AIRCRAFT WHEEL & BRAKE DIVISION

PARKER HANNIFIN CORPORATION

AVON, OHIO

PARTS LIST

199-100 CONVERSION KIT

PIPER AIRCRAFT CORP. PA-31, PA-31-300,
PA-31-325, PA-31-350*

PART NUMBER	IBM CODE	DESCRIPTION	QUANTITY
30-138	030-13800	Brake Assembly	2
40-162	040-16200	Wheel Assembly	2
50-61	N/A	Installation Drawing	1
STC SA563GL	N/A	Supplemental Type Certificate	1
		Brake Lining Conditioning Sheet	1

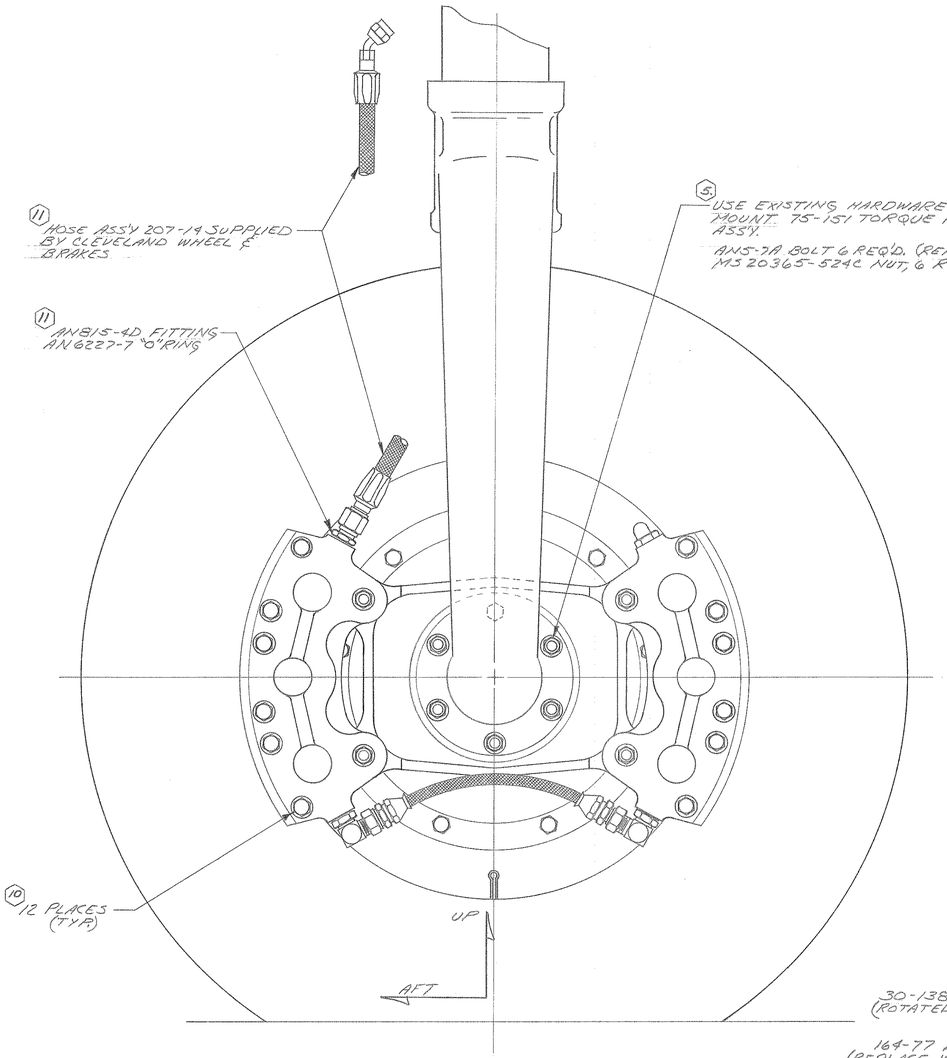
This kit will upgrade one aircraft currently using Cleveland wheel assemblies (part number 40-102, 40-102A or 40-130) and brake assemblies (part number 30-68, 30-68A, 30-68B or 30-95A).

*This kit applicable only to aircraft using Cleveland wheels and brakes.

199-100
09-10-80
02-27-81 267-4
10-09-81 REV A 268-60

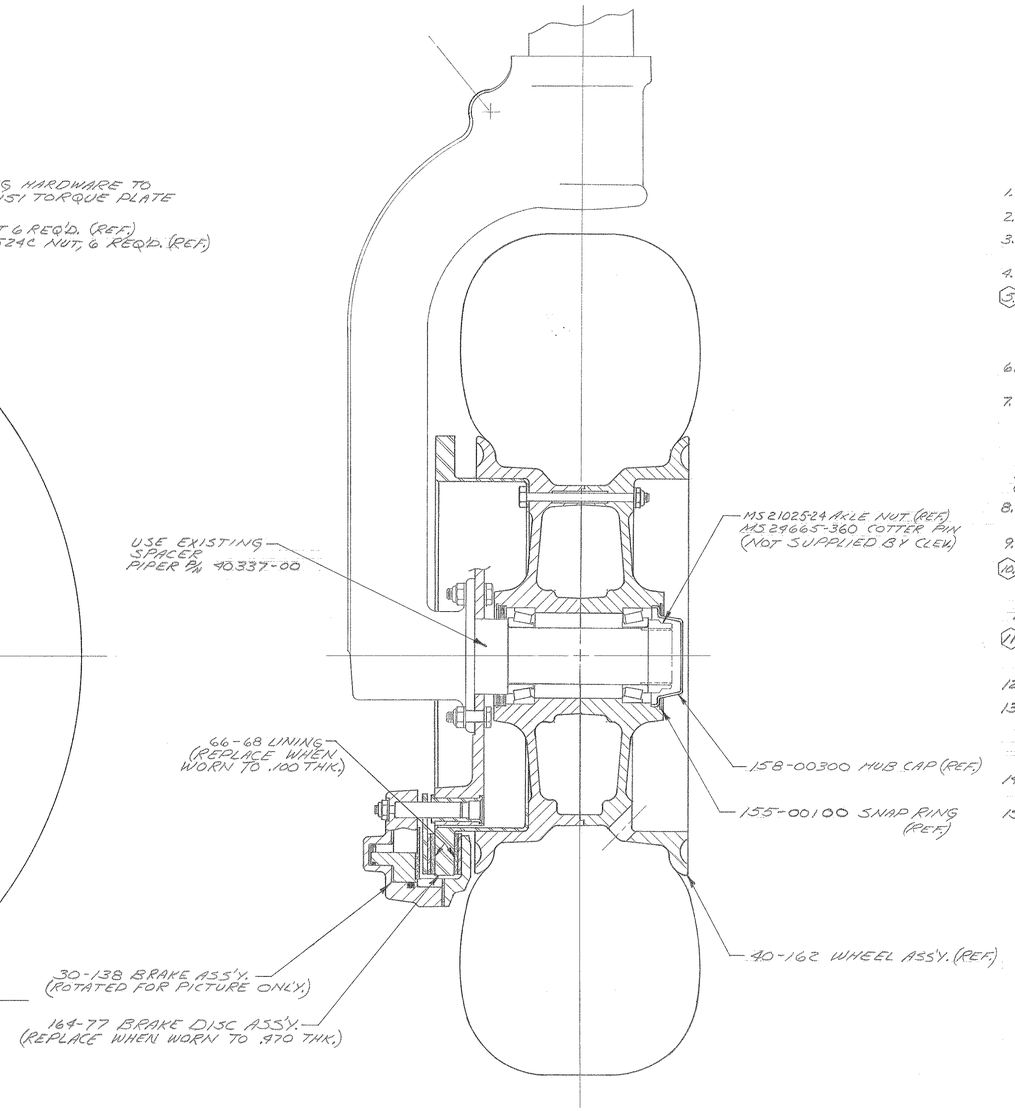
50-61

CHANGE NOTICE	LET-TER	DESCRIPTION OF CHANGE	CHG. BY	DATE	CHK'D. BY
268-19	–	FIRST RELEASE	RS	2-27-81	
268-60	A	SEE CIN	DD	9/9/81	



LEFT HAND STRUT SHOWN

REF.
TIRE SIZE - ALL MODELS
6.50-10, 8 PLY TIRE
6.50-10, TUBE



OUTBOARD

INSTALLATION INSTRUCTIONS

1. PROPERLY JACK UP AIRCRAFT
2. REMOVE EXISTING M.L.G. WHEELS.
3. DISCONNECT EXISTING RIGID HYDRAULIC LINES FROM BRAKE ASSY'S. AND FROM BULKHEAD FITTINGS, AND CAP.
4. REMOVE EXISTING BRAKE ASSY'S. - RETAIN ATTACHMENT HARDWARE.
5. INSTALL CLEVELAND TORQUE PLATE ASSY. 75-151 USING EXISTING ATTACHMENT HARDWARE 6 EA. AN5-7A BOLTS, AND 6 EA. MS 20365-524C NUT. TORQUE NUTS PER AIRCRAFT SERVICE SPECS.
6. REMOVE SNAP RING, HUB CAP AND OUTBOARD BEARING FROM WHEEL ASS'Y. 40-162
7. INSTALL 40-162 WHEEL ASS'Y. ON AXLE. INSTALL LM29710 BEARING, AND MS21025-24 AXLE NUT. WHILE ROTATING WHEEL, TIGHTEN AXLE NUT TO 90 IN.-LBS., THEN BACK OFF TO 0. THEN WHILE ROTATING WHEEL, TIGHTEN AXLE NUT TO 20 IN.-LBS. IF SLOT IN NUT AND HOLE IN AXLE DO NOT ALIGN AT THIS POINT ROTATE NUT (TIGHTENING OR LOOSENING) UNTIL NEAREST POSSIBLE ALIGNMENT IS REACHED AND INSERT MS 29665-360 COTTER PIN. INSTALL HUB CAP AND SNAP RING.
8. LOOSEN 12 TIE BOLTS ON NEW BRAKE ASSY. AND REMOVE 6 BACK PLATE ASSY'S.
9. SLIDE NEW BRAKE ASS'Y. INTO TORQUE PLATE.
10. MAKING SURE THAT THE INSULATOR SHIMS ON THE CYLINDERS ARE IN POSITION ON THE TIE BOLTS, PLACE THE BACK PLATE ASSY'S. BETWEEN THE BRAKE DISC AND WHEEL FLANGE, ALIGN BACK PLATES WITH THE BOLTS, AND TIGHTEN. TORQUE TIE BOLTS TO 80-90 IN.-LBS.
11. INSTALL AN815-9D FITTINGS, AND INSTALL 207-19 FLEXIBLE INLET HOSES SUPPLIED IN KIT. CONNECT AT BRAKE AND UPPER BULKREAD FITTINGS ON STRUT.
12. CHECK RESEVOIR LEVEL AND BLEED SYSTEM.
13. DEPRESS AND RELEASE PEDALS SEVERAL TIMES ROTATE WHEELS BY HAND CHECKING FOR DRAG. A SLIGHT AMOUNT OF DRAG IS NOT DETRIMENTAL TO THE SYSTEM. A SEVERELY BOUND UNIT SHOULD BE INVESTIGATED AND CORRECTED. EXCESSIVE DRAG CAN BE CAUSED BY IMPROPERLY SEATED LINING.
14. CHECK TIRE INFLATION. REMOVE AIRCRAFT FROM JACKS AND CONDITION LINING PER ENCLOSED INSTRUCTION SHEET.
15. WEIGHT AND BALANCE INFORMATION:
    30-138 BRAKE ASS'Y. --- 10.10
    40-162 WHEEL ASS'Y. --- 19.25
    TOTAL WEIGHT/GEAR --- 29.35

WEIGH EXISTING WHEELS AND BRAKES, AND SUBTRACT FROM NEW WEIGHTS TO DERIVE WEIGHT INCREASE CREATED BY 199-100 KIT INSTALLATION. MULTIPLY WEIGHT INCREASE BY MOMENT (APPLICABLE AIRCRAFT) AND REVISE WEIGHTS AND BALANCE INFORMATION IN LOG BOOK

NOTES:

1. THIS KIT WILL UPGRADE ONE AIRCRAFT CURRENTLY USING CLEVELAND WHEEL ASSEMBLIES (P/N 40-102, 40-102A OR 40-130) AND BRAKE ASSEMBLIES (P/N 30-68, 30-68A, 30-68B OR 30-95A)
2. THIS KIT IS APPLICABLE ONLY TO AIRCRAFT USING CLEVELAND WHEELS AND BRAKES.

   APPLICABLE MODELS ARE:
   PIPER AIRCRAFT CORP. NAVAJO
   PA-31
   PA-31-300
   PA-31-325
   PA-31-350

QTY	QTY	ITEM	PART NO.	DESCRIPTION	QTY	MATERIAL & SPEC.	HEAT TREAT & SPEC.	FINISH & SPEC.	WGT.
			50-61	INSTALLATION					

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

ZYGLO PER MIL-I-6866 STAMP M ON PART
MAGNAFLUX PER MIL-I-6868 STAMP P ON PART
√ MACHINED SURFACES PER MIL STD 10 UNLESS OTHERWISE NOTED
UNLESS NOTED ALL THREADS PER MIL-S-7742

WORK TO DIMENSIONS – DO NOT SCALE
TOLERANCE FOR .XXX ± .010
TOLERANCE FOR .XX ± .030
TOLERANCE FOR ANGULAR DIMS. ± 1/2°
TOLERANCE FOR FRACTIONAL DIMS. ± .030
BREAK SHARP EDGES .010 UNLESS NOTED. REMOVE ALL BURRS BEFORE PLATING. DRILL PER INSP. PROCEDURE NO. 114.-

DRAWN BY: [illegible]
CHECKED BY: [illegible]
SCALE: 1/2 : 1
NAME: INSTALLATION DRAWING AND INSTRUCTIONS

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

Parker

50-61

Cleveland
Wheels & Brakes

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

PRODUCT REFERENCE MEMO

METALLIC BRAKE LINING CONDITIONING PROCEDURE

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

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

Conditioning may be accomplished as follows:

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

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

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

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

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

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

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

REGISTRO AERONAUTICO ITALIANO

DIREZIONE CERTIFICAZIONE MATERIALE AERONAUTICO

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

- **Federal Aviation Administration**
  Department of Transportation
  U.S. Embassy
  27, Blvd. du Regent
  B-1000 BRUXELLES
  BELGIUM

Our ref.: 96/4352/MAE
October 30, 1996

Subject: FAA STC SA563GL - Italian Validation

Dear Sirs,
according to the existing Bilateral Airworthiness Agreement between USA an Italy, and following satisfactory accomplishment of RAI evaluation, we hereby confirm RAI validation of the FAA STC SA563GL. The validation is limited to the PA-31, PA-31-325, PA-31-350, wich are the models, between those eligible for the installation of the subject STC, already type certified in Italy.
Will you please consider RAI in the mailing list for continued airworthiness information for the related STC installation.

Yours faithfully

MAE Director
Ing. Filippo De Florio

FP/bs

c.c.: DD.TT. RAI (only fax)

Via di Villa Ricotti, 42 - 00161 Roma - Tel. (06) 44185 - 1 (Centralino)
Telefax: (06) 44185416 - Telex 625229 RAI-I - Indirizzo telegrafico: Regaero Roma
Codice Fiscale: 80021650587

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

Date: _ _/_ _/20_ _

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

To whom it may concern:

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

KIT NUMBER: 199-_____

FAA APPROVAL: 1) STC # _____

NO OTHER APPROVALS NECESSARY

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

A/C MAKE: _____

A/C MODEL_____

TAIL # _____

Regards,

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

United States of America

Department of Transportation — Federal Aviation Administration

Supplemental Type Certificate

Number SA563GL

This certificate, issued to Aircraft Wheel and Brake Division
Parker Hannifin Corporation
1160 Center Raod
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 T. C. Data Sheet No. A20SO for complete certification basis)

Original Product — Type Certificate Number A20SO
Make Piper
Model PA-31, PA-31-300, PA-31-325 and PA-31-350

Description of Type Design Change

Install Cleveland Conversion Kit P/N 199-100 in accordance with installation drawing 50-61, dated February 27, 1981, or later FAA approved revisions.

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 September 2, 1981 *Date reissued*

Date of issuance September 29, 1981 *Date amended*

By direction of the Administrator

W. F. Horn *(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)