

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 aircraft. This section also covers in somewhat greater detail some of the items listed in Checklist form in Section I that require further explanation.

FUEL SYSTEMS.

The aircraft contains, as standard equipment, an "ON-OFF" fuel shutoff valve system. An optional selector valve system which provides fuel tank selection capability is also available. Details of both systems are discussed in the following paragraphs. Optional long range fuel tanks are also available.

"ON-OFF" FUEL SYSTEM.

Fuel is supplied to the engine from two tanks, one in each wing. The total usable fuel, for all flight conditions, is 62 gallons.

Fuel from each wing tank flows by gravity through a fuel accumulator tank, shutoff valve, fuel strainer, by-pass in the electric auxiliary fuel pump (when it is not operating) and engine-driven fuel pump to the cylinders via a fuel control unit and manifold. Vapor and excess fuel from the engine-driven fuel pump and fuel control unit are returned to the main fuel tanks by way of the fuel accumulator tank.

To provide fuel flow to the engine, squeeze together the double buttons of the fuel shutoff valve control knob (located on the floor console), releasing the lock, and push the knob full in. Fuel will flow from both wing fuel tanks simultaneously.

NOTE

With full fuel, the tanks may not drain evenly because fuel may be sloshed into the interconnect vent line, preventing absolutely equal vent pressures in each

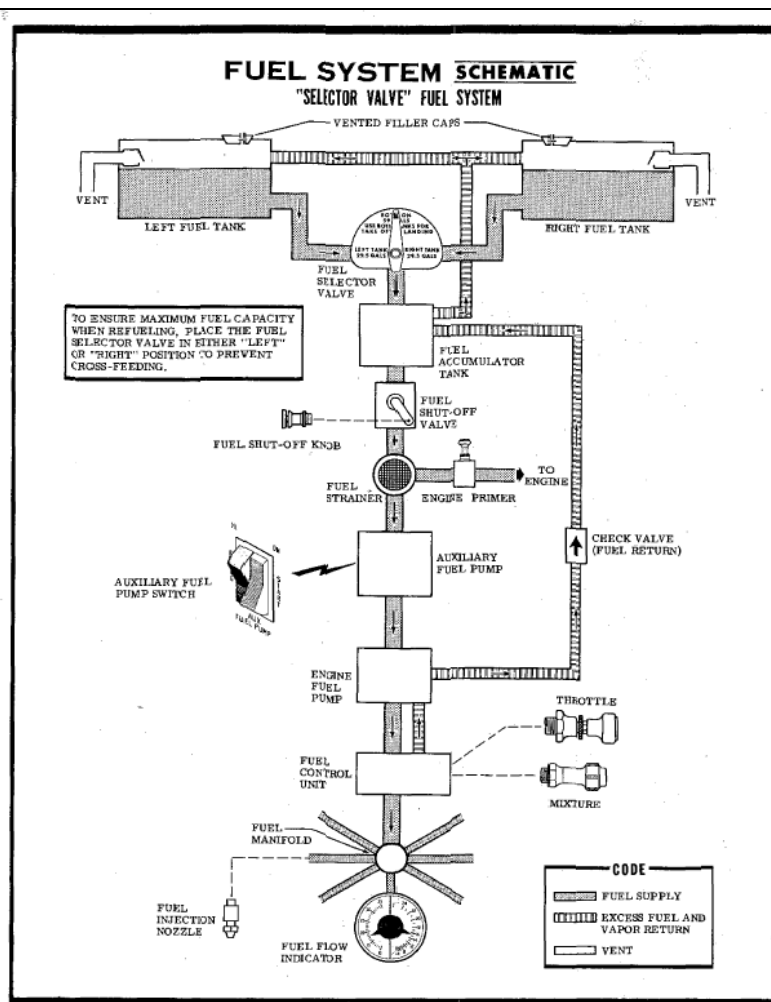


Figure 2-3.

ank. However, as fuel is consumed, clearing the interconnect vent line and equalizing tank vent pressures, the fuel quantities should equalize in each tank, provided the wings are maintained exactly level.

When the control knob is pulled full out, the shutoff valve is closed, isolating the wing tanks and fuel accumulator tank from the engine.

"SELECTOR VALVE" FUEL SYSTEM (OPT).

A "selector valve" fuel system is available to provide fuel tank selection capability. The system is standard with long range fuel tanks and optional with standard range tanks. When this system is installed, the total usable fuel, for all flight conditions, is 59 gallons for standard tanks and 78 gallons for optional long range tanks.

In this system, fuel flows from both wing tanks to a selector valve; here, fuel from either or both tanks may be selected, depending upon the cruise requirements. Fuel from the selector valve then flows through a fuel accumulator tank, shutoff valve and associated components as in the "ON-OFF" fuel system. Vapor and excess fuel from the engine-driven fuel pump and fuel control unit are returned through the accumulator tank to the main tanks.

The LEFT TANK position of the three-position selector valve provides fuel flow from the left wing tank to the engine. Similarly, the RIGHT TANK position provides flow from the right wing tank. The BOTH ON position allows fuel flow from both tanks simultaneously.

NOTE

Take-off and land with the selector valve handle in the BOTH ON position to prevent inadvertent operation on an empty tank. However, when the selector is left in the BOTH ON position for extended flight, unequal fuel flow from each tank may occur if the wings are not maintained exactly level. Resulting wing heaviness can be alleviated gradually by turning the selector valve handle to the tank in the "heavy" wing.

The recommended cruise fuel management procedure for extended flight is to use the left and right tank alternately.

NOTE

It is not practical to measure the time required to con-

sume all of the fuel in one tank, and, after switching to the opposite tank, expect an equal duration from the remaining fuel. The airspace in both fuel tanks is interconnected by a vent line and, therefore, some sloshing of fuel between tanks can be expected when the tanks are nearly full and the wings are not level.

If it is desired to completely exhaust a fuel tank quantity in flight, the auxiliary fuel pump will be needed to assist in restarting the engine when fuel exhaustion occurs. Therefore, it is recommended that proper operation of the auxiliary fuel pump be verified prior to running a fuel tank dry by turning the auxiliary fuel pump on momentarily and checking for a slight rise in fuel flow indication.

To ensure a prompt engine restart in flight after running a fuel tank dry, immediately switch to a tank containing fuel at the first indication of fuel pressure fluctuation and/or power loss. Then place the right half of the auxiliary fuel pump switch in the ON position momentarily (3 to 5 seconds) with the throttle at least 1/2 open. Excessive use of the auxiliary fuel pump at high altitude and full rich mixture can cause flooding of the engine as indicated by a short (1 to 2 seconds) period of power followed by a loss of power. This can later be detected by a fuel flow indication accompanied by a lack of power. If flooding does occur, turn off the auxiliary fuel pump switch, and normal propeller windmilling should start the engine in 1 to 2 seconds.

If the propeller should stop (possible at very low airspeeds) before the tank containing fuel is selected, place the auxiliary fuel pump switch in the ON position and advance the throttle promptly until the fuel flow indicator registers approximately 1/2 way into the green arc for 1 to 2 seconds duration. Then retard the throttle, turn off the auxiliary fuel pump, and use the starter to turn the engine over until a start is obtained.

FUEL TANK SUMP AND FUEL LINE QUICK-DRAIN VALVES.

Each fuel tank sump is equipped with a fuel quick-drain valve to facilitate draining and/or examination of fuel for contamination and grade. The valve extends through the lower surface of the wing just outboard of the cabin door. Two similar valves are provided in the fuel supply lines and are located on the bottom of the fuselage below the cabin door area. A sampler cup stored in the aircraft is used to examine the fuel. Insert the probe in the sampler cup into the center of the quick-drain valve and push. Fuel will drain into the sampler cup until pressure on the valve is released.