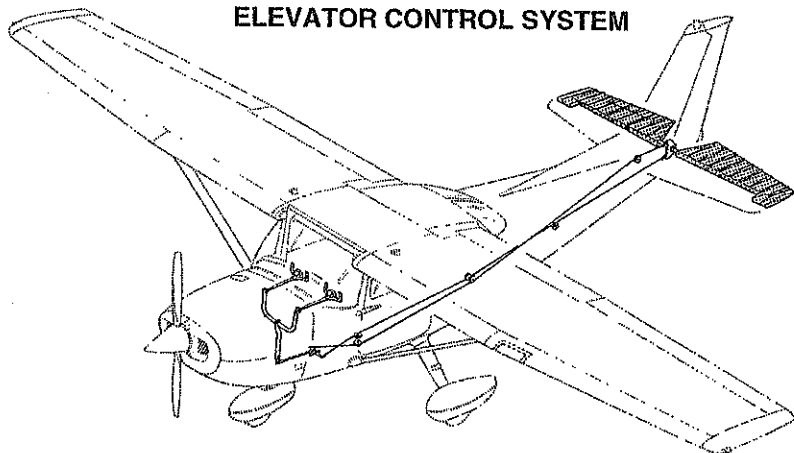
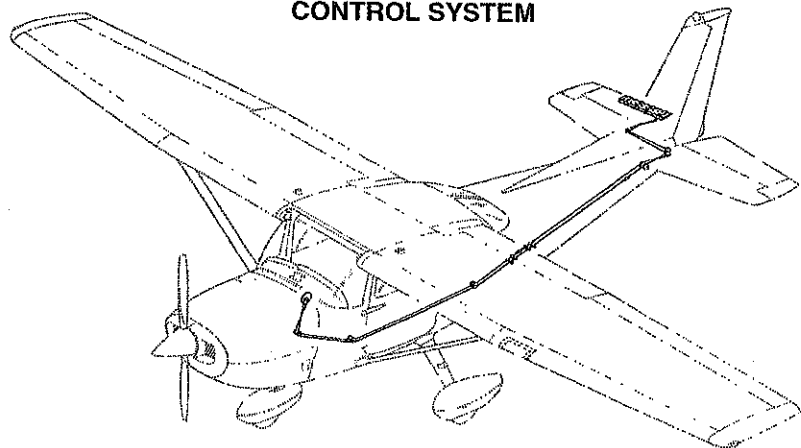


ELEVATOR CONTROL SYSTEM



ELEVATOR TRIM CONTROL SYSTEM



0585X1018

Figure 7-1. Flight Control and Trim Systems (Sheet 2 of 2)

INSTRUMENT PANEL

The instrument panel (Refer to Figure 7-2) is of all-metal construction, and is designed in segments to allow related groups of instruments, switches and controls to be removed without removing the entire panel. For specific details concerning the instruments, switches, circuit breakers, and controls on the instrument panel, refer to related topics in this section.

PILOT SIDE PANEL LAYOUT

Flight instruments are contained in a single panel located in front of the pilot. These instruments are designed around the basic "T" configuration. The gyros are located immediately in front of the pilot, and arranged vertically over the control column. The airspeed indicator and altimeter are located to the left and right of the gyros, respectively. The remainder of the flight instruments are clustered around the basic "T". A multi-function annunciator is located above the altimeter and provides caution and warning messages for fuel quantity, oil pressure, low vacuum and low voltage situations.

To the right of the flight instruments is a sub panel which contains engine tachometer and various navigational heading instruments. To the left of the flight instruments is a sub panel which contains a fuel quantity indicator, an oil temperature/oil pressure indicator, a vacuum gauge/ammeter, an EGT/fuel flow indicator, a digital clock /O.A.T. indicator and the avionics circuit breaker panel.

Below the engine and flight instruments are the circuit breakers and switches used throughout the airplane. Master, avionics master and ignition switches are also located in this area of the panel.

CENTER PANEL LAYOUT

The center panel contains various avionics equipment arranged in a vertical rack. This arrangement allows each component to be removed without having to access the backside of the panel. Below the panel are the throttle, mixture, alternate static air and lighting controls.

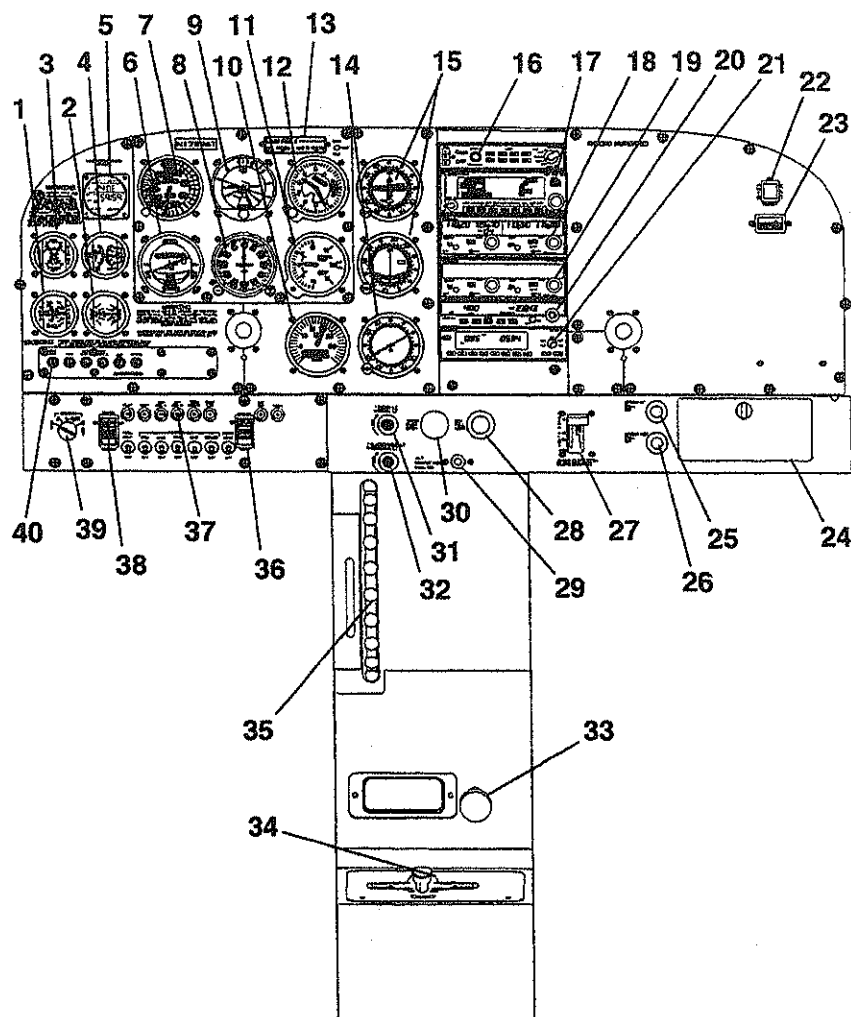


Figure 7-2. Instrument Panel (Sheet 1 of 2)

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- | | |
|---|--|
| 1. Oil Temperature and Oil Pressure Indicator | 21. Transponder |
| 2. Vacuum Gauge/Ammeter | 22. ELT Remote Test Button |
| 3. Fuel Quantity Indicators | 23. Hour Meter |
| 4. EGT/Fuel Flow Indicator | 24. Glove Box |
| 5. Digital Clock / O.A.T. Indicator | 25. Cabin Heat Control |
| 6. Turn Coordinator | 26. Cabin Air Control |
| 7. Airspeed Indicator | 27. Flap Switch and Position Indicator |
| 8. Directional Indicator | 28. Mixture Control |
| 9. Attitude Indicator | 29. Alternate Static Air Control |
| 10. Tachometer | 30. Throttle Control |
| 11. Vertical Speed Indicator | 31. Radio and Panel Dimming Control |
| 12. Altimeter | 32. Glareshield and Pedestal Dimming Control |
| 13. Annunciator Panel | 33. Fuel Shutoff Valve Control |
| 14. ADF Bearing Indicator | 34. Fuel Selector |
| 15. Course Deviation and Glide Slope Indicators | 35. Elevator Trim Control and Position Indicator |
| 16. Audio Control Panel | 36. Avionics Master Switch |
| 17. GPS Receiver | 37. Circuit Breakers and Switch/Breakers |
| 18. Nav/Com Radio #1 | 38. Master Switch |
| 19. Nav/Com Radio #2 | 39. Ignition Switch |
| 20. ADF Receiver | 40. Avionics Circuit Breaker Panel |

Figure 7-2. Instrument Panel (Sheet 2 of 2)

AIRSPEED INDICATOR

The airspeed indicator is calibrated in knots. It incorporates a true airspeed window which allows true airspeed to be read off the face of the dial. In addition, the indicator incorporates a window at the twelve o'clock position which displays pressure altitude overlaid with a temperature scale.

Limitation and range markings (in KIAS) include the white arc (40 to 85 knots), green arc (48 to 129 knots), yellow arc (129 to 163 knots), and a red line (163 knots).

To find true airspeed, first determine pressure altitude and outside air temperature. Using this data, rotate the lower left knob until pressure altitude aligns with outside air temperature in the twelve o'clock window. True airspeed (corrected for pressure and temperature) can now be read in the lower window.

VERTICAL SPEED INDICATOR

The vertical speed indicator depicts airplane rate of climb or descent in feet per minute. The pointer is actuated by atmospheric pressure changes resulting from changes of altitude as supplied by the static source.

ALTIMETER

Airplane altitude is depicted by a barometric type altimeter. A knob near the lower left portion of the indicator provides adjustment of the instrument's barometric scale to the current altimeter setting.

VACUUM SYSTEM AND INSTRUMENTS

The vacuum system (Refer to Figure 7-9) provides vacuum necessary to operate the attitude indicator and directional indicator. The system consists of two engine-driven vacuum pumps, two pressure switches for measuring vacuum available through each pump, a vacuum relief valve, a vacuum system air filter, vacuum operated instruments, a vacuum gauge, low vacuum warning on the annunciator, and a manifold with check valves to allow for normal vacuum system operation if one of the vacuum pumps should fail.

ATTITUDE INDICATOR

The attitude indicator is a vacuum air-driven gyro that gives a visual indication of flight attitude. Bank attitude is presented by a pointer at the top of the indicator relative to the bank scale which has index marks at 10°, 20°, 30°, 60°, and 90° either side of the center mark. Pitch and roll attitudes are presented by a miniature airplane superimposed over a symbolic horizon area divided into two sections by a white horizon bar. The upper "blue sky" area and the lower "ground" area have pitch reference lines useful for pitch attitude control. A knob at the bottom of the instrument is provided for in-flight adjustment of the symbolic airplane to the horizon bar for a more accurate flight attitude indication.

DIRECTIONAL INDICATOR

A directional indicator is a vacuum air-driven gyro that displays airplane heading on a compass card in relation to a fixed simulated airplane image and index. The indicator will precess slightly over a period of time. Therefore, the compass card should be set with the magnetic compass just prior to takeoff, and readjusted as required throughout the flight. A knob on the lower left edge of the instrument is used to adjust the compass card to correct for precession. A knob on the lower right edge of the instrument is used to move the heading bug.

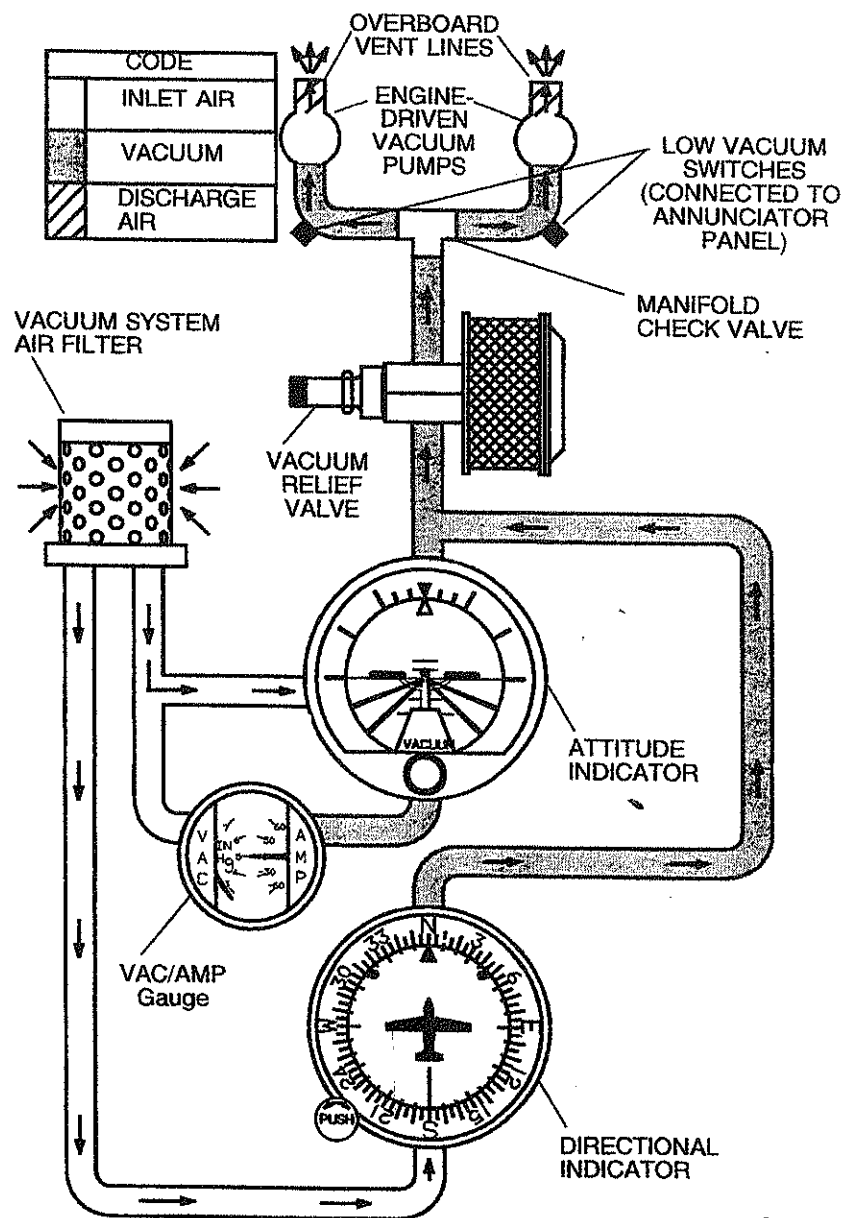


Figure 7-9. Vacuum System

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VACUUM GAUGE

The vacuum gauge is part of the vacuum gauge/ammeter, located on the lower left corner of the instrument panel. It is calibrated in inches of mercury and indicates vacuum air available for operation of the attitude and directional indicators. The desired suction range is 4.5 to 5.5 inches of mercury. Normally, a vacuum reading out of this range may indicate a system malfunction or improper adjustment, and in this case, the indicators should not be considered reliable. However, due to lower atmospheric pressures at higher altitudes, the vacuum gauge may indicate as low as 4.0 in. Hg. at 20,000 feet and still be adequate for normal system operation.

LOW VACUUM ANNUNCIATION

Each engine-driven vacuum pump is plumbed to a common manifold, located forward of the firewall. From the tee, a single line runs into the cabin to operate the various vacuum system instruments. This tee contains check valves to prevent back flow into a pump if it fails. Transducers are located just upstream of the tee and measure vacuum output of each pump.

If output of the left pump falls below 3.0 in. Hg., the amber L VAC message will flash on the annunciator panel for approximately 10 seconds before turning steady on. If output of the right pump falls below 3.0 in. Hg., the amber VAC R message will flash on the annunciator panel for approximately 10 seconds before turning steady on. If output of both pumps falls below 3.0 in. Hg., the amber L VAC R message will flash on the annunciator panel for approximately 10 seconds before turning steady on.