

AIRCRAFT LANDING GEAR SERVICE BULLETIN No. L.G.1001

SUBJECT: MODIFICATION OF BENDIX WHEELS AND BRAKES USED ON AT-7, AT-11, UC-45 AND C-45 AIRPLANES.

REASON FOR CHANGE: To improve the sensitivity of the brakes and render them more suitable for civilian type of operation. (Military type of operation for which this model airplane was designed did not require sensitive brakes.)

AIRPLANES AFFECTED: It is recommended this modification be incorporated in all Bendix brakes installed on the AT-7, AT-11, UC-45 and C-45 model airplanes.

MAINTENANCE (SPARE) PARTS AFFECTED: It is recommended that the modification be incorporated in the following parts:

59799 - 13 x 2-1/2 Brake Assembly
55941 - 13 x 2-1/2 Brake Assembly
59180 - 33" Main Wheel Assembly
57679 - 33" Main Wheel Assembly

ACCOMPLISHMENT: Modification to be accomplished as soon as practicable by service personnel in the field.

DESCRIPTION OF CHANGE: (PROCEDURE) This modification involves the replacement of the hydraulic brake hose with new hose and stainless steel tubings as well as replacement of the brake shoes with shoes having higher friction lining. (Some installations will require drum replacement as discussed in paragraph 19). The modification will be accomplished as follows:

NOTE: Complete the modification of one wheel before starting second wheel.

1. Jack the airplane using wing jacks.
2. Disconnect the hydraulic lines from the brake and allow the fluid to drain into a clean container.
3. Remove the safety wire, front and back nuts from the axle cap on the outboard side of the strut fork. Mark the caps so they can be installed in the same position when being reassembled. Do not attempt to remove the center axle locating pin. As the axle cap is removed, watch for shims which should be replaced in the same relative position when the units are reassembled.
4. Repeat the above on the inboard side of the strut fork.
5. Remove the wheel, tire and axle assembly from the strut fork.
6. Remove the grease cup from the axle by prying up the three retaining springs.
7. Remove the cotter pin, axle nut, axle washer and bearing from axle.
8. Remove the wheel from the axle. **NOTE:** back off the star wheel adjusting screw in the brake if the wheel does not slide freely off the axle.
9. Complete disassembly of the brake, and clean all parts in unleaded gasoline or other approved solvent.

10. Reassemble the brake using two new cups, part number 59002, cup expander assembly part number 145121, boot part number 59119 and two high friction shoe and lining assemblies, part number 145704 (see figure No. 2)

11. Inspect the wheel for general sound condition and cracks. Pay particular attention to the brake drum and check for cracks. Two types of brake drums may be found in the wheels as described below.

A. Centrifuse drums part number 59225 (Wheel No. 59180). This is the correct type of drum for use with the high friction lining mentioned above. Inspect the drum in accordance with instructions shown on figure No. 1. Scrap drum and replace with new part if outer steel shell is cracked. Check drum for run out which should not exceed .010 inches. If run out exceeds .010 inches, mount wheel and drum assembly in a lathe and grind the drum surface to reduce the total run out to .005 inches or less.

NOTE: Do not increase the diameter of the drum to more than 13.025 inches unless provision has been made to use shoes incorporating special oversize ground linings.

B. Steel drums, part number 52927 (Wheel No. 57679). This drum is now obsolete and should not be used with the new high friction linings described above. Replacement of this drum with the centrifuse drum is necessary to obtain sensitive brakes. Refer to Section II for details regarding wheel modification and drum replacement instructions.

12. Reinstall the wheel on the axle, lubricate and install the outer bearing, axle washer, axle nut and cotter pin, and greasecup.

13. Reinstall the axle assembly into the strut fork and place the axle caps into position using the shims originally installed. Tighten the cap nuts and secure with safety wire.

14. Remove the hydraulic flexible hose (see figure No. 3) at the fitting in the wheel nacel and replace with a new No. 4 hydraulic hose 3/16 inches I.D., 41 inches long (see figure No. 3A). Attach the stainless steel tubing to the new hose and attach the other end to the inlet connector fitting at the brake. Secure the stainless tubing to the fork with the clamps originally used to hold the hose. On each end of new hose it will be necessary to use the reducing coupling furnished in the kit.

15. Repeat the above operation for the other wheel.

16. Lower the airplane and remove wing jacks. (NOTE: Be sure strut compresses as the jacks are lowered. Otherwise a sudden collapse of the strut may result while jacks are being removed and damage to the airplane may result.)

17. Adjust the brakes as follows: (see figure No. 2)

A. Use four feeler gages .005 inches thick. Insert feeler gages in each of slots A,B, C,D. With the feeler gages in place turn the two upper adjusting screws and the lower star wheel until a slight drag is noticed at all four positions. Due to the fact that this brake is a full floating shoe ring, it is necessary to use four feelers whenever an adjustment to the brake is made. Disregard the remaining two feeler gage slots (E and E) during brake adjustment.

18. Bleed brakes as follows:

- A. Attach a bleeder hose to the bleeder fitting of the brake and place the other end of the bleeder hose in a clean receptacle.
- B. Fill reservoir tank in nose of ship. **WARNING:** The reservoir must not be allowed to become empty throughout the entire bleeding operation.
- C. Depress the master cylinder pedal and open the bleeder fitting at the brake and allow the fluid to escape into the receptacle. Then close the bleeder fitting at the brake to prevent air returning into the system.
- D. Repeat Item C above until all air is exhausted from the system and the fluid coming out of the bleeder hose is clear and free of all air bubbles.
- E. Remove the bleeder hose and install the dust screw and washer in the bleeder fitting.
- F. Check fluid level in the reservoir and add fluid to fill to within one inch of the top. Replace reservoir cap.
- G. Check master cylinder pedal linkage and see that there is no lost motion. Adjust pedals so they are in a vertical position. Also check brake pedal cross shaft and brackets for lost motion.
- H. Full braking effort should be obtained within one inch initial pedal travel when system is properly bled and adjusted to correct settings.

19. The following modification will apply to old style 33 inch wheels, part number 57679 which incorporates steel drums and have not been modified as is shown in figure No. 4.

- A. Remove brake drum from wheel and scrap.
- B. Mount the wheel in a lathe and machine the cavity to the dimensions shown in figure No. 4. During this operation, it will be necessary to cut through the lightening holes at the outside edge of the wheel. This machining operation is necessary before the centrifuse drum can be installed as the original steel drum was a press fit into the wheel and the centrifuse drum required clearance to insure proper cooling.
- C. Drill a 17/64 inch hole exactly between each of the existing drum bolt holes. This means 18 new drum bolt holes must be drilled on a radius of 6.125 inches.

IDENTIFICATION: Following the modification, identification may be made by means of the stainless steel tubing attached to the brake inlet adapter.

PARTS REQUIRED PER AIRPLANE: One kit, Bendix part number 146484 will service one airplane or two brake assemblies. This kit is composed of the following parts:

Quantity	Part No.	Name
2	59119	Boots
4	59002	Cup (Mineral Oil)
2	145121	Cup Expander Assemblies
2	57677	Fairings
12	57620	Screws

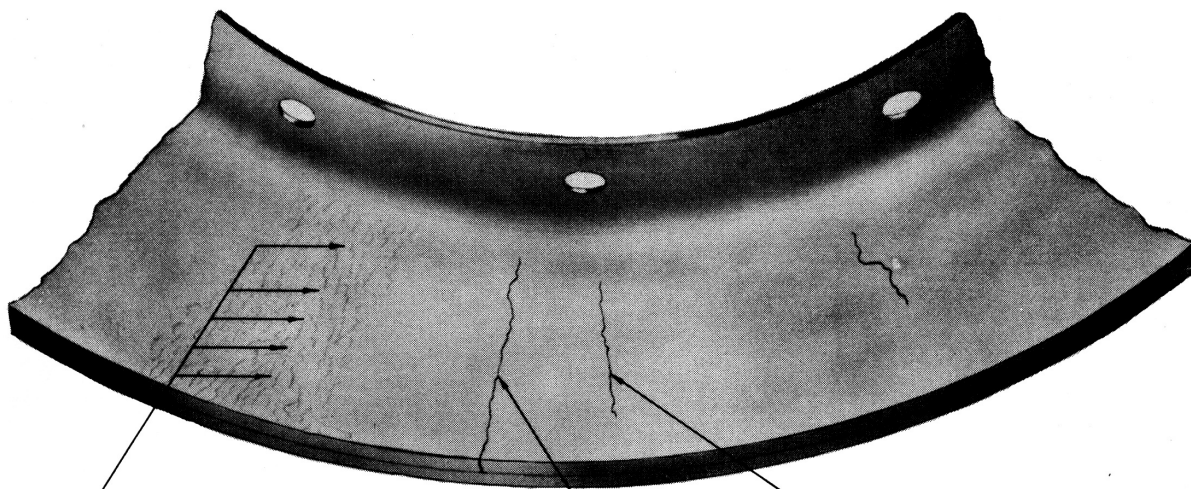
Quantity	Part No.	Name
6	57606	Spring Plate Assembly
4	145704	Shoe and Lining Assembly
2	146486 (AN6274-4-41)	Hose Assembly
4	146485 (AN919-3)	Reducer
1	146474	Tube Assembly L.H.
1	146475	Tube Assembly R.H.

SPECIAL TOOLS REQUIRED: None

DISPOSITION OF REMOVED PARTS: All parts removed during this modification may be scrapped with the exception of the brake shoes.

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SMALL HEAT CHECKS — THESE
ARE NOT IMPORTANT.

HEAT CRACK — NOT CONSIDERED
SERIOUS UNLESS CRACK ENTERS
OUTER STEEL SHELL.

AS CRACK PROGRESSES OVER
EDGE OF DRUM, REPLACE AT
FIRST OPPORTUNITY.

FIG. 1

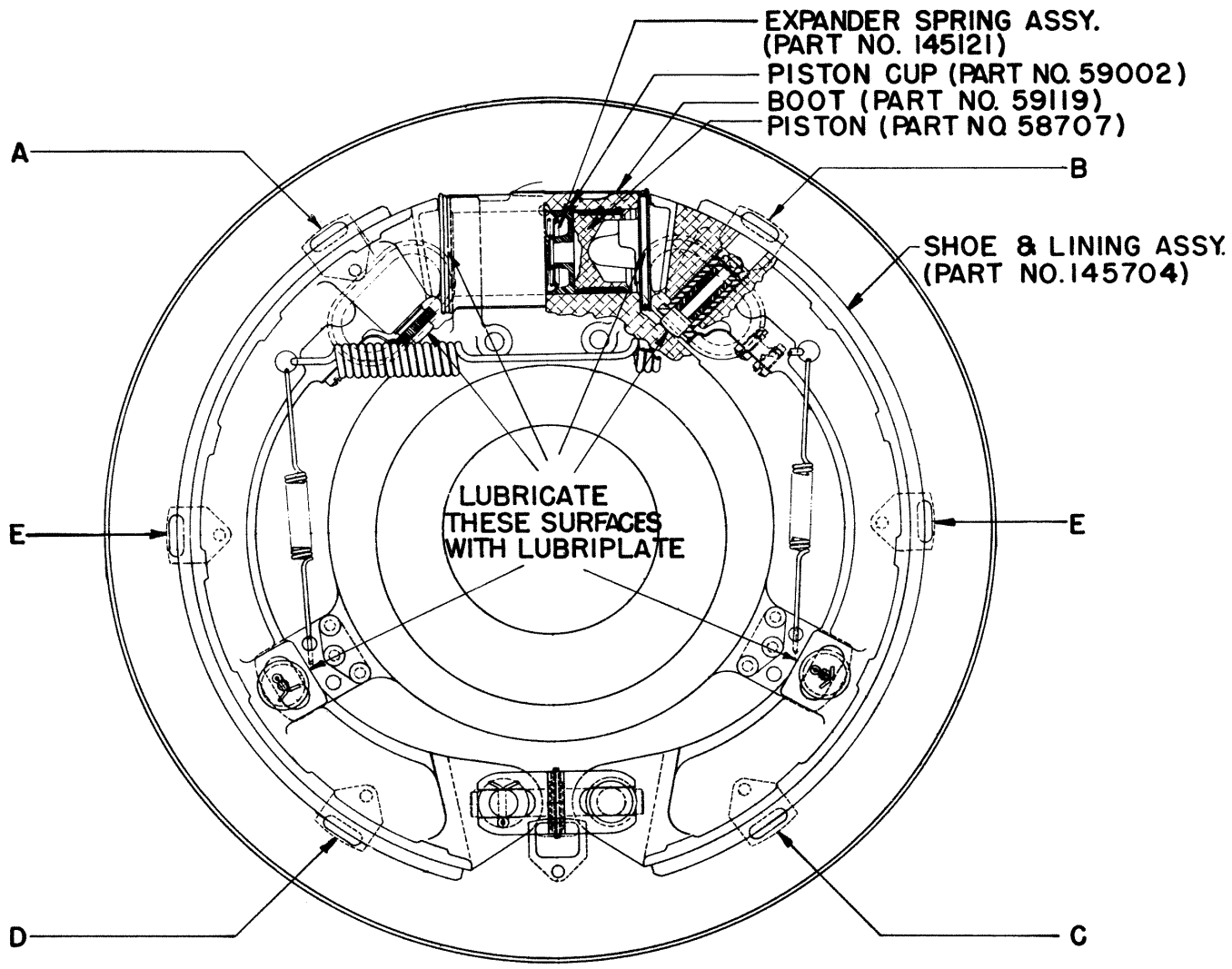


FIG. 2

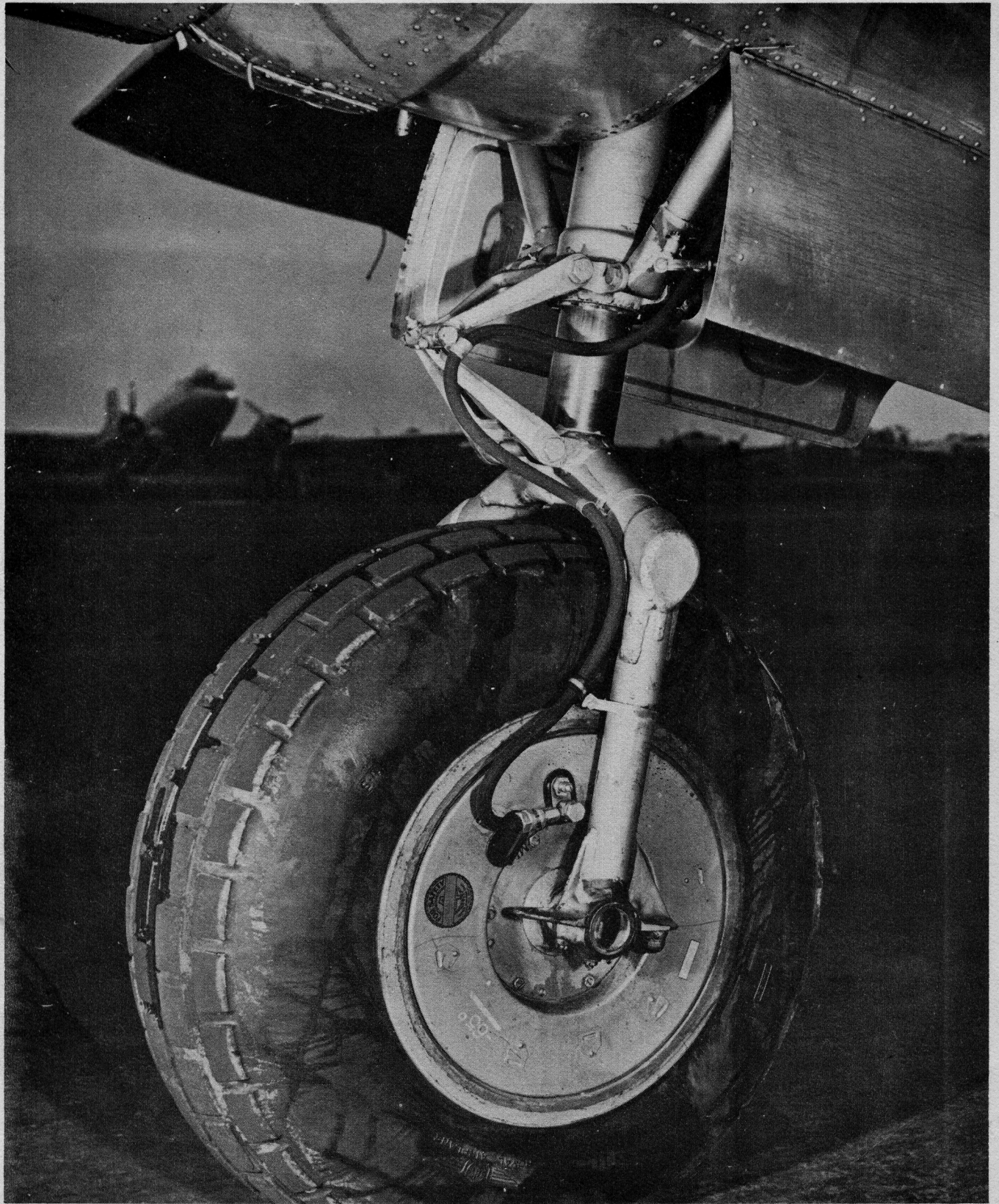


FIG. 3

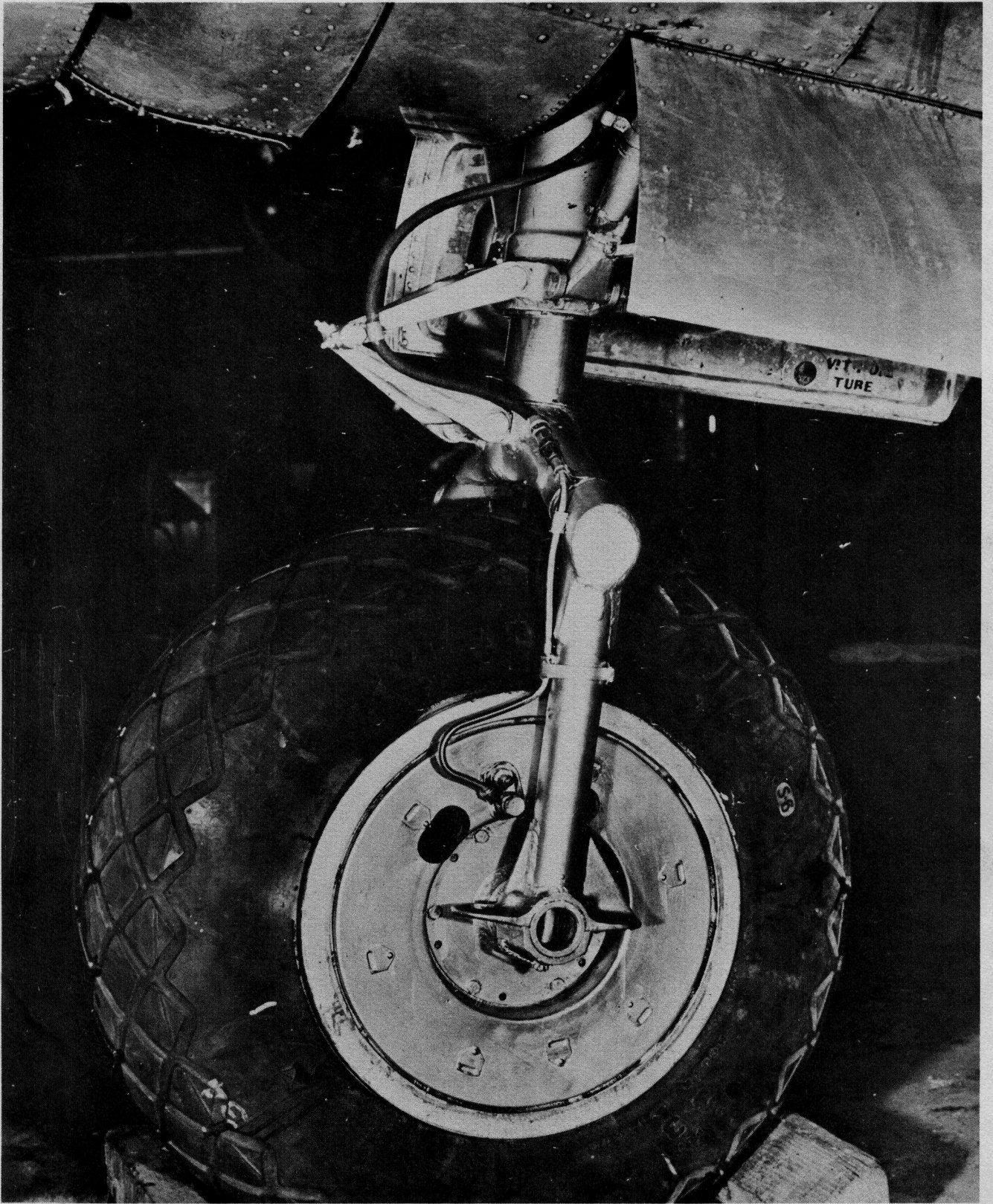
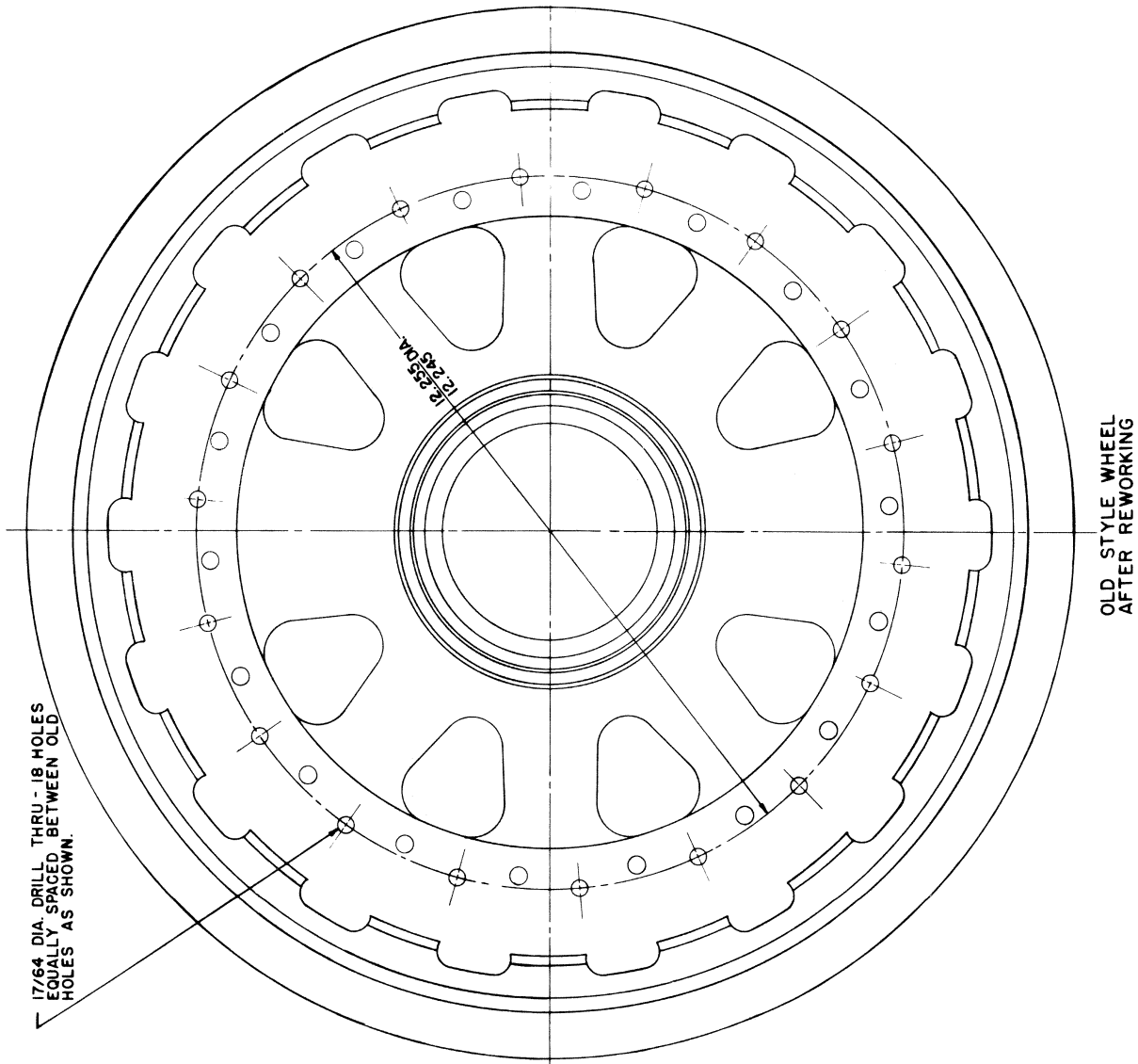
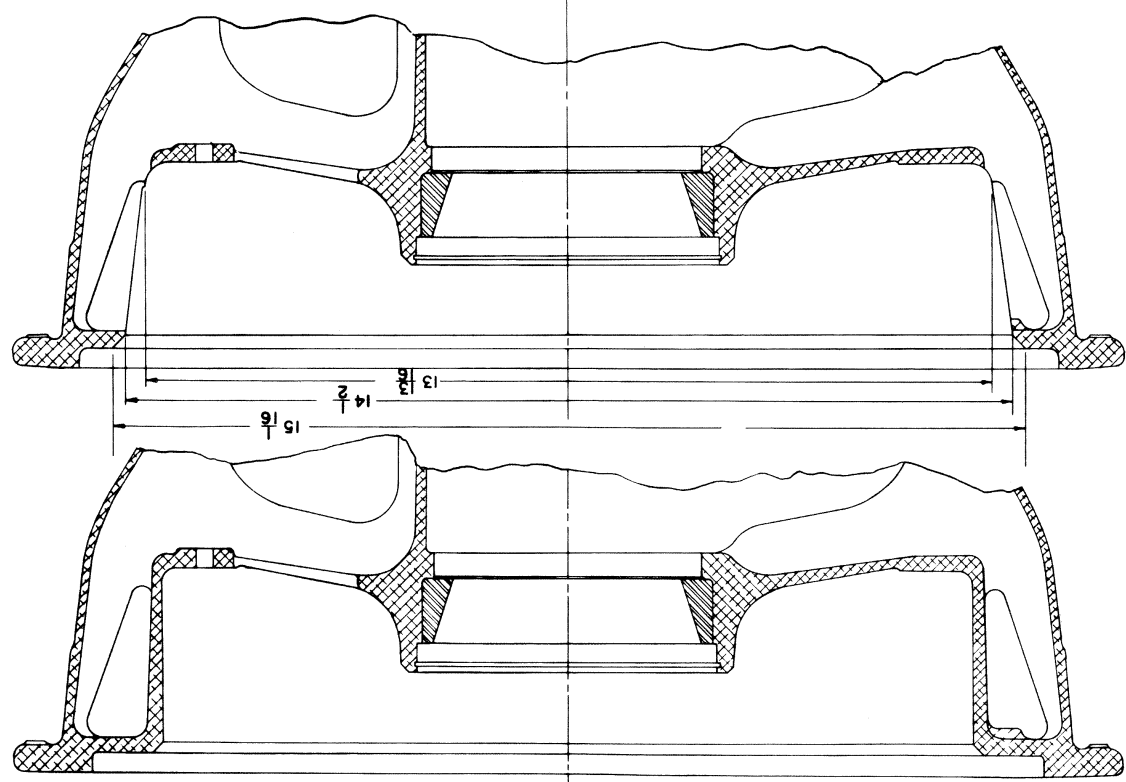


FIG. 3A



OLD STYLE WHEEL
AFTER REWORKING



OLD STYLE WHEEL
AFTER REWORKING

OLD STYLE WHEEL
BEFORE REWORKING

FIG. 4