



Aircraft Wheel & Brake  
Parker Hannifin Corporation  
1160 Center Road  
Avon, Ohio 44011

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FAA-PMA

## PARTS LIST

### 199-68A CONVERSION KIT

#### Rockwell Thrush Commander Aircraft – Model S-2R

<u>PART NO.</u>	<u>CODE NO.</u>	<u>DRAWING REVISION</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
30-98A	030-09801	Rev. F dated 08-16-2010	Brake Assembly	2
40-133	040-13300	Rev. D dated 09-20-1989	Wheel Assembly	2
207-00900	207-00900	Rev. C dated 01-13-1989	Hose Assembly	2
103-21300	103-21300	-----	Bolt (AN5-7A)	18
095-10500	095-10500	-----	Washer (AN960-516)	18
094-10400	094-10400	-----	Nut (MS21044-N5)	18

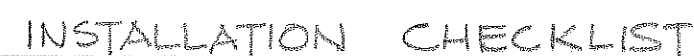
#### Publication Package (P/N PP199-06801)

199-68A		Kit Parts List (This Document)
50-40	Rev. B, dated 01-09-1984	Installation Drawing
SA162GL		Supplemental Type Certificate
PRM13A		Conditioning Procedure for Non-Asbestos Brake Lining


#### NOTES:

1. This kit will convert one aircraft to Cleveland Wheels and Brakes.
2. The 30-98A brake assembly is designed for use with Automotive Type Brake Fluid Only.

199-68A  
01-18-1977  
04-05-1977  
Rev. A 05-06-1988 (0289-74)  
Rev. B 10-23-1989 (0298-34)  
Rev. C 02-01-2011 (0392-35)



1. REMOVE EXISTING M.L.G. WHEELS (2)
2. REMOVE EXISTING M.L.G. BRAKES (2)
3. INSTALL CLEVELAND WHEELS AND BRAKES  
TORQUE PLATE AS SHOWN. TORQUE 160/180 IN-LBS
4. INSTALL CLEVELAND WHEEL (40-133), WASHER  
(MS21258C 16) AND NUT (AN7502-16) AS FOLLOWS:
  - a) WHILE ROTATING WHEEL, TORQUE NUT  
TO 80 IN-LBS.
  - b) WHILE ROTATING WHEEL, BACK NUT OFF  
TO ZERO (0) IN-LBS.
  - c) WHILE ROTATING WHEEL, FINGER TIGHTEN  
NUT NOT TO EXCEED 40 IN-LBS.
  - d) IF NUT IS NOT IN LOCKING POSITION, ADVANCE  
NUT TO NEXT POSITION (NOT TO EXCEED  
30° AND/OR 40 IN-LBS.
  - e) INSTALL MS24665-306 COTTER PIN.
5. REMOVE BACK PLATES (6) FROM CLEVELAND  
BRAKE CYLINDER AND INSTALL CYLINDERS  
IN TORQUE PLATE. REINSTALL BACK PLATES  
AND TORQUE BOLTS TO 80-90 IN-LBS.
6. INSTALL 207-00900 HOSE ASSY.
7. FILL BRAKE SYSTEM RESERVOIR AND BLEED  
BRAKE SYSTEM.
8. CHECK FOR PROPER OPERATION OF  
WHEELS AND BRAKES.
9. ROTATE WHEELS TO CHECK FOR AND  
ELIMINATE BRAKE DRAG.
10. CHECK FOR AND ELIMINATE POSSIBLE  
INTERFERENCE PECULIAR TO INDIVIDUAL  
AIRCRAFT.

50-40		WHL BRK. INSTALL.													
QTY	XCTY	ITEM	PART NO.	DESCRIPTION		MATERIAL & SPEC.		HEAT TREAT & SPEC.		FINISH & SPEC.		WG.T.			
NEXT ASSEMBLY	QTY	FINAL ASSEMBLY	QTY	PATTERN, CASTING OR BLANK NO.		DRAWN BY DJG				<b>Cleveland Wheel &amp; Brake</b> 1169 Avon Center Road, Avon, Ohio 44011 a division of VanSickle Industries, Inc. "the brake people"					
						CHECKED BY SCB									
THIS DESIGN IS THE PROPERTY OF CLEVELAND WHEELS & BRAKES AND IS NOT TO BE COPIED, DUPLICATED, OR USED FOR ANY OTHER MANUFACTURE OR SALE WITHOUT PERMISSION.			ZYLPO PER MIL-L6866 STAMP M ON PART		WORK TO DIMENSIONS - DO NOT SCALE TOLERANCE FOR .XXX ± .010 TOLERANCE FOR XX ± .020 TOLERANCE FOR ANGULAR DIMS: 1/2° TOLERANCE FOR FRACTIONAL DIMS: .005 BREAK SHARP EDGES .010 UNLESS NOTED. REMOVE ALL BURRS BEFORE PLACING PER INSP. PROCEDURE NO. 114.		NAME		<b>CLEVELAND WHEEL &amp; BRAKE INSTALLATION</b> 50 40						
			MAGNAFLUX PER MIL-L6868 MIL-S-11742 T MACHINED SURFACES PER UNLESS OTHERWISE NOTED UNLESS NOTED ALL THREADS PER MIL-S-11742												

# 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.

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# 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

DEPARTMENT OF TRANSPORT

# Supplemental Type Approval

Number: SA87-34

This approval is issued to:

Aircraft Wheel and Brake Division  
Parker Hannifin Corporation  
1160 Center Road  
Avon, Ohio 44011

Issue No.: 1

Approval Date: September 1, 1987

Issue Date: September 1, 1987

Responsible Region:

Central

Aircraft/Engine Type or Model:

Rockwell Commander, S-2R

Canadian Type Approval or Equivalent:

A-105

Description of Type Design Change:

Install Cleveland Wheel and Brake Conversion Kit  
P/N 199-68A, according to Cleveland Drawing  
No. 50-40, Revision B dated January 9, 1984; Per  
FAA STC #SA162GL

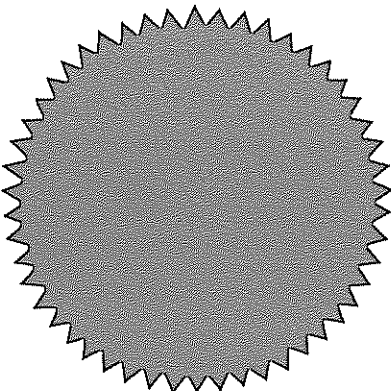
Installation/Operating Data,  
Required Equipment  
and Limitations:

1. This STA applies to those airplanes already using automotive type brake fluid and 27-inch wheels, and with a maximum of 600 H.P.
2. The approval of this change in type design only applies to the basic model S-2R.

**Conditions:** This approval is only applicable to the type/model of aeronautical product specified therein. Prior to incorporating this modification, it shall be established that the interrelationship between this change and any other modification(s) incorporated will not adversely affect the airworthiness of the modified product.



F.R. Davies  
Chief, Programs  
Airworthiness Branch Ottawa  
For Minister of Transport





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* SA162GL

*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 & 8 of the Civil Air*

*Regulations.* See Type Certificate Data Sheets A3SW and A4SW for complete certification basis.

*Original Product — Type Certificate Number* A3SW and A4SW  
*Make* Ayres Corp. (Rockwell Commander)  
*Model* S-2R

*Description of Type Design Change*

Installation of Cleveland Main Wheels and Brakes in accordance with Parker Hannifin Conversion Kit P/N 199-68A, Revision A, dated March 8, 1988, and Cleveland Installation Drawing 50-40, Revision B, dated January 9, 1984, or later FAA Approved revisions.

*Limitations and Conditions* 1. This STC applies to those airplanes already using automotive type brake fluid and 27-inch wheels, and with a maximum of 600 H.P.  
2. The approval of this change in type design applies basically to the Model S-2R only. 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 those 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* February 11, 1977

*Date reissued* October 28, 1980

*Date of issuance* April 15, 1977

*Date amended* August 2, 1984; May 6, 1988



*By direction of the Administrator*  
*C. L. Smalley*  
*for* W. F. Horn (Signature)  
Manager, Chicago Aircraft Certification Office  
ACE-115C, Central Region  
(Title)

*Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.*

*This certificate may be transferred in accordance with FAR 21.47.*

WEIGHT AND BALANCE

FOR

199-06801 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

<u>Unit</u>	<u>Weight / Unit</u>	<u># of Units</u>	<u>Weight</u>
Brake	_____ X	2	= _____ LBS.
Wheel	_____ X	2	= _____ LBS.
		TOTAL	= _____ LBS.

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NEW INSTALLATION

<u>Unit</u>	<u>Weight / Unit</u>	<u># of Units</u>	<u>Weight</u>
Brake	11.28 X	2	= 22.56 LBS.
Wheel	35.50 X	2	= 71.00 LBS.
		TOTAL	= 93.56 LBS.