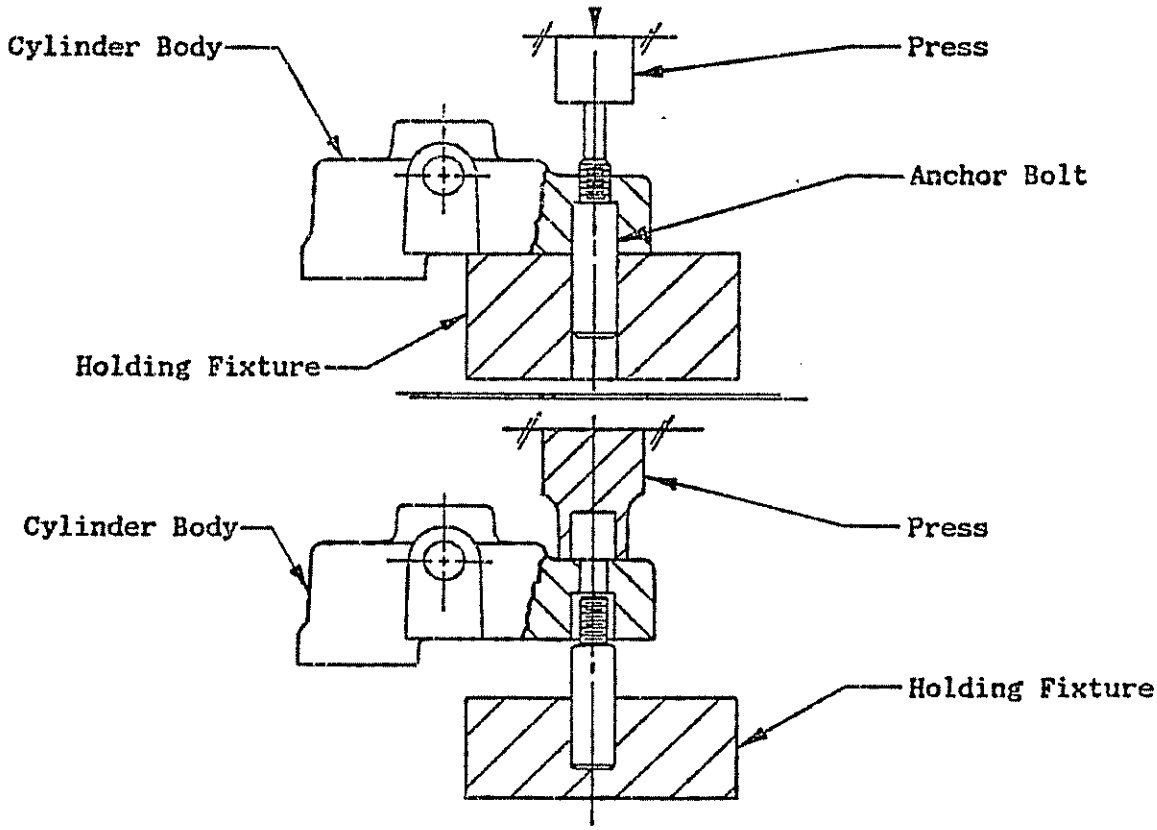

Figure 3 Anchor Bolt Removal

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12.2.1.7 Remove piston guide Item #8, bolt Item #10, stato-seal Item #9 and washer Item #9A from each piston bore.

12.2.2 Cleaning

12.2.2.1 Clean all metal parts in alcohol or suitable solvent.

12.2.2.2 Discard and replace all O-ring seals and stato-seals.

12.2.3 Inspection

12.2.3.1 Inspect brake cylinder Item #3 for cracks, especially in the lug area around the anchor bolts. Cracks in this area necessitate cylinder replacement.

12.2.3.2 Small nicks and light corrosion may be blended and removed with emery or sand paper. Any area from which the protective coating is removed should be thoroughly cleaned, and repainted with one coat of zinc chromate primer, and one coat of white lacquer.

12.2.3.3 Inspect the fitting ports and piston bores for contamination. Light scratches or nicks in the piston bores or on the chamfered surfaces within these bores may be polished out with #600 grit emery.

12.2.3.4 Thoroughly clean out any residue upon completion of step 12.2.3.3. Any external surfaces around the piston bores from which the protective coating has been removed should be cleaned, and painted with one coat of zinc chromate primer and one coat of white lacquer.

-NOTE-

Do not paint internal surfaces of piston bores.

12.2.3.5 Inspect pistons Item #5 and piston guides Item #8 for nicks or burrs. Remove nicks or burrs by polishing with #600 grit emery. Thoroughly clean before reinstallation.

12.2.3.6 Inspect brake lining for edge chipping and surface deterioration. See section 12.2.5 for wear limits.

12.2.3.7 Lining replacement can be accomplished by prying the old segments off of the carrier with a screwdriver. To install new pads, snap the new pad onto the carrier pins.

-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.

12.2.3.8 Inspect pressure plate Item #13 and back plates Item #18 for cracks or warpage. Replace if cracked or severely deformed. Inspect pins Item #14 for looseness. If loose, tighten with rivet set and anvil, part number 199-1A and 199-1B.

-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 within .015 TIR. Warped pressure plates can cause brake drag.

12.2.3.9 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 of 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 white lacquer.

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12.2.3.10 Inspect bolts Item #20 for cracks, thread damage, or corrosion and replace if necessary.

12.2.4 Reassembly

12.2.4.1 If removed, press anchor bolts Item #27 (ref. Figure 3) into brake and install washers Item #28 and nuts Item #29. Torque bolts to 60-70 in-lbs.

12.2.4.2 Install inlet and bleeder fitting. Install piston guide Item #8, bolt Item #10, stato-seal Item #9 and washer Item #9A into each cylinder bore. Torque bolt Item #10 at 30 in-lbs.

12.2.4.3 For piston installation, lubricate the piston, O-ring, piston guide 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. Tap the piston with a wooden or plastic mallet while alternately rotating. If considerable effort is required, remove piston and inspect pilot bore area for damage. If the bore is damaged, check the corresponding area of the piston guide for damage. Repair, if necessary, and repeat the above procedure.

12.2.4.4 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.

12.2.4.5 Slide the brake assembly into the torque plate, aligning the anchor bolts to the torque plate holes (cylinders must slide freely in torque plate).

12.2.4.6 Install washers Item #21, tie bolts Item #20, and insulator shim Item #19. Install back plate assemblies Item #18 between brake disc and wheel flange, and align with tie bolts. Torque bolts to 150 in-lbs.

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

12.2.5 Wear Limits

12.2.5.1 Maximum wear limits for brake linings and discs are shown in the following sketch. Disc warpage should not exceed .015 in.

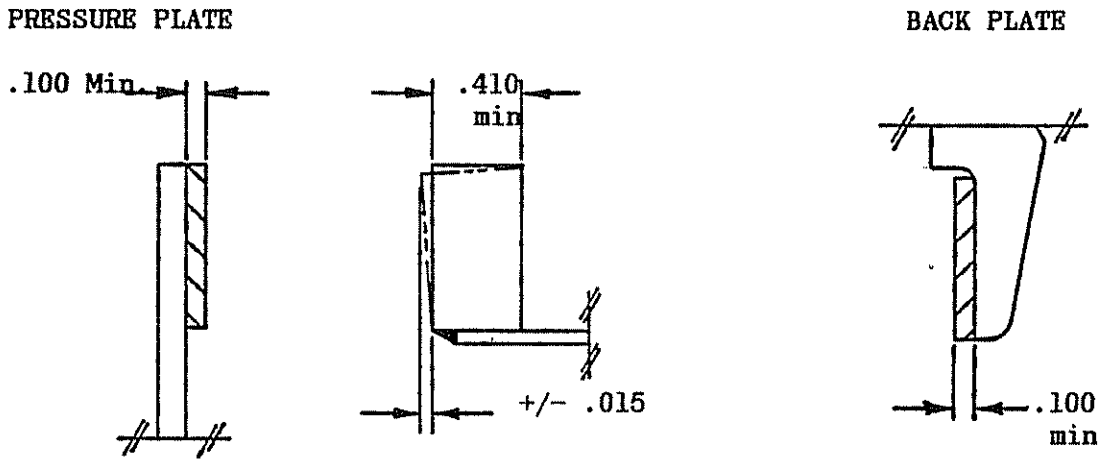

Figure 4
Lining and Disc Wear Limits

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12.3 Master Cylinder Overhaul

12.3.1 Disassembly

12.3.1.1 Remove nut Item #67 and clevis Item #66 from shaft end.

12.3.1.2 Remove retaining ring Item #69 and slide cover plate Item #70 and bronze bushing Item #72 from shaft.

12.3.1.3 Loosen screw and washer assembly Item #75 and remove from housing. Shaft and piston may now slide from the housing bore and spring Item #80 may be removed.

12.3.1.4 To remove piston Item #77, spring Item #78, stat-o-seal Item #74 and washer Item #73 from shaft Item #68, apply locktite loosener and loosen and remove spring guide Item #79.

12.3.1.5 Remove O-ring Item #76 from piston, and rubber ring Item #71 from housing.

12.3.2 Inspection

12.3.2.1 Inspect retaining ring Item #69 for cracks or burrs.

12.3.2.2 Inspect bushing Item #72, shaft Item #68, piston Item #77, and spring guide Item #79 for nicks, scratches or damaged threads.

12.3.2.3 Inspect housing Item #81 for scratches in the bore, damage to the threaded ports and cracks in the floor attach point.

12.3.2.4 It is recommended that O-ring Item #76 and stat-o-seal Item #74 be replaced at each overhaul.

12.3.3 Reassembly

12.3.3.1 Ensure that all parts have been cleaned and inspected.

12.3.3.2 Lubricate O-rings and stat-o-seal with MIL-H-5606 hydraulic fluid. Install O-Ring on piston.

12.3.3.3 Slide washer Item #73, Stat-o-seal Item #74, piston Item #77 and spring Item #78 onto small end of shaft Item #68.

12.3.3.4 Wipe small shaft end until thoroughly dry. Apply primer "T", then Lock-tite 609 to internal threads of spring guide Item #79 and install on small shaft end. Assure that end of of spring guide is flush to end of shaft. Allow 30 minutes cure time before subjecting sub-assembly to hydraulic fluid.

12.2.3.5 Fit one end of spring Item #80 over spring guide. Lubricate walls of housing bore with MIL-H-5606 fluid, then slide spring and shaft assembly into bore until top of piston is below bottom of reservoir. Secure with screw and washer assembly Item #75.

12.3.3.6 Place rubber ring Item #71 at top of housing reservoir, then slide bronze bushing Item #72 and cover plate Item #70 over shaft until cover plate seats to the rubber ring. Secure with retaining ring Item #69.

12.3.3.7 Install clevis Item #66 and nut Item #67 to shaft end and adjust clevis to obtain an overall length of 8.00 + .02/- .18 inches between eyes at full extension. Secure with lock nut, torqued at 35 in-lbs.

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Rev B, May, 1989

13. PARTS LIST

13.1 Wheel Parts List

40-169 WHEEL ASSEMBLY 6.50 - 10 TYPE III

ITEM	OLD P/N	CODE NO.	DESCRIPTION	QUANTITY
38	40-169	040-16900	Wheel Assembly	1
39	161-109	161-10900	Inner Wheel Half Assembly	1
40	151-99	151-09900	Wheel Half - Inner	1
41	LM501310	214-02900	Cup - Bearing (Timken)	1
42	42N010-054	094-00600	Spline Nut	16
43	162-94	162-09400	Outer Wheel Half Assembly	1
44	152-97	152-09700	Wheel Half - Outer	1
41	LM501310	214-02900	Cup - Bearing (Timken)	1
45	TR762-03	160-00700	Inflation Valve Assembly	1
46	LM501349	214-02800	Cone - Bearing (Timken)	2
47	AN5-15A	103-20300	Bolt - (Disc Att.)	8
49	164-207	164-20700	Brake Disc Assembly	1
50	MS21250-05-016	103-22600	Bolt	8
51	MS20002C5	095-02800	Washer	8
53	154-34	154-03400	Molded Grease Seal Assembly	1
55	155-44	155-04400	Snap Ring	2
56	158-13	158-01300	Hubcap	1
57	166-88	166-08800	Nameplate	1
58	AN6230B-47	101-09700	O-Ring	1

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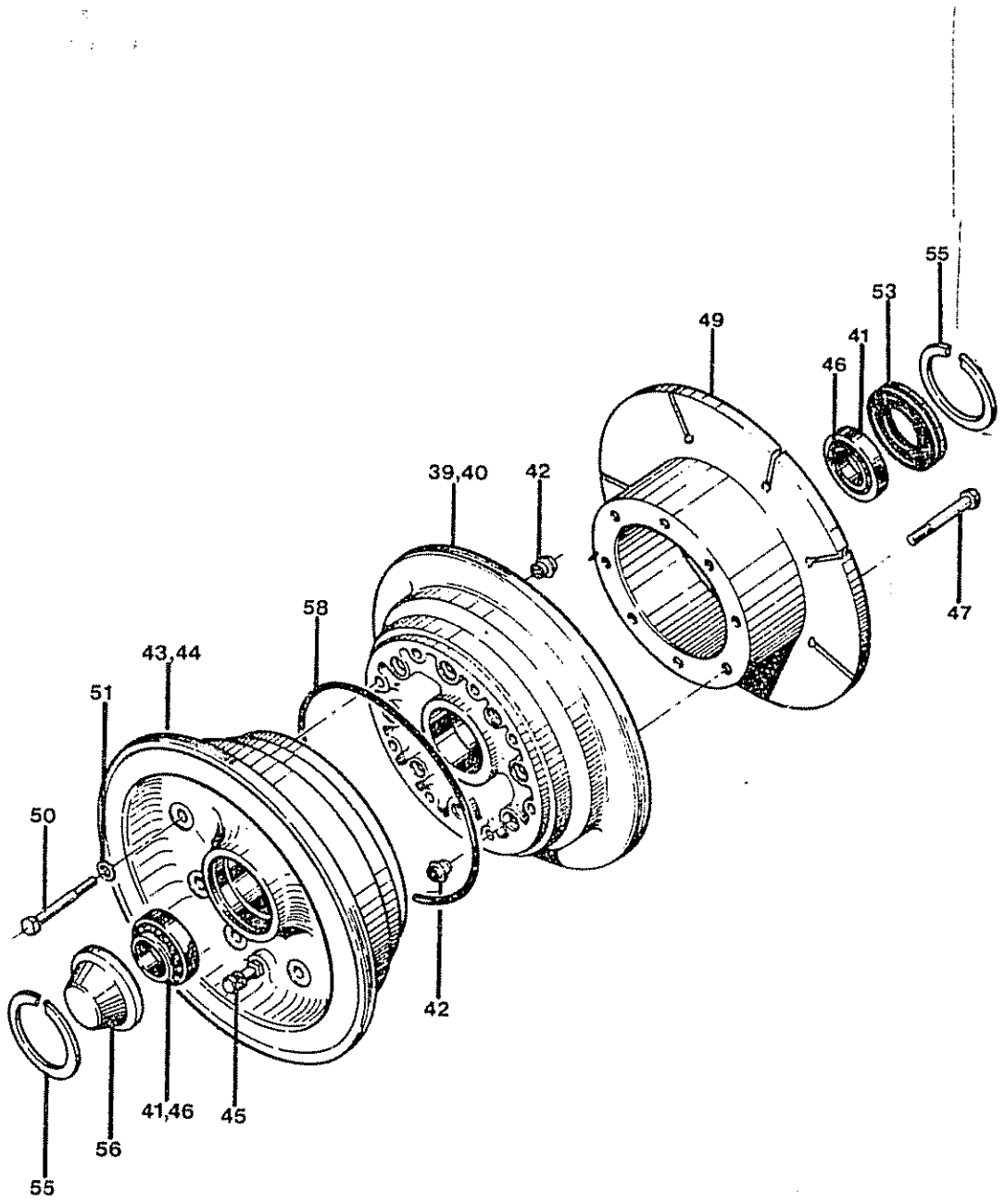

Figure 5
40-169 Wheel Assembly

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13.2 Brake Parts List

13.2.1 Left Hand Brake

PARTS LIST

30-143 BRAKE ASSEMBLY

ITEM	OLD P/N	CODE NO.	DESCRIPTION	QUANTITY
1	30-143	030-14300	Brake Assembly (Left)	1
2	91-136	091-13600	Cylinder Assembly	1
3	61-104	061-10400	Cylinder	1
4	92-51	092-05100	Piston Assembly	3
5	62-53	062-05300	Piston	3
6	82-20	082-02000	Friction Ring	3
7	88-1	088-00100	Insulator	3
8	139-81	139-08100	Piston Guide	3
9	95-26	095-02600	Stato-seal	3
9A	AN960-10L	095-10800	Washer	3
10	AN3-5A	103-00100	Bolt	3
11	MS28775-229	101-25700	O-Ring	3
12	73-60	073-06000	Pressure Plate Assembly	1
13	63-47	063-04700	Pressure Plate	1
14	177-16	177-01600	Pin	9
17	74-45	074-04500	Back Plate Assembly	3
18	64-38	064-03800	Back Plate	3
14	177-16	177-01600	Pin	9
15	66-73	066-07300	Lining	6
19	68-40	068-04000	Insulator Shim	1
20	AN5H-22A	103-22500	Bolt	6
21	AN960-516	095-10500	Washer	6
22	81-2	081-00200	Seat - Bleeder	1
23	FC-6446	079-00300	Screw - Bleeder	1
24	183-1	183-00100	Cap - Bleeder	1
25	MS28775-007	101-00700	O-Ring	2
27	69-12	069-01200	Bolt - Anchor	2
28	AN960-516L	095-10700	Washer	2
29	AN365-524	094-10400	Nut	2
30	75-153	075-15300	Torque Plate Assembly, L.H.	1
33	166-86	166-08600	Nameplate	1
34	AN815-4D	104-00200	Inlet Fitting	1

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13.2.2 Right Hand Brake

PARTS LIST

30-14350 BRAKE ASSEMBLY

ITEM	OLD P/N	CODE NO.	DESCRIPTION	QUANTITY
1A	30-14350	030-14350	Brake Assembly (Right)	1
2	91-136	091-13600	Cylinder Assembly	1
3	61-104	061-10400	Cylinder	1
4	92-51	092-05100	Piston Assembly	3
5	62-53	062-05300	Piston	3
6	82-20	082-02000	Friction Ring	3
7	88-1	088-00100	Insulator	3
8	139-81	139-08100	Piston Guide	3
9	95-26	095-02600	Stato-seal	3
9A	AN960-10L	095-10800	Washer	3
10	AN3-5A	103-00100	Bolt	3
11	MS28775-229	101-25700	O-Ring	3
12	73-60	073-06000	Pressure Plate Assembly	1
13	63-47	063-04700	Pressure Plate	1
14	177-16	177-01600	Pin	9
17	74-45	074-04500	Back Plate Assembly	3
18	64-38	064-03800	Back Plate	3
14	177-16	177-01600	Pin	9
15	66-73	066-07300	Lining	6
19	68-40	068-04000	Insulator Shim	1
20	AN5H-22A	103-22500	Bolt	6
21	AN960-516	095-10500	Washer	6
22	81-2	081-00200	Seat - Bleeder	1
23	FC-6446	079-00300	Screw - Bleeder	1
24	183-1	183-00100	Cap - Bleeder	1
25	MS28775-007	101-00700	O-Ring	2
27	69-12	069-01200	Bolt - Anchor	2
28	AN960-516L	095-10700	Washer	2
29	AN365-524	094-10400	Nut	2
31	75-159	075-15900	Torque Plate Assembly, R.H.	1
33	166-86	166-08600	Nameplate	1
34	AN815-4D	104-00200	Inlet Fitting	1

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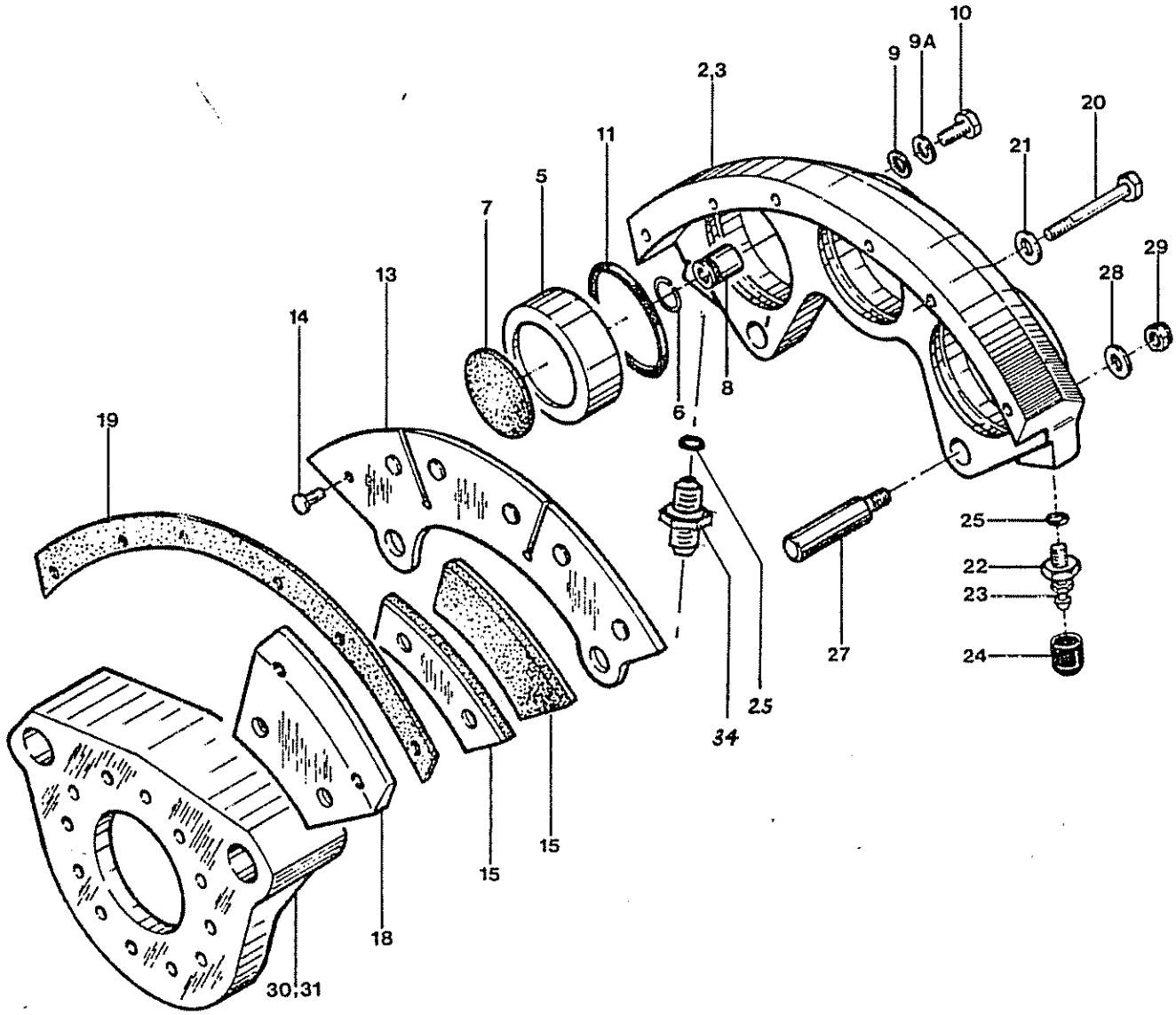

Figure 6
30-143 (L.H.) & (R.H.) Brake Assembly

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13.3 Master Cylinder Parts List

PARTS LIST

10-69 MASTER CYLINDER ASSEMBLY

ITEM	OLD P/N	CODE NO.	DESCRIPTION	QUANTITY
65	10-69	010-06900	Master Cylinder Assembly	1
66	143-10	143-01000	Clevis	1
67	AN316-5	094-04300	Nut – Check	1
68	142-80	142-08000	Shaft	1
69	155-63	155-06300	Retaining Ring	1
70	147-7	147-00700	Cover Plate	1
71	101-600A	101-60001	Rubber Ring	1
72	145-64	145-06400	Bronze Bushing	1
73	95-128	095-12800	Washer	1
74	95-26	095-02600	Stat-O–Seal	1
75	102-202	102-20200	Screw	1
75A	95-103	095-10300	Washer	1
76	MS28775-115	101-01300	O-Ring	1
77	148-47	148-04700	Piston	1
78	82-55	082-05500	Spring	1
79	145-65	145-06500	Spring Guide	1
80	82-57	082-05700	Spring	1
81	144-67	144-06700	Housing	1
82	166-198	166-19800	Nameplate	1
83	140-19	140-01900	Filler Plug	1
84	155-69	155-06900	Retaining Ring	1
(REF)	199-577	199-57700	Seal Repair Kit	

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Rev D Jan., 2004

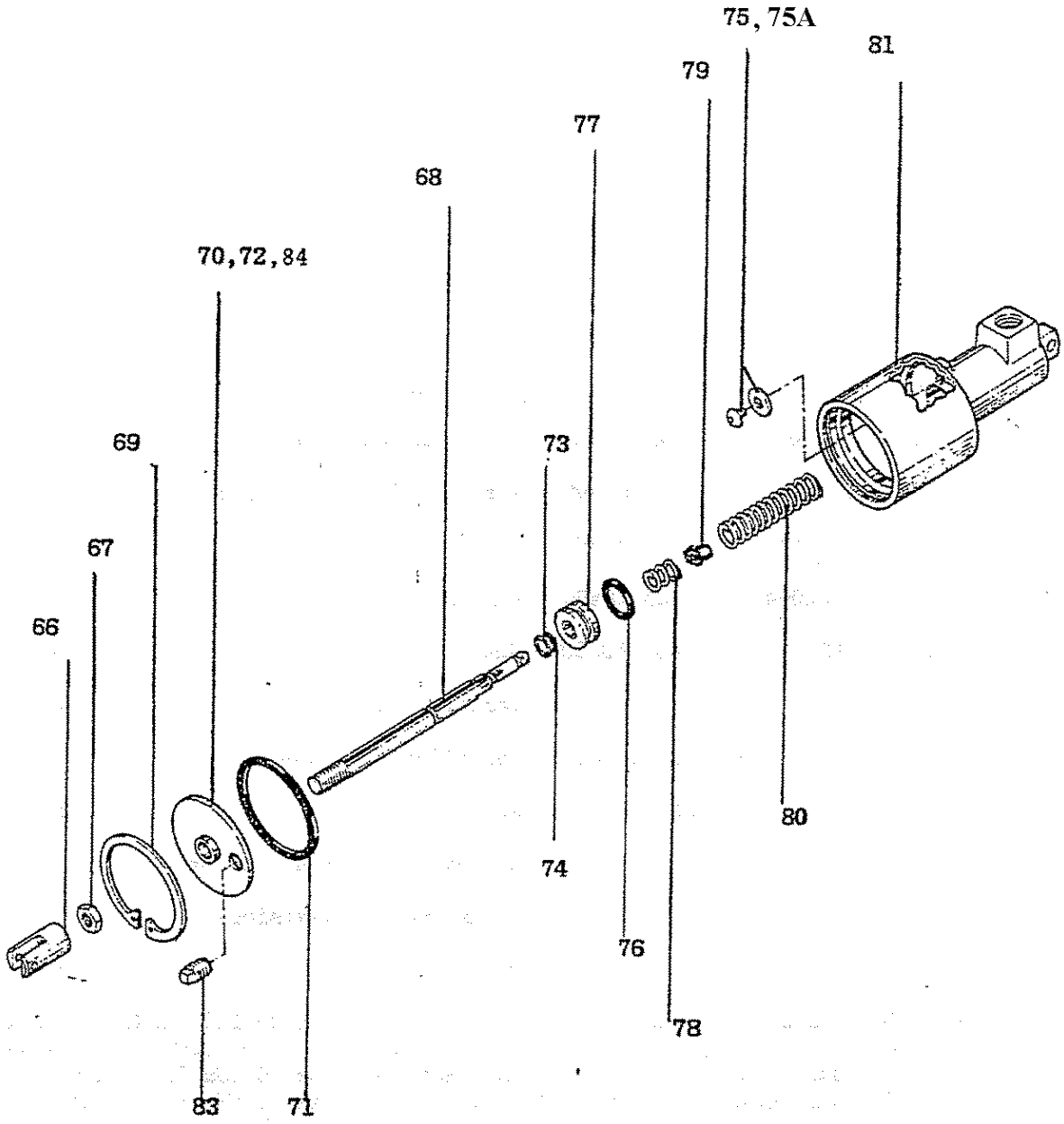

Figure 7
10-69 Master Cylinder Assembly

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Rev C, Sept., 1992
Rev D Jan., 2004

13.4 Kit Parts List

PARTS LIST

199-115 CONVERSION KIT

CESSNA CONQUEST
MODEL 441

ITEM	OLD P/N	CODE NO.	DESCRIPTION	QUANTITY
1	30-143	030-14300	Brake Assembly (Left)*	1
1A	30-14350	030-14350	Brake Assembly (Right)**	1
38	40-169	040-16900	Wheel Assembly***	2
65	10-69	010-06900	Master Cylinder Assembly****	2
35	AN4-7A	103-14700	Bolt	16
36	AN960-416	095-10400	Washer	32
37	AN365-428	094-10300	Nut	16
	50-84		Installation Drawing	1
	199-115 Manual		Installation Manual	1
	SA644GL		STC	1
			Warranty Registration Card	1
			Flight Manual Revisions	1
			POM Revision	1

* For Subassembly and Parts Identification: See 30-143 (L.H.) Parts List
** For Subassembly and Parts Identification: See 30-14350 (R.H.) Parts List
*** For Subassembly and Parts Identification: See 40-169 Parts List
**** For Subassembly and Parts Identification: See 10-69 Parts List

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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 SA644GL

This certificate, issued to Aircraft Wheel and 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 23 *of the* Federal Aviation *Regulations.* See Type Certificate Data Sheet A28CE for complete certification basis.

Original Product — Type Certificate Number A28CE

Make Cessna

Model 441 Conquest

Description of Type Design Change

Install wheels and brakes according to Parker Hannifin Corporation Parts List 199-115 Conversion Kit, Revision D dated March 19, 1987, or later FAA Approved revisions.

Limitations and Conditions

The compatibility of this modification, with previously approved modifications, must be determined by the installer.

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 May 19, 1982 *Date reissued*

Date of issuance August 23, 1982 *Date amended* March 19, 1987

By direction of the Administrator

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