

AA-5 SERIES  
MAINTENANCE MANUAL

CHAPTER 78

EXHAUST

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ENGINE EXHAUST SYSTEM – DESCRIPTION/OPERATION

1. General

The exhaust system consists of an integral muffler and exhaust pipe, clamp assemblies, risers, and gaskets. The muffler is enclosed by a metal shroud which is connected by flexible tubing to the plenum assembly in the cabin and furnishes warm air for cabin heating. Inlet air is picked up through an opening in the front of the shroud which extends slightly through an opening in the front baffle.

On Model AA-5 and AA-5A aircraft, the carburetor heat hose is attached to a shell assembly around the exhaust pipe from No. 4 cylinder and supplies heat to the carburetor when the carburetor heat control is opened. On Model AA-5B aircraft, carburetor heat is supplied to the carburetor from a shroud around the muffler when the carburetor heat control is opened.

ENGINE EXHAUST SYSTEM - MAINTENANCE PRACTICES

1. Removal/Installation of Engine Exhaust System

A. Remove Exhaust System - Model AA-5 and AA-5A Aircraft (See Figure 201).

- (1) Remove the lower cowl (Refer to Chapter 71).
- (2) Remove the carburetor air induction system (Refer to Chapter 73).
- (3) Loosen clamps and disconnect cabin heater and fresh air inlet flexible ducts from muffler shroud assembly.
- (4) Loosen clamp and disconnect carburetor heat flexible duct from shell assembly around No. 4 exhaust pipe.
- (5) Remove nuts, bolts, and bead clamps from exhaust pipes, and lower muffler assembly from engine.
- (6) Remove nuts securing the exhaust risers to cylinders, and remove risers and gaskets.

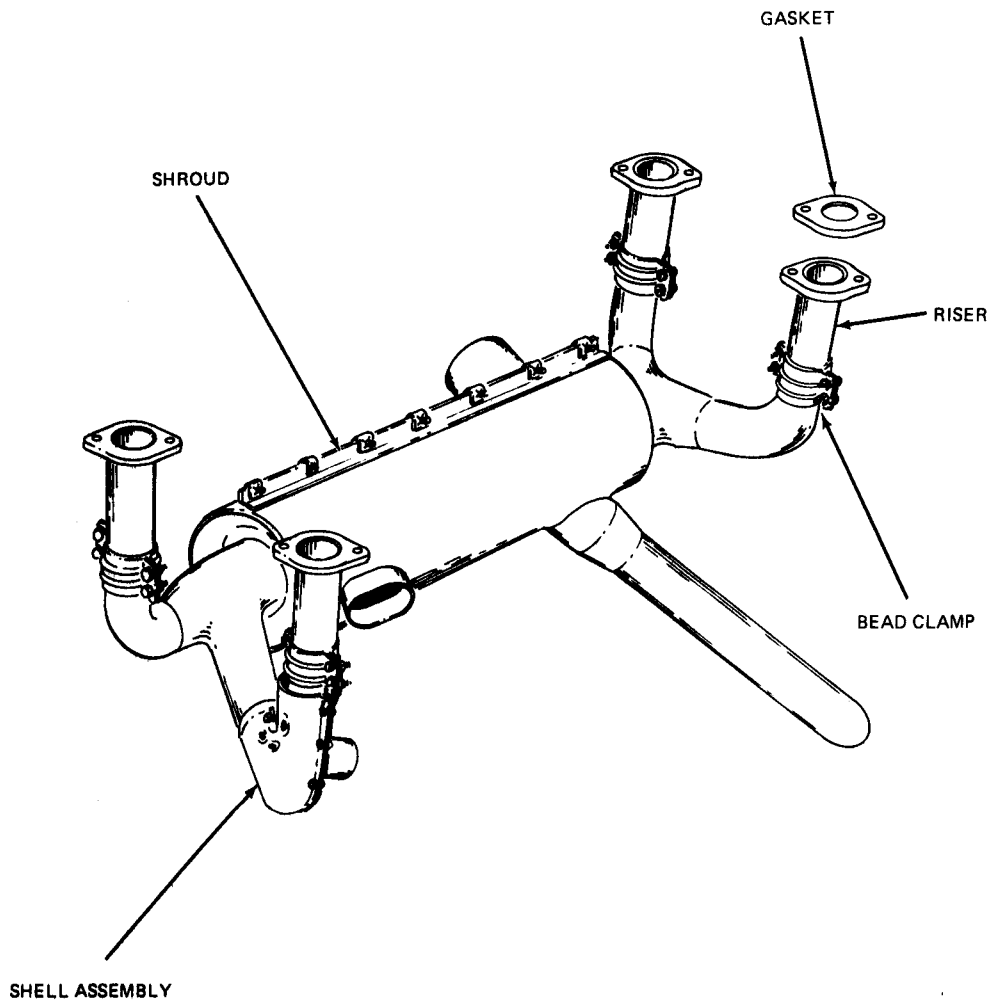
B. Install Exhaust System - AA-5 and AA-5A Aircraft (See Figure 201)

- (1) Using new gaskets, position the risers on the cylinders and install the exhaust flange nuts loosely.
- (2) Position the muffler assembly on the risers; apply approved sealant (Walker Acousti-Seal 5160) around riser to muffler joints and install bead clamps.
- (3) Position support braces to bead clamps and install bolts loosely in bead clamps.
- (4) Tighten the exhaust flange nuts to 110-130 inch-pounds torque using new lock washers. Tighten bead clamp bolts.
- (5) Install cabin heater and fresh air inlet flexible ducts to muffler shroud assembly and tighten clamps.
- (6) Install carburetor heat flexible duct to shell assembly around No. 4 exhaust pipe and tighten clamp.
- (7) Install carburetor air induction system (Refer to Chapter 73).
- (8) Install the lower cowl (Refer to Chapter 71).

C. Remove Exhaust System - AA-5B Aircraft (See Figure 202)

- (1) Remove the lower cowl (Refer to Chapter 71).
- (2) Loosen clamps and disconnect cabin heater flexible duct and carburetor heat flexible duct from muffler shroud assembly.
- (3) Remove nuts, bolts, and bead clamps from exhaust pipes and lower muffler assembly from engine.
- (4) Remove nuts securing exhaust risers to cylinders, and remove risers and gaskets.

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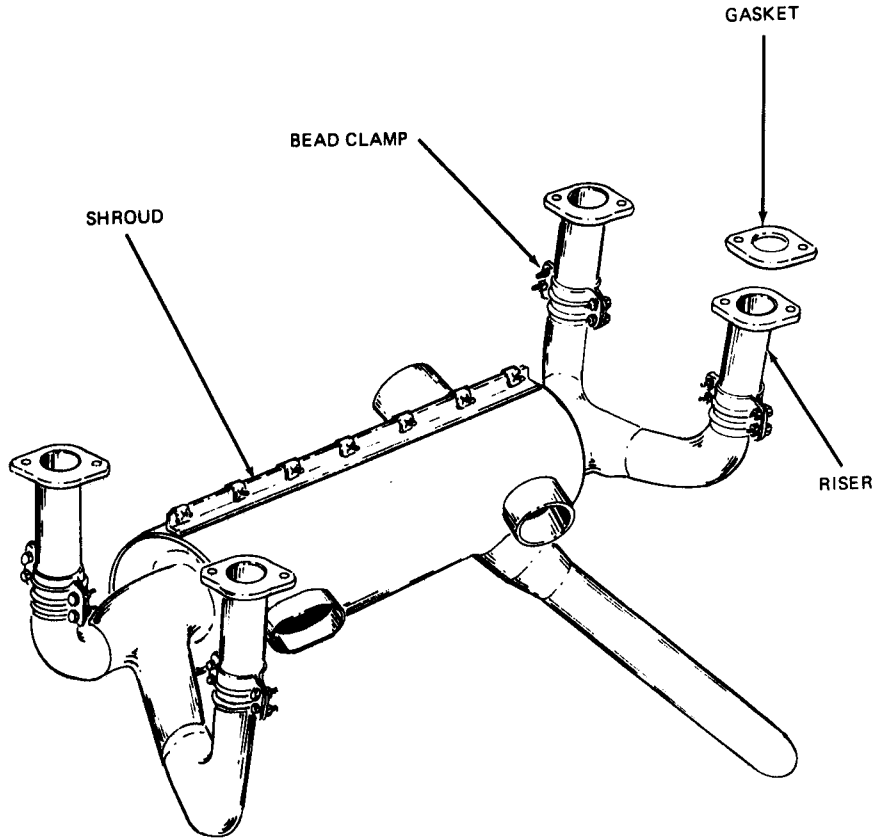


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Exhaust System Assembly - AA-5 and AA-5A  
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Exhaust System Assembly AA-5B  
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**D. Install Exhaust System - AA-5B Aircraft (See Figure 202)**

- (1) Using new gaskets, position the risers on the cylinders and install the exhaust flange nuts loosely.
- (2) Position the muffler assembly on the risers; apply approved sealant (Walker Acousti-Seal 5160) around riser to muffler joints and install bead clamps.
- (3) Position support braces to bead clamps and install bolts loosely in bead clamps.
- (4) Tighten the exhaust flange nuts to 110-130 inch pounds torque using new washers. Tighten bead clamp bolts.
- (5) Install carburetor heat and cabin heater flexible ducts to the muffler shroud assembly and tighten clamps.
- (6) Install the lower cowl (Refer to Chapter 71).

**2. Inspection of Exhaust System**

Exhaust systems are subject to burning, cracking, and general deterioration from alternate thermal stresses and vibration. Consequently, it is extremely important that the system be inspected every 100 hours or at any time power loss is suspected or exhaust fumes or carbon monoxide are detected in the cabin. To properly inspect the exhaust system, the components must be clean and free from oil, grease, or dirt. Stoddard solvent may be used to clean exhaust system components.

**WARNING: USE SOLVENTS IN A WELL VENTILATED AREA. AVOID BREATHING FUMES. KEEP AWAY FROM FLAMES.**

**WARNING: DO NOT USE HIGHLY FLAMMABLE SOLVENTS ON ENGINE EXHAUST SYSTEM. NEVER USE A WIRE BRUSH OR ABRASIVES TO CLEAN EXHAUST SYSTEMS OR MARK THE SYSTEM WITH LEAD PENCILS.**

**A. Inspect Exhaust System**

- (1) Perform engine run up and check for required static RPM (Refer to Chapter 5-2-1)
- (2) Clean exhaust system components using a suitable solvent.
- (3) Allow components to drain and then wipe dry with a clean cloth.
- (4) Inspect core through tail pipe opening for distorted or deteriorated baffles and shake the muffler to determine if baffles are loose.
- (5) Tap muffler lightly with a rubber mallet and check for scale and rust from interior of muffler. Severely distorted, deteriorated or loose baffles, or large flakes of scale and rust from the interior of the muffler are an indication that the muffler should be replaced.

**NOTE:** Especially check the area adjacent to welds. Look for exhaust gas deposits in surrounding areas, indicating that exhaust gasses are escaping through a crack or hole. If thorough inspection is not possible, pressure test for leaks in accordance with AC43. 13-1, Chapter 14, Section 3, Paragraph 387B. If cracks are found in the muffler or tail pipe, repairs must be in accordance with AC43. 13-1, Chapter 14, Section 3, Paragraph 388.

- (6) Inspect the engine exhaust flanges for smooth seating surfaces. Check the header flanges for warpage.
- (7) Check fit of risers to muffler pipes. If loose, swage out the risers for tight fit.

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■ (8) Perform exhaust system air leak test as follows:

- (a) Plug all openings in the muffler and attach the pressure side of an industrial vacuum cleaner (capable of producing a pressure rise of at least 2 inches Hg, above atmospheric pressure) to the tail pipe opening, using a rubber plug or other suitable means of effecting a suitable seal.

NOTE: The inside of the vacuum cleaner hose should be free of any contamination that might be blown into the system.

- (b) With the vacuum cleaner operating, the complete muffler assembly can be checked for leaks by applying a soapy water solution to all areas and watching for air bubbles.

■ (9) All leakage must be corrected.