CHAPTER 95

INSTRUMENT SYSTEM

Section	Title	Page
95-00	Description	95.1
95-10	Console Assemblies	95.2
95-11	Upper Consoles	95.2
95-12	Lower Consoles	95.3
95-20	Instrument Markings	95.3
95-30	Pitot-Static System	95.11
95-40	Instruments, Engine Gauges, and Indicating Equipment	95.17
95-41	Vertical Speed Indicator	95.17
95-42	Airspeed Indicator	95.19
95-43	Engine (N_2) and Rotor Dual Tachometer	95.20
95-44	Altimeter	95.23
95-45	Torquemeter	95.24
95-46	Magnetic Compass	95.25
95-47	N_1 Tachometer	95.26
95-48	Measured Gas (Turbine) Temperature (MGT) Gage	95.27
95-49	Engine Oil Pressure Gage	95.28
95-50	Engine Oil Temperature Gage	95.28
95-51	Fuel Quantity Gage	95.29
95-52	Clock	95.30
95-53	Ammeter	95.31
95-54	Outside Air Temperature (OAT) Gage/Voltmeter	95.32
95-55	Hourmeters	95.33
95-60	Electronic Flight Displays	95.34
95-61	Aspen EFD500H & EFD1000H Display(s) Installation	95.34
95-62	Garmin Display Unit (GDU) 620	95.34
95-63	Garmin Display Unit (GDU) 700L TXi or 1060 TXi	95.34

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CHAPTER 95

INSTRUMENT SYSTEM

95-00 Description

Standard primary instruments include an airspeed indicator, engine (N_2) and rotor dual tachometer, altimeter, torquemeter, and magnetic compass. Engine gages include an N_1 tachometer, measured gas (turbine) temperature, oil pressure, oil temperature, and fuel quantity. Also standard are a clock, an ammeter, a digital outside air temperature gage/voltmeter, and an hourmeter. An additional hourmeter is located outboard of the pilot's seat. Both hourmeters require main gearbox oil pressure to activate. The outboard hourmeter is collective activated and may be used to determine time in service.

For instrument panels with electronic flight displays, a P/N D327 light filter may be used to reduce reflections in the windshield at night. The light filter is installed by clipping it to the front of the display. Filter use is at pilot discretion.

The pitot-static system supplies air pressure to operate the airspeed indicator, altimeter, and vertical speed indicator. The pitot tube is located on the front edge of the mast fairing. The static sources are located on each side of the cabin, aft of the rear doors.

Water can be drained from pitot-static lines by removing the plastic drain plugs which are accessible through the aft inspection panel on the underside of the cabin. Draining lines should be required only if the airspeed indicator or altimeter appears erratic.

Pitot and static sources should be inspected frequently for bugs or other obstructions.

95-10 Console Assemblies

95-11 Upper Consoles

A. Description

Upper console assemblies may be "opened" or removed for maintenance. Upper consoles with instrument panels that do not include Electronic Flight Displays (EFDs) or other avionics may be "opened" per Part B. Upper consoles with EFDs or other avionics can be removed per Part C. Refer to Figures 95-1 thru 95-5 for typical upper console assemblies.

B. Opening and Closing Console

1. Remove (4) screws securing upper console to sides of lower console and hinge console aft.
2. To close, hinge upper console forward and install (4) screws securing upper console to lower console.

C. Removing Console

1. Remove EFD and/or other avionics if installed per Chapter 97. For Police or ENG versions, also refer to Chapters 90 or 92, respectively.
2. Remove HeliSAS control panel if installed and located in upper instrument console (not required if control panel is located at top of avionics stack).
3. If required for access to pitot-static lines, remove perimeter screws securing instrument face to console.
4. Disconnect instrument pitot-static lines. Plug lines. Temporarily secure face to console, if removed.
5. Remove screws securing console assembly to forward keel panels and lower panel. Remove console and disconnect console harness from airframe harness.

D. Installing Console

1. Connect console assembly harness to airframe harness and install screws securing console to forward keel panels and lower panel.
2. If removed, position instrument face in console. Remove plugs and connect pitot-static lines.
3. As required, install perimeter screws securing face to console. Verify security.
4. Install HeliSAS control panel, if removed.
5. Install EFD and/or avionics per Chapter 97, if removed. For Police or ENG versions, also refer to Chapters 90 or 92, respectively.
6. Perform pitot-static system leak check per § 95-30.

95-12 Lower Consoles

A. Description

Lower consoles may contain various instruments, avionics equipment, or switches. Refer to the appropriate sections for installed instruments or avionics equipment.

B. Opening Lower Console

1. Disconnect battery per § 96-10.
2. Refer to appropriate sections for avionics installed in lower console and remove avionics.
3. Remove screws securing F640 face assembly to lower console.
4. Remove screws securing F444 cyclic box cover to cyclic box. Pull cover aft to allow clearance for face assembly removal.
5. Pull face assembly aft to access electrical wiring. Disconnect wiring from switches and instruments attached to face assembly and remove face assembly from helicopter.
6. Refer to appropriate sections for remote-mounted avionics installed in trays and remove avionics.
7. If installed, remove (2) SI413 hole plugs on sides of lower console. Remove hardware securing avionics trays to sides of lower console.
8. Pull avionics trays aft from lower console.

C. Closing Lower Console

1. Disconnect battery per § 96-10.
2. Position avionics trays in lower console. Install hardware securing avionics trays to sides of lower console. Install (2) SI413 hole plugs.
3. Install remote-mounted avionics in avionics trays per appropriate sections.
4. Connect electrical wiring to switches and instruments attached to face assembly and position face assembly on lower console. Install screws securing face assembly. Verify security.
5. Position F444 cyclic box cover on cyclic box. Install screws securing cover to cyclic box. Verify security.
6. Refer to appropriate sections for avionics removed and reinstall in lower console.
7. Connect battery per § 96-10.

95-20 Instrument Markings

See R66 Pilot's Operating Handbook (POH) Section 2 for instrument markings.

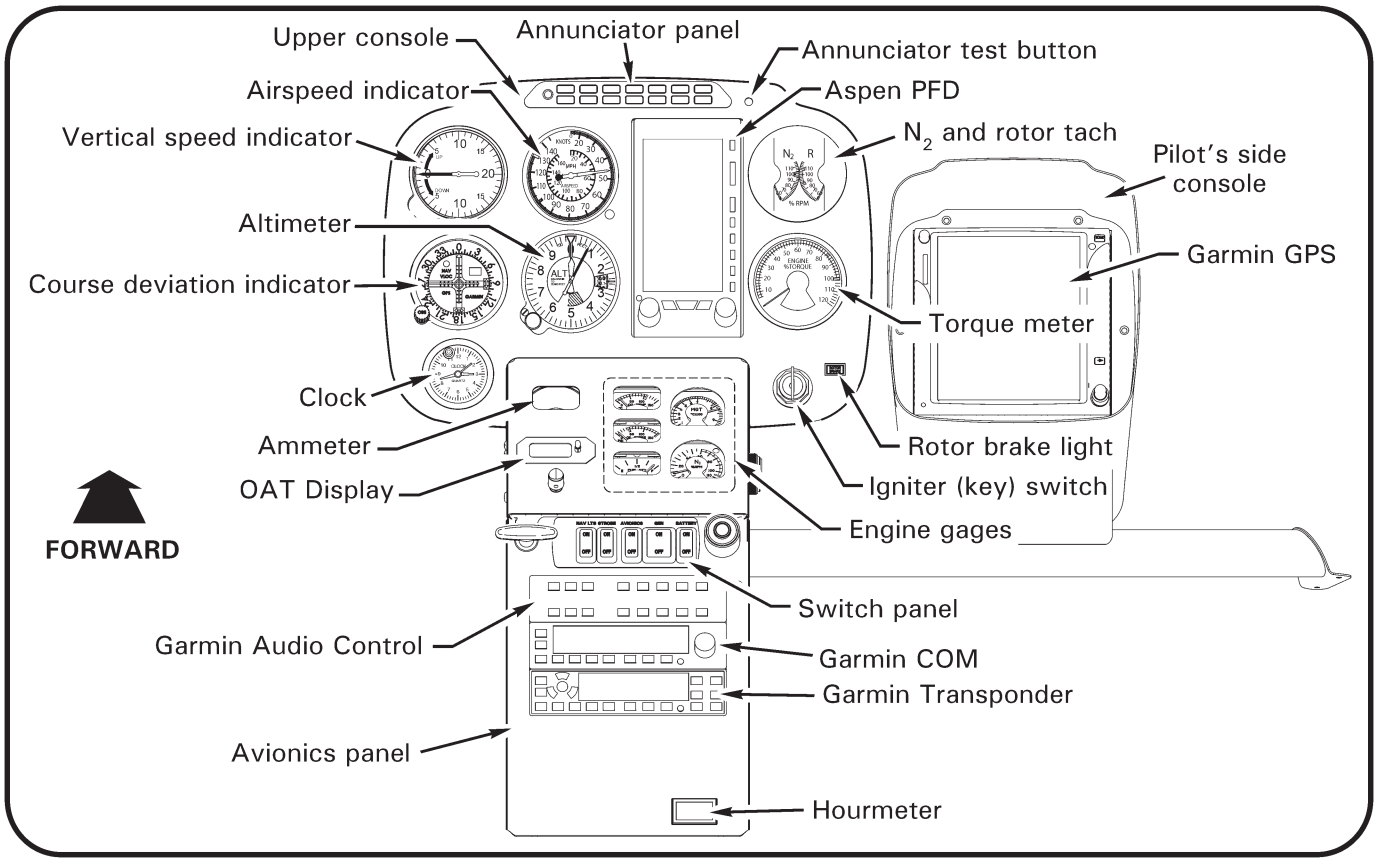


FIGURE 95-1 EIGHT-INSTRUMENT CONSOLE WITH ASPEN PFD

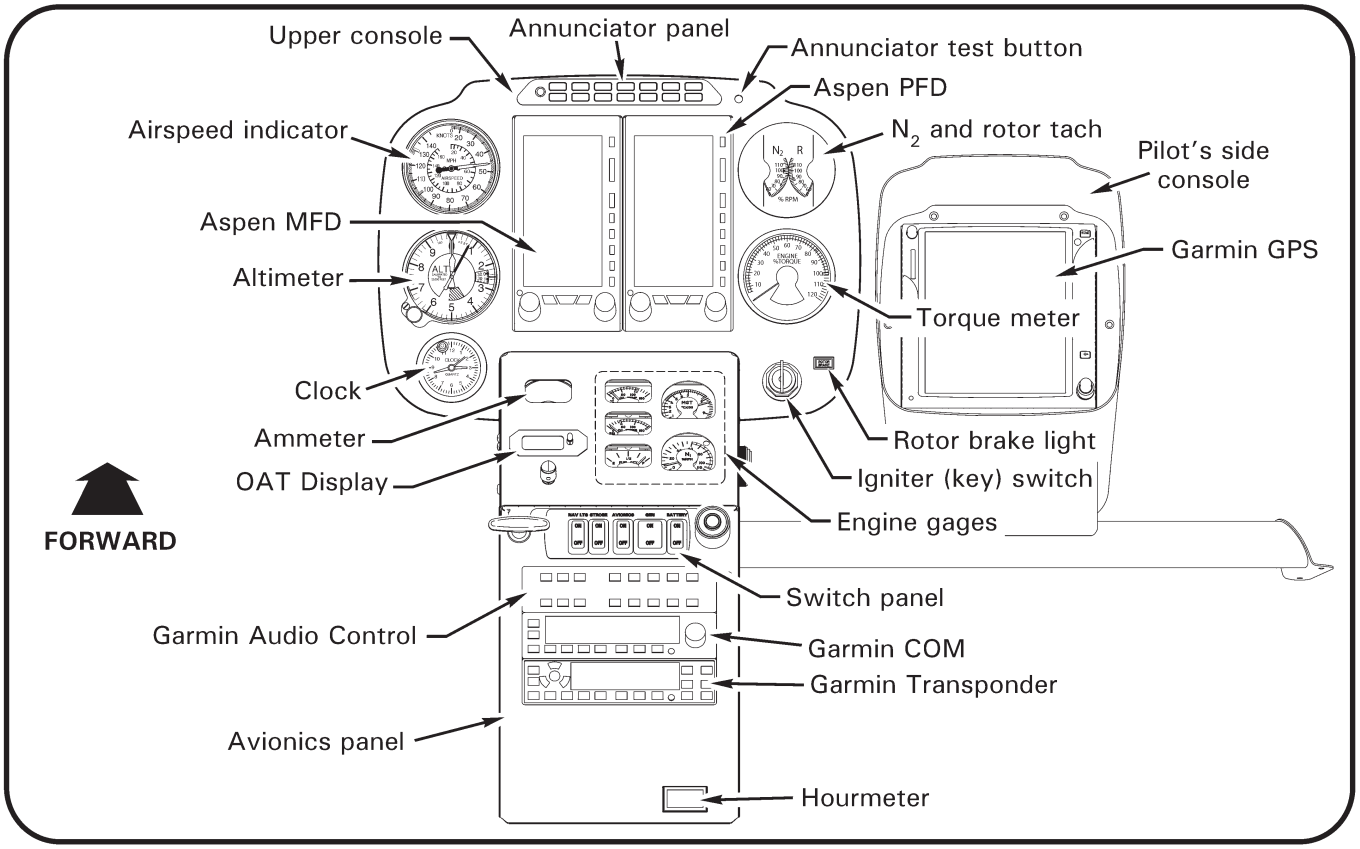


FIGURE 95-2 EIGHT-INSTRUMENT CONSOLE WITH ASPEN PFD AND MFD

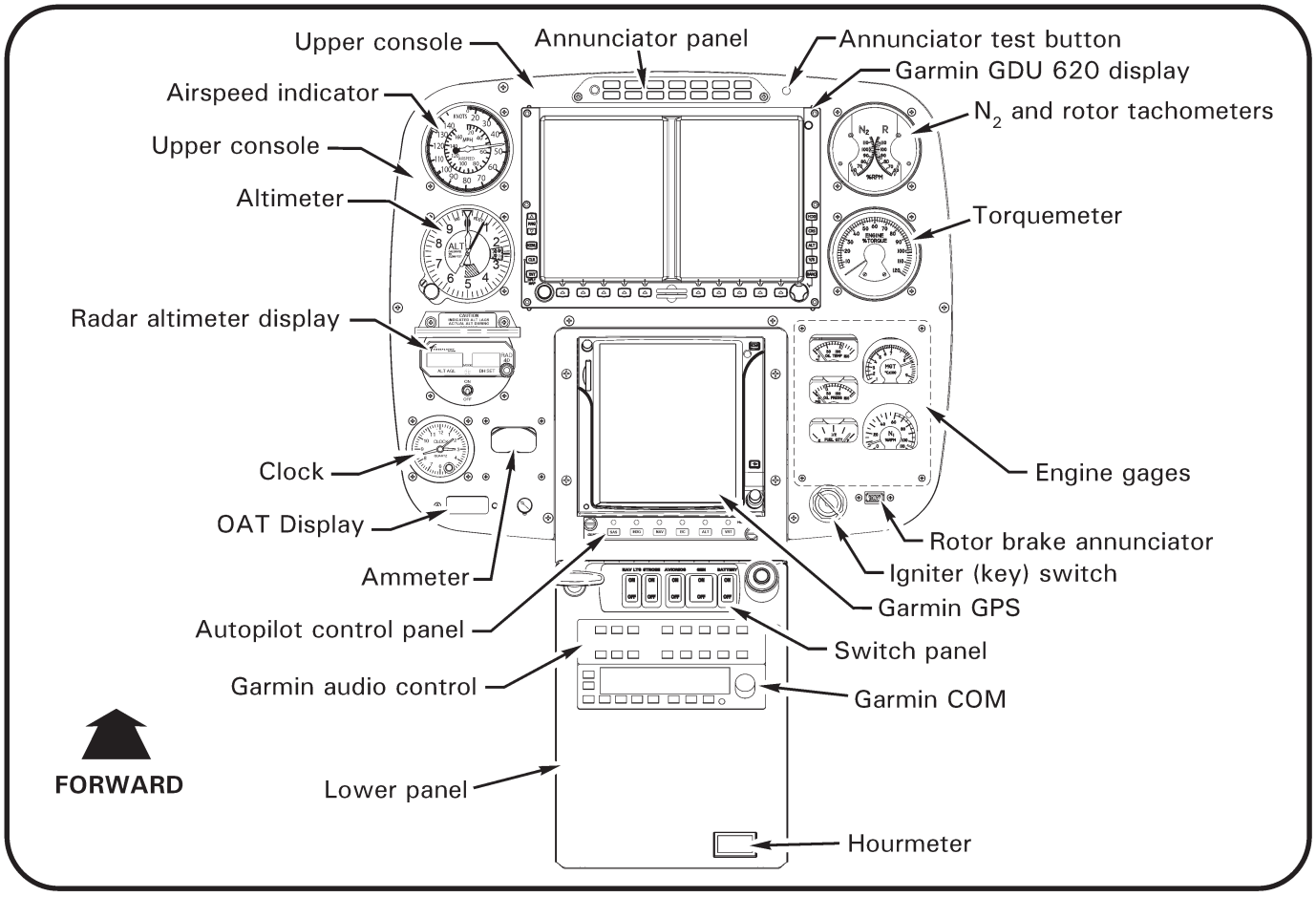


FIGURE 95-3 GARMIN G500H UPPER CONSOLE WITH GDU 620

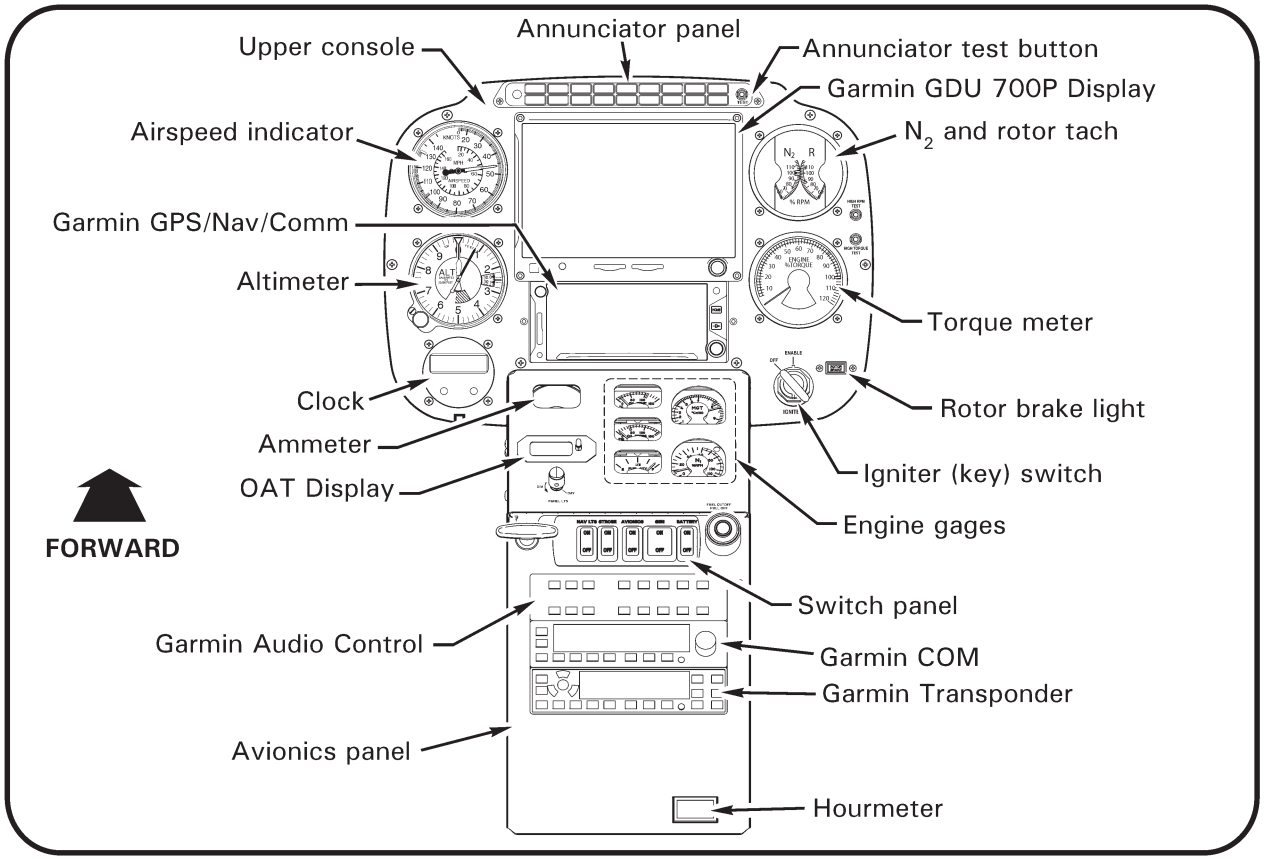


FIGURE 95-4 GARMIN G500H UPPER CONSOLE WITH GDU 700L

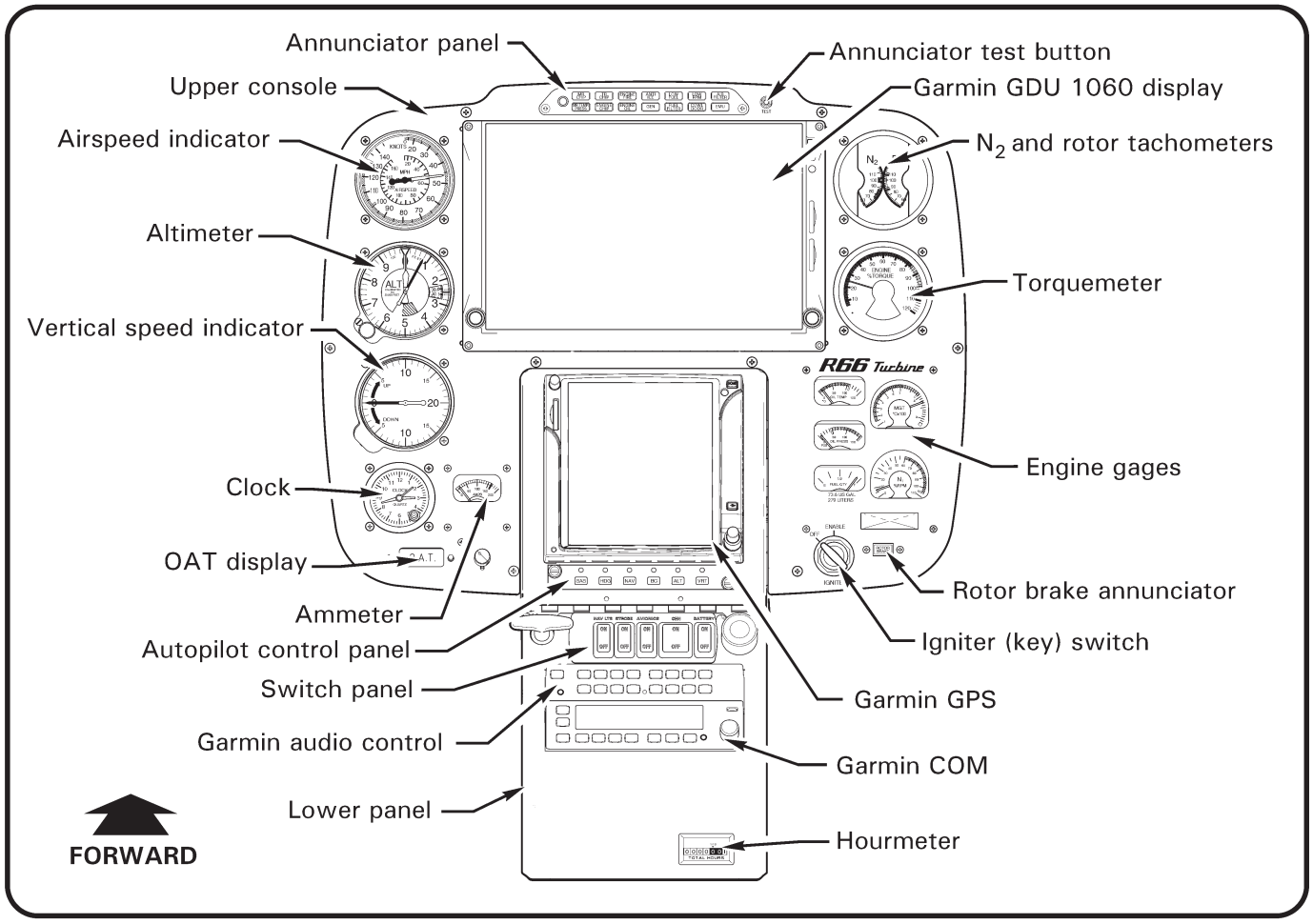


FIGURE 95-5 GARMIN G500H UPPER CONSOLE WITH GDU 1060

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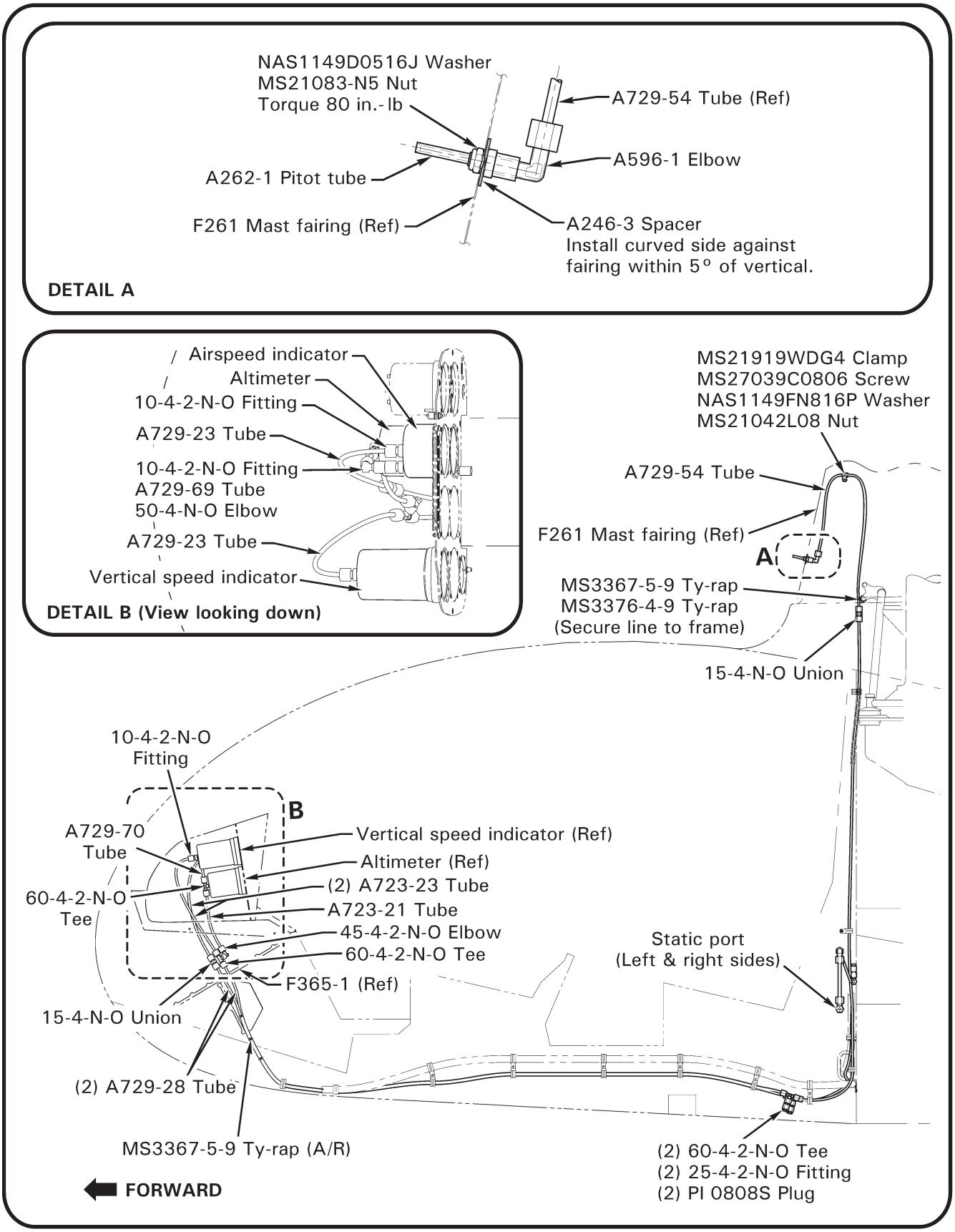


FIGURE 95-6 PITOT–STATIC SYSTEM INSTALLATION (STANDARD WITHOUT EFIS)

95-30 Pitot-Static System

A. Pitot System Leak Test

CAUTION

Do not apply suction to pitot system or pressure to static system.

1. Open mast fairing per § 53-22.
2. Refer to Figures 95-6 and 95-7. Seal drain hole in elbow aft of pitot tube with pressure sensitive tape. Connect a medical syringe, with plunger withdrawn, to pitot tube via flexible tubing.
3. SLOWLY apply pressure to pitot line by depressing syringe plunger until airspeed indicator reads 70 knots. Release force on plunger; plunger will remain in place without need to pinch flexible tubing.
4. Gently tap airspeed indicator glass to remove friction effects.
5. If airspeed indication drops more than 10 knots in one minute, an unacceptable leak is indicated. SLOWLY release pressure. Locate and repair any leak(s). Retest after any repairs.
6. Remove tape from pitot tube drain hole and verify airspeed indicator has returned to zero.
7. Remove test equipment.

B. Static System Leak Test

CAUTION

Airspeed indicator, altimeter, and vertical speed indicator may be damaged if suction to static line is applied or removed rapidly.

1. Refer to Figures 95-6 and 95-7. Set altimeter to location elevation.
2. Temporarily seal left or right side static opening with pressure sensitive tape. Cover remaining static port with a suction cup attached to a medical syringe.
3. SLOWLY apply suction to static port by withdrawing syringe plunger until altimeter indicates 500 feet greater than location elevation. Release force on plunger, wait one minute, and note any change in altimeter indication.
4. Change of less than 100 feet indication in one minute is acceptable. SLOWLY remove suction from static port. Locate and repair leak(s) if altimeter indication changes 100 or more feet in one minute. Retest after any repairs.
5. Remove test equipment.

95-30 Pitot-Static System (continued)

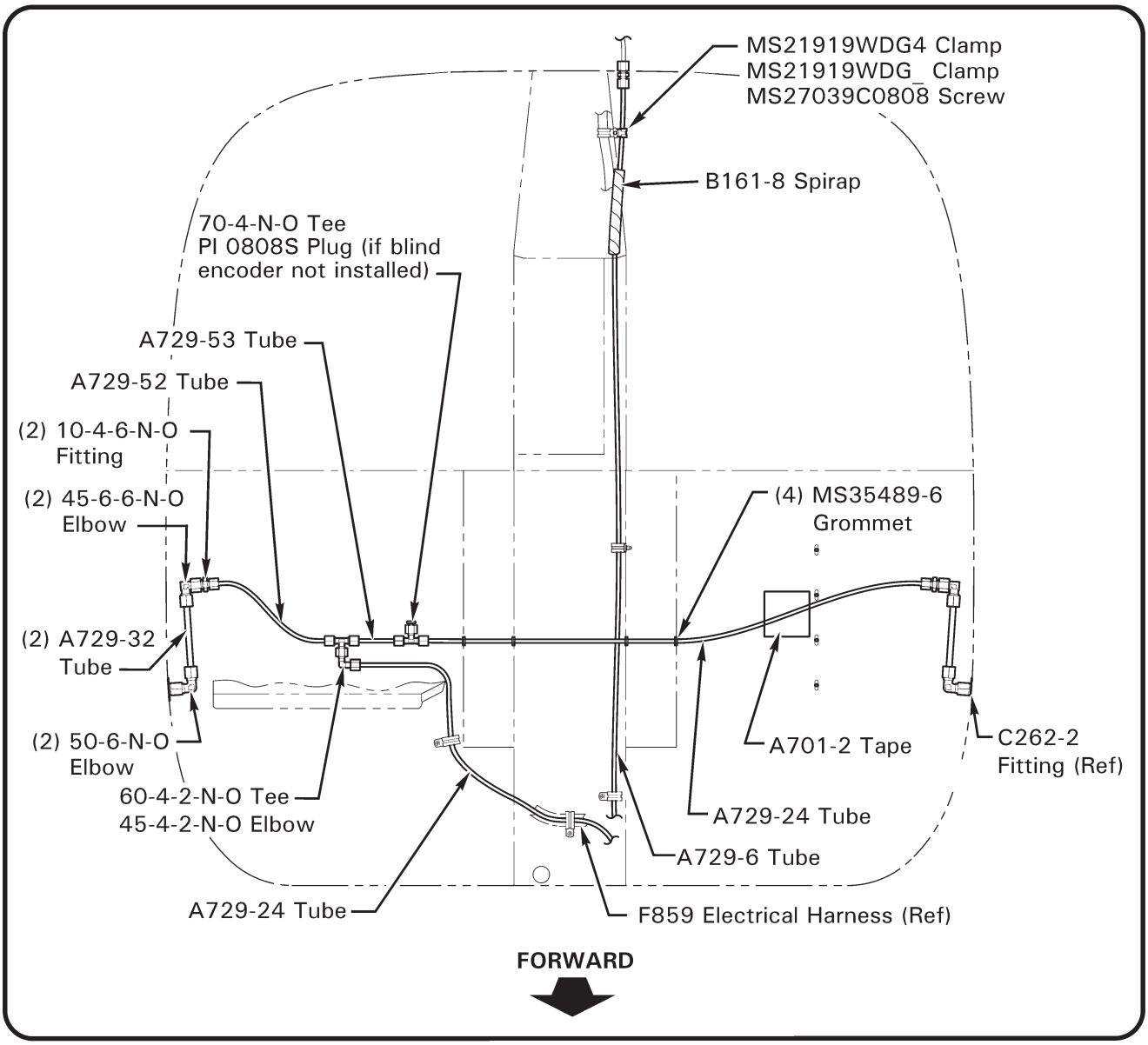


FIGURE 95-7 PITOT–STATIC SYSTEM INSTALLATION

95-30 Pitot-Static System (continued)

C. Schematics

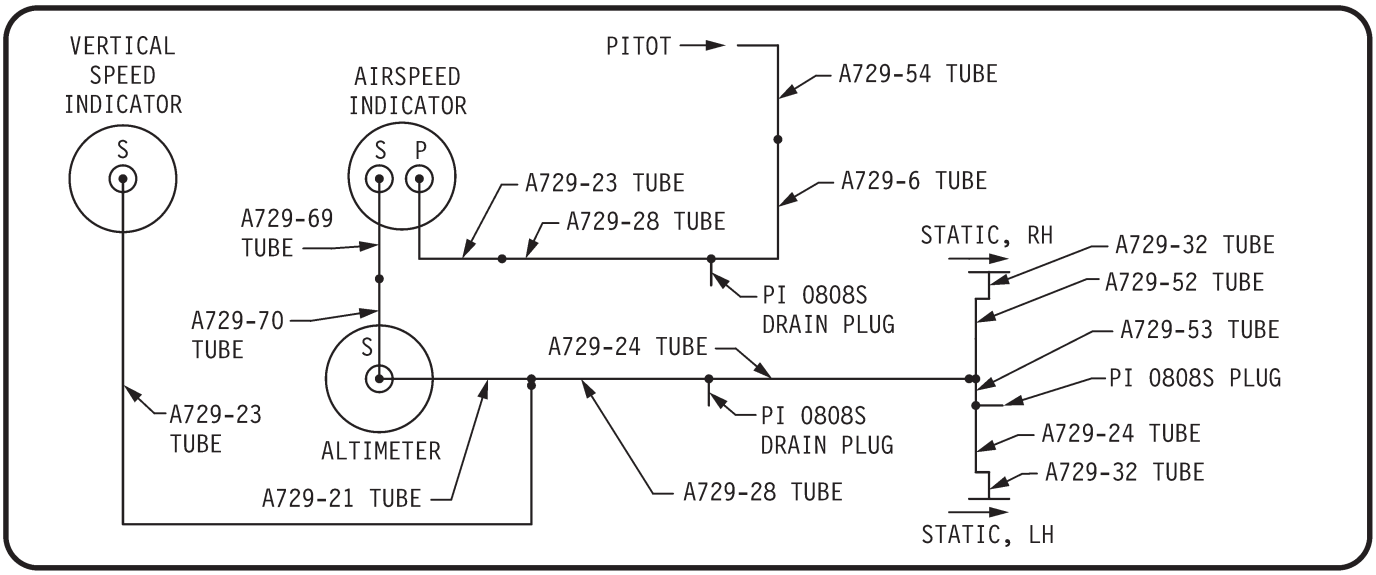


FIGURE 95-8 PITOT–STATIC SCHEMATIC — UPPER CONSOLE (STANDARD WITHOUT EFIS)

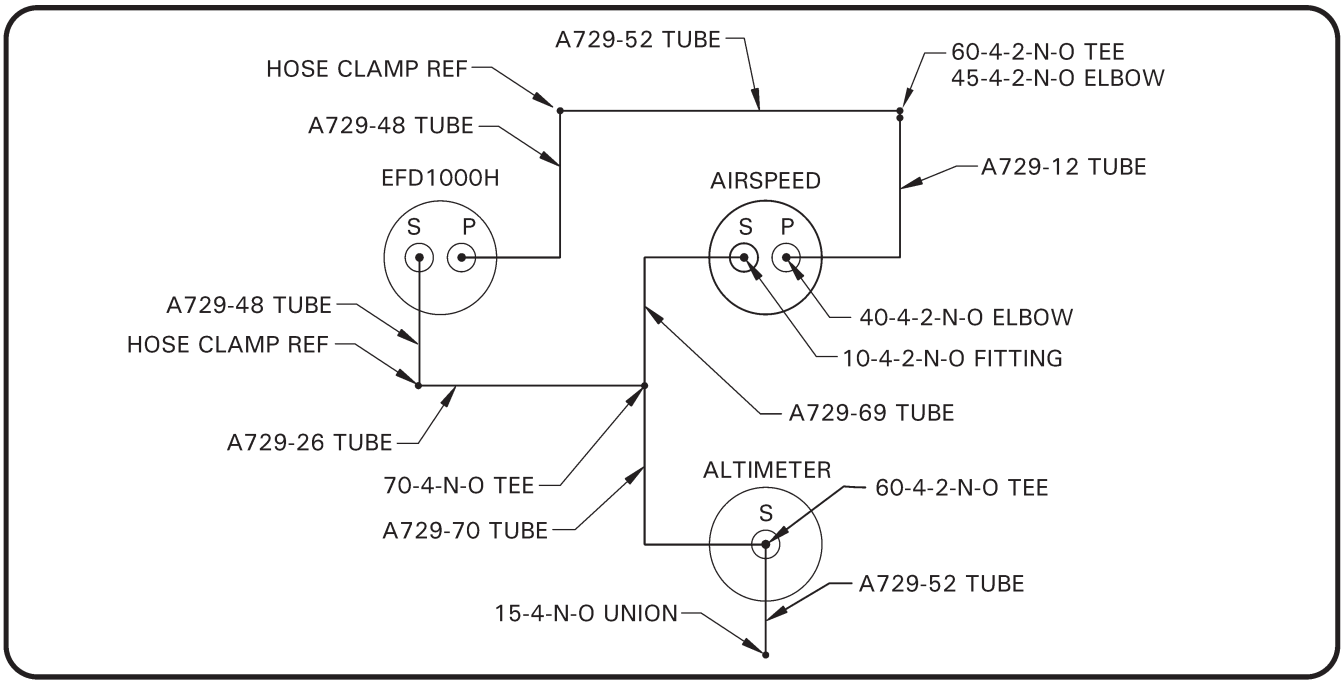


FIGURE 95-9 PITOT–STATIC SCHEMATIC — SIX-INSTRUMENT CONSOLE WITH ASPEN PFD

95-30 Pitot-Static System (continued)

C. Schematics (continued)

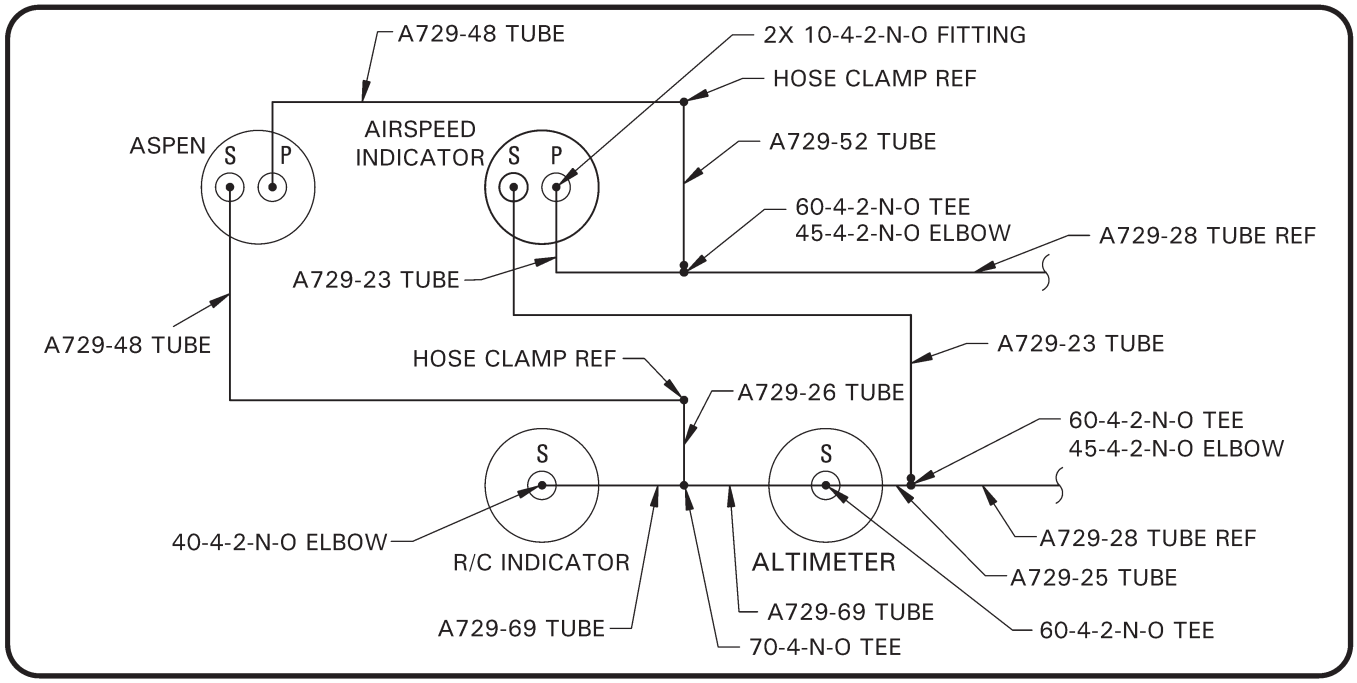


FIGURE 95-10 PITOT–STATIC SCHEMATIC — EIGHT-INSTRUMENT CONSOLE WITH ASPEN PFD

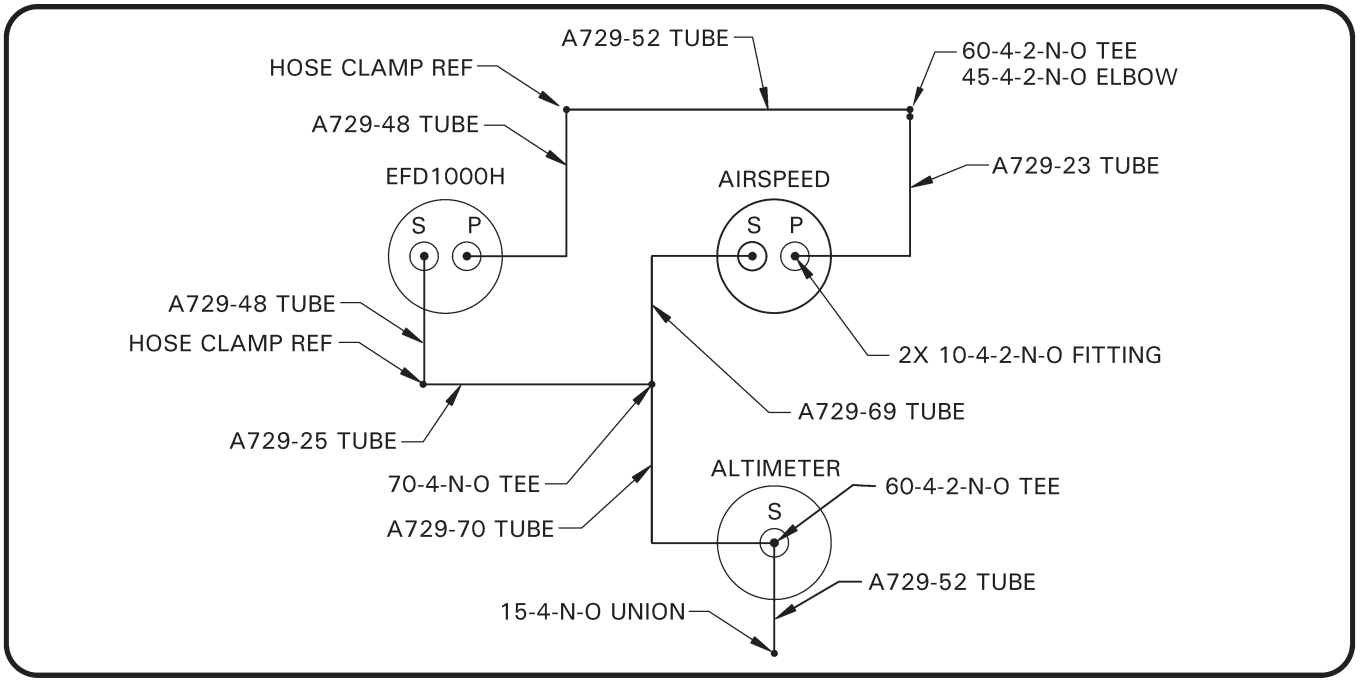


FIGURE 95-11 PITOT–STATIC SCHEMATIC — EIGHT-INSTRUMENT CONSOLE WITH ASPEN PFD AND MFD

95-30 Pitot-Static System (continued)

C. Schematics (continued)

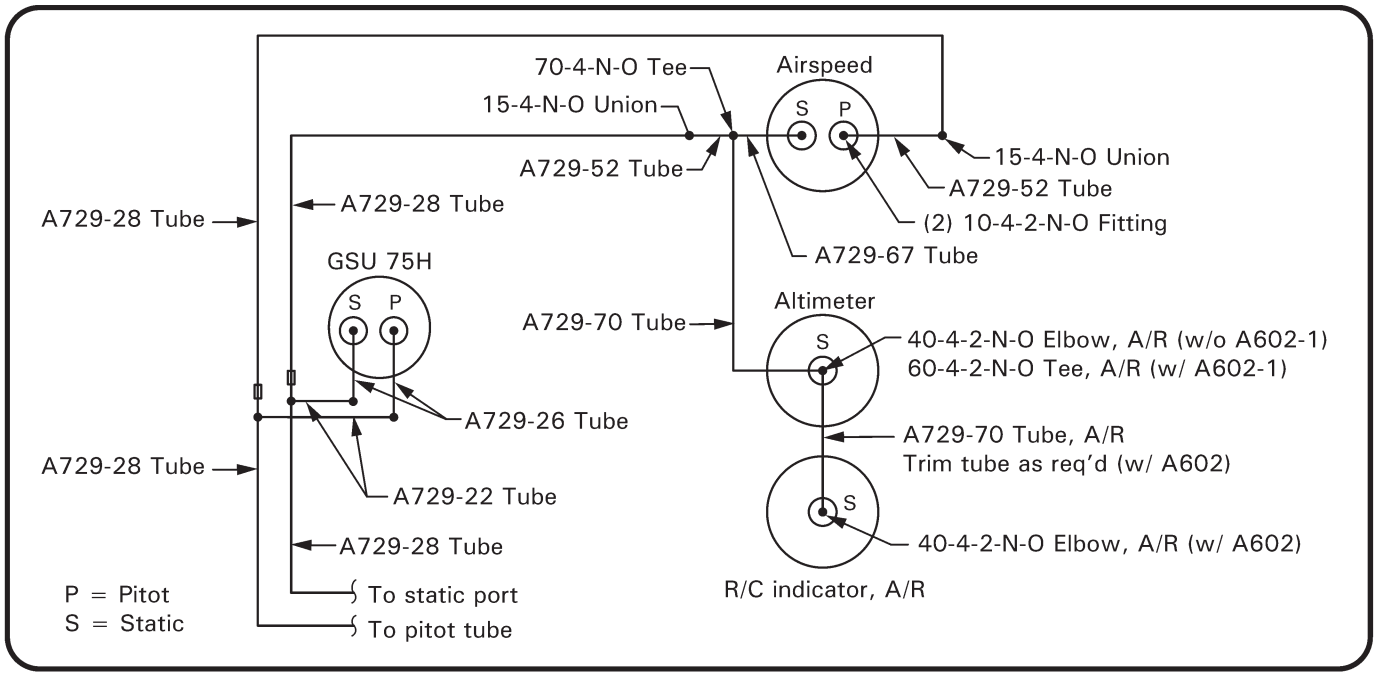


FIGURE 95-12 PITOT–STATIC SCHEMATIC — UPPER CONSOLE WITH GARMIN G500H EFIS

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95-40 Instruments, Engine Gauges, and Indicating Equipment

CAUTION

Protect instrumentation using foam padding or equivalent. Handle instruments like eggs.

NOTE

Refer to each instrument's section for instrument-specific instructions prior to removal or installation.

A. Instrument Removal

NOTE

If installed, Electronic Flight Displays (EFD) must be removed prior to removing console face assembly. If instrument is accessible thru EFD mounting location, face assembly removal is not necessary.

1. Turn battery and avionics switches off and pull out applicable circuit breaker(s).
2. If installed, remove EFD and/or other avionics per Chapter 97. For Police or ENG versions, also refer to Chapters 90 or 92, respectively.
3. Remove perimeter screws securing face to console and pull face aft as required.
4. While supporting instrument, remove screws securing instrument to face.
5. Disconnect wiring as applicable.
6. Disconnect pitot/static lines and cap or plug instrument and lines, as applicable. Temporarily secure face to console, if removed.
7. Remove instrument and place on foam padding.

B. Instrument Installation

1. Turn battery and avionics switches off and pull out applicable circuit breaker(s).
2. Remove caps and plugs and connect pitot/static lines, as applicable. Verify security.
3. Connect wiring as applicable. Verify security.
4. Position instrument in face and install screws securing instrument. Verify security.
5. Install perimeter screws securing face to console, if removed. Verify security.
6. Install EFD and/or avionics per Chapter 97, if removed. For Police or ENG versions, also refer to Chapters 90 or 92, respectively.
7. Perform pitot-static system checks as required per § 95-30.
8. Verify instrument(s) responds correctly to closing assigned circuit breaker and breaker remains closed.

95-41 Vertical Speed Indicator

A. Description

The vertical speed indicator indicates rate of ascent or descent. Check vertical speed indicator for a zero-rate needle indication when rotorcraft is in a stationary hover.

B. Schematic

Refer to § 95-30 Part C for pitot-static system schematics.

C. Removal

Remove vertical speed indicator per § 95-40 Part A.

D. Installation

Install vertical speed indicator per § 95-40 Part B.

E. Scheduled Maintenance and Inspections

Refer to § 5-45 100-Hour/Annual Inspection.

F. Special Maintenance and Inspections

1. If vertical speed indicator displays climb indication but does not return to zero in level flight, or if indication is erratic:
   a. Inspect static system for water or obstructions, and remove water or obstructions if found.
   b. Perform pitot-static system checks as required per § 95-30.
2. Perform appropriate function checks per § 5-40. If vertical speed indicator still displays erratic indication, or displays no indication, remove indicator per Part C, and return to RHC for inspection.
3. Install airworthy indicator per Part D.

95-42 Airspeed Indicator

A. Description

The airspeed indicator displays airspeed in knots and either miles or kilometers per hour. The airspeed indicator operates properly in forward flight only; backward or lateral flight will not indicate correct airspeed.

B. Schematic

Refer to § 95-30 Part C for pitot-static system schematics.

C. Removal

Remove airspeed indicator per § 95-40 Part A.

D. Installation

Install airspeed indicator per § 95-40 Part B.

E. Scheduled Maintenance and Inspections

Refer to § 5-45 100-Hour/Annual Inspection.

F. Special Maintenance and Inspections

1. If airspeed indicator displays no indication:
    a. Inspect pitot tube for obstructions and remove obstructions if found.
    b. Inspect pitot tube connection, and tighten connection if loose.
    c. Open upper console and inspect pitot line for kinks or bends.
    d. Perform pitot-static system checks as required per § 95-30.
    e. Perform appropriate function checks per § 5-40. If indicator still displays no indication, remove indicator per Part C, and return to RHC for inspection.
    f. Install airworthy indicator per Part D.
2. If airspeed indicator displays erratic indication:
    a. Inspect pitot-static system connection(s), and tighten connection(s) if loose.
    b. Inspect pitot-static system lines and verify no lines are cracked or broken.
    c. Inspect pitot-static system for water, and remove water if found.
    d. Open upper console and inspect pitot lines for kinks or bends.
    e. Perform pitot-static system checks as required per § 95-30.
    f. Perform appropriate function checks per § 5-40. If indicator still displays erratic indication, remove indicator per Part C, and return to RHC for inspection.
    g. Install airworthy indicator per Part D.

95-43 Engine (N_2) and Rotor Dual Tachometer

A. Description

CAUTION

Installation of electrical devices can affect accuracy and reliability of electronic tachometers.

An electronic engine (N2) and rotor dual tachometer is standard. Engine tachometer signal is provided by a transducer on the engine gearbox. Rotor tachometer signal is provided by magnets on the main gearbox tail rotor driveline yoke. Each tachometer is on a separate circuit with its own circuit breaker.

The tachometer bus receives power from the avionics bus or through the battery relay bypass circuit as long as the main rotor gearbox has oil pressure. Therefore, the tachometers will receive power through the bypass circuit whenever the rotors are turning even if the avionics bus is not powered. The bypass circuit is disconnected from the tachometer bus when the annunciator test button is depressed. Pressing the test button while the helicopter is running will confirm that the tachometers are receiving power from the avionics bus.

NOTE

Do not use magnetized tools.

CAUTION

Protect instrumentation using foam padding or equivalent. Handle instruments like eggs.

B. Removal

1. Turn battery switch off and pull out TACHS N_2 (2 amp) and R (2 amp) circuit breakers on circuit breaker panel.
2. Remove perimeter screws securing instrument face to console and pull face aft.
3. Remove screws securing console harness connector to F792-1 or -2 dual tachometer and unplug connector.
4. Supporting instrument, remove screws securing tachometer to face, and remove tachometer.

95-43 Engine (N_2) and Rotor Dual Tachometer (continued)

C. Installation

1. Turn battery switch off and pull out TACHS N_2 (2 amp) and R (2 amp) circuit breakers on circuit breaker panel.
2. Install screws securing F792-1 or -2 dual tachometer to instrument face. Verify security.
3. Plug in console harness connector to tachometer and install connector screws. Verify security.
4. Install perimeter screws securing face to console. Verify security.
5. Perform accuracy check and needle synchronization per Part D.

D. Accuracy Check and Needle Synchronization

CAUTION

Inadvertent engine overspeed can occur if accuracy check is not performed.

1. Perform PTG rigging check per § 76-22.
2. Install magnetic pickup (or photocell) portion of calibrated main rotor balancing equipment per § 18-11.
3. Push in TACHS N_2 (2 amp) and R (2 amp) circuit breakers on circuit breaker panel. Turn battery switch on, open throttle, and "beep" actuator to minimum (RPM) setting. Close throttle and turn battery switch off.
4. a. Start engine and run-up helicopter per R66 Pilot's Operating Handbook (POH) Section 4, establish stable idle, and record dual tachometer's % N_2 indication. Also record RPM displayed on balancer.

   b. Multiply dual tachometer's % N_2 indication (use 0.69 for 69%, 0.70 for 70%, etc.) by 408 RPM. Verify calculated RPM is within ± 8 RPM displayed on balancer.

   c. If calculated RPM is more than ± 8 RPM displayed on balancer, shut down helicopter per POH Section 4. Do not proceed further; contact RHC Technical Support.
5. Monitor RPM displayed on balancer and increase throttle to full open. Immediately close throttle and shut down helicopter per POH Section 4 if balancer indication exceeds 412 RPM.
6. Monitor RPM displayed on balancer and "beep" actuator until dual tachometer indicates 100% N_2. Verify RPM displayed on balancer is 408 ± 4 RPM; do not exceed 412 RPM.

95-43 Engine (N_2) and Rotor Dual Tachometer (continued)

D. Accuracy Check and Needle Synchronization (continued)

7. Verify dual tachometer's % NR indication is within 1% of % N_2 indication. If required, adjust % NR by turning screw on back of tachometer. Turning screw clockwise increases % NR and turning screw counterclockwise decrease % NR; one-half turn equals approximately 1% change. Adjusting screw is accessed by removing instrument face perimeter screws and pulling face aft.
8. Shut down helicopter per R66 POH Section 4.
9. Install perimeter screws securing face to console. Verify security.

E. Scheduled Maintenance and Inspections

Refer to § 5-45 100-Hour/Annual Inspection.

Refer to § 4-22 for recommended replacement time between overhauls.

F. Special Maintenance and Inspections

1. Perform accuracy check and needle synchronization per Part D.
2. If tachometer cannot be adjusted, remove tachometer per Part B, and return to RHC for inspection.
3. Install airworthy tachometer per Part C.

95-44 Altimeter

A. Description

The sensitive altimeter provides altitude information relative to mean sea level when the barometric pressure correction scale is properly set. Check altimeter calibration by setting correction scale to the current altimeter setting and checking the altimeter reading against field elevation; they must agree within 70 feet.

B. Schematic

Refer to § 95-30 Part C for pitot-static system schematics.

C. Removal

Remove altimeter per § 95-40 Part A.

D. Installation

Install altimeter per § 95-40 Part B.

E. Scheduled Maintenance and Inspections

Refer to § 5-45 100-Hour/Annual Inspection.

F. Special Maintenance and Inspections

1. If altimeter displays no indication:
    a. Inspect static lines for obstructions and remove obstructions if found.
    b. Perform pitot-static system checks as required per § 95-30.
    c. Perform appropriate function checks per § 5-40. If altimeter still displays no indication, remove altimeter per Part C, and return to RHC for inspection.
    d. Install airworthy altimeter per Part D.
2. If altimeter displays erratic indication:
    a. Inspect static system for water, and remove water if found.
    b. Perform pitot-static system checks as required per § 95-30.
    c. Perform appropriate function checks per § 5-40. If altimeter still displays erratic indication, remove altimeter per Part C, and return to RHC for inspection.
    d. Install airworthy altimeter per Part D.

95-45 Torquemeter

A. Description

The electronic torquemeter indicates percent torque. The torque sensor is an oil pressure transducer mounted on the front of the engine's accessory gearbox.

B. Schematic

Refer to Figures 98-1 thru 2B for applicable electrical schematic.

C. Removal

Remove torquemeter per § 95-40 Part A.

D. Installation

Install torquemeter per § 95-40 Part B.

E. Scheduled Maintenance and Inspections

Refer to § 5-45 100-Hour/Annual Inspection.

F. Special Maintenance and Inspections

1. Inspect wiring for loose, chafed, frayed, or broken wires. Verify no damaged connectors. Verify wiring neatness, proper routing and installation, and security.
2. Perform appropriate function checks per § 5-40. If accuracy of torquemeter is suspected, remove torquemeter per Part C, and check calibration per Figure 95-13.
3. Install airworthy torquemeter per Part D.

PIN	FUNCTION
1	SPARE
2	GND
3	CASE GND
4	SHIELD
5	SPARE
6	+POWER
7	+POWER
8	SIGNAL LO
9	SIGNAL HI

% TORQUE*	SIGNAL (VDC)*
0	0.480
20	0.914
40	1.347
60	1.781
80	2.214
83	2.279
100	2.648
120	3.081

* Accuracy is ± 0.5% at 20% and 100%; ± 2% elsewhere.

FIGURE 95-13 TORQUEMETER CALIBRATION CHECK

95-46 Magnetic Compass

A. Description

An internally illuminated, wet-type compass is attached to the center bow between the windshields above the instrument panel.

B. Schematic

Refer to Figures 98-1 thru 2B for applicable for electrical schematic.

C. Removal

1. Remove hardware securing B339-2 mount to windshield bow.
2. Remove hardware securing B148-5 compass assembly to mount.
3. Remove heat shrink as required and disconnect light bar wires from airframe harness. Remove compass.

D. Installation

1. Install heat shrinks over wires and connect B148-5 compass assembly's light bar wires to airframe harness. Verify security. Activate heat shrinks.
2. Install hardware securing compass to B339-2 mount. Verify security.
3. Install hardware securing mount to windshield bow. Verify security.
4. Using the airport compass rose, align the helicopter skids on the rose lines, and record the indicated compass headings at 30° increments. Adjust compass compensator magnets as required until the maximum error at any heading is 5° or less with all avionics operating, all exterior lights on, and dimmer full bright. Record the final readings on the aircraft compass card. Re-check 4 cardinal headings with lights off and all avionics off except COM radio 1 and transponder. Verify maximum error remains 5° or less.

E. Scheduled Maintenance and Inspections

Refer to § 5-45 100-Hour/Annual Inspection.

F. Special Maintenance and Inspections

1. Perform compass deviation check per Part D step 4.
2. If compass cannot be adjusted to limits specified, remove compass per Part C, and install airworthy compass per Part D.

95-47 N_1 Tachometer

A. Description

The electronic N_1 tachometer indicates percent RPM of the engine's gas producer section. The N_1 sensor is a sealed variable-reluctance, permanent-magnet device mounted atop the engine's accessory gearbox adjacent to the hoisting lug.

B. Schematic

Refer to Figures 98-1 thru 2B for applicable electrical schematic.

C. Removal

1. Turn battery switch off and pull out applicable circuit breaker(s).
2. Remove screws securing upper console to lower console and tilt upper console aft.
3. Loosen screws securing console wiring connector to G144-6 instrument cluster and disconnect wiring.
4. Remove screws securing instrument cluster to G051 shell assembly's face plate and remove instrument cluster.

D. Installation

1. Turn battery switch off and pull out applicable circuit breaker(s).
2. Remove screws securing upper console to lower console and tilt upper console aft.
3. Position G144-6 instrument cluster on G051 shell assembly's face plate and install screws. Verify security.
4. Connect console wiring connector to G144-6 instrument cluster tighten connector screws. Verify security.
5. Tilt console forward and install screws securing upper console to lower console. Verify security.
6. Perform appropriate function checks per § 5-40.

E. Scheduled Maintenance and Inspections

Refer to § 5-45 100-Hour/Annual Inspection.

95-47 N_1 Tachometer (continued)

F. Special Maintenance and Inspections

1. Inspect wiring for loose, chafed, frayed, or broken wires. Verify no damaged connectors. Verify wiring neatness, proper routing and installation, and security.
2. Perform appropriate function checks per § 5-40. If accuracy of engine gage is suspected, remove G144-6 instrument cluster per Part C, and return to RHC for inspection.
3. Install airworthy instrument cluster per Part D.

95-48 Measured Gas (Turbine) Temperature (MGT) Gage

A. Description

The measured gas temperature (MGT) gage connects to the engine's thermocouple harness via different size connectors to ensure correct polarity. Refer to RR300 Series Operation and Maintenance Manual (OMM) for periodic calibration requirements.

B. Schematic

Refer to Figures 98-1 thru 2B for applicable electrical schematic.

C. Removal

Remove G144-6 instrument cluster per § 95-47 Part C.

D. Installation

Install G144-6 instrument cluster per § 95-47 Part D.

E. Scheduled Maintenance and Inspections

Refer to § 5-45 100-Hour/Annual Inspection.

F. Special Maintenance and Inspections

Perform special maintenance and inspections per § 95-47 Part F.

95-49 Engine Oil Pressure Gage

A. Description

The engine oil pressure gage is electronic. The oil pressure sensor is a transducer mounted on the lower front of the engine's accessory gearbox.

B. Schematic

Refer to Figures 98-1 thru 2B for applicable electrical schematic.

C. Removal

Remove G144-6 instrument cluster per § 95-47 Part C.

D. Installation

Install G144-6 instrument cluster per § 95-47 Part D.

E. Scheduled Maintenance and Inspections

Refer to § 5-45 100-Hour/Annual Inspection.

F. Special Maintenance and Inspections

Perform special maintenance and inspections per § 95-47 Part F.

95-50 Engine Oil Temperature Gage

A. Description

The engine oil temperature gage is electronic. The oil temperature sensor is a transducer mounted on the inboard wall of the oil tank.

B. Schematic

Refer to Figures 98-1 thru 2B for applicable electrical schematic.

C. Removal

Remove G144-6 instrument cluster per § 95-47 Part C.

D. Installation

Install G144-6 instrument cluster per § 95-47 Part D.

E. Scheduled Maintenance and Inspections

Refer to § 5-45 100-Hour/Annual Inspection.

F. Special Maintenance and Inspections

Perform special maintenance and inspections per § 95-47 Part F.

95-51 Fuel Quantity Gage

A. Description

The electric fuel quantity gage indicates relative fuel quantity. The variable resistance sender is mounted near the fuel cap.

B. Schematic

Refer to Figures 98-1 thru 2B for applicable electrical schematic.

C. Removal

Remove G144-6 instrument cluster per § 95-47 Part C.

D. Installation

Install G144-6 instrument cluster per § 95-47 Part D.

E. Scheduled Maintenance and Inspections

Refer to § 5-45 100-Hour/Annual Inspection.

F. Special Maintenance and Inspections

Perform special maintenance and inspections per § 95-47 Part F.

95-52 Clock

A. Description

A manually set electric analog clock is standard equipment; a digital clock is optional.

B. Schematic

Refer to Figure 98-1 thru 2B for applicable electrical schematic.

C. Removal

1. Remove perimeter screws securing face to console and pull face aft, or remove screws securing upper console to lower console and tilt upper console aft, as applicable.
2. Remove screws securing clock to face.
3. Disconnect console wiring from clock wiring at connectors, and remove clock.

D. Installation

1. Connect console wiring to clock wiring at connectors. Verify security.
2. Install screws securing clock to face. Verify security.
3. Install perimeter screws securing face to console and verify security, or tilt console forward and install screws securing upper console to lower console and verify security, as required.

E. Scheduled Maintenance and Inspections

Refer to § 5-45 100-Hour/Annual Inspection.

F. Special Maintenance and Inspections

1. Check AGC-3 (3 amp) fuse at firewall for evidence of melting and replace fuse as required.
2. Inspect wiring for loose, chafed, frayed, or broken wires. Verify no damaged connectors. Verify wiring neatness, proper routing and installation, and security.
3. If clock is still inoperative, remove clock per Part C, and install airworthy clock per Part D.

95-53 Ammeter

A. Description

The ammeter indicates electrical system loads. System load is measured across the A780-71 cable (shunt; cable is calibrated, do not alter cable) located between the starter/generator and relay on right side of engine compartment.

B. Schematic

Refer to Figure 98-1 thru 2B for applicable electrical schematic.

C. Removal

1. Remove perimeter screws securing face to console and pull face aft, or remove screws securing upper console to lower console and tilt upper console aft, as applicable.
2. Remove screws securing ammeter to face.
3. Disconnect console wiring from ammeter wiring at connectors, and remove ammeter.

D. Installation

1. Connect console wiring to ammeter wiring at connectors. Verify security.
2. Install screws securing ammeter to face. Verify security.
3. Install perimeter screws securing face to console and verify security, or tilt console forward and install screws securing upper console to lower console and verify security, as required.

E. Scheduled Maintenance and Inspections

Refer to § 5-45 100-Hour/Annual Inspection.

F. Special Maintenance and Inspections

1. Check continuity across two 3-amp fuses in B304-16 fuse assembly (in airframe harness on right side of engine compartment) and replace fuse assembly as required.
2. Inspect wiring for loose, chafed, frayed, or broken wires. Verify no damaged connectors. Verify wiring neatness, proper routing and installation, and security.
3. If ammeter is still inoperative, remove ammeter per Part C, and install airworthy ammeter per Part D.

95-54 Outside Air Temperature (OAT) Gage/Voltmeter

A. Description

NOTE
No cutting or splicing of OAT probe wires is permitted.

The outside air temperature gage is connected via a calibrated, twisted pair wiring harness to a stainless steel probe protruding from the chin.

B. Schematic

Refer to Figures 98-1 thru 2B for applicable electrical schematic.

C. Removal

1. Remove perimeter screws securing face to console and pull face aft, or remove screws securing upper console to lower console and tilt upper console aft, as applicable.
2. Remove screws securing OAT gage to face.
3. Disconnect console wiring from OAT gage wiring at connectors, and remove gage.

D. Installation

1. Connect console wiring to OAT gage wiring at connectors. Verify security.
2. Install screws securing OAT gage to face. Verify security.
3. Install perimeter screws securing face to console and verify security, or tilt console forward and install screws securing upper console to lower console and verify security, as required.

E. Scheduled Maintenance and Inspections

Refer to § 5-45 100-Hour/Annual Inspection.

F. Special Maintenance and Inspections

1. Inspect wiring for loose, chafed, frayed, or broken wires. Verify no damaged connectors. Verify wiring neatness, proper routing and installation, and security.
2. If OAT gage is still inoperative, remove OAT gage per Part C, and install airworthy OAT gage per Part D.

95-55 Hourmeters

A. Description

Two hourmeters are standard. One hourmeter is mounted above the ammeter and is activated by main gearbox oil pressure. Another hourmeter on the horizontal panel outboard of the pilot's seat is activated by a combination of main gearbox oil pressure and a raised collective and is approved for recording time in service.

B. Schematic

Refer to Figures 98-1 thru 2B for applicable electrical schematic.

C. Removal

Collective-Activated Hourmeter

1. Remove screws securing hourmeter, faceplate, and carpet to F353-2 panel.
2. Disconnect airframe wiring from hourmeter wiring at connectors, and remove hourmeter.

Console Hourmeter

1. Remove screws securing hourmeter to F640 face assembly, remove screws securing face to lower console, and supporting hourmeter, remove face.
2. Disconnect airframe wiring from hourmeter, and remove hourmeter.

D. Installation

Collective-Activated Hourmeter

1. Connect airframe wiring to hourmeter wiring at connectors. Verify security.
2. Install screws securing hourmeter, faceplate, and carpet to F353-2 panel. Verify security.

Console Hourmeter

1. Connect airframe wiring to hourmeter (F859-2053 to positive terminal). Verify security.
2. Install screws securing F640 face assembly to lower console. Install screws securing hourmeter to face. Verify security.

E. Scheduled Maintenance and Inspections

On condition.

F. Special Maintenance and Inspections

1. Inspect wiring for loose, chafed, frayed, or broken wires. Verify no damaged connectors. Verify wiring neatness, proper routing and installation, and security.
2. If hourmeter is still inoperative, remove hourmeter per Part C, and install airworthy hourmeter per Part D. Make appropriate maintenance record entries.

95-60 Electronic Flight Displays

95-61 Garmin Display Unit (GDU) 700L TXi or 1060 TXi

Refer to §§ 97-76 or 97-77 for Garmin display unit information.

95-62 Garmin Display Unit (GDU) 620 Installation

Refer to § 97-75 for Garmin display unit information.

95-63 Aspen EFD500H & EFD1000H Display(s) Installation

Refer to § 97-61 for Aspen system information.