

SECTION VII

BLOWER

A. DESCRIPTION

1. Blower

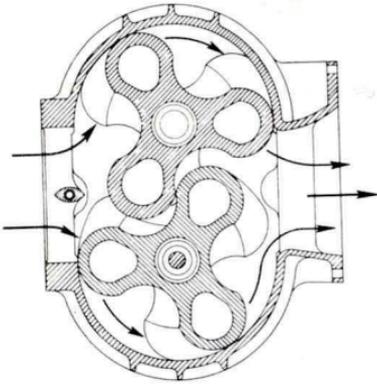
The blower, Fig. 7-1, consists of a pair of helical three-lobed rotors, which revolve in a close fitting aluminum housing. This design insures a large volume of air at low pressure, proportional to engine speed. A cross-section view of the blower is shown in Fig. 7-3. Two blowers are used on 12 and 16 cylinder engines; one on 6 and 8 cylinder engines on the right bank.

Each rotor is pressed on a tubular steel shaft. The engine end of these shafts are journals supported in the rear end plate bearing blocks. The front, or gear ends of the shafts, are serrated. Flanged hubs having serrated bores are pressed onto the serrated tubular shaft ends and serve as bearing journals and drive flanges for a matched pair of helical rotor gears. Thrust bearings are included in the front end bearing blocks.

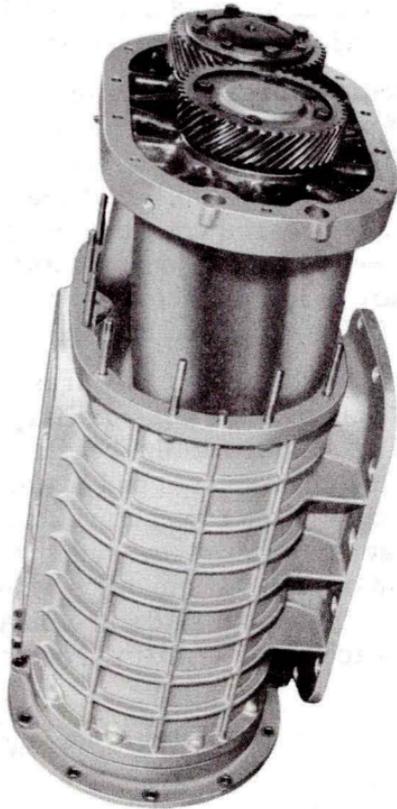
VII

Blower rotor bearings are pressure lubricated by engine oil supplied from the auxiliary generator drive housing. Oil is supplied to the bearings by drilled passages in the end plates; both end plates being connected by an oil passage in the top center of the housing. Rotor gears are bath lubricated by running in oil. The oil level is maintained by a standpipe which is part of the blower oil drain line. Oil seals are provided in each end plate around each rotor shaft to prevent oil leakage into the rotor housing.

Gaskets are not used between the end plates and blower housing. A fine silk thread around the housing end, inside the stud line, together with a thin coating of gasket compound, provide an air-tight seal.



Blower Operation



**Blower
Fig. 7-1**

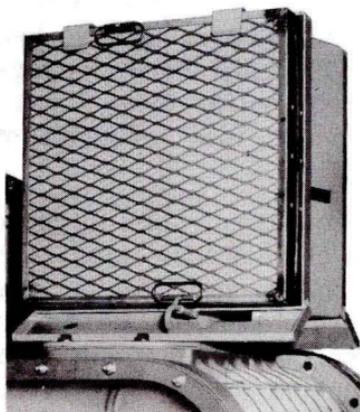
2. Blower Drive

Each blower is driven by a blower drive gear in the camshaft gear train. A flange with a serrated hub is bolted to the drive gear. A quill shaft having a flanged end bolted to a rotor gear, and a serrated end, extends through the outer rotor shaft. When the blower is in place, the serrated end of the quill shaft enters the serrated hub of the drive flange.

Engine blower drive gears on 8 and 16 cylinder engines are smaller than those used on 6 and 12 cylinder engines. Consequently, blower rotor speed is faster and capacity is proportionally greater on 8 and 16 cylinder engines. See Section VI, for additional information on the engine gear train.

3. Engine Air Filters

Air is cleaned before entering the blower by passing through the engine air filters and air intake silencer assemblies. Different arrangements and types of these assemblies are used depending on the engine installation and customer specification. A representative air filter - silencer assembly is shown in Fig. 7-2.



Engine Air Filters
Fig. 7-2

It is very important that air supplied by the engine be clean to minimize wear of parts caused by air borne abrasive particles and to prevent contamination in the engine. Therefore, whatever the type of air filter used, it should be maintained to operate efficiently. Cleaning information covering the engine filters is given in Maintenance Instruction 1706.

B. MAINTENANCE

1. Servicing Blower

Blowers in need of rebuilding should be returned to the factory. For blower rebuild information see Factory Rebuild Service Bulletin #301.

2. Blower Inspection

It is recommended that blowers be inspected at intervals specified in the Scheduled Maintenance Program.

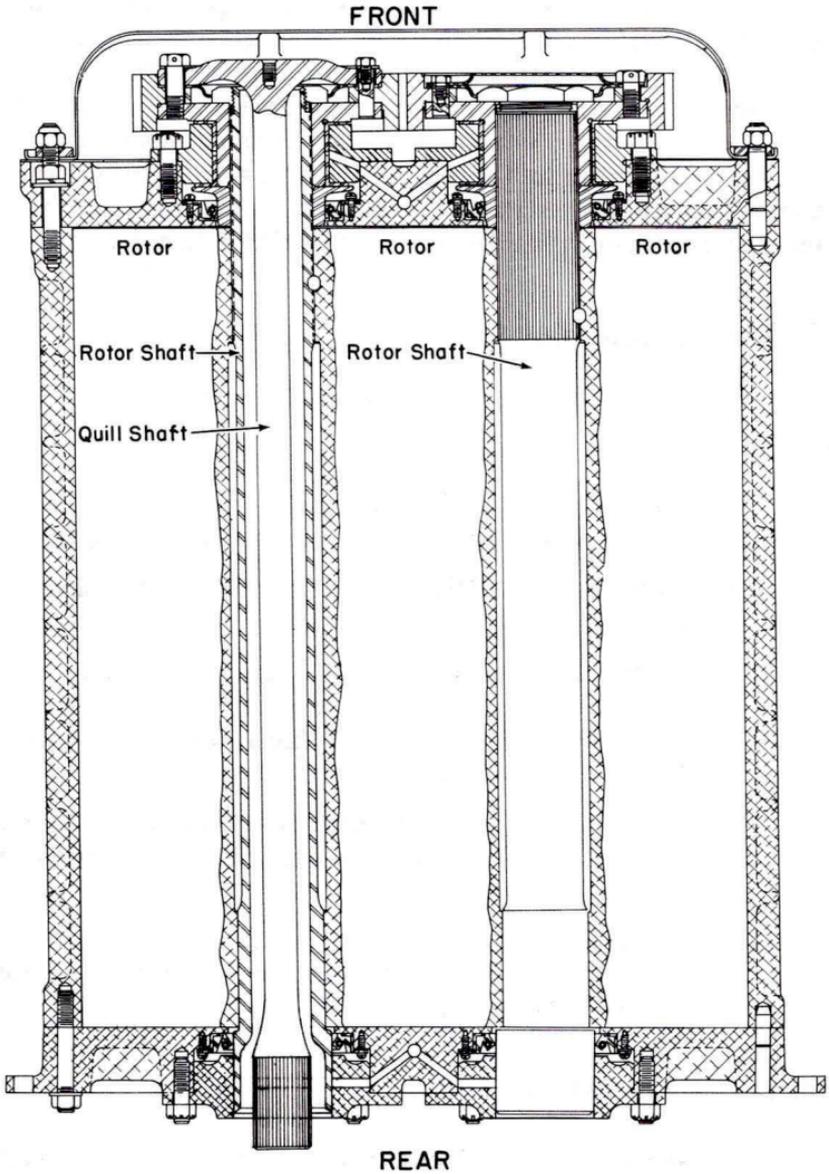
If blower bearings become worn enough for rotor interference, aluminum dust will appear in the blower support housing and in the air box. A blower in this condition must be replaced at once.

A leak at the blower oil seals will show an excessive amount of oil running down the blower support and into the air box, and excessive oil on rotors and end plates.

NOTE: Air pressure should not be used to test blower seals.

When inspecting blower rotors, a clean strip on the crown radius or high part of the lobes, running the entire length of the lobes, may be seen on some rotors. The strip appears to be flat, but actually is hand worked to conform to the housing bore. The hand working operation is done to match pairs of rotors for close clearance, and the width of the strip will vary on different rotors.

The strip on the lobes is the closest point of rotor contact and therefore is usually cleaner than other lobe areas. Scratches may appear on the strip due to dirt particles finding their way into the blower, but generally they are of no consequence. Accordingly, the clean strip or evidence of scratches on it should not be interpreted as an indication of rotor to rotor or rotor to housing contact.



Engine Blower Cross-Section
Fig. 7-3

Upon inspection of the current design engine blowers, it will be noted that some parts, although similar to previously used parts are lighter in weight. The blower housing end plates and rotor lobes have been lightened, and the cast iron rear end plate bearing housing and bushing assembly has been replaced by an integral one piece aluminum bearing. Cast iron housings are re-bushed, however, when blowers are rebuilt at the factory.

3. Blower Removal

General removal procedure is as follows:

- a. Remove oil separator lines to blower.
- b. Remove blower lube oil supply and drain lines; apply blank flange or otherwise cover openings.
- c. Remove air filter element, element housing, and blower adapter (if used).
- d. Remove stud nuts and capscrews securing blower to support and camshaft drive housing. (Special wrench 8177166 facilitates removal of hard to reach bottom nuts.)
- e. Slide blower straight back from the engine until splined shaft clears spline drive on blower drive gear.
- f. With the aid of a chain hoist or equally safe means, carefully raise and remove the blower from its support.

4. Installing Blower

To install a blower, reverse the procedure outlined in Item 3. Grease the blower to blower support gasket, so blower can be moved in place without moving or tearing the gasket. Line up spline drive and slide blower straight into position.

5. Blower Changeover

Blowers used on 567C engines are similar to blowers used on other 567 series engines. Blowers used on the same bank may be exchanged from 567A, 567B to 567C without alteration. To change over a 567 (cast or fabricated) engine blower to same bank on 567A, 567B or 567C engine, the drive quill shaft must be changed from the inside blower rotor gear to the outside gear, or vice versa from 567A, 567B or 567C to 567 engine blower.

Installation of blowers is the same, with wide mounting base flange inward of the engine.

To change a 567 blower to same bank on 567C, 567B or 567A or vice versa:

- a. Remove blower end cover, quill shaft and gear cover on opposite gear from quill shaft.
- b. Drill and ream two dowel holes in gear opposite original quill shaft location, and dowel quill shaft to gear.
- c. Replace gear cover on opposite gear and replace blower end cover. (Cover nut torque values are 35-40 foot-pounds.)

C. SPECIFICATIONS

| | | |
|--|------------------------|----------------------|
| Blower | 6 & 12 cyl. | 8 & 16 cyl. |
| Blower speed (engine speed 800 RPM) | 1540 RPM | 2040 RPM |
| Blower speed (engine speed 835 RPM) | 1650 RPM | 2200 RPM |
| Blower capacity (per blower at 7-1/2" Hg. approx.) | 800 RPM 2000 CFM | 2700 CFM |
| | 835 RPM 2150 CFM | 2900 CFM |
| Blower pressure (approx.) at engine RPM | 800 RPM 6" to 8.5" Hg. | 835 RPM 7" to 9" Hg. |

C. SPECIFICATIONS (Cont'd)

New Limit

| | | |
|---|-----------------|--------|
| *Clearance - rotor to rear end plate (away from gears) | .012" - .023" | .025" |
| *Clearance - rotor to front end plate (near blower gears) | .0085" - .0195" | .022" |
| **Clearance - housing to rotor | .012" - .014" | .017" |
| Clearance - rotor to rotor | .008" - .012" | .015" |
| Clearance - diametric - rear rotor bearing | | |
| aluminum | .0025" - .004" | .0045" |
| cast iron and sleeve | .002" - .0041" | .0045" |
| Clearance - diametric - front rotor bearing | .002" - .0045" | .0055" |
| Clearance - thrust - front rotor bearing | .002" - .004" | .004" |
| Backlash - synchronizing gears | .000" - .0025" | .0025" |
| Runout - synchronizing gear face (total indicator reading) | | .002" |
| Runout - quill shaft (after assembly total indicator reading) | | .025" |
| Blower base - twist or warp | | .006" |

*Rotor to be pushed toward the end on which clearance is being measured.

**Check clearance with blower inverted.

D. EQUIPMENT LIST

| Name | Part No. |
|--|----------|
| Blower Lifting Plate | 8072929 |
| Feeler gauges (1/2" x 12" - .008" - .020") | 8049132 |
| Feeler gauges (1/2" x 36" - .010" - .020") | 8049131 |
| Feeler gauges (.0015" - .200" short) | 8067337 |
| Blower Nut Ratchet Wrench | 8177166 |

For additional blower tools see Catalog 91B.