DESCRIPTION

AIRPLANE AND SYSTEMS

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THE AIRPLANE

The PA-32-260 is a six-place (seventh seat optional), single-engine, low-wing, all metal monoplane. Removable seats give the airplane a wide range of cargo and passenger loading options. Its large capacity combined with the economy and performance of a 260 horsepower engine makes this Cherokee a versatile airplane for personal or commercial use.

AIRFRAME

Except for the steel engine mount and landing gear struts and the dent resistant fiberglass extremities - cowling, tips of wing and tail surfaces - the **basic airframe** is of aluminum alloy.

The **fuselage** is a conventional semi-monocoque structure with a cabin door on the right front and a cargo and passenger door on the left rear.

The **wings** are attached to each side of the fuselage by the insertion of the butt ends of the main spars into a spar box carry-through which is an integral part of the fuselage structure. This provides, in effect, a continuous main spar with splices at each side of the fuselage. There are also fore and aft attachments at the rear spar and at an auxiliary front spar.

The **wing airfoil section** is a laminar flow type, NACA65_2-415 with a maximum thickness at about 40% aft of the leading edge.

The **empennage** consists of the fin, the stabilator, and the stabilator trim tab.

ENGINE AND PROPELLER

The **Lycoming O-540-E4B5 engine** installed in the Cherokee Six is rated at 260 horsepower at 2700 rpm. This engine has a compression ratio of 8.5 to 1 and requires 100/130 minimum octane fuel. The engine is equipped with a geared starter, a 60 ampere alternator, dual magnetos, vacuum pump drive, a diaphragm-type fuel pump and a float carburetor.

Exhaust gases are carded through a system constructed of heavy gauge stainless steel and incorporating two heater shrouds, one for cabin heat and the other for carburetor deicing.

The **Hartzell propeller** is 82 inches in diameter and is controlled by a Hartzell F-4-4 governor mounted on a pad on the forward end of the crankcase. This governor supplies oil to the propeller through the engine shaft. The governor is controlled by a cable from the cockpit.

Cowling on the Cherokee Six is designed to cool the engine in all normal flight conditions, including protracted climb, without the use of cowl flaps or cooling flanges.

The **power control quadrant,** located in the lower center of the instrument panel, includes the throttle, the mixture, and the propeller controls. The quadrant has a **friction lock** to prevent creeping of the controls. In addition, the mixture control has a lock* to prevent activation of the mixture control instead of the pitch control.

Carburetor heat is operated by the control to the right of the quadrant. Maximum heat is provided when the control is in the ON position. Prolonged ground operation with the carburetor heat control in the ON position should be avoided, as the air is unfiltered.

For the normal system, air passes through a highly efficient dry type **air filter.**

Full rich position of the **mixture control** is obtained when the control is full forward. Full aft position of the control provides idle cut-off for stopping the engine. Intermediate positions are selected for leaning the mixture at altitudes above sea level.

LANDING GEAR

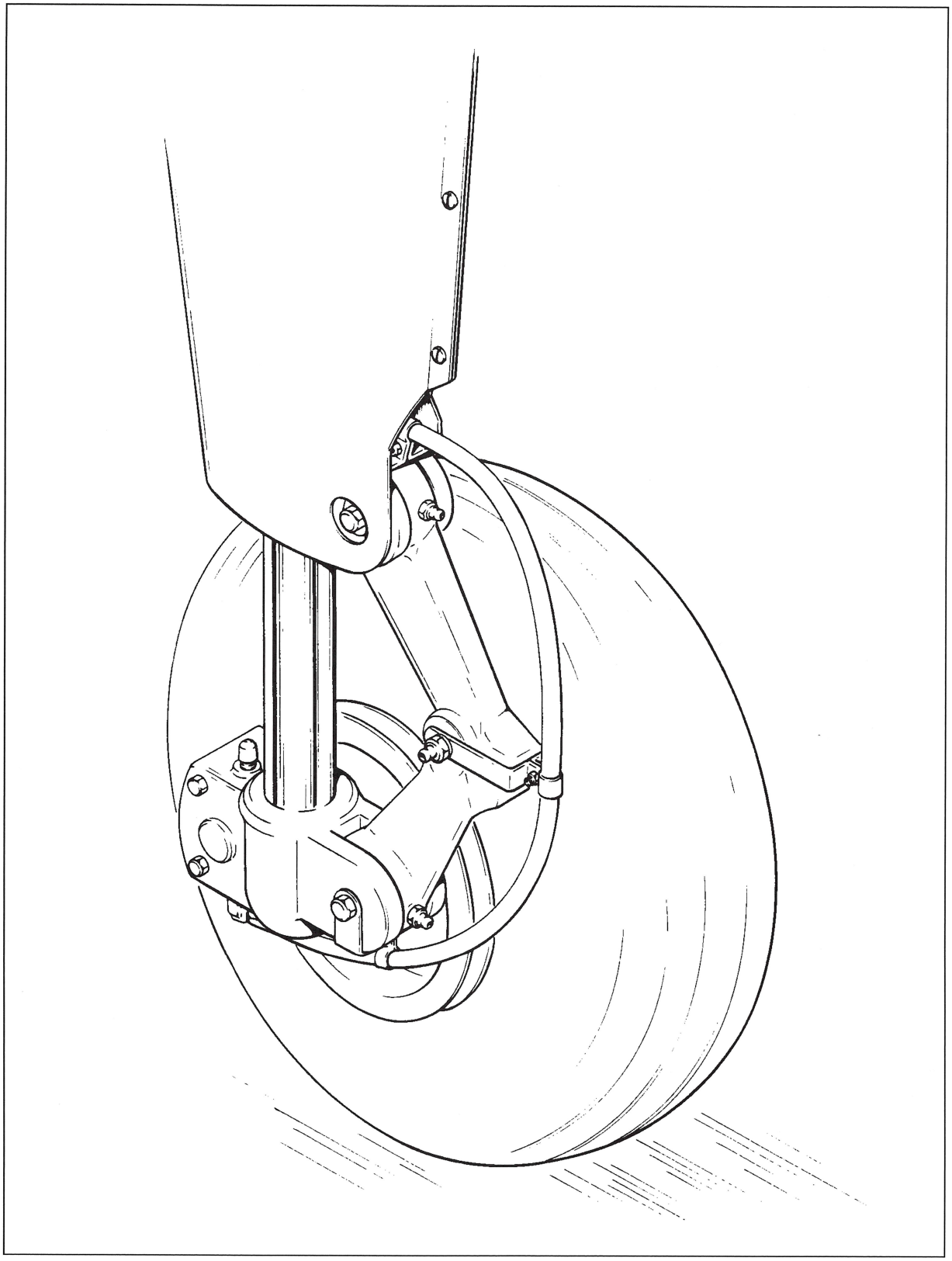
All three **landing gears** use Cleveland 6.00 x 6 wheels. The main gear have brake drums and Cleveland double disc hydraulic brake assemblies. The nose wheel carries a 6.00 x 6 four or six ply tire and the main gear use 6.00 x 6 six ply tires. All three tires have tubes.

The **nose gear** is steerable using a combination of full rudder pedal travel and brakes. The nose gear can be turned 24° each side of center. A spring device is incorporated in the rudder pedal torque tube assembly to aid in rudder centering and to provide rudder trim. The nose gear also includes a shimmy dampener.

The **oleo struts** are of the air-oil type. The normal extensions ate 3-1/4 inches for the nose gear and 4-1/2 inches for the main gear under normal static load (empty weight of airplane plus full fuel and oil).

The **brakes** are actuated by toe pedals attached to the left rudder pedals, or by a hand lever and master cylinder located below and behind the left center of the instrument sub-panel. Hydraulic cylinders are located above each pedal and adjacent to the hand lever. The brake fluid reservoir is on the top left front of the fire wall. The **parking brake** is incorporated in the lever brake and is engaged by pulling back on the lever and depressing the knob attached to the top of the handle. To release the parking brake, pull back on the brake lever to disenage the catch; then allow the handle to swing forward.

*Serial nos. 7500001 and up



Main Wheel Assembly

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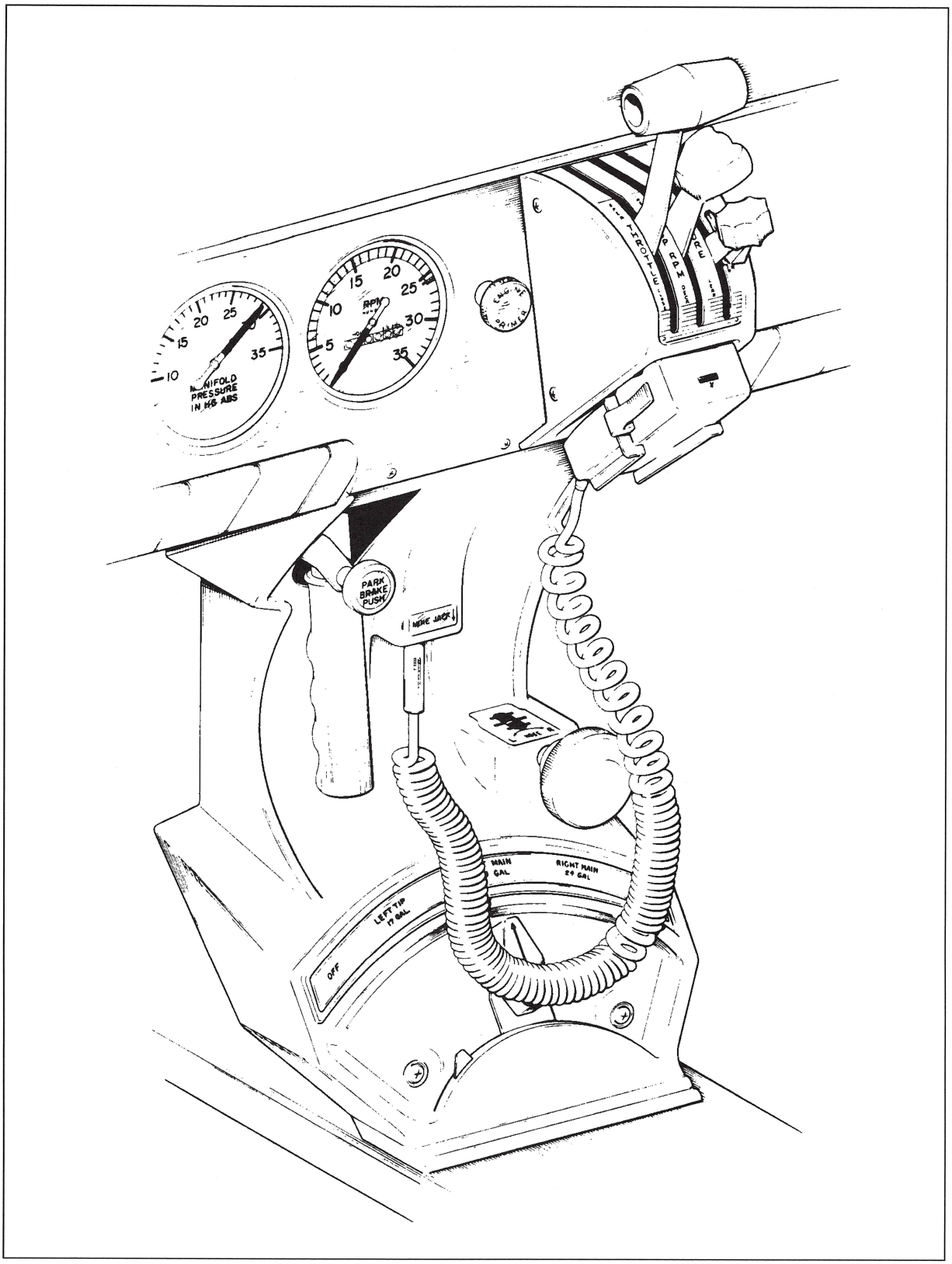
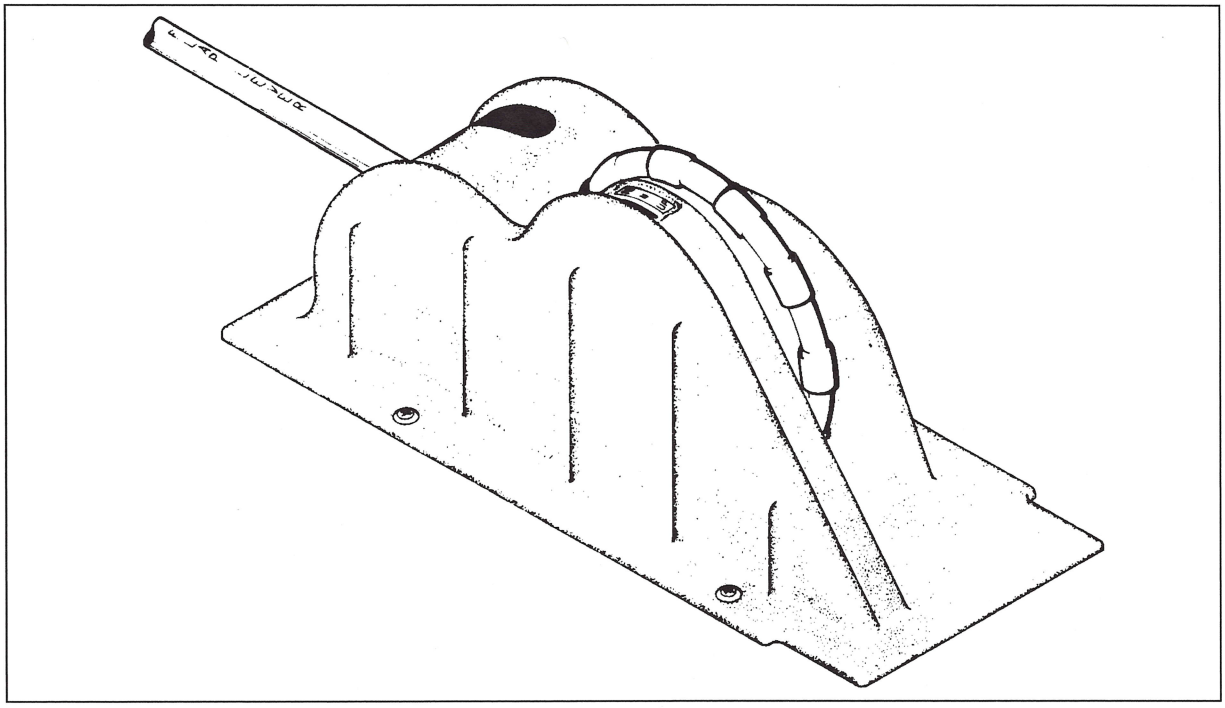


Throttle Quadrant and Console



Console

FLIGHT CONTROLS

Dual controls, with a cable system between the controls and the surfaces, are provided as standard equipment.

The horizontal tail is of the all-movable slab type **(stabilator).** The stabilator provides extra stability and controllability with less size, drag, and weight than conventional tail surfaces.

An **anti-servo tab,** which also acts as a longitudinal trim tab, is located on the horizontal tail. This tab is actuated by a control mounted on the control tunnel between the front seats.

The **ailerons** are provided with a differential action which tends to eliminate adverse yaw in turning maneuvers and to reduce the amount of coordination required in normal turns.

The **flaps** are manually operated, balanced for light operating forces and spring-loaded to return to the up position. A past-center lock incorporated in the actuating linkage holds the flap when it is in the up position so that it may be used as a step on the right side. Since the flap will not support a step load except in the full up position, it should be completely retracted when the airplane is on the-ground. The flaps have three extended positions, 10, 25, and 40 degrees.

FUEL SYSTEM

The total fuel capacity of the Cherokee Six is 84 gallons, all of which is usable except for approximately one pint in each of the four tanks. The **two main inboard tanks**, which hold 25 gallons each, are attached to the wing structure with screws and nut plates and can be removed easily for service or inspection. The **tip tanks** are constructed of resin-impregnated fiberglass and hold 17 gallons each.

When using less than the standard 84 gallon capacity of the tanks, fuel should be distributed equally between each side. The tip tanks should always be filled first, and fuel from the main tanks should be used first. All weight in excess of 3112 pounds must be in fuel weight only.

The **fuel selector control** is located below the center of the instrument panel on the sloping face of the control tunnel. It has five positions, one corresponding to each of the four tanks plus an OFF position.

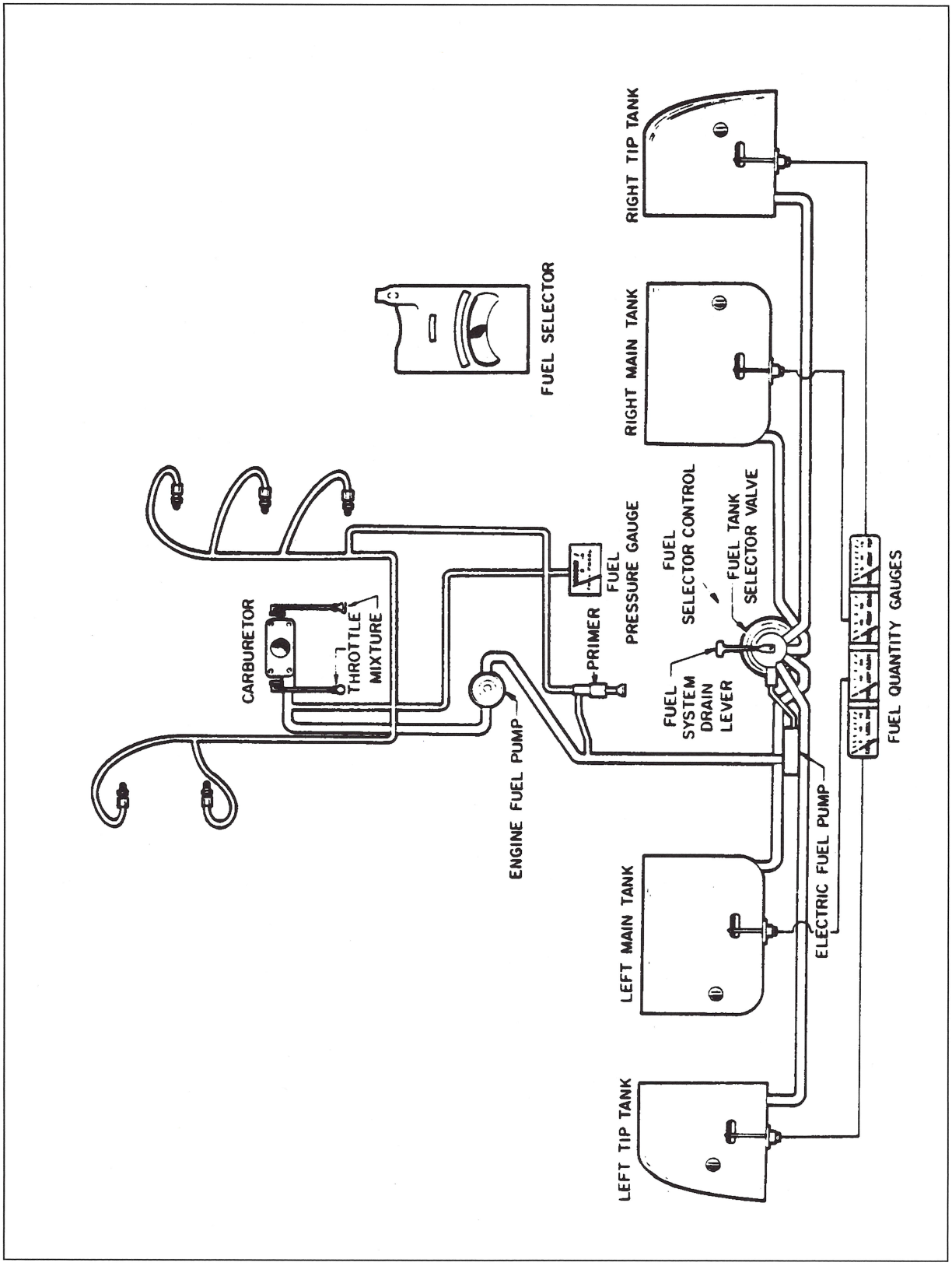
To avoid the accumulation of water and sediment, the fuel system should be drained daily prior to first flight and after refueling. Each tank is equipped with an **individual quick drain** located at the lower inboard rear comer of the tank. The **fuel strainer** and a **system quick drain valve** are located in the fuselage at the lowest point of the fuel system. It is important that the fuel system be drained in the following manner:

1. Drain each tank through its individual quick drain located at the lower inboard rear comer of the tank, making sure that enough fuel has flowed to ensure the removal of all water and sediment.
2. Place a container beneath the fuel sump drain outlet located under the fuselage. A special container is furnished for this operation.
3. Drain the fuel strainer by pressing down on the lever located on the right side of the cabin on the forward edge of the wing spar housing. Move the fuel selector through the following sequence: OFF position, left tip, left main, right main, and right tip while draining the strainer. Make sure that enough fuel has flowed to drain the fuel line between each tank outlet and the fuel strainer, as well as the strainer itself. With full fuel tanks, it will take approximately 11 seconds to drain all the fuel in one of the fuel lines from the tip tanks to the strainer, and approximately 6 seconds to drain all of the fuel from the line from either main tank to the fuel strainer. When the tanks are less than full, it will take a few seconds longer.
4. Examine the contents of the container placed under the fuel sump drain outlet. When the fuel flow is clear, close the drain and dispose of the contents of the container.

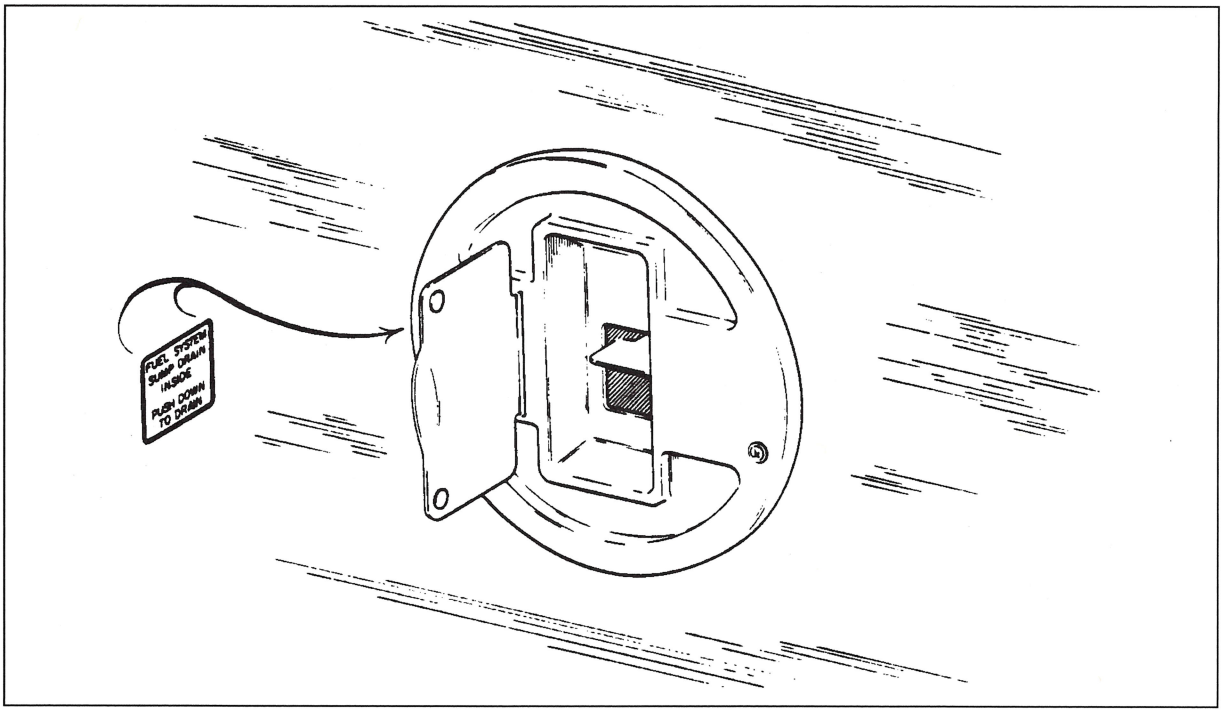
CAUTION

When draining fuel, care should be taken to ensure that no fire hazard exists before starting the engine.

After using the underseat quick drain, check from the outside to make sure that it has closed completely and is not leaking.



Fuel System Schematic



Fuel Drain Lever

Fuel quantity gauges for each of the four tanks are located in the engine gauge cluster on the left side of the instrument panel. A **fuel pressure indicator** is also incorporated in the engine gauge cluster.

An **electric fuel pump** is provided for use in case of failure of the engine driven pump. The electric pump operates from a single switch and independent circuit protector. It should be ON for all takeoffs and landings.

An optional **engine priming system** is available to facilitate starting. The primer pump is located to the immediate left of the throttle quadrant.

ELECTRICAL SYSTEM

The 14-volt electrical system includes a 12-volt **battery** for starting and to back up alternator output. Electrical power is supplied by a 60 ampere **alternator.** The battery, a master switch relay, a voltage regulator and an overvoltage relay are located beneath the floor of the forward baggage compartment, and access is obtained by removing the floor.

Electrical switches are located on a panel to the pilot's left and all **circuit breakers** are on the lower right instrument panel behind a decorative door. Two thumb-wheel rheostat switches to the left of the circuit breakers control the navigation lights and the intensity of the instrument panel lights.

Standard electrical accessories include the starter, the electric fuel pump, the stall warning indicator, the cigar lighter, the ammeter, and the annunciator panel*.

The annunciator panel* includes alternator and low oil pressure indicator lights. When the optional gyro system is installed, the annunciator panel also includes a low vacuum indicator light. The annunciator panel lights are provided only as a warning to the pilot that a system may not be operating properly, and that he should check and monitor the applicable system gauge to determine when or if any necessary action is required.

Optional electrical accessories include the navigation lights, an anti-collision light, and instrument panel lighting.

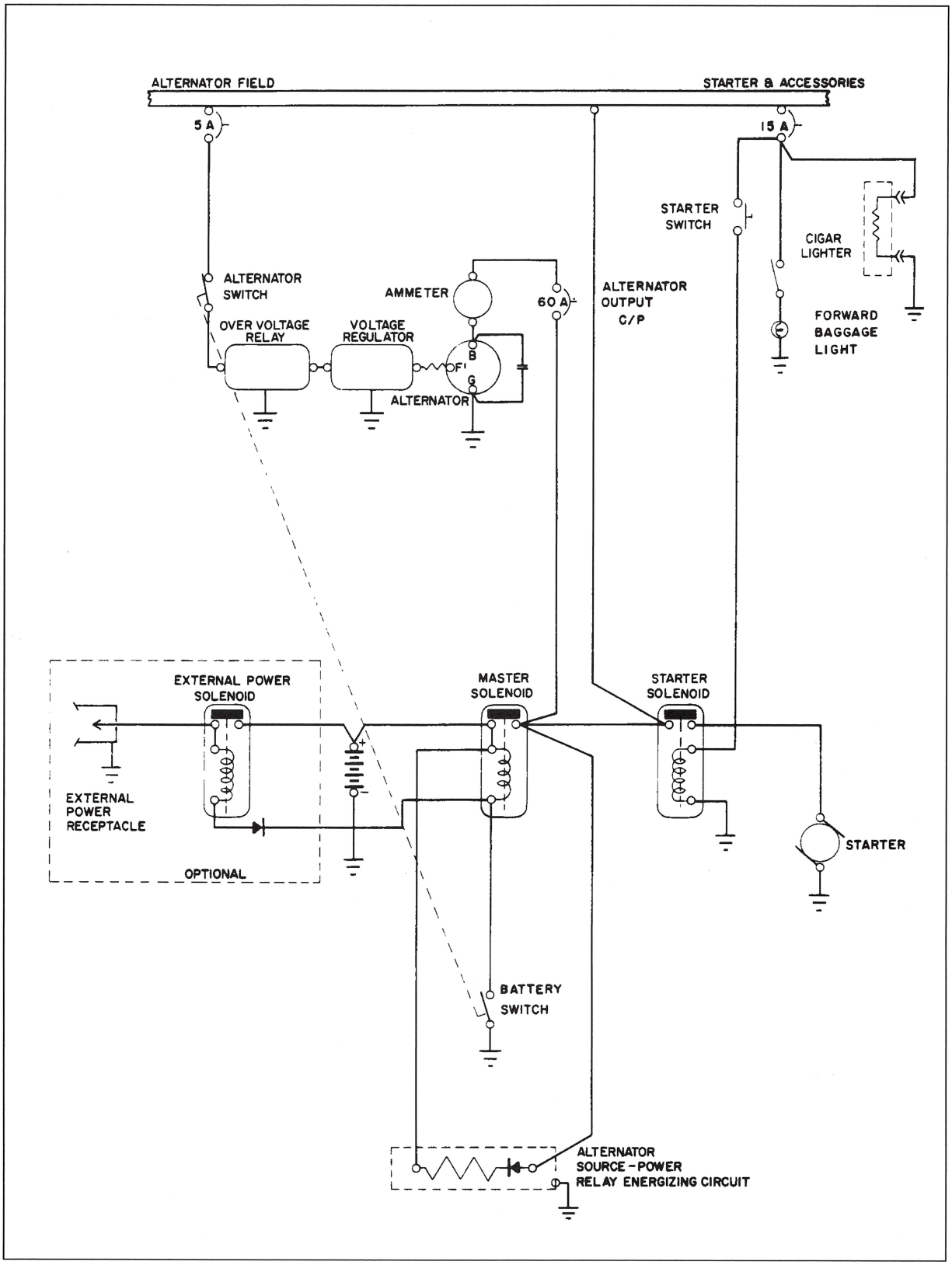
Circuit provisions are made to handle a full complement of communications and navigational equipment.

The **alternator system** offers many advantages over a generator system. The main advantage is fun electrical power output at much lower engine speed, which results in improved radio and electrical equipment operation. Since the alternator output is available all the time, the battery will be charging almost continuously. This will make cold weather starting easier.

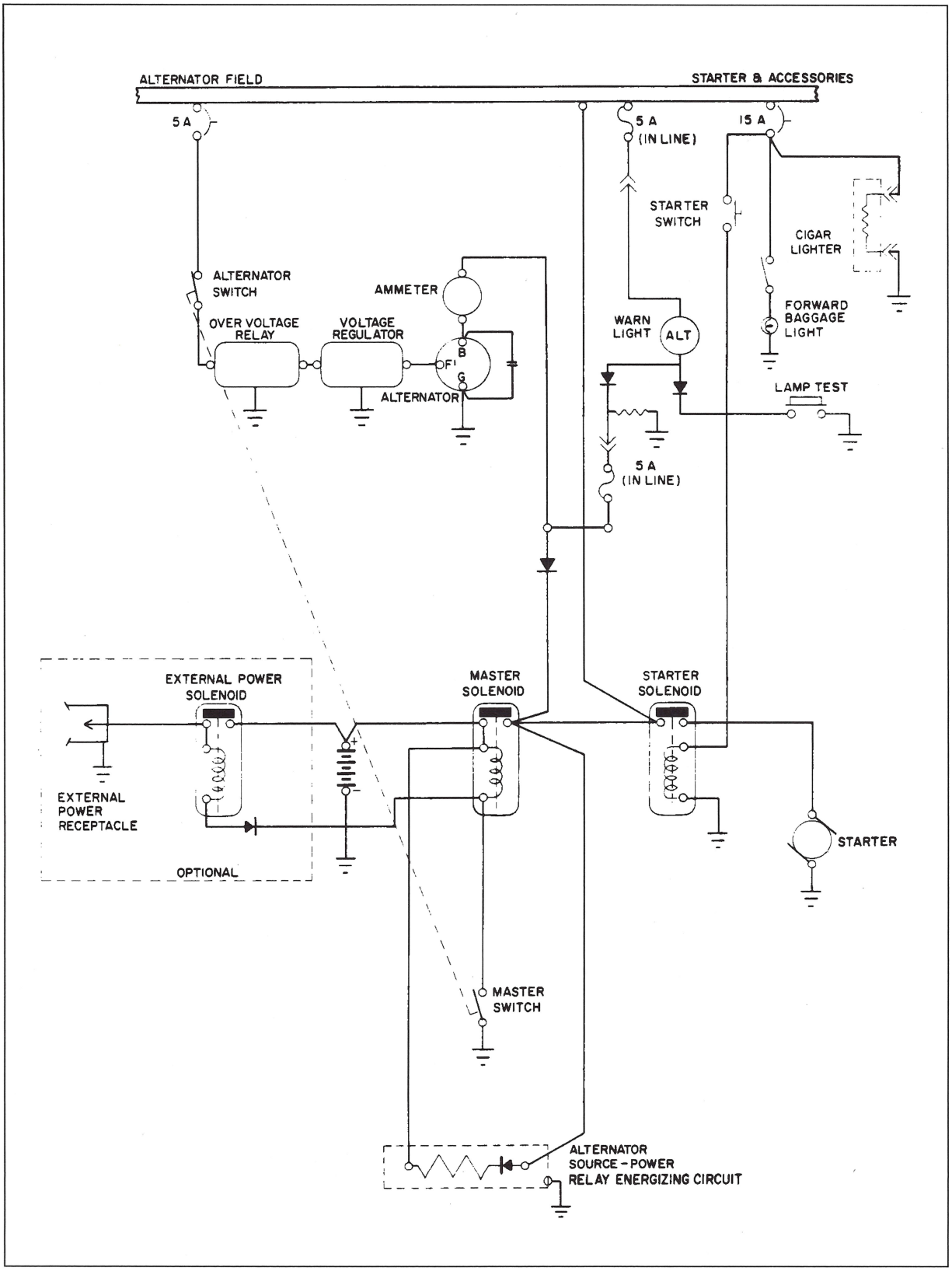
The **ammeter** in the alternator system displays in amperes the load placed on the alternator. It does not indicate battery discharge. With all electrical equipment off (except the master switch) the ammeter will be indicating the amount of charging current demanded by the battery. As each item of electrical equipment is turned on, the current will increase to a total appearing on the ammeter. This total includes the battery. The maximum continuous load for night flight, with radios on, is about 30 amperes. This 30 ampere value, plus approximately 2 amperes for a fully charged battery, will appear continuously under these flight conditions.

The **master switch** is a split switch with the left half operating the master relay and the right half energizing the alternator. This switch is interlocked so that the alternator cannot be operated without the battery. For normal operation, be sure that both halves are turned on.

*Serial nos. 7500001 and up



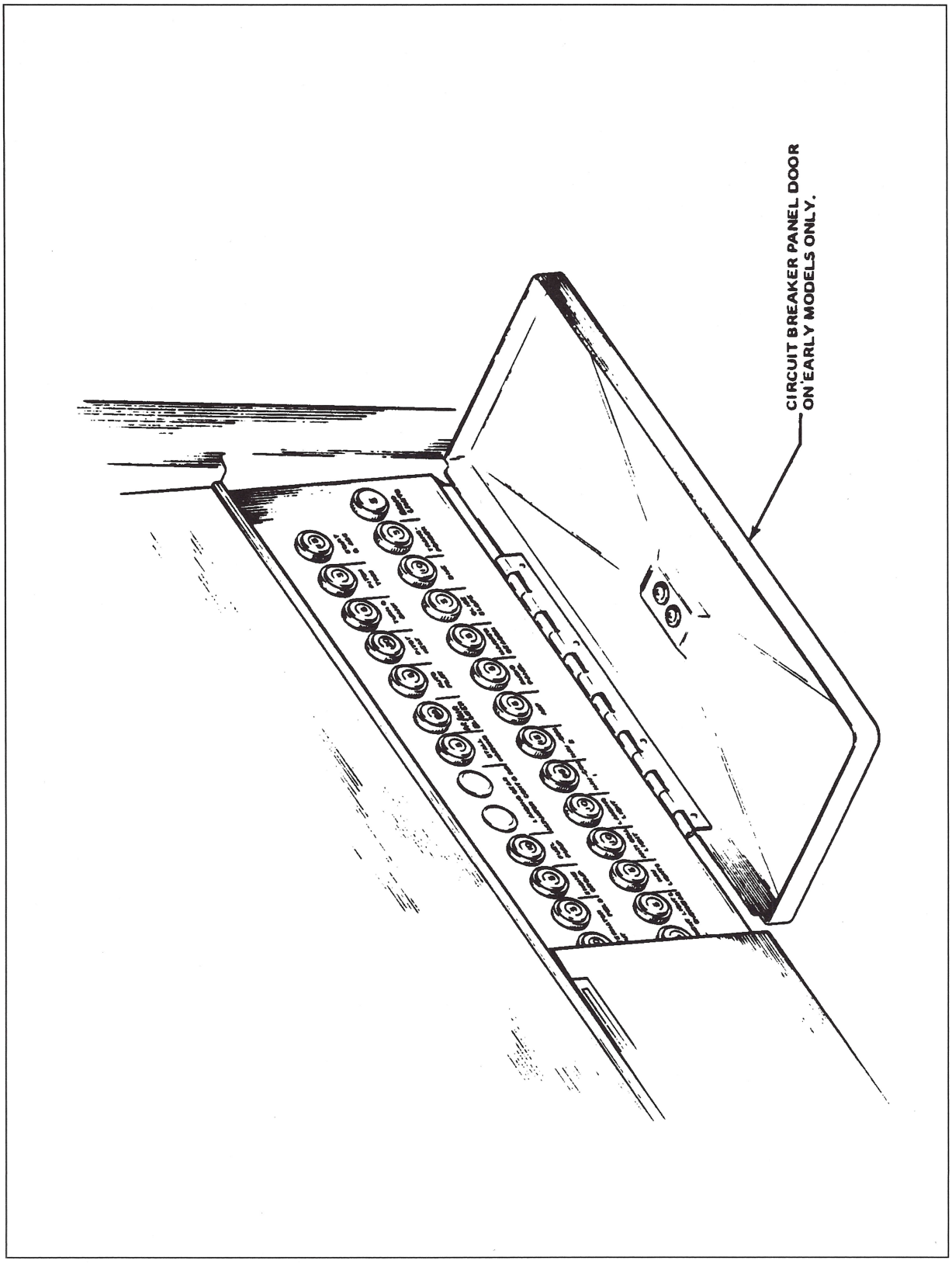
Alternator and Starter Schematic (Ser. Nos. 7400001 through 7400061)



Alternator and Starter Schematic (Ser. Nos. 7500001 and up)

If no output is indicated by the ammeter during flight, reduce the electrical load by turning off all unnecessary electrical equipment. Check both the 5 ampere field breaker and the 60 ampere output breaker and reset if open. If neither circuit breaker is open, turn off the alternator switch for 1 second to reset the overvoltage relay. If the ammeter continues to indicate no output, turn off the alternator switch; maintain a minimum electrical load; and terminate the flight as soon as practical.

Maintenance on the alternator should prove to be a minor factor. Should service be required, contact a Piper Dealer.



Circuit Breaker Panel

VACUUM SYSTEM

The **vacuum system** employed to operate the gyro instruments includes an engine-driven dry vacuum pump, a vacuum regulator valve, and the tubing necessary to complete the system.

The use of a dry type **vacuum pump** eliminates the need for an oil-air separator and the hardware necessary for its installation.

The **vacuum gauge** is mounted on the right side of the instrument panel. The gauge is calibrated in inches of mercury and indicates the amount of suction created by the engine-driven vacuum pump. As the system filter becomes clogged or the lines obstructed, the gauge will show a decrease in pressure (a low vacuum indicator light is provided in the annunciator panel*). Do not reset the regulator until the filter and lines have been checked.

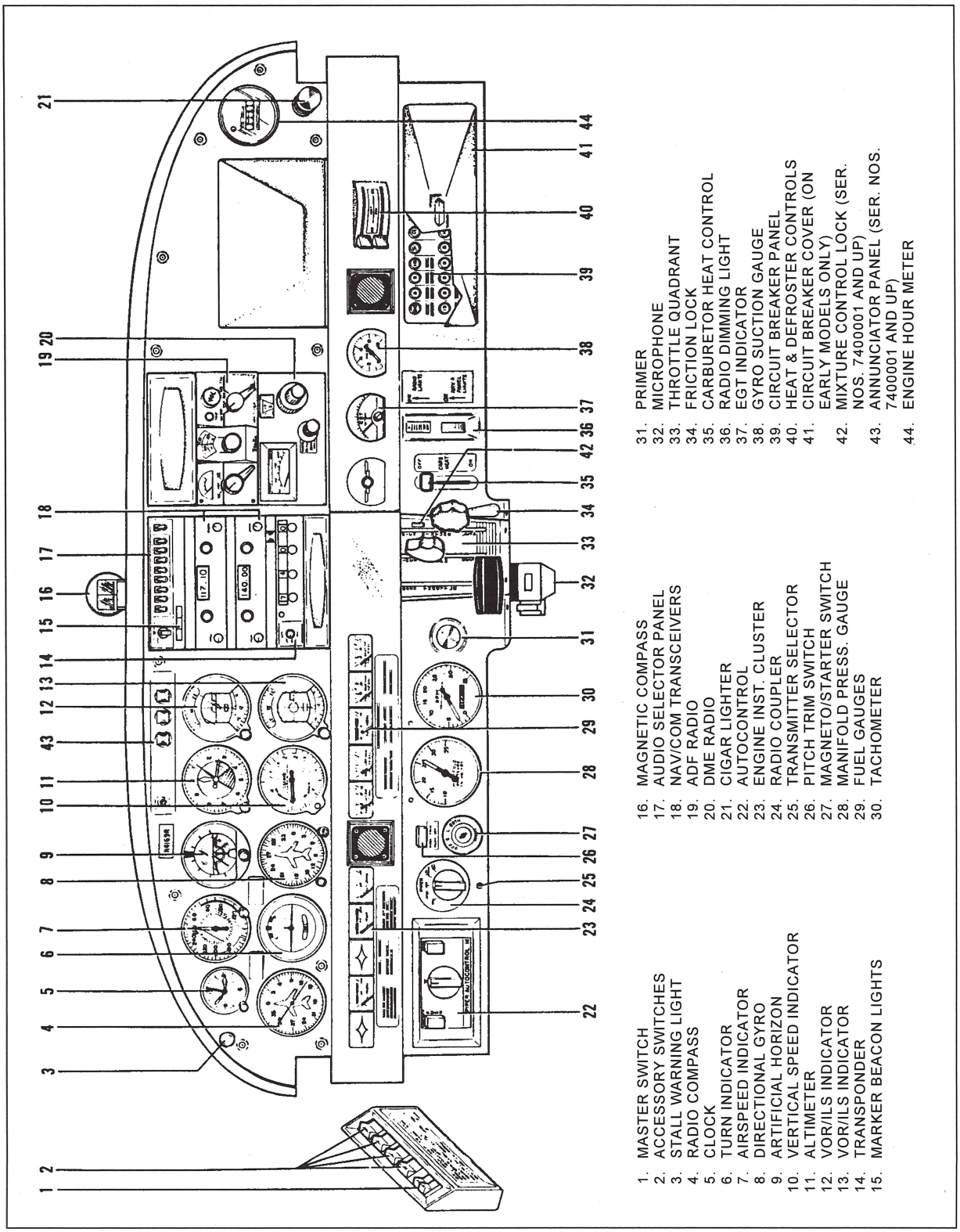
A **vacuum regulator** valve is incorporated in the system to control vacuum pressure to the gyro instruments. The regulator valve is located under the instrument panel. Access to the valve for maintenance and adjustment is gained from below the instrument panel. The regulator should be set so that the vacuum gauge reads 5.0 ± .1 inches of mercury with the engine running at medium RPM after warm-up.

INSTRUMENT PANEL

The **instrument panel** of the Cherokee Six is designed to accommodate the customary advanced flight instruments and the normally required power plant instruments. The **artificial horizon** and **directional gyro** are vacuum operated through use of a vacuum pump installed on the engine. The gauges are in the center of the left hand instrument panel. The vacuum gauge is mounted on the right hand instrument panel. The **turn indicator,** located on the left side of the panel, is electrically operated. An annunciator panel is mounted in the upper instrument panel* to warn the pilot of a possible malfunction in the alternator, oil pressure or vacuum system.

A natural separation of the flight group and the power group is provided by the placement of the flight group in the upper instrument panel and the power group in the center and lower instrument panels. The **radios** are located in the center portion of the panel, and the circuit breakers are on the lower right behind a decorative door.

*Serial nos. 7500001 and up



Instrument Panel

PITOT-STATIC SYSTEM

The system supplies both **pitot** and **static** pressure for the airspeed indicator, altimeter and vertical speed indicator (when installed).

Pitot and static pressure are picked up by the pitot head on the bottom of the left wing. An optional heated pitot head, which alleviates problems with icing or heavy rain, is available. The switch for pitot heat is located on the lower left instrument panel.

To prevent bugs and water from entering the pitot and static pressure holes when the airplane is parked, a cover should be placed over the pitot head. A partially or completely blocked pitot head will give erratic or zero readings on the instruments.

NOTE

During the preflight, check to make sure the pitot cover is removed.

HEATING AND VENTILATING SYSTEM

Heat for the cabin interior and the defroster system is provided by a heater muff attached to the exhaust system. Controls for these systems are located on the lower right side of the instrument panel. There are six heater outlets, one for each seat. If unusual odors are emitted by the heater system, turn off the heat and inspect the system for leaks.

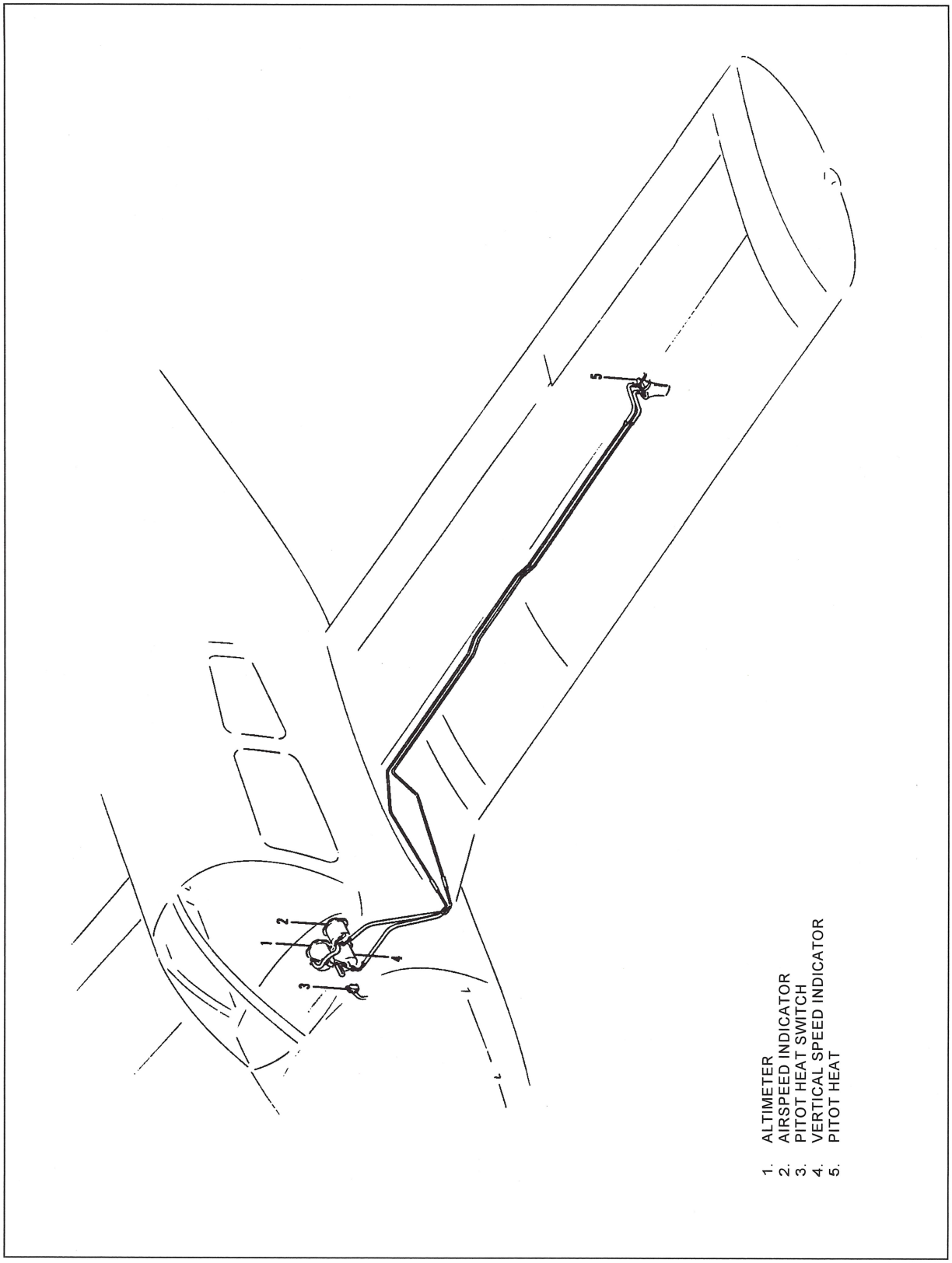
Fresh air inlets are located in the leading edge of each wing at the intersection of the straight and tapered sections, and in the leading edge of the fin. Two large adjustable **outlets** are located on each side of the cabin, one forward and one aft of the front seat near the floor. There are also adjustable outlets above each seat. An optional blower may be added to the overhead vent system to aid in the circulation of cabin air.

CABIN FEATURES

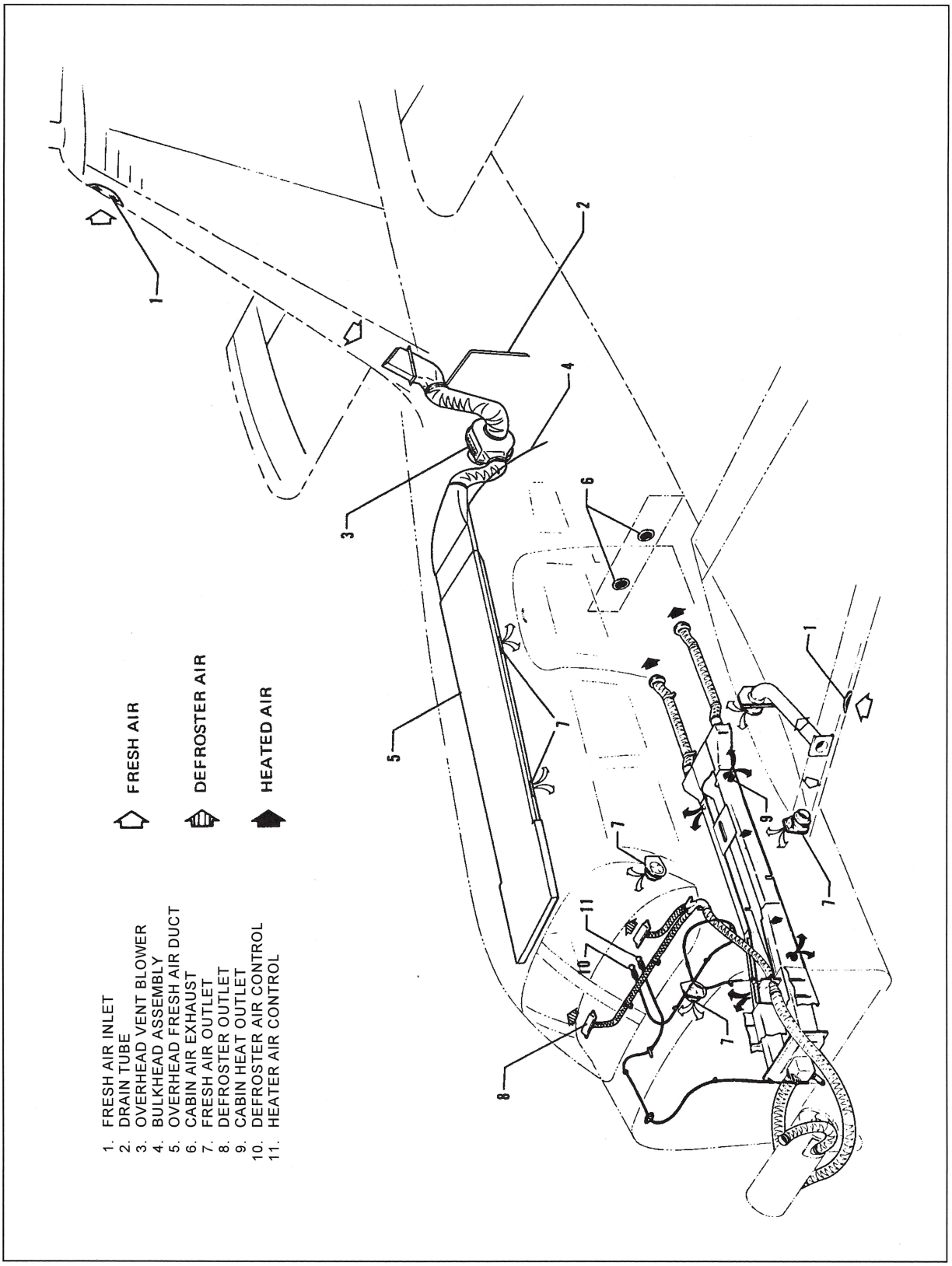
For ease of entry and exit and for pilot and passenger comfort, the front seats are adjustable fore and aft. All seats recline and have armrests and are available with optional headrests. The front seats can be equipped with optional vertical adjustment. The center and rear seats are easily removable for added cargo space. Some rear seat installations incorporate leg retainers with latching mechanisms which must be released before the rear seats can be removed. Releasing the retainers is easily accomplished by turning the latching mechanisms 90° with a coin or screwdriver. An optional jump seat can be installed between the two middle seats to give the airplane a seven-place capacity.

Single strap shoulder harnesses controlled by **inertia reels** are standard equipment for the front seats and are offered as optional equipment for the third, fourth, fifth and sixth seats, but not for the seventh seat. The shoulder strap is routed over the shoulder adjacent to the windows and attached to the lap belt in the general area of the person's inboard hip.

The inertia reel should be checked by tugging sharply on the strap. The reel will lock in place under this test and prevent the strap from extending. Under normal movement, the strap will extend and retract as required.



Pitot-Static System



Heating and Ventilating System

BAGGAGE AREA

The Cherokee Six has two separate luggage areas, each with a 100 pound capacity. An 8 cubic foot luggage compartment, accessible from the right side of the fuselage through a 16 x 22 inch outside door, is located just aft of the fire wall. A 22 cubic foot luggage compartment behind the fifth and sixth seats is conveniently accessible even during flight from inside the cabin.

NOTE

It is the pilot's responsibility to be sure when the baggage is loaded that the airplane's C.G. falls within the allowable C.G. range (See Weight and Balance Section.)

STALL WARNING

An approaching stall is indicated by a stall warning indicator which is activated between five and ten miles per hour above stall speed. Mild airframe buffeting and gentle pitching may also precede the stall. Stall speeds are shown on graphs in the Performance Charts Section. The stall warning indicator is a red warning light on the left side of the instrument panel on earlier models and a continuous sounding horn located behind the instrument panel on later models. The stall warning indicator is activated by a lift detector installed on the leading edge of the left wing. During preflight, the stall warning system should be checked by turning the master switch "ON," lifting the detector and checking to determine if the indicator is actuated.

FINISH

All exterior surfaces are primed with etching primer and finished with acrylic lacquer available in a variety of colors and combinations. To keep the finish new looking, economy size spray cans of touch-up paint are available from Piper Dealers.

PIPER EXTERNAL POWER*

An optional starting installation known as Piper External Power (PEP) is accessible through a receptacle located on the left side of the nose section aft of the cowling. An external battery can be connected to the socket, thus allowing the operator to crank the engine without having to gain access to the airplane's battery.

*Optional equipment