AIRCRAFT WHEEL & BRAKE DIVISION **FAA-PMA**
PARKER HANNIFIN CORPORATION

AVON, OHIO

PARTS LIST
199-52 CONVERSION KIT
MAIN WHEEL & BRAKE AND NOSE WHEEL

NAVION AIRCRAFT
MODELS A, B, D, E, F, G, H

PART NUMBER	DRAWING REVISION	DESCRIPTION	QUANTITY
30-66B	Rev. C, dated 11-07-1979	Brake Assembly	2
40-98D	Rev. C, dated 03-19-1999	Main Wheel Assembly (7.00-8)	2
40-76B	Rev. K, dated 05-23-2008	Nose Wheel Assembly (6.00-6	1
067-02900	Rev. J, dated 06-25-2003	Axle Spacer, MLG	2
067-03100	Rev. J, dated 06-25-2003	Axle Spacer, NLG	2
067-03200	Rev. J, dated 06-25-2003	Axle Spacer, MLG	2
095-15100	Rev. A, dated 09-26-2001	Dust Shield Washer	6
102-00600		Dust Shield Screw (8-32 x .250)	6
157-01000	Rev. C, dated 02-04-2002	Dust Shield	2
207-00300	Rev. C, dated 03-28-2007	Hose Assembly	2
	Publication Package (P/N PP199-52)		
IM199-52	Rev. A, dated 01-17-2013	Installation Manual (MLG and NLG)	
50-29	Rev. A, dated 08-15-2012	Installation Drawing NLG	
50-30	Rev. D, dated 01-17-2013	Installation Drawing MLG	
SA36GL	Reissue date 10-28-1980	Supplemental Type Certificate	
PRM13A	-------	Product Reference Memo - “Conditioning Procedure for Non Asbestos Organic Lining”	
PRM69	-------	Product Reference Memo - “Availability of General Maintenance Information & Torquing Procedures”	
-------		Weight and Balance Sheet	
-------		Product Registration Card	

NOTES:
1. This kit will convert one aircraft to Cleveland Wheels and Brakes.
2. The 30-66B brake assembly is designed for use with MIL-H-5606 hydraulic fluid.

199-52
Rev. NC 06-15-1973
Rev. A 07-02-1973
Rev. B 09-12-1973
Rev. C 05-19-1998 (DCN 0328-84)
Rev. D 07-09-2003 (DCN 0356-95)
Rev. E 11-01-2004 (DCN 0363-53)
Rev. F 07-23-2008 (DCN 0380-99)
Rev. G 08-15-2012 (ECO-0013453)
Rev. H 01-17-2013 (ECO-0019065)

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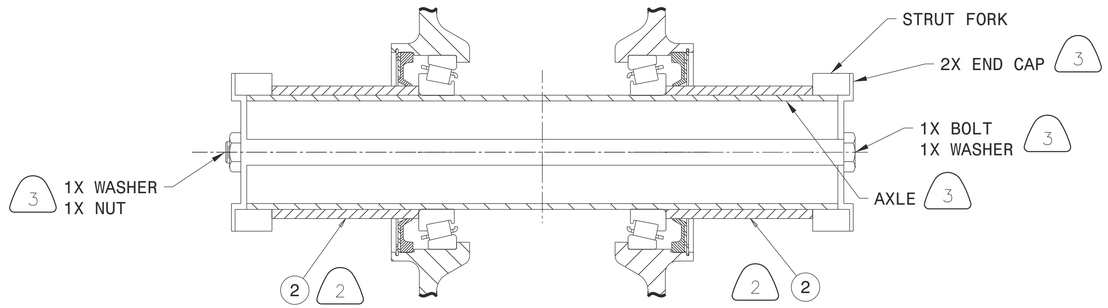
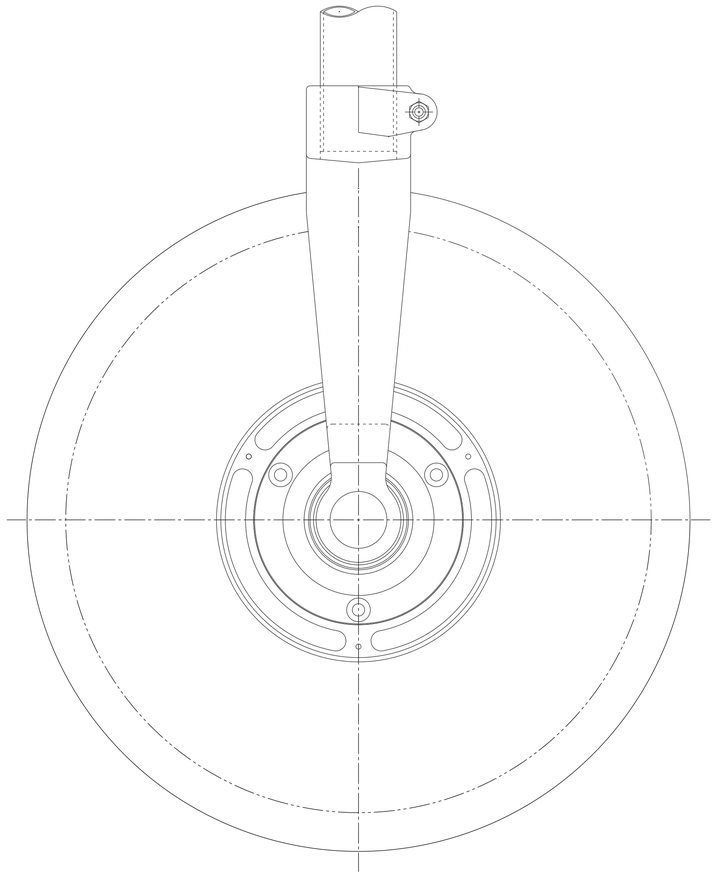
DWG. NO. 50-29 | SHEET 1/1 | REV. A

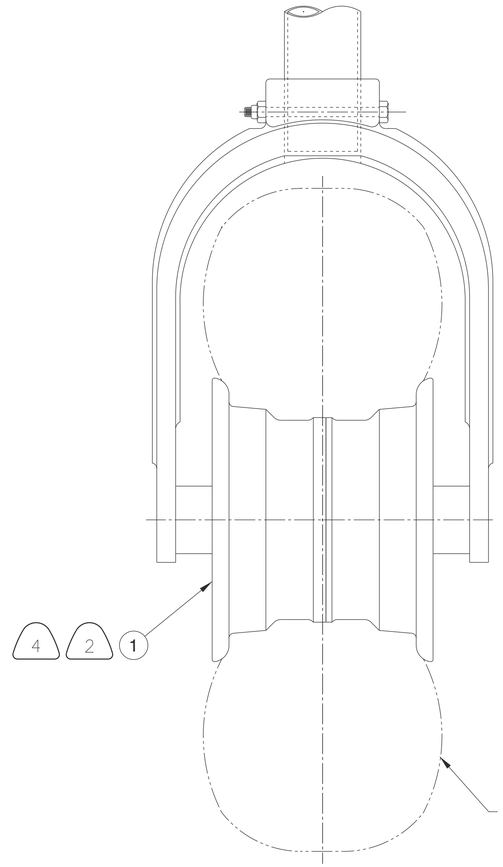
REVISIONS

CHANGE NOTICE	REV	DESCRIPTION OF CHANGE	CHG BY	CHK BY	DATE	APPROVED
0013453	A	Redrawn into electronic format.	PH	GL	09/05/2012	PH



AXLE SPACER DETAIL
SCALE: 1:1





APPLICABILITY OF AIRCRAFT INSTALLATION

MODEL	TIRE	PRESSURE
NAVION AIRCRAFT MODELS: A,B,D,E,F,G,H	6.00-6 TUBE TYPE	PER NAVION AIRCRAFT MANUAL

NOTES:

1. REFER TO IM199-52 INSTALLATION MANUAL FOR DETAILED INSTALLATION INSTRUCTIONS.
2. PARTS SUPPLIED IN 199-52 KIT.
3. EXISTING HARDWARE NOT SUPPLIED IN 199-52 KIT.
4. REFER TO IM199-52 INSTALLATION MANUAL FOR PARTS IDENTIFICATION.
5. REFER TO RYAN AERONAUTICAL DRAWINGS, 145-34116, 145-34146, AND 145-34127.

QUANTITIES LISTED BELOW ARE PER KIT

QTY	ITEM	PART NO.	DESCRIPTION
2	2	067-03100	SPACER, AXLE
1	1	40-76B	WHEEL ASSEMBLY, 6.00-6 TYPE III

.	.	.	.
QTY	FINAL ASSY	QTY	NEXT ASSY

APPLICATION (NOT MAINTAINED)

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A CONTRACT ALTERED ITEM EXISTS FOR THIS PART NUMBER

GENERAL NOTES: UNLESS OTHERWISE SPECIFIED

DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
DIMENSIONS ARE IN INCHES
TOLERANCES
2 PLACE (.XX): ±.03
3 PLACE (.XXX): ±.010
ANGULAR: ±0.5°
REMOVE ALL BURRS
BREAK CORNERS .010 MAX.
INTERNAL RADII .005-.010
GENERAL MACHINED SURFACES 125 PER ANSI B46.1
THIRD ANGLE PROJECTION

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS AND MICROFINISHES APPLY TO COMPLETED PART, LESS PAINT

PROGRAM/CONTRACT NO.	.	
DRAWN	J. BAKOS	02-16-1973
CHECKED	.	.
ENGINEER	.	.
DESIGN APPROVAL	.	.
PROJ APPROVAL	.	.
MFG ENGRG	.	.
QUAL ASSUR	.	.

CLEVELAND WHEELS & BRAKES
Aircraft Wheel and Brake Division
Parker Hannifin Corporation
Avon, Ohio 44011

DWG. TITLE

INSTALLATION DRAWING, NOSE LANDING GEAR

SIZE	CAGE CODE	DWG. NO.	REV.
D	33269	50-29	A

SCALE:1/2:1 | UNIT WGT.: | SHEET: 1 OF 1

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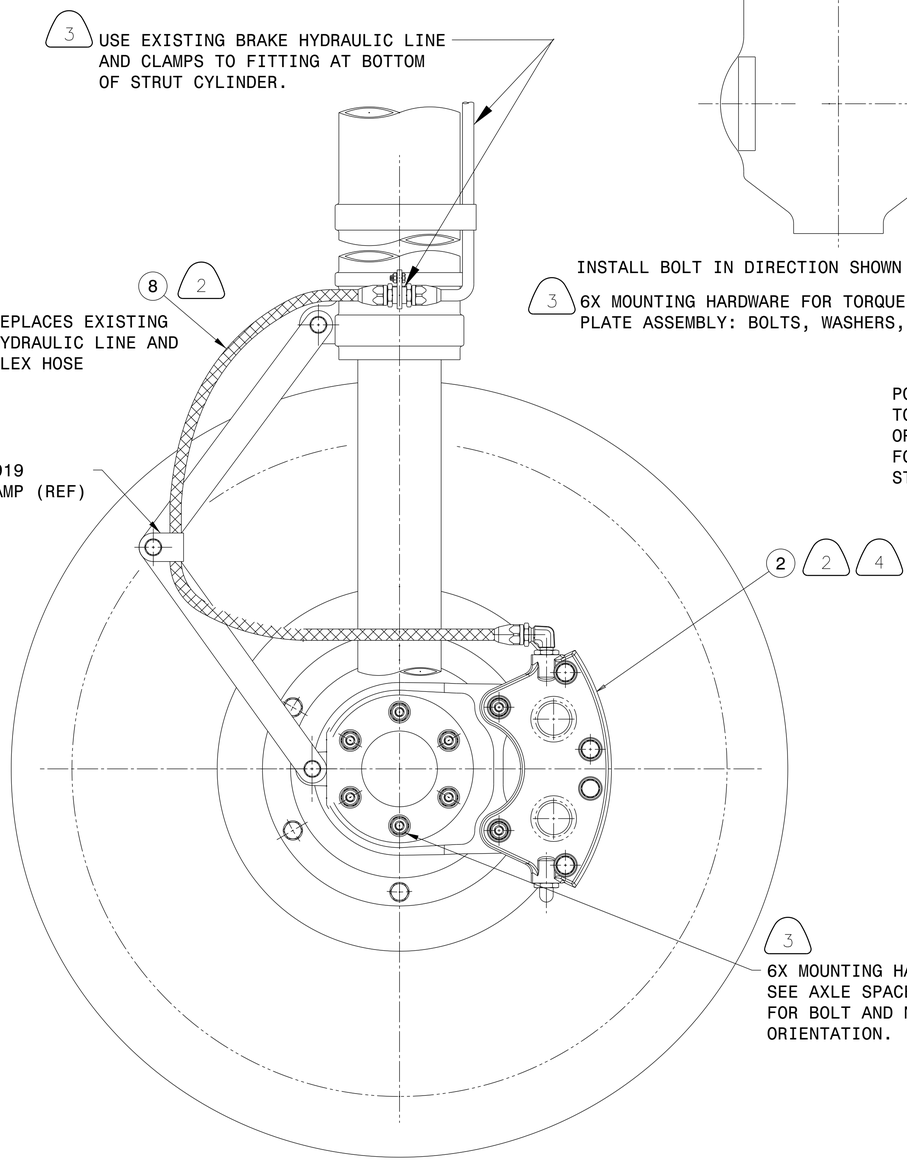
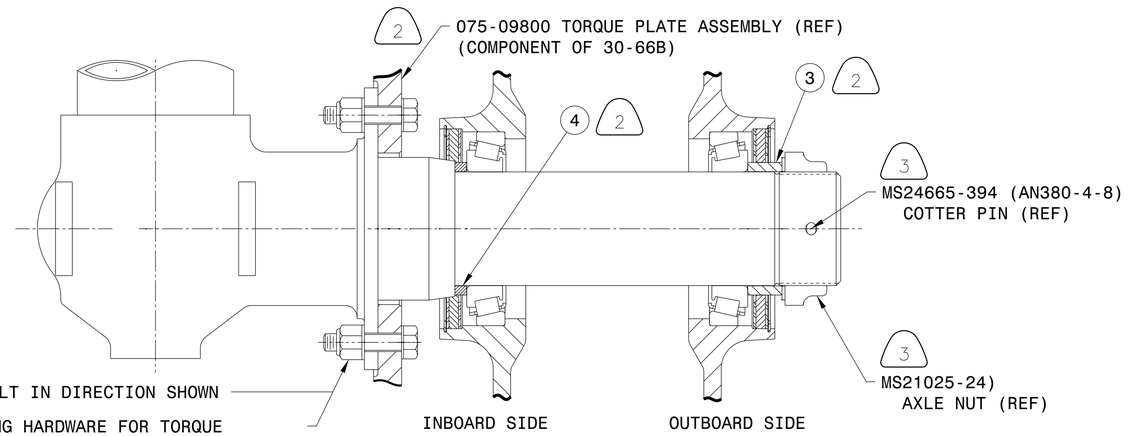
DWG. NO. 50-30 | SHEET 1/1 | REV. D

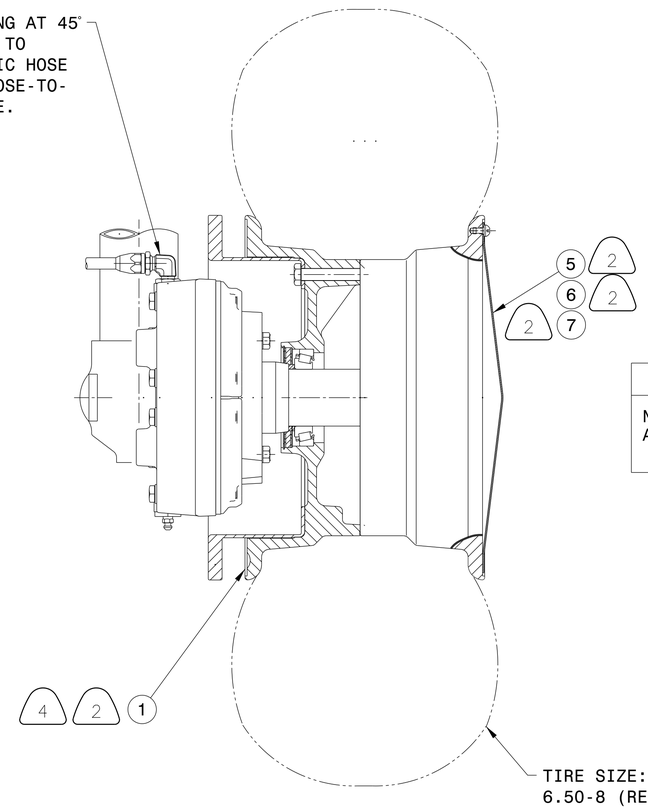
REVISIONS

CHANGE NOTICE	REV	DESCRIPTION OF CHANGE	CHG BY	CHK BY	DATE	APPROVED
254-29	A	Rev. Inst. Instr.	JB	.	03/30/74	.
0328-84	B	See C/N.	PH	BB	05/19/98	.
0013453	C	Redrawn into electronic format.	PH	GL	09/05/2012	PH
0019065	D	SEE ECO	PH	BB	01/17/2013	BB





AXLE SPACER DETAIL
SCALE: 1:1



APPLICABILITY OF AIRCRAFT INSTALLATION

MODEL	TIRE	PRESSURE
NAVION AIRCRAFT MODELS: A,B,D,E,F,G,H	6.50-8 TUBE TYPE	PER NAVION AIRCRAFT MANUAL

QUANTITIES LISTED BELOW ARE PER KIT

QTY	ITEM	PART NO.	DESCRIPTION
2	8	207-00300	HOSE ASSEMBLY
2	7	157-01000	DUST SHIELD
6	6	102-00600	SCREW, DUST SHIELD
6	5	095-15100	WASHER, DUST SHIELD
2	4	067-03200	SPACER, AXLE
2	3	067-02900	SPACER, AXLE
2	2	30-66B	BRAKE ASSEMBLY
2	1	40-98D	WHEEL ASSEMBLY, 7.00-8 TYPE III
QTY	ITEM	PART NO.	DESCRIPTION

(D)
NOTES:

1. REFER TO IM199-52 INSTALLATION MANUAL FOR DETAILED INSTALLATION INSTRUCTIONS.
2. PARTS SUPPLIED IN 199-52 KIT OR 199-52A KIT AS APPLICABLE.
3. EXISTING HARDWARE NOT SUPPLIED IN 199-52 KIT OR 199-52A KIT AS APPLICABLE.
4. REFER TO IM199-52 INSTALLATION MANUAL FOR PARTS IDENTIFICATION.
5. THIS KIT IS TO BE USED WITH MIL-H-5606 HYDRAULIC FLUID.
6. REFER TO RYAN AERONAUTICAL DRAWINGS, 143-33113, 145-33161, AND 145-33205 FOR PICTORIAL SKETCH OF LANDING GEAR.

A CONTRACT ALTERED ITEM EXISTS FOR THIS PART NUMBER

.	.	.	.
QTY	FINAL ASSY	QTY	NEXT ASSY

APPLICATION (NOT MAINTAINED)

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DIMENSIONS ARE IN INCHES
TOLERANCES
2 PLACE (.XX): ±.03
3 PLACE (.XXX): ±.010
ANGULAR: ±0.5°
THIRD ANGLE PROJECTION
REMOVE ALL BURRS
BREAK CORNERS .010 MAX.
INTERNAL RADII .005-.010
GENERAL MACHINED SURFACES 125√ PER ANSI B46.1

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS AND MICROFINISHES APPLY TO COMPLETED PART, LESS PAINT

PROGRAM/CONTRACT NO.	.	
DRAWN	J. BAKOS	02-15-1973
CHECKED	.	.
ENGINEER	.	.
DESIGN APPROVAL	.	.
PROJ APPROVAL	.	.
MFG ENGRG	.	.
QUAL ASSUR	.	.

CLEVELAND WHEELS & BRAKES
Aircraft Wheel and Brake Division
Parker Hannifin Corporation
Avon, Ohio 44011

DWG. TITLE
INSTALLATION DRAWING, MAIN LANDING GEAR

SIZE	CAGE CODE	DWG. NO.	REV.
D	33269	50-30	D

SCALE: 1/2:1 | UNIT WGT.: | SHEET: 1 OF 1

Kit Installation Publication

Main Wheel & Brake and Nose Wheel Conversion Kit
Parker Hannifin Part No. 199-52
and
Main Wheel & Brake Conversion Kit
Parker Hannifin Part No. 199-52A

IM199-52

Revision A

Publication No.: IM199-52 Revision A

Manufacturer:

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

Cleveland
Wheels & Brakes

TO: HOLDERS OF IM199-52 INSTALLATION MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN WHEEL ASSEMBLY PART NO. 40-98D, MAIN BRAKE ASSEMBLY PART NO. 30-66B, AND NOSE WHEEL ASSEMBLY PART NO. 40-76B.

Attached to this transmittal letter is Revision NC of IM199-52 (dated August 15, 2012)

Revision NC, Dated August 15, 2012

REVISION NC CONTAINS ALL PAGES OF THE MANUAL. Pages that have been added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.	Description Of Change
All Sections/All Pages	Initial Release (ECO-0013453)

TO: HOLDERS OF IM199-52 INSTALLATION MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN WHEEL ASSEMBLY PART NO. 40-98D, MAIN BRAKE ASSEMBLY PART NO. 30-66B, AND NOSE WHEEL ASSEMBLY PART NO. 40-76B.

Attached to this transmittal letter is Revision A of IM199-52 (dated January 17, 2013)

Revision A, Dated January 17, 2013

REVISION A CONTAINS ALL PAGES OF THE MANUAL. Pages that have been added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.	Description Of Change
As follows	(ECO-0019065)
Title page/T-1	(ADD) Kit No. 199-52A applicability
3.4 Aircraft Model Applicability/pg 2	(ADD) reference to Kit No. 199-52A and STC SA46GL.
5.0 Product Registration/pg 3	(ADD) reference to Kit No. 199-52A.
12.5 Weight and Balance Data/pg 21	(ADD) reference to Kit No. 199-52A.
13.0 Kit Parts List/pg 24	(ADD) 199-52A Kit Parts List

RECORD OF REVISIONS

Check in the following record that all earlier changes have been incorporated.

Rev	Incorporated date	by (signature)	Rev	Incorporated date	by (signature)
NC	08-15-2012	P. Hunyad			
A	01-17-2013	P. Hunyad			

STEP 1: VERIFY EQUIPMENT

VERIFY THAT THE WHEEL AND BRAKE ASSEMBLY NUMBERS AS LISTED ON THE KIT PARTS LIST MATCH THE MODEL NUMBERS AS INDICATED ON THE ASSEMBLY NAMEPLATES.

STEP 2: REVIEW USAGE RESTRICTIONS

REFER TO SECTION 3.0.

STEP 3: REVIEW MODIFICATIONS

REFER TO SECTION 3.0.

STEP 4: REVIEW INSTALLATION HARDWARE

REFER TO SECTION 3.0.

THIS KIT MAY NOT INCLUDE THE HARDWARE NEEDED TO COMPLETE THE INSTALLATION. THIS HARDWARE MUST BE OBTAINED SEPARATELY. IN ADDITION, SOME HARDWARE MAY NEED TO BE FABRICATED SUCH AS FLEXIBLE HYDRAULIC HOSES. READ THIS INSTALLATION MANUAL AND REVIEW THE INSTALLATION DRAWING BEFORE DOING ANY WORK.

STEP 5: RETURN REGISTRATION CARD

COMPLETE AND RETURN THE REGISTRATION CARD. PLEASE PRINT INFORMATION LEGIBLY. THIS DATA WILL ASSIST PARKER HANNIFIN, AIRCRAFT WHEEL & BRAKE TO NOTIFY END USERS OF SPECIFIC AIRWORTHINESS DOCUMENTS WHEN REQUIRED.

STEP 6: TECHNICAL ASSISTANCE

FOR TECHNICAL ASSISTANCE, CONTACT THE TECHNICAL SERVICES HOTLINE:

E-mail: clevelandwbhelp@parker.com
Fax: 440-937-5409
Tel: 1-800-BRAKING (272-5464)

TABLE OF CONTENTS

TABLE OF CONTENTS

1.0 INTRODUCTION

This manual is published for the guidance of personnel responsible for the installation of the Parker Hannifin Conversion Kit covered in this publication.

Installation of this kit should be performed by a qualified, licensed Airframe and Powerplant mechanic (A & P).

1.1 Data rights

1.2 Export statement

U.S. EXPORT CONTROLLED – Dissemination is restricted by the Export Administration Act of 1979 (50 U.S.C. App. 2401, et seq) and the Export Administration Regulations.

2.0 MANUAL USE

This publication covers instructions for both the main gear wheel and brake and the nose gear wheel.

2.1 Warnings, cautions and notes

These adjuncts to the text shall be used to highlight or emphasize important points when necessary. Refer to the descriptions of these statements that follow:

- A **"SAFETY WARNING"** flagged by this symbol  , calls attention to possible serious or life threatening situations if procedures are not followed.
- A **"WARNING"** calls attention to use of materials, processes, methods, procedures, or limits which must be followed precisely to avoid injury to persons.
- A **"CAUTION"** calls attention to methods and procedures which must be followed to avoid damage to equipment.
- A **"NOTE"** calls attention to an essential operating or maintenance procedure, condition, or statement, which must be highlighted.

3.0 KIT EQUIPMENT AND INSTRUCTION

CAUTION: READ THIS INSTALLATION MANUAL AND REVIEW THE INSTALLATION DRAWING BEFORE DOING ANY WORK.

All support hardware fabrication that is not covered by this publication should be done per Advisory Circular AC43.13-1, latest issue in effect.

3.1 Usage restrictions

There are no restrictions for this conversion kit.

3.2 Airframe or equipment modifications

3.2.1 Main landing gear

- Main landing gear equipment: The brake master cylinder, Gladden Products Corp. P/N 145-58015-5, must be modified. Refer to section 11.1.

3.3.2 Nose landing gear

- Nose landing gear equipment: No modifications required.

3.3 Installation hardware

3.3.1 Main landing gear

- Refer to Installation Drawing, 50-30 for hardware that is not supplied in this conversion kit.
- It is recommended that new cotter pins be used. The axle cotter pins are not supplied in this conversion kit and must be obtained separately. In addition, it is up to the installer to determine the condition of existing hardware and whether to re-use or replace. Refer to the aircraft parts catalog for part identification.

3.3.2 Nose landing gear

- Refer to Installation Drawing, 50-29 for hardware that is not supplied in this conversion kit.
- It is up to the installer to determine the condition of existing hardware and whether to re-use or replace. Refer to the aircraft parts catalog for part identification.

3.4 Aircraft model applicability

- The equipment supplied under Kit No. 199-52 is applicable to the following aircraft under STC SA36GL.
- The equipment supplied under Kit No. 199-52A is applicable to the following aircraft under STC SA46GL

Table 1 Aircraft model applicability

MAKE	MODELS
Navion Aircraft	A, B, D, E, F, G, H

4.0 TSO NOTICE

The main wheel and brakes and nose wheel 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.

Modifications to the wheel and brake assemblies provided in this kit or use of unapproved parts will void the TSO qualification and warranty for the wheel and brake assemblies.

5.0 PRODUCT REGISTRATION

A product registration card is included in the shipment of this converstion kit. The card is used to track the conversion kits and your guarantee of receiving any future airworthiness information applicable to Conversion Kit No.’s 199-52 and 199-52A as applicable. Please fill out the registration card completely and return promptly. Postage is prepaid.

6.0 REFERENCE PUBLICATIONS

Refer to the following publications, published by Parker Hannifin - Aircraft Wheel & Brake, for service limits, maintenance, component overhaul and applicable related data. Always obtain the latest issue in effect.

AWBCMM0001..... Maintenance Manual, External Design Wheels & Brakes
AWBTSG0001..... Technician’s Service Guide (formerly PRM64)
PRM13A ..... Conditioning Procedure for Non-Asbestos Organic Brake Lining (included in kit paperwork)
PRM69 Availability of General Maintenance Information and Torquing Procedures (included in kit paperwork)
PRM73 ..... Wheels & Brakes – Preparation For Service – On-Aircraft Cleaning

7.0 ORDERING INFORMATION

To order spare parts, contact the nearest Parker Hannifin, Aircraft Wheel & Brake distributor in your area, or contact Aircraft Wheel and Brake:

Parker Hannifin Corporation
Aircraft Wheel & Brake Division
1160 Center Road
Avon, Ohio 44011 U.S.A.
Attn: Technical Services/Hotline

Web site: www.parker.com
E- mail: clevelandwbhelp@parker.com
Fax: (440) 937-5409
Tel: 1-800-BRAKING (272-5464)

8.0 MAIN LANDING GEAR EQUIPMENT DESCRIPTION

8.1 Main brake assembly

The brake assembly is shipped from the factory as a complete assembly. It is a cast magnesium, single cylinder, dual piston external disc design, with organic lining. It is suitable for use with brake fluid conforming to MIL-H-5606. The cylinder contains the brake fluid which operates the piston and pressure plate. A back plate is secured to the cylinder with bolts and washers on the opposite side of the brake disc. The back plate and pressure plate each hold brake linings. Two anchor bolts, attached to the cylinder with nuts and washers, slide or float in torque plate bushings. The torque plate is mounted to the landing gear strut.

8.2 Main wheel assembly

CAUTION: THE MAIN WHEEL FELT GREASE SEALS (5-15), (5-16) ARE SHIPPED DRY. THEY MUST BE PROPERLY LUBRICATED TO PROVIDE PROTECTION AND LUBRICANT RETENTION FOR THE BEARINGS. IF THEY ARE NOT PROPERLY LUBRICATED THEN MOISTURE CAN SOAK PAST THE FELTS AND CONTACT THE BEARINGS WHICH CAN LEAD TO BEARING FAILURE.

The wheel assembly is shipped from the factory as a complete assembly with the bearing cones (5-13) packed with grease (Mobil Aviation Grease SHC 100) and installed in the wheel halves. The grease seal felts (5-15), (5-16) are shipped dry. Refer to paragraph 9.1 Lubricate the Seal Felts, for instructions on lubricating the seal felts. The wheel is cast magnesium and conforms to all tire and rim association standards for a 7.00-8 Type III, divided type wheel. It is a tube-type design only. The inner and outer wheel halves are fastened together with bolts, washers, and nuts. The brake disc is attached to the wheel by the bolts. The wheel rotates on two tapered roller bearings, which seat in bearing cups in the wheel half hubs. Grease seal felts provide protection and lubricant retention for the bearing.

8.3 Operation

Actuation of the toe pedals engages the master cylinder which delivers hydraulic pressure to the brake cylinder. The pressure flows through the cylinder and forces the piston outward against the pressure plate. The anchor bolts slide freely in the torque plate assembly bushings and allow the pressure plate and back linings to squeeze the brake disc at the same time.

9.0 NOSE LANDING GEAR EQUIPMENT DESCRIPTION

9.1 Nose wheel assembly

The wheel assembly is shipped from the factory as a complete assembly with the bearing cones (5-13) packed with grease (Mobil Aviation Grease SHC 100) and installed in the wheel halves. The wheel is cast magnesium and conforms to all tire and rim association standards for a 6.00-6 Type III, divided type wheel. It is a tube-type design only. The inner and outer wheel halves are fastened together with bolts, washers, and nuts. The wheel rotates on two tapered roller bearings, which seat in bearing cups in the wheel half hubs. Molded grease seals provide protection and lubricant retention for the bearing.

9.2 Operation

The nose wheel assembly provides the primary interface between the nose gear landing strut and tire during lading and taxiing and provides a means of steering control.

10.0 GENERAL MAINTENANCE PROCEDURES

The following general procedures can also be found in AWBCMM0001, latest issue along with recommended sources of supply.

10.1 Felt grease seal lubrication procedure

Scheduled occurrence: This procedure must be done during installation of the Cleveland equipment.

CAUTION: THE MAIN WHEEL ASSEMBLY FELT GREASE SEALS (5-15), (5-16) ARE SHIPPED DRY. THEY MUST BE PROPERLY LUBRICATED TO PROVIDE PROTECTION AND LUBRICANT RETENTION FOR THE BEARINGS. IF THEY ARE NOT PROPERLY LUBRICATED THEN MOISTURE CAN SOAK PAST THE FELTS AND CONTACT THE BEARINGS WHICH CAN LEAD TO BEARING FAILURE.

NOTE: Lubricate the seal felts just before installation to prevent contamination.

The main wheel assembly felt grease seals (5-15), (5-16) are shipped dry and must be properly lubricated as follows.

a. Lightly coat all surfaces of the felts with the wheel bearing grease (Mobil Aviation Grease SHC 100).

10.2 Bearing cone grease packing procedure

Scheduled occurrence: At every tire change or 12 months, whichever comes first. Always clean and re-pack the bearing cones with fresh grease.

CAUTIONS

- DO NOT MIX AVIATION WHEEL BEARING GREASES WITH EACH OTHER. IF USING OTHER APPROVED GREASE, COMPLETE REMOVAL OF CONTAINED GREASE AND BEARING CLEANING IS REQUIRED. REPLACEMENT OF PREVIOUSLY LUBRICATED FELT GREASE SEALS IS ALSO REQUIRED.
- HANDLE BEARING CONES WITH CARE TO PREVENT CONTAMINATION OR DAMAGE.

The main and nose wheel assemblies are shipped from the factory as a complete assembly. The bearing cones (5-13) and (8-12) are packed with Mobil Aviation Grease SHC 100 bearing grease.

The correct application of grease to the tapered roller bearing will reduce friction, dissipate heat and maintain a rust and corrosion proof coating on the operating surfaces of the roller bearings.

NOTES

- Pack the bearing cones just before installation to prevent contamination.
- Bearing cones can be packed by hand or by using a mechanical bearing greaser. The mechanical bearing greaser will do a more thorough job of packing the grease.

a. Clean bearing cones carefully in a separate container of mineral spirits.

CAUTION: DO NOT SPIN BEARING CONES WITH COMPRESSED AIR.

b. After cleaning, thoroughly dry with filtered dry compressed air.

c. Push and force the grease up and out between the rollers, cone and cage.

d The bearing is properly greased when no voids or daylight can be observed between the rollers and inner and outer races.

e Disperse excess grease around each end and the roller surfaces of each cone.

NOTE: Shaded area indicates the recommended amount of grease.

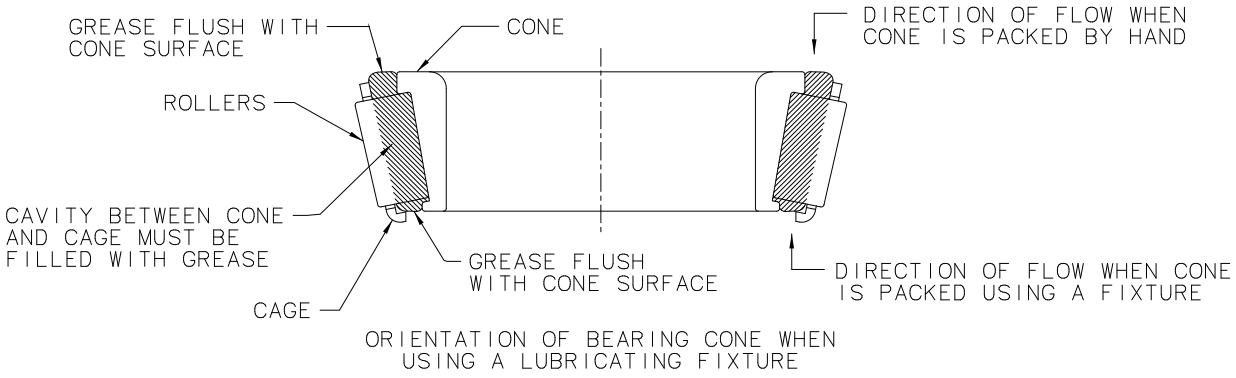

Figure 1 Pack the bearing cones

11.0 KIT INSTALLATION – MAIN LANDING GEAR EQUIPMENT

Read this installation manual and review the installation drawing before removing and installing components.

SAFETY WARNING: MAKE SURE THE AIRCRAFT IS SECURE AND STABLE BEFORE BEGINNING ANY WORK. WORKING UNDER AN AIRCRAFT THAT IS NOT SECURE AND STABLE CAN CAUSE INJURY OR DEATH.

SAFETY WARNING: COMPLETELY DEFLATE THE TIRE BEFORE REMOVING THE VALVE CORE. VALVE CORES UNDER PRESSURE CAN BE EJECTED WITH GREAT FORCE AND CAN CAUSE INJURY OR DEATH.

11.1 Airframe and equipment modifications

Read the following modifications before removing and installing components. These modifications will be accomplished after removal of the original equipment.

a. The brake adjuster valve, B.F.G. P/N B107-19 must be opened to and locked in the maximum open position, or removed and replaced with a union type fitting, P/N AN815-4D.

b. The brake master cylinder, Gladden Products Corp. P/N 145-58015-5 must be modified as follows.

1 Refer to Figure 2. The check valve and spring subassembly in the bottom (pressure) end of the master cylinder must be removed. The rubber seat must be retained to maintain the proper piston-to-body relationship. This will eliminate possible retention of brake pressure upon release of brake application.

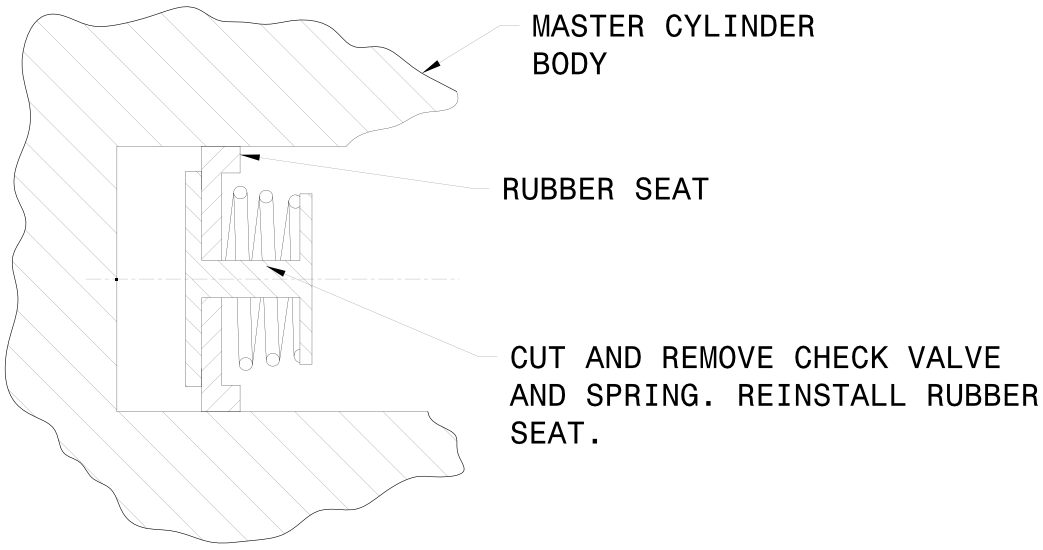

Figure 2 Check valve and spring subassembly modification

c. The brake adjustment valve, B.F.G. P/N B107-19 should be located behind the instrument panel (below and to the right of the master cylinder).

11.2 Remove the original equipment

CAUTION: ALWAYS CHECK THE CONDITION OF ORIGINAL EQUIPMENT HARDWARE THAT WILL BE RETAINED AND REPLACE THESE ITEMS AS NEEDED.

a. Refer to the aircraft maintenance manual instructions on jacking and supporting the aircraft.

b. Block the brake pedals in the retracted position to prevent movement during conversion.

c. Deflate the tire. Remove the cap from the tube valve stem and deflate the tire by pushing the valve stem plunger until air can no longer be heard escaping from the tube.

d. When all the tire pressure has been released remove the valve core from the inside of the valve stem.

NOTE: It is recommended that new cotter pins be used. The cotter pins are not supplied as part of the 199-52 kit and must be obtained separately. Refer to the aircraft parts catalog for part identification.

e. Remove and retain the axle hardware. Discard the cotter pin.

f. Refer to Installation Drawing, 50-30. Remove the original wheel and brake equipment, then:

1 Remove the existing hydraulic line and flex hose between the strut cylinder fitting and brake.

2 Install the hydraulic hose assembly, item (8) P/N 207-00300. Route the hose assembly through the existing clamp (MS21919) on the scissors. Cap the end of the hose assembly.

g. Repeat for the other side.

h. Perform necessary modifications. See section 11.1, Modifications.

11.3 Install the Cleveland equipment

Refer to Figure 4, main wheel assembly IPL and Figure 5, main brake assembly IPL for identification of the main wheel and brake assembly components.

11.3.1 Mount the tire

a. Remove the following items from the wheel assembly and place on a clean surface to prevent contamination or damage.

- from the inner wheel half subassembly: snap ring (5-17), grease seal rings (5-14) and grease seal felt (5-16).
- from the outer wheel half subassembly: snap ring (5-17), grease seal rings (5-14) and grease seal felt (5-15).

CAUTION: HANDLE BEARING CONES WITH CARE TO PREVENT CONTAMINATION OR DAMAGE.

b. Next, remove the bearing cones (5-13) from each side. Place the bearing cones on a clean surface to prevent contamination or damage.

CAUTION: DO NOT USE AN IMPACT WRENCH OR A POWER WRENCH TO REMOVE OR INSTALL THE WHEEL NUTS AND BOLTS. THESE TOOLS CAN DAMAGE THE EXTERNAL FEATURES OF THE NUTS AND BOLTS AND MATING COMPONENTS.

c. Remove all nuts (5-12), washers (5-11) and bolts (5-10).

d. Remove the brake disc (5-9) and place to the side.

e. Examine the bead seat area of the wheel halves. If necessary, remove all lubricant, grease or foreign material with a clean cloth moistened with a mild soap and water solution or with denatured alcohol.

f. The mating surfaces of the wheel halves should not have nicks, burrs, small dents, or other damage. Damaged mating surfaces can prevent the wheel halves from mating.

g. Verify that the tire is clean inside. If it is not clean, then wipe the bead base with a clean cloth dampened with a mild dishwashing soap and water solution or a suitable rubber cleaner.

NOTE: A new tube should be used when installing a new tire.

h. After the inside of the tire has been cleaned, lubricate lightly with tire talc.

i. Inflate the tube with dry nitrogen to slightly round, and insert in the tire. The tube heavy spot is indicated by a painted yellow stripe about ½ inch wide by 2 inches long. Align the stripe on the tube with the tire red balance dot. If the tube has no balance mark, align the tube valve with the tire red balance dot.

j. Position the tire on the outer wheel half, inserting the valve stem through the valve hole in the wheel.

k. Position the inner wheel half inside the tire, aligning as necessary to clear the valve stem and align the bolt holes of both wheel halves.

l. Continue to paragraph 11.3.2. Attach the Wheel Halves.

11.3.2 Attach the wheel halves

NOTE: The nuts (5-12) must be located on the outer wheel half side.

a. Install the brake disc (5-9) in the inner wheel half (5-3) aligning the bolt holes.

CAUTION: DO NOT DAMAGE THE TIRE TUBE VALVE DURING WHEEL ASSEMBLY.

NOTE: The use of a fixture is permitted to evenly draw the wheel halves together prior to tightening the fasteners. Do not allow the fixture to damage the wheel halves or any installed components.

b. Install at least two bolts (5-10) with washers (5-11) and compress the wheel halves by hand so that the nuts can be started on the bolts. Install a washer (5-11) and nut (5-12) on each bolt. Tighten the nuts by hand as far as possible. Install the remaining bolts, washers, and nuts.

SAFETY WARNING: FAILURE TO PROPERLY TORQUE THE WHEEL ASSEMBLY FASTENERS MAY CAUSE FASTENER/WHEEL FAILURE AND SERIOUS INJURY.

CAUTIONS:

- DO NOT USE POWER TOOLS FOR THE INSTALLATION OF WHEEL FASTENERS. POWER TOOLS CAN CAUSE OVER TIGHTENING.
- THE FASTENERS MUST BE TIGHTENED BY APPLYING THE TORQUE TO THE NUT WHLE HOLDING THE BOLT HEAD.

c. Use a criss-cross pattern to first snug the wheel nuts to seat the flange, then apply the final torque evenly in a criss-cross pattern to 150 lb-in (16,9 N-m).

11.3.3 Install the remaining main wheel assembly components

CAUTION: THE FELT GREASE SEALS (5-15), (5-16) ARE SHIPPED DRY. THEY MUST BE LUBRICATED TO PROVIDE PROTECTION AND LUBRICANT RETENTION FOR THE BEARINGS. IF THEY ARE NOT PROPERLY LUBRICATED THEN MOISTURE CAN SOAK PAST THE FELTS AND CONTACT THE BEARINGS WHICH CAN LEAD TO BEARING FAILURE.

a. Place the wheel/tire unit on a clean surface.

b. Swab the exposed surfaces of the bearing cup, bearing bore hub and the grease seal/snap ring areas with bearing grease (Mobil Aviation Grease SHC 100).

c. Refer to Section 10.1 and lubricate the seal felts (5-15) and (5-16).

d. Refer to Figure 3 and install the following components.

1 Install the following in the inner wheel half (5-3):

- The bearing cone (5-13). Align in the bearing cup (5-4).
- The first grease seal ring (5-14).
- The grease seal felt (5-16). Position against the first grease seal ring (5-14).
- The second grease seal ring (5-14).
- The snap ring (5-17). Install the end of the snap ring into the groove in the hub of the wheel half and wind or spiral the ring into the groove.

2 Install the following in the outer wheel half (5-6):

- The bearing cone (5-13). Align in the bearing cup (5-4).
- The first grease seal ring (5-14).
- The grease seal felt (5-15). Position against the first grease seal ring (5-14).
- The second grease seal ring (5-14).
- The snap ring (5-17). Install the end of the snap ring into the groove in the hub of the wheel half and wind or spiral the ring into the groove.

3 Excess grease will squeeze out. Remove the excess grease with an inward rotating movement against the bearing cone ID. Disperse any small amounts of grease on the exterior surface of the grease seal and snap ring and remove any grease from the hub outside surface.

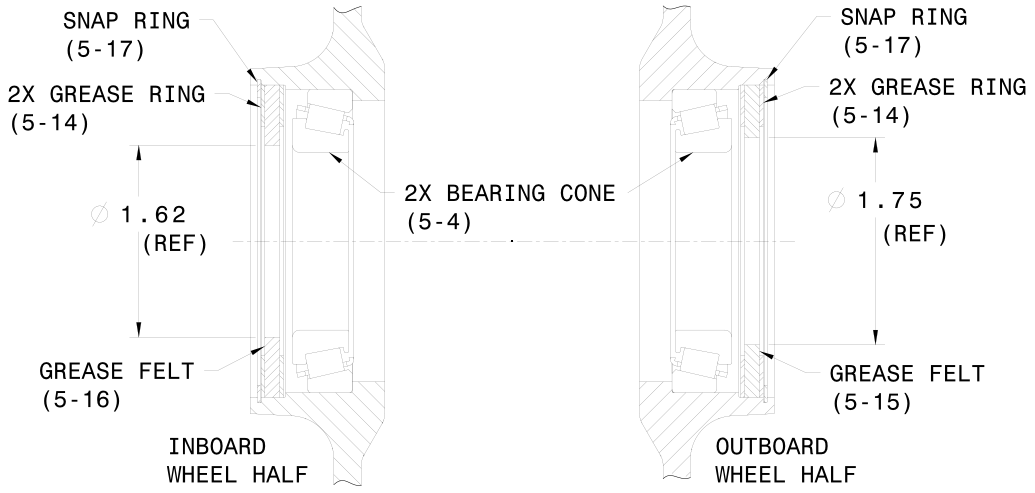

Figure 3 Main wheel assembly grease seal components

SAFETY WARNING: PLACE THE WHEEL/TIRE ASSEMBLY IN A SAFETY CAGE DURING INFLATION TO PREVENT INJURY TO PERSONNEL FROM POSSIBLE EXPLOSION.

NOTE: Refer to the aircraft maintenance manual for recommended tire operating pressure.

e. Inflate the tire per the tire manufacturer's specifications to seat the beads on the wheel. Follow the aircraft maintenance manual to inflate the tire to the operating pressure. Set the wheel/tire assembly to the side.

11.3.4 Mount the torque plate

Refer to Installation Drawing, 50-30.

a. Attach the torque plate assembly to the axle strut mounting flange.

11.3.5 Mount the main wheel/tire assembly

Refer to Installation Drawing, 50-30.

a. Slide the first axle spacer, item (4) P/N 067-03200, onto the axle seated against the axle strut face.

b. Carefully slide the wheel/tire unit onto the axle.

c. Slide the second axle spacer, item (3) P/N 067-02900, onto the axle seated against the outer bearing cone.

d. Install the axle nut. Rotate the wheel and hand tighten the axle nut to properly seat the wheel bearings. When the bearings are seated, hand tighten the nut until it stops. Back off to the nearest hole and insert the cotter pin.

e. Install the dust shield, item (7) P/N 157-01000, using the three screws, item (6) P/N 102-00600 and washers, item (5) P/N 095-15100.

f. Repeat for the other side.

11.3.6 Mount the main brake assembly

Refer to Figure 4.

a. Loosen the four back plate attachment bolts (6-16) and remove the two back plate assemblies (6-11) and the shim (6-13) from the cylinder (6-3).

CAUTIONS

- DO NOT FORCE THE CYLINDER ANCHOR BOLTS INTO THE TORQUE PLATE BUSHING BUSHINGS.
- DO NOT USE A LIQUID TYPE LUBRICANT ON THE ANCHOR BOLTS AND BUSHING I.D. LIQUID LUBRICANT WILL ALLOW DIRT AND MOISTURE TO COLLECT AND INCREASE THE RISK OR CORROSION, BINDING, AND WEAR.

b. Apply a dry film lubricant to the anchor bolts and the I.D. of the torque plate bushings. This will help installation and give easier operation. Refer to AWBCMM0001 or AWBTSG0001 for a list of recommended lubricants.

c. Engage the brake assembly into the torque plate by sliding the anchor bolts (6-13) through the torque plate bushings.

CAUTION: DO NOT USE IMPACT OR POWER WRENCHES TO TORQUE THE BOLTS. THE USE OF IMPACT OR POWER WRENCHES CAN CAUSE OVER TIGHTENING.

d. Install the shim (6-13) and back plate assemblies (6-11) between the brake disc (5-9) and the inner wheel flange. Thread the bolts (6-17) into the back plate assemblies and dry torque the bolts to 90 lb-in (10,2 N-m).

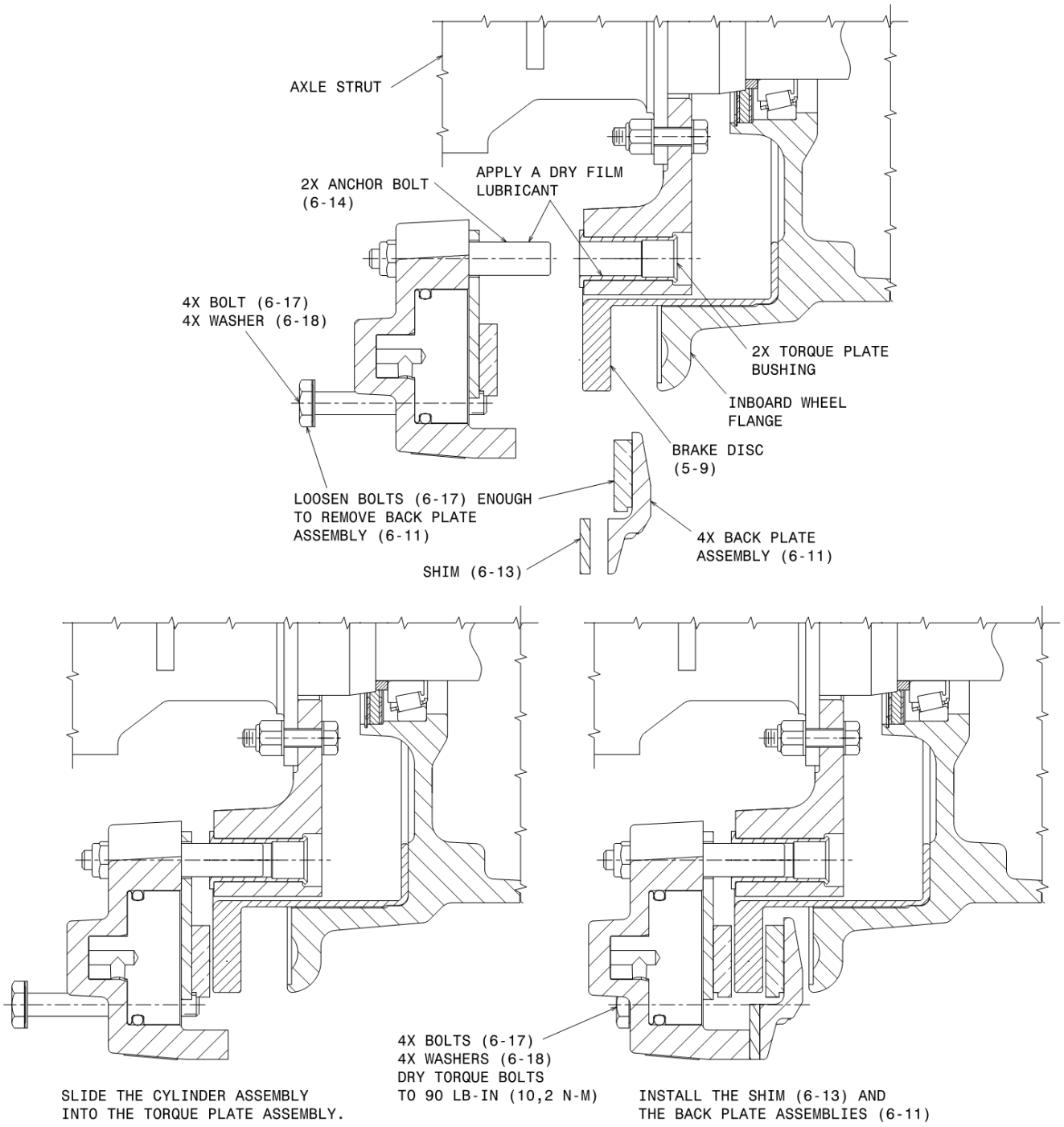

Figure 4 Mount the main brake assembly

11.4 Complete the hydraulic connections

a. Connect the hydraulic line to the brake inlet fitting and tighten in accordance with the aircraft maintenance manual. Repeat for the remaining brake.

11.5 Bleed the system

Upon completion of the installation, bleed the system in accordance with the aircraft maintenance manual and follow paragraph 11.6 System checks.

11.6 System checks

After bleeding the system, check the following:

a. The wheel assemblies should rotate freely. There should be no evidence of binding or excessive brake drag.

b. Check for proper operation of main gear.

c. Check for and eliminate possible interference peculiar to individual aircraft.

11.7 Condition the brake lining

When new linings are installed, it is important to condition them properly to obtain the service life designed into them.

Perform the brake lining conditioning procedure after installation of the nose wheel assembly. Refer to section 12.0 KIT INSTALLTION – NOSE WHEEL EQUIPMENT for procedures on installing the nose wheel.

Condition linings in accordance with Parker Hannifin product reference memo PRM13A (included with kit paperwork).

11.8 Weight and balance data

Fill out the weight and balance sheet included in the 199-52 kit publication package.

11.9 Main wheel assembly illustrated parts list

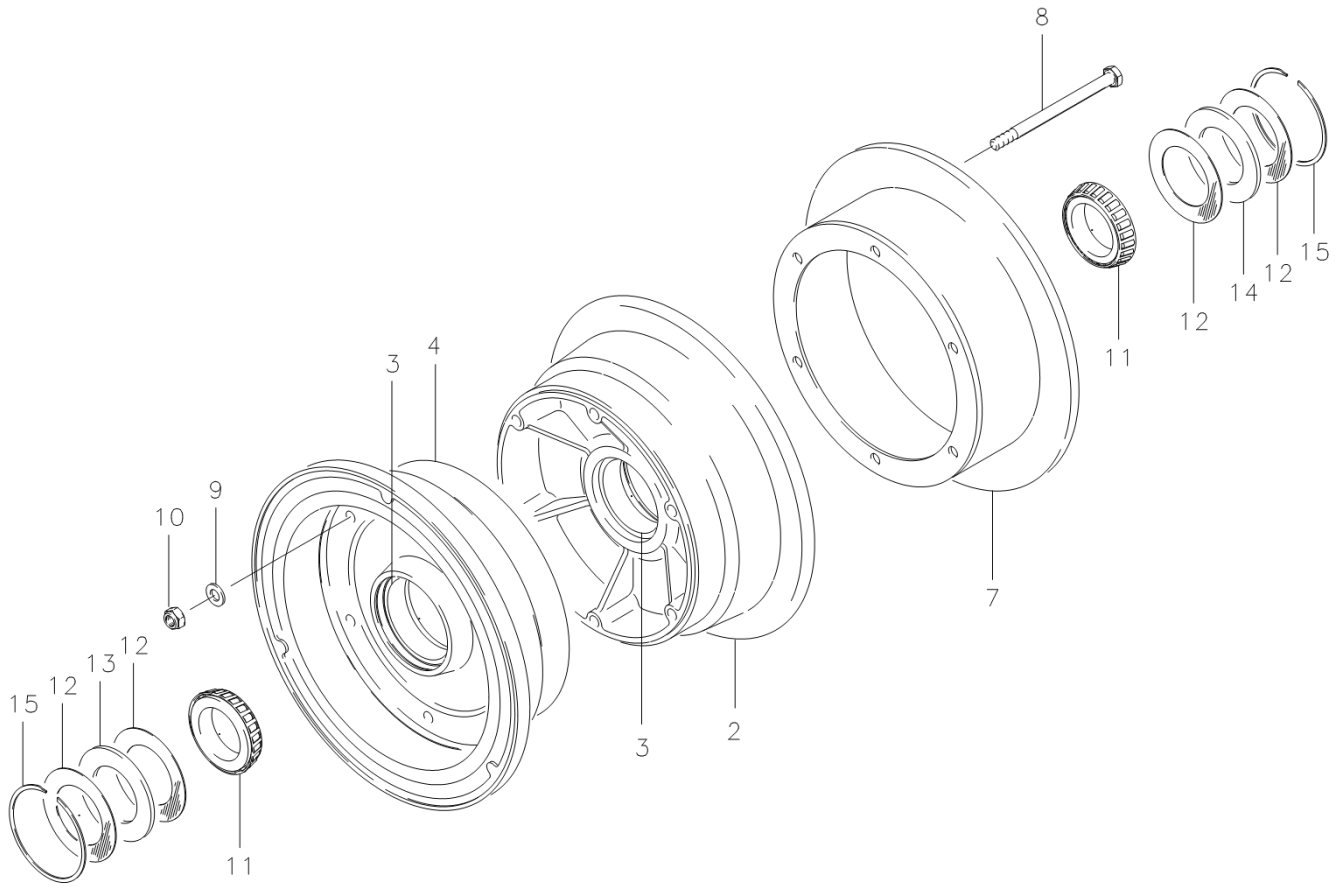

Figure 5 40-98D Main wheel assembly

ITEM	PART NO.	DESCRIPTION	QTY
5-1	40-98D	Main wheel assembly	RF
2	161-02300	• Inner wheel half subassy.	1
3	214-00100	• • Cup, bearing	1
4	162-04800	• Outer wheel half subassy.	1
3	214-00100	• • Cup, bearing	1
– 5	166-19700	• Nameplate	1
– 6	166-20000	• Nameplate, warning	1
7	164-02707	• Brake disc	1

ITEM	PART NO.	DESCRIPTION	QTY
8	103-20400	• Bolt (AN5-35A)	6
9	095-10500	• Washer (AN960-516)	6
10	094-10400	• Nut (MS21044-N5)	6
11	214-00200	• Cone, bearing	2
12	153-01600	• Ring, grease seal	4
13	154-01400	• Felt, grease seal	1
14	154-00300	• Felt, grease seal	1
15	155-00100	• Ring, retaining	2

Dash (–) in front of the Item number: Item Not Illustrated.

11.10 Main brake assembly illustrated parts list

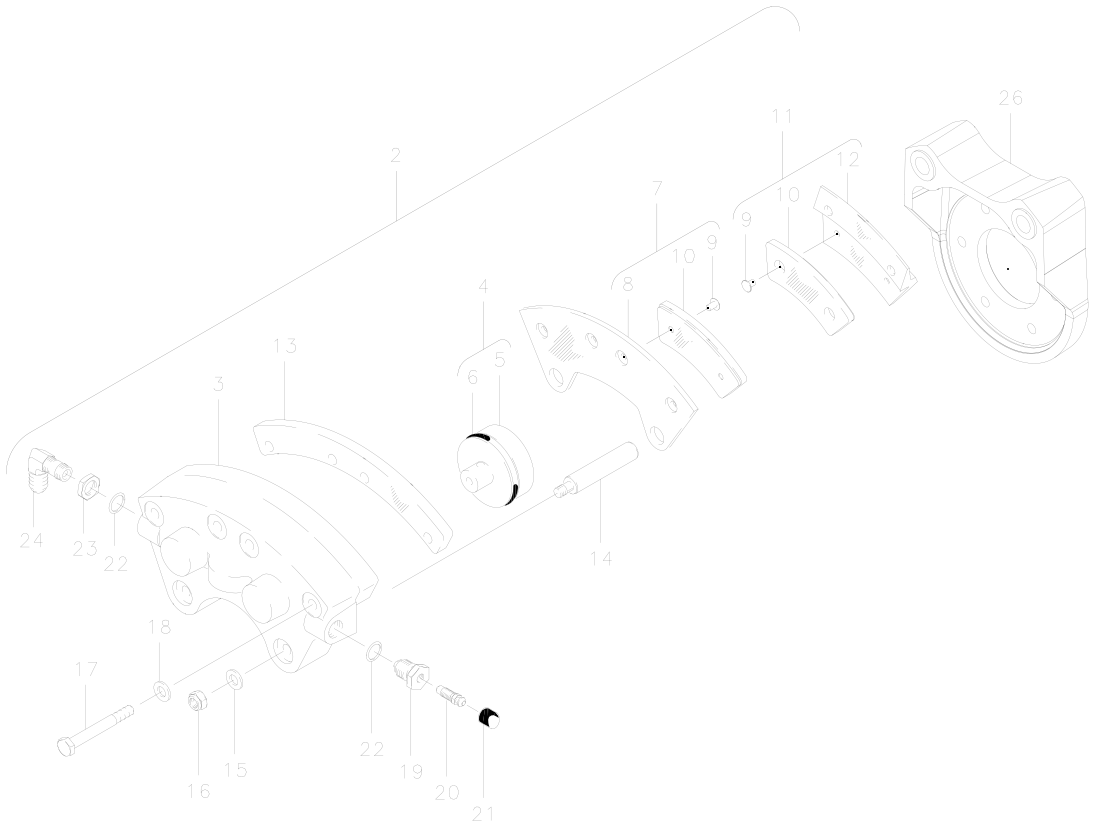

Figure 6 30-66B Main brake assembly

ITEM	PART NO.	DESCRIPTION	QTY
6-1	30-66B	Main brake assembly	RF
2	091-03500	• Cylinder assembly	1
3	061-02200	• • Cylinder	1
4	092-01600	• • Piston assembly	2
5	062-01500	• • • Piston	1
6	101-02700	• • • Preformed packing (AS28775-222)	1
7	073-02100	• • Pressure plate assy.	1
8	063-01400	• • • Pressure plate	1
9	105-00200	• • • Rivet	4
10	066-11000	• • • Lining	2
11	074-01700	• • Back plate assembly	2
12	064-01700	• • • Back plate	1
9	105-00200	• • • Rivet	2
10	066-11000	• • • Lining	1

ITEM	PART NO.	DESCRIPTION	QTY
13	068-02500	• • Shim-back plate	1
14	069-00400	• • Anchor bolt	2
15	095-10200	• • Washer (AN960-416L)	2
16	094-10300	• • Nut (MS21044-N4)	2
17	103-11800	• • Bolt	4
18	095-10400	• • Washer (AN960-416)	4
19	081-00200	• • Seat, bleeder	1
20	079-00300	• • Screw, bleeder	1
21	183-00100	• • Cap, bleeder	1
22	101-00700	• • Preformed packing (MS28775-012)	2
23	094-90500	• • Nut (AN924-4D)	1
24	104-02300	• • Fitting (AN833-4D)	1
– 25	166-01500	• • Nameplate	1
26	075-09800	• Torque plate assembly	1

Dash (–) in front of the Item number: Item Not Illustrated.

12.0 KIT INSTALLATION – NOSE LANDING GEAR EQUIPMENT

Read this installation manual and review the installation drawing before removing and installing components.

SAFETY WARNING: MAKE SURE THE AIRCRAFT IS SECURE AND STABLE BEFORE BEGINNING ANY WORK. WORKING UNDER AN AIRCRAFT THAT IS NOT SECURE AND STABLE CAN CAUSE INJURY OR DEATH.

SAFETY WARNING: COMPLETELY DEFLATE THE TIRE BEFORE REMOVING THE VALVE CORE. VALVE CORES UNDER PRESSURE CAN BE EJECTED WITH GREAT FORCE AND CAN CAUSE INJURY OR DEATH.

12.1 Airframe and equipment modifications

There are no modifications required for installation of the nose wheel assembly.

12.2 Remove the original equipment

CAUTION: ALWAYS CHECK THE CONDITION OF ORIGINAL EQUIPMENT HARDWARE THAT WILL BE RETAINED AND REPLACE THESE ITEMS AS NEEDED.

a. Refer to the aircraft maintenance manual instructions on jacking and supporting the aircraft.

b. Block the brake pedals in the retracted position to prevent movement during conversion.

c. Deflate the tire. Remove the cap from the tube valve stem and deflate the tire by pushing the valve stem plunger until air can no longer be heard escaping from the tube.

d. When all the tire pressure has been released remove the valve core from the inside of the valve stem.

e. Remove and retain the axle hardware.

f. Remove the original nose wheel equipment.

12.3 Install the Cleveland equipment

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

12.3.1 Mount the tire

a. Remove the following items from the wheel assembly and place on a clean surface to prevent contamination or damage.

- from the inner and outer wheel half subassemblies: snap rings (8-14) and grease seals (8-13).

CAUTION: HANDLE BEARING CONES WITH CARE TO PREVENT CONTAMINATION OR DAMAGE.

b. Next, remove the bearing cones (8-12) from each side. Place the bearing cones on a clean surface to prevent contamination or damage.

CAUTION: DO NOT USE AN IMPACT WRENCH OR A POWER WRENCH TO REMOVE OR INSTALL THE WHEEL NUTS AND BOLTS. THESE TOOLS CAN DAMAGE THE EXTERNAL FEATURES OF THE NUTS AND BOLTS AND MATING COMPONENTS.

c. Remove all nuts (8-11), washers (8-10) and bolts (8-9).

d. Examine the bead seat area of the wheel halves. If necessary, remove all lubricant, grease or foreign material with a clean cloth moistened with a mild soap and water solution or with denatured alcohol.

e. The mating surfaces of the wheel halves should not have nicks, burrs, small dents, or other damage. Damaged mating surfaces can prevent the wheel halves from mating.

f. Verify that the tire is clean inside. If it is not clean, then wipe the bead base with a clean cloth dampened with a mild dishwashing soap and water solution or a suitable rubber cleaner.

NOTE: A new tube should be used when installing a new tire.

g. After the inside of the tire has been cleaned, lubricate lightly with tire talc.

h. Inflate the tube with dry nitrogen to slightly round, and insert in the tire. The tube heavy spot is indicated by a painted yellow stripe about ½ inch wide by 2 inches long. Align the stripe on the tube with the tire red balance dot. If the tube has no balance mark, align the tube valve with the tire red balance dot.

i. Position the tire on the outer wheel half, inserting the valve stem through the valve hole in the wheel.

j. Position the inner wheel half inside the tire, aligning as necessary to clear the valve stem and align the bolt holes of both wheel halves.

k. Continue to paragraph 12.3.2. Attach the Wheel Halves.

12.3.2 Attach the wheel halves

NOTE: The nuts (8-11) must be located on the outer wheel half subassembly side.

a. Install the bolts (8-9) with washers (8-10) in the inner wheel half (8-3).

CAUTION: DO NOT DAMAGE THE TIRE TUBE VALVE DURING WHEEL ASSEMBLY.

NOTE: The use of a fixture is permitted to evenly draw the wheel halves together prior to tightening the fasteners. Do not allow the fixture to damage the wheel halves or any installed components.

b. Install at least two bolts (8-9) with washers (8-10) and compress the wheel halves by hand so that the nuts can be started on the bolts. Install a washer (8-10) and nut (8-11) on each bolt. Tighten the nuts by hand as far as possible. Install the remaining bolt, washer, and nut.

SAFETY WARNING: FAILURE TO PROPERLY TORQUE THE WHEEL ASSEMBLY FASTENERS MAY CAUSE FASTENER/WHEEL FAILURE AND SERIOUS INJURY.

CAUTIONS:

- DO NOT USE POWER TOOLS FOR THE INSTALLATION OF WHEEL FASTENERS. POWER TOOLS CAN CAUSE OVER TIGHTENING.
- THE FASTENERS MUST BE TIGHTENED BY APPLYING THE TORQUE TO THE NUT WHLE HOLDING THE BOLT HEAD.

c. First snug the wheel nuts to seat the flange, then apply the final torque evenly to 150 lb-in (16,9 N-m).

12.3.3 Install the remaining nose wheel assembly components

a. Place the wheel/tire unit on a clean surface.

b. Swab the exposed surfaces of the bearing cup, bearing bore hub and the grease seal/snap ring areas with bearing grease (Mobil Aviation Grease SHC 100).

c. Apply a light coat of bearing grease (Mobil Aviation Grease SHC 100) to the molded rubber of the grease seals (8-13).

d. Refer to Figure 7 and install the following components.

1 Install the following in both the inner wheel half (8-3) and outer wheel half (8-6):

- The bearing cone (5-13). Align in the bearing cup (5-4).
- The first grease seal ring (5-14).
- The grease seal felt (5-16). Position against the first grease seal ring (5-14).
- The second grease seal ring (5-14).
- The snap ring (5-17). Install the end of the snap ring into the groove in the hub of the wheel half and wind or spiral the ring into the groove.

2 Excess grease will squeeze out. Remove the excess grease with an inward rotating movement against the bearing cone ID. Disperse any small amounts of grease on the exterior surface of the grease seal and snap ring and remove any grease from the hub outside surface.

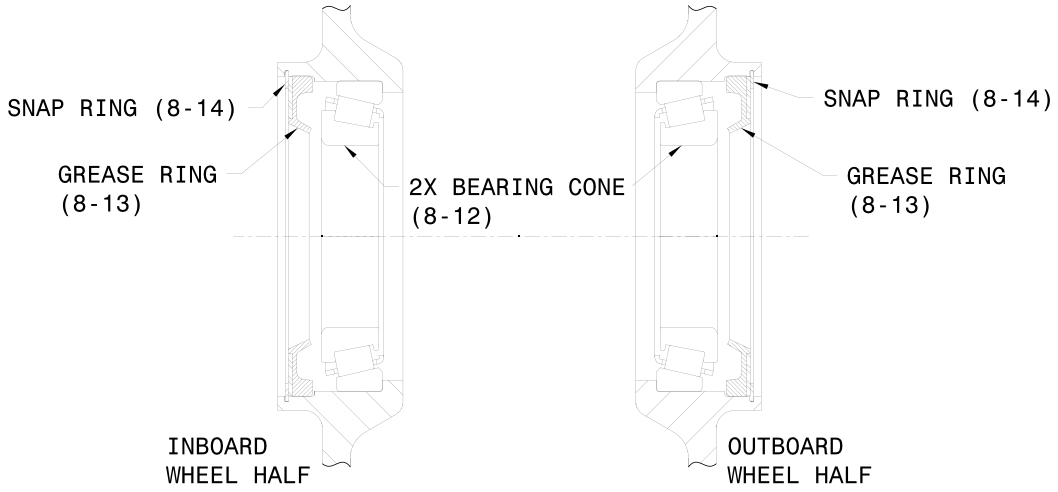

Figure 7 Nose wheel assembly grease seal components

SAFETY WARNING: PLACE THE WHEEL/TIRE ASSEMBLY IN A SAFETY CAGE DURING INFLATION TO PREVENT INJURY TO PERSONNEL FROM POSSIBLE EXPLOSION.

NOTE: Refer to the aircraft maintenance manual for recommended tire operating pressure.

e. Inflate the tire per the tire manufacturer's specifications to seat the beads on the wheel. Follow the aircraft maintenance manual to inflate the tire to the operating pressure. Set the wheel/tire assembly aside.

12.3.4 Mount the nose wheel assembly

Refer to Installation Drawing, 50-29.

a. Install an axle spacer, item (2) P/N 067-03100, into each end of the nose wheel assembly.

NOTE: The axle spacers will seat against the bearing cones.

b. Carefully slide the wheel/tire unit between the forks of the nose gear strut.

c. Insert the axle into the fork and through the spacers and wheel assembly.

d. Install the end caps.

e. Install the axle bolt, washers, and nut. Follow the aircraft manual for torqueing instructions.

12.4 System checks

After installation is complete, check the following:, the wheel assemblies should rotate freely. There should be no evidence of binding or excessive brake drag. Check for possible interference particular to each aircraft.

a. The wheel assemblies should rotate freely.

b. Check for proper operation of nose gear.

c. Check for and eliminate possible interference peculiar to individual aircraft.

12.5 Weight and balance data

Fill out the weight and balance sheet included in the 199-52 kit or 199-52A kit publication package.

12.6 Nose wheel assembly illustrated parts list

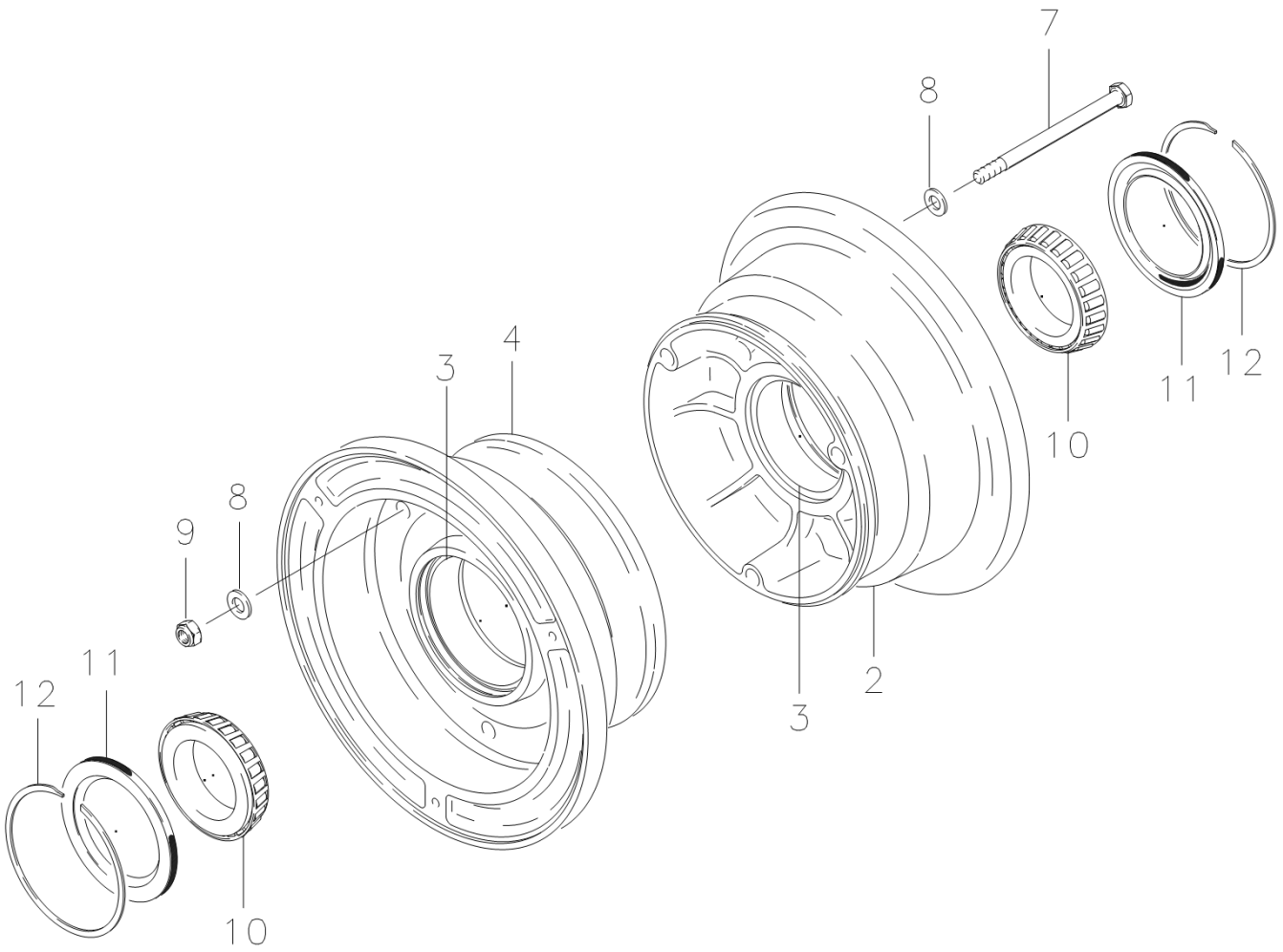

Figure 8 40-76B Nose wheel assembly

ITEM	PART NO.	DESCRIPTION	QTY
8-1	40-76B	Nose wheel assembly	RF
2	161-03000	• Inner wheel half subassy.	1
3	214-00100	• • Cup, bearing	1
4	162-02700	• Outer wheel half subassy.	1
3	214-00100	• • Cup, bearing	1
– 5	166-19700	• Nameplate	1
– 6	166-20000	• Nameplate, warning	1

ITEM	PART NO.	DESCRIPTION	QTY
7	103-20400	• Bolt (AN5-35A)	3
8	095-10500	• Washer (AN960-516)	6
9	094-10400	• Nut (MS21044-N5)	3
10	214-00200	• Cone, bearing	2
11	154-03000	• Seal, grease	2
12	155-00100	• Ring, retaining	2

Dash (–) in front of the Item number: Item Not Illustrated.

13.0 KIT PARTS LIST

199-52 kit

SEE NOTE	PART NUMBER	DESCRIPTION	QUANTITY
(1)	40-98D	Main wheel assembly	2
(2)	30-66B	Main brake assembly	2
(3)	40-76B	Nose wheel assembly	1
	067-02900	Axle spacer, main landing gear	2
	067-03100	Axle spacer, nose landing gear	2
	067-03200	Axle spacer, main landing gear	2
	095-15100	Dust shield washer	6
	102-00600	Dust shield screw (8-32 x 0.250)	6
	157-01000	Dust shield	2
	207-00300	Hose assembly	2

Publication package for 199-52 kit

SEE NOTE	DOCUMENT NUMBER	DESCRIPTION	QUANTITY
	IM199-52	Installation manual	1
	50-29	Installation drawing, nose landing gear	1
	50-30	Installation drawing, main landing gear	1
(4)	SA36GL	Supplemental Type Certificate	1
	PRM13A	Conditioning Procedure for Non Asbestos Organic Brake Lining	1
	PRM69	Availability of General Maintenance Information & Torquing Procedures	1
	-------	Weight and balance sheet	1
	-------	Product registration card	1

Notes:

(1) For parts identification: See Figure 5; 40-98D IPL.

(2) For parts identification: See Figure 6; 30-66B IPL.

(3) For parts identification: See Figure 8; 40-76B IPL.

(4) Supplemental Type Certificate is included in the 199-52 kit publication package and covers the following Navion Aircraft models:

A, B, D, E, F, G, H

13.0 KIT PARTS LIST (continued)

199-52A kit

SEE NOTE	PART NUMBER	DESCRIPTION	QUANTITY
(1)	40-98D	Main wheel assembly	2
(2)	30-66B	Main brake assembly	2
	067-02900	Axle spacer, main landing gear	2
	067-03200	Axle spacer, main landing gear	2
	095-15100	Dust shield washer	6
	102-00600	Dust shield screw (8-32 x 0.250)	6
	157-01000	Dust shield	2
	207-00300	Hose assembly	2

Publication package for 199-52A kit

SEE NOTE	DOCUMENT NUMBER	DESCRIPTION	QUANTITY
	IM199-52	Installation manual	1
	50-30	Installation drawing, main landing gear	1
(3)	SA46GL	Supplemental Type Certificate	1
	PRM13A	Conditioning Procedure for Non Asbestos Organic Brake Lining	1
	PRM69	Availability of General Maintenance Information & Torquing Procedures	1
	-------	Weight and balance sheet	1
	-------	Product registration card	1

Notes:

(1) For parts identification: See Figure 5; 40-98D IPL.

(2) For parts identification: See Figure 6; 30-66B IPL.

(3) Supplemental Type Certificate is included in the 199-52 kit publication package and covers the following Navion Aircraft models:

A, B, D, E, F, G, H

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

CONDITIONING PROCEDURE FOR
NON ASBESTOS ORGANIC BRAKE LINING

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.

Conditioning may be accomplished as follows:

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.

2. Allow brakes to cool for 10 - 15 minutes.

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.

4. If static run up cannot be held, repeat steps 1 through 3 as needed to successfully hold.

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.

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 PRM.

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

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

United States of America

Department of Transportation — Federal Aviation Administration

Supplemental Type Certificate

Number SA36GL

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 3 *of the Civil Air Regulations:* effective November 13, 1945; Models D, E, and F wing, landing gear and flight test requirements (CAR 3 effective May 15, 1956); Models G & H, all except powerplant (CAR 3 effective May 15, 1956).

Original Product — Type Certificate Number A782

Make Navion

Model A, B, D, E, F, G, and H

Description of Type Design Change

Install Cleveland Aircraft Products Wheel and Brake Conversion Kit P/N 199-52 in accordance with Cleveland Installation Drawings 50-29 dated February 16, 1973, and 50-30 Revision A, dated August 30, 1973.

Limitations and Conditions

This 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 June 29, 1973

Date of issuance October 3, 1973

Date reissued July 23, 1974 October 28, 1980

Date amended

By direction of the Administrator

W. F. Horn, Jr. *(Signature)*
Chief, Engineering and Manufacturing Branch,
Great Lakes Region AGL-210
(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)

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

Cleveland
Wheels & Brakes

WEIGHT AND BALANCE

FOR

199-05200 KIT

Major components of this kit may differ in weight from existing equipment. Removed components as listed should be weighed. Subtract old installation weight from new installation weight to determine weight change created by installation of this kit. Multiply weight change by moment (applicable to aircraft) and revise weight and balance information in aircraft log book.

DATA

OLD INSTALLATION

Unit	Weight / Unit		# of Units		Weight	
Brake	_____	X	2	=	_____	LBS.
Wheel	_____	X	2	=	_____	LBS.
			TOTAL (MAINS)	=	_____	LBS.
Nose Wheel Total Weight				=	_____	LBS.

NEW INSTALLATION

Unit	Weight / Unit		# of Units		Weight	
Brake	4.00	X	2	=	8.00	LBS.
Wheel	11.10	X	2	=	22.20	LBS.
			TOTAL (MAINS)	=	30.20	LBS.
Nose Wheel Total Weight				=	4.10	LBS.

Parker
General Aviation