Wheels & Brakes

216/934-5221
TELEX: 212527 PHAV UR

CONVERSION KIT/CHROME DISC DATA SHEET

THE DESIGNATION "C" AFTER THE PART NUMBER OF THE FOLLOWING WHEEL AND BRAKE CONVERSION KITS MEANS THAT THEY CONTAIN WHEELS EQUIPPED WITH CLEVELAND CHROME BRAKE DISCS. THESE WHEELS ARE FAA-TSO APPROVED TO RETAIN THEIR ORIGINAL MODEL NUMBER AND "TSO" IDENTIFICATION.

STANDARD KIT	CHROME DISC KIT	* WHEEL ASSEMBLY	CHROME DISC
199-46	199-46C	40-97A	164-126A
199-48	199-48C	40-113C	164-143
199-49	199-49C	40-83	164-125A
199-60	199-60C	40-75B	164-115A
199-60A	199-60AC	40-75B	164-115A
199-62	199-62C	40-75D	164-136
199-71	199-71C	40-60	164-167
199-71A	199-71AC	40-60A	164-167
199-79	199-79C	40-97D	164-126A
199-84	199-84C	40-113	164-140
199-84A	199-84AC	40-113	164-140
199-102	199-102C	40-78B	164-117
199-103	199-103C	40-78A	164-117
199-104	199-104C	40-59A	164-175
199-105	199-105C	40-113X	164-140
199-124	199-124C	40-113C	164-143

* FOR REORDER, SPECIFY WHEEL AS EQUIPPED WITH A CLEVELAND CHROME DISC BY ADDING AN "C" IN FRONT OF THE WHEEL MODEL NUMBER. EXAMPLE: C40-97A.

Parker
General Aviation

FAA-PMA

AIRCRAFT WHEEL & BRAKE DIVISION

PARKER HANNIFIN CORPORATION

AVON, OHIO

PARTS LIST

199-49 CONVERSION KIT

Beech Aircraft
MODELS 33, 35 & 36
6.00-6 Equipment

PART NO.	CODE NO.	DRAWING REVISION	DESCRIPTION	QUANTITY
30-54	030-05400	Rev. E, dated 6-18-87	Brake Assembly	2
40-83	040-08300	Rev. C, dated 1-13-83	Wheel Assembly	2
207-27	207-02700	N/C, dated 1-19-87	Hose Assembly	2
67-26	067-02600	Rev. G, dated 9-7-78	Inboard Spacer	4
67-32	067-03200	Rev. G, dated 9-7-78	Outboard Spacer	8
AN5-10A	103-22100	-------	Bolt	8
AN960-516	095-10500	-------	Washer	24
AN365-524	094-10400	-------	Nut	8
AN837-4D	104-02000	-------	45° Bulkhead Fitting	2
AN924-4D	094-90500	-------	Nut, Bulkhead	4
AN816-4D	104-00300	-------	Straight Inlet Fitting	2
50-28		Rev. E, dated 9-2-87	Installation Drawing	1
199-49 Manual		Rev. A, dated 9-2-87	Installation Manual	1
SA11GL			STC	1
			Warranty Registration	1
			Flight Manual and POM Revisions	1

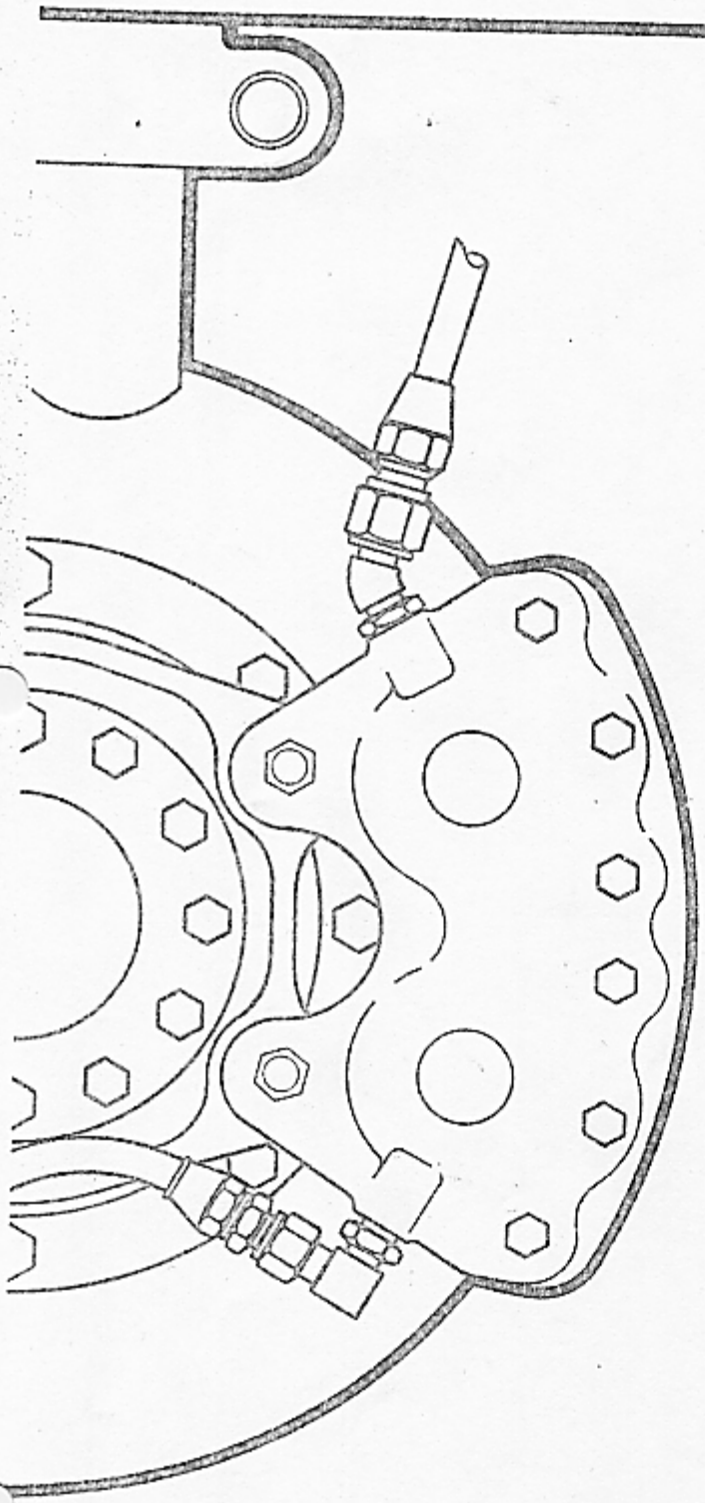
THIS KIT WILL CONVERT ONE AIRCRAFT
TO CLEVELAND WHEELS AND BRAKES.

NOTE

FOR USE WITH MIL-H-5606 (RED FLUID)

199-49
12-19-72
06-18-87 Rev. A (283-61)
09-02-87 Rev. B (285-35) GG

Cleveland
Wheels & Brakes



Conversion Kit
Installation Manual

Kit Number 199-49
For
Beech Aircraft
Models 33, 35, & 36

Parker
General Aviation

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

INSTALLATION INSTRUCTIONS
Cleveland Wheels & Brakes Conversion Kit 199-49

LIST OF REVISIONS

REVISION	DATE	PAGE	DESCRIPTION	APVD
N/C	05/29/87	---	Production Release.... Installation Instructions Cleveland Wheels & Brakes Conversion Kit 199-49	BB
A	09/02/87	18	Item 30: P/N "74-10A 074-01001" was "74-12 074-01200" Item 31: P/N "64-15A 064-01501" was "64-17 064-01700"	BB (285-35)
		20	Item 49: Qty. 24 was 16. Item 54: Qty. 4 was 2. Add Item 55: "67-32 067-03200 Outboard Spacer 8"	

INSTALLATION INSTRUCTIONS
Cleveland Wheels & Brakes Conversion Kit 199-49

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INSTALLATION INSTRUCTIONS
Cleveland Wheels & Brakes Conversion Kit 199-49

1. INTRODUCTION.

1.1 This manual is published for the guidance of personnel responsible for the installation of Cleveland Conversion Kit 199-49.

1.2 Each kit contains all materials and instructions needed to replace existing equipment with Cleveland wheels and brakes. Kit 199-49 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 199-49":

MAKE	MODELS
Beech	35, A35, B35, C35, D35, E35, F35, G35, 35R, H35, J35, K35, M35, N35, P35, S35, V35, V35A, V35B
Beech	35-33, 35-A33, 35-B33, 35-C33, 35-C33A
Beech	E33, E33A, E33C, F33, F33A, F33C, G33
Beech	36, A36

3.2 Note: Prior to installation of kit, check master cylinder bore and stroke. If present system has bore of no less than .625 inch, and stroke of at least 1.5 inch, no Master cylinder change is required.

3.2.1 If present master cylinders do not meet this specification, new Beech master cylinders must be installed to assure proper brake pedal travel. For order information refer to PRM 03 at back of this booklet.

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3.3 199-49 Kit applies to above aircraft currently equipped with 6 inch wheels and brakes. Beech Bonanzas equipped with 8 inch wheels and brakes may be converted to Cleveland equipment with Kit Number 199-50.

3.4 On Models with 1/4 inch brake mounting bolts, it will be necessary to drill out the Landing Gear Flange Holes for 5/16 inch bolt usage. Since the flange is made of hardened steel, it is advisable to use a cobalt, long shanked, drill bit for this operation.

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.

5 DESCRIPTION.

5.1 The brake is a single caliper, 2 piston external disc design, with organic lining. It is suitable for use with MIL-H-5606 brake fluid, and is composed of the following parts listed on page 18.

5.2 The wheel is cast magnesium and conforms to all Tire and Rim Association standards for a 6.00-6 divided type wheel. The wheel is a tube-type only. Felt seals on the inner and outer wheel halves protect the bearings. It is composed of the following parts listed on page 16.

6. INSTALLATION.

6.1 Jack aircraft in accordance with Beech Service Manual, deflate main wheels completely, and remove and retain axle nut and inboard and outboard spacers. 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 #13, grease seals Items #11 & 12 and bearing cone Item #10 from the outboard side of wheel assembly Item #1 and place on a clean surface to avoid contamination.

6.6 Remove all three (3) nuts Item #9, washers Item #8 and tie bolts Item #7 to separate wheel halves.

6.7 Position disc Item #16 and inner wheel half Item #3 on a flat surface with the register side up.

6.8 Place serviceable tire & tube over inner wheel half Item #3 and then place outer wheel half Item #6 in tire making sure to properly align inner and outer registers.

6.9 Slide tie bolts Item #7 through wheel assembly. Install washers Item #8 and nuts Item #9 on to tie bolts Item #7 and torque to 150 in-lbs.

6.10 Inflate tire to proper pressure in safety cage.

6.11 Inspect bearing cone Item #10 for contamination and/or solidification at every periodic inspection. Repack wheel bearings with 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 #42 to axle flange using new bolts Item #47, nuts Item #48 and washers Item #49. Torque at 150 in-lbs.

-NOTE-

Bolt head to be towards the wheel. Orientation as shown on Installation Drawing 50-28, Detail A

6.14 Mount wheel and tire assembly on axle using new spacers as shown in Installation Drawing 50-28, Detail A.

6.15 Apply a thin coat of bearing grease on axle nut and threads. Install bearing cone Item #10, grease seals Items #11 & 12 and snap ring Item #13 in wheel. Install spacer, tang washer (if used), and 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.

-NOTE-

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

6.16 Loosen four (4) tie bolts Item #35 on 30-54 brake assembly, and remove two (2) back plates Item #29.

6.17 Slide new brake cylinder Item #20 into torque plate Item #42.

6.18 Remove existing 45° inlet fitting from brake. Replace with straight inlet fitting Item #53.

6.19 Install back plates Item #29 between brake disc and inner wheel flange. Align back plate with bolts, and torque at 80-90 in-lbs.

6.20 Remove existing hydraulic inlet hose and upper fitting from gear.

6.21 Replace with 45° bulkhead fitting Item #50, nuts Item #51, and inlet hose Item #52.

6.22 Reconnect hydraulic line to brake. Check reservoir fluid level and bleed system.

6.23 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.

6.24 Perform Gear Retract to assure Inlet Hose to Gear Door Clearance, then remove aircraft from jacks and condition linings per Section 9.

7. WEIGHT AND BALANCE COMPUTATIONS

Weight: 10.26 lbs. per wheel and brake assembly.
Complete Form 337 and make appropriate log book entries.

8. FLIGHT MANUAL INSERTS (Located in back of this booklet)

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. ORGANIC BRAKE LINING CONDITIONING PROCEDURE

9.1 The brake lining material used in this brake assembly is a non asbestos organic composition. This material must be properly conditioned in order to provide maximum performance and service life.

9.2 Conditioning may be accomplished as follows:

9.2.1 Taxi aircraft for 1500 feet with engine at 1700 rpm applying brake pedal force as needed to develop a 5 - 10 mph taxi speed.

9.2.2 Allow brakes to cool for 10 - 15 minutes.

9.2.3 Apply brakes and check to see if a high throttle static run up may be held with normal pedal force....If so, conditioning is completed. If static run up cannot be held, repeat steps 9.2.1 thru 9.2.3 as needed to successfully hold.

9.3 This conditioning procedure will generate sufficient heat to create a thin layer of glazed material at the lining friction surface. Normal brake usage should generate enough heat to maintain the glaze throughout the life of the lining.

9.4 Light brake usage can cause the glaze to wear off, resulting in reduced brake performance. In such cases, the lining may be conditioned again following the instructions set forth in this section.

10. WARRANTY REGISTRATION

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

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 .450 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.

12.1.1 Dismounting .

12.1.1.1 Deflate tire. Back plates must be removed from brake before wheel removal. Remove axle nut and outboard spacer. Remove wheel and tire assembly from axle as a unit. Remove snap ring Item #13, grease seals Items #11 & 12 and bearing cones Item #10 from both wheel halves Item #3, and Item #6.

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 three (3) nuts Item #9, washers Item #8, and bolts Item #7 from the wheel assembly and remove brake disc.

12.1.1.4 Separate the wheel halves and remove the tire and tube.

-NOTE-

Bearing cups Item #4 are shrunk fit into the wheel halves and should not be removed unless replacement is necessary. If a bearing cup Item #4 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 Item #4 shown in the following Figure 1.

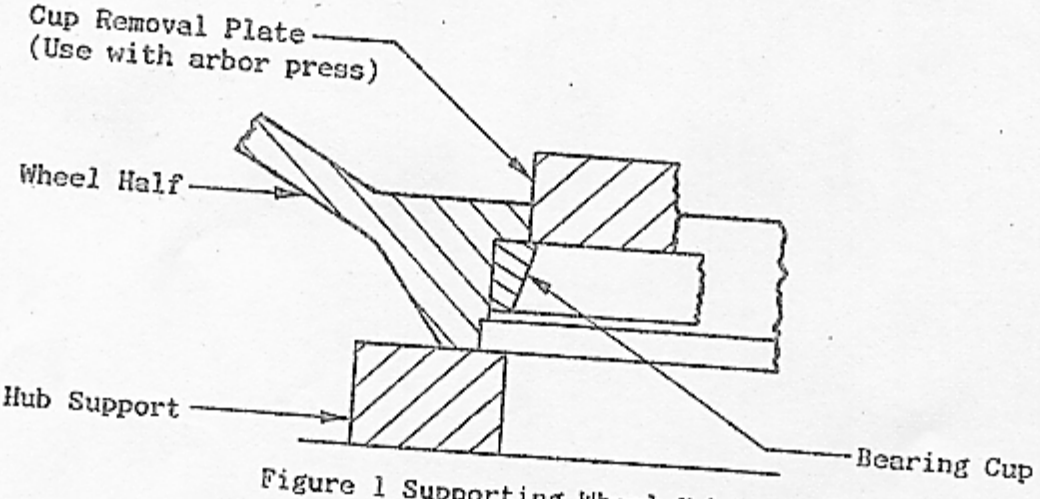

Figure 1 Supporting Wheel Hub

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 grease felts clean with dry cloth. Saturate grease seal felts with SAE 10 oil (DO NOT SOAK).

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 #7 and wheel halves Item #3 & Item #6 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 #7 for cracks and breaks.

12.1.3.2 With dye penetrant, inspect wheel halves Item #3 and Item #6 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 felts for pits, cuts, and other defects. Replace as necessary.

12.1.4 Repair and Replacement

12.1.4.1 Repair scratches, nicks, corrosion, and other surface blemishes on wheel halves Item #3 and Item #6 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 two of coats zinc chromate primer, and one coat of Aluminum 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.

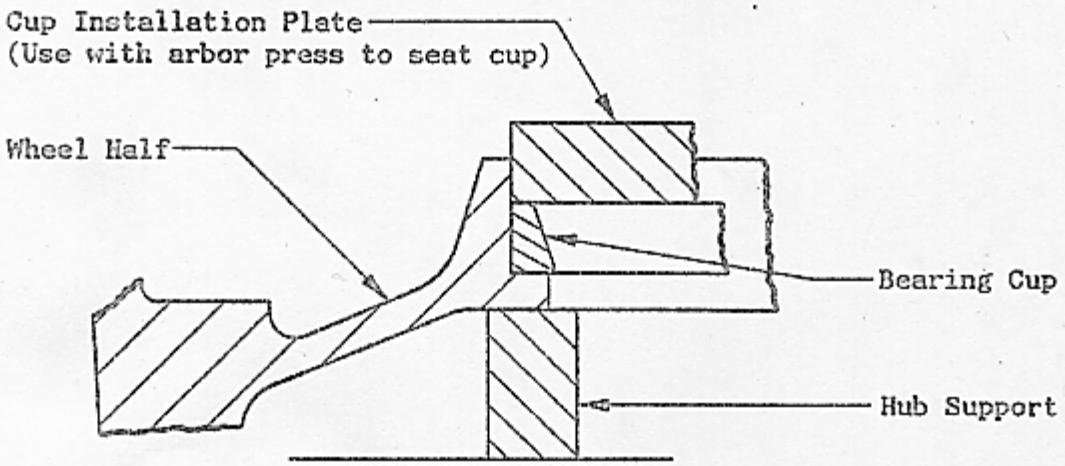

Figure 2 Supporting Wheel Hub

-NOTE-

The wet zinc chromate primer lubricates the parts to be pressed together and acts as protection against galvanic corrosion between the parts.

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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 Position disc Item #16 and wheel half Item #3 on a flat surface with register side up.

12.1.6.2 Place a serviceable tire & tube over inner wheel half Item #3 and then place outer wheel half Item #6 in the tire, making sure to properly align inner and outer wheel registers.

12.1.6.3 Slide tie bolts Item #7 through wheel assembly. Install washers Item #8 and nuts Item #9 on tie bolts Item #7 and torque to 150 in-lbs.

12.1.6.4 Inflate tire to proper pressure in a safety cage.

12.1.6.5 Install bearing cones Item #10 to inner wheel half Item #3 and outer wheel half Item #6.

12.1.6.6 Install grease seals Items #11 & 12 and snap ring Item #13 into the inner and outer wheel halves, Items #3 and #6.

12.2 Brake Overhaul

12.2.1 Dismounting

-NOTE-

It is not necessary to remove the wheel from the aircraft to disassemble and service brake assembly

12.2.1.1 Remove and cap hydraulic line.

12.2.1.2 Remove the cylinder tie bolts Item #35 and remove back plates Item #29.

12.2.1.3 Remove the brake cylinder assembly from the torque plate (the torque plate will remain mounted to the axle).

12.2.1.4 Remove the pressure plate assembly, inlet fitting, and bleeder fitting.

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

12.2.1.6 Remove the O-rings from each piston.

12.2.1.7 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.

-CAUTION-

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

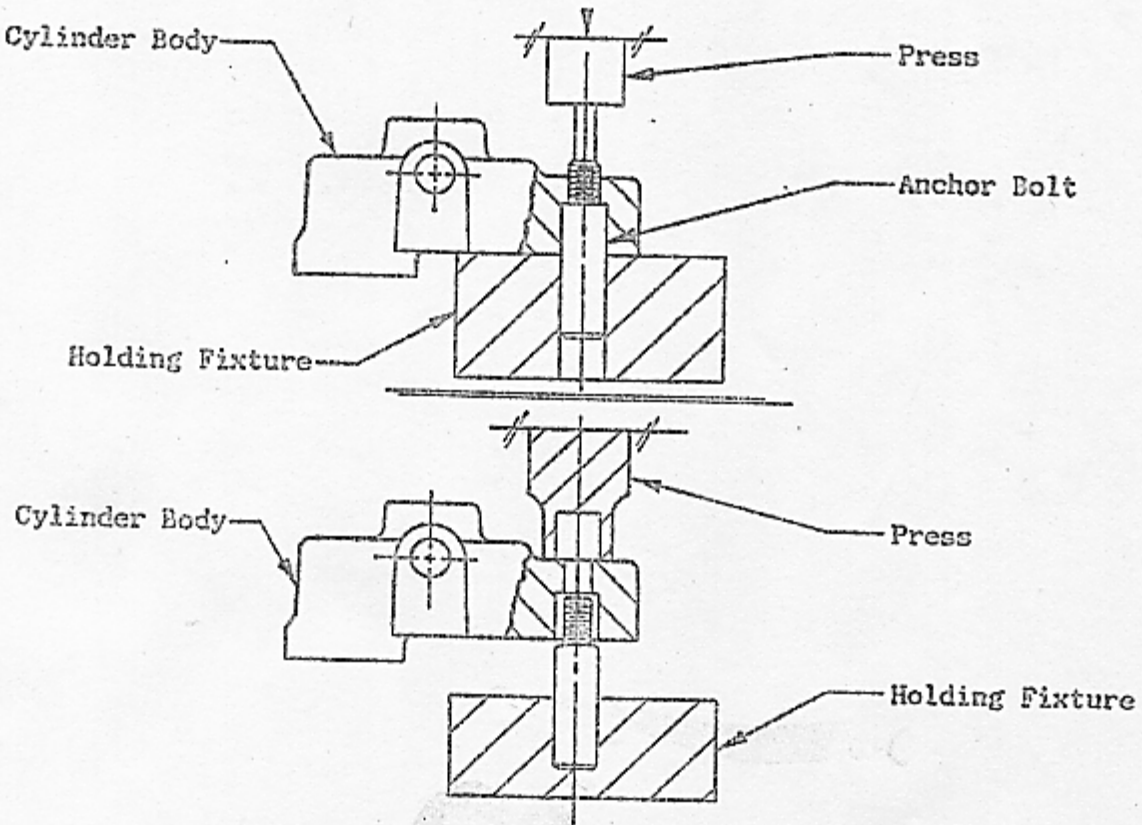

Figure 3 Anchor Bolt Removal

12.2.2 Cleaning

12.2.2.1 Clean all metal parts in alcohol or suitable solvent.

12.2.2.2 Discard all O-ring seals.

12.2.3 Inspection

12.2.3.1 Inspect brake cylinder Item #21 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 Aluminum lacquer.

12.2.3.3 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. NOTE: Nicks and burrs in the pilot bore area can prevent the pistons from properly retracting, resulting in brake drag.

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 #23 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, apply a light film of glue to the backing material of the pad, and snap the new pad onto the carrier pins. The glue will retain the pads in the correct position when reassembling the brake.

-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 #26 and back plates Item #29 for cracks or warpage. Replace if cracked or severely deformed. Inspect pins Item #28 for looseness. If loose, tighten with rivet set and anvil, part number 199-1A and 199-1B or replace with 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 within .010 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 Aluminum lacquer.

12.2.3.10 Inspect bolts Item #35 for cracks, thread damage, or corrosion and replace if necessary.

12.2.4 Reassembly

12.2.4.1 If removed, press anchor bolts Item #33 (ref. Figure 3) into brake and install washers and nuts. Torque nuts to 60-70 in-lbs.

12.2.4.2 Install inlet and bleeder fitting.

12.2.4.3 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 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 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.

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 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).

12.2.4.6 Install washers Item #36, tie bolts Item #35, and insulator shim Item #31. Install back plate assemblies Item #29 between brake disc and wheel flange, and align with tie bolts. Torque bolts to 80-90 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.

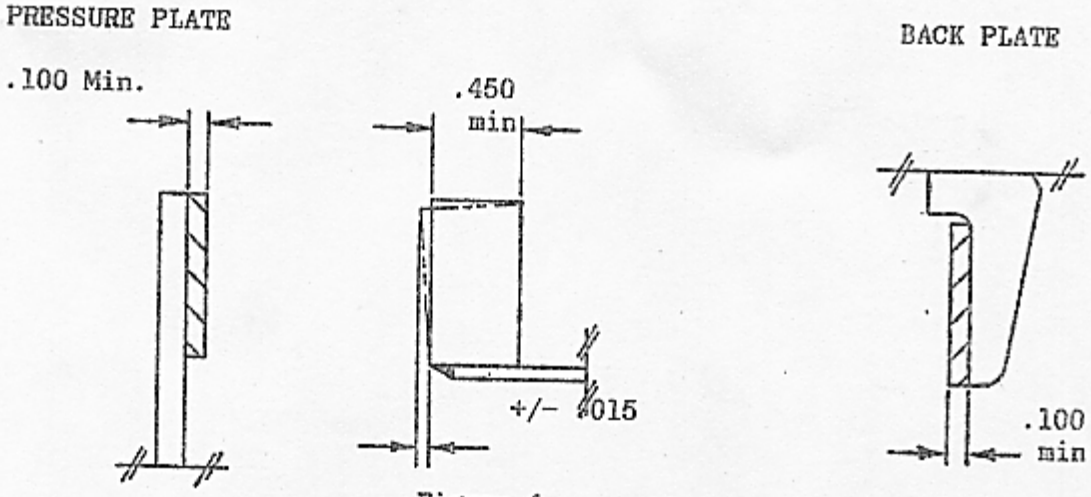

Figure 4
Lining and Disc Wear Limits

13. PARTS LIST

13.1 Wheel Parts List

AIRCRAFT WHEEL AND BRAKE DIVISION

PARKER HANNIFIN CORPORATION

AVON, OHIO

PARTS LIST

40-83 WHEEL ASSEMBLY 6.00-6 TYPE III

ITEM	OLD P/N	CODE NO.	DESCRIPTION	QUANTITY
1	40-83	040-08300	Wheel Assembly	1
2	161-30	161-03000	Inner Wheel Half Assembly	1
3	151-26	151-02600	Wheel Half - Inner	1
4	13836	214-00100	Cup - Bearing (Timken)	1
5	162-27	162-02700	Outer Wheel Half Assembly	1
6	152-24	152-02400	Wheel Half - Outer	1
4	13836	214-00100	Cup - Bearing (Timken)	1
7	AN5-35A	103-20400	Bolt	3
8	AN960-516	095-10500	Washer	3
9	AN365-524	094-10400	Nut	3
10	13889	214-00200	Cone - Bearing (Timken)	2
11	153-9	153-00900	Ring - Grease Seal	4
12	154-8	154-00800	Felt - Grease Seal	2
13	3023	155-00100	Ring - Snap	2
16	164-25A	164-02501	Brake Disc Assembly	1
17	166-64	166-06400	Nameplate	1
18	166-48	166-04800	Nameplate	1

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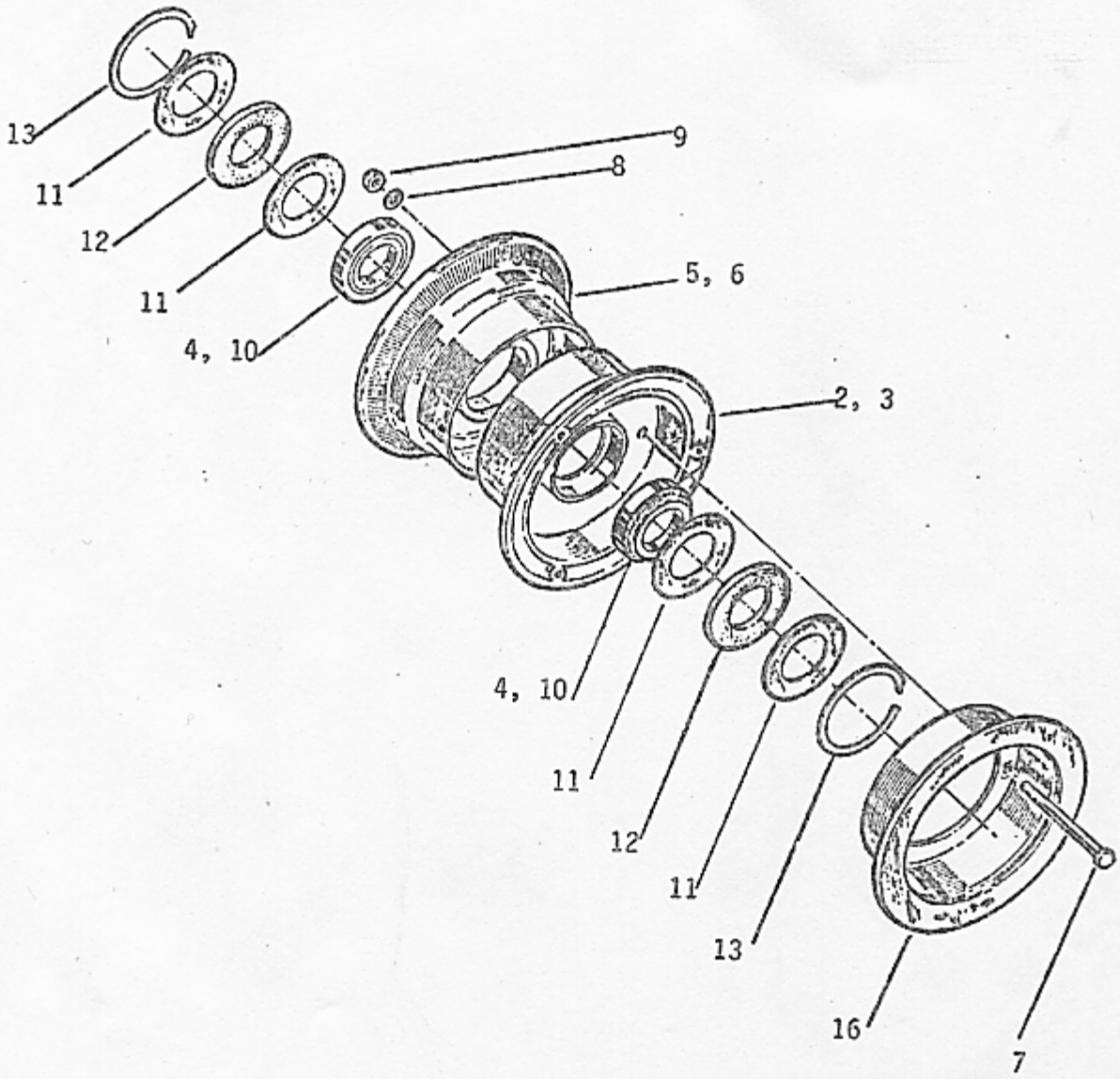

Figure 5
40-83 Wheel Assembly

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13.2 Brake Parts List

AIRCRAFT WHEEL & BRAKE DIVISION

PARKER HANNIFIN CORPORATION

AVON, OHIO

PARTS LIST

30-54 BRAKE ASSEMBLY

ITEM	OLD P/N	CODE NO.	DESCRIPTION	QUANTITY
19	30-54	030-05400	Brake Assembly	1
20	91-25	091-02500	Cylinder Assembly	1
21	61-24	061-02400	Cylinder	1
22	92-16	092-01600	Piston Assembly	2
23	62-15	062-01500	Piston	2
24	AN6227-27	101-02700	O-Ring	2
26	73-10	073-01000	Pressure Plate Assembly	1
27	63-11	063-01100	Plate - Pressure	1
28	#561	105-00200	Rivet	4
29	66-105	066-10500	Lining	2
30	74-10A	074-01001	Back Plate Assembly	2
31	64-15A	064-01501	Plate - Back	2
28	#561	105-00200	Rivet	4
29	66-105	066-10500	Lining	2
33	69-4	069-00400	Bolt - Anchor	2
34	AN365-428	094-10300	Nut	2
35	LP4-21AM	103-11800	Bolt	4
36	AN960-416L	095-10200	Washer	6
37	183-1	183-00100	Cap - Bleeder	1
38	FC-6446	079-00300	Screw - Bleeder	1
40	81-1	081-00100	Seat - Bleeder	1
42	75-33	075-03300	Torque Plate Assembly	1
43	65-27	065-02700	Plate - Torque	1
44	145-18	145-01800	Bushing	2
45	166-65	166-06500	Nameplate	1
46	166-48	166-04800	Nameplate	1

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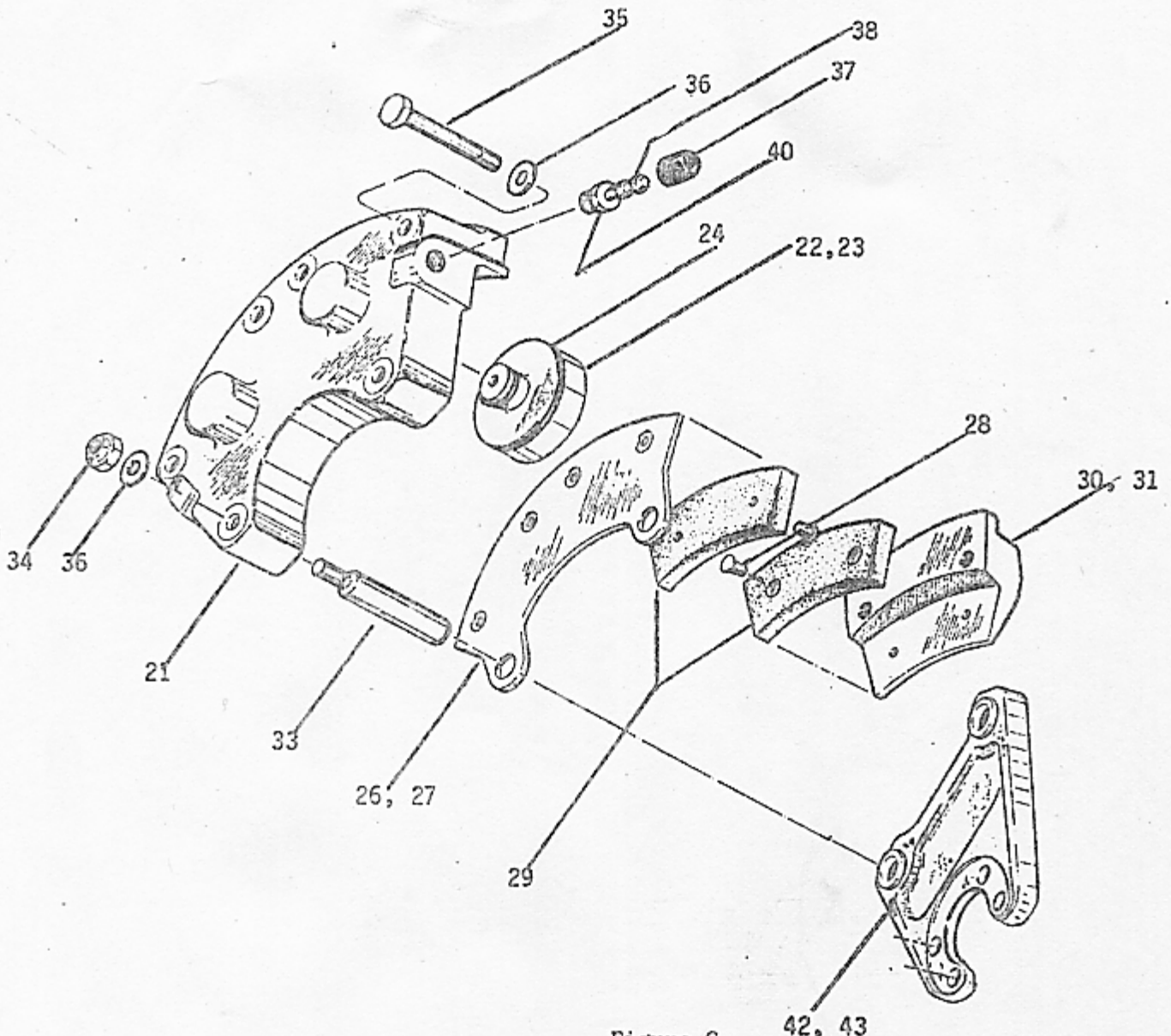


Figure 6
30-54 Brake Assembly

May, 1987

13.3 Kit Parts List

AIRCRAFT WHEEL & BRAKE DIVISION

PARKER HANNIFIN CORPORATION

AVON, OHIO

PARTS LIST

199-49 CONVERSION KIT

BEECH AIRCRAFT
MODELS 33, 35, & 36
6.00-6 EQUIPMENT

ITEM	OLD P/N	CODE NO.	DESCRIPTION	QUANTITY
19	30-54	030-04500	Brake Assembly*	2
1	40-83	040-08300	Wheel Assembly**	2
47	AN5-10A	103-22100	Bolt	8
48	AN365-524	094-10400	Nut	8
49	AN960-516	095-10500	Washer	24
50	AN837-4D	104-02000	45° Bulkhead Fitting	2
51	AN924-4D	094-90500	Nut, Bulkhead	4
52	207-27	207-02700	Inlet Hose	2
53	AN816-4D	104-00300	Straight Inlet Fitting	2
54	67-26	067-02600	Inboard Spacer	4
55	67-32	067-03200	Outboard Spacer	8
	50-28		Installation Drawing	1
	199-49 Manual		Installation Manual	1
	SA11GL		STC	1
			Warranty Registration Card	1
			Flight Manual Revisions	1

* For Subassembly and Parts Identification: See 30-54 Parts List
** For Subassembly and Parts Identification: See 40-83 Parts List

May, 1987
Rev. A, Sept. 1987

Product Reference Memo

PRM No. 03

SUBJECT: 199-49 and 199-50 Conversion Kits

Cleveland installation drawings 50-27 and 50-28 for Kits 199-50 and 199-49, respectively, list three Beech master cylinders that are compatible with the particular wheel and brake assemblies (40-98/30-66) or (40-83/30-54) provided in these kits. Design data listed below:

Beech Part No.	Bore Diameter	Stroke	Installed Length
96-3800034-1	.750 inch	1.50 inch	8.62 inches
96-3800034-3	.625 inch	1.50 inch	8.75 inches
96-3800034-7	.750 inch	1.50 inch	7.37 inches

These master cylinders may also carry a part number with a "VV" prefix, which can be interpreted as follows:

VV - 15-62 = Master Cylinder Stroke 1.5 inch Bore .625 inch
VV - 15-75 = Master Cylinder--Stroke 1.5 inch Bore .750 inch

Before ordering replacement master cylinders, check installed length of present system and replace with the same length.

If present system has master cylinders with at least a 1.5 inch useable stroke, and a minimum bore of .625 inches, no change is necessary.

Parker Hannifin Corporation
Aircraft Wheel and Brake Division
P.O. Box 158, Avon, Ohio 44011 US
(216) 934-5221

Parker Aerospace

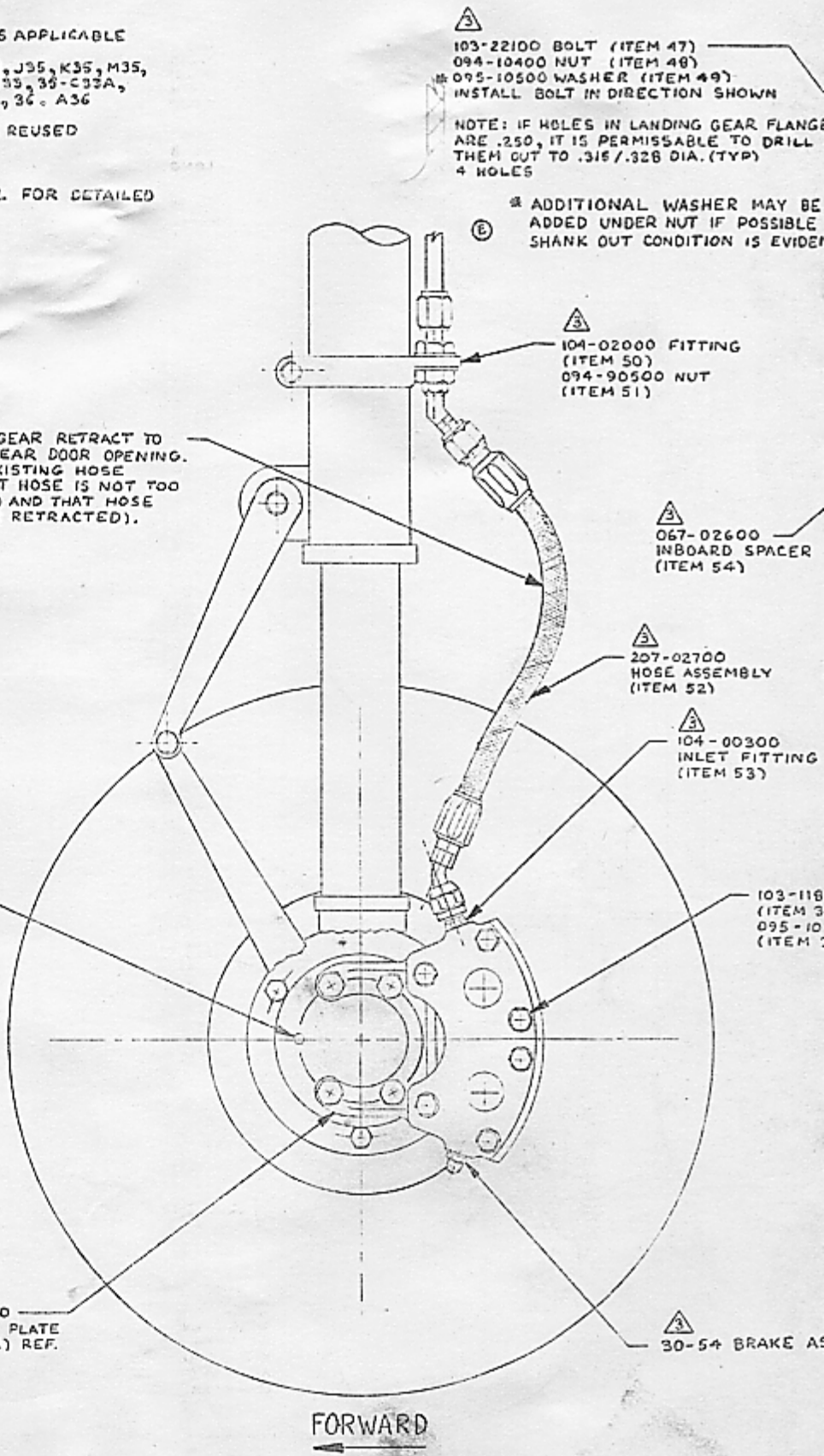
NOTES:

1. 199-49 KIT INSTALLED PER THIS DRAWING IS APPLICABLE TO THE FOLLOWING AIRCRAFT:
   35, A35, C35, D35, E35, F35, G35, 35R, H35, J35, K35, M35, N35, P35, S35, 35-33, 35-A33, 35-B33, 35-C33, 35-C33A, E33, E33A, E33C, F33, F33A, F33C, G35, 36, A36

2. EXISTING HARDWARE TO BE RETAINED AND REUSED

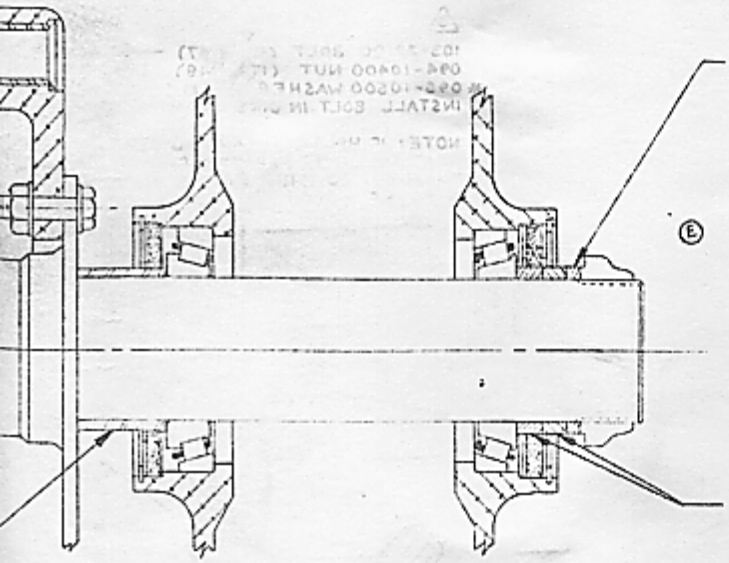
3. PARTS SUPPLIED IN KIT 199-49

4. REFER TO 199-49 INSTALLATION MANUAL FOR DETAILED INSTALLATION INSTRUCTIONS.



50-28

CHANGE NOTICE	LTR TBR	DESCRIPTION OF CHANGE	CHG BY	DATE
283-61	D	REVISED & REDRAWN	PCS	3/4/87
286-35	E	SEE C/N	PCS	9-2-87



(2) 100951-X-100-WL TANGED WASHER (OPTIONAL USE ON AIRCRAFT WITH SHORT AXLES)
—OR—
USE EXISTING BUSHINGS 35-815023 ON AIRCRAFT WITH LONG AXLES

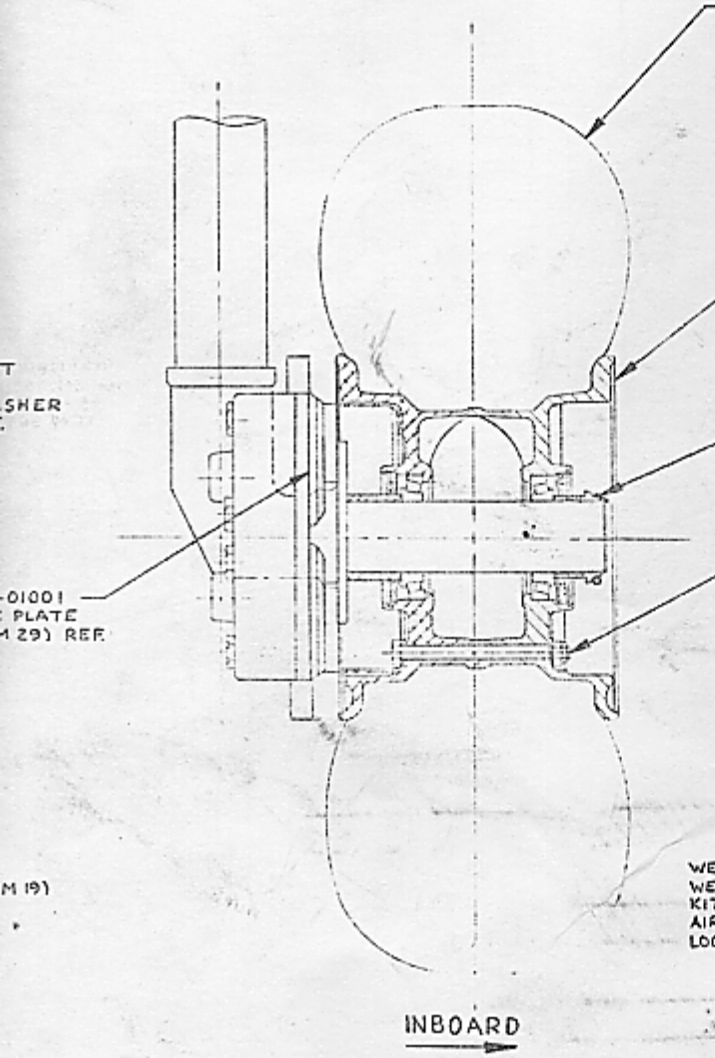
(E) (3) NOTE: 8 (EA) 067-03200 (SHORT AXLE) AND 2 (EA) ADDITIONAL 067-02600 (LONG AXLE) SPACERS ARE PROVIDED IN KIT, AND MAY BE USED INSTEAD OF OR IN COMBINATION WITH EXISTING OUTBOARD SPACERS AS NEEDED FOR PROPER COTTER PIN TO NUT ALIGNMENT

(2) 95-810003-13 BUSHING (2)
—OR—
35-815254-9 BUSHING (2)

AXLE DETAIL A-A

TIRE 7.00-6 6 PLY --- MODEL 35 SERIES
--- MODEL 33 (OPTIONAL)

6.00-6 6 PLY --- MODEL 33 (STANDARD)



(3) 40-83 WHEEL ASSY 6.00-6 TYPE III (ITEM 1)

(2) AN7502-24 NUT
AN380-4-8 COTTER

103-20400 BOLT (ITEM 7) REF.
094-10400 NUT (ITEM 9) REF.
095-10500 WASHER (ITEM 8) REF.

INBOARD

WEIGHT AND BALANCE DATA

NEW INSTALLED

WHEEL	7.45 LBS
BRAKE	2.81 LBS
TOTAL/SIDE	10.26 LBS

OLD REMOVED
TOTAL/SIDE

WEIGH EXISTING WHEELS & BRAKES. SUBTRACT FROM NEW WEIGHTS TO DERIVE WEIGHT INCREASE CREATED BY 199-49 KIT INSTALLATION. MULTIPLY WEIGHT INCREASE BY APPLICABLE AIRCRAFT MOMENT; REVISE WEIGHT & BALANCE INFORMATION IN LOG BOOK.

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

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

DRAWN BY PCS | CHECKED BY [illegible] | SCALE 1/2

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

NAME CLEVELAND WHEEL, BRAKE AND AXLE SPACER INSTALL

50-28