

12-22. ENGINE EXHAUST SYSTEM. The exhaust system consists of two exhaust stack assemblies, one for the left and one for the right bank of cylinders. Each cylinder has a riser pipe attached to the exhaust port. The three risers at each bank of cylinders are joined together into a collector pipe which connects to a muffler and a tailpipe, forming an exhaust stack assembly. The center riser on each bank is detachable but the front and aft risers are welded to the collector pipe. The left muffler is enclosed in a shroud which captures exhaust heat which is used to heat the airplane cabin. The right muffler is also shrouded. On Models 210 thru 210C, and Model 205 prior to serial number 205-0034 an outlet on the right muffler provides a source for the heated air to the induction airbox.

12-23. REMOVAL OF ENGINE EXHAUST SYSTEM. The exhaust stack and muffler removal sequence can be clearly seen in figure 12-11 or 12-12. The tailpipes are attached to the lower firewall with one spring each. On later Models the tailpipes are attached to the lower firewall through a clamp which is shock mounted at the firewall.

12-24. INSPECTION of the exhaust system should be thorough because the cabin heating system uses air heated by the heat exchangers of the exhaust system. Since exhaust systems of this type are subject to burning, cracking, and general deterioration from alternate thermal stresses and vibration (comparable to those affecting automotive mufflers), inspection is important and should be accomplished every 100 hours of operation. In addition, an inspection should be performed any time exhaust fumes are detected in the cabin.

a. Remove engine cowlings, and loosen or remove heater shrouds so that ALL surfaces of the exhaust stack assembly can be visually inspected. Especially check the areas adjacent to welds. Look for exhaust deposits in surrounding areas, indicating that exhaust gas is escaping through a crack or hole.

b. Where part of the exhaust stack assembly is not accessible for a thorough visual inspection, or is hidden by parts of non-removable shrouds, the following method is recommended.

1. Remove the exhaust stack assembly and heater shrouds.
2. Use rubber expansion plugs to seal openings.
3. Using a manometer or gage, apply approximately 1 1/2 psi (3 inches of mercury) air pressure while the stack assembly is submerged in water. Any leaks will appear as bubbles and can be readily detected.
4. It is recommended that any exhaust stacks found defective be replaced before the next flight.
5. If no defects are found, remove plugs and dry thoroughly with compressed air.

12-25. INSTALLATION OF ENGINE EXHAUST SYSTEM. When installing exhaust stacks be sure there is one copper-asbestos gasket between each riser and its mounting pad on the cylinder. The exhaust system installation sequence can be clearly seen in figure 12-11 or 12-12. The tailpipes are secured at the lower firewall with one spring each. Make certain these springs are installed. On later Models make

certain the clamp is tight around the tailpipe. and the shock mounts are in serviceable condition.

12-26. ENGINE BAFFLES. (See figure 12-13.)

12-27. The sheet metal baffles installed on the engine direct the flow of air around the cylinders and other engine components. These baffles incorporate rubber-asbestos composition seal at points of contact with the engine nacelle to help confine and direct the airflow to the desired area. It is very important to engine cooling that the baffles are installed correctly.

12-28. CLEANING AND INSPECTION OF ENGINE BAFFLES. The engine baffles should be cleaned with a suitable solvent to remove oil and dirt.

NOTE

The rubber-asbestos seals are oil and grease resistant but should not be soaked in solvents for long periods.

Inspect for cracks in the metal and for loose and/or torn seals. Replace defective parts.

12-29. FUEL INJECTION SYSTEM.

12-30. Fuel injection is standard equipment on all 200-series aircraft. This fuel injection system is a simple, low pressure system of injecting fuel into the intake valve port in the cylinder head. It is a multi-nozzle, continuous flow type which controls fuel flow to match engine airflow. Any change in throttle position, engine speed, or a combination of both, causes changes in fuel flow in the correct relation to engine airflow. A manual mixture control and either a pressure gage or a fuel flow indicator are provided for leaning at any combination of altitude and power setting. The fuel pressure gage is calibrated in pounds per square inch. The fuel flow meter is calibrated in gallons per hour and indicates approximately the gallons of fuel consumed each hour. The continuous flow system uses a typical rotary vane fuel pump. There are no running parts in this system except for the engine driven fuel pump.

12-31. FUEL-AIR CONTROL UNIT. This unit occupies the position ordinarily used for a carburetor, at the intake manifold inlet. The function of this unit is to control engine air intake and to set the metered fuel pressure for proper fuel-air ratio. There are three control elements in this unit, one for air and two for fuel, one of which is for fuel mixture and the other for fuel metering. Main fuel enters the control unit through a strainer and passes to the metering valve. The position of the metering valve controls this fuel passed to the manifold valve and nozzles. A linkage connecting the metering valve to the air throttle proportions airflow to fuel flow. The position of the mixture valve determines the amount of fuel returned to the fuel pump. The fuel control portion of the fuel-air control unit is enclosed in a shroud and is blast-air cooled to help prevent vapor lock.

Operational Data

2500

CRUISE PERFORMANCE

NORMAL LEAN MIXTURE

Standard Atmosphere
Zero Wind

Gross Weight - 2900 Pounds
55 Gallons - No Reserve

2500 FEET

RPM	MP	% BHP	Fuel Press.	MPH TAS	Gal/ Hour	Endurance Hours	Range Sta. Miles
2450	24	75	9.4	181	14.2	3.9	700
	23	71	8.6	177	13.4	4.1	725
	22	67	7.8	173	12.6	4.4	755
	21	63	7.1	169	11.8	4.7	790
2300	24	68	8.0	174	12.8	4.3	745
	23	64	7.4	170	12.1	4.6	775
	22	60	6.8	166	11.4	4.8	800
	21	57	6.2	163	10.7	5.1	835
2200	23	60	6.6	166	11.2	4.9	810
	22	56	6.2	162	10.6	5.2	840
	21	53	5.7	158	10.0	5.5	870
	20	49	5.3	154	9.4	5.9	900
2100	22	51	5.6	156	9.8	5.6	880
	21	48	5.2	152	9.2	6.0	910
	20	45	4.8	148	8.7	6.3	935
	19	42	4.5	144	8.2	6.7	965
	18	38	4.3	139	7.8	7.1	980
	17	35	4.1	133	7.3	7.5	1000
	16	32	3.9	127	6.9	8.0	1015
	15	29	3.7	121	6.6	8.3	1010