

AIRCRAFT WHEEL & BRAKE DIVISION  
 PARKER HANNIFIN CORPORATION  
 AVON, OHIO

PARTS LIST

199-174 CONVERSION KIT

ROCKWELL AERO COMMANDER

<u>PART NUMBER</u>	<u>DRAWING REVISION</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
40-140	Rev. E dated 05-23-2008	Wheel Assembly	1

Publication Package (P/N PP199-17400)

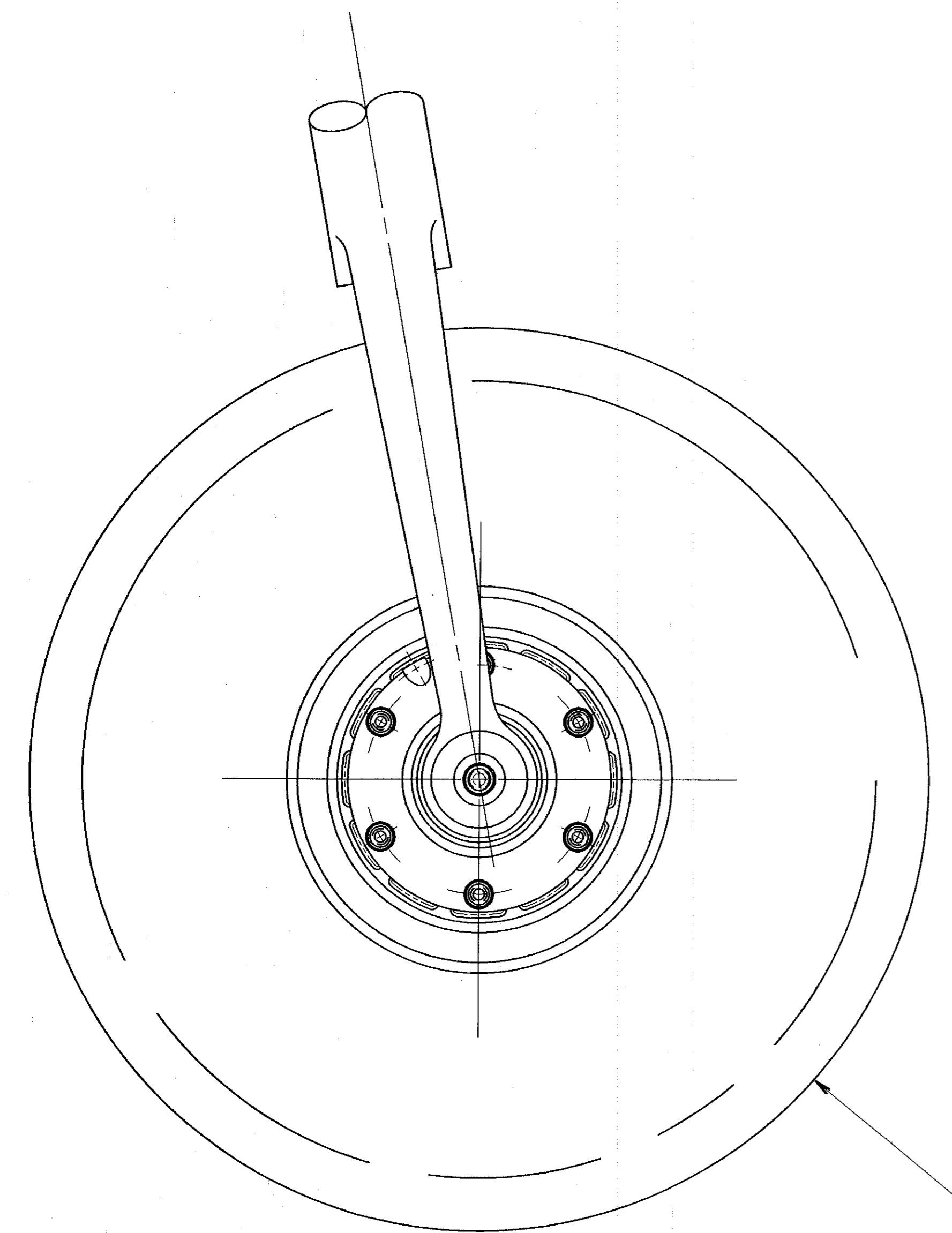
199-174 P/L	-----	Kit Parts List (This document)
50-130	Rev. A dated 10-23-1995	Installation Drawing
IM199-174	Rev. A dated 10-23-1995	Installation Manual
SA1457GL	Issue date 03-15-1990	Supplemental Type Certificate
SA1458GL	Issue date 03-15-1990	Supplemental Type Certificate
	-----	Pilot Operating Manual Inserts
	-----	Warranty Registration Card

**NOTES:**

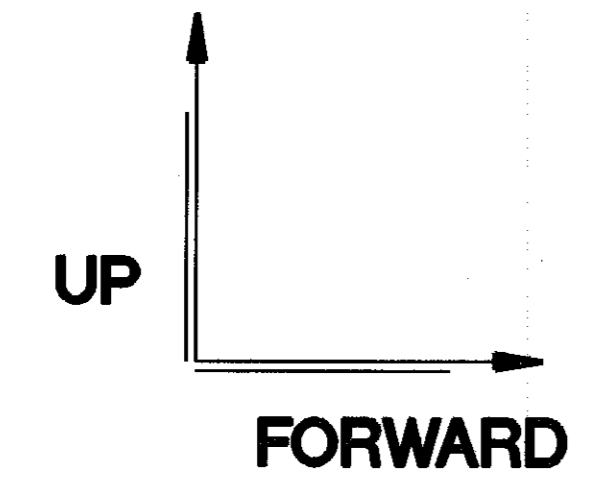
1. This kit will convert one aircraft to Cleveland Nose Wheels.

199-174  
 REV. NC  
 REV. A  
 REV. B  
 REV. C  
 03-23-1989 (295-57)  
 10-23-1995 (0318-79)  
 11-19-2007 (0377-29)  
 05-14-2009 (0384-81)

REV STATUS		REVISIONS			CHG BY	DATE	APPROVED
SHEET	LTR	CHANGE NOTICE	ZONE	LTR	DESCRIPTION OF CHANGE		
50-130	1/1	295/57	N/C		PRODUCTION RELEASE	PMH	03-27-89
		0318/79	A		SEE C/N	GL	10-23-95 <i>Berry Barker</i>



6.00 X6, 6 PLY TIRE TUBETYPE



40-140 NOSE WHEEL ASSY (ITEM 1)

EXISTING HARDWARE:  
 AXLE  
 AXLE SPACER- 2 EA.  
 AXLE PLUG- 2 EA.  
 AXLE BOLT  
 AXLE NUT

153-00900 RING, GR. SEAL (ITEM 11)- 4 EA.  
 154-01400 FELT, GR. SEAL (ITEM 12)- 2 EA.  
 155-00100 SNAP RING (ITEM 14)- 2 EA.

214-00200 BEARING CONE (ITEM 10)- 2 EA.

103-20400 BOLT (ITEM 7)- 6 EA.  
 095-10500 WASHER (ITEM 8)- 12 EA.  
 094-10400 NUT (ITEM 9)- 6 EA.

APPLICABILITY OF AIRCRAFT INSTALLATION  
 CLEVELAND KIT 199-174

MODEL	TIRE SIZE	PLY	TYPE	PRESSURE
ROCKWELL MODELS: SHRIKE 500 SERIES: 500, 500A, 500B, 500S, 500U, 560A, 560E COMMANDER SERIES: 560F, 680, 680E, 680FL, 681, 680FL(P), 680T, 680V, 680W, 685, 690, 690A, 690B, 690C, 690D, 695, 695A, 695B, 720	6.00 X 6 TYPE III	6 PLY	TUBETYPE	PER MANUAL

QTY	QTY	ITEM	FSCM NO.	PART NO.	DESCRIPTION	MATERIAL/SPEC.	ACT	CALC

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UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES:  
 DECIMALS: XX ± .030 ANGLAR DIMS: ± 1/2°  
 FRACTIONAL DIMS: ± .030  
 DO NOT SCALE DRAWING  
 GENERAL MACHINED SURFACES TO BE .125 FINISH UNLESS NOTED  
 PARKER  
 DWG. TITLE  
 INSTALLATION NOSE WHEEL  
 DATE 89-03-20  
 HUNYAD  
 DATE 89-03-20  
 BARKER  
 SCALE 33269  
 DWG. NO. 50-130  
 RELEASE DATE: 03-27-89(295/57) REV: A SHEET: 1 OF 1

**CLEVELAND WHEELS & BRAKES  
IM199-174  
INSTALLATION MANUAL  
FOR  
CONVERSION KIT  
199-174  
FOR  
ROCKWELL AERO COMMANDER  
MODELS SHRIKE 500 SERIES  
AND COMMANDER SERIES**

**Cleveland**  
Wheels & Brakes

  
Aerospace

**PARKER HANNIFIN CORPORATION - AIRCRAFT WHEEL & BRAKE**  
1160 Center Road - Avon, Ohio 44011 - Customer Service 1-800-Braking

***STOP!***

***PLEASE TAKE A FEW MOMENTS TO COMPLETE AND RETURN THE ATTACHED REGISTRATION CARD. IT IS IMPORTANT THAT ALL INFORMATION IS LEGIBLY PRINTED. THIS DATA WILL ASSIST PARKER HANNIFIN, AIRCRAFT WHEEL & BRAKE IN THE EVENT THAT NOTIFICATION TO END USERS OF SPECIFIC AIRWORTHINESS DOCUMENTS IS NECESSARY.***



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IM199-174 INSTALLATION MANUAL FOR  
CONVERSION KIT 199-174

LIST OF REVISIONS

REVISION	DATE	PAGE	DESCRIPTION	APVD
N/C	03-27-89	ALL	Initial Production Release Cleveland Wheels & Brakes Conversion Kit 199-174	BB (295-57)
<hr/>				
A	10-26-95	ALL	Reformatted with changes as listed below	
		4	Sect. 8.2 (a.): "conforming to MIL-G-81322" was "Mobil grease 77, Mobilux EP2"	
		6	Sect. 11.0: Wheel P/N "40-140" was "40-140A" Item 11: "153-00900 Qty 4" was "153-00300 Qty 2" Item 12: "154-01400 Qty 2" was "154-01300 Qty 2" Delete Item 13: "153-01500, Ring - Grease Seal, Qty 2"	
			Figure: Pictorial revision to reflect above	
		7	Sect. 12.0: Item 1: "40-140" was "40-140A"	
<hr/>				



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## IM199-174 INSTALLATION MANUAL FOR CONVERSION KIT 199-174

### **1.0 INTRODUCTION**

The information herein addresses the installation of Cleveland Conversion Kit . It is published for the guidance of qualified maintenance personnel responsible for the installation of Cleveland Conversion Kit , manufactured by Parker Hannifin Corporation, Aircraft Wheel and Brake.

### **1.1 PURPOSE**

This manual provides the necessary procedures to accomplish installation of Cleveland Conversion Kit. For information regarding service limits, maintenance and component overhaul, consult the Wheel and Brake Assemblies Component Maintenance Manual, published by Parker Hannifin, Aircraft Wheel and Brake. This manual should be passed on to the owner or retained by the maintenance facility for future reference.

### **1.2 KIT EQUIPMENT**

Each kit contains all materials needed to replace existing equipment with Cleveland Wheels and Brakes. Kit 199-174 will completely retrofit one aircraft to Cleveland equipment. Refer to Kit Parts List.

### **2.0 TSO NOTICE**

The wheels 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.

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.

FAA regulations subject both Parker Hannifin, Aircraft Wheel and Brake 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.



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IM199-174 INSTALLATION MANUAL FOR  
CONVERSION KIT 199-174

**3.0 APPLICABILITY**

**3.1 KIT 199-174**

The equipment supplied under Kit No. 199-174 is applicable to the following aircraft.

**TABLE I, APPLICABILITY**

"KIT 199-174":	MAKE	MODELS
	Rockwell	Shrike 500 Series: 500, 500A, 500B, 500S, 500U, 560A, 560E
	*Rockwell	Commander Series: 560F, 680, 680E, 680FL, 680FL(P), 680T, 680V, 680W, 681, 685, 690, 690A, 690B, 690C, 690D, 695, 695A, 695B, 720

**\* NOTE:**

This Kit not applicable to Models 680T, V, and W, S/N's 1473 thru 1725 which use 16 x 4.4, 4 ply nose tire.

**4.0 SAFETY**

Always follow proper safety precautions when handling or servicing any aircraft braking system or component(s) of such systems.

**CAUTIONS** and **WARNINGS** are noted throughout this manual, where applicable. Follow them when servicing aircraft wheel and brake equipment.

**5.0 PRODUCT REGISTRATION**

The product registration card is located at the front of this manual. The card is our way of tracking the conversion kits and your guarantee of receiving any future airworthiness information applicable to Conversion Kit No. 199-174. Please fill out the registration card completely and return promptly. Postage is prepaid.





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IM199-174 INSTALLATION MANUAL FOR  
CONVERSION KIT 199-174

## 6.0 **ORDER INFORMATION**

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

Parker Hannifin Corporation  
Aircraft Wheel and Brake  
Attn: Customer Service Dept.  
1160 Center Road  
Avon, Ohio 44011

Telephone: (216) 937-6211  
1-800-272-5464

Fax: (216) 937-5409

**NOTE:** to order the Wheel and Brake Assemblies Component Maintenance Manual, contact Aircraft Wheel and Brake.

## 7.0 **EQUIPMENT DESCRIPTION**

### 7.1 **WHEEL ASSEMBLY**

The wheel is cast magnesium and conforms to all tire and rim association standards for a 6.00-6 divided type wheel. It is a tube-type design only.

The wheel incorporates inboard and outboard halves which 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. Felt grease seals provide protection and lubricant retention for the bearing.

## 8.0 **KIT INSTALLATION**

**WARNING:** Insure aircraft is secure and stable before beginning any work. Working under an improperly stabilized aircraft could cause injury or death.

### 8.1 **REMOVE EXISTING EQUIPMENT**

- a. Jack aircraft in accordance with Rockwell Service Manual until tire is clear of ground. Fully deflate tire.
- b. Remove nose wheel, retaining axle spacers, plugs, bolt and nut.

## 8.2 INSTALL CLEVELAND EQUIPMENT

- a. The wheels 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.  
Use bearing grease conforming to MIL-G-81322.

- b. Remove the following items from both the inboard and outboard side of wheel assembly: snap rings, grease seals (rings and felts) and bearing cones. Place items on a clean surface to avoid contamination.
- c. Lightly coat/dampen grease seal felts with SAE 10 engine oil.
- d. Re-assemble bearing cones, grease seals (rings and felts) and snap rings.

**CAUTION:** Do not use impact or power wrenches to remove wheel nuts and bolts.

- e. Remove all six nuts, twelve washers and six bolts to separate wheel halves.
- f. Position inner wheel half sub-assembly on a flat surface with the register side up.
- g. Place serviceable tire and tube over inner wheel half sub-assembly and then place outer wheel half sub-assembly in tire, making sure to properly align inner and outer registers.
- h. Slide bolts through the wheel assembly. Install washers and nuts onto bolts. Torque to 150 in-lbs (dry).
- i. Inflate tire to airframe manufacturers recommended pressure in a safety cage.

**WARNING:** Place the wheel/tire in an inflation cage for initial inflation, to prevent injury to personnel from possible explosion.

- j. Install nose wheel / tire assembly and original axle spacers in gear fork and insert axle through fork spacers and nose wheel.
- k. Install axle plugs and axle bolt and nut. Tighten axle bolt until wheel bearings begin to bind, then back off until bearings are free.



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**9.0 WEIGHT AND BALANCE COMPUTATIONS**

Weigh existing nose wheel. Subtract from new weights to derive weight increase created by the kit installation. Multiply weight increase by applicable aircraft moment and revise weight and balance information in log book.

**9.1 WEIGHT AND BALANCE DATA**

New installed (nose gear leg)

Wheel assy..... 5.5 lbs.

Complete form 337 and make appropriate log book entries.

**10.0 PILOT OPERATING INSERTS**

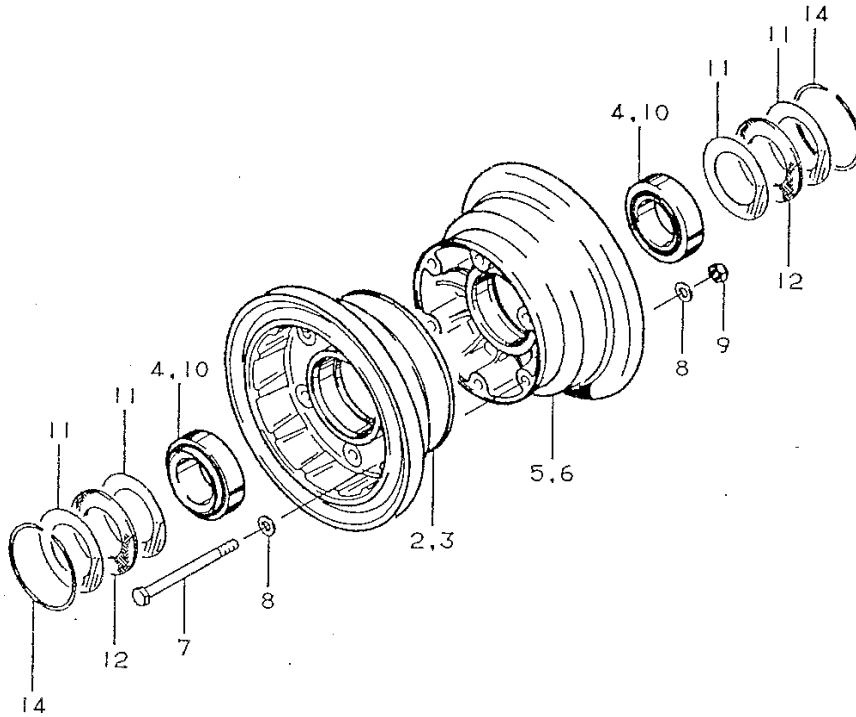
Inserts are located in front with conversion kit documentation.

Attach label in pilot operating manual as close as possible to the original section labeled Nose Wheel Assembly. Enter the correct arm and moment in blocks provided. Zero items out for the original nose wheel that has been removed.

Inserts are reprinted below for reference:

x	One 6.00-6 Type III Wheel Assembly, Cleveland P/N 40-140	5.5 ea.
---	-------------------------------------------------------------	---------

**11.0 WHEEL ASSEMBLY IPL**



ITEM	PART NUMBER	DESCRIPTION	QTY
1	40-140	Wheel Assembly	1
2	161-08200	Inner Wheel Half Assembly	1
3	151-07900	Inner Wheel Half	1
4	214-00100	Cup-Bearing	1
5	162-07700	Outer Wheel Half Assembly	1
6	152-07800	Outer Wheel Half	1
4	214-00100	Cup-Bearing	1
7	103-20400	Bolt AN5-35A	6
8	095-10500	Washer AN960-516	12
9	094-10400	Nut MS21044-N5	6
10	214-00200	Cone-Bearing	2
11	153-00900	Ring-Grease Seal	4
12	154-01400	Felt-Grease Seal	2
14	155-00100	Snap Ring	2
15	166-09600 (1)	Nameplate	1
16	166-09700 (1)	Nameplate	1

NOTES:  
(1) NOT ILLUSTRATED

**FIGURE 1**  
**ILLUSTRATED PARTS LIST (IPL) FOR 40-140 WHEEL ASSEMBLY**

**12.0 KIT PARTS LIST**

**199-174 KIT**

<u>SEE NOTE</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
(1)	40-140	Wheel Assembly	1
	IM199-174	Installation Manual for Conversion Kit 199-174	1
	50-130	Installation Drawing	1
	SA1457GL	STC	1
	SA1458GL	STC	1
	-----	Pilot Operating Manual Inserts	1
	-----	Product Registration Card	1

(1) For Subassembly and Parts identification: See Fig 1; 40-140 IPL



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](mailto:Clevelandwbhelp@parker.com)  
Web-site: [www.clevelandwheelandbrake.com](http://www.clevelandwheelandbrake.com)  
Manufacturer of Cleveland Wheels & Brakes

United States of America  
Department of Transportation — Federal Aviation Administration  
**Supplemental Type Certificate**

*Number* SA1457GL

*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. See Type Certificate Data Sheet No. 6A1 for complete certification basis.*

*Original Product — Type Certificate Number* 6A1  
*Make* Gulfstream Aerospace  
*Model* 500, 500-A, 500-B, 500-S, 500-U, 560-A, and  
560-E

*Description of Type Design Change:*

Installation of a Cleveland Nose Wheel in accordance with Parker Hannifin Conversion Kit Parts List 199-174, no revision, dated March 23, 1989, or later FAA Approved revision.

*Limitations and Conditions*

This approval should not be extended to other aircraft of this model on which other previously approved modifications are incorporated unless it is determined by the installer that the interrelationship between this change and any of the other previously approved modifications will introduce no adverse effect upon the airworthiness of that 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* April 12, 1989

*Date reissued*

*Date of issuance* March 15, 1990

*Date amended*



*By direction of the Administrator*

*Donald P. Michal*  
(Signature)

Donald P. Michal, Manager  
Chicago Aircraft Certification Office

(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*

United States of America  
Department of Transportation — Federal Aviation Administration  
**Supplemental Type Certificate**

*Number* SA1458GL

*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.* See Type Certificate Data Sheet No. 2A4 for complete certification basis.

*Original Product — Type Certificate Number* 2A4

*Make* Gulfstream Aerospace

*Model* 560-F, 680, 680-E, 680FL, 680FL(P), 680T, 680V,  
680W, 681, 685, 690, 690A, 690B, 690C, 690D, 695, 695A, 695B, and 720

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*Date of application* April 12, 1989

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*Date of issuance* March 15, 1990

*Date amended*



*By direction of the Administrator*

*Donald P. Michal*

(Signature)

Donald P. Michal, Manager  
Chicago Aircraft Certification Office

(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*