AIRSPEED LIMITATIONS (See Figure 2-1)

AIRSPEED LIMITATIONS

SPEED	KIAS	KCAS	REMARKS
Maneuvering Speed V_A (Knots)	155	155	Do not make abrupt control movements above this speed.
Maximum Flap Extended Speed V_{FE} (Knots) 15°	160	160	Do not exceed this speed with the given flap setting.
45°	142	140	
Maximum Gear Operating Speed V_{LO} (Knots)	140	140	Do not extend or retract landing gear above this speed.
Maximum Gear Extended Speed V_{LE} (Knots)	140	140	Do not exceed this speed with landing gear extended.
Air Minimum Control Speed - V_{MC_A} (Knots)	83	84	This is the minimum flight speed at which the airplane is controllable with one engine inoperative and a 5° bank towards the operative engine.
Never Exceed Speed V_{NE} (Knots)	234	234	Do not exceed this speed in any operation.
Maximum Structural Cruising Speed V_{NO} (Knots)	200	200	Do not exceed this speed except in smooth air and then only with caution.

Figure 2-1

SECTION 3
EMERGENCY PROCEDURES

TABLE OF CONTENTS

INTRODUCTION

Section 3 of this handbook describes the recommended procedures for emergency situations. The first part of this section provides emergency procedural action required in an abbreviated checklist form. Amplification of the abbreviated checklist is presented in the second part of this section.

NOTE

Refer to Section 9 of this handbook for amended operating limitations, operating procedures, performance data and other necessary information for airplanes equipped with specific options.

EMERGENCY PROCEDURES ABBREVIATED CHECKLIST

Procedures in the Abbreviated Checklist portion of this section outlined in black ▭ are immediate-action items and should be committed to memory.

AIRSPEEDS FOR SAFE OPERATION

Conditions:
1. Takeoff Weight 5990 Pounds
2. Landing Weight 5990 Pounds
3. Standard Day, Sea Level

(1) One Engine Inoperative Best Angle-of-Climb Speed (Wing Flaps UP)	94 KIAS
(2) One Engine Inoperative Best Rate-of-Climb Speed (Wing Flaps UP)	98 KIAS
(3) Air Minimum Control Speed	83 KIAS
(4) Intentional One Engine Inoperative Speed	91 KIAS

Figure 3-1

ENGINE FAILURE

ENGINE FAILURE DURING TAKEOFF (Speed Below 91 KIAS or Gear Down)

1. Throttles - CLOSE IMMEDIATELY.
2. Brake or Land and Brake - AS REQUIRED.

ENGINE FAILURE AFTER TAKEOFF (Speed Above 91 KIAS With Gear Up Or In Transit)

1. Mixtures - FULL RICH.
2. Propellers - FULL FORWARD.
3. Throttles - FULL FORWARD (34.5 Inches Hg.).
4. Landing Gear - CHECK UP.
5. Inoperative Engine:
   a. Throttle - CLOSE.
   b. Mixture - IDLE CUT-OFF.
   c. Propeller - FEATHER.
6. Establish Bank - 5° toward operative engine.
7. Climb To Clear 50-Foot Obstacle - 91 KIAS.
8. Climb At One Engine Inoperative Best Rate-of-Climb Speed - 98 KIAS.
9. Trim Tabs - ADJUST 5° bank toward operative engine with approximately 1/2 ball slip indicated on the turn and bank indicator.
10. Cowl Flap - CLOSE (Inoperative Engine).
11. Inoperative Engine - SECURE as follows:
    a. Fuel Selector - OFF (Feel For Detent).
    b. Auxiliary Fuel Pump - OFF.
    c. Magneto Switches - OFF.
    d. Alternator - OFF.
12. As Soon As Practical - LAND.

ENGINE FAILURE DURING FLIGHT (Speed Above V_{MC_A})

1. Inoperative Engine - DETERMINE.
2. Operative Engine - ADJUST as required.

Before Securing Inoperative Engine:

3. Fuel Flow - CHECK. If deficient, position auxiliary fuel pump to ON.
4. Fuel Selectors - MAIN TANKS (Feel For Detent).
5. Fuel Quantity - CHECK.
6. Oil Pressure and Oil Temperature - CHECK.
7. Magneto Switches - CHECK ON.
8. Mixture - ADJUST. Lean until manifold pressure begins to increase, then enrichen as power increases.

If Engine Does Not Start, Secure As Follows:

9. Inoperative Engine - SECURE.
   a. Throttle - CLOSE.
   b. Mixture - IDLE CUT-OFF.
   c. Propeller - FEATHER.
   d. Fuel Selector - OFF (Feel For Detent).
   e. Auxiliary Fuel Pump - OFF.
   f. Magneto Switches - OFF.
   g. Propeller Synchrophaser - OFF.
   h. Alternator - OFF.
   i. Cowl Flap - CLOSE.
10. Operative Engine - ADJUST.
    a. Power - AS REQUIRED.
    b. Mixture - ADJUST for power.
    c. Fuel Selector - AS REQUIRED (Feel For Detent).

NOTE

- Auxiliary fuel on the side of the failed engine is unusable.
- Position operative engine fuel selector to MAIN TANK and feel for detent if below 1000 feet AGL or if nearest airport is within range of fuel remaining in MAIN TANK. If necessary, range can be extended by using wing locker fuel, opposite main fuel or auxiliary fuel on the side of the operative engine. Crossfeed as required to maintain lateral balance.

    d. Auxiliary Fuel Pump - ON.
    e. Cowl Flap - AS REQUIRED.
11. Trim Tabs - ADJUST 5° bank toward operative engine with approximately 1/2 ball slip indicated on the turn and bank indicator.
12. Electrical Load - DECREASE to minimum required.
13. As Soon As Practical - LAND.

ENGINE FAILURE DURING FLIGHT (Speed Below V_{MC_A})

1. Rudder - APPLY towards operative engine.
2. Power - REDUCE to stop turn.
3. Pitch Attitude - LOWER NOSE to accelerate above V_{MC_A}.
4. Inoperative Engine Propeller - FEATHER.
5. Operative Engine - INCREASE POWER as airspeed increases above V_{MC_A}.
6. Inoperative Engine - SECURE.
7. Trim Tabs - ADJUST 5° bank toward operative engine with approximately 1/2 ball slip indicated on the turn and bank indicator.
8. Operative Engine Cowl Flap - AS REQUIRED.

AIRSTART

Airplane Without Optional Propeller Unfeathering System:

1. Auxiliary Fuel Pump - CHECK OFF. If ON or LOW, purge engine by turning OFF auxiliary fuel pump, mixture to IDLE CUT-OFF, throttle full open, magneto switches OFF, and rotating engine 15 revolutions with starter.
2. Magneto Switches - ON.
3. Fuel Selector - MAIN TANK (Feel For Detent).
4. Throttle - FORWARD approximately one and one-half inches.
5. Mixture - FULL RICH then retard approximately two inches.
6. Propeller - FORWARD of detent.
7. Starter Button - PRESS.
8. Primer Switch - ACTIVATE.
9. Starter and Primer Switch - RELEASE when engine fires.
10. Auxiliary Fuel Pump - ON.
11. Mixture - ADJUST for smooth operation.
12. Power - INCREASE after cylinder head temperature reaches 200°F with gradual mixture enrichment as power increases.
13. Cowl Flap - AS REQUIRED.
14. Alternator - ON.

Airplane With Optional Propeller Unfeathering System:

1. Auxiliary Fuel Pump - CHECK OFF. If ON or LOW, purge engine by turning OFF auxiliary fuel pump, mixture to IDLE CUT-OFF, throttle full open, magneto switches OFF, and rotating engine 15 revolutions with starter.
2. Magneto Switches - ON.
3. Fuel Selector - MAIN TANK (Feel For Detent).
4. Throttle - FORWARD approximately one and one-half inches.
5. Mixture - FULL RICH then retard approximately two inches.
6. Propeller - FULL FORWARD.
7. Propeller - RETARD to detent when propeller reaches 1000 RPM.
8. Auxiliary Fuel Pump - ON.
9. Mixture - ADJUST for smooth operation.
10. Power - INCREASE after cylinder head temperature reaches 200°F with gradual mixture enrichment as power increases.
11. Cowl Flap - AS REQUIRED.
12. Alternator - ON.
13. If Engine Will Not Start - SECURE.

On Floor Between Fuel Selectors:

Standard Fuel System

SET FUEL SELECTOR VALVES TO LEFT MAIN TANK FOR LEFT ENGINE AND RIGHT MAIN TANK FOR RIGHT ENGINE IN TAKEOFF, DESCENT, LANDING, EMERGENCY, AND FIRST 90 MIN. OF FLIGHT.

TAKEOFF AND LAND WITH AUXILIARY FUEL PUMPS ON.

USE FULL RICH MIXTURE AND AUXILIARY FUEL PUMPS ON "LOW" WHEN SWITCHING TANKS.

100 GRADE AVIATION FUEL MINIMUM.

TO EXTEND LANDING GEAR MANUALLY:
1. PLACE GEAR SWITCH IN NEUTRAL.
2. PULL GEAR MOTOR CIRCUIT BREAKER.
3. PULL OUT CRANK TO ENGAGE.
4. TURN CLOCKWISE TO EXTEND.
5. PUSH BUTTON AND STOW CRANK.

Optional 40-Gallon Fuel System

SET FUEL SELECTOR VALVES TO LEFT MAIN TANK FOR LEFT ENGINE AND RIGHT MAIN TANK FOR RIGHT ENGINE IN TAKEOFF, DESCENT, LANDING, EMERGENCY, AND FIRST 60 MIN. OF FLIGHT.

TAKEOFF AND LAND WITH AUXILIARY FUEL PUMPS ON.

USE FULL RICH MIXTURE AND AUXILIARY FUEL PUMPS ON "LOW" WHEN SWITCHING TANKS.

100 GRADE AVIATION FUEL MINIMUM.

TO EXTEND LANDING GEAR MANUALLY:
1. PLACE GEAR SWITCH IN NEUTRAL.
2. PULL GEAR MOTOR CIRCUIT BREAKER.
3. PULL OUT CRANK TO ENGAGE.
4. TURN CLOCKWISE TO EXTEND.
5. PUSH BUTTON AND STOW CRANK.

Optional 63-Gallon Fuel System

SET FUEL SELECTOR VALVES TO LEFT MAIN TANK FOR LEFT ENGINE AND RIGHT MAIN TANK FOR RIGHT ENGINE IN TAKEOFF, DESCENT, LANDING, EMERGENCY, AND FIRST 90 MIN. OF FLIGHT.

TAKEOFF AND LAND WITH AUXILIARY FUEL PUMPS ON.

USE FULL RICH MIXTURE AND AUXILIARY FUEL PUMPS ON "LOW" WHEN SWITCHING TANKS.

100 GRADE AVIATION FUEL MINIMUM.

TO EXTEND LANDING GEAR MANUALLY:
1. PLACE GEAR SWITCH IN NEUTRAL.
2. PULL GEAR MOTOR CIRCUIT BREAKER.
3. PULL OUT CRANK TO ENGAGE.
4. TURN CLOCKWISE TO EXTEND.
5. PUSH BUTTON AND STOW CRANK.

Optional Wing Locker Fuel System

SET FUEL SELECTOR VALVES TO LEFT MAIN TANK FOR LEFT ENGINE AND RIGHT MAIN TANK FOR RIGHT ENGINE IN TAKEOFF, DESCENT, LANDING, AND EMERGENCY.

TAKEOFF AND LAND WITH AUXILIARY FUEL PUMPS ON.

USE FULL RICH MIXTURE AND AUXILIARY FUEL PUMPS ON "LOW" WHEN SWITCHING TANKS.

100 GRADE AVIATION FUEL MINIMUM.

1 OPERATE ON MAIN TANKS UNTIL FUEL QUANTITY IS LESS THAN 180 POUNDS PER TANK.

2 TRANSFER WING LOCKER FUEL WHILE OPERATING ON MAIN TANKS IN STRAIGHT AND LEVEL FLIGHT.

3 TURN TRANSFER PUMPS OFF WHEN LIGHTS ILLUMINATE.

4 USE FUEL CROSSFEED SYSTEM TO BALANCE MAIN FUEL QUANTITIES IF ONE WING LOCKER TANK DOES NOT TRANSFER OR IF A SINGLE WING LOCKER TANK IS INSTALLED.

TO EXTEND LANDING GEAR MANUALLY:
1. PLACE GEAR SWITCH IN NEUTRAL.
2. PULL GEAR MOTOR CIRCUIT BREAKER.
3. PULL OUT CRANK TO ENGAGE.
4. TURN CLOCKWISE TO EXTEND.
5. PUSH BUTTON AND STOW CRANK.

Optional Wing Locker Fuel and 40-Gallon System

SET FUEL SELECTOR VALVES TO LEFT MAIN TANK FOR LEFT ENGINE AND RIGHT MAIN TANK FOR RIGHT ENGINE IN TAKEOFF, DESCENT, LANDING, EMERGENCY, AND FIRST 60 MIN. OF FLIGHT.

TAKEOFF AND LAND WITH AUXILIARY FUEL PUMPS ON.

USE FULL RICH MIXTURE AND AUXILIARY FUEL PUMPS ON "LOW" WHEN SWITCHING TANKS.

100 GRADE AVIATION FUEL MINIMUM.

1 OPERATE ON MAIN TANKS UNTIL FUEL QUANTITY IS LESS THAN 180 POUNDS PER TANK.

2 TRANSFER WING LOCKER FUEL WHILE OPERATING ON MAIN TANKS IN STRAIGHT AND LEVEL FLIGHT.

3 TURN TRANSFER PUMPS OFF WHEN LIGHTS ILLUMINATE.

4 USE FUEL CROSSFEED SYSTEM TO BALANCE MAIN FUEL QUANTITIES IF ONE WING LOCKER TANK DOES NOT TRANSFER OR IF A SINGLE WING LOCKER TANK IS INSTALLED.

5 SWITCH TO AUXILIARY TANKS WHEN MAIN FUEL IS AGAIN LESS THAN 180 POUNDS PER TANK.

TO EXTEND LANDING GEAR MANUALLY:
1. PLACE GEAR SWITCH IN NEUTRAL.
2. PULL GEAR MOTOR CIRCUIT BREAKER.
3. PULL OUT CRANK TO ENGAGE.
4. TURN CLOCKWISE TO EXTEND.
5. PUSH BUTTON AND STOW CRANK.

Optional Wing Locker Fuel and 63-Gallon System

SET FUEL SELECTOR VALVES TO LEFT MAIN TANK FOR LEFT ENGINE AND RIGHT MAIN TANK FOR RIGHT ENGINE IN TAKEOFF, DESCENT, LANDING, EMERGENCY, AND FIRST 90 MIN. OF FLIGHT.

TAKEOFF AND LAND WITH AUXILIARY FUEL PUMPS ON.

USE FULL RICH MIXTURE AND AUXILIARY FUEL PUMPS ON "LOW" WHEN SWITCHING TANKS.

100 GRADE AVIATION FUEL MINIMUM.

1 OPERATE ON MAIN TANKS UNTIL FUEL QUANTITY IS LESS THAN 180 POUNDS PER TANK.

2 TRANSFER WING LOCKER FUEL WHILE OPERATING ON MAIN TANKS IN STRAIGHT AND LEVEL FLIGHT.

3 TURN TRANSFER PUMPS OFF WHEN LIGHTS ILLUMINATE.

4 USE FUEL CROSSFEED SYSTEM TO BALANCE MAIN FUEL QUANTITIES IF ONE WING LOCKER TANK DOES NOT TRANSFER OR IF A SINGLE WING LOCKER TANK IS INSTALLED.

5 SWITCH TO AUXILIARY TANKS WHEN MAIN FUEL IS AGAIN LESS THAN 180 POUNDS PER TANK.

TO EXTEND LANDING GEAR MANUALLY:
1. PLACE GEAR SWITCH IN NEUTRAL.
2. PULL GEAR MOTOR CIRCUIT BREAKER.
3. PULL OUT CRANK TO ENGAGE.
4. TURN CLOCKWISE TO EXTEND.
5. PUSH BUTTON AND STOW CRANK.

FUEL SYSTEM

The fuel system, see Figure 7-15, consists of two main tanks, two optional auxiliary tanks, two optional wing locker tanks, fuel selectors for selection of main, auxiliary or crossfeed fuel and other necessary components to complete the system.

MAIN TANKS

The main tanks are integrally sealed (wet) aluminum tanks mounted on each wing tip. Each tank contains an auxiliary fuel pump and transfer pump. The auxiliary fuel pump, mounted in the bottom of the tank, provides fuel pressure for priming during engine starting and supplies fuel to the engine in an emergency. The auxiliary pump operation is controlled by an auxiliary fuel pump switch on the instrument panel. The transfer pump, mounted on the aft side of the main tank rear bulkhead, transfers fuel from the nose section of the main tank to the center sump area, where it is picked up and routed to the engine by the engine-driven or auxiliary fuel pump. The transfer pump permits steep descents with low main tank fuel quantity. The transfer pump operates continuously whenever the battery switch is positioned to ON. The main tank is vented to atmospheric pressure by a flush vent located on the lower aft portion of the main tank. These tanks are serviced through a flush filler located on the top forward portion of each tank.

AUXILIARY TANKS

The optional auxiliary tanks are available in two sizes. These tanks are bladder-type cells located between the spars in the outboard wing. These tanks provide an engine fuel supply during cruise operations. No internal fuel pumps are required. The auxiliary tanks are vented to the main tanks. The auxiliary tanks are serviced through a flush filler located on the upper wing surface outboard of the nacelles.

WING LOCKER TANKS

An optional wing locker fuel tank is available for installation in the forward portion of each wing locker baggage area. These tanks are bladder-type cells which supplement the main tank fuel quantity. This fuel cannot be fed directly to the engines; instead it is transferred to the main tanks by wing locker fuel transfer pumps. The transfer pumps are manually controlled and should not be energized until adequate volume is available in the main tanks to hold the wing locker fuel. After the fuel is transferred, a pressure switch in each transfer line will sense a drop in pressure and illuminate the annunciator light, indicating fuel transfer is complete and the applicable wing locker transfer pump should be turned off. These pumps use fuel for lubrication; therefore, operation after fuel transfer will shorten the pump life. The wing locker fuel tanks are individually vented through the lower surface of each wing. The fuel vent lines are deiced by heaters which are controlled by the stall and vent heat switch. These tanks are serviced through a flush filler located on the top of the engine nacelle.

FUEL SYSTEM SCHEMATIC

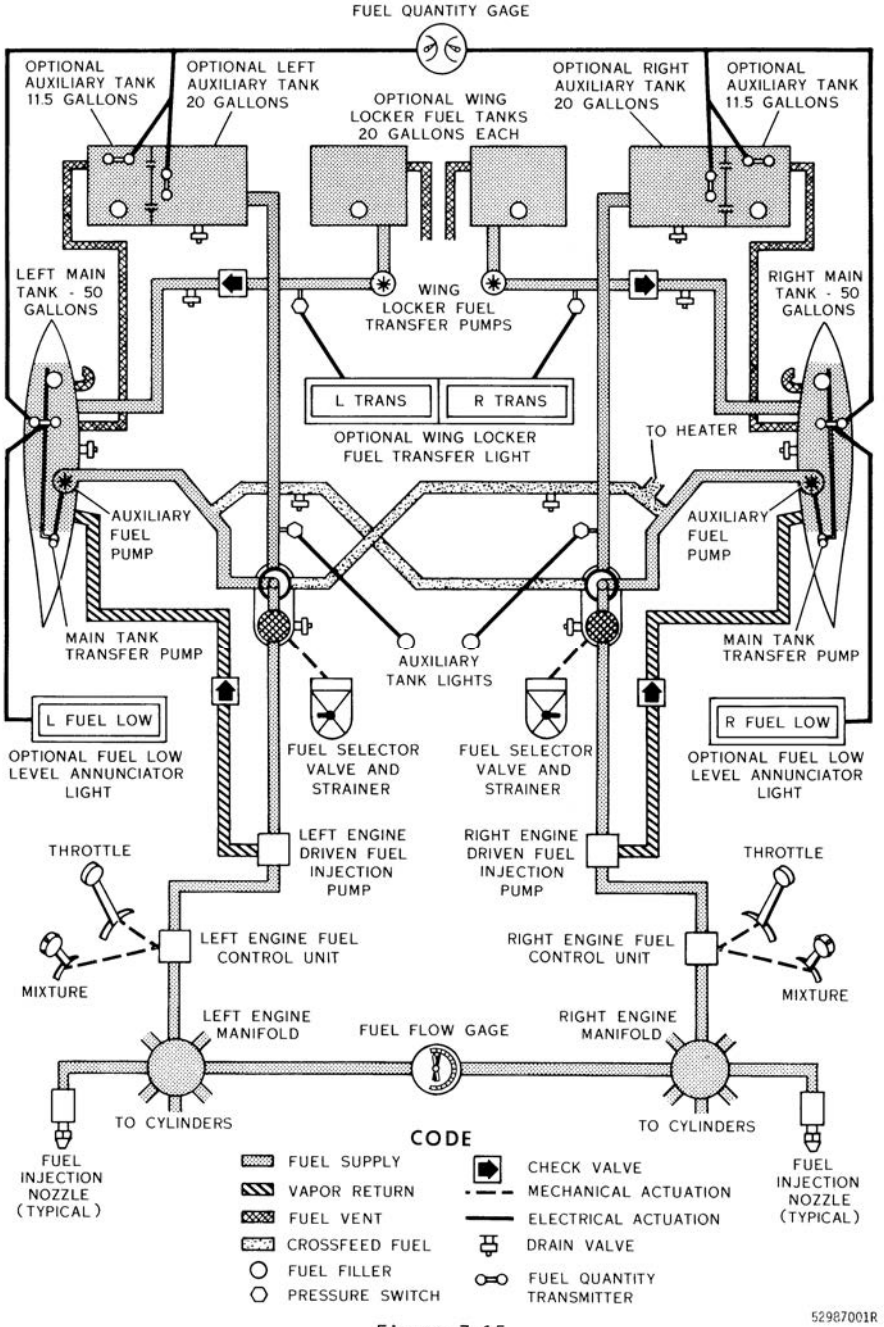

Figure 7-15

FUEL SELECTORS

Two fuel selectors, one for each engine, are provided on the floor between the pilot and copilot seats. The selectors allow selection of main fuel, auxiliary fuel, crossfeed and no fuel.

The MAIN position of each selector allows fuel to flow from the main tank through the fuel selector to the engine-driven fuel pump. The AUXILIARY position allows fuel to flow from the auxiliary tank through the fuel selector to the engine-driven pump. The crossfeed position allows fuel to flow from the opposite engine main tank to the engine-driven fuel pump. The crossfeed position is used for balancing asymmetric fuel loads and supplying the engine-driven fuel pump from the opposite main tank. When the OFF position is selected, no fuel is allowed to flow to the engine-driven fuel pump.

The fuel selector handles form the pointers for the selectors. The ends of the handles are arrow-shaped and point to the position on the selector placard which corresponds to the valve position.

AUXILIARY FUEL PUMP SWITCHES

A 3-position auxiliary fuel pump switch, see Figure 7-1, is provided for each main fuel tank pump. In the LOW position, the auxiliary fuel pumps operate at low speed. The ON position runs the auxiliary fuel pumps at low speed, as long as the engine-driven pumps are functioning. With an engine-driven pump failure and the switch in the ON position, the auxiliary pump on that side will switch to high speed automatically, providing sufficient fuel for all partial-power engine operations.

FUEL DRAIN VALVES

Fuel quick-drain valves are provided for each fuel tank, fuel selector and crossfeed line. In addition, a quick-drain is provided in each wing locker fuel transfer line. The drains provide a location for removing moisture and sediment from the fuel system. The drains are located on the lower surface of the fuselage, wing and main tanks and are actuated by depressing the lower portion of the valve. A special screwdriver is provided with the airplane which allows a 2-ounce sample to be drained and inspected without fuel spillage.

FUEL FLOW GAGE

The fuel flow gage, see Figure 7-1, is a dual instrument which indicates the approximate fuel consumption of each engine in pounds per hour. The fuel flow gage used with the injection system senses the pressure at which fuel is delivered to the engine spray nozzles. Since fuel pressure at this point is approximately proportional to the fuel consumption of the engine, the gage is marked as a flowmeter.

The gage dial is marked with arc segments corresponding to proper fuel flow for various power settings and is used as a guide to quickly set the mixtures.

The gage has takeoff, climb and cruise markings for various percentages of power. The takeoff range (white arc) presents the desired fuel flow (full rich schedule for proper engine cooling) for full power (2700 RPM and 34.5 inches Hg. manifold pressure) operation under all conditions up to 16,000 feet altitude. The climb range (blue arc) presents the desired fuel flow for maximum power above 16,000 feet, which corresponds to the manifold pressure schedule, with an enriched mixture for higher power settings to allow proper engine cooling during climb conditions. The cruise range presents the desired fuel flow for recommended lean mixture at the specified percent power.

FUEL QUANTITY GAGE

The dual indicating fuel quantity gage, see Figure 7-1, is calibrated in pounds and will accurately indicate the weight of fuel contained in the tanks; however, fuel density varies with temperature, therefore a full tank will weigh more on a cold day than on a warm day. This will be reflected by the weight shown on the gage. A gallons scale is provided in blue on the indicator for convenience in allowing the pilot to determine the approximate volume of fuel on board.

The dual indicating fuel quantity gage continuously indicates fuel remaining in the tanks selected. When the fuel selectors are in the AUX position, AUX TANK indicator lights, see Figure 7-1, will illuminate and the fuel quantity gage will indicate the fuel in the auxiliary tanks (pounds in white and gallons in blue). When the fuel selectors are in the MAIN position, the fuel quantity gage will indicate the fuel in the main tanks. A 3-position switch, spring-loaded to center, allows checking fuel quantity in the tanks not selected. The switch, adjacent to the auxiliary tank indicator lights, is labeled MAIN and AUX. By positioning the switch to the appropriate tank position, the fuel quantity in that tank will be indicated on the fuel quantity gage.

FUEL LOW LEVEL WARNING LIGHTS

The optional fuel low level warning lights, see Figure 7-3, provide a warning when the left and/or right main tanks contain approximately 60 pounds of fuel. The warning is provided by the L FUEL LOW and R FUEL LOW lights located on the annunciator panel. These lights are actuated by a float switch located in each main fuel tank. Each light operates independently from the fuel quantity indicating system.

ENGINE-DRIVEN FUEL PUMPS

Each engine is equipped with a mechanically driven fuel pump which provides fuel to the metering unit. Each pump also contains a bypass which returns excess fuel and vapor to the main tanks at all times. Should these pumps fail, the main tank auxiliary pumps can provide sufficient fuel flow for all partial-power engine operations. These auxiliary pumps, however, operate at a fixed pressure, consequently the mixture must be leaned when operating at a low power setting to prevent flooding the engine. Conversely, if an engine-driven pump failure should occur during high power operation, adequate fuel flow may not be available to insure rated power and adequate engine cooling.

BRAKE SYSTEM

The airplane is provided with an independent hydraulically actuated brake system for each main wheel. A hydraulic master cylinder is attached to each pilot's rudder pedal. Hydraulic lines and hoses are routed from each master cylinder to the wheel cylinder on each brake assembly. No manual adjustment is necessary on these brakes. The brakes can be operated from either pilot's or copilot's pedals. The parking brake system consists of a manually operated handle assembly, see Figure 7-1, connected to the parking brake valves located in each main brake line. When pressure is applied to the brake system and the parking brake handle is pulled, the valve holds pressure on the brake assemblies until released. To release parking brakes, push the parking brake handle in. It is not necessary to depress the rudder pedals when releasing the parking brake.

ELECTRICAL SYSTEM

Electrical energy, see Figure 7-16, is supplied by a 28-volt, negative-ground, direct current system powered by an alternator on each engine. The electrical system has independent circuits for each side with each alternator having its own regulator and overvoltage protection relay. The voltage regulators are connected to provide proper load sharing. A 24-volt battery is located in the left wing just outboard of the engine nacelle. Immediate detection of low system voltage is provided by a LOW VOLT light on the annunciator panel, see Figure 7-3. The light will illuminate when the airplane bus voltage decreases below approximately 25 volts.

NOTE

Insure all circuit breakers are engaged and serviceable fuses are installed before all flights. Never operate with any blown fuses or disengaged circuit breakers without a thorough knowledge of the consequences.

BATTERY AND ALTERNATOR SWITCHES

Separate battery and alternator switches, see Figure 7-1, are provided as a means of checking for a malfunctioning alternator circuit and to permit such a circuit to be turned off. If an alternator circuit fails or malfunctions, or when one engine is not running, the switch for that alternator should be turned off. Operation should be continued on the functioning alternator, using only necessary electrical equipment. If both alternator circuits should malfunction, equipment can be operated at short intervals on the battery alone. In either case a landing should be made as soon as practical to check and repair the circuits.

EMERGENCY ALTERNATOR FIELD SWITCH

An emergency alternator field switch, see Figure 7-17, is located on the forward side of the switch and circuit breaker panel. The switch is used when the alternators will not self-excite. Placing the switch in the ON position provides excitation from the battery even though the battery is considered to have failed.