

Section II

DESCRIPTION AND OPERATING DETAILS

The following paragraphs describe the systems and equipment whose function and operation is not obvious when sitting in the airplane. This section also covers in somewhat greater detail some of the items listed in Check List form in Section I that require further explanation.

FUEL SYSTEM.

The main fuel system is composed of two main fuel tanks (46 gal. usable each wing) in each outboard wing panel and one sump tank in the lower portion of each boom. Fuel flows from the main and sump tanks to selector valves located at the wing roots. Fuel is normally fed from the left wing tanks and front selector valve to the front engine, and from the right wing tanks and rear selector valve to the rear engine. It is possible, however, to feed either engine from either main fuel tank.

NOTE

The fuel selector valve handles should be turned to "LEFT MAIN" for the front engine and "RIGHT MAIN" for the rear engine during take-off, landing, and all normal operations.

Depending upon the setting of the selector valves, fuel from the tanks being used flows through fuel line manifolds, fuel strainers and a by-pass in the electric auxiliary fuel pumps (when they are not operating) to the engine-driven fuel pumps. From here, fuel is distributed to the engine cylinders via fuel control units and fuel distributors. Vapor and excess fuel from the engine-driven fuel pumps are returned to the fuel line manifolds, and the returned fuel is recirculated to the engine-driven pumps. The fuel line manifolds are vented (with the fuel tanks) at the wing tips.

AUXILIARY FUEL PUMP SWITCHES.

The auxiliary fuel pumps are electrically operated and are located in the front and rear engine compartments. The pumps are controlled by

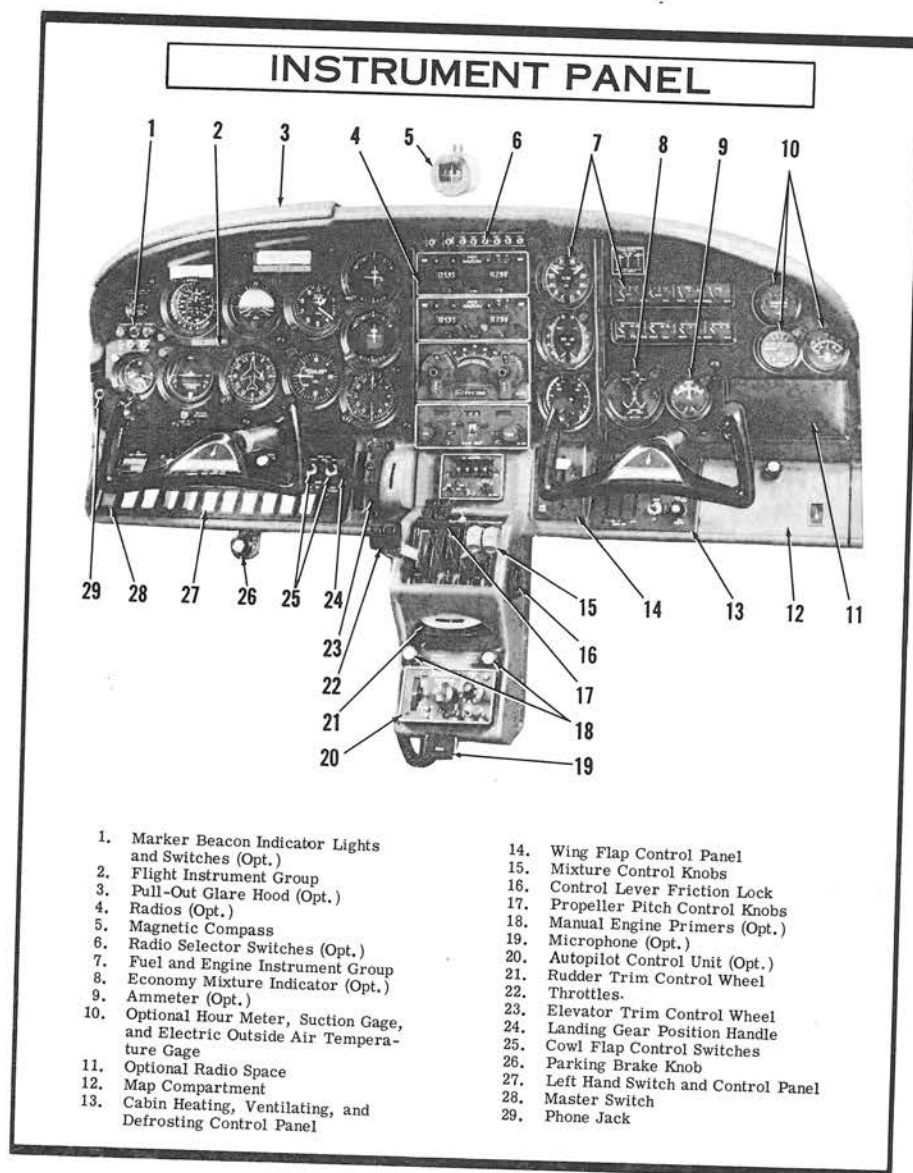


Figure 2-1.

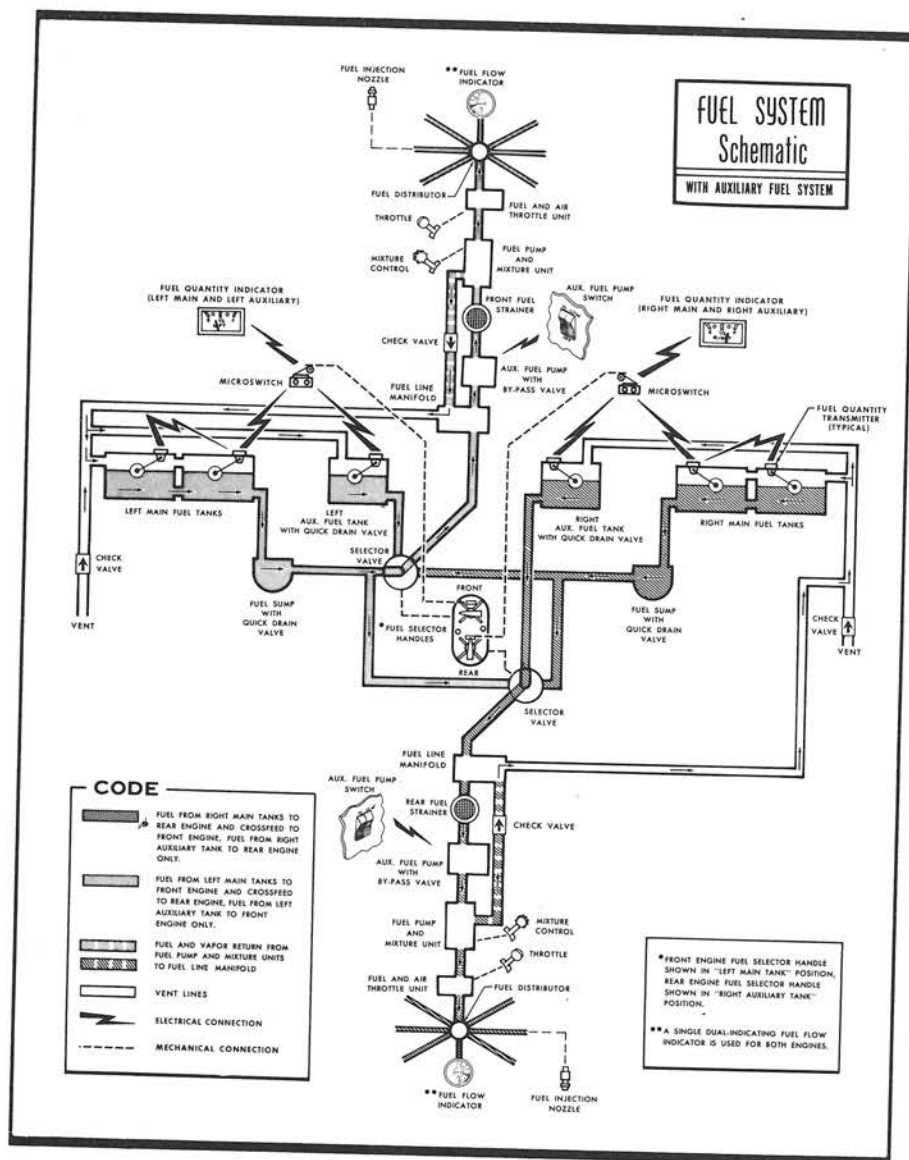


Figure 2-2.

two split rocker-type switches located on the lower left switch and control panel. The switches are labeled "AUX PUMPS," "FRONT ENGINE REAR." One side of each switch is red in color and is labeled "HI"; the other side is yellow in color and is labeled "LOW." The "LOW" side operates the pumps at low speed, providing sufficient fuel for priming and starting. The "HI" side operates the pumps at high speed, supplying sufficient fuel flow to maintain normal power in the event of engine-driven fuel pump failure. In all operations (including crossfeeding and operation on auxiliary tank) the left auxiliary fuel pump switch controls the pump for the front engine and the right auxiliary fuel pump switch controls the pump for the rear engine.

The auxiliary fuel pumps are not used while the engines are running smoothly and fuel flow is satisfactory. However, for vapor elimination or to restore sufficient fuel flow, the "HI" side of the auxiliary fuel pump switches may be used with the engines running for as long as required, provided the mixture control is adjusted to prevent an excessively rich mixture. The auxiliary fuel pumps should be turned off and mixtures reset prior to making a low power or idle let-down or landing approach. In addition, the "HI" side may be used for engine restarts in hot or cold weather.

NOTE

The cylinder intake ports can be flooded if the "HI" side of the auxiliary fuel pump switch is accidentally turned on with the master switch on and the engine stopped.

FUEL STRAINERS AND TANK SUMP DRAINS.

Refer to servicing procedures in Section V.

ELECTRICAL SYSTEM.

Electrical energy is supplied by a 28-volt, direct-current system powered by two engine-driven alternators (see figure 2-3). Electrical energy is stored in a 24-volt battery located in the lower left portion of the front engine compartment. Power is supplied to all electrical circuits through a split bus bar, one side containing electronic system circuits and the other side having general electrical system circuits. Both sides of the bus are on at all times except when either an external power source is connected or the starter switches are turned on; then a power contactor is automatically activated to open the circuit to the electronics bus. Isolating the electronic circuits in this manner prevents harmful transient voltages from damaging the semi-conductors in the electronics equipment.