AIRCRAFT WHEEL & BRAKE DIVISION

PARKER HANNIFIN CORPORATION

AVON, OHIO

PARTS LIST

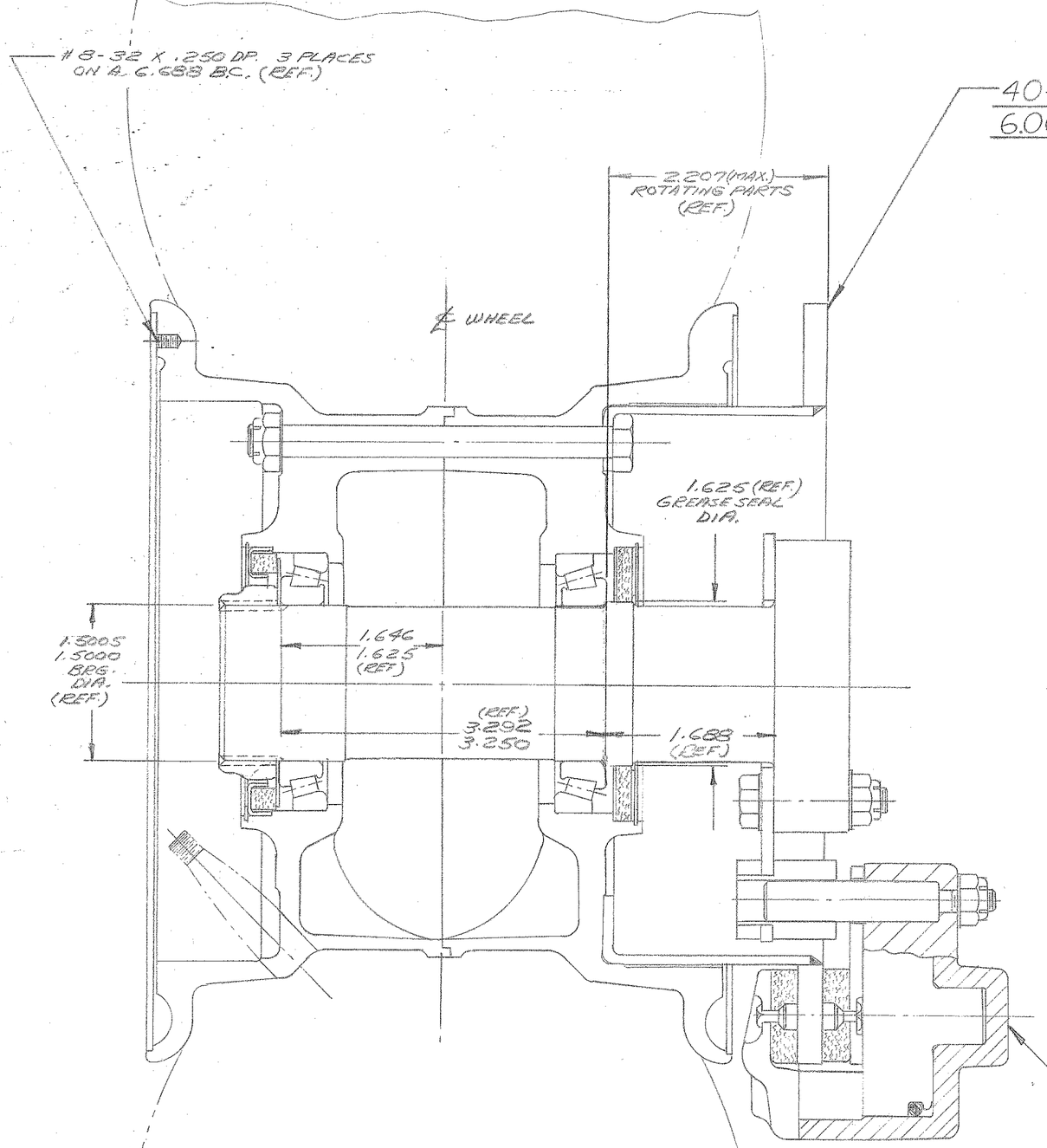
199-46 Conversion Kit for Cessna Aircraft

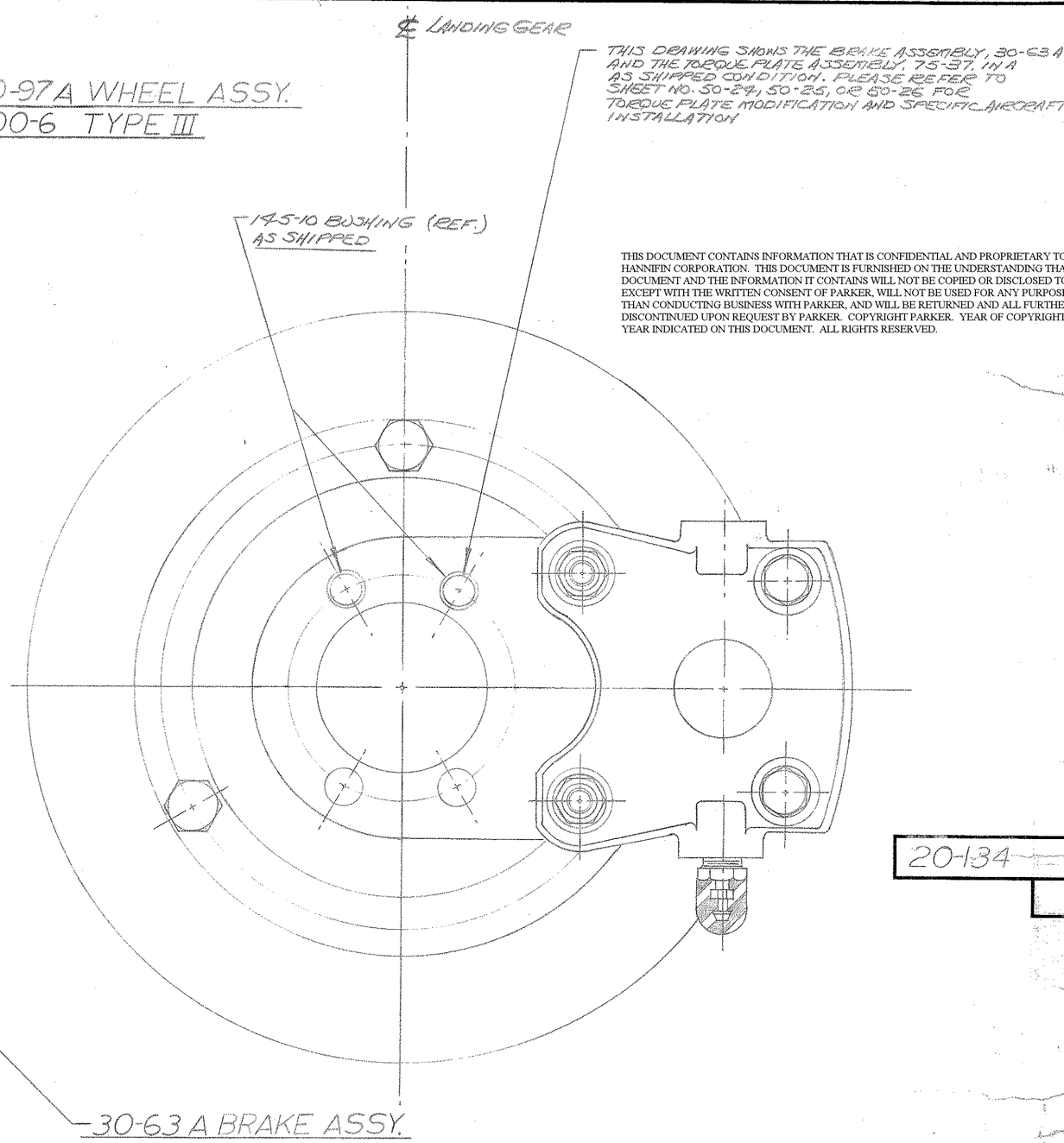
Model 120, 140, 175, 170, 170A, 170B, 172, 180, 182, Skyhawk & Skylane

PART NUMBER	DESCRIPTION	QUANTITY
40-97A	Wheel Assembly	2
30-63A	L. H. Brake Assembly	1
30-63A	R. H. Brake Assembly	1
145-22	Bushing	8
145-10	Bushing	4
20-134	W & B Assembly	1
50-24	Installation Instructions	1
50-25	Installation Instructions	1
50-26	Installation Instructions	1
SA13GL	Supplemental Type Cert.	1
(A) **PRM13A**	**Non Asbestos Lining Conditioning Procedure.**	**1**

This kit will convert on aircraft to the Cleveland Wheel & Brake Assemblies.

199-46
8-25-72
12-23-87 REV A (287-22)





20-134

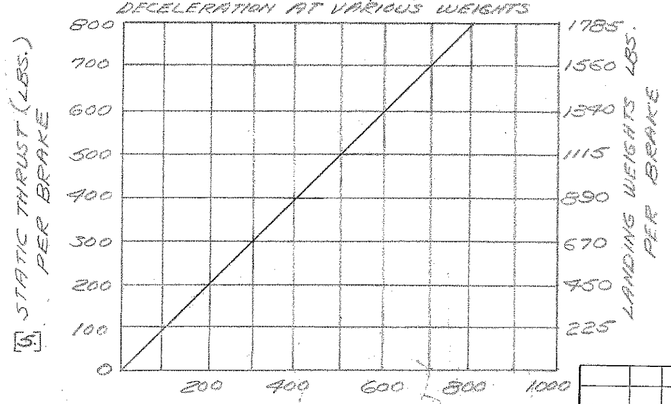
NOTES:

1. WHEEL RATING PER FAA - TSO - C 26a.
   STATIC LOAD = 2500 LBS.
   LIMIT LOAD = 8975 LBS.
2. BRAKE KINETIC ENERGY CAPACITY
   270,000 FT. LBS., 100 STOPS FROM 72 M.P.H.
   AT 10 FT/SEC/SEC DECELERATION WITHOUT DISC OR LINING CHANGE
3. BRAKE FLUID DISPLACEMENT
   MAXIMUM - NEW TO FULLY WORN = 1.04 CU. IN.
   NORMAL CLEARANCE TO 400 P.S.I. = .19 CU. IN.
4. TR 20 VALUE SHOWN IN PHANTOM

[5] STATIC THRUST AT GROUND LINE VS. BRAKE LINE PRESSURE (I.E., 800 P.S.I. LINE PRESSURE CAN SUBSTAIN A 800# STATIC THRUST LOAD AT THE GROUND LINE)

6: 6.00-6 TIRE SHOWN IN PHANTOM

PRESSURES TO WITHSTAND STATIC THRUST AND TO PRODUCE 10 FT/SEC/SEC. DECELERATION AT VARIOUS WEIGHTS



WEIGHTS

WHEEL	3.78 LBS.
DISC	2.09 LBS.
BRAKE CYL.	1.50 LBS.
TORQUE PL.	.39 LBS.
TOTAL	7.76 LBS

CHANGE NOTICE	LETTER	DESCRIPTION OF CHANGE	DATE	CHG. BY	CHK. BY
	A	ADDED NOTE # 5 + #6	9-22-72		

WORK TO DIMENSIONS - DO NOT SCALE. ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED. TOLERANCE FOR .XXX ±.010. TOLERANCE FOR .XX ±.030. TOLERANCE FOR ANGULAR DIMS. ± ½°. TOLERANCE FOR FRACT. DIMS. ± 1/32". BREAK SHARP EDGES - REMOVE ALL BURRS	NEXT ASSEMBLY	USED ON	NEXT ASSEMBLY / FINAL ASSEMBLY
	APPLICATION		QUANTITY REQ'D
DRAWN BY JW 9/22/72	MATERIAL		SURFACE TREATMENT
CHECKED BY	HEAT TREAT		PATTERN, FORGING OR BLANK NO.
WT.	CLEVELAND AIRCRAFT PROD. AVON, OHIO		
SCALE FULL	NAME WHEEL & BRAKE ASSEMBLY		20-134

020-13400

PREPARED BY	Cleveland Wheels & Brakes	REVISION
JW 3-9-73	INSTALLATION INSTRUCTIONS	(A) 10-13-72 (B) 02-02-73
APPROVED BY C. DiMondian	SUBJECT CONVERTING FROM GOODYEAR 6.00-6 WHEELS AND BRAKES TO CLEVELAND WHEELS AND BRAKES FOR CESSNA AIRCRAFT MODELS 120 AND 140, SERIAL NUMBERS 8004 THROUGH 13399	
EFFECTIVE DATE 8-29-72		

50-24

SHEET 1 OF 3

I. Purpose:

This procedure will outline the steps for converting early Cessna Models 120 and 140, Serial Numbers 8004 through 13399*.

II. Removal:

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

2. Remove old wheel assembly from axle.

3. Remove hydraulic line from brake cylinder.

4. Remove nuts, washers, and bolts which secure brake assembly to the mounting flange and remove brake assembly.

5. When applicable, modify the brake disc cover plate, mounting plate assembly and hubcap per instructions on Page 3.

III. Installation of Cleveland Wheel and Brake Assemblies per Drawing 20-134:

1. Modify torque plate assembly per Figure 1 and install on axle. Retighten the four axle attachment bolts per torque specifications in Cessna Service Manual.

2. Remove two through bolts (103-11600) and washers (095-10200) to remove back plate assembly (074-01000) from brake cylinder.

3. Place new wheel assembly (40-97A) on axle and start axle nut on threads. While rotating the wheel, 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 the nut to the nearest hole and install cotter pin.

* Restricted from usage on aircraft using optional Goodyear Crosswind Landing Gear. Reference Cessna Installation Drawing 0441150.

4. Place new brake assembly (30-63A) in torque plate assembly and install two (2) washers (095-10200) and two (2) thru bolts (103-11600) to secure back plate assembly 074-01000. Torque bolts to 90 in./lbs.

5. When necessary, cut existing rigid hydraulic line and flare open end. Attach flexible high pressure hose between flared end and brake assembly. It may be necessary to add an additional support for the hose in order to prevent excessive line vibration.

6. Bleed both brake assemblies.

7. Check reservoir for correct fluid level, and check to see that both brake pedals are solid.

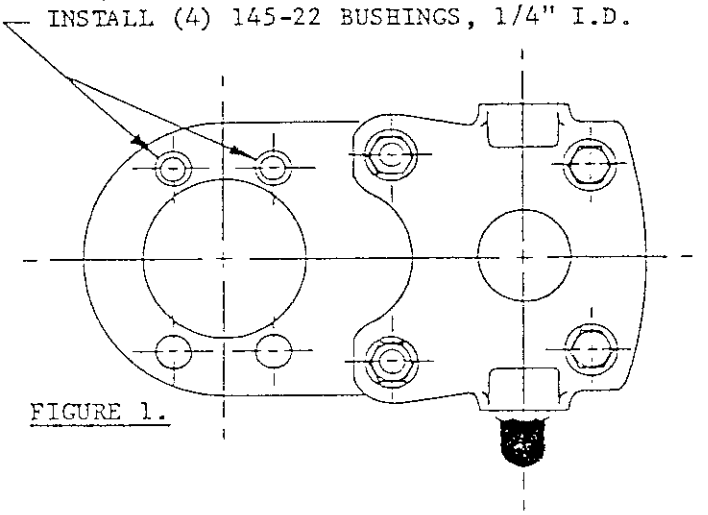


FIGURE 1.

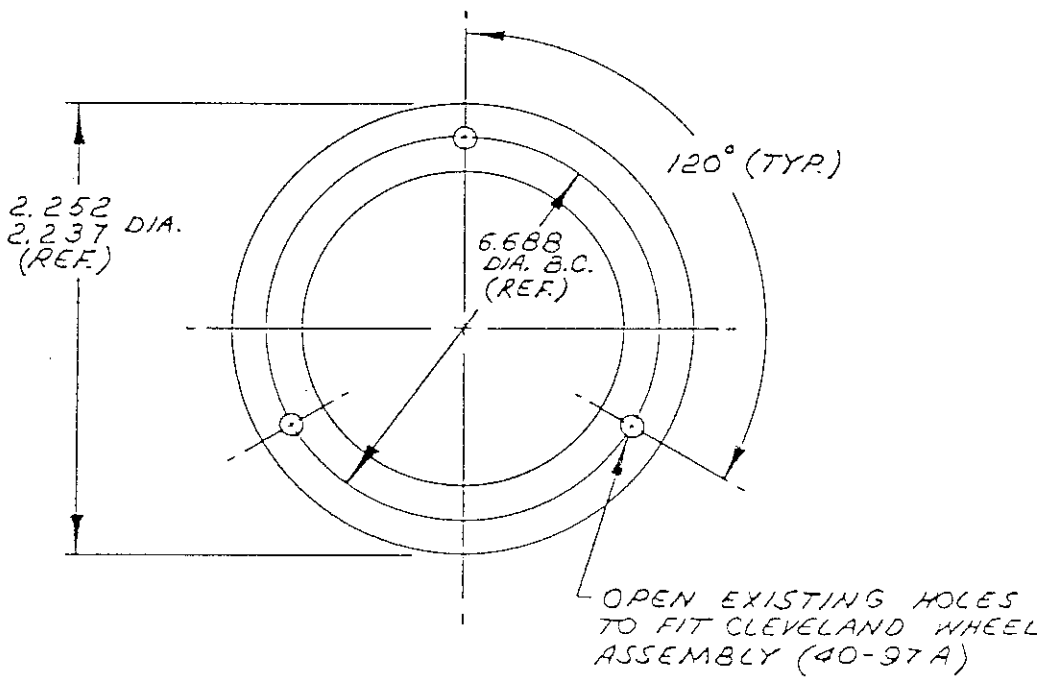
PREPARED BY	Cleveland Wheels & Brakes	REVISION
JW 3-9-73	INSTALLATION INSTRUCTIONS	(A) 10-13-72 (B) 02-02-73
APPROVED BY C. DeLorean	SUBJECT CONVERTING FROM GOODYEAR 6.00-6 WHEELS AND BRAKES TO CLEVELAND WHEELS AND BRAKES FOR CESSNA AIRCRAFT MODELS 120 AND 140, SERIAL NUMBERS 8004 THROUGH 13399	
EFFECTIVE DATE - 8-29-72		

WHEN APPLICABLE THE FOLLOWING MODIFICATIONS MUST BE MADE:

1. Modify brake cutout contour on existing mounting plate assembly to fit over Cleveland (30-63A) brake assembly, or purchase new mounting plate assembly. Attain correct part number from Cessna Parts Catalog.

2. Modify existing brake disc cover plate to allow Cleveland brake assembly (30-63A) to float freely when installed or purchase new disc cover plate. Attain correct part number from Cessna Parts Catalog.

3. Rework existing hubcap (dust shield) to dimensions shown.



PREPARED BY	Cleveland Wheels & Brakes	REVISION
JW 3-9-73	INSTALLATION INSTRUCTIONS	(A) 10-13-72 (B) 02-02-73
APPROVED BY C. DeBardeleben	SUBJECT CONVERTING FROM GOODYEAR 6.00-6 WHEELS & BRAKES TO CLEVELAND WHEELS & BRAKES FOR CESSNA AIRCRAFT MODELS 120, 140, 140A, SERIAL NUMBER 13400 & UP ALSO MODELS 170 AND 170A	
EFFECTIVE DATE 8-29-72		

I. Purpose:

This procedure will outline the steps for converting early Cessna Model Aircraft as noted above.*

II. Removal:

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

2. Remove old wheel assembly from axle.

3. Remove hydraulic line from brake cylinder.

4. Remove nuts, washers, and bolts which secure brake assembly to the mounting flange and remove brake assembly.

5. When applicable, modify the brake disc cover plate, mounting plate assembly and hubcap per instructions on Page 4.

III. Installation of Cleveland Wheel and Brake Assemblies per Drawing 20-134:

1. Modify torque plate assembly per Figure 1 and install on axle. Retighten the four axle attachment bolts per torque specifications in Cessna Service Manual.

2. Remove two through bolts (103-11600) and washers (095-10200) to remove back plate assembly (074-01000) from brake cylinder.

3. Place new wheel assembly (40-97A) on axle and start axle nut on threads. While rotating the wheel, 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 the nut to the nearest hole and install cotter pin.

* Restricted from usage on aircraft using optional Goodyear Crosswind Landing Gear. Reference Cessna Installation Drawing 0441150.

PREPARED BY	Cleveland Wheels & Brakes	REVISION
JW 3-9-73	INSTALLATION INSTRUCTIONS	(A) 10-13-72 (B) 02-02-73
APPROVED BY C. Delordeau	SUBJECT CONVERTING FROM GOODYEAR 6.00-6 WHEELS & BRAKES TO CLEVELAND WHEELS & BRAKES FOR CESSNA AIRCRAFT MODELS 120, 140, 140A, SERIAL NUMBER 13400 & UP ALSO MODELS 170 AND 170A (SEE NOTE BELOW)	
EFFECTIVE DATE 8-29-72		

4. Place new brake assembly (30-63A) in torque plate assembly and install (2) washers (095-10200) and two (2) thru bolts (103-11600) to secure back plate assembly 074-01000. Torque bolts to 90 in./lbs.

5. When necessary, cut existing rigid hydraulic line and flare open end. Attach flexible high pressure hose between flared end and brake assembly. It may be necessary to add an additional support for the hose in order to prevent excessive line vibration.

6. Bleed both brake assemblies.

7. Check reservoir for correct fluid level, and check to see that both brake pedals are solid.

NOTE: Before modifying a model 170A, visually inspect the four bolts that attach the axle to the main landing gear spring. If these bolts are the same diameter, follow the procedure outlined below. If these bolts are not the same diameter, refer to Sheet 3 of 4, FIGURE 2.

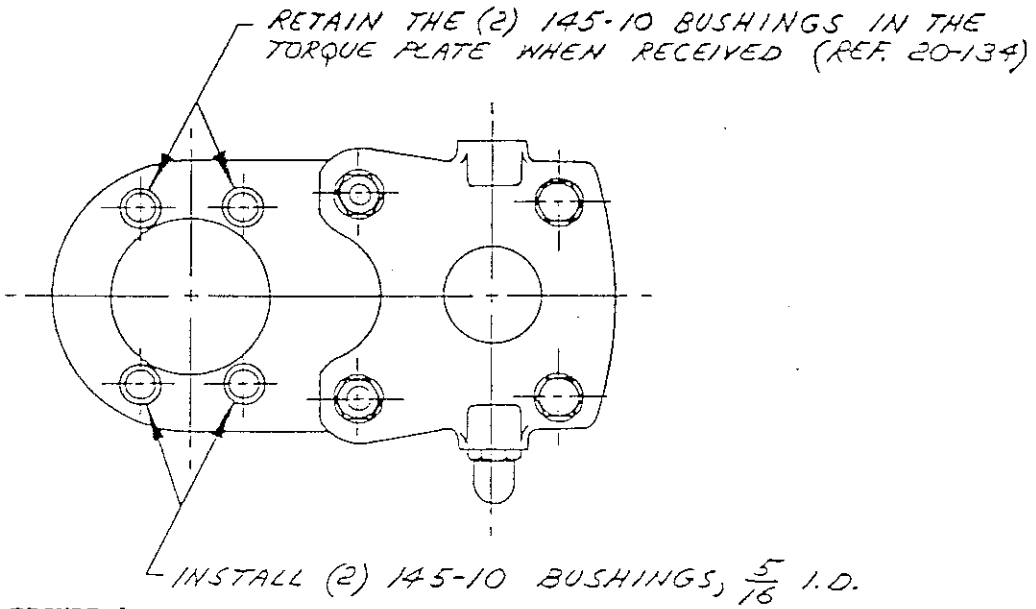


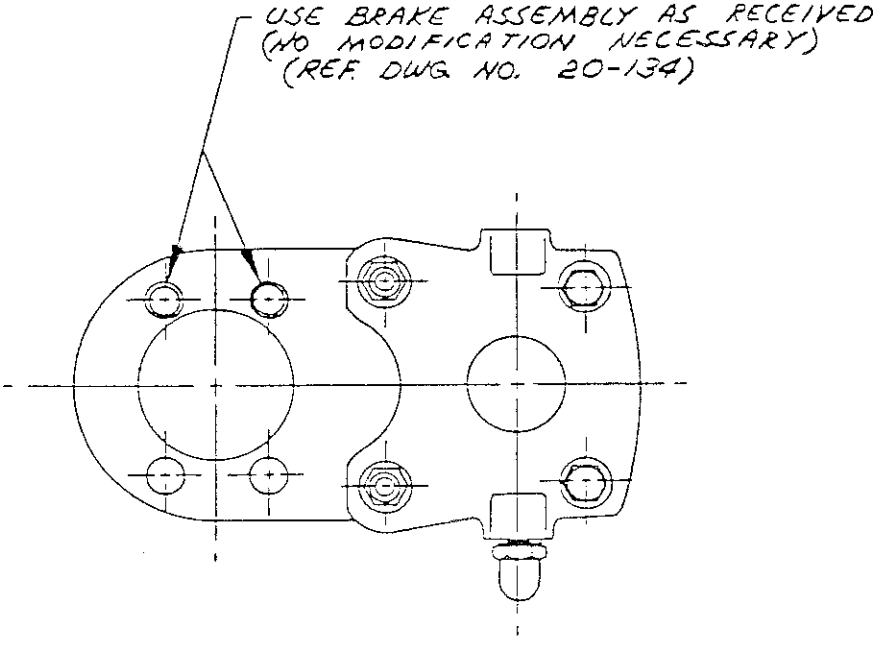
FIGURE 1.

PREPARED BY	Cleveland Wheels & Brakes	REVISION
JW 3-9-73	INSTALLATION INSTRUCTIONS	(A) 10-13-72 (B) 02-02-73
APPROVED BY C. Delandean	SUBJECT CONVERTING FROM GOODYEAR 6.00-6 WHEELS AND BRAKES TO CLEVELAND WHEELS & BRAKES FOR CESSNA AIRCRAFT MODELS 120, 140, 140A, SERIAL NUMBER 13400 & UP ALSO MODELS 170 AND 170A	
EFFECTIVE DATE 8-29-72		

50-25

SHEET 3 OF 4

FIGURE 2.



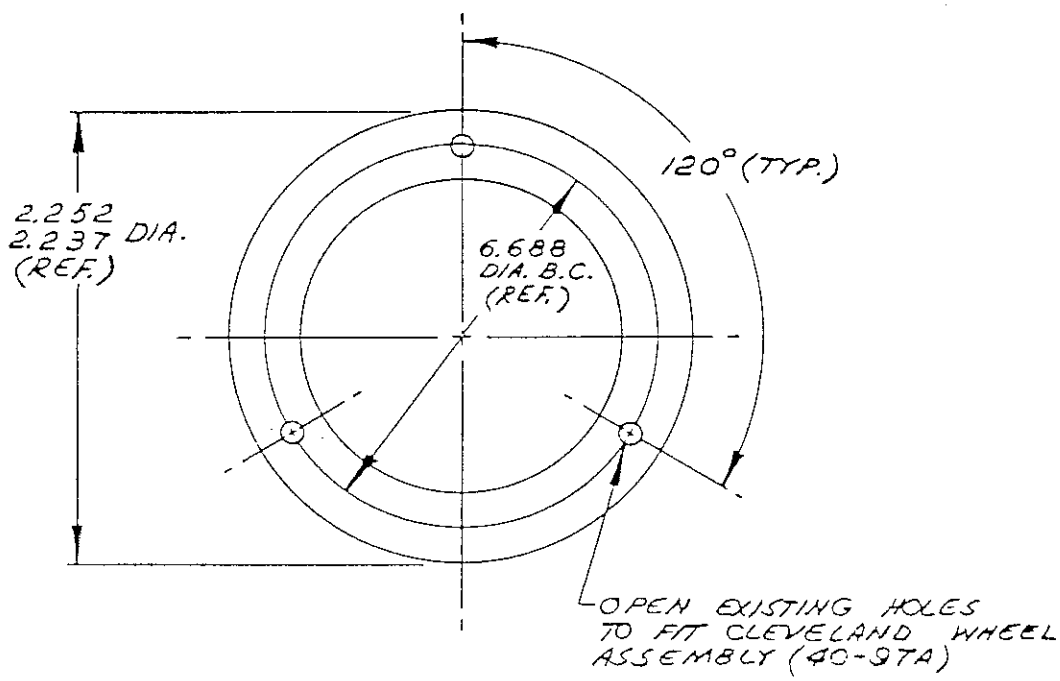
PREPARED BY	Cleveland Wheels & Brakes	REVISION
JW 3-9-73	INSTALLATION INSTRUCTIONS	(A) 10-13-72 (B) 02-02-73
APPROVED BY C. Deboudean	SUBJECT CONVERTING FROM GOODYEAR 6.00-6 WHEELS AND BRAKES TO CLEVELAND WHEELS & BRAKES FOR CESSNA AIRCRAFT MODELS 120, 140, 140A, SERIAL NUMBER 13400 & UP ALSO MODELS 170 AND 170A	
EFFECTIVE DATE 8-29-72		

WHEN APPLICABLE THE FOLLOWING MODIFICATIONS MUST BE MADE:

1. Modify brake cutout contour on existing mounting plate assembly to fit over Cleveland (30-63A) brake assembly, or purchase new mounting plate assembly. Attain correct part number from Cessna Parts Catalog.

2. Modify existing brake disc cover plate to allow Cleveland brake assembly (30-63A to float freely when installed or purchase new disc cover plate. Attain correct part number from Cessna Parts Catalog.

3. Rework existing hubcap (dust shield) to dimensions shown.



PREPARED BY	Cleveland Wheels & Brakes	REVISION
JW 3-9-73		(A) 10-13-72
APPROVED BY	INSTALLATION INSTRUCTIONS	(B) 02-02-73
C. Debordieu	SUBJECT: CONVERTING FROM GOODYEAR 6.00-6 WHEELS AND BRAKES TO CLEVELAND WHEELS AND BRAKES FOR CESSNA AIRCRAFT MODELS 170B, 172, 172A THRU 172E, 175, 175A, 175B, 175C, P172D, 180, 180A THRU 180F, 182, 182A, THRU 182G	
EFFECTIVE DATE 8-29-72		

I. Purpose:

This procedure will outline the steps for converting early Cessna Model Aircraft as noted above.*

II. Removal:

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

2. Remove old wheel assembly from axle.

3. Remove hydraulic line from brake cylinder.

4. Remove nuts, washers, and bolts which secure brake assembly to the mounting flange and remove brake assembly.

5. When applicable, modify the brake disc cover plate, mounting plate assembly and hubcap per instructions on Page 3.

III. Installation of Cleveland Wheel and Brake Assemblies per Drawing 20-134:

1. Modify torque plate assembly per Figure 1 and install on axle. Retighten the four axle attachment bolts per torque specifications in Cessna Service Manual.

2. Remove two through bolts (103-11600) and washers (095-10200) to remove back plate assembly (074-01000) from brake cylinder.

3. Place new wheel assembly (40-97A) on axle and start axle nut on threads. While rotating the wheel, 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 the nut to the nearest hole and install cotter pin.

* Restricted from usage on aircraft using optional Goodyear Crosswind Landing Gear. Reference Cessna Installation Drawing 0441150.

4. Place new brake assembly (30-63A) in torque plate assembly and install two (2) washers (095-10200) and two (2) thru bolts (103-11600) to secure back plate assembly 074-01000. Torque bolts to 90 in./lbs.

5. When necessary, cut existing rigid hydraulic line and flare open end. Attach flexible high pressure hose between flared end and brake assembly. It may be necessary to add an additional support for the hose in order to prevent excessive line vibration.

6. Bleed both brake assemblies.

7. Check reservoir for correct fluid level, and check to see that both brake pedals are solid.

USE BRAKE ASSEMBLY AS RECEIVED
(NO MODIFICATION NECESSARY)
(REF. 20-134)

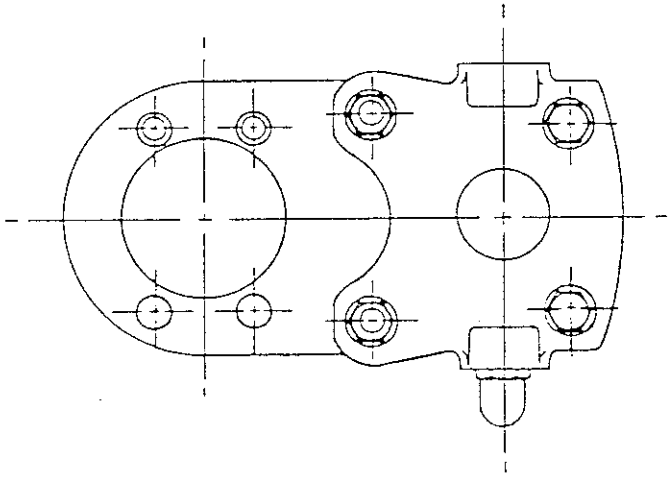


FIGURE 1.

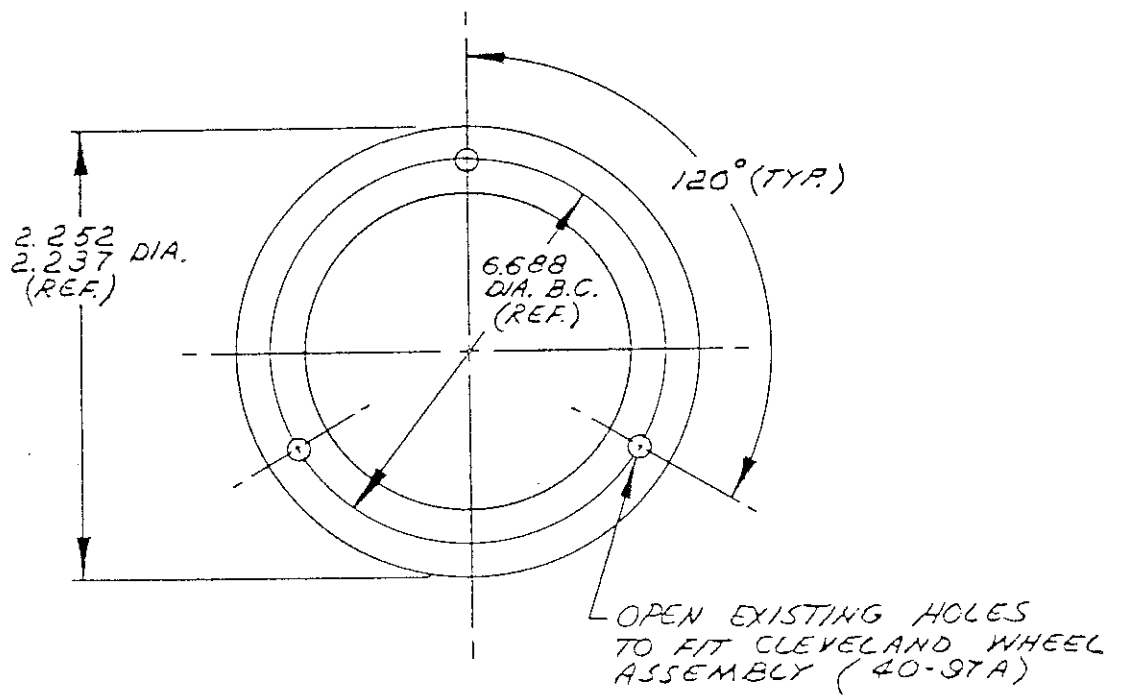
PREPARED BY	Cleveland Wheels & Brakes	REVISION
3-9-73	INSTALLATION INSTRUCTIONS	(A) 10-13-72 (B) 02-02-73
APPROVED BY C. Deboardian	SUBJECT CONVERTING FROM GOODYEAR 6.00-6 WHEELS AND BRAKES TO CLEVELAND WHEELS AND BRAKES FOR CESSNA AIRCRAFT MODELS 170B, 172, 172A THRU 172E, 175, 175A, 175B, 175C, P172D, 180, 180A THRU 180F, 182, 182A THRU 182G	
EFFECTIVE DATE 8-29-72		

WHEN APPLICABLE THE FOLLOWING MODIFICATIONS MUST BE MADE:

1. Modify brake cutout contour on existing mounting plate assembly to fit over Cleveland (30-63A) brake assembly, or purchase new mounting plate assembly. Attain correct part number from Cessna Parts Catalog.

2. Modify existing brake disc cover plate to allow Cleveland brake assembly (30-63A) to float freely when installed or purchase new disc cover plate. Attain correct part number from Cessna Parts Catalog.

3. Rework existing hubcap (dust shield) to dimensions shown.



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

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 SA13GL

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,* as defined on individual model specification/type certification data sheet.

Original Product—Type Certificate Number A-768, A-799, 3A12, 3A13, 3A17, 5A2, 5A6

Make Cessna

Model 120, 140 (S/N 8004 thru 13399), 120, 140, 140A, (S/N 13400 and up), 170, 170A, 170B, 172, 172A thru 172E, 175, 175A, 175B, 175C, P172D, 180, 180A thru 180F, 182, 182A thru 182G

Description of Type Design Change

Install Cleveland Wheel #40-97A, Brake #30-63A in accordance with Cleveland Drawings 20-134, Revision A, dated October 12, 1972, and mounting instructions 50-24, Revision C, dated February 2, 1973, 50-25 Revision C, dated February 2, 1973, 50-26 Revision C, dated February 1973, as appropriate.

Limitations and Conditions

This approval should not be extended to other aircraft of these models 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 on the airworthiness of that aircraft. This approval is not extended to aircraft with Goodyear cross-wind (castering) landing gear.

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 October 13, 1972

Date of issuance February 20, 1973

Date reissued July 23, 1974, October 28, 1980

Date amended July 24, 1973, April 1, 1981

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)