



CLASS II

# SERVICE INSTRUCTIONS

19, 23, 24, 55

0452-359, Rev. II  
ATA Code 24-30

**SUBJECT:** ELECTRICAL (ALTERNATOR) – INSTALLATION OF ALTERNATOR COOLING FAN

**SYNOPSIS OF REVISION:** Deleted alternator fan inspection procedures and installed new vibration resistant fan. Service Instructions rewritten to comply with AD-72-15-2.

**EFFECTIVITY:** BEEHCRAFT Models A23-19, 19A, and M19A, serials MB-1 through MB-480; B23, serials M-1095 through M-1284; A23-24, serials MA-1 through MA-363; Barons 95-B55 and 95-B55A, serials TC-763 through TC-1177 if Kit No. 55-3012 S, Prestolite Alternator Installation, has been installed in compliance with Service Instructions No. 0184-241, or No. 0184-241, Revision I; and serials TC-1178 through TC-1502 if equipped with Prestolite belt-driven alternators.

**REASON:** To reduce the possibility of alternator cooling fan failure.

**COMPLIANCE:** All the above applicable aircraft must have the new two piece fan (90-2241) installed prior to January 1, 1973 in compliance with AD 72-15-2 amendment 39-1487 as amended by amendment 39-1508. On Models 95-B55 and 95-B55A prior to serial TC-1368, the alternator cooling fan should be inspected for adequate clearance with the adjacent engine mount support tube at the time of installation of the cooling fan, and thereafter each time a new alternator drive belt is installed, unless the shorter alternator adjustment arm, P/N 629825, and shorter drive belt, P/N 539547-31-19, are installed in which case the clearance inspections may be discontinued.

**DESCRIPTION:** The alternator cooling fan is replaced with a new two piece fan (Refer to Prestolite Service Bulletin ASM-8, issued 5/30/72, printed herein). On Models 95-B55 and 95-B55A prior to serial TC-1368, cooling fan clearance with the adjacent engine mount support tube is checked; a shorter alternator adjustment arm and drive belt are installed if insufficient clearance exists.

**APPROVAL:** FAA Approved - DOA CE-2

**MANPOWER:** The following information is for planning purposes only:

Models A23-19, 19A, M19A, B23, and A23-24

Estimated man-hours: 4 hours  
Suggested number of men: 1 man.

Models 95-B55 and 95-B55A

Estimated man-hours: 2.5 hours per alternator.  
Suggested number of men: 1 man.

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CLASS II

II

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## Service Instructions No. 0452-359, Rev. II

**MATERIAL:** The following parts are available through your BEEHCRAFT Parts and Service Outlet.

Model	Part Number	Description	Quantity	*Price
A23-19, 19A, M19A, B23, and A23-24	**90-2241	Fan	1 per aircraft	\$5.64 each
95-B55 and 95-B55A	**90-2241	Fan	2 per aircraft	\$5.64 each
	***629825	Arm	2 per aircraft	\$3.72 each
	***539547-31-19	Belt	2 per aircraft	\$3.06 each

\*Suggested selling price. (Price subject to change without notice.)

\*\*Replaces fan PU1605 or PU1605A and consists of PU604A Backing Plate and PU605A Fan.

\*\*\*These parts must be installed together.

**SPECIAL TOOLS:** None.

**WEIGHT AND BALANCE:** None.

**REFERENCES:** AD 72-15-2 Amendment 39-1487 as amended by amendment 39-1508. BEEHCRAFT Service Instructions No. 0184-241, or No. 0184-241 Revision I. BEEHCRAFT 19, 23 and 24 series Shop Manual, P/N 169-590015D or subsequent.

**PUBLICATIONS AFFECTED:** It is recommended that a note be made in the applicable section of all shop manuals to "See Service Instructions No. 0452-359, Revision II."

**ACCOMPLISHMENT INSTRUCTIONS:** Installation of the new type alternator cooling fan on Models A23-19, 19A, M19A, B23, and A23-24 is described in Part I of these instructions.

Parts II and III cover the alternator cooling fan clearance check and cooling fan change on Models 95-B55 and 95-B55A.

### Part I. INSPECTION OF ALTERNATOR COOLING FAN (MODELS A23-19, 19A, M19A, B23, AND A23-24.)

### CAUTION

1. Make certain that the battery master switch is off.
2. Remove the engine cowling.

Do not hold the fan to prevent the alternator shaft from rotating while the retaining nut is being removed or replaced. Use of the fan to prevent shaft rotation can result in bending and distortion of the fan.

### NOTE

On airplanes not incorporating a split nose cowl, it will be necessary to remove the propeller in order to remove the cowling. (Refer to the shop manual for propeller removal and reinstallation.)

3. Remove the alternator from the engine. Note installation details such as the alternator electrical connections, attaching parts, and lock wire on attaching parts to insure correct reinstallation.

4. While retaining the alternator pulley with a strap wrench, remove the nut securing the pulley and the fan to the alternator shaft.

5. With a wheel puller, remove the pulley from the alternator shaft.

6. Remove the alternator cooling fan from the shaft. Obtain a new 90-2241 fan. (Refer to Prestolite Service bulletin ASM-8, issued 5/30/72, printed herein.)

7. Place the fan on the alternator shaft as described in Prestolite Service Bulletin ASM-8, issued 5/30/72 (printed herein) and install the retaining lock washer and nut. Hold the pulley with a strap wrench and torque the nut to 35 to 40 foot-pounds.

**CAUTION**

Make certain that the recommended torque is applied; improper torque on the nut could result in failure of the fan.

8. Reinstall the alternator on the engine, but do not tighten the attaching bolts at this time.

9. Place the alternator drive belt on the pulleys, making certain that the raised belt lap will trail in the direction of rotation to preclude snagging on a possible obstruction.

10. Adjust belt tension as described in Prestolite Service Bulletin ASM-8, issued 5/30/72 (printed herein).

**CAUTION**

When adjusting belt tension do not pry on the fan or pulley.

11. With the belt retained at the proper tension, torque the bolt attaching the alternator to the alternator adjustment arm to  $165 \pm 10$  inch-pounds, then torque the alternator pivot bolt to  $300 \pm 25$  inch-pounds.

12. Reinstall the propeller (if removed) and the engine cowling.

**PART II. CLEARANCE CHECK OF ALTERNATOR COOLING FAN (MODELS 95-B55 AND 95-B55A PRIOR TO SERIAL TC-1368)**

1. Open the door in the left hand side of the engine cowling.

2. Check the alternator cooling fan for adequate clearance with the adjacent engine mount support tube (approximately 3/8 inch minimum clearance.)

**RECORD COMPLIANCE:**

Upon completion of these Service Instructions make an appropriate maintenance record entry.

3. Perform the above steps on the opposite engine.

4. If increased clearance between the alternator cooling fan and the engine mount support tube is required, replace the existing alternator adjustment arm and drive belt with a shorter arm, P/N 629825, and a shorter belt, P/N 539547-31-19, as described in Part III of these instructions.

**PART III. INSTALLATION OF THE NEW TYPE ALTERNATOR COOLING FAN (MODELS 95-B55 AND 95-B55A)**

**NOTE**

The following procedure is applicable to both engines.

1. Make certain that the battery master switch is off.

2. Remove the engine accessory section panel just aft of the door in the left hand side of the engine cowling.

3. Remove the alternator from the engine. Note installation details such as alternator electrical connections, attaching parts, and lock wire on attaching parts to insure correct reinstallation.

4. Remove and install the new type alternator cooling fan as described in Steps 4 through 7 in Part I of these instructions.

5. If a new 629825 alternator adjustment arm and 539547-31-19 drive belt are to be installed, replace the existing adjustment arm with a 629825 arm (use existing attaching parts), but do not tighten the arm attaching bolt at this time.

6. Reinstall the alternator and drive belt on the engine by referring to steps 8 through 11 in Part I of these instructions. If a new 629825 alternator arm was installed, torque the arm attaching bolt to  $165 \pm 10$  inch-pounds before tightening the alternator pivot bolt.

7. Reinstall the engine accessory section panel and secure the cowling door.

**NOTICE TO OUR BARON CUSTOMERS**

Teledyne Continental Motors Corporation has made available an improved Prestolite alternator fan which they have installed on production engines. This fan is an alternate to the fan offered in these Service Instructions and is approved for use by the Federal Aviation Agency and Prestolite Company. This fan may be obtained from Teledyne Continental Motors, Product Support Group (950 Arthur Ave., Elk Grove Village, Illinois, 60007) under Kit No. Eq. 6494 which is called out in Continental Service Bulletin M73-6 or subsequent.



# prestolite®

## AIRCRAFT SERVICE BULLETIN

NUMBER ASM-8 ISSUED 5-30-72  
SUBJECT New Ventilating Fan Assembly  
APPLICATION All Belt Driven Aircraft Alternators Except ALV Series  
PAGE NO. 1 OF 2 PAGES

Prestolite has designed and released a new ventilating fan assembly that we recommend be used whenever replacement is necessary.

The new, two piece, unwelded construction ventilating fan, shown in Figure 1, consists of a thick gauge aluminum material ventilating fan and a thin gauge aluminum material backing plate. The backing plate is dished to provide vibration dampening when the fan and backing plate are properly assembled on the shaft and the retaining nut is torqued to the proper specification.

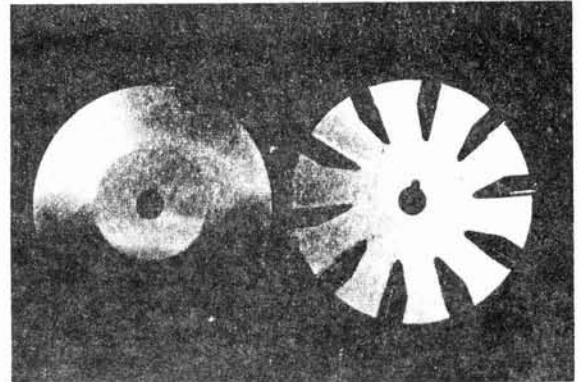


Figure 1

The new fan and backing plate, being aluminum, are easily identified by their appearance.

The new ventilating fan and backing plate are contained in parts package number 90-2241.

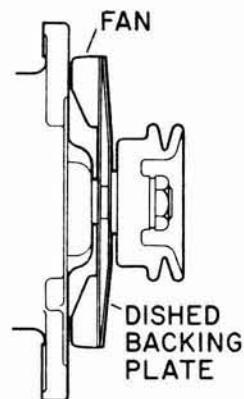


Figure 2

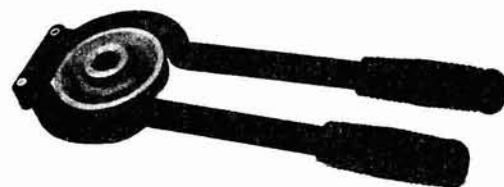


Figure 3

### INSTALLATION

Correct assembly of the fan and backing plate is shown in Figure 2. **Make certain the outside edge of the backing plate contacts the outside edge of the fan.** Install the pulley, lockwasher, and retaining nut then torque the retaining nut to 35 Ft. Lbs. minimum to 40 Ft. Lbs. maximum. Use a strap wrench or a pulley gripping tool, similar to the type shown in Figure 3, to hold the pulley while torquing the retaining nut.

NOTE: Proper tightening of the pulley retaining nut and proper belt tension are extremely important as these have been the two major contributing factors to the ventilating fan problems. Make certain the torque wrench is accurate and **DO NOT** undertorque or overtorque the retaining nut.



# *prestolite*® AIRCRAFT SERVICE BULLETIN

NUMBER ASM-8 ISSUED 5-30-72  
SUBJECT New Ventilating Fan Assembly  
APPLICATION All Belt Driven Aircraft Alternators Except ALV Series  
PAGE NO. 2 OF 2 PAGES

After installing the alternator on the engine, use one of the two following methods to adjust the fan belt tension.

1. **SLIP TORQUE METHOD:** This method consists of installing a torque wrench on the pulley retaining nut and measuring the amount of torque required to make the pulley slip. Turn the torque wrench in a clockwise direction, as viewed from the pulley end, and adjust belt tension accordingly.

<u>BELT WIDTH</u>	<u>SLIP TORQUE NEW BELT</u>	<u>SLIP TORQUE USED BELT</u>
3/8 Inch	11 to 13 Ft. Lbs.	7 to 9 Ft. Lbs.
1/2 Inch	13 to 15 Ft. Lbs.	9 to 11 Ft. Lbs.

If a new belt is being installed the slip torque should be checked to the used belt specification after 1 hour operation, at 25 hours, and each 100 hours thereafter. See Aircraft Manual or call Aircraft Manufacturer.

NOTE: The higher torque value for the new belts is to compensate for the initial stretch of the belt that occurs as soon as it is operated. Do not use the higher torque value for a belt that has been previously used.

2. **BELT TENSION METHOD:** This method consists of installing a belt tension meter on the fan belt at mid point of the longest unsupported section of the belt and adjusting the alternator to obtain the specifications listed below.

The following specifications are for a 3 to 1 pulley ratio with a belt wrap of 140° on the alternator pulley.

<u>TYPE</u>	<u>OUTPUT</u>	<u>BELT LOAD</u>
ALE	40 Amp	50 Lbs.
ALH, ALT, ALZ	50 Amp	75 Lbs.
ALY, ANG	60 Amp	75 Lbs.
ALU, ALX	70 Amp	75 Lbs.

The meter used for these specifications was a Borroughs Belt Tension Meter Model #BT-33-73F.

The above specifications are for a used belt, or a new belt after 1 hour operation.

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