THE

cherokee SIX 300

PILOT'S OPERATING MANUAL

BY

PIPER

This manual is incomplete without an APPROPRIATE FAA APPROVED AIRPLANE FLIGHT MANUAL and an APPROPRIATE WEIGHT AND BALANCE REPORT.

WARNING

EXTREME CARE MUST BE EXERCISED TO LIMIT THE USE OF THIS MANUAL TO APPLICABLE AIRCRAFT. THIS MANUAL REVISED AS INDICATED BELOW OR SUBSEQUENTLY REVISED IS VALID FOR USE WITH THE AIRPLANE IDENTIFIED BELOW WHEN APPROVED BY PIPER AIRCRAFT CORPORATION. SUBSEQUENT REVISIONS SUPPLIED BY PIPER AIRCRAFT CORPORATION MUST BE PROPERLY INSERTED.

MODEL PA-32-300

AIRCRAFT SERIAL NO. 32-7640041 REGISTRATION NO. N7039C PR750717

PILOT'S OPERATING MANUAL, PART NUMBER 761 559 REVISION 7-17-75

PIPER AIRCRAFT CORPORATION
APPROVAL SIGNATURE AND STAMP T.W. Reed, Jr.

Assurance that the airplane is in an airworthy condition is the responsibility of the owner. The pilot in command is responsible for determining that the airplane is safe for flight. The pilot is also responsible for remaining within the operating limitations outlined by the Airplane Flight Manual, instrument markings, and placards.

This Pilot's Operating Manual is not designed as a substitute for adequate and competent flight instruction, knowledge of the current airworthiness directives, applicable federal air regulations, or advisory circulars. It is not intended to be a guide for basic flight instruction or a training manual for transition from single to multi-engine flying.

If an inconsistency of information exists between the Pilot's Operating Manual and the Airplane Flight Manual approved by the FAA, the Airplane Flight Manual shall be the authority.

A complete or partial replacement of this manual, Part No. 761 559, may be obtained only from Piper Customer Services.

Published by
PUBLICATIONS DEPARTMENT
Piper Aircraft Corporation
761 559
Issued: July 1973

APPLICABILITY

This manual is applicable to Piper Model PA-32-300 aircraft having serial numbers commencing with 32-7440001. The concluding limit to applicable serial numbers was not available at time of printing. Contact Piper Customer Services for specific information on the application of this manual.

REVISIONS

The information compiled in the Pilot's Operating Manual will be kept current by revisions distributed to the airplane owners.

Revision material will consist of information necessary to update the text of the present manual and/or to add information to cover added airplane equipment.

I. Revisions

Revisions will be distributed whenever necessary as complete page replacements or additions and shall be inserted into the manual in accordance with the instructions given below:

1. Revision pages will replace only pages with the same page number.
2. Insert all additional pages in proper numerical order within each section.
3. Page numbers followed by a small letter shall be inserted in direct sequence with the same common numbered page.

II Identification of Revised Material

Revised text and illustrations shall be indicated by a black vertical line along the left hand margin of the page, opposite revised, added or deleted material. A line opposite the page number or section title and printing date, will indicate that the text or illustration was unchanged but material was relocated to a different page or that an entire page was added.

Black lines will indicate only current revisions with changes and additions to or deletions of existing text and illustrations. Changes in capitalization, spelling, punctuation or the physical location of material on a page will not be identified by symbols.

III. Original Pages Issued

The original pages issued for this manual prior to revision are given below:

1-1 through 1-4, 2-1 through 2-19, 3-1 through 3-18, 4-1 through 4-7, 5-1 through 5-30, 7-1 through 7-12, 8-1 through 8-2, 9-1 through 9-12, 10-1 through 10-15.

PILOT'S OPERATING MANUAL LOG OF REVISIONS

Current Revisions to the PA-32-300 Cherokee Six Pilot's Operating Manual, 761 559, issued July 12, 1973.

Revision	Revised Pages	Description	Date
Rev. 1 - 761 559 (PR740111)	2-10	Revised Overvoltage Relay Reset Time.	Jan. 11, 1974
	4-7	Revised Alternator Failure Item 3.	
	W/B	Added Rev. 1 to Report: VB-551.	
	7-i	Added Airspeed Data.	
	7-7	Revised Item 3.	
	7-9	Added Airspeed Data; info moved to 7-10.	
	7-10	Info added from 7-9 and info moved to 7-11.	
	7-11	Info added from 7-10 and info moved to 7-12.	
	7-12	Info added from 7-11.	
	8-1	Revised Item 6.	
Rev. 2 - 761 559 (PR740607)	ii	Added PAC Approval Form.	June 7, 1974
	iii	Added Applicability and Item III. Original Pages Issued.	
	A F/M	Added Rev. 1 to Report: VB-562.	
	W/B	Added Rev. 2 to Report: VB-551. (NOTE: AIRCRAFT DELIVERED WITH MANUALS PRIOR TO THIS REVISION DO NOT REQUIRE THIS REVISION.)	
Rev. 3 - 761 559 (PR740620)	2-i	Revised page no. for Electrical System.	June 20, 1974
	2-2	Added Mixture Control Lock info; revised Fuel Flow Indicator and Manifold Pressure Gauge info; added footnote.	
	2-3	Added Mixture Control Lock to illustration.	
	2-9	Added material relocated from page 2-10.	
	2-10	Relocated material; added Annunciator Panel info and footnote.	
	2-11	Revised Alternator and Starter Schematic.	
	2-11a	Added page (Alternator and Starter Schematic).	
	2-12	Relocated page.	
	2-12a	Added intentionally blank page.	
	2-13	Added Annunciator Panel info and footnote.	
	2-14	Revised Instrument Panel illustration.	
	2-15	Added Seat Removal instructions.	
	A F/M	Added Rev. 2 to Report: VB-562.	

Revision	Revised Pages	Description	Date
Rev. 3 (cont)	W/B	Added Rev. 3 to Report: VB-551.	
	7-4	Added Annunciator Panel Check to Ground Check; added footnote.	
	7-7	Added Mixture Control Lock to Cruising instructions; added footnote.	
	7-9	Added Mixture Control Lock to Stopping Engine instructions; added footnote.	
	8-1	Revised Item 6; relocated material from Item 8; added footnote.	
	8-2	Added material relocated from page 8-1.	
	9-i	Revised Performance Charts Index.	
	9-2	Revised Takeoff Chart.	
	9-3	Revised Takeoff Chart.	
	9-4	Revised Climb Chart.	
	9-5	Revised Airspeed Chart.	
	9-6	Revised Range Chart.	
	9-7	Revised Range Chart.	
	9-8	Revised Glide Chart.	
	9-11	Revised Landing Chart.	
Rev. 4 - 761 559 (PR741106)	2-3	Revised Manifold Pressure Gauge (added fuel flow).	Nov. 6, 1974
	2-4	Revised nose gear steering angle and deleted bungee reference under Landing Gear.	
	2-14	Added fuel flow to item 28.	
	A F/M	Added Rev. 3 to Report: VB-562.	
	W/B	Added Rev. 4 to Report: VB-551.	
	7-5	Added new item 9. and revised existing items under Takeoff.	
	8-2	Added item 11.	
Rev. 5 - 761 559 (PR750124)	2-18	Revised Stall Warning info.	Jan. 24, 1975
	W/B	Added Rev. 5 to Report: VB-551.	
	7-11	Revised ELT info.	
Rev. 6 - 761 559 (PR750717)	1-2	Revised Empty Weight and Useful Load; deleted seats removed Empty Weight and Useful Load; deleted footnote; added footnote.	July 17, 1975
	2-1	Deleted info (AIRFRAME); revised exhaust system description.	
	2-2	Revised Induction System description completely.	
	2-3	Added mixture lock clip and placard to illus.	

PILOT'S OPERATING MANUAL LOG OF REVISIONS (cont)

Revision	Revised Pages	Description	Date
Rev. 6 (cont)	2-12	Added callout.	
	2-14	Added Engine Hour Meter; revised callouts.	
	2-17	Revised Heating and Vent. illustration.	
	A F/M	Added Rev. 4 to Report: VB-562.	
	W/B	Added Rev. 6 to Report: VB-551.	
	8-1	Relocated item 8. to page 8-2.	
	8-2	Added and revised item 8.	
	10-5	Revised Removing, Cleaning and Installation of Engine Air Filter.	
Rev. 7 - 761 559 (PR760202)	1-2, 2-1	Added Ser. No. effectivity to IO-540-K1A5 engine; added IO-540-K1G5 engine.	Feb. 2, 1976
	A F/M	Added Rev. 5 to Report: VB-562.	
	W/B	Added Rev. 7 to Report: VB-551.	
	7-5	Deleted info - Takeoff.	
	7-6	Added footnote.	
	7-12	Revised ELT info.	
	8-2	Revised item 8.	
Rev. 8 - 761 559 (PR770602)	7-11, 7-12	Revised ELT info.	June 2, 1977
Rev. 9 - 761 559 (PR781215)	2-7	Deleted seventh seat reference.	
	A F/M	Added Rev. 6 to Report: VB-562.	
	7-11	Revised ELT info.	Dec. 15, 1978

PILOT'S OPERATING MANUAL LOG OF REVISIONS (cont)

Revision	Revised Pages	Description	Date
Rev. 11 - 761 559 (PR900423)	iv-c A F/M 10-8 10-8a 10-8b 10-10, 10-11 10-12 10-13	Added Rev. 11 to 761 559 Log of Revisions. Added Rev. 8 to Report: VB-562. Revised Oil Requirements. Moved Fuel System to page 10-8a. Added page. Revised and moved Fuel System from page 10-8. Added page. Revised Handling and Servicing (Facts You Should Know). Revised Preventative Maintenance. Revised Required Service and Inspection Periods.	April 23, 1990

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GENERAL SPECIFICATIONS

GENERAL SPECIFICATIONS

PERFORMANCE

Published figures are for standard airplanes flown at gross weight under standard conditions at sea level unless otherwise stated. Performance for a specific airplane may vary from published figures depending upon the equipment installed, the conditions of engines, airplane and equipment, atmospheric conditions and piloting technique. Each performance figure below is subject to the same conditions as on the corresponding performance chart from which it is taken in the Performance Charts Section.

GROSS WEIGHTS	3400	2900
Takeoff Ground Run, 10° flaps, sea level (ft)	1050	750
Takeoff Distance Over 50-ft Obstacle, 10° flaps, sea level (ft)	1500	1200
Best Rate of Climb Speed (mph)	105	100
Rate of Climb (ft per min)	1050	1350
Best Angle of Climb Speed (mph)	95	–
Max Speed, sea level (mph)	174*	175*
Max Speed Optimum Altitude, 8,300 ft, 75% power (TAS) (mph)	168*	171*
Service Ceiling (ft)	16,250	20,000
Absolute Ceiling (ft)	18,000	21,500
Cruise Speed at Best Power Mixture (mph)		
65% power, 11,500 ft	163	167
55% power, 15,000 ft	155	163
Range at Best Power Mixture (mi)**		
75% power, 8,000 ft	780	779
65% power, 11,500 ft	845	850
55% power, 15,000 ft	905	935
Cruise Speed at Best Economy Mixture (mph)		
75% power, 8,000 ft	166	169
65% power, 11,400 ft	159	165
55% power, 15,000 ft	149	157
Range at Best Economy Mixture (mi)**		
75% power, 8,000 ft	850	865
65% power, 11,400 ft	945	980
55% power, 15,000 ft	1030	1080
Stalling Speed, flaps down, (CAS) (mph)	63	58
Stalling Speed, flaps up, (CAS) (mph)	71	66
Landing Roll, flaps down, sea level (ft)	630	540
Landing Distance Over 50-ft Obstacle, sea level (ft)	1000	850

*The speed stated is with optional wheel fairings installed. Subtract 3 mph if wheel fairings are not installed.

**No reserve.

GROSS WEIGHTS	3400	2900
WEIGHTS		
Standard Empty Weight (lbs)	1824	1824
Maximum Useful Load (lbs)	1576	1076

POWER PLANT		
Engine - Lycoming	IO-540-K1A5	
Rated Horsepower	300	
Rated Speed (rpm)	2700	
Bore (inches)	5.125	
Stroke (inches)	4.375	
Displacement (cubic inches)	541.5	
Compression Ratio	8.7:1	
Dry Weight (pounds)	457	
Propeller (Standard)	HC-C2YK-1( )/8475-4 or HC-C2YK-1( )/8475D-4 or HC-C2YK-1( )F/F8475D-4	
(Optional)*	HC-C2YK-1( )/8475R-0 or HC-C2YK-1( )F/F8475R-0	
Propeller Diameter (inches) (Standard)	80	
(Optional)	84	

FUEL AND OIL		
Fuel Capacity (inboard) (U.S. gal)	50	
With Standard Auxiliary (U.S. gal)	84	
Oil Capacity (U.S. qts)	12	
Fuel, Aviation Grade (min octane)	100/130	

BAGGAGE	Forward	Aft
Maximum Baggage (lbs)	100	100
Baggage Space (cubic ft)	8	20
Baggage Door Size (in.)	16 x 22	

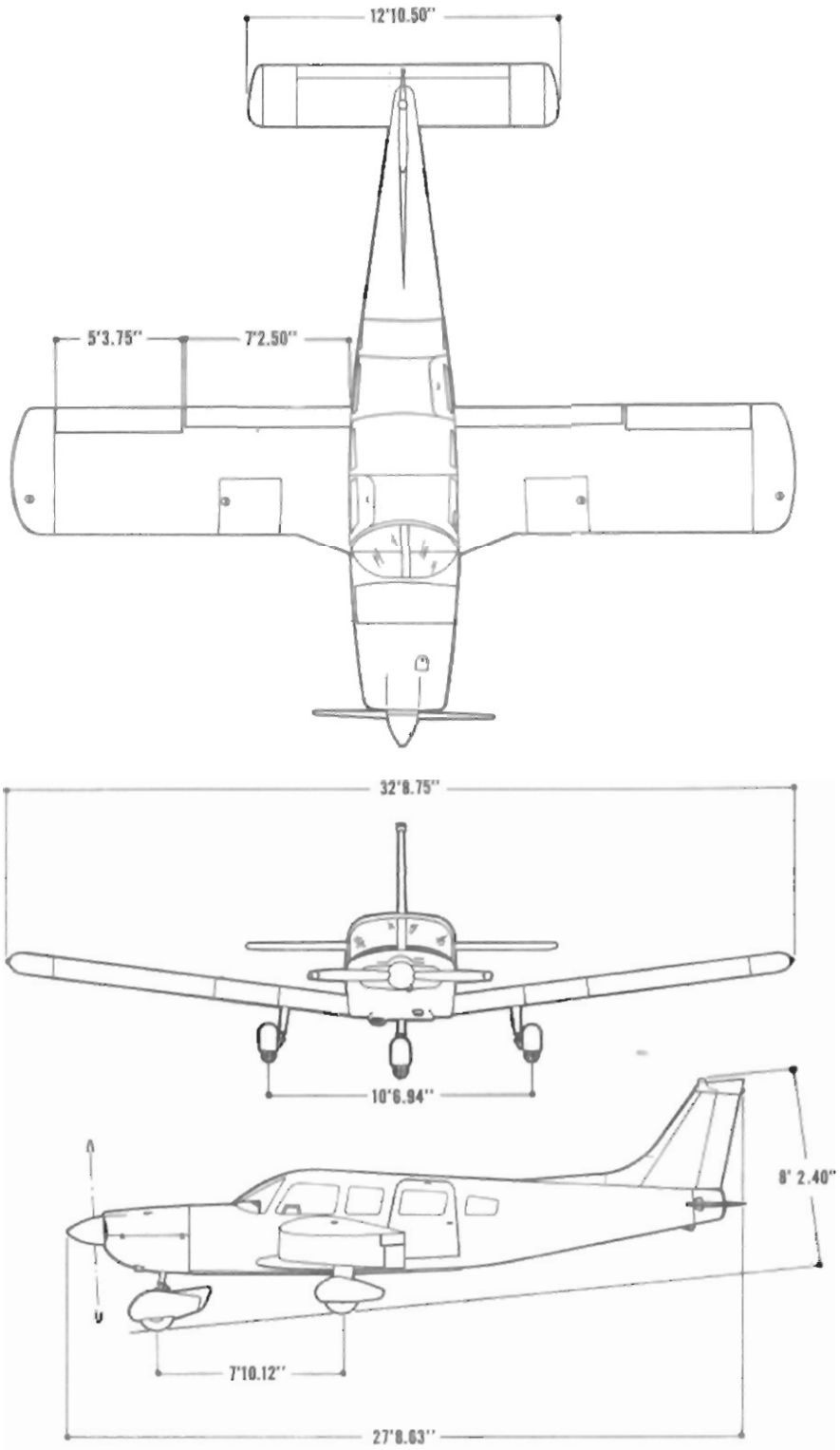
*Serial nos. 7440001 thru 7540188 only

DIMENSIONS

Wing Span (ft)		32.8
Wing Area (sq ft)		174.5
Wing Loading (lbs per sq ft)		19.5
Length (ft)		27.7
Height (ft)		8.2
Power Loading (lbs) per hp)		11.3

LANDING GEAR

Wheel Base (ft)		7.8
Wheel Tread (ft)		10.6
Tire Pressure (lbs)	Nose	28-30
	Main	35-40


12'10.50"
5'3.75"
7'2.50"
32'8.75"
10'6.94"
8' 2.40"
7'10.12"
27'8.63"

DESCRIPTION

AIRPLANE AND SYSTEMS

DESCRIPTION

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THE AIRPLANE

The PA-32-300 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 an economical and powerful fuel injected 300 horsepower engine, makes this Cherokee a versatile airplane for personal or commercial use.

AIRFRAME

Except for the tubular steel engine mount, steel landing gear struts, other miscellaneous steel parts, and the dent resistant fiberglass extremities - cowling and 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 IO-540-K1A5 engine** installed in the PA-32-300 is rated at 300 horsepower at 2700 rpm. This engine has a compression ratio of 8.7 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 vane-type fuel pump, and fuel injection.

The **exhaust system** consists of dual exhaust stacks routed to a single heavy gauge stainless steel muffler on serial numbers 7440001 through 7540188. On later models individual exhaust pipes are routed in pairs to three heavy gauge stainless steel mufflers. Exhaust gases are routed overboard at the underside of the engine cowling. The muffler (or mufflers) are surrounded by a shroud which provides heat for the cabin and for windshield defrosting.

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 **constant speed propeller** is a Hartzell HC-C2YK-1( )F/ F8475D-4 with a diameter of 80 inches. The propeller is controlled by a governor mounted at the left forward side of the crankcase. The governor is operated by a cable from the power control quadrant.

The **power control quadrant** located in the lower center of the instrument panel includes throttle, mixture, and propeller controls. A **friction lock** on the right side of the quadrant prevents creeping of the controls. In addition, the mixture control has a lock* to prevent activation of the mixture control instead of the pitch control. For information on the leaning procedure, see the **Avco-Lycoming Operator's Manual.**

INDUCTION SYSTEM

On Serial Numbers 7440001 through 7540188, the Induction Air for the engine enters an opening in the nose cowl below the propeller and is picked up by a large air duct. The air is directed through a filter and on to the servo regulator. Should the filter become blocked, a spring-loaded door in the air box between the filter and the servo regulator opens automatically. The door may also be opened manually by a control located on the right side of the quadrant.

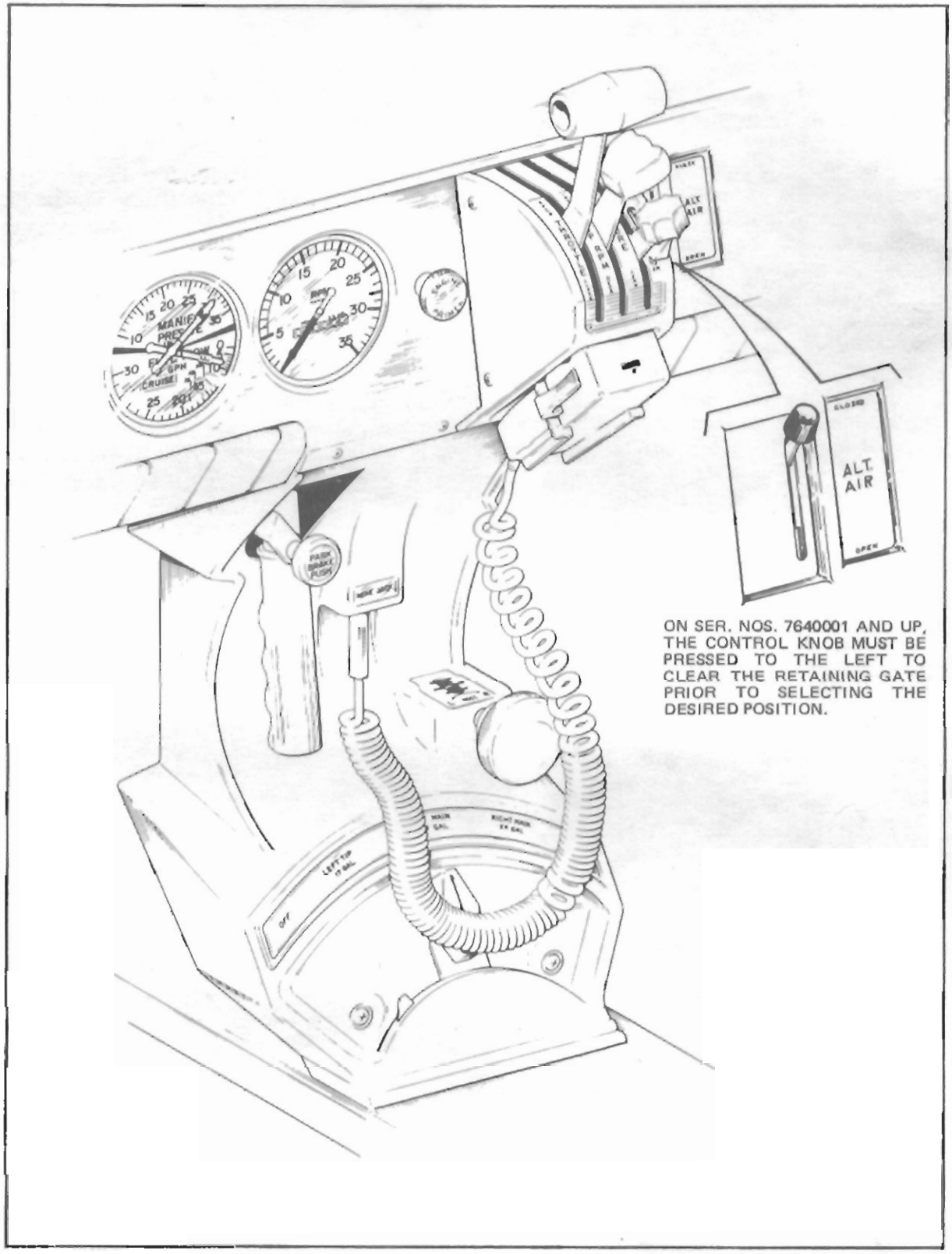
On Serial Numbers 7640001 and up, an induction scoop is located on the left side of the lower cowl. An intake air box is attached to the inside of the cowl adjacent to the air filter box. The filter box is located at the aft end of the induction scoop. Access to the filter is gained through a detachable plate located on the outside of the lower cowl. The intake air box incorporates a manually operated two-way valve designed to allow induction air either to pass through the filter or to bypass the filter and supply heated air directly to the engine.

Alternate air selection insures induction air flow should the filter become blocked. Since the air is heated, the alternate air system offers protection against induction system blockage caused by snow or freezing rain, or by the freezing of moisture accumulated in the induction air filter. Alternate air is unfiltered; therefore, it should not be used during ground operation when dust or other contaminants might enter the system. The primary (through the filter) induction source should always be used for takeoffs. On serial numbers 7640001 and up, the control is operated by pressing the knob to the left to clear the retaining gate and then moved in the desired direction.

The Bendix RSA-10ED1 type fuel injection system consists of a servo regulator which meters fuel flow in proportion to airflow to the engine, giving the proper fuel-air mixture at all engine speeds, and a fuel flow divider which receives the metered fuel and accurately divides the fuel flow among the individual cylinder fuel nozzles.

A combination fuel flow indicator and manifold pressure gauge is installed in the left side of the instrument panel. The fuel flow indicator is connected to the fuel flow divider and monitors fuel pressure. The instrument converts fuel pressure to an accurate indication of fuel flow in gallons per hour and percentage of cruise power.

*Serial nos. 7540001 and up



Throttle Quadrant and Console

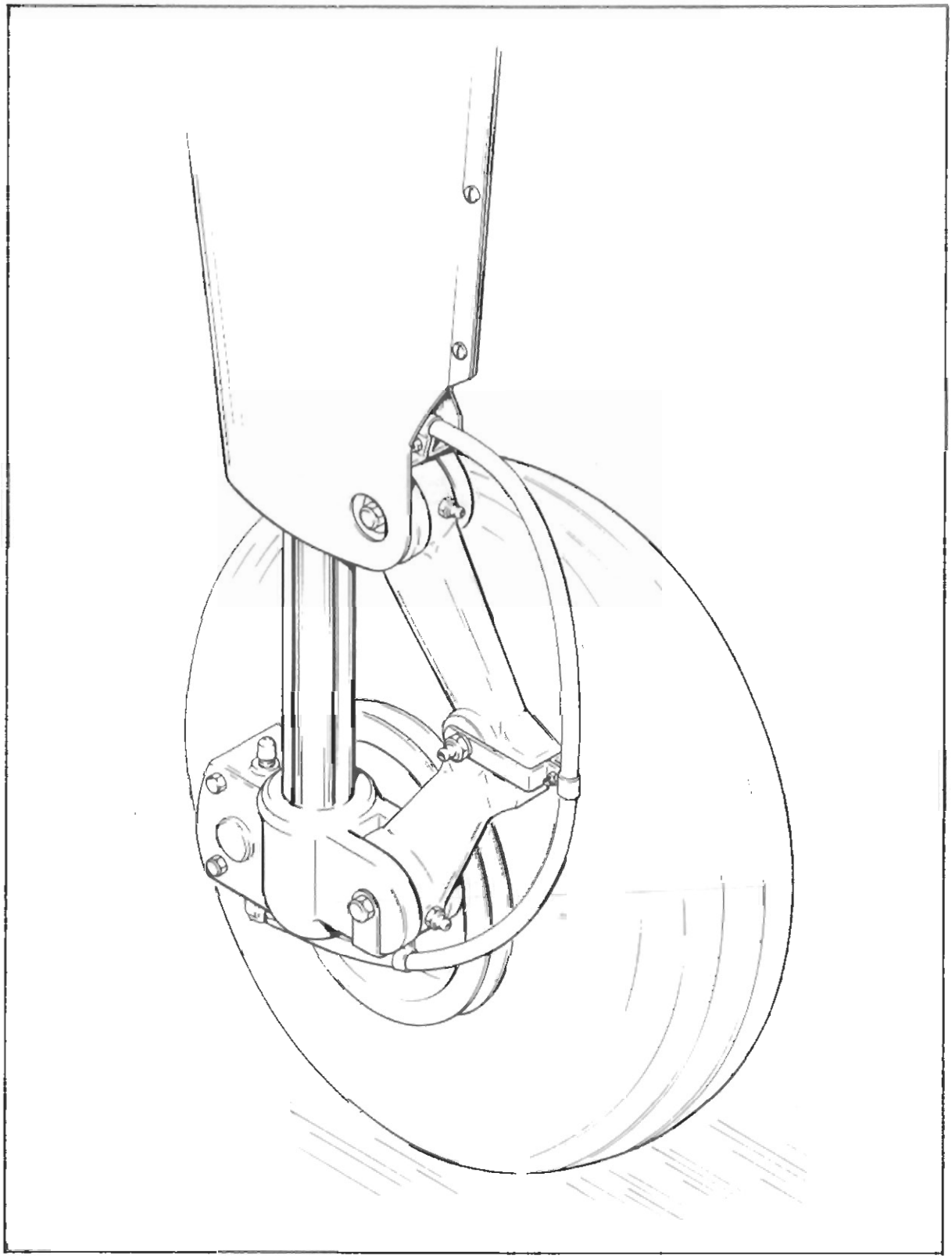
LANDING GEAR

All three **landing gear** use Cleveland 6.00 x 6 wheels. The main gear have brake drums and Cleveland double disc hydrualic 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 are tube type.

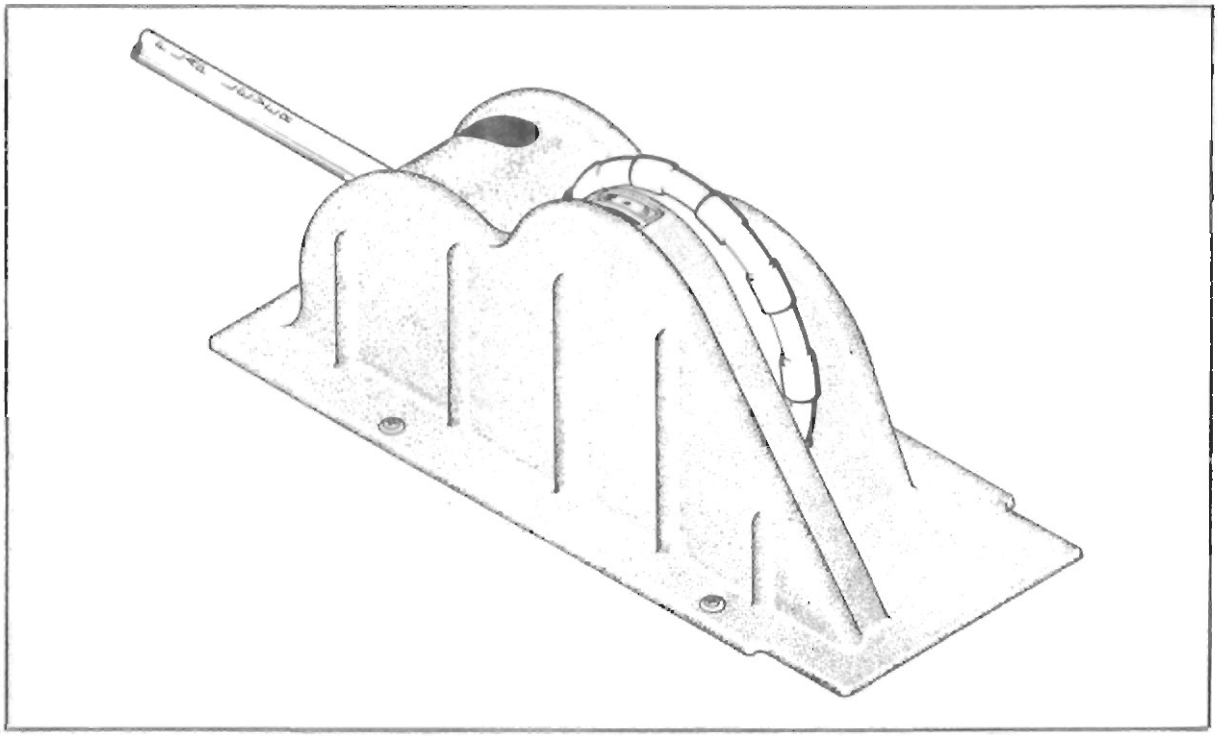
The **nose gear** is steerable using a combination of full rudder pedal travel and brakes. The nose gear can be turned 24° each side of center. A spring device is incorporated in the rudder pedal torque tube assembly to aid in rudder centering and to provide rudder trim. The nose gear also includes a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

The **oleo struts** are of the air-oil type. The normal extensions are 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 operated 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. Optional toe brakes are available for the right rudder pedals. 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 disengage the catch; then allow the handle to swing forward.



Main Wheel Assembly



Console

FLIGHT CONTROLS

Dual controls, with a cable system between the controls and the surfaces, are installed 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 tail 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 standard 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 each one holds 17 gallons.

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 position corresponding to each of the four tanks plus an OFF position.

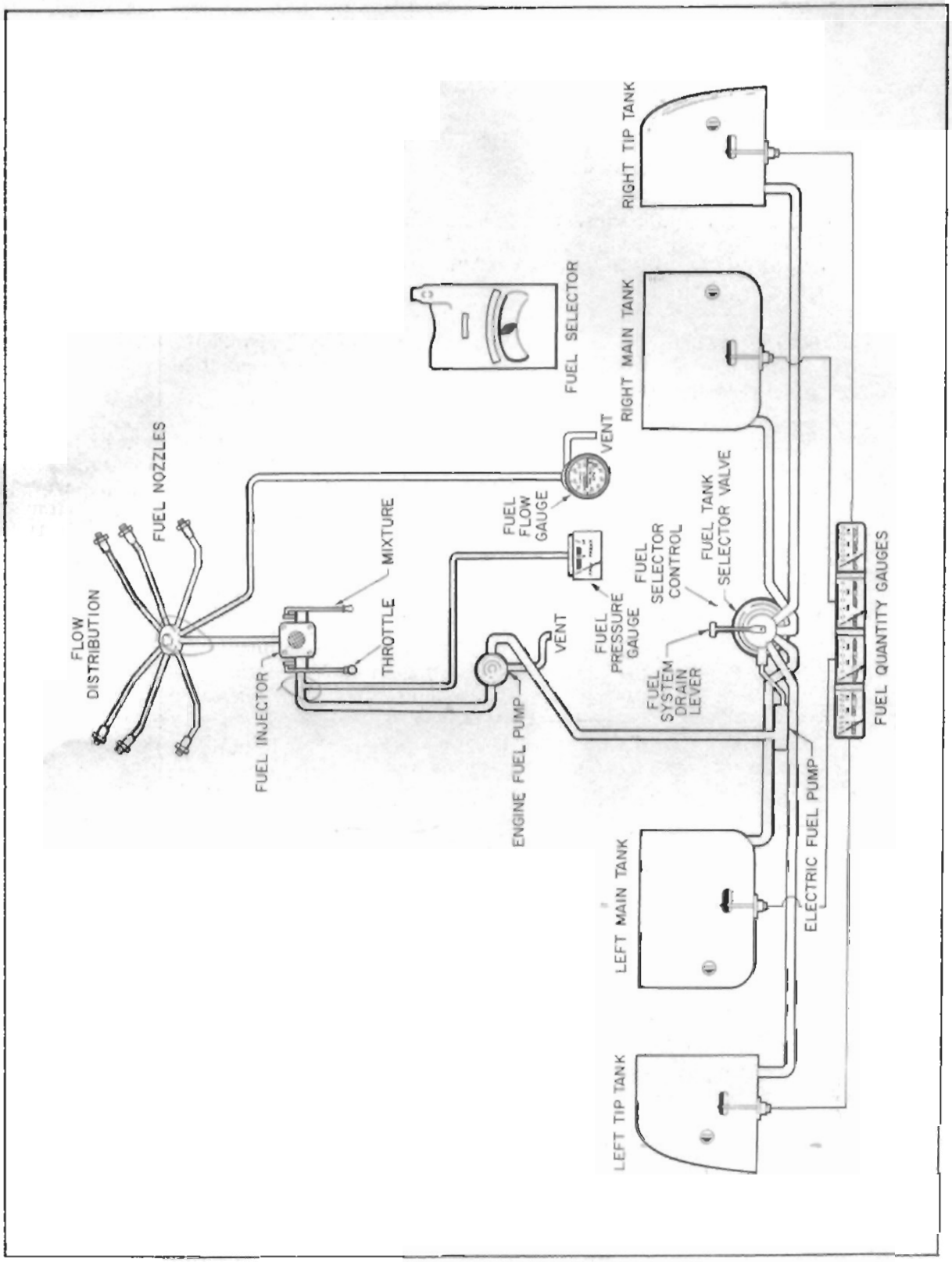
To avoid the accumulation of water and sediment, the fuel system should be drained daily prior to first flight and after refueling. Each tank is equipped with an individual quick drain located at the lower inboard rear corner of the tank. The fuel strainer and a system quick drain valve are located in 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 corner 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 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 tank 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 free of water and sediment, close the drain and dispose of the contents of the bottle.

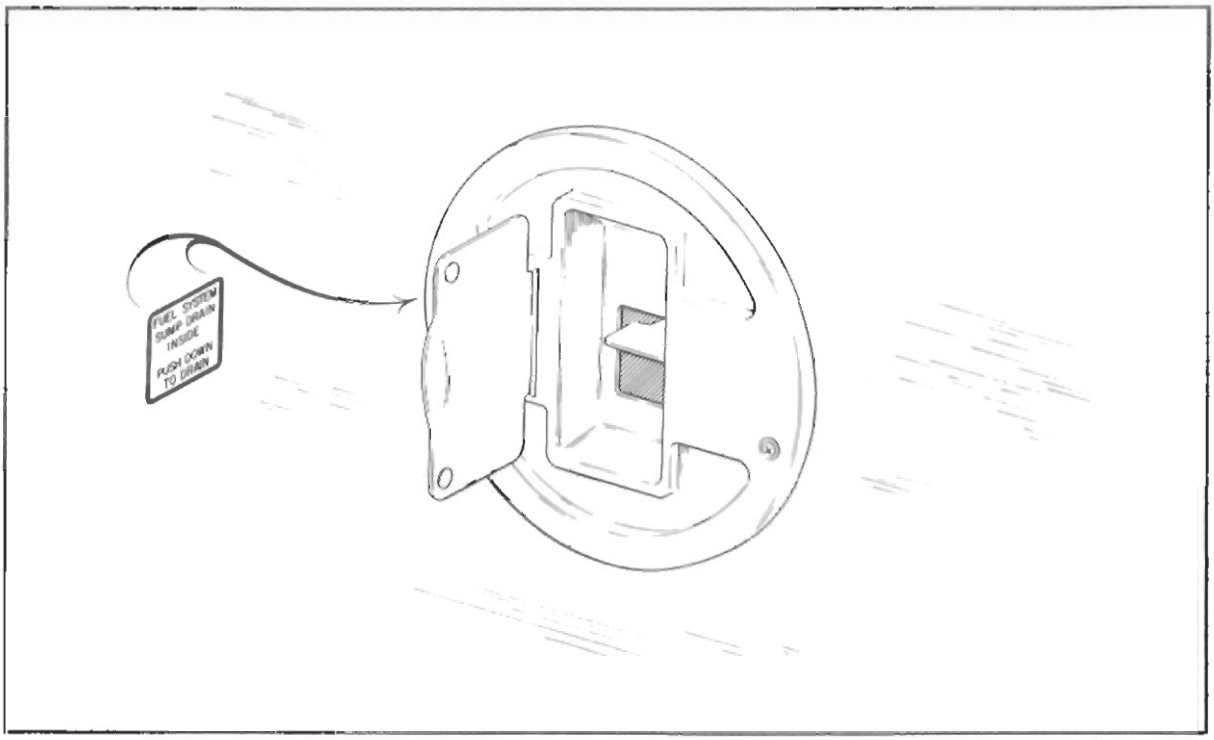
CAUTION

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.

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 full 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.

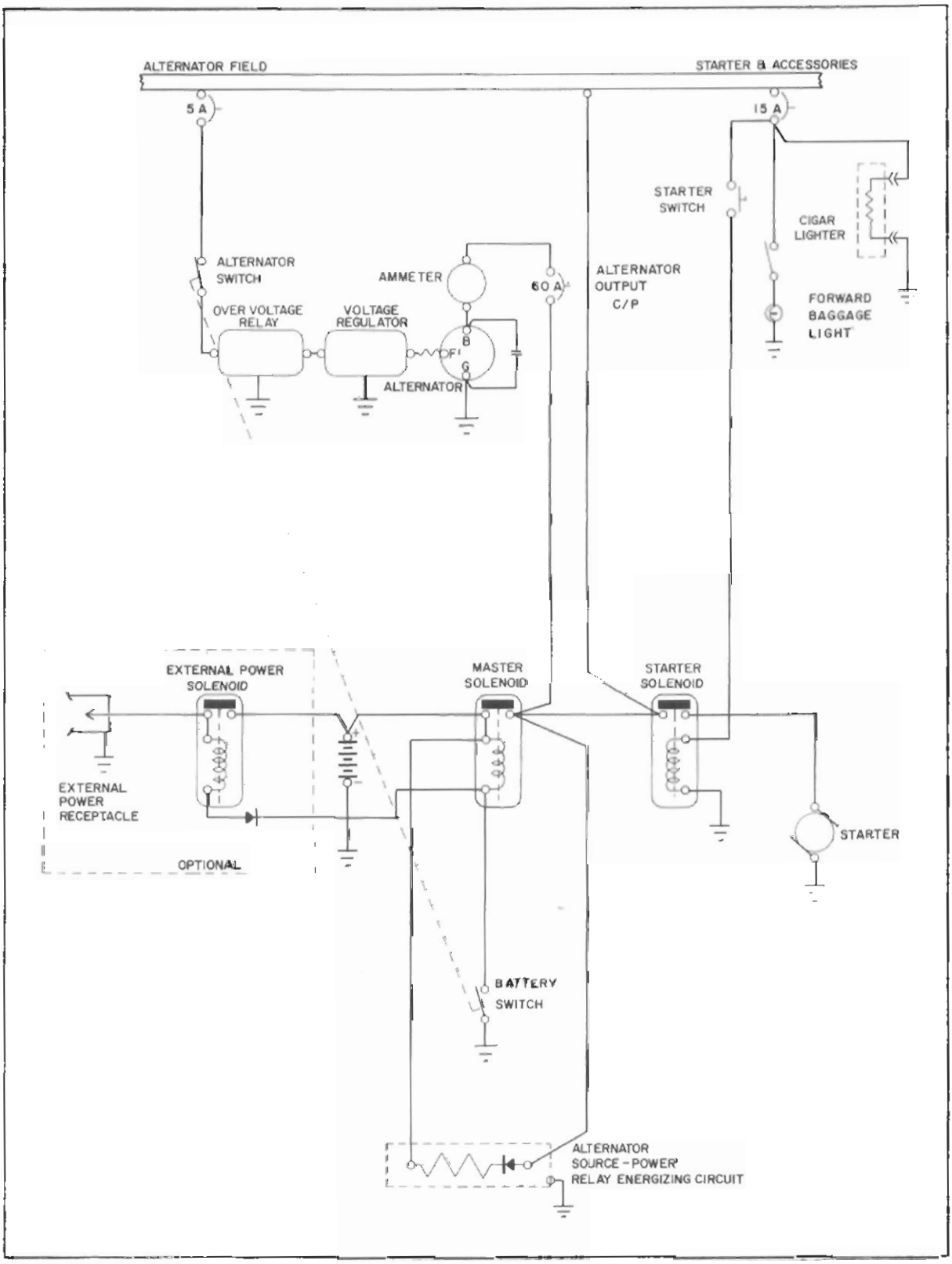
The **ammeter** in the alternator system displays in amperes the load placed on the alternator. It does not indicate battery discharge. With all electrical equipment off (except the master switch) the ammeter will be indicating the amount of charging current demanded by the battery. As each item of electrical 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.

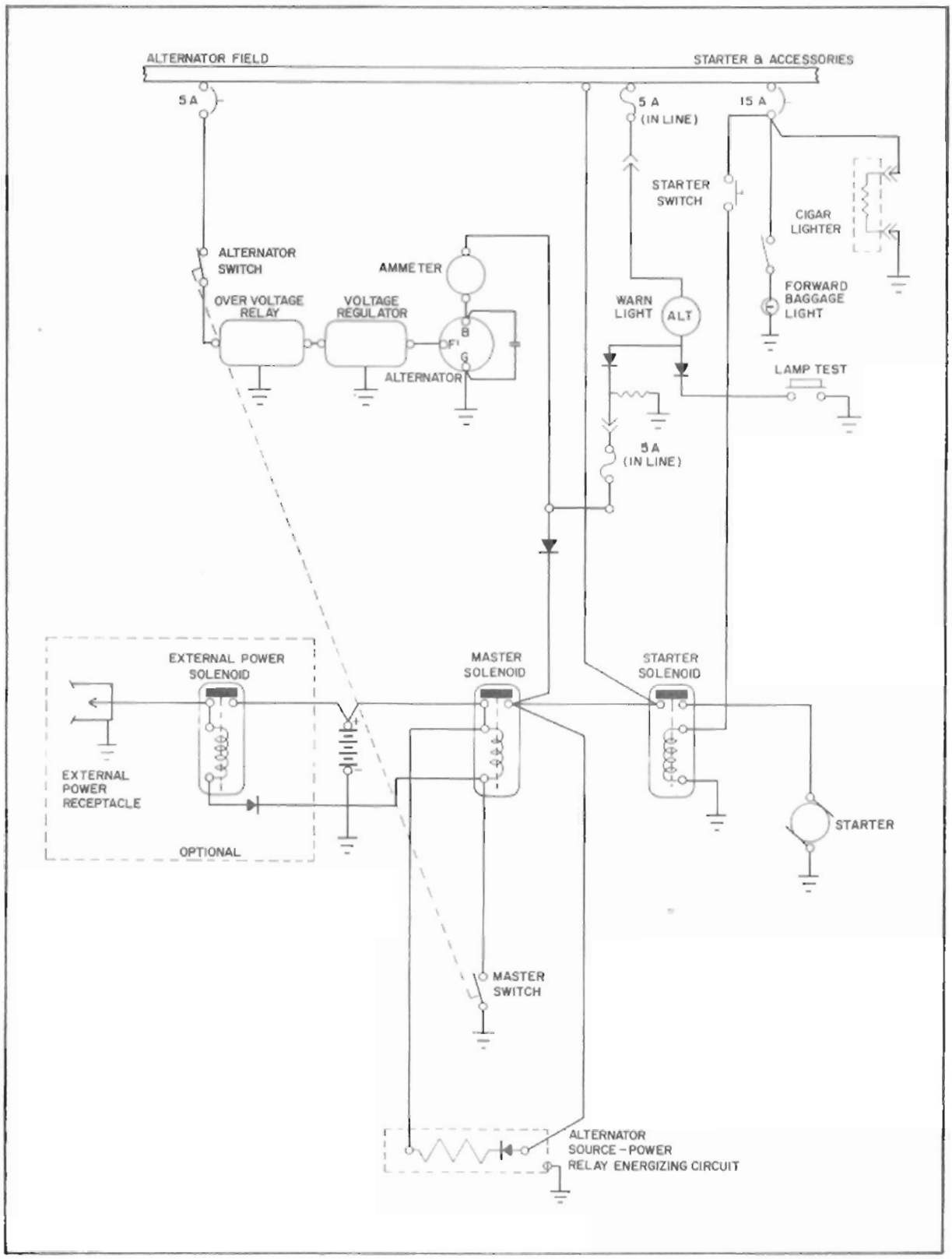
If no output is indicated by the ammeter during flight, reduce the electrical load by turning off all unnecessary electrical equipment. Check both the 5 ampere field breaker and the 60 ampere output breaker and reset if open. If neither circuit breaker is open, turn off the alternator switch for 1 second 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.

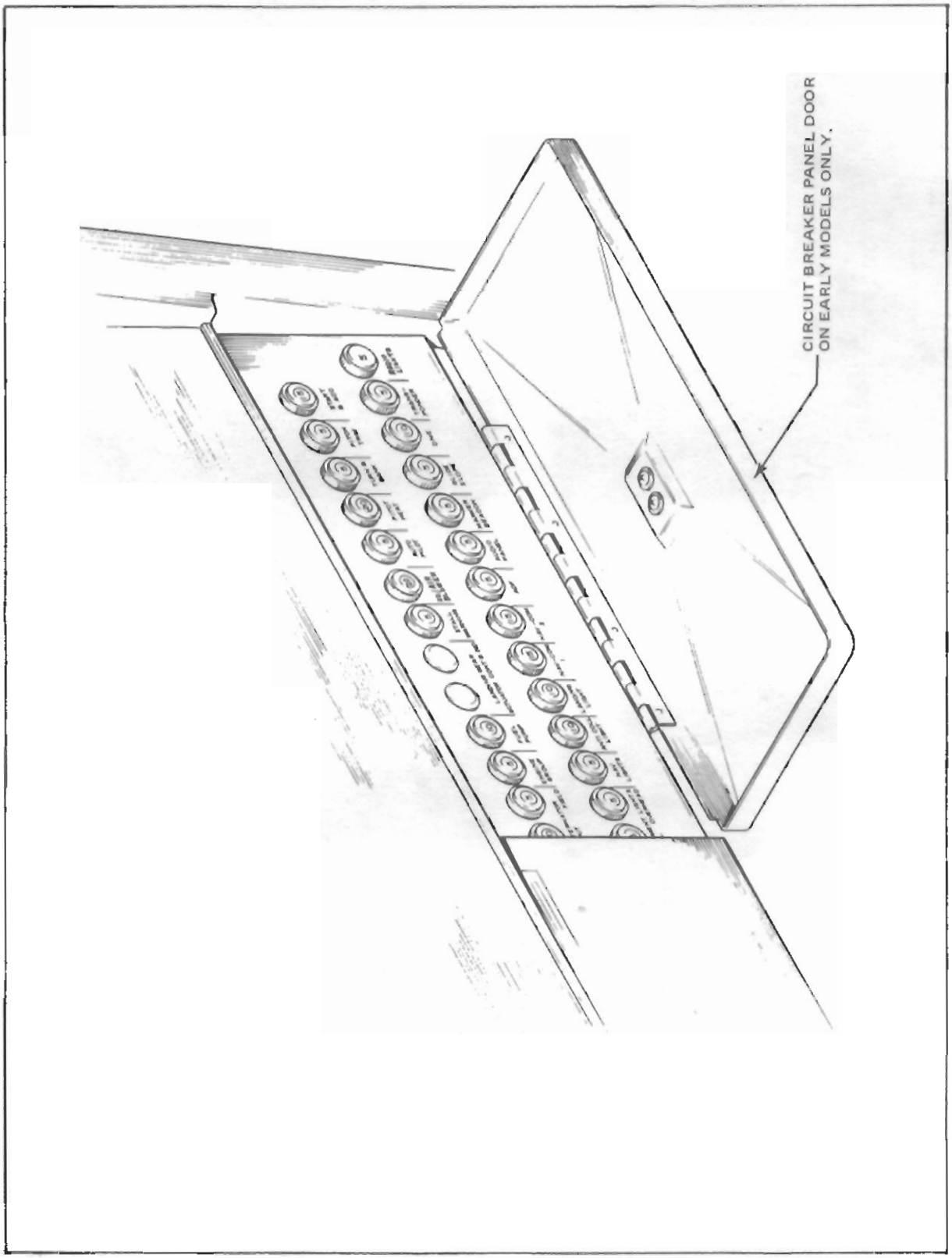
*Serial nos. 7540001 and up



Alternator and Starter Schematic (Ser. Nos. 7440001 through 7440182)



Alternator and Starter Schematic (Ser. Nos. 7540001 and up)



Circuit Breaker Panel

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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.

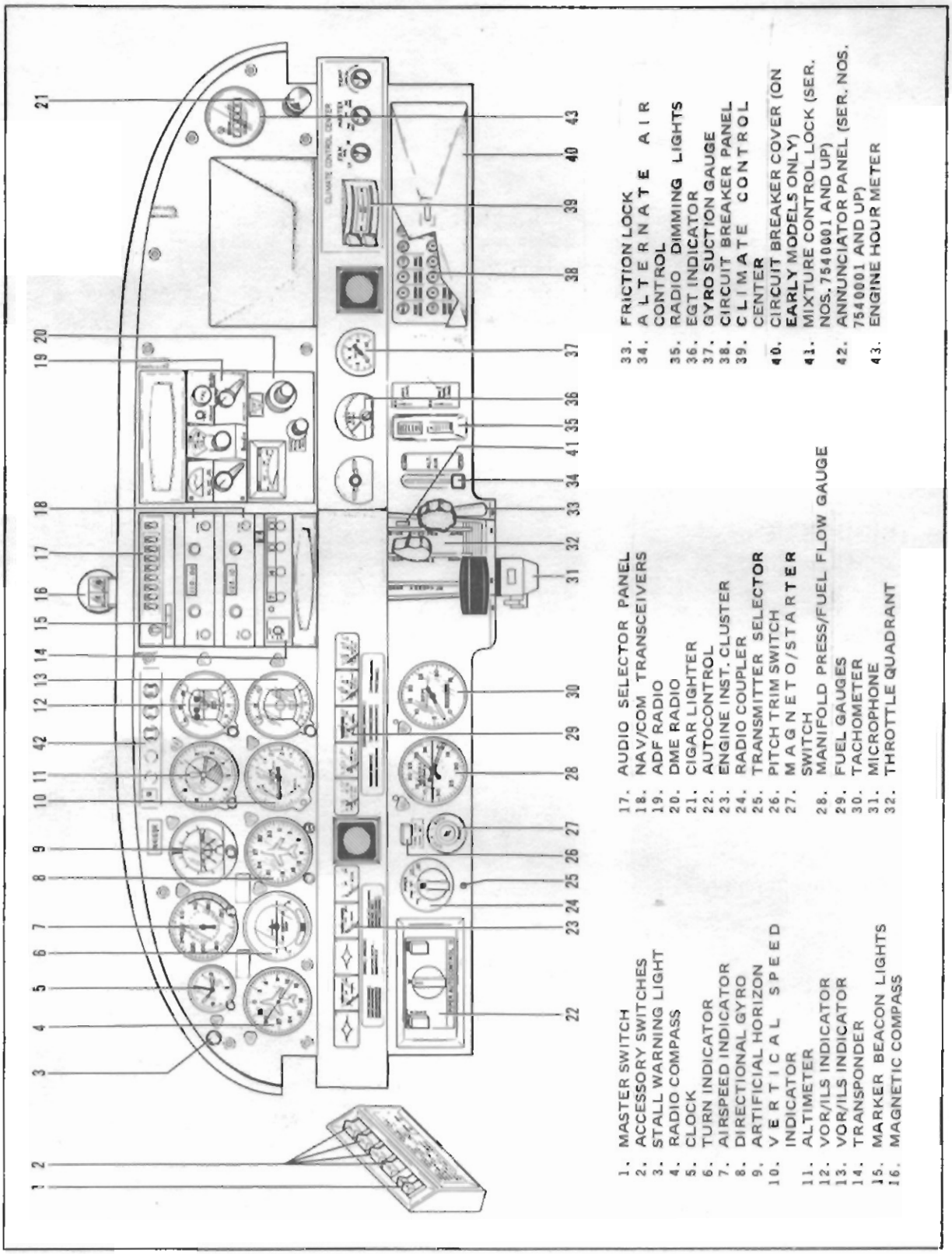
INSTRUMENT PANEL

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 and are located in the center of the left hand instrument panel. The vacuum gauge is located on the right hand instrument panel. The **turn indicator**, on the left side, is electrically operated.

A natural separation of the flight group and the power group is achieved 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 section of the panel, and the circuit breakers are in the lower right behind a decorative door.

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 systems.

*Serial nos. 7540001 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 preflight, check to make sure the pitot cover is removed.

HEATING AND VENTILATING SYSTEM

Heat for the cabin interior and the defroster system is drawn from a heater muff attached to the exhaust system. Controls for these systems are located on the lower right side of the instrument panel.

NOTE

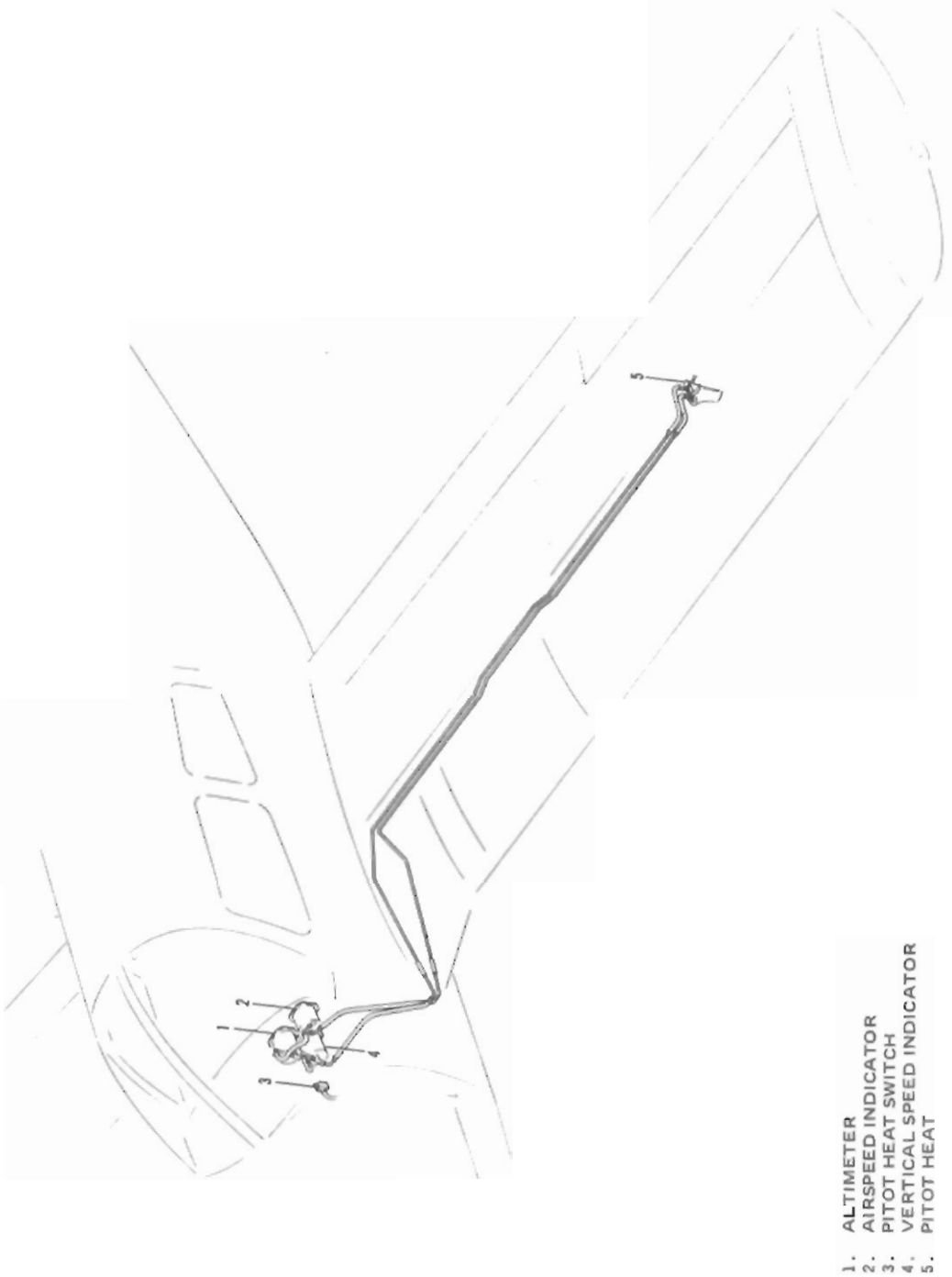
If unusual odors are detected, turn off the heat and inspect the system for leaks.

Fresh air **inlets** are located in the leading edge of each wing at the intersection of the tapered and straight 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. In airplanes without air conditioning, an optional blower may be added to the overhead vent system to aid in the circulation of cabin air.

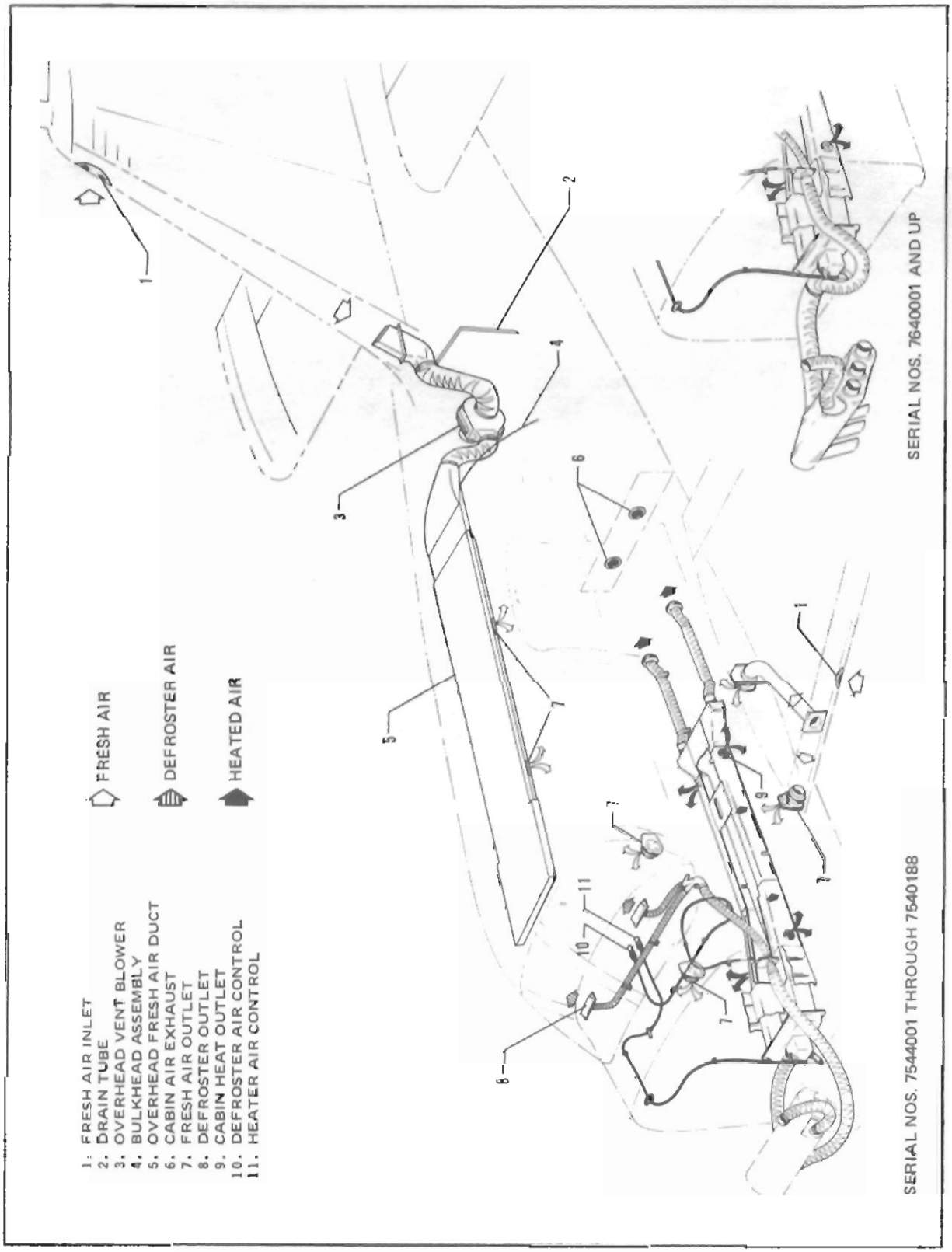
CABIN FEATURES

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 removed for additional 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.



Pitot-Static System



Heating and Ventilating System

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.

BAGGAGE AREA

The airplane has two separate baggage areas, each with a 100 pound capacity. An 8 cubic foot forward luggage compartment, located just aft of the fire wall, is accessible through a 16 x 22 inch door on the right side of the fuselage. A 22 cubic foot aft compartment is located behind the fifth and sixth seats and 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 attractive looking, economy size spray cans of touch-up paint are available from Piper Dealers.

AIR CONDITIONING*

The air conditioning system is a recirculating air system. The major components include an evaporator, a condenser, a compressor, a blower, switches and temperature controls.

The evaporator is located behind the rear baggage compartment. This cools the air used for the air conditioning system.

The condenser is mounted on a retractable scoop located on the bottom of the fuselage and to the rear of the baggage compartment area. The scoop extends when the air conditioner is ON and retracts to a flush position when the system is OFF.

The compressor is mounted on the forward right underside of the engine. It has an electric clutch which automatically engages or disengages the compressor to the belt drive system of the compressor.

*Optional equipment

An **optional electric blower** is mounted on the aft side of the rear cabin panel. Air from the baggage area is drawn through the evaporator by the blower and distributed through an overhead duct to individual outlets located adjacent to each occupant.

The switches and temperature control are located on the lower right side of the instrument panel in the **climate control** center panel. The **temperature control** regulates the temperature of the cabin. Turning the control clockwise increases cooling; counterclockwise decreases cooling.

The **fan speed switch** and the **air conditioning ON-OFF switch** are inboard of the temperature control. The fan can be operated independently of the air conditioning; however, the fan must be on for air conditioner operation. Turning either switch off will disengage the compressor clutch and retract the condenser door. Cooling air should be felt within one minute after the air conditioner is turned on.

NOTE

If the system is not operating in 5 minutes, turn the system OFF until the fault is corrected.

The **fan switch** allows operation of the fan with the air conditioner turned OFF to aid in cabin air circulation. "LOW," "MED" or "HIGH" can be selected to direct a flow of air through the air conditioner outlets in the overhead duct. These outlets can be adjusted or turned off individuallly.

The **condenser door light** is located to the right of the engine instrument cluster in front of the pilot. The door light illuminates when the door is open and is off when the door is closed.

A circuit breaker on the circuit breaker panel protects the air conditioning electrical system.

Whenever the throttle is in the full forward position, it actuates a micro switch which disengages the compressor and retracts the scoop. This allows maximum power and maximum rate of climb. The fan continues to operate and the air will remain cool for about one minute. When the throttle is retarded approximately 1/4 inch, the clutch will engage, the scoop will extend, and the system will again supply cool, dry air.

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

AIRPLANE FLIGHT MANUAL

FOR

CHEROKEE SIX 300

APPLICABLE TO SERIAL NUMBERS 32-7440001 THROUGH 32-7640130

WARNING

EXTREME CARE MUST BE EXERCISED TO LIMIT THE USE OF THIS MANUAL TO APPLICABLE AIRCRAFT. THIS MANUAL REVISED AS INDICATED BELOW OR SUBSEQUENTLY REVISED IS VALID FOR USE WITH THE AIRPLANE IDENTIFIED BELOW WHEN APPROVED BY PIPER AIRCRAFT CORPORATION. SUBSEQUENT REVISIONS SUPPLIED BY PIPER AIRCRAFT CORPORATION MUST BE PROPERLY INSERTED.

MODEL PA-32-300

AIRCRAFT SERIAL NO. 32-7640041 REGISTRATION NO. N7039C

AIRPLANE FLIGHT MANUAL, REPORT NUMBER VB-562 REVISION 7

PIPER AIRCRAFT CORPORATION
APPROVAL SIGNATURE AND STAMP Werner K. Hartlieb by SSA

Werner K. Hartlieb

NOTE

THIS MANUAL MUST BE KEPT IN THE AIRPLANE AT ALL TIMES

FAA APPROVED BY: H.W. Barnhouse

H. W. BARNHOUSE
PIPER AIRCRAFT CORPORATION
D. O. A. NO. SO-1
VERO BEACH, FLORIDA

DATE OF APPROVAL: MAY 14, 1973

APPROVAL BASIS: CAR 3

DUPLICATE

REPORT: VB-562
MODEL: PA-32-300

TABLE OF CONTENTS

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AIRPLANE FLIGHT MANUAL LOG OF REVISIONS

Revision	Revised Pages	Description of Revision	FAA Approved Date
1	Title	Added PAC Approval Form. (NOTE: AIRCRAFT DELIVERED WITH MANUALS PRIOR TO THIS REVISION DO NOT REQUIRE THIS REVISION.)	D. H. Trompler June 7, 1974
2	3-i	Added Item F. (Installation of Piper Auto-Control IIIB) to Supplements.	
	3-11	Added Item F. (Installation of Piper Auto-Control IIIB).	
	3-19, 3-20, 3-21, 3-22	Added pages (AutoControl IIIB Supplement).	D. H. Trompler June 20, 1974
3	3-i	Under Limitations - added item L. (Nose Wheel Fairing Removed); changed Section IV title from Supplements to Optional Equipment; under Optional Equipment - deleted items B. and C.; revised remaining items; added new item E. (Piper AltiMatic IIIC Installation).	
	3-5	Added item L. (Nose Wheel Fairing Removed), remove Airplane Flight Manual Supplement Report No. VB-637 if attached to the Airplane Flight Manual.	
	3-11	Changed Section IV title from Supplements to Optional Equipment; revised Note; deleted items B. and C.; revised remaining items; added new item E. (Piper AltiMatic IIIC Installation).	
	3-14	Deleted item B. AutoFlite Installation.	
	3-15	Deleted item C. AutoControl III Installation.	
	3-16	Revised item letter (D. to B.).	
	3-17	Revised item letter (E. to C.).	Ward Evans Nov. 6, 1974
	3-19	Revised item letter; revised item title; added AutoControl III to title.	
	3-22	Deleted IIIB designation from items c. (1) and (2).	
	3-23, 3-24, 3-25, 3-26 3-27, 3-28, 3-29, 3-30	Added pages (AltiMatic IIIC), remove Airplane Flight Manual Supplement Report No. VB-667 if attached to the Airplane Flight Manual.	

AIRPLANE FLIGHT MANUAL LOG OF REVISIONS (cont)

Revision	Revised Pages	Description of Revision	FAA Approved Date
4	3-1 3-5	Added serial numbers for optional propeller. Added M. (Noise Level).	Ward Evans July 17, 1975
5	3-1	Added serial number effectivity for IO-540-KIA5 engine; added IO-540-KIG5 engine.	Ward Evans Feb. 2, 1976
6	3-1, 3-5	Deleted seventh seat reference.	Ward Evans Dec. 15, 1978
7	Title	Added Applicable Serial Numbers. (NOTE: AIRCRAFT DELIVERED WITH MANUALS PRIOR TO THIS REVISION DO NOT REQUIRE THIS REVISION.)	Ward Evans March 23, 1979
8	3-22	Revised item c. (1)	D.H.Trompler May 3, 1990

SECTION I

LIMITATIONS

The following limitations must be observed in the operation of this airplane:

A. ENGINE

Lycoming IO-540-K1A5 (Serial nos. 7440001 through 7640065 and 7640067 through 7640071)
Lycoming IO-540-K1G5 (Serial nos. 7640066, 7640072 and up)

ENGINE LIMITS
For all operations 2700 RPM, 300 HP

B. FUEL
100/130 minimum aviation grade fuel

C. PROPELLER
Hartzell HC-C2YK-1/8475D-4 or HC-C2YK-1( )/8475-4 or HC-C2YK-1( )F/F8475D-4
Low pitch stop 13.5° ± .2°, high pitch stop 34° ± 1°
Maximum diameter 80 inches, minimum diameter 78.5 inches

OPTIONAL PROPELLER (Ser. nos. 7440001 through 7540188 only)
Hartzell HC-C2YK-1( )/8475R-0 or HC-C2YK-1( )F/F8475R-0
Low pitch stop 12.4° ± .2°, high pitch stop 29° ± 1°
Maximum diameter 84 inches, minimum diameter 82.3 inches

D. POWER INSTRUMENTS

OIL TEMPERATURE	
Green Arc (Normal Operating Range)	75° F to 245° F
Red Line (Maximum)	245° F
OIL PRESSURE	
Green Arc (Normal Operating Range)	60 PSI to 90 PSI
Yellow Arc (Caution Range)	25 PSI to 60 PSI
Red Line (Minimum)	25 PSI
Red Line (Maximum)	90 PSI
FUEL PRESSURE	
Green Arc (Normal Operating Range)	18 PSI to 40 PSI
Red Line (Minimum)	18 PSI
Red Line (Maximum)	40 PSI
Yellow Arc (Idle Range)	12 PSI to 18 PSI
TACHOMETER	
Green Arc (Normal Operating Range)	500 to 2700 RPM
Red Line (Maximum Continuous Power)	2700 RPM

E. AIRSPEED LIMITATIONS AND AIRSPEED INSTRUMENT MARKINGS (Calibrated Airspeed)

NEVER EXCEED	212 MPH
MAXIMUM STRUCTURAL CRUISE	168 MPH
MANEUVERING	149 MPH
FLAPS EXTENDED	125 MPH
MAXIMUM POSITIVE LOAD FACTOR	3.8
MAXIMUM NEGATIVE LOAD FACTOR	No inverted maneuvers approved

AIRSPEED INSTRUMENT MARKINGS

Red Radial Line (Never Exceed)	212 MPH (184 KTS)
Yellow Arc (Caution Range) (Smooth Air Only)	168 MPH to 212 MPH (146 KTS to 184 KTS)
Green Arc (Normal Operating Range)	71 MPH to 168 MPH (62 KTS to 146 KTS)
White Arc (Flap Down)	63 MPH to 125 MPH (55 KTS to 109 KTS)

F. MAXIMUM WEIGHT 3400 LBS

G. C. G. RANGE

The datum used is 78.4 inches ahead of the wing leading edge at the intersection of the straight and tapered section.

Weight (Pounds)	Forward Limit (In. Aft of Datum)	Rearward Limit (In. Aft of Datum)
3400	91.4	95.5
3300	89.0	96.2
2900	80.0	96.2
2400	76.0	96.2

Straight line variation between points given.

NOTE

It is the responsibility of the airplane owner and the pilot to insure that the airplane is properly loaded. See Weight and Balance Section for proper loading instructions.

H. MANEUVERS

No acrobatic maneuvers including spins approved.

I. PLACARDS

In full view of the pilot:

"THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS AND MANUALS. NO ACROBATIC MANEUVERS, INCLUDING SPINS, APPROVED."

"THIS AIRCRAFT APPROVED FOR NIGHT IFR NON-ICING FLIGHT WHEN EQUIPPED IN ACCORDANCE WITH FAR 91 OR FAR 135."

In full view of the pilot, the following takeoff and landing check lists will be installed:

TAKEOFF CHECK LIST

Fuel on proper tank	Mixture set	Flaps 10° (1st notch)
Electric fuel pump on	Propeller set	Trim tab - set
Engine gauges checked	Fasten belts/harness	Controls free
Alternate air closed		Doors latched
Seat backs erect		Air Conditioner - Off

LANDING CHECK LIST

Seat backs erect	Fuel on proper tank	Mixture rich
Fasten belts/harness	Electric fuel pump on	Propeller set
Air Conditioner - Off		Flaps down (125 mph)

The "AIR CONDITIONER OFF" item in the above takeoff and landing check lists is mandatory for air conditioned aircraft only.

On the instrument panel in full view of the pilot:

"ROUGH AIR OR MANEUVERING SPEED 149 MPH."

On the instrument panel in full view of the pilot:

"DEMONSTRATED CROSSWIND COMPONENT 20 MPH."

In full view of the pilot: (For operation with the rear door removed)

"FOR FLIGHT WITH THE DOOR REMOVED, SEE THE LIMITATIONS AND PROCEDURES SECTIONS OF THE AIRPLANE FLIGHT MANUAL."

On the instrument panel in full view of the pilot when the AutoFlite is installed:

"FOR HEADING CHANGES: PRESS DISENGAGE SWITCH ON CONTROL WHEEL. CHANGE HEADING. RELEASE DISENGAGE SWITCH."

On the fuel selector valve cover:

"ALL WEIGHT IN EXCESS OF 3112 POUNDS MUST BE FUEL WEIGHT ONLY. FILL TIP TANKS FIRST. USE MAIN TANKS FIRST."

On the instrument panel in full view of the pilot when the AutoFlite II is installed:

"TURN AUTOFLITE ON. ADJUST TRIM KNOB FOR MINIMUM HEADING CHANGE: FOR HEADING CHANGE, PRESS DISENGAGE SWITCH ON CONTROL WHEEL, CHANGE HEADING, RELEASE SWITCH. ROTATE TURN KNOB FOR TURN COMMANDS. PUSH TURN KNOB IN TO ENGAGE TRACKER. PUSH TRIM KNOB IN FOR HI SENSITIVITY. LIMITATIONS AUTOFLITE OFF FOR TAKEOFF AND LANDING."

On the instrument panel in full view of the pilot when the supplementary white strobe lights are installed:

"WARNING - TURN OFF STROBE LIGHTS WHEN TAXIING IN VICINITY OF OTHER AIRCRAFT, OR DURING FLIGHT THROUGH CLOUD, FOG OR HAZE."

In full view of the pilot, in the area of the air conditioner controls when the air conditioner is installed:

"WARNING - AIR CONDITIONER MUST BE OFF TO INSURE NORMAL TAKEOFF CLIMB PERFORMANCE."

J. REAR CABIN DOOR OR REAR CABIN DOOR AND CARGO DOOR REMOVED

The following limitations must be observed in the operation of this airplane with the rear cabin door or rear cabin door and cargo door removed:

1. The airplane may be flown with the rear cabin door or rear cabin door and cargo door removed. Flight with the front door removed is not approved.
2. Maximum speed - 165 mph.
3. No smoking.
4. All loose articles must be tied down and stowed.
5. Jumper's static lines must be kept free of pilot's controls and control surfaces.
6. Operation approved VFR flight conditions only.

K. LOADING LIMITATIONS

The following limitations must be observed in the operation of this airplane.

1. Fill tip tanks first; use main tanks first.
2. This airplane must not be operated at gross weights in excess of 3112 pounds unless the weight over 3112 pounds is fuel weight only.
3. Remove fuel from the main tanks first when required for proper weight and balance.

L. NOSE WHEEL FAIRING REMOVED

When the nose wheel fairing is removed, two nose wheel centering springs (part number 67168) must be installed.

M. NOISE LEVEL (Ser. nos. 7640001 and up)

No noise reduction procedures are required for this airplane. The noise level achieved during type certification was 79.27 d B (A). No determination has been made by the Federal Aviation Administration that the noise levels of this airplane are or should be acceptable or unacceptable for operation at, into or out of any airport.

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SECTION II

PROCEDURES

1. The stall warning system is inoperative with the master switch off.

2. Electric fuel pump must be on for both landing and takeoff.

3. Except as noted above, all operating procedures for this airplane are normal.

4. When operating with the rear cabin door removed, it is recommended that all occupants wear parachutes.

5. Air conditioned Models only: Warning - the air conditioner must be off to insure normal takeoff performance.

6. Fuel System Preflight Procedure:

The fuel system should be drained daily prior to first flight and after refueling to avoid the accumulation of water or sediment. Each fuel tank is equipped with an individual quick drain located at the lower inboard rear corner 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:

a. Drain each tank through its individual quick drain located at the lower inboard rear corner of the tank, making sure that enough fuel has been drained to insure that all water and sediment is removed.

b. Place a container under the fuel sump drain outlet, which is located under the fuselage.

c. Drain the fuel strainer by pressing down on the lever located on the right hand side of the cabin below the forward edge of the rear seat. The fuel selector must be positioned in the following sequence: off position, left tip, left main, right main, and right tip while draining the strainer to insure that the fuel lines between each tank outlet and fuel strainer are drained as well as the strainer. When the fuel tanks are full, it will take approximately 11 seconds to drain all the fuel in one of the lines between a tip tank and the fuel strainer and approximately six seconds to drain all the fuel in one of the lines from a main tank to the fuel strainer. When the fuel tanks are less than full, it will take a few seconds longer.

d. Examine the contents of the container placed under the fuel sump drain outlet for water and sediment and dispose of the contents.

CAUTION

When draining any amount of fuel, care should be taken to insure that no fire hazard exists before starting engine.

After using the under-seat quick drain, it should be checked from outside to make sure it has closed completely and is not leaking.

SECTION III

PERFORMANCE

All performance is given for a weight of 3400 pounds.

Loss of altitude during stalls can be as great as 350 feet, depending on configuration and power.

Stalling speed, in mph, (Calibrated Airspeed):

Flaps Up - 71
Flaps Down - 63

Flap deflection versus handle position is:

lst notch - 10 degrees
2nd notch - 25 degrees
3rd notch - 40 degrees

Air Conditioned Models Only:

When the full throttle position is not used or in the event of a malfunction which causes the compressor to operate and the condenser door to remain extended, a decrease in rate of climb of as much as 100 fpm can be expected at all altitudes.

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SECTION IV

OPTIONAL EQUIPMENT

NOTE

THE INFORMATION CONTAINED IN THIS SECTION APPLIES WHEN THE RELATED EQUIPMENT IS INSTALLED IN THE AIRCRAFT.

A. Electric Pitch Trim Installation

B. AutoFlite II Installation

C. Air Conditioner Installation

D. Piper AutoControl III and/or AutoControl IIIB Installation

E. Piper AltiMatic IIIC Installation

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A. ELECTRIC PITCH TRIM INSTALLATION

The following emergency information applies in case of electric pitch trim malfunction.

1. In case of malfunction, disengage electric pitch trim by operating push button trim switch on instrument panel.

2. In emergency, electric pitch trim may be overpowered using manual pitch trim.

3. In cruise configuration, malfunction results in 10° pitch change and 50 ft altitude variation.

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B. AUTOFLITE II INSTALLATION

1. LIMITATIONS
   a. AutoFlite off for takeoff and landing.
   b. AutoFlite use prohibited above 195 mph CAS.
   c. AutoFlite use prohibited in seaplane configuration.

2. PROCEDURES
   a. Normal Operation
      Refer to Manufacturer's Operation Manual.

   b. Emergency Operation
      (1) In case of malfunction, PRESS disconnect switch on pilot's control wheel.
      (2) Rocker switch on instrument panel - OFF.
      (3) Unit may be overpowered manually.
      (4) In cruise configuration malfunction, 3 seconds delay results in 35° bank and 50 ft altitude loss.
      (5) In approach configuration malfunction, 1 second delay results in 10° bank and 50 ft altitude loss.

C. AIR CONDITIONER INSTALLATION

Prior to takeoff, the air conditioner should be checked for proper operation as follows:

1. Check aircraft master switch on.

2. Turn the air conditioner control switch to "ON" and the fan switch to one of the operating positions - the "AIR COND DOOR OPEN" warning light will turn on, thereby indicating proper air conditioner condenser door actuation.

3. Turn the air conditioner control switch to OFF - the "AIR COND DOOR OPEN" warning light will go out, thereby indicating the air conditioner condenser door is in the up position.

4. If the "AIR COND DOOR OPEN" light does not respond as specified above, an air conditioner system or indicator bulb malfunction is indicated and further investigation should be conducted prior to flight.

The above operational check may be performed during flight if an in flight failure is suspected.

WARNING

The air conditioner must be off to insure normal takeoff performance.

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D. PIPER AUTOCONTROL III AND/OR AUTOCONTROL IIIB INSTALLATION

1. LIMITATIONS
   a. Autopilot OFF during takeoff and landing.
   b. Autopilot use prohibited above 180 MPH CAS.

2. PROCEDURES
   a. PREFLIGHT
      (1) Roll Section
         (a) Place Radio Coupler in "Heading" mode and place A/P ON/OFF switch in the "ON" position to engage roll section. Rotate roll command knob Left and Right and observe control wheel describes a corresponding Left and Right turn, then center knob.
         (b) Set proper D.G. Heading on D.G. and turn Heading Indice to aircraft heading. Engage "Heading" mode switch and rotate Heading Indice right and left. Aircraft control wheel should turn same direction as Indice. While D.G. indice is set for a left turn, grasp control wheel and override the servo to the right. Repeat in opposite direction for right turn.
         (c) If VOR signal available check Omni mode on Radio Coupler by swinging Omni needle left and right slowly. Observe that control wheel rotates in direction of needle movement.
         (d) Disengage by placing the A/P ON/OFF switch to the "OFF" position.

   b. IN-FLIGHT
      (1) Trim airplane (ball centered).
      (2) Check air pressure or vacuum to ascertain that the Directional Gyro and Attitude Gyro are receiving sufficient air.
      (3) Roll Section
         (a) To engage, center Roll Command Knob, place the A/P ON/OFF switch to the "ON" position. To turn rotate roll command knob in desired direction. (Maximum angle of bank should not exceed 30°.)
         (b) For heading mode, set Directional Gyro with Magnetic Compass. Push directional gyro HDG knob in, rotate to aircraft heading. Place the console HDG ON/OFF switch to the "ON" position. To select a new aircraft heading, push D.G. heading knob IN and rotate, in desired direction of turn, to the desired heading.

NOTE

In HDG mode the maximum bank angles are limited to approximately 20° and single command, heading changes should be limited to 150°. (HDG Indice not more than 150° from actual aircraft heading.)

(4) VOR

(a) To Intercept:

1. Using OMNI Bearing Selector, dial desired course, inbound or outbound.
2. Set identical heading on Course Selector D.G.
3. After aircraft has stabilized, position coupler mode selector knob to OMNI mode. As aircraft nears selected radial, interception and crosswind correction will be automatically accomplished without further switching.

NOTE

If aircraft position is less than 45° from selected radial, aircraft will intercept before station. If position is more than 45°, interception will occur after station passage. As the aircraft nears the OMNI station, (1/2 mile) the zone of confusion will direct an "S" turn in alternate directions as the OMNI indicator needle swings. This alternate banking limited to the standard D.G. bank angle, is an indication of station passage.

(b) To select new course:

1. To select a new course or radial, rotate the HDG indice to the desired HDG (match course).
2. Rotate OBS to the new course. Aircraft will automatically turn to the intercept heading for the new course.

(c) To change stations:

1. If same course is desired, merely tune receiver to new station frequency.
2. If different course is desired, position coupler mode selector to HDG mode. Dial course selector D.G. to new course. Dial OBS to new course and position coupler mode selector to OMNI mode.

(5) VOR Approach

Track inbound to station as described in VOR navigation section. After station passage:

(a) Dial outbound course on Course Selector D.G., then dial same course on OBS.

(b) After established on outbound radial, position coupler mode selector to HDG mode and select outbound procedure turn heading. After 40 seconds to 1 minute select a turn in the desired direction with the Course Selector D.G. to the inbound procedure turn heading.

(c) Set OBS to inbound course.

(d) When aircraft heading is 45° to the inbound course, dial Course Selector D.G. to inbound course and position coupler mode selector to OMNI mode.

NOTE

For precise tracking over OMNI station, without "S" turn, position coupler mode selector to HDG mode just prior to station passage. If holding pattern is desired, position coupler mode selector to HDG mode at station passage inbound and select outbound heading in direction of turn. After elapsed time, dial inbound course on Course Selector D.G. When aircraft heading is 45° to radial, position coupler mode selector to OMNI mode.

(6) LOC Approach Only
   (a) To intercept dial ILS outbound course on Course Selector D.G. When stabilized, position coupler mode selector to LOC REV mode.
   (b) After interception and when beyond outer marker, position coupler mode selector to HDG mode and dial outbound procedure turn heading. After one minute, dial inbound procedure turn heading in direction of turn.
   (c) When aircraft heading is 45° to ILS inbound course dial inbound course on Course Selector D.G. and position coupler mode selector to LOC NORM mode.
   (d) At the missed approach point (M.A.P.), or when missed approach is elected, position coupler mode selector to HDG mode and execute missed approach procedure.

(7) LOC Approach - Back Course (Reverse)
   (a) To intercept dial ILS Back Course outbound heading on Course Selector D.G. When stabilized, position coupler mode selector to LOC NORM mode.
   (b) After interception and when beyond fix, position coupler mode selector to HDG and dial outbound procedure turn heading. After one minute, dial inbound procedure turn heading in direction of turn.
   (c) When heading 45° to inbound course, dial inbound course on Course Selector D.G. and position coupler mode selector to LOC REV mode.
   (d) Approximately 1/2 mile from runway, position coupler mode selector to HDG mode to prevent "S" turn over ILS station near runway threshold.
   (e) Missed approach - same as Front Course. (See (6) d)

c. EMERGENCY OPERATION

(1) In an emergency the AutoControl can be disconnected by:

(a) Placing the A/P ON/OFF switch to the "OFF" position.

(b) Pulling the Autopilot circuit breaker (aircraft S/N 32-7640001 through 32-7640130).

(2) The AutoControl can be overpowered at either control wheel.

(3) An Autopilot runaway, with a 3 second delay in the initiation of recovery, while operating in a climb, cruise or descending flight could result in a 38° bank and 40 foot altitude loss.

(4) An Autopilot runaway, with a 1 second delay in the initiation of recovery, during an approach opertion, coupled or uncoupled, could result in a 8° bank and 10 foot altitude loss.

3. PERFORMANCE

No change.

E. PIPER ALTIMATIC IIIC INSTALLATION (Includes Roll, Pitch and Pitch Trim Sections)

1. LIMITATIONS
   a. The maximum speed for autopilot operation is 195 MPH CAS. (Autopilot Vmo)
   b. Autopilot "OFF" for takeoff and landing.
   c. Placard P/N 13A660 "Conduct Trim Check Prior to Flight (See AFM)" to be installed in clear view of pilot.
   d. During autopilot operation, the pilot must be in his seat with the safety belt fastened.

2. PROCEDURES
   a. PREFLIGHT
      (1) Roll Section
         (a) Place Radio Coupler in "Heading" mode and place Roll rocker switch in the "ON" position to engage roll section. Rotate Roll Command Knob left and right and observe that control wheel describes a corresponding left and right turn, then center Roll Command Knob.
         (b) Set proper D.G. Heading on D.G. and turn Heading Bug to aircraft heading. Engage HDG mode rocker switch and rotate Heading Bug right and left. Aircraft control wheel should turn same direction as Bug. Grasp control wheel and manually override servo, both directions.
         (c) Disengage Autopilot by depressing trim switch. Check Aileron operation is free and A/P is disconnected from controls.
      (2) Pitch Section
         (a) Engage "Roll" rocker switch.
         (b) Center pitch command disc and engage "Pitch" rocker switch.
         (c) Rotate pitch command disc full DOWN and full UP and check control wheel describes a corresponding fore and aft movement. Check to see that servo can be overridden by hand at control wheel.

NOTE

Autopilot might not be able to raise elevators on ground without assistance from pilot.

(d) Hold control wheel and disengage Autopilot by pressing Master A/P Disconnect/Trim Interrupt switch button. Check Roll and Pitch controls to assure autopilot has disconnected.

(3) Trim Section (General)

This preflight check procedure is designed to uncover hidden failures that might otherwise go undetected. Proper operation of the electric elevator trim system is predicated on conducting the following preflight check before each flight. If the trim system fails any portion of the procedure, place the panel mounted Trim Master Switch in the OFF position until the system is repaired. Substitution of any trim system component for another model is not authorized. For emergency interrupt information, refer to Section 2.d. of this supplement.

The Command Electric Trim Switch on the left hand portion of the pilot's control wheel has two functions:

(a) When the top bar (A/P off) is pressed, it disconnects the Autopilot.

(b) When the top bar is pressed and the rocker is moved forward, nose down trim will occur - when moved aft, nose up trim will occur.

PREFLIGHT: Command Trim - Before Each Flight

(a) Check trim circuit breaker - IN.

(b) Trim Master Switch - ON.

(c) A/P OFF - Check normal trim operation - UP. Grasp trim wheel and check override capability. Check nose DOWN operation. Recheck override.

(d) Press center bar only - trim should not operate.

(e) Without pressing center bar, move rocker fore and aft - trim should not operate.

AUTOTRIM - Before Each Flight

(a) A/P ON - (Roll and Pitch Sections) Check automatic operation by activating A/P Pitch Command Disc UP, then DN. Observe trim operation follows Pitch Command Direction.

NOTE

In Autopilot Mode, there will be approximately a 3 second delay between operation of Pitch Command and operation of trim.

(b) Press center bar (A/P OFF) - release - check autopilot disengagement.

(c) Rotate trim wheel to check manual trim operation. Reset to takeoff position prior to takeoff.

b. IN-FLIGHT

(1) Trim airplane (ball centered).

(2) Check pressure gauge to ascertain that the Directional Gyro and Attitude Gyro are receiving sufficient air.

(3) Roll Section

(a) To engage, center Roll Command Knob, push Roll rocker switch to the "ON" position. To turn, rotate Roll Command Knob in desired direction. (Maximum angle of bank should not exceed 30°.)

(b) For heading mode, set Directional Gyro with Magnetic Compass. Push directional gyro HDG knob in, rotate to select desired heading. Push HDG rocker switch to the "ON" position. (Maximum angle of bank will be 20° with heading lock engaged.)

(4) Pitch Section - (Roll Section must be engaged prior to engaging Pitch Section.)

(a) Center pitch trim indicator with the Pitch Command Disc.

(b) Engage pitch rocker switch. To change attitude, rotate Pitch Command Disc in the desired direction.

(5) Altitude Hold

Upon reaching desired or cruising altitude, engage ALT Hold Mode rocker switch. As long as ALT Hold Mode rocker switch is engaged, aircraft will maintain selected altitude. For maximum passenger comfort, rate of climb or descent should be reduced to approximately 500 FPM prior to Altitude Hold engagement. For Altitude Holding below 100 MPH lower flaps to takeoff position.

NOTE

Prior to disengaging Altitude Hold Mode, rotate Pitch Command Disc to center.

(6) Radio Coupling VOR/ILS with H.S.I. (Horizontal Situation Indicator) Type Instrument Display. (Optional)

VOR Navigation

(a) Tune and identify VOR Station. Select desired course by rotating CRS knob of H.S.I.

(b) Select OMNI mode on Radio Coupler.

(c) Engage HDG mode on autopilot console to engage coupler. Aircraft will turn to a 45° intercept angle to intercept the selected VOR course. Intercept angle magnitude depends on radio needle off-course magnitude, 100% needle deflection will result in 45° intercept angle, diminishing as the needle off-set diminishes.

(d) NAV mode - NAV mode provides reduced VOR sensitivity for tracking weak, or noisey, VOR signals. NAV mode should be selected after the aircraft is established on course.

ILS/LOC Front Course

(a) Set inbound, front, localizer course on H.S.I.

(b) Select LOC/NORM mode on Radio Coupler to intercept and track inbound on the localizer. Select LOC/REV to intercept and track the localizer course outbound to the procedure turn area.

(c) Engage HDG mode on autopilot console to engage coupler.

ILS/Back Course

(a) Set inbound, front, localizer course on H.S.I.

(b) Select LOC/REV on Radio Coupler to intercept and track inbound on the back localizer course. Select LOC/NORM to intercept and track outbound on the back course to the procedure turn area.

(c) Engage HDG mode on autopilot console to engage coupler.

(7) Radio Coupling VOR/ILS with Standard Directional Gyro

NOTE

Radio Coupler operation in conjunction with a standard Directional Gyro and VOR/LOC display differs from operation with an integrated display (H.S.I.) only in one respect. The Heading Bug is used as the radio course datum and therefore must be set to match the desired VOR/ILS course as selected on the O.B.S.

(a) For VOR Intercepts and Tracking: Select the desired VOR course and set the Heading Bug to the same heading. Select OMNI mode on the coupler and engage the HDG mode on the autopilot console.

(b) For ILS Front Course Intercepts and Tracking: Tune the localizer frequency and place the Heading Bug on the inbound, front course heading. Select LOC/NORM mode on the coupler and engage HDG mode on the autopilot console.

(c) For LOC Back Course Intercepts and Tracking: Tune the localizer frequency and place the Heading Bug on the inbound course heading to the airport. Select LOC/REV mode on the coupler and engage HDG mode on the autopilot console.

COUPLED APPROACH OPERATIONS

(1) VOR or LOC

(a) After arrival at the VOR Station, track outbound to the procedure turn area as described in Section b.(6) or (7), as appropriate, and slow to 110-120 MPH CAS and lower flaps to takeoff position (10° extension).

(b) Use HDG mode and Pitch or ALT Hold modes as appropriate during procedure turn.

(c) At the F.A.F. inbound, return to pitch mode for control of descent and lower landing gear.

(d) At the M.D.A. engage ALT Hold mode and add power for level flight. Monitor Altimeter to assure accurate altitude control is being provided by the autopilot.

(e) Go-Around. For missed approach select desired pitch attitude with Pitch Command Disc and disengage ALT Hold mode. This will initiate the pitch up attitude change. Immediately add takeoff power and monitor Altimeter and rate of climb for positive climb indication. After climb is established, retract flaps. Adjust attitude as necessary for desired airspeed and engage HDG mode for turn from the VOR final approach course.

(2) ILS - Front Course Approach with Glide Slope Capture (Optional)

(a) Track inbound to L.O.M. as described in Section b.(6) or (7) with ALT Hold mode engaged.

(b) Inbound to L.O.M. Slow to 110-120 MPH IAS and lower flaps to takeoff position (10° extension).

(c) Automatic Glide Slope capture will occur at Glide Slope Intercept if the following conditions are met:

1. Radio Coupler in LOC/NORM Mode.
2. Altitude Hold Mode engaged (ALT rocker switch on console).
3. Under Glide Slope for more than 20 seconds.
4. Localizer radio frequency selected on NAV receiver.

(d) At Glide Slope Intercept immediately reduce power to maintain 110-120 MPH CAS on final approach. Glide Slope capture is indicated by lighting of the green Glide Slope engage Annunciator Lamp and by a slight pitch down of the aircraft.

(e) Monitor localizer and Glide Slope raw data through out approach. Adjust power as necessary to maintain correct final approach airspeed. All power changes should be of small magnitude and smoothly applied for best tracking performance. Do not change aircraft configuration during approach while autopilot is engaged.

(f) Conduct missed approach maneuver as described in Section c.(1)(e).

NOTE

Glide Slope Coupler will not automatically decouple from Glide Slope. Decoupling may be accomplished by any of the following means:

(1) Disengage ALT Hold mode.
(2) Switch Radio Coupler to HDG mode.
(3) Disengage Autopilot.

d. EMERGENCY OPERATIONS

This aircraft is equipped with a Master Disconnect/Interrupt Switch on the pilot's control wheel. When the switch button is depressed it will disconnect the autopilot. When depressed and held it will interrupt all Electric Elevator Trim Operations. Trim operation will be restored when the switch is released. If an autopilot or trim emergency is encountered, do not attempt to determine which system is at fault. Immediately depress and hold the Master Disconnect/Interrupt button. Turn off Autopilot and Trim Master Switch and retrim aircraft, then release the interrupt switch.

NOTE

During examination of this supplement, the pilot is advised to locate and identify the Autopilot controls, the Trim Master Switch and the Circuit Breakers for both systems.

(1) In the event of an Autopilot malfunction the Autopilot can be:
   (a) Overpowered at either control wheel.

CAUTION

Do not overpower Autopilot pitch axis for periods longer than 3 seconds because the Autotrim System will operate in a direction to oppose the pilot and will, thereby, cause an increase in the pitch overpower forces.

   (b) Disconnected by depressing the Master Disc/Inter Switch.
   (c) Disconnected by depressing the Trim Switch "A/P OFF" bar.
   (d) Disconnected by pushing the Roll rocker switch "OFF."

(2) In the event of a Trim malfunction:
   (a) Depress and hold the Master Trim Interrupt Switch.
   (b) Trim Master Switch - OFF. Retrim aircraft as necessary using manual trim system.
   (c) Release Master Trim Interrupt Switch - be alert for possible trim action.
   (d) Trim Circuit Breaker - Pull. Do not operate trim until problem is corrected.

(3) If a trim runaway occurs with the Autopilot operating, the above procedures will disconnect the Autopilot which will immediately result in higher control wheel forces. Be prepared to manually retrim, as necessary, to eliminate undesirable forces.

(4) Altitude Loss During Malfunction:
   (a) An Autopilot malfunction during climb, cruise or descent with a 3 second delay in recovery initiation could result in as much as 35° of bank and a 400 foot altitude loss.
   (b) An Autopilot malfunction during an approach with a 1 second delay in recovery initiation could result in as much as 20° of bank and a 180 foot altitude loss. Maximum altitude loss measured in approach configuration and operating either coupled or uncoupled.

3. PERFORMANCE

No change.

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