

SECTION II

DESIGN INFORMATION

ENGINE AND PROPELLER

The Lycoming IO-320-B four cylinder, fuel injected engines are rated at 160 horsepower at 2700 rpm. These engines are equipped with geared starters, fuel injectors and shielded ignition systems.

Engine mounts are of steel tube dynafocal mount construction. Engine cowls are cantilever structures attached at the firewall, with side panels which are quickly removed by means of quick release fasteners.

The exhaust system is a cross-over type with exhaust gases directed overboard at the bottom of the nacelles in the area of the cowl flaps. The cowl flaps are located on the bottom of the engine nacelles and are manually operated by push-pull controls located in the cabin to the right of the power control quadrant.

Oil coolers are mounted on the left rear baffle of each engine. Air passes through the oil coolers before reaching the area of the cowl flaps.

The propellers are Hartzell HC-E2YL-2 constant-speed, controllable, full-feathering units. These are controlled entirely by use of the propeller control levers located in the center of the power control quadrant. Feathering of the propellers is accomplished by moving the controls fully aft through the low RPM detent into the feathering position. Feathering takes place in approximately three seconds. A propeller is unfeathered by moving the prop control ahead and engaging the starter. (See Section III for complete feathering and unfeathering instructions.)

and stopped in any desired position. The airfoil shaped flap control is to the right of the power control quadrant. Located on the instrument panel is a flap position indicator marked to show the position of the flap relative to the wing. A range for take-off operation is also shown.

Located in the inboard end of the right flap is a lock which holds the flap in the UP position so that it can be used as a step for entry or exit. A second lock is incorporated to prevent the flap from going full down in case a step load is applied and the up lock is not fully engaged.

FUEL SYSTEM

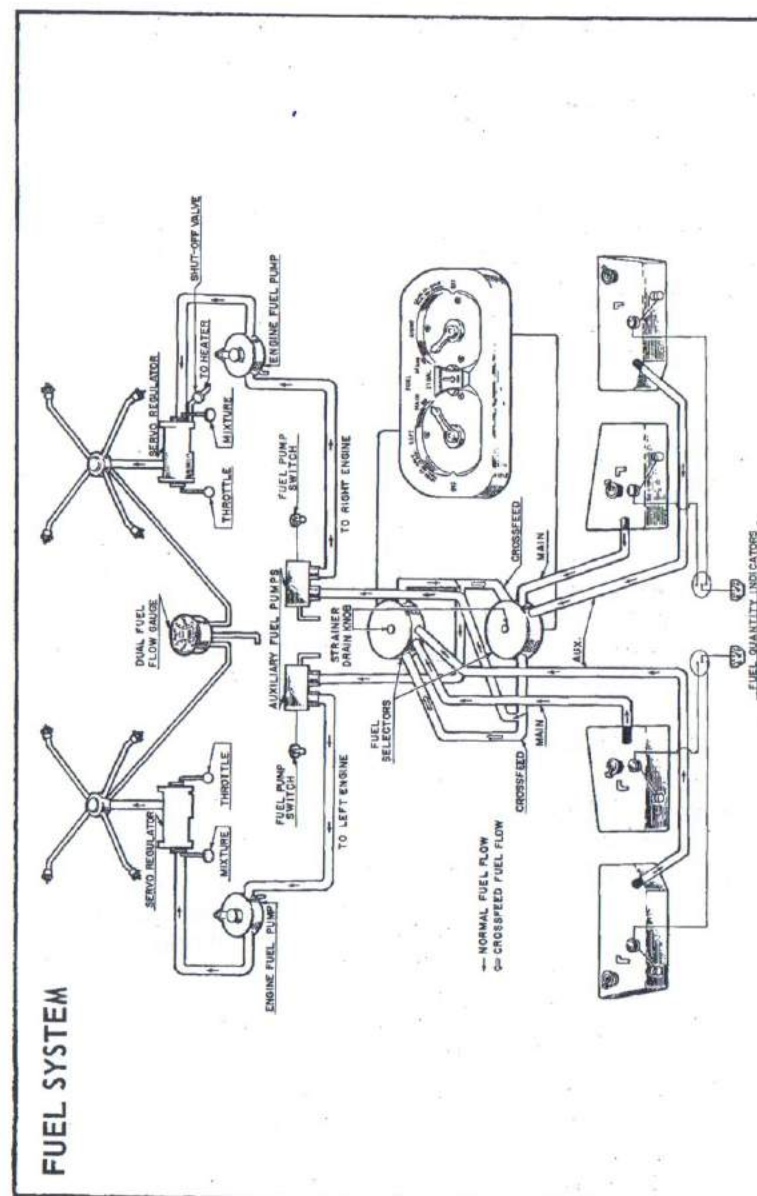
The fuel is carried in four integral fuel cells located in the leading edge sections of the wings. Capacity of the two main fuel cells is 30 gallons each, of which 27 gallons is usable.

The auxiliary fuel system consists of two 15 gallon cells (all usable) installed in the wings just outboard of the main fuel cells. Wing tip tanks are available as optional equipment. Auxiliary fuel and tip tank fuel is to be used in level flight only.

The cells should be kept full of fuel during storage of the airplane to prevent accumulation of moisture and deterioration of the cells. For storage of more than ten days without fuel, the cells should be coated with light engine oil to prevent excessive drying.

During normal operation use the engine driven fuel pump to draw fuel from the cell directly adjacent to that engine. However, fuel can be drawn from any cell to both engines through use of the engine driven fuel pump or the electric auxiliary fuel pump.

For emergency single engine operation a crossfeed is provided to increase the range. When using fuel from tanks on the same side as the operating engine, the position of the fuel selector will remain the same as for normal operation with the



auxiliary fuel pump off unless the engine driven pump is inoperative.

NOTE

Do not put both fuel selectors in the crossfeed position at the same time.

When using fuel from cells on the opposite side of the operating engine, move the fuel selector for the inoperative engine to the main or auxiliary position; then move the fuel selector for the operating engine to the crossfeed position.

For single engine landing, fuel must be pumped from the main cell on the same side as the operating engine.

The fuel strainers for the system are located beneath the floor panel in the center section of the fuselage. Daily draining of the strainers may be accomplished in the cockpit by opening the hinged access door located in the floor panel just aft of the fuel selector handles and pulling up on the knob located in the center of the selector valve. The general procedure for draining the fuel system is to open the strainer quick drain for several seconds with the fuel cell selector on the main cell, then to change the selector to the auxiliary cell and repeat the process. Allow enough fuel flow to clear the lines as well as the strainer. Positive fuel flow shut-off can be observed through the clear plastic tube that carries the fuel overboard. Located inside the fuel valves is a by-pass valve which will open at 1/2 psi differential pressure if the strainer screen becomes blocked.

Fuel quantity is indicated by two electric gauges located at the top of the instrument cluster. The instruments are connected to a transmitter unit located in each fuel cell. The gauges will indicate the amount of fuel available in the cells that are selected.

ELECTRICAL SYSTEM

Electrical power for the Twin Comanche is supplied by a 12 volt, direct current system. Incorporated in the system is a 12 volt 50 ampere generator and 35 ampere hour battery, which furnish electrical power during operation. The battery is located behind the baggage compartment bulkhead in a sealed stainless steel battery box. Refer to the Maintenance Section for servicing of the battery. Dual generators are available as optional equipment.

Electrical switches for the various systems are located on the lower left instrument panel. The circuit breakers, located under the floorboard aft of the nose wheel well, automatically break the electrical circuit if an overload should occur. To reset the circuit breakers simply push in the reset button. It may be necessary to allow approximately two minutes before resetting the breakers. Corrective action should be taken in event of continual circuit breaker popping. It is possible to manually trip the breaker by pulling out on the reset button.

VACUUM SYSTEM

Suction for the vacuum operated gyro instruments is supplied by two engine driven (dry type) vacuum pumps, interconnected to form a single system. Either vacuum pump has sufficient capacity to operate the gyro instruments. If suction is lost from one or the other side a check valve automatically closes and suction is supplied by the remaining system.

A vacuum gauge is installed in the instrument panel to provide a constant indication of vacuum source. Incorporated in the instrument are two red indicators (right and left systems). During normal operation the indicators are not visible, but if vacuum is lost, for example on the right side, then the right indicator will