

NOTE

The intercylinder baffle assemblies separate into two sections to facilitate installation. However, due to the close fit, considerable manipulation may be required to work them into position.

- h. To install left front baffle (23), place the baffle in position and secure with three screws and bolt.
- i. To install oil cooler baffles (1 and 25), first remove the lower oil cooler attaching bolts. Position the baffles and secure with lower oil cooler attaching bolts. Secure baffles (1 and 25) to support bracket (2) with screws.

- j. Fasten right and left baffles (3, 4, 5, 19, 20 and 21) in place with cylinder rocker box cover screws. Attach baffles (1, 10 and 23) to baffles (3, 5 and 21) with screws.
- k. Inspect completed installation.
- l. Replace engine cowling in accordance with paragraph 4-5.

4-78. FUEL SYSTEM. (See figure 4-12.)

4-79. The fuel supply is contained in two nylon main cells (310-0001 to 310-0021 and 310-0031 to 310G0001) and integrally sealed (wet) tanks (310-0021 to 310-0031 and 310G0001 and ON). The fuel capacity of each main fuel cell is 51 gallons, of which approxi-

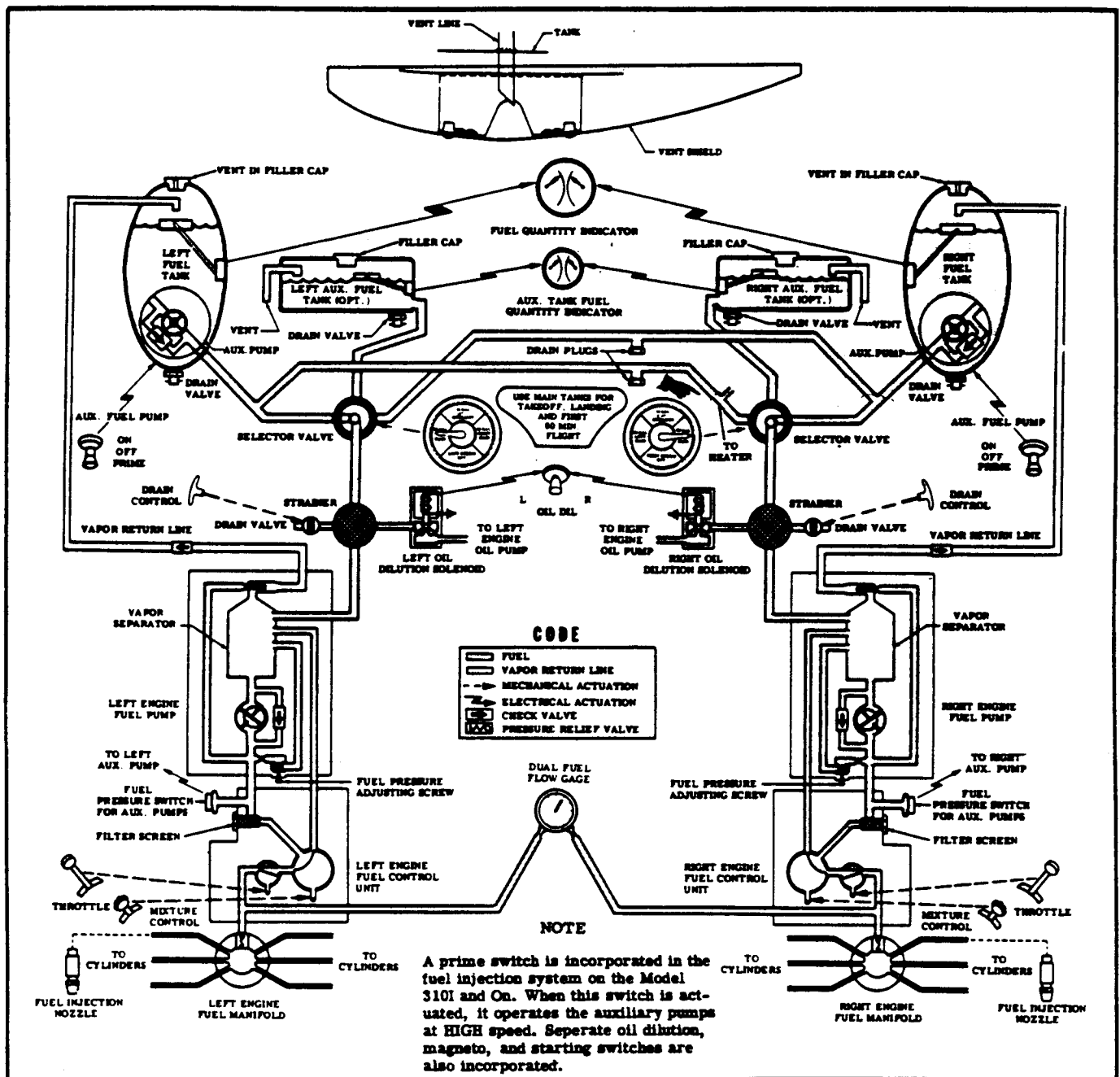


Figure 4-12. Fuel Injection System Schematic

imately 50 gallons is usable. An electrically-operated fuel boost pump, used as an emergency pump and to provide fuel pressure for starting, is contained in the bottom of each main fuel cell. The fuel capacity of each auxiliary tank is 15.5 gallons, of which 15 gallons is usable. From the boost pumps in the main tanks, fuel is fed to selector valves located in the wings, through the fuel strainers and engine-driven fuel pumps to the engines. A vapor return line is installed to return unused fuel from the engine-driven fuel pump to the main fuel cells. A line from each auxiliary tank carries fuel to its respective fuel selector valve. The auxiliary tanks are not equipped with fuel boost pumps, as are the main tanks. Quick-drain valves are provided throughout the system and are easily accessible for draining of trapped moisture and sediment. On Model 310I0001 and ON, and aircraft modified by SK310-53, a normally open oil pressure switch has been added to the oil pressure indicator line (see figures 4-4 and 4-5) and is electrically connected in series with the auxiliary fuel pump switch. The auxiliary fuel pump will not operate (except by the primer switch) if the respective engine is not running or oil pressure is below approximately 20 PSI. With the engine running and oil pressure above 20 PSI the respective oil pressure switch will be actuated to the closed position, allowing the auxiliary fuel pump to function normally as required by the position of the auxiliary fuel pump switch and available fuel pressure.

4-79A. GROUND CHECK OF FUEL PRESSURE SWITCH AND OIL PRESSURE SWITCH. (Model 310I0001 and ON, and aircraft modified by SK310-53.)

- a. Turn master switch ON.
- b. Turn auxiliary fuel pump switch ON - auxiliary fuel pump should not run.
- c. Start engine and run at 1000 rpm - check oil pressure above 20 PSI.
- d. Position auxiliary fuel pump switch to LOW position - make audio check of pump for low speed operation.

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- e. Position auxiliary fuel pump switch to ON position - recheck pump operation for low speed.

NOTE

If audio check indicates pump is running, the oil pressure switch is functioning normally.

- f. Momentarily position mixture lever to IDLE CUT-OFF - make audio check for pump going to high speed.

NOTE

If pump goes to high speed, fuel pressure switch is functioning normally.

- g. Turn auxiliary fuel pump switch OFF when pump goes to high speed.

NOTE

If auxiliary fuel pump does not go into high speed, proceed with the following steps.

- h. Auxiliary fuel pump switch - OFF.
- i. In the engine nacelle, jumper the oil pressure switch electrical leads to close the circuit.
- j. With the engine not running, momentarily position the auxiliary fuel pump switch to ON - make audio check of pump for high speed operation.

NOTE

If auxiliary fuel pump goes into high speed, the fuel pressure switch and pump are functioning normally.

- k. Position master switch to OFF and disconnect jumper from oil pressure switch electrical leads.

4-80. TROUBLE SHOOTING THE FUEL SYSTEM.

TROUBLE	PROBABLE CAUSE	CORRECTION
NO FUEL QUANTITY INDICATION	Fuel tank empty.	Fill tank with correct grade of fuel.
	Fuel quantity indicator circuit breaker open.	Reset circuit breaker.
	Loose connections or open circuit.	Tighten connections and check wiring.
	Defective fuel quantity indicator.	Replace fuel quantity indicator.
	Defective fuel quantity sending unit.	Replace fuel quantity sending unit.
FUEL DRIPS FROM NACELLE	Mixture lever not in IDLE CUT-OFF.	Place mixture lever in IDLE CUT-OFF.
	Mixture lever not in IDLE CUT-OFF due to improper rigging.	Rig mixture control in accordance with paragraph 4-177.
	Broken fuel line or loose fitting.	Check fuel lines and fittings.

TROUBLE	PROBABLE CAUSE	CORRECTION
AUXILIARY FUEL PUMP INOPERATIVE	Master switch OFF. Circuit breaker open. Open circuit or loose connections. Defective fuel pump.	Turn master switch ON. Reset circuit breaker. Check circuit and repair. Replace fuel pump.
AUXILIARY FUEL PUMP OPERATES WITH ENGINE NOT RUNNING 310I0001 AND ON	Defective oil pressure switch.	Replace oil pressure switch.
AUXILIARY FUEL PUMP RUNS AT HIGH SPEED WHEN AUXILIARY FUEL PUMP SWITCH IS MOVED TO "ON" POSITION WITH ENGINES RUNNING	Defective fuel pressure switch.	Replace fuel pressure switch.
AUXILIARY FUEL PUMP RUNS AT SLOW SPEED WITH AUXILIARY FUEL PUMP SWITCH "ON" AND ENGINES NOT RUNNING 310F0001 TO 310I0001 (On 310I aircraft with oil pressure switch jumped, see paragraph 4-79A.)	Defective fuel pressure switch. Defective auxiliary fuel pump.	Replace fuel pressure switch. Replace auxiliary fuel pump.
ENGINE WILL NOT START OR CONTINUE TO RUN AFTER STARTING	Fuel tank empty. Fuel selector valve in OFF position. Mixture in IDLE CUT-OFF. Engine overprimed. Fuel strainer in fuel control unit dirty. Auxiliary fuel pump switch not in PRIME position. Plugged fuel cap vent. Bypass valve in engine-driven fuel pump stuck.	Fill tank with correct grade of fuel. Move fuel selector valve to tank desired. Set mixture to FULL RICH. Place mixture control in IDLE CUT-OFF, turn engine over several revolutions with throttle WIDE OPEN. Clean fuel control unit strainer. Place auxiliary fuel pump switch in PRIME position. Clean vent. Replace engine-driven fuel pump.

4-81. FUEL INJECTION SYSTEM. The fuel injection 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 re-

lation to engine airflow. A manual mixture control and flow gage, indicating metered fuel pressure, are provided for precise leaning at any combination of altitude and power setting. 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.

4-82. TROUBLE SHOOTING THE FUEL INJECTION SYSTEM.

TROUBLE	PROBABLE CAUSE	CORRECTION
ENGINE WILL NOT START NO GAGE PRESSURE	No fuel to engine.	Check mixture control for proper position, auxiliary pump PRIME and

TROUBLE	PROBABLE CAUSE	CORRECTION
ENGINE WILL NOT START NO GAGE PRESSURE (Cont)		operating, selector valve in correct position, tank fuel level.
ENGINE WILL NOT START WITH PRESSURE GAGE	Engine flooded.	Reset throttle, clear engine of excess fuel, try another start.
	No fuel to engine.	Loosen one line at nozzle. If no fuel shows, with fuel pressure on gage, replace fuel manifold valve.
ROUGH IDLE	Nozzle air screens restricted.	Remove nozzles and clean.
	Improper idle mixture.	Adjust as described in paragraph 4-87.
POOR ACCELERATION	Idle mixture too lean.	Adjust as described in paragraph 4-87.
	Worn linkage.	Replace worn elements of linkage.
ENGINE RUNS ROUGH	Restricted nozzle.	Remove and clean all nozzles.
	Improper mixture.	Improper pump pressure, replace pump.
LOW GAGE PRESSURE	Restricted flow to metering valve.	Check mixture control for full travel. Check for clogged fuel filters.
HIGH GAGE PRESSURE	Restricted flow beyond metering valve.	Check for restricted nozzles or fuel manifold valve. Clean or replace as required.
	Restricted recirculation passage in pump.	Replace pump.
FLUCTUATING OR ERRONEOUS FUEL FLOW INDICATIONS	Vapor in system excess fuel temperature.	If not cleared with auxiliary pump, check for clogged ejector jet in vapor separator cover. Clean only with solvent, no wires.
	Air in gage line. Leak at gage connection.	Purge line and repair leak. Perform Fuel Flow Indication Check, paragraph 4-99A.
POOR IDLE CUT-OFF	Engine getting fuel.	Check mixture control to be in IDLE CUT-OFF. Check auxiliary pump to be OFF. If neither, replace manifold valve.
FLUCTUATION AND/OR LOWERING OF FUEL FLOW AT HIGH ENGINE SETTINGS WITHOUT AUXILIARY PUMP OPERATION.	Air leak in system.	Apply negative pressure to system, check for leaks, tighten fittings and or replace gaskets as required.

4-83. 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 the 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. A fuel pressure switch, connected to the fuel control