Temporary Maintenance Instruction
TMI109-459

Production Flight Acceptance Test Procedure

A109E

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The present TMI will be evaluated for its introduction in the standard set of Technical Publication.
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Introduction

The aim of this document is to provide information to perform the Production Flight Acceptance Test Procedure for A109E helicopters.

The Revision B of this TMI is published in order to extend the expiration date.

Production Flight Acceptance Test Procedure

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Table 1 References

Data Module	Title
MM Section 00-20	Helicopter safety - Pre-operation

Preliminary requirements

Required conditions

Table 2 Required conditions

Condition	Data Module/Technical Publication
Make helicopter safe for maintenance	MM Section 00-20

Support equipment

Table 3 Support equipment

Nomenclature	Identification No.	Qty
No support equipment is required		

Supplies

Table 4 Supplies

Nomenclature	Identification No.	Qty
No supplies are required		

Spares

Table 5 Spares

Nomenclature	Identification No.	Qty
No spares are required		

Safety conditions

WARNING

ANY KNOWN PROBLEM OR MALFUNCTION THAT MAY AFFECT SAFETY MUST BE CORRECTED BEFORE PROCEEDING WITH THE ACCEPTANCE TEST PROCEDURE

Procedure

Note 1: These procedures require that various controls, switches and circuit breakers be manipulated and that various messages be verified. To enhance understanding of the procedures, all controls, switches, circuit breakers and messages are presented in the same format as seen in the cockpit. For example, a procedure which involves turning on the battery switch is presented as “Select the BAT switch to the ON position”, since “BAT” and “ON” correspond to the cockpit markings.

Note 2: Aircraft are often delivered from the assembly line or from the overhaul shop with known snags or deviations which could not be immediately corrected prior to roll-out from the line or shop. It is important that the crew conducting the acceptance tests is aware of snags, deviations and known defects existent in the test aircraft.

Note 3: Conduct a thorough audit of all historical production/overhaul aircraft records to determine the exact status of the helicopter to be accepted. Obtain engine identification information from the engine power section identification plates. Use this information to obtain the engine manufacturers/overhaul shop test data on the subject engine(s). Audit this data to determine the status of the engine(s). Note and record the engine/airframe hours as indicated on the engine (Hobbs) hour meters.

Note 4 If the ground test procedures are followed in sequence, the bracketed steps may be skipped.

1. Ground Test Procedure

1.1. Preliminary Steps

1.1.1. Set the NOSE WHEEL LOCK lever to ON (lever up).

1.1.2. Set the parking brake control lever to ON (pull out and turn counterclockwise).

1.2. Internal Inspection

1.2.1. Verify that all switches and selectors are in the OFF or NORM positions and that all circuit breakers are IN, except for ESS BUS #1, ESS BUS #2 and TIE, which should be OUT. See the table, below, for a list of figures depicting cockpit equipment.

- Instrument panel (typical) (Figure 1)
- Front console (Figure 2)
- Central console (Figure 3)
- Overhead console (typical) (Figure 4)
- Collective Grip Assembly (Typical) (Figure 5)
- Cyclic Grip Assembly (Typical) (Figure 6)
- Baggage Compartment (Figure 7)

1.2.2. Visually inspect the cabin compartment for loose items, foreign matter or loose equipment.

1.2.3. Check the crew seats and seat-belts for security and adjustment range.

1.2.4. Check the inertia reel and harness lock operation (when installed).

1.2.5. Check cabin door locked and emergency door release secured.

1.3. External Inspection

1.3.1. Do a thorough external inspection of the helicopter (engine compartments included), as described in the Rotorcraft Flight Manual.

1.4. Systems Functional Checks (power OFF)

1.4.1. Controls Installation and Markings

1.4.1.1. Connect an external hydraulic power supply.

1.4.1.2. Move all the major flight controls (cyclic, pedals, collective and throttles) through their full throw ranges. Verify that the full throw ranges are available, that there is no abnormal free-play and that the controls operate smoothly.

1.4.1.3. Disconnect the external hydraulic power supply.

1.4.1.4. Move all the secondary mechanical controls (Park Brake, Rotor Brake, Nose wheel lock, etc.) through their full throw ranges. Verify that the full throw ranges are available and that the controls operate smoothly.

1.4.1.5. Visually check all controls (flight and secondary) and verify that required markings are present and correct.

1.4.2. Instrument Installation and Markings

1.4.2.1. Visually check all instruments for correct location and proper alignment on the instrument panel (Fig.1).

1.4.2.2. Verify that all instruments are correctly marked in accordance with the Rotorcraft Flight Manual.

1.4.3. Switches/Circuit Breakers Installation and Markings

1.4.3.1. Move each electrical switch to all its positions. Verify that each switch operates smoothly and that switch detents and stops are functional.

1.4.3.2. Release and engage each circuit breaker. Verify that the release and engagement mechanisms function correctly.

1.4.3.3. Visually check all electrical switches and circuit breakers and verify that required markings are present and correct.

1.4.4. Initial Electrical System Power-up

1.4.4.1. Select DC ESS BUS # 1, DC ESS BUS # 2 and BUS TIE circuit breakers IN.

1.4.4.2. Select BAT switch ON.

1.4.4.3. Select GEN BUS 1 and GEN BUS 2 switches ON.

1.4.4.4. Verify that the following parameters show zero values on EDU 1:

- N1
- ΔN1 Blank Turbomeca ARRUS 2K1
- TQ (+/-2.5% is permissible) PW206C
- NR

1.4.4.5. Verify that the following parameters show zero values on the MAIN page of EDU 2:

- ENG 1 OIL PRESS
- XMSN OIL PRESS
- ENG 2 OIL PRESS
- HYD 1 PRESS
- FUEL 1 PRESS and FUEL 2 PRESS
- HYD 2 PRESS

1.4.4.6. Verify that the following parameters show expected values on the MAIN page of the EDU 2:

- ENG 1 OIL TEMP (approx. ambient temperature)

- XMSN OIL TEMP (approx. ambient temperature)
- OAT (approx. ambient temperature)
- ENG 2 OIL TEMP (approx. ambient temperature)
- FUEL 1 and FUEL 2 quantity

1.4.4.7. Check battery voltage on the AUX page of EDU 2 (voltage should range from 23 VDC to 28 VDC).

1.4.4.8. Verify that the green landing gear position indicators (LH-NOSE-RH) are illuminated; push the test button and verify that the red (gear unsafe) warning light illuminates

1.4.4.9. Select GEN BUS 1 and GEN BUS 2 switches OFF.

1.4.4.10. Select the BAT switch OFF.

Note Select the battery switch ON prior to starting any functional test. Then, connect a 28 VDC external power source to the external power receptacle on the right side of the helicopter. The external power source voltage should be adequate but not excessive (a maximum of 28 Volts to ensure a positive start). In the CAA variant, verify that the caution "BATTERY OFF" appears on the caution annunciator panel when external power is connected..

1.4.5. Caution and Warning Annunciators/Audio Warnings

1.4.5.1. Select the GEN BUS 1 & GEN BUS 2 switches ON

1.4.5.2. Press the CLR switch to re-order the annunciations.

1.4.5.3. The annunciators shown in the table below should be illuminated:

LEFT COLUMN	CENTER COLUMN	RIGHT COLUMN
FUEL PUMP 1 #1 OIL PRES (**) SERVO 1 MAIN UTIL PRESS (*) #1 DC GEN INV 1 VG 1 SAS 1 OFF	ROTOR LOW XMSN OIL PRES CABIN DOOR (*) EXT PWR ON (*) PARK BRK ON (*) BATTERY OFF (***)	FUEL PUMP 2 #2 OIL PRES (**) SERVO 2 EMER UTIL PRES (*) #2 DC GEN INV 2 VG 2 SAS 2 OFF

Notes: (*) This annunciation will be displayed only if the corresponding input signal is active.

(**) This annunciation will be placed at the top of the page for the CAA variant from s/n 11078 (warning message), and Turbomeca ARRIUS 2K1.

(***) This annunciation is used in the CAA variant from s/n 11078 and Turbomeca ARRIUS 2K1.

1.4.5.4. Push the TEST function key on EDU 1 and verify that the pilot's and copilot's MASTER CAUTION and MASTER WARNING (push button) annunciators illuminate and flash.

1.4.5.5. Push the MASTER CAUTION and MASTER WARNING push-buttons and verify that the flashing mode terminates.

1.4.5.6. Pull out the HYD UTIL CTL circuit breaker and verify that the MAIN UTIL PRESS message is extinguished and the EDU 1 display switches to the CRUISE format.

1.4.5.7. Verify that the ENG 1 OUT and ENG 2 OUT warnings appear on EDU 1 and that the N2/NR scale reverts to the allowable power OFF RPM range.

1.4.5.8. Push in the HYD UTIL CTL circuit breaker and verify that the MAIN UTIL PRES message is illuminated.

1.4.5.9. Press the MASTER reset push-button on collective grip to terminate the flashing mode of MASTER CAUTION.

1.4.5.10. On the lower console, select the AWG switch to the TEST position and hold for 6 seconds. The voice warning test message sequence should be activated (only if an ICS is installed) and the following audio tones should be heard, in the sequence shown below:

- TEST OK
- Tone 1 ROTOR LOW
- Tone 2 ENGINE 1 OUT
- Tone 2 ENGINE 2 OUT
- Tone 3 ENGINE 1 FIRE
- Tone 3 ENGINE 2 FIRE
- Tone 4 WARNING
- Tone 4 ROTOR HIGH
- Tone 6 LANDING GEAR
- Tone 7 200 FEET
- Tone 7 150 FEET

1.4.5.11. Select GEN BUS 2 switch ON

1.4.5.12. Select GEN BUS 1 switch OFF

1.4.6. Engine Fire Test

1.4.6.1. Press M key on EDU 1

1.4.6.2. Press TEST function key and check:

1.4.6.3. On EDU1 the activation of ENG 1 FIRE and ENG 2 FIRE warning messages.

1.4.6.4. On ENG MODE control panel the activation of both red FIRE lamps.

1.4.6.5. On both FIRE ESTINGUISHER push buttons the activation of both red FIRE lamps.

1.4.6.6. On both PLA the activation of red lamps

1.4.7. Electrical System - DC Generator Bus Switches

Note This procedure requires an assistant, since the relevant circuit breakers are located in the baggage compartment.

1.4.7.1. Pull the GEN BUS 1 and GEN BUS 2 circuit breakers OUT. Select the GEN BUS 1 switch to ON; the switch should not stay engaged.

1.4.7.2. Push the GEN BUS 1 circuit breaker IN. Select the GEN BUS 1 switch to ON; the switch should stay engaged. Select the GEN BUS 1 switch OFF.

1.4.7.3. Pull the GEN BUS 1 circuit breaker OUT. Select the GEN BUS 2 switch to ON; the switch should not stay engaged.

1.4.7.4. Push the GEN BUS 2 circuit breaker IN. Select the GEN BUS 2 switch to ON; the switch should stay engaged. Select the GEN BUS 2 switch OFF.

1.4.7.5. Push the GEN BUS 1 circuit breaker IN.

1.4.8. Electrical System - AC Inverter Switches

1.4.8.1. Select the GEN BUS 1 and GEN BUS 2 switches ON.

1.4.8.2. Verify that INV 1 and INV 2 switches are OFF.

1.4.8.3. Pull out the INV 1 and INV 2 circuit breakers.

1.4.8.4. Select the INV 1 and INV 2 switches to ON. Verify that the INV 1 and INV 2 caution messages are displayed on EDU 1. Reset the INV 1 and INV 2 switches to OFF.

1.4.8.5. Push the INV 1 circuit breaker IN and select the INV 1 switch to the ON position. Verify that the INV 1 caution message extinguishes and that, on the EDU 2 AUX page, the correct AC voltage is indicated on both digital fields.

1.4.8.6. Push the INV 2 circuit breaker IN and select the INV 2 switch to ON. Verify that the INV 2 caution message extinguishes.

Note Proceed with the following checks when the VG1 and VG2 caution lights have extinguished (this should occur within two minutes after activation of the inverters).

1.4.8.7. Select the INV 1 switch OFF. Check that the VG1 caution message illuminates instantaneously and extinguishes as the INV 1 caution message appears. Reset the INV 1 switch to ON.

1.4.8.8. Select the INV 2 switch OFF. Check that the VG2 caution message illuminates instantaneously and extinguishes as the INV 2 caution message appears.

1.4.8.9. Select GEN BUS 1 and GEN BUS 2 switches OFF.

1.4.9. Electrical System - Engine Starting Circuit

1.4.9.1. Pull the IGN SYS 1 and IGN SYS 2 (STARTER GEN 1 and STARTER GEN 2 panel) circuit breakers OUT.

1.4.9.2. Verify that the fuel valve switches are OFF.

1.4.9.3. Verify that both power levers are OFF (full rearward).

1.4.9.4. Select GEN BUS 1 and GEN BUS 2 switches to ON.

1.4.9.5. Pull the START RELAY (STARTER GEN 1 panel) circuit breaker OUT.

1.4.9.6. Push the # 1 engine starter button; the starter generator should not operate.

1.4.9.7. Repeat step 1.4.9.6 with the START RELAY (STARTER GEN 1 panel) circuit breaker IN and verify that the starter generator provides normal gas producer (N1) acceleration.

Note Do not permit the gas producer RPM to exceed 15%

1.4.9.8. Repeat steps 1.4.9.5 through 1.4.9.7 on engine starter system # 2.

1.4.9.9. Select GEN BUS 1 and GEN BUS 2 switches to OFF.

1.4.9.10. Push the IGN SYS (STARTER GEN 1 & STARTER GEN 2 panels) circuit breakers IN.

1.4.10. Fuel System

1.4.10.1. Select GEN BUS 1 and GEN BUS 2 switches to ON.

1.4.10.2. Select the CROSS FEED fuel switch to the NORM position.

1.4.10.3. Verify that the FUEL PUMP 1 and FUEL PUMP 2 caution messages, on EDU 1, are illuminated.

1.4.10.4. Verify that #1 A/F F FLTR and #2 A/F F FLTR lights on the caution panel are extinguished.

1.4.10.5. Check the fuel quantity gauge of each tank on EDU 2 in AUX page (#1 FUEL LOW and #2 FUEL LOW caution annunciators should be extinguished if the fuel quantity, in each tank, is more than 30 Kg).

1.4.10.6. Pull out the QTY 1 (FUEL SYS 1 panel) circuit breaker and verify that the #1 needle indicates zero and the digital indicator shows a dashed line.

1.4.10.7. Check that the #1 FUEL LOW caution annunciator is illuminated and MAINTENANCE annunciator on EDU 2, Push the circuit breaker in.

1.4.10.8. Pull out the QTY 2 (Fuel SYS 2) circuit breaker and verify that the #2 needle indicates zero and the digital indicator shows a dashed line.

1.4.10.9. Check that the #2 FUEL LOW caution annunciator is illuminated and MAINTENANCE annunciator on EDU 2. Push the circuit breaker in.

1.4.10.10. Verify that fuel pressure gauges 1 and 2 indicate zero pressure.

1.4.10.11. Select FUEL PUMP 1 (#1 tank) switch to ON.

1.4.10.12. Check that the FUEL PUMP 1 caution message is extinguished.

1.4.10.13. Pull out the PUMP 1 circuit breakers and verify that the FUEL PUMP 1 caution message illuminates. Push them back in; the message should extinguish.

1.4.10.14. Select the ENG 1 FUEL switch to ON; verify that the fuel pressure indicated on #1 gauge is within normal operating limits (green arc). The #1 fuel valve position indicator should display a vertical bar (valve open). The #1 A/F F FLTR caution message should be extinguished.

1.4.10.15. Pull out the VALVE 1 circuit breaker (FUEL SYS 1 panel). The #1 fuel valve position indicator should display a single dot.

1.4.10.16. Select the ENG 1 FUEL switch to OFF; verify no fuel pressure change.

1.4.10.17. Push in the VALVE 1 circuit breaker; verify that the fuel pressure indication falls to zero. The #1 fuel valve position indicator should display a horizontal bar (valve closed).

1.4.10.18. Select the ENG 1 FUEL switch to ON; verify a normal operating fuel pressure indication.

1.4.10.19. Verify that the cross-feed valve position indicator shows "open" (horizontal bar).

1.4.10.20. Select the CROSS FEED valve to the CLOSED position; verify that the cross-feed valve indicator shows “closed” (vertical bar).

1.4.10.21. Re-select the CROSS FEED valve to the NORM position.

1.4.10.22. Select the ENG 2 FUEL switch to ON; verify that the fuel pressure indicated on both fuel pressure gauges is within normal operating limits (green arc). The #2 fuel valve position indicator should display a vertical bar (valve open). The #2 A/F F FLTR caution message should be extinguished.

1.4.10.23. Pull out the VALVE 2 circuit breaker (FUEL SYS 2 panel). The #2 fuel valve position indicator should display a single dot.

1.4.10.24. Select the ENG 2 FUEL switch to OFF; verify no fuel pressure change.

1.4.10.25. Push in the VALVE 2 circuit breaker; verify that the fuel pressure indication falls to zero. The #2 fuel valve position indicator should display a vertical bar (valve closed).

1.4.10.26. Select the ENG 2 FUEL switch to ON; verify a normal operating fuel pressure indication.

1.4.10.27. Select the FUEL PUMP 2 (Tank #2) switch to ON; verify that the FUEL PUMP 2 caution message is extinguished. Verify that the cross-feed valve position indicator shows "closed" (vertical bar) and that both fuel pressure gauges indicate normal operating fuel pressure.

1.4.10.28. Pull out PUMP 2 circuit breaker; verify that FUEL PUMP 2 caution message illuminates. Check that cross-feed valve position indicator shows "open" (horizontal bar) and that both fuel pressure gauges indicate normal operating fuel pressure. Push in the circuit breaker and verify that the caution message extinguishes and the cross-feed valve position indicator shows "closed" (vertical bar).

1.4.10.29. Check that all system caution messages are extinguished.

1.4.10.30. Select the FUEL PUMP 1 switch to OFF and verify that fuel pressure remains in the normal operating range.

1.4.10.31. Select the CROSS FEED valve switch to CLOSED. Verify that the cross-feed valve indicator is vertical and the # 1 fuel pressure gauge indicates zero pressure.

1.4.10.32. Select ENG 1 FUEL and ENG 2 FUEL switches to OFF.

1.4.10.33. Select FUEL PUMP 2 switch to OFF.

1.4.10.34. Select the CROSS FEED valve switch to the NORMAL position.

1.4.10.35. Select the GEN BUS 1 and GEN BUS 2 switches OFF.

1.4.11. Engine Air Particle Separator (EAPS) (if installed)

1.4.11.1. Select the GEN BUS 1 and GEN BUS 2 switches ON.

1.4.11.2. Select the EAPS 1 and EAPS 2 switches ON.

1.4.11.3. Verify that the #1 EAPS On and #2 EAPS ON advisories are displayed on EDU 2 and that, following a short delay, the #1 EAPS PRES and #2 EAPS PRES caution messages are displayed on EDU 1.

1.4.11.4. Select the EAPS 1 and EAPS 2 switches OFF.

1.4.11.5. Select the GEN BUS 1 and GEN BUS 2 switches OFF

1.4.12. Cabin Ventilation System

1.4.12.1. Select the GEN BUS 1 and GEN BUS 2 switches ON.

1.4.12.2. Select the CKPT VENT switch to LOW and verify that the VENT ON message, on EDU 2, is illuminated and the ventilation system is working. Pull out the cabin VENT knob and verify airflow coming from the windshield diffusers. Set the switch to HIGH and verify airflow increase, then push in the cabin VENT knob to stop the airflow.

1.4.12.3. Set the CKPT VENT switch to OFF and check that the VENT ON message extinguishes and the ventilation system stops.

1.4.12.4. Select the GEN BUS 1 and GEN BUS 2 switches OFF

1.4.13. Windshield Wiper System (if installed)

CAUTION

During this test, the wiper(s) must remain away from the plexiglass to prevent any damage to the surface. This can be done by lifting the wipers and inserting a 3 mm diameter pin into the holes near the hinges.

1.4.13.1. Select GEN BUS 1 and GEN BUS 2 switches ON.

Note Select the procedure applicable to the helicopter configuration; step 1.4.13.2 refers to Version with Wiper switch on the Overhead Console, step 1.4.13.3 refers to Version with Wiper switch on the Cyclic Control.

1.4.13.2. (Version with Wiper switch on the Overhead Console)

a) Select the PLT WIPER to LOW and HIGH. Check pilot wiper movement and speed variation for each selection.

b) Pull out the WIPER PLT circuit breaker and verify that the pilot wiper stops. Push the circuit breaker in.

c) Select the PILOT WIPER switch to OFF and check that the pilot wipe stops in the parked position.

1.4.13.3. (Version with Wiper switch on the Cyclic Control)

a) Select the PLT WIPER switch on the overhead console to the ON position. Select the Wiper selector switch on the pilot cyclic to the Low and High positions. Verify that the pilot wiper moves at the selected speed.

b) Select the PILOT WIPER switch to OFF and check that the pilot wiper stops in the parked position.

1.4.13.4. Repeat the steps 1.4.13.2 or 1.4.13.3 above for the copilot system.

1.4.13.5. Select GEN BUS 1 and GEN BUS 2 switches OFF

1.4.14. Pitot Heat System

1.4.14.1. Select GEN BUS 1 and GEN BUS 2 switches ON

1.4.14.2. Utilize an outside observer to verify the function of the Pitot anti-ice system when executing steps 1.4.14.3 and 1.4.14.4, below.

CAUTION

Do not activate the Pitot anti-ice system for an extended period with the helicopter on the ground.

1.4.14.3. Set the PITOT 1 and PITOT 2 control switches ON and check that the PITOT HEAT 1 and PITOT HEAT 2 advisory messages illuminate on EDU 2 and that the pitot tubes are heating.

1.4.14.4. Select the PITOT 1 and PITOT 2 switches OFF and check that the advisory messages extinguish and the Pitot tubes are cooling.

1.4.14.5. Select GEN BUS 1 and GEN BUS 2 switches OFF

1.4.15. Instrument Lighting System

1.4.15.1. Select GEN BUS 1 and GEN BUS 2 switches ON

1.4.15.2. Rotate the PED LT knob clockwise. Verify that the following lights illuminate and that brightness increases as the knob is rotated:

- Pax ICS control panel (if installed in pedestal)
- Pilot ICS panel (if installed in pedestal)
- Landing gear panel/Servo controls
- Helipilot control panel
- Miscellaneous panel
- Gyro compass panel
- Fuel management panel
- Engine Mode selector
- RDR2000 control panel (if installed)
- Pilot collective panel

1.4.15.3. Pull out the PED LT circuit breaker and verify that the pedestal lights extinguish. Push it in and verify that the instrument lights re-illuminate.

1.4.15.4. Rotate the PED LT knob counter-clockwise. Check that light brilliance decreases. Continue counter-clockwise rotation past the detent and verify that the pedestal lights extinguish completely.

1.4.15.5. Rotate the INST PNL knob clockwise. Verify that both EDU displays dim, that the following instrument lights illuminate and that brightness increases as the knob is rotated:

- Magnetic compass
- Clock
- Radar altimeter (not installed in the EFIS variant)
- Encoding altimeter
- Pilot vertical speed indicator
- Pilot's ADI (if installed)
- Pilot's HSI (if installed)
- Pilot's ICS panel (if installed on cockpit)
- Pilot's airspeed indicator
- Flight Director Control Panel (if installed)
- Standby ADI
- Copilot Altimeter (STBY in the CAA variant)
- Copilot vertical speed indicator
- Copilot's ADI (if installed)
- Copilot's HSI (if installed)
- Copilot's airspeed indicator
- Copilot's ICS panel (if installed on cockpit)

1.4.15.6. Pull out the INST PNL circuit breaker and verify that the instrument lights extinguish. Push it in and verify that the instrument lights re-illuminate.

1.4.15.7. Rotate the INST PNL knob counter-clockwise. Check that light brilliance decreases. Continue counter-clockwise rotation past the detent and verify that the instrument lights extinguish completely and both EDU displays brighten.

1.4.15.8. Repeat steps 1.4.15.2 through 1.4.15.4 with the OVHD and CSL knob and with the OVHD CSL (LT SYS panel) circuit breaker to check the following lights:

- VNE placard
- Central overhead panel and circuit breakers

1.4.15.9. Select GEN BUS 1 and GEN BUS 2 switches OFF

1.4.16. Auxiliary and ANTISTORM Lighting (if installed)

1.4.16.1. Select GEN BUS 1 and GEN BUS 2 switches ON

1.4.16.2. Rotate the rheostat control at the rear of the pilot's auxiliary light to activate the light. Verify brilliance regulation by rotating the control clockwise. Verify concentration/diffusion of the light by rotating the bezel on the front side of the light.

1.4.16.3. With the auxiliary light off, push the spring loaded button on the aft side of the light and check maximum brightness.

1.4.16.4. Pull out the PLT CKPT (LT SYS panel) circuit breaker and verify that the pilot auxiliary light does not operate when switched on. Push the circuit breaker in.

1.4.16.5. Repeat steps 1.4.16.2 through 1.4.16.4 on the copilot auxiliary light using the CPLT CKPT (LT SYS) circuit breaker to check that light.

1.4.16.6. Select the ANTISTORM LT switch ON and check the pilot storm light for correct functioning (if installed).

1.4.16.7. Select GEN 1 BUS & GEN 2 BUS switches OFF

1.4.17. Cabin Light System (if installed)

1.4.17.1. Select GEN BUS 1 and GEN BUS 2 switches ON

1.4.17.2. Select CAB switch to ON and check that all READ keys in passenger cabin illuminate.

1.4.17.3. Push each READ key and verify that the correspondent light illuminates.

1.4.17.4. Switch OFF all lamps and then select CAB switch to OFF.

1.4.17.5. Select GEN BUS 1 and GEN BUS 2 switches OFF

1.4.18. Passengers' Warning Lights (if installed)

1.4.18.1. Select GEN BUS 1 and GEN BUS 2 switches ON

1.4.18.2. Select PASS WRN LTS switch to ON and check that all passengers' warning light are ON in passenger cabin.

1.4.18.3. Select the switch to OFF and check lights are extinguished.

1.4.18.4. Select GEN BUS 1 and GEN BUS 2 switches OFF

1.4.19. Position Lights

Note Utilize an outside observer to simplify the check.

1.4.19.1. Select GEN BUS 2 switch ON

1.4.19.2. Select POS switch ON. Check for position lights illumination.

1.4.19.3. Select POS switch OFF. Check that lights are extinguished.

1.4.19.4. Select GEN BUS 2 switch OFF

1.4.20. Anti-collision Lights

Note Utilize an outside observer to simplify the check.

1.4.20.1. Select GEN BUS 2 switch ON

1.4.20.2. Select A-COLL switch ON. Verify that anti-collision lights illuminate and flash.

1.4.20.3. Select A-COLL switch OFF. Check that anti-collision lights are extinguished.

1.4.20.4. Select GEN BUS 2 switch OFF

1.4.21. Alternative Lights System (if installed)

Note This check should be carried out in low light conditions.

1.4.21.1. Select GEN BUS 1 and GEN BUS 2 switch ON

1.4.21.2. Select NORM/NVG switch to NVG position (or ALT LT switch to ON position) and verify that all instrument lights are extinguished and that the cockpit green floodlights are illuminated.

1.4.21.3. Select NORM/NVG switch to NORM (or ALT LT switch to OFF position) and check that all instrument lights illuminate.

1.4.21.4. Select the A-COLL switch (if installed) to NVG position and check that the RED anti-collision lights are extinguished and that the blue NVG compatible lights illuminate.

1.4.21.5. Reselect A-COLL switch to OFF.

1.4.21.6. Select GEN BUS 1 and GEN BUS 2 switch OFF

1.4.22. Strobe Lights (if installed)

Note Utilize an outside observer to simplify the check.

1.4.22.1. Select GEN BUS 2 switch ON

1.4.22.2. Select STROBE LT switch ON. Verify that strobe lights illuminate and flash.

1.4.22.3. Select STROBE LT switch OFF. Check that strobe lights are extinguished.

1.4.22.4. Select GEN BUS 2 switch OFF

1.4.23. Landing Lights

Note Utilize an outside observer to simplify the check.

1.4.23.1. Select GEN BUS 1 switch ON

CAUTION

Do NOT switch on landing light near flammable material.

1.4.23.2. Select the LDG LT switch (on the collective control) to the FWD (center position). Check that the landing light is illuminated and set properly (directed downward). The advisory message LANDING LT ON should be present on EDU 2 and the cooling fan should activate.

1.4.23.3. Select the LDG LT switch to BOTH. Check that the second lamp illuminates.

1.4.23.4. Pull out the LDG circuit breaker (LT SYS panel) and verify that the lights extinguish and the fan stops. Push the circuit breaker in and check that the lights illuminate and the fan activates.

1.4.23.5. Select the LDG LT switch OFF. Check that both lights extinguish.

1.4.23.6. Select the GEN BUS 1 switch OFF

1.4.24. Landing Lights (search light)

Note Utilize an outside observer to simplify the check.

1.4.24.1. Select the GEN BUS 1 switch ON

CAUTION

Do NOT switch on landing light near flammable material.

1.4.24.2. Select the LDG LT switch to the FWD position. Check that the landing light is illuminated and set properly (directed downward).

1.4.24.3. Check that the advisory message LANDING LT ON is present on EDU2 (center column) and the cooling fan is activated.

1.4.24.4. Pull out LDG (LT SYS panel) circuit breaker and verify that the light goes out and the cooling fan stops. Push the circuit breaker in and check that the light illuminates and the fan activates.

1.4.24.5. Select the LDG LT switch OFF. Check that the light extinguishes.

1.4.24.6. Select the SCHLT switch (on the collective grip) to the ON position and push the SCHLT controller to the EXT position in order to extract the lamp. Check that the light illuminates.

1.4.24.7. Select the SCHLT light controller to all positions (L - R - RETR) and check for correct light movement.

1.4.24.8. Select the SCHLT switch to the STOW position and check that the system is retracted and that the lamp extinguishes, then select SCHLT switch to OFF

1.4.24.9. Select the GEN BUS 1 switch OFF

1.4.25. Flood Lights (if installed)

Note Utilize an outside observer to simplify the check.

1.4.25.1. Select GEN BUS 2 switch ON

1.4.25.2. Select FLDT switch ON. Check for floodlight illumination.

1.4.25.3. Select FLDT switch OFF. Check that floodlights are extinguished.

1.4.25.4. Select GEN BUS 2 switch OFF

1.4.26. ICS System and VHF Radios (preliminary check)

1.4.26.1. Select GEN BUS 1 and GEN BUS 2 switches ON .

1.4.26.2. Check the clarity of communications between the pilot's and copilot's stations in the two ICS modes (HOT-MIC (VOX) and PTT).

1.4.26.3. Check the PTT mode using the pilot's and copilot's foot switches (select the transmitter selector to the OFF position).

1.4.26.4. Verify that it is possible to adjust the pilot's and copilot's intercommunication volume using the ICS-VOL control knobs.

1.4.26.5. Check the functioning of the interphone voice trigger with the VOX control knob (ICS must be set in the HOT-MIC mode)

1.4.26.6. Set radio master switch to the GND position (if installed).

Note In versions without the GND position, perform the following steps with the Radio Master (RAD MSTR) switch selected to the ON position.

1.4.26.7. On the pilot and copilot ICS panels, select VHF #1 or VHF #2 as the active transmitter.

1.4.26.8. Select a manual or pre-selected frequency on the available VHF radio and establish two-way communications with a local station.

1.4.26.9. For both the pilot and copilot stations, verify that the signals transmitted and received are of good quality (loud and clear) and suitably adjustable using the volume control. Check the sidetone adequacy and level and verify squelch operation and functionality.

1.4.26.10. Pull the PLT ICS circuit breaker and select the red switch on the pilot ICS control panel to the FAIL position. Check that the pilot ICS is fully operative in the FAIL mode. Push in the PLT ICS circuit breaker and reselect NORM on ICS control panel.

1.4.26.11. Pull the CPLT ICS circuit breaker and select the red switch on the copilot ICS control panel to the FAIL position. Check that the copilot ICS is fully operative in the FAIL mode. Push in the CPLT ICS circuit breaker.

Note The copilot FAIL mode function is not available in all versions of the helicopter

1.4.26.12. Set the Radio Master switch to OFF and verify that all the avionic equipment (VHF/AM-VOR-ADF-DME-GPS-TRASPONDER) is inoperative.

1.4.26.13. Pull both RADIO MASTER OVRD circuit breakers and verify that all the avionic equipment is operative. Push in both circuit breakers.

1.4.26.14. Select the GEN BUS 1 and GEN BUS 2 switches OFF

1.4.27. External Hoist (if installed)

Note Utilize a hoist operator assistant to execute these checks.

Note The hoist checks, below, must be accomplished with the load selection switch set to both 113 kg and 272 kg.

1.4.27.1. Select GEN BUS 1 and GEN BUS 2 switches to ON .

1.4.27.2. Check that hoist operator is wearing gloves.

1.4.27.3. Select the main HOIST switch to the ON position. Verify that the HOIST ON advisory is displayed on EDU 2.

1.4.27.4. Verify that the HOIST CABLE LKD caution message is not displayed on EDU 1.

1.4.27.5. Select the HOIST control switch, on the pilot's cyclic stick, to the DOWN position.

1.4.27.6. Verify that the hoist hook is lowering.

1.4.27.7. Verify that the cable payout display shows the length of cable deployed.

1.4.27.8. Select the HOIST control switch, on the pilot's cyclic stick, to the UP position.

1.4.27.9. Verify that the hoist hook is raising.

Note When reeling in the cable, with no load, apply friction to the cable, with gloved hands, to assure smooth and even wrapping.

1.4.27.10. Rotate the HOIST thumb wheel, on the hoist remote control, to the DN and UP positions and verify that the hoist hook moves correctly.

1.4.27.11. Instruct the hoist operator to select the DN position, using the thumb wheel; then, select UP on the pilot's cyclic stick. The UP command from the pilot's cyclic stick should over-ride the DN command from the thumb wheel and the hook should raise.

1.4.27.12. Repeat step 1.4.27.11, reversing the cyclic and thumb wheel commands and verify cyclic authority in the alternate directions.

1.4.27.13. Raise the hoist hook to its fully retracted position using the cyclic control.

1.4.27.14. Select the thumb wheel control to the OFF position.

1.4.27.15. Select the main HOIST switch to the OFF position. Verify that the HOIST ON advisory, on EDU 2, is extinguished.

1.4.28. Cargo Hook (if installed)

Note Utilize an assistant to execute these checks

1.4.28.1. Select the BAT switch to ON .

1.4.28.2. Select GEN BUS 1 and GEN BUS 2 switches to ON .

1.4.28.3. Verify on EDU 1 that the HOOK ARMED caution light is extinguished.

1.4.28.4. Lift the guard of CARGO HOOK push button on cyclic stick.

1.4.28.5. Check on EDU 1 that HOOK ARMED caution message is displayed

1.4.28.6. Pull and hold the CARGO HOOK push button on cyclic stick and verify that both the cargo hook has opened and HOOK OPEN caution message on EDU1 is displayed.

1.4.28.7. Release the switch and verify that both the cargo hook closes and that the HOOK OPEN caution message goes out.

1.4.28.8. Lower the guard on CARGO HOOK pushbutton on the cyclic stick and verify on EDU 1 that the HOOK ARMED caution light is extinguished.

1.4.28.9. Pull (one at a time) the mechanical EMER CARGO RELEASE PULL handles; verify that the respective cargo hook opens and that HOOK OPEN caution message on EDU1 is displayed.

1.4.28.10. Release the handles and verify that both cargo hook return to the closed position and that the HOOK OPEN caution message goes out.

1.4.29. Emergency Floats (if installed)

1.4.29.1. Select GEN BUS 1 and GEN BUS 2 switches ON

1.4.29.2. Open the switch guard and select the EMERGENCY FLOATS switch to the ARMED position.

1.4.29.3. Verify that the FLOATS ARMED caution is displayed on EDU 1.

1.4.29.4. Select the EMERGENCY FLOATS switch to the OFF position and close the guard.

1.4.29.5. Select GEN BUS 2 switch OFF

1.4.30. Oxygen System (if installed)

Note Utilize an outside observer to simplify the check.

1.4.30.1. Select GEN BUS 1 and GEN BUS 2 switches ON.

1.4.30.2. Open the utility compartment door to obtain access to the oxygen bottles.

1.4.30.3. Verify that the UTIL DOOR caution is displayed on EDU 1.

1.4.30.4. Close the door and verify that the caution message is extinguished.

1.4.30.5. Pull out the oxygen push-pull control, located on the pilot's side of the overhead console, and verify that the OXYGEN CLOSED advisory on EDU 2 is extinguished.

1.4.30.6. Push in the oxygen push-pull control and verify that the OXYGEN CLOSED advisory on EDU 2 is displayed.

1.4.30.7. Select GEN BUS 1 and GEN BUS 2 switches OFF.

1.5. Initial Engine Start Procedures for Pratt and Whitney 206C

1.5.1. Pre-start Checks, PW206C

1.5.1.1. Complete the steps outlined under, "Preliminary Steps" (Step 1.1), "Internal Inspection" (Step 1.2), “External Inspection” (Step 1.3) and “Systems Functional Checks (power OFF)” (Steps 1.4.1 thru 1.4.10), before proceeding with an engine start. Utilize the ENGINE PRE-START CHECK LIST, as outlined in the Rotorcraft Flight Manual, to execute pre-starting procedures.

1.5.1.2. Connect an EXT PWR source and select GEN BUS 1 & GEN BUS 2 switches ON. Select the AVIONIC MASTER switch OFF or to the GND position (if installed).

1.5.2. Engine Starting, PW206C

1.5.2.1. Select the LD-SH (Load Share) switch to the TORQUE position.

1.5.2.2. Select the avionic master to the ON (or GND position, if installed) and call the tower, as required.

1.5.2.3. Post a fire guard.

1.5.2.4. Manually and gently move both power levers to the FLIGHT position; check for freedom of lever movement, detent position and the stop at the FLIGHT position; then, return both levers to the OFF position.

1.5.2.5. With ENG1 GOV and ENG2 GOV switches in the AUTO mode, operate the ENG1 TRIM and ENG2 TRIM toggle switches (on the collective control) to verify that the engine power levers travel forward, but not beyond the FLIGHT position and back-ward, but not beyond the IDLE position.

1.5.2.6. Select the ENG1 GOV switch to MANUAL (the caution annunciator should illuminate and the N1, TOT and TRQ captions should switch to a magenta color). Operate the ENG1 TRIM toggle switch to check for full travel of the engine power lever (up to the MAX position); then, select the engine power lever to the FLIGHT position and select the ENG1 GOV to AUTO.

1.5.2.7. Set the ENG2 GOV switch to MANUAL (caution annunciator should illuminate). Operate the ENG2 TRIM toggle switch to check for full travel of the engine power lever (up to the MAX position); then, set the engine power lever to the FLIGHT position and set the ENG2 GOV to AUTO.

CAUTION

Utilize an assistant to observe the engine, combining gearbox, oil coolers, transmission and tail pipe areas for leaks, signs or sources of potential fire, or hot start indications.

1.5.2.8. Start the engines using external power and the start sequence described in the Rotorcraft Flight Manual. Monitor instruments for abnormal temperatures, pressures and indications of any impending problem.

1.5.2.9. Check for automatic starter dis-engagement when compressor speed (N1) reaches 50% ±2 %. START and IGN legends should be automatically suppressed.

1.5.2.10. Verify that the engine, transmission and hydraulic oil pressures are within limits.

1.5.2.11. Have the observer check for engine and transmission oil leaks.

1.6. Initial Engine Start Procedures for Turbomeca ARRIUS 2K1

1.6.1. Pre-start Checks, TM ARRIUS 2K1

1.6.1.1. Complete the steps outlined under, "Preliminary Steps" (Step 1.1), "Internal Inspection" (Step 1.2), “External Inspection” (Step 1.3) and “Systems Functional Checks (power OFF)” (Steps 1.4.1 thru 1.4.10), before proceeding with an engine start. Utilize the ENGINE PRE-START CHECK LIST, as outlined in the Rotorcraft Flight Manual, to execute pre-starting procedures.

1.6.1.2. Connect an EXT PWR source and select GEN BUS 1 & GEN BUS 2 switches ON. Select the AVIONIC MASTER switch OFF or to the GND position (if installed).

1.6.2. Engine Starting, TM ARRIUS 2K1

1.6.2.1. Select the LD-SH (Load Share) switch to the TORQUE position.

1.6.2.2. Select the RAD MSTR to the ON (or GND position, if installed) and call the tower, as required.

1.6.2.3. Post a fire guard.

1.6.2.4. Check both power levers to the FLIGHT position. With ENG1 GOV and ENG2 GOV switches in the AUTO mode, operate the ENG1 TRIM and ENG2 TRIM toggle switches (on the collective control) to verify that the engine power levers travel forward, but not beyond the FLIGHT position and back-ward, but not beyond the IDLE position.

1.6.2.5. Check the 1-2 PLA CAUTION lights are ON during the power lever range check, when the levers are out of the FLT position.

1.6.2.6. Select the ENG1 GOV switch to MAN (the caution annunciator should illuminate, the ΔN1, TQ, TOT captions should switch to a magenta color and PLA caution lights should go off). Operate the ENG1 TRIM toggle switch to check for full travel of the engine power lever (up to the MAX position); then, select the engine power lever to the FLIGHT position and select the ENG1 GOV

to AUTO. Check the PLA CAUTION light is OFF, if NOT reset the power lever in the FLIGHT position moving it gently aft and returning to FLIGHT.

1.6.2.7. Select the ENG2 GOV switch to MAN (the caution annunciator should illuminate and the N1 and TOT captions should switch to a magenta color and PLA caution lights goes off). Operate the ENG2 TRIM toggle switch to check for full travel of the engine power lever (up to the MAX position); then, select the engine power lever to the FLIGHT position and select the ENG2 GOV to AUTO. Check the PLA CAUTION light is OFF, if NOT reset the power lever in the FLIGHT position moving it gently aft and returning to FLIGHT.

CAUTION

Utilize an assistant to observe the engine, combining gearbox, oil coolers, transmission and tail pipe areas for leaks, signs or sources of potential fire, or hot start indications.

1.6.2.8. Start the engines using external power and the start sequence described in the Rotorcraft Flight Manual. Monitor instruments for abnormal temperatures, pressures and indications of any impending problem

1.6.2.9. Check for automatic starter dis-engagement when compressor speed (N1) reaches 50% ±2 %. START and IGN legends should be automatically suppressed.

1.6.2.10. Verify that the engine, transmission and hydraulic oil pressures are within limits

1.6.2.11. Verify the stability of engine parameters in the idle condition.

1.6.2.12. Have the observer check for engine and transmission oil leaks.

1.7. Engine/Rotor Checks

1.7.1. Throttle FLIGHT Setting

1.7.1.1. With both power levers in the FLIGHT position, select the BAT switch ON, disconnect the external power source, close the external power door and Note that the EXT PWR ON message extinguishes.

1.7.1.2. Stabilize at the FLIGHT setting (collective lever at flat pitch, NR = 100%). Verify that the ROTOR LOW warning message and the MASTER WARNING light extinguish.

1.7.1.3. With both engines at the FLIGHT position, with matched torques and the rotor speed (NR) at 100%, check the generator voltages. Balance the generators at the 28 VDC rated value using the ground test unit (the difference between generator voltage and bus voltage should be less than 0.5 V).

1.7.1.4. Select GEN 1 and GEN 2 switches to ON; Note that #1 DC GEN and #2 DC GEN messages extinguish. Select INV 1 and INV 2 switches ON and verify that the related caution messages extinguish.

1.7.1.5. Set the altimeter Kollsman window to 1013 mb or 29.92" Hg. Record pressure altitude and OAT.

1.7.1.6. Check that all pressures, temperatures and instrument readings are within operating limits.

1.7.1.7. Verify that the DC voltage is 28 VDC ±1 VDC; verify that the generator loads are stabilized within a range from 15 Amps to 17 Amps.

Note When making a battery start, the generator load should be 100 Amps to 160 Amps for the first 1-2 sec. It should then decrease to 50 to 60 Amps for a period of 2-3 minutes followed by a further decrease to the standard condition of 20 to 25 Amps. These values assume a fully charged battery.

1.7.1.8. Record the instrument readings specified by the check list in Annex 1. (N1,TRQ, N2/NR).

1.7.1.9. Verify that no WARNING messages are illuminated.

1.7.1.10. Verify that no CAUTION messages are illuminated except PARK BRK ON, SAS 1 OFF and SAS 2 OFF.

1.7.2. Engine Oil Pressure Setting for Pratt and Whitney PW206C

1.7.2.1. With both engines at the FLIGHT setting and stabilized at an N1 value of approximately 77.6% and an engine oil temperature (MOT) value between 79°C and 85°C, record the value of the engine oil pressure (MOP).

1.7.2.2. Using the Engine oil pressure limits of the RFM and the diagram on Figure 21, adjust engine oil pressures, as necessary.

1.7.3. Engine Oil Pressure for Turbomeca ARRIUS 2K1

1.7.3.1. With both engines at the FLIGHT setting (N1 value of approximately 82%) and engine oil temperature (MOT) value stable record OIL TEMP and PRESS.

1.7.3.2. Refer to engine maintenance manual if OIL PRESS vs N1 is outside the limit using the Engine oil pressure limits (AEO) and (OEI) diagram on the RFM.

1.7.4. Rotor RPM Low Warning

1.7.4.1. With both engines running at 100% N2/NR, simultaneously select both ENG MODE controls to IDLE and record the percent N2/NR at which the ROTOR LOW audio/annunciator warnings occur (warning light, message on EDU, cabin acoustic signal and vocal alarm). The rotor RPM at the onset of the warnings should be 90% ± 2%.

1.7.4.2. Select both ENG MODE controls to FLIGHT.

1.7.5. Droop Compensation Control

1.7.5.1. With both engines at the FLIGHT setting, select the RPM control to 102%; verify that both engines increase speed and stabilize at 102% ± 1% RPM.

1.7.5.2. Select the ENG 1 MODE control to the IDLE position.

1.7.5.3. With engine #2 in the FLIGHT position and engine #1 at IDLE, verify that the maximum N2/NR speed is 102% ± 1%.

1.7.5.4. Select ENG 1 MODE control to the FLIGHT position and ENG 2 MODE control to the IDLE position.

1.7.5.5. With engine #1 in the FLIGHT position and engine #2 at IDLE, verify that the maximum N2/NR speed is 102% ± 1%.

1.7.5.6. Select the RPM control to 100%; verify that both engines decrease speed and stabilize at 100%.

1.7.6. Engine Matching Pratt and Whitney PW206C

1.7.6.1. With both engines in the FLIGHT position, the rotor RPM at 100% and LD-SH (Load Share) in the TORQUE position, Note the torque value for each engine. The torque differential between the engines should be less than 2%. Note the turbine outlet temperature (TOT) split.

1.7.6.2. Select the LD-SH switch to the TOT position; Note the TOT value for each engine. The TOT differential between the engines should be less than 5°C. Note the TORQUE split.

1.7.6.3. Re-select the LD-SH switch to the TORQUE position

1.7.7. Engine Matching Turbomeca ARRIUS 2K1

1.7.7.1. With both engines in the FLIGHT position, the rotor RPM at 100% and LD-SH (Load Share) in the TORQUE position, Note the torque value for each engine. The torque differential between the engines should be less than 2%. Note the N1 split.

1.7.7.2. Select the LD-SH switch to the N1 position; Note the ΔN1 value for each engine. The differential between the engines should be less than 0.2%. Note the TORQUE split.

1.7.7.3. Re-select the LD-SH switch to the TORQUE position

1.8. System Functional Checks (Power ON)

Note Each system check must be conducted with both engines running at 100% N2 and with the collective at flat pitch, except as Noted below, for the rotor checks.

1.8.1. Rotor Tracking and Balancing

1.8.1.1. Main rotor tracking & balancing.

1.8.1.2. With rotor speed at 100% and cyclic control neutral, record tracking and balance data in accordance with the aircraft Maintenance Manual.

1.8.1.3. Repeat as necessary.

Note This check can be accomplished with either or both engines running. Do not change beep trim or control position between runs.

1.8.1.4. Tail rotor balancing.

1.8.1.5. With rotor speed at 100%, cyclic control neutral, collective full down, right pedal approximately 40 mm (1½ inches) forward and helicopter heading into the wind, check tail rotor balance in accordance with the aircraft Maintenance Manual.

1.8.1.6. Repeat as necessary.

1.8.2. N2 Overspeed Test for Pratt and Whitney PW206C

Note Utilize an outside assistant for this check.

1.8.2.1. Select ENG 1 and ENG 2 MODE control to IDLE.

1.8.2.2. Check collective lever set at MPOG.

1.8.2.3. Allow both engines to stabilize.

1.8.2.4. Verify that engines torque are balanced within 4%.

CAUTION

Test switch must be released before the selected engine N1 speed reaches 50%, in order to prevent an engine shut down.

1.8.2.5. Select engine #1 N2 O/S test switch (located in the baggage compartment) to TEST. Verify that engine N1 decreases to confirm that engine # 1 O/S circuitry is functioning.

1.8.2.6. Select engine #1 N2 O/S test switch to the NORMAL position to clear the N2 trip. Verify that engines torques are balanced within 4%.

1.8.2.7. Repeat steps 1.8.2.4 thru 1.8.2.6 with engine #2.

1.8.3. MANUAL Engine Mode Pratt and Whitney PW206C

1.8.3.1. Verify that both ENG GOV controls are set to the AUTO mode.

1.8.3.2. Set both ENG MODE controls to the FLT position.

1.8.3.3. Use the collective pitch to adjust torque to approximately 40% or to a value below lift-off condition, whichever is less.

1.8.3.4. Set ENG1 GOV to the MANUAL mode and check that the caution annunciator activates.

1.8.3.5. Slowly decrease PLA1 using the ENG1 TRIM beep switch in order to obtain a TRQ #1 indication near 0%; verify that engine #2 is the only engine delivering power by observing the torque values.

1.8.3.6. Continue trimming down PLA1 to the IDLE position using the ENG1 TRIM beep switch.

1.8.3.7. Set the collective lever to the minimum position.

1.8.3.8. Manually select PLA1 (power lever) to the OFF position to shut down the engine.

1.8.3.9. Select FUEL VALVE 1, FUEL PUMP 1 and ENG1 MODE to OFF; then, select ENG1 GOV to the AUTO mode.

1.8.3.10. Select ENG2 GOV to the MANUAL mode (caution annunciator should illuminate) and slowly decrease PLA2, using the ENG2 TRIM beep switch, until the engine reaches an N2/NR speed of 65%.

1.8.3.11. Select PLA2 (power lever) to the OFF position in order to shut down the second engine.

1.8.3.12. Select FUEL VALVE 2, FUEL PUMP 2 AND ENG2 MODE to OFF; then, select ENG2 GOV to the AUTO mode.

1.8.4. MANUAL Engine Mode Turbomeca ARRIUS 2K1

1.8.4.1. Verify that both ENG GOV controls are set to the AUTO mode.

1.8.4.2. Set both ENG MODE controls to the FLT position.

1.8.4.3. Use the collective pitch to adjust torque to approximately 40% or to a value below lift-off condition, whichever is less.

1.8.4.4. Set ENG1 GOV to the MANUAL mode and check that the caution annunciator activates.

1.8.4.5. Slowly decrease PLA1 using the ENG1 TRIM beep switch in order to obtain a TRQ #1 indication near 0%; verify that engine #2 is the only engine delivering power by observing the torque values.

1.8.4.6. Continue trimming down PLA1 towards the IDLE position using the ENG1 TRIM beep switch to set N1 at 60%-62% N1.

1.8.4.7. Set the collective lever to the minimum position.

1.8.4.8. Manually select PLA1 (power lever) to the OFF position to shut down the engine.

1.8.4.9. Select FUEL VALVE 1, FUEL PUMP 1 and ENG1 MODE to OFF; then, select ENG1 GOV to the AUTO mode.

1.8.4.10. Select ENG2 GOV to the MANUAL mode (caution annunciator should illuminate) and slowly decrease PLA2, using the ENG2 TRIM beep switch, until the engine reaches an N2/NR speed of 65%.

1.8.4.11. Select PLA2 (power lever) to the OFF position in order to shut down the second engine.

1.8.4.12. Select FUEL VALVE 2, FUEL PUMP 2 AND ENG2 MODE to OFF; then, select ENG2 GOV to the AUTO mode.

1.8.5. Electrical System - Generator Switches and Bus Connections

1.8.5.1. ENG 1 and 2 normal start procedure and set Nr 100%

1.8.5.2. Select SAS 1 and SAS 2 switch ON

1.8.5.3. Select DC GEN 2 switch OFF.

1.8.5.4. Select GEN BUS 1 and GEN BUS 2 switches OFF.

1.8.5.5. Pull ESS BUS #2 and the TIE circuit breakers OUT.

1.8.5.6. (Only for EFIS configuration) Check that both copilot's EFIS displays are ON

1.8.5.7. Press CLR button and verify that the following caution and advisory messages are displayed on the EDU1(reversionary mode):

#1 PLA MOTOR	PARK BRK ON(*) IDS LANDING GEAR BUS TIE FUEL XFEED	FUEL PUMP 2 #2 DC GEN INV 2 SAS 2 Off #2 PLA MOTOR #2 OIL CHIP (only from S/N11085) #2 FIRE DET #2 FUEL LOW 2 ECU MAINT (**ARRIUS 2K1 Only**) LIM OVRD ON

(*) If applied

1.8.5.8. Verify that the following parameters are displayed on EDU 1 (in reversionary mode)

- Initial Electrical N1 (#1 and #2) Values (ARRIUS 2K1)
- Δ N1 (#1 and #2) Values (ARRIUS 2K1)
- N1 (#1 and #2) Only Bargraph (P&W206C)
- TOT (#1 and #2) Only Bargraph
- TORQUE (#1 and #2) Only Bargraph
- N2 (#1 and #2) Only Bargraph
- NR Only Bargraph
- ENGINE 1 OIL (press/temp)
- TRANSMISSION OIL (press/temp)
- ENGINE 2 OIL (press/temp)
- FUEL 1 (quantity and press) with magenta dot
- HYDRAULIC PRESS (#1 and #2)
- FUEL 2 (pressure) with yellow dot

1.8.5.9. Select DC GEN 2 switch ON.

1.8.5.10. Push ESS BUS #2 circuit breaker IN.

1.8.5.11. Reselect SAS2 to ON

1.8.5.12. Select DC GEN 1 switch OFF.

1.8.5.13. Pull ESS BUS #1 and check the bus TIE circuit breakers OUT.

1.8.5.14. Press CLR button and verify that the following caution messages are displayed on the:

EDU1 (P&W 206C)

FUEL PUMP 1 #1 DC GEN #1 FIRE DET #1 FUEL LOW	PARK BRK ON(*) BUS TIE	

EDU1 (ARRIUS 2K1)

FUEL PUMP 1 #1 DC GEN #1 FIRE DET #1FUEL LOW #1 ECU MAINT	PARK BRK ON(*) BUS TIE	#2 ECU MAINT

In helicopter without Emergency bus

INV 1 SAS 1 Off		

EDU 2

	AUTOTRIM OFF	

Note During this check, the COPILOT ICS and FORCE TRIM are inoperative.

1.8.5.15. Verify that the following parameters are displayed on the EDU's:

a) EDU1

- ΔN1 (#1 and #2) (ARRIUS 2K1)
- N1 (#1 and #2)
- TOT (#1 and #2)
- TORQUE (#1 and #2)
- N2 (#1 and #2) Only Bargraph
- NR

b) EDU2(main)

- ENGINE 1 OIL (press/temp)
- TRANSMISSION OIL (press/temp)
- OAT
- ENGINE 2 OIL (press/temp)
- HYDRAULIC PRESSURE 1
- FUEL 1 (pressure = 0 PSI, no quantity)
- Fuel Cross-feed
- FUEL 2 (Quantity and pressure)
- HYDRAULIC PRESS 2

1.8.5.16. Push ESS BUS # 1 and the TIE circuit breakers IN.

1.8.5.17. Select DC GEN 1 switch ON.

1.8.5.18. Select DC GEN BUS 1 and DC GEN BUS 2 switches ON and SAS1 ON (only in helicopter without emergency bus).

1.8.6. Electrical System - Emergency Bus Check

1.8.6.1. With both engines at the FLIGHT position and the rotor speed at 100%, select the GEN1 and GEN2 switches to the OFF position. Check SAS1 ON.

1.8.6.2. Verify that the ELECTRICAL warning annunciator is illuminated on the EDU and that a warning aural tone is present in the pilot/copilot headsets.

1.8.6.3. If battery discharge control box is installed (CAA version) select the AUX page on EDU2. Verify that the BATT DISCH warning annunciator illuminates at voltages less than 26.2 Vdc.

1.8.6.4. Select both GEN BUS switches to OFF, push CLR on EDU1 and check for next caution and advisory on EDU1 and 2

EDU1 (P&W 206C)

	ELECTRICAL PARK BRK ON(*) LANDING GEAR BUS TIE	INV 2 SAS 2 OFF

EDU1 (ARRIUS 2K1)

#1 ECU MAINT	ELECTRICAL PARK BRK ON(*) LANDING GEAR BUS TIE	INV 2 SAS 2 OFF #2 ECU MAINT

(*) If applied

EDU 2

	AUTOTRIM OFF	

1.8.6.5. Verify that the following system are functional:

EDU1 EDU2 DAU CHA & B ADI Stby ADI and HSI Stby (EHSI74 Version) Pilot EADI REV (Efis version) VOR2 VHF2 Pilot/Copilot ICS AWG Force Trim SAS1 System Attitude Engage (SAS/ATT)	Fuel Pump 1 Fuel Pump 2 Fuel Crossfeed Inverter 1 LDG pos ind. Eng.Gover.Cntr. (Check transition AUTO-MANUAL-AUTO control) Landing/Search Light Pilot Wander light

1.8.6.6. Check SERVO switch operation (1/2/BOTH positions). Verify that all engines and systems give coherent value on EDU1 and 2

1.8.6.7. Verify that Fuel Quantity 1 and Fuel Quantity 2 display is present on EDU2.

1.8.6.8. Select both GEN switches to the ON position and SAS2 to ON.

1.8.6.9. Select the BAT switch to the OFF position. Verify that all parameters are available except EDU1 and DAU CH A. Check that EDU2 has automatically switched to the reversionary mode and verify that:

EDU1 (P&W 206C)

SAS 1 OFF	ELECTRICAL BATT OFF PARK BRK ON(*) IDS BUS TIE	

EDU1 (ARRIUS 2K1)

SAS 1 OFF #1 ECU MAINT	ELECTRICAL BAT OFF PARK BRK ON(*) IDS BUS TIE	#2 ECU MAINT

*If applied

1.8.6.10. Select the BAT switch to the ON position. Verify that the warning ELECTRICAL and the caution BATT OFF and IDS extinguish.

1.8.6.11. Select GEN BUS 1 and GEN BUS 2 to the ON position. Verify that the BUS TIE caution extinguishes.

1.8.7. Electrical System - Emergency Bus Check (22 Amp battery)

1.8.7.1. With both engines at the FLIGHT position and the rotor speed at 100%, select the GEN1 and GEN2 switches to the OFF position.

1.8.7.2. Select both GEN BUS switches to OFF. Verify that the following parameters are functional:

• EDU1	EDU2
• DAU CHA	DAU CHB
• Pilot EADI	ADI Stby
• VHF2	Pilot ICS
• Fuel Pump 1	Fuel Pump 2
• Fuel Crossfeed	Force Trim
• Attitude Engage	SAS1 System
• LDG pos ind.	Inverter 1
• Pilot Wander light	Eng.Gover.Cntr.
• AWG	Landing Light
• Pitot 2	

1.8.7.3. Check SERVO switch operation (1/2/ Both positions). Verify that Fuel Quantity 1 and Fuel Quantity display is present on EDU1.

1.8.7.4. Select both GEN and GEN BUS switches to the ON position.

1.8.8. Fuel System

1.8.8.1. Select the crossfeed switch CLOSED (crossfeed indicator vertical).

1.8.8.2. Select FUEL PUMP #1 switch OFF. Verify decrease of fuel pressure in engine #1 fuel system.

1.8.8.3. Verify that the FUEL PUMP 1 caution annunciator illuminates and that engine #2 fuel pressure is within limits.

1.8.8.4. Select crossfeed switch to the NORM position. (crossfeed indicator horizontal and XFEED message activated). Verify fuel pressure increase in engine #1 system,

1.8.8.5. Select crossfeed switch to the OPEN position (Crossfeed indicator should remain horizontal and there should be no change in fuel pressure).

1.8.8.6. Select crossfeed switch to the CLOSE position (crossfeed indicator vertical) and verify decrease of pressure in engine #1 fuel system.

1.8.8.7. Select FUEL PUMP 1 switch ON. Verify engine #1 fuel pressure within limits; verify that FUEL PUMP 1 message extinguishes.

1.8.8.8. Repeat steps 1.8.8.1 thru 1.8.8.7 with FUEL PUMP 2.

1.8.8.9. Select the crossfeed switch to the NORMAL position.

1.8.9. Hydraulic Servo System

1.8.9.1. Select the FORCE TRIM switch to the OFF position; verify that the hydraulic SERVO switch is set to BOTH.

1.8.9.2. Make small inputs with the cyclic, pedal and collective controls; verify that hydraulic pressure drops are equal on #1 and #2 systems and do not exceed 40 PSI on each system.

1.8.9.3. Select the #2 SERVO system to the OFF position. Verify that the SERVO 2 message appears and that #2 HYD PRESS indication falls to zero.

1.8.9.4. Check operation of the #1 SERVO system (repeat step (b)); verify that there is no force increase, force discontinuity or cyclic/collective coupling.

1.8.9.5. Select the #1 SERVO system to the OFF position (both servos now OFF).

Note If the tail rotor force spring is not installed, switching SERVO #1 OFF will induce a strong tendency for the right pedal to move forward. The pilot should be prepared to control pedal motion to prevent helicopter motion.

1.8.9.6. Make small inputs with the cyclic, pedal and collective controls; verify controllability. Verify that the directional control pedals are now un-boosted.

1.8.9.7. Select servos to the BOTH ON position.

1.8.9.8. Pull out the HYD SYS circuit breaker; verify that there is no effect on the HYD PRESS indicators.

1.8.9.9. Select SERVO #1 and SERVO #2; verify that there is no effect on the hydraulic system pressure.

1.8.9.10. Re-select the BOTH position and push the HYD SYS circuit breaker in.

1.8.9.11. Select FORCE TRIM ON.

1.8.10. Cyclic Control Magnetic Brake/Force Gradient

1.8.10.1. Verify that FORCE TRIM is ON, the collective pitch is full down and the cyclic friction is fully off.

1.8.10.2. Depress and hold the FORCE TRIM push button on the pilot cyclic stick and check that the cyclic moves freely.

WARNING

DO NOT USE LARGE CYCLIC STICK DISPLACEMENTS.

1.8.10.3. Release the FORCE TRIM push button and check that the stick remains in that position.

1.8.10.4. Displace the cyclic stick fore, aft, left and right (25 mm or 1 inch); verify that it tends to return to the trim position.

1.8.10.5. Using small (left and right) pedal displacements, move the pedals away from their trimmed position and verify that they tend to return to the trimmed position (the rate of return will be slower for the right pedal than for the left pedal).

1.8.10.6. Pull out the FORCE TRIM circuit breaker and check that the cyclic stick and pedals move freely (force trim not engaged); push the FORCE TRIM circuit breaker in.

1.8.10.7. Select the FORCE TRIM switch to the OFF position; verify that force trim is not engaged (cyclic stick and pedals move freely) and that the FT OFF message appears on EDU 2.

1.8.10.8. Operate the cyclic friction adjustment and verify that the cyclic friction force level increases and decreases smoothly.

1.8.10.9. Select the FORCE TRIM switch to the ON position.

1.8.10.10. Repeat steps 1.8.10.2 thru 1.8.10.5 using the copilot's controls.

1.8.11. IDS system

1.8.11.1. Select both ENGINE MODE controls to the IDLE position.

1.8.11.2. On EDU1, for each engine, record the N1, TOT, TRQ and N2/NR values.

1.8.11.3. On EDU1 (MENU 2/2), select DAU CH-A and, for each engine, record the N1, TOT, TRQ and N2/NR values.

1.8.11.4. On EDU1 (MENU 2/2), select DAU CH-B and, for each engine, record the N1, TOT, TRQ and N2/NR values.

1.8.11.5. On EDU1 (MENU 2/2), de-select DAU CH-B to return to ECU status.

1.8.11.6. Check that DAU CHA & CHB recorded data match ECU data within:

a) 40°TOT and 7% TQ for Pratt and Whitney 206C.

b) 10°TOT and 0.1 ΔN1 Turbomeca ARRIUS 2K1

1.8.12. Environment Control System (if installed)

1.8.12.1. Select the ECS switch to ON and verify no airflow from the outlets.

1.8.12.2. Select SHUT-OFF switch #1 to ON and verify airflow coming from the outlet and TOT increase.

1.8.12.3. Select SHUT-OFF switch #1 to OFF and verify that the airflow stops and TOT decrease.

1.8.12.4. Repeat steps 1.8.12.2 and 1.8.12.3 using SHUT-OFF switch #2.

1.8.12.5. Select SHUT-OFF switches #1 and #2 to ON and verify airflow coming from the outlets. Turn the TEMP CONT. knob to MIN. Verify a decrease of air temperature.

1.8.12.6. Select the ECON switch to ON and verify that airflow and TOT decrease. Select the switch to NORMAL and verify that airflow and TOT increase.

1.8.12.7. Turn the TEMP CONT knob to MAX. Verify an increase of air temperature.

1.8.12.8. Select the ECS switch to OFF and verify airflow shut-off.

1.8.12.9. Select SHUT-OFF #1 and SHUT-OFF #2 to OFF.

1.8.13. Bleed Air Heating System (if installed)

1.8.13.1. Verify that the TEMP CONTROL knob is in the full COLD position and SHUT-OFF switches # 1 and # 2 are in the OFF position.

1.8.13.2. Select the HTR switch to ON.

1.8.13.3. Turn the TEMP CONT knob to INCREASE (clockwise) and verify no airflow from the outlets.

1.8.13.4. Select the MIX switch to ON and verify no airflow from the outlets.

1.8.13.5. Select SHUT-OFF switch # 1 to ON and check for heater airflow from the outlets and TOT increase. Select SHUT-OFF switch # 1 to OFF and check TOT decrease.

1.8.13.6. Repeat step 1.8.13.5 using SHUT-OFF switch # 2.

1.8.13.7. Select SHUT-OFF switches # 1 and # 2 switch to ON.

1.8.13.8. Decrease the TEMP CONT knob to full COLD and observe heater airflow shut-off; then, set to INCREASE.

1.8.13.9. Select SHUT-OFF switches # 1 and # 2 to OFF and verify airflow shut-off; then, re-set the switches to ON.

1.8.13.10. Select the MIX switch to OFF; verify heater airflow shut-off; then, select the switch to ON.

1.8.13.11. Select the HTR switch to OFF; verify heater airflow shut-off.

1.8.13.12. Decrease the TEMP CONT knob to FULL COLD. Select the MIX switch to OFF. Select SHUT-OFF switches # 1 and # 2 to OFF.

1.8.14. E.A.P.S. System (if installed)

1.8.14.1. With engines running at 100%, select both EAPS switches to the ON position and check that the advisory messages #1 EAPS ON and #2 EAPS ON are displayed on EDU 2.

1.8.14.2. On the EDU, verify that EAPS activation results in an increase in turbine outlet temperature (TOT) of approximately 15 degrees and no 1# EAPS PRES and 2# EAPS PRES caution displayed on EDU 1.

1.8.14.3. Select both EAPS switches to OFF.

1.8.15. Training Mode (if installed)

1.8.15.1. Select ENG 1 MODE control to the FLT position and ENG 2 MODE control to the IDLE position.

1.8.15.2. Select the TNG switch to #1. Verify that the TNG mode is not engaged and that the TNG switch does not remain in the selected position.

1.8.15.3. Repeat steps 1.8.15.1 and 1.8.15.2 with Engine #2 at the FLT position and Engine # 1 at the IDLE position (select TNG switch to # 2).

1.8.15.4. Select both engines to the FLIGHT position. Select the TNG switch to #1 and verify that:

a) EDU 1 reverts to the OEI TRAINING format with TNG and OEI legends shown in the correct position.

b) Engine #2 N2 speed is 90% and check stability of Eng 2 parameters.

1.8.15.5. Push the LIM OVRD button on the collective grip and verify that:

a) LIM OVRD indication appears on EDU2

b) The TNG mode is disengaged and the TNG switch moves back to its central position.

c) EDU1 reverts to the AEO CRUISE mode, within 3 seconds.

d) The N2 and TQ (or TOT) engine values are matched.

1.8.15.6. Select the LMT OVRD function OFF.

a) Check LIM OVRD indication switches OFF on EDU2

1.8.15.7. With both engines in the FLIGHT position, select the TNG switch to #2 and verify that:

a) EDU1 reverts to the OEI TRAINING format with TNG and OEI legends shown in the correct position relatively to the selected engine.

b) Engine #1 N2 speed is 90% and check stability of Eng 2 parameters.

1.8.15.8. Select Engine #1 to the MAN Mode and verify that:

a) The TNG mode is disengaged and the TNG switch moves back to its central position.

b) On EDU 1 the TNG legend disappears and the MAN legend activates in the correct position.

1.8.15.9. Select Engine #1 to the AUTO mode.

1.8.15.10. Select the TNG switch to #1 and verify that:

a) EDU 1 reverts to the OEI TRAINING format and the TNG and OEI legends are shown in the correct positions.

b) Engine #2 N2 speed is 90%.

1.8.15.11. Select Engine #2 to IDLE and verify that:

a) The TNG mode is disengaged and the TNG switch moves back to its central position.

b) EDU 1 reverts to the OEI mode within 3 seconds.

1.8.15.12. Select Engine #2 to FLT and verify that EDU 1 reverts to the AEO format.

1.8.15.13. Repeat steps 1.8.15.10 and 1.8.15.11 with the TNG switch selected to #2 and Engine #1 selected to IDLE.

1.8.15.14. When all checks have been completed, select both engines to the FLIGHT position.

1.8.15.15.

1.8.16. Engine Shut-down Pratt and Whitney PW206C

Note This check may be executed at the end of the ground run sequence to avoid the requirement for an engine shut-down and re-start

1.8.16.1. Set the RPM beep trim to 100%; then, select both ENG MODE controls to the IDLE position. Allow the engines to run, at IDLE, for approximately 30 seconds.

1.8.16.2. Manually move both power levers to the OFF position and verify an immediate decrease of engine gas producer speed (N1) and turbine outlet temperature (TOT).

1.8.16.3. When the rotor speed has decelerated to less than 40%, apply the rotor brake; verify that rotor deceleration is smooth and that the rotor stops within 15 seconds; verify that there is no appreciable drop in utility hydraulic pressure during rotor brake actuation and that the ROTOR BRK ON caution annunciator is illuminated.

1.8.16.4. Verify that the gas producer speed (N1) decelerates freely. Note any abnormal noise or rapid rundown.

1.8.16.5. Complete the remaining shut-down operations in accordance with the Rotorcraft Flight Manual.

1.8.17. Engine Shut-down Turbomeca ARRIUS 2K1

Note This check may be executed at the end of the ground run sequence to avoid the requirement for an engine shut-down and re-start

1.8.17.1. Set the RPM beep trim to 100%; then, select both ENG MODE controls to the IDLE position. Allow the engines to run, at IDLE, for approximately 30 seconds.

1.8.17.2. Manually move both power levers to the OFF position and verify an immediate decrease of engine gas producer speed (N1) and turbine outlet temperature (TOT).

1.8.17.3. When the rotor speed has decelerated to less than 40%, apply the rotor brake; verify that rotor deceleration is smooth and that the rotor stops within 15 seconds; verify that there is no appreciable drop in utility hydraulic pressure during rotor brake actuation and that the ROTOR BRK ON caution annunciator is illuminated.

1.8.17.4. Verify that the gas producer speed (N1) decelerates freely. Note any abnormal noise or rapid rundown.

1.8.17.5. Complete the remaining shut-down operations in accordance with the Rotorcraft Flight Manual.

1.8.18. Post Ground Run External Inspection

1.8.18.1. Visually inspect the engine compartments verifying that there are no fluid leaks.

1.8.18.2. Inspect all oil sight gauges verifying no abnormal oil consumption.

1.8.18.3. Verify that there are no abnormal oil, fuel or hydraulic stains on the ground.

1.8.18.4. Visually inspect the dynamic components, landing gear and the airframe structure for security and condition.

2. Avionics Ground Checks (power ON)

2.1. Basic Avionic Systems

AG 06	ICS System
SP711	A.F.C.S. System

Note Select the RAD MASTER switch to the ON position for these checks.

2.1.1. AG 06 - ICS System

2.1.1.1. Check the clarity of communications, at the pilot's, copilot's and passengers' stations, in the two ICS modes (HOT-MIC(VOX) and PTT).

2.1.1.2. At the pilot's and copilot's station, check for the correct functioning of:

- Intercommunication volume using the ICS control knob.
- Receive volume using the RCVR control knob.
- The interphone voice trigger using the VOX control knob (ICS must be set in the HOT-MIC mode)

2.1.1.3. Check the following operational modes for the passengers' station using the control selector on the ICS control panel:

a) ICS

- Verify that communication exists from the pilot/copilot stations to the passengers and vice versa. With ICS switch to OFF press every PTT key in cabin and check that ICS light flashes and a tone is heard in the pilot/copilot headphones.

b) XMTR1

- Verify that RX/TX capability exists from the passengers' station on VHF1.

c) XMTR2

- Verify that RX/TX capability exists from the passengers' station on VHF2.

d) SPKR

- Check the clarity of messages from the pilot/copilot stations to the passengers cabin through the loudspeakers.

2.1.2. A.F.C.S. (SAS/ATT MODES)

WARNING

CLOSELY MONITOR THE FLYING CONTROLS WHEN CARRYING OUT THE FOLLOWING PROCEDURE TO AVOID ANY UNDESIRABLE CONTROL MOVEMENTS.

2.1.2.1. Select the force-trim selector to ON and verify that the ATT flags on both ADI displays are out of view.

2.1.2.2. Select the SAS1 and SAS2 switches to ON. Verify that:

a) The ATTD HLD switch is ON

b) The SAS1 OFF, SAS2 OFF and ATTD OFF caution messages on the EDU are extinguished and the Actuator Position Indicators (API) are centered.

2.1.2.3. Move the cyclic stick forward, backward, to the right and to the left and verify that the API indicators do not move.

2.1.2.4. Depress and hold the SAS2/PUSH button, on the Helipilot Control panel and repeat step 2.1.2.3.

2.1.2.5. On the Helipilot control panel, select the SAS mode (ATT HLD switch in the OFF position) and verify that the ATTD OFF caution message is present on the EDU.

2.1.2.6. Move the cyclic stick to the right and to the left and check that the API roll indicator moves to the right and to the left respectively. Move the cyclic stick forward and backward and check that the API pitch indicator moves backward (down) and forward (up) respectively.

2.1.2.7. Switch SAS1 OFF and verify that the SAS1 OFF caution message illuminates on the EDU.

2.1.2.8. Repeat step 2.1.2.6 with only the SAS2 ON.

2.1.2.9. Select the SAS 1 and ATTD HLD switches to the ON position.

2.1.2.10. Push the cyclic beep trim to the right, for 2 seconds and then AFT for 2 seconds and verify that the API indicators move right and up.

2.1.2.11. Depress and hold the SAS2/PUSH button on the Helipilot control panel and ensure that the movement of the SAS2 actuators is in accordance with the previous one.

2.1.2.12. Press the FTR button on the cyclic stick and verify that the API indicators re-center (approx 5 sec).

2.1.2.13. Repeat the procedure with copilot beep trim.

2.1.2.14. Press the FTR button on the cyclic stick in order to re-center the actuators.

2.2. COLLINS/EHSI-74 SUITE

VHF22A	VHF/AM #1 & 2 System
EHSI 74B	Electronic HSI
VIR32	VOR/ILS/MB #1 & 2 System
ADF60	ADF System
DME42	DME System
AA300	Radar Altimeter System
TDR90	Transponder System
FZ720	Flight Director System

2.2.1. VHF22A - VHF/AM #1&2 COM systems

2.2.1.1. On the pilot and copilot ICS panels, select VHF1 (2) as the active transmitter.

2.2.1.2. On the audio control panel, select the XMTR1 (2) switch ON.

2.2.1.3. Check the system using its internal Self-Test. Press the TEST button located on the control panel and verify that:

a) display intensity will modulate from Min to Max and a two-tone Note will heard in the headphone during test progress;

b) at the End of the self-test, the “00” indication displayed in the Standby Frequency field and four dashes (----) displayed in the Active Frequency field are indications that the self-test has been satisfactory.

2.2.1.4. Select a manual or pre-selected frequency and establish two-way communications with a local radio station. Verify that:

a) At the pilot, copilot and passengers positions, the signals transmitted and received are of good quality (loud and clear) and suitably adjustable using the volume control.

b) The sidetone level is adequate.

c) The squelch operates correctly.

Note Two communications receivers tuned to the same station could result in a reduction in audio volume.

2.2.1.5. Repeat all steps with VHF/AM 2 System

2.2.2. VHF22C - VHF/AM #1&2 COM systems with 25/8.33kHz frequency spacing

2.2.2.1. Refer to Step 2.2.1 for system test procedure.

Note This system only differs from the one described in 2.2.1 for the availability of 8.33kHz frequency spacing.

2.2.2.2. Pull the inner frequency setting knob to access the narrower spacing.

2.2.3. EHSI 74B - Electronic HSI

2.2.3.1. Press HSI pushbutton to select the HSI display format.

2.2.3.2. Operate the INT knob to increase and decrease the brightness of the EHSI display on both control panels.

2.2.3.3. Turn the HDG knob left and right and verify that the selected HDG display changes. Push the HDG knob in and check that the HDG bug is automatically aligned to the EHSI lubber line.

2.2.3.4. Push the ↑ button and check that the V1(VOR1), A1(ADF), W1(GPS) bearing pointer appears.

2.2.3.5. Push the CRS button (Navigation data source selector for the CDI and Flight Director) and verify that VOR1, VOR2, LRN (opz) receiver are available.

2.2.3.6. Turn the CRS knob and verify that the selected course on the EHSI changes (only VOR1 & 2 mode).

2.2.3.7. Push the CRS Knob in and check that the course arrow automatically rotates until the course is equal to the VOR1 bearing (if signal available).

2.2.3.8. Push the CRS knob again and check for VOR2 data.

2.2.3.9. Push the ⇑ button and verify that the V2 (VOR2), A1(ADF), W1(GPS) bearing pointer appears.

2.2.3.10. Select ARC and check on the display the correct symbology.

2.2.3.11. Select MAP and check that 130-150-50-25-12.5-5 NM range are available

2.2.4. VIR32 - VOR/LOC/GS/MB systems (NAV #1 - NAV #2)

2.2.4.1. VOR - test

a) Select on EHSI the HSI format on the control panels of the VOR # 1 and VOR # 2 receivers, select a VOR frequency (108.2 MHz, for example). A specific frequency is not required for this test.

b) Push the ↑ button on the EHSI control panel and select the V1 bearing pointer

c) Push the CRS button to select VOR1 as the navigation source

d) Rotate the Course arrow to select 360 degrees. Press and Hold the TEST button and verify that:

- The NAV flag is out of view.
- The lateral deviation bar is centered, with the TO flag in view.
- The bearing pointer V1 is aligned with 360 degrees.

e) Push the ⇑ button to select the V2 pointer and the CRS button to select VOR2 and repeat the above procedure with the VOR # 2 receiver.

2.2.4.2. VOR test on pilot's HSI (STBY)

Note The navigation pointer on the PLT HSI (STBY) will indicate either Bearing or Deviation (selectable with the RMI/HSI knob)

a) Push the CRS button on the EHSI control panel to select VOR1, in order to select automatically VOR#2 as navigation receiver available on HSI.

b) On the HSI (STBY) set the navigation pointer selector in the HSI mode and rotate the course arrow to select 360 degrees.

c) Press and Hold the TEST button on VOR # 2 control panel; on the HSI, verify that:

- The NAV flag is out of view.
- The lateral deviation bar is centered, with the TO flag in view.

d) Set the navigation pointer selector knob on the pilot's HSI in the RMI position. Press and hold the TEST button and verify that:

- The bearing pointer indication is 360 degrees.

e) Select VOR2 on the EHSI, tune a VOR frequency on the VOR # 1 receiver and repeat step 2.2.4.2 with the VOR # 1 receiver.

2.2.4.3. ILS - test

a) Select an ILS frequency (e.g. 108.1 MHz) on the VOR # 1 and VOR # 2 control panel.

b) Push the CRS button on the EHSI control panel to select ILS1

c) Press and Hold the TEST button and verify that:

- The NAV and GS flags are out of view.
- The lateral deviation bar on the EHSI is deflected right at 2/3 of full scale.
- The glide-slope pointer is deflected down at 2/3 of full scale
- That EXP LOC (on PLT ADI) is fully right with G/S index 2/3 down.

d) Push the CRS button on the EHSI control panel to select ILS2 and repeat step (c) with the VOR # 2 receiver.

2.2.4.4. ILS - test on HSI (STBY)

a) Push the CRS button on the EHSI control panel to select VOR/or/ILS1, in order to select automatically ILS#2 as navigation receiver available on HSI.

b) On the control panel of the VOR # 2 receiver, select an ILS frequency.

c) Press and Hold the TEST button on the VOR # 2 control panel; on the HSI, verify that:

- The lateral deviation bar on the EHSI is deflected right to 2/3 of full scale.
- The glide-slope pointer is deflected down to 2/3 of full scale.

2.2.4.5. Marker Beacon - Test

a) On both COMM CONTR panels, select the MB receiver and adjust VOL on MKR control panel

b) Press the TEST button on the VOR # 1 receiver control panel and check that all pilot marker lamps (O-M-I) are lighted and a 30 Hz tone is present in the pilot's headphone.

c) Press the TEST button on VOR # 2 receiver control panel and verify that the CPL marker lamps are lighted and a 30 Hz tone is present in the copilot's headphone.

2.2.5. ADF60A - ADF system

2.2.5.1. On both ICS panels, select the ADF receiver.

2.2.5.2. Push the ↑ button on the EHSI control panel to select A1 (the ADF1) pointer.

2.2.5.3. Tune the receiver to a frequency corresponding to a local NDB (or broadcasting) station and select the ADF function.

2.2.5.4. Check the reception and the approximate indication of the ADF pointers (EHSI and the HSI blue pointer).

2.2.5.5. On the ADF control panel, press and hold the TEST button and check:

a) On the control panel, verify that the display modulates the intensity from min to max.

b) Over EHSI and HSI, that the bearing pointer rotates 90° counter-clockwise from the previous indication.

c) A tone is heard in ICS (1000 Hz)

2.2.5.6. Release the TEST button and check that the bearing pointers return to the previous indication.

2.2.5.7. Select the ANT mode and check that the ADF bearing needles disappear, on EHSI and is parked at nine o'clock on HSY (stby).

2.2.5.8. Set the mode selector switch to TONE (BFO) and verify that a 1000 Hz tone is audible in the headphones.

2.2.6. DME42 - DME system

2.2.6.1. Select CH1 on the DME control panel and select VOR1 as navigator on EHSI74.

2.2.6.2. On the VOR # 1 control panel, push the TEST button.

2.2.6.3. The self-test will start. Check that all display segments and annunciators on the DME display are illuminated for a few seconds.

2.2.6.4. Verify that the test value of 100 NM, 100 KTS or 60 MIN is displayed on DME display (the parameter displayed will depend on the key function active at that moment) and that 0.1 NM is displayed on EHSI.

2.2.6.5. At the end of the self-test, the display will show "AOK" if the results were satisfactory.

2.2.6.6. Select CH2 on DME control panel and repeat steps 2.2.6.1 thru 2.2.6.5 with VOR # 2.

2.2.6.7. If the helicopter is near a local ground station, tune in the appropriate channel and verify the indication of distance.

2.2.7. AA 300 - Radar Altimeter system

2.2.7.1. Check instrument zero reading.

2.2.7.2. Ensure that the OFF flag is not in view.

2.2.7.3. Set the D.H. bug to 50 feet and check that the D.H. lights illuminate on the RAD-ALT indicator and on the pilot ADI.

2.2.7.4. Press the TEST button and verify that:

- The height needle move up to 100 feet +/- 15 feet
- The DH indicators are extinguished.

2.2.7.5. Release the Test button and check that:

- The height needle returns to zero
- The DH indicators (Radalt-ADI) illuminate.

2.2.8. TDR90 / TDR94 - Transponder system

2.2.8.1. Position the mode switch to ON and set a desired code on the display.

2.2.8.2. Press the TEST button and check that the display modulates from minimum to maximum intensity and that TX light go on.

2.2.9. Flight Director

2.2.9.1. Set the F/D COUPL/DECOUPL switch to the DECOUPL position and check that the advisory FD DECPLED illuminates on the EDU, and the advisory DCPL illuminates on the ADI.

2.2.9.2. Check that the SAS1, SAS2, ATTD/HLD and AUTOTRIM switches are in the ON position.

2.2.9.3. On the F/D mode selector, press the SBY button and verify that:

- All the F/D modes switches illuminate.
- The G/A & DH light on the ADI are illuminated.
- The pilot F/D command bars and flag are out of view and FD flag is in sight.

2.2.9.4. Repeat the above procedure pressing the FD SBY pushbutton on the pilot's and copilot's cyclic sticks.

CAUTION

Operate with care when the F/D is COUPLED and the Autotrim is ON, because the cyclic stick moves as the F/D bar moves.

2.2.9.5. HDG Mode Selection

- On the pilot's EHSI control panel, press the HDG sync knob to align the Heading Select Bug with the EHSI lubber line.
- On the F/D Mode Selector, press the HDG key and verify that the HDG lamp illuminates and that the Roll Command bar on the ADI is centered.
- Turn the pilot heading bug clockwise and counterclockwise and check that the F/D command bar moves in the direction of the HDG bug and that the cyclic stick and API roll indicator remain fixed with the COUPL/DECOUPL switch on the Helipilot Control panel in the DECOUPL position.
- Press the SBY key on FD control panel to disengage the mode.

2.2.9.6. IAS Mode Selection

- On the F/D mode selector, press the IAS key and verify that the IAS light illuminates and that the pitch command bar on the ADI is centered.
- Operate the A/S trim to increase (DN) and decrease(UP) the IAS with the cyclic DN/UP beep trim. Ensure that the ADI pitch command bar moves downwards as the A/S increases and upwards as the A/S decreases.
- Verify that the cyclic stick and API pitch indicator remain fixed if the COUPL/DECOUPL switch on the Helipilot Control panel is in the DECOUPL position.
- Press the SBY key on copilot stick to disengage the mode.

2.2.9.7. ALT and VS Mode Selection

- On the F/D Mode Selector, press the ALT key. Verify that the ALT light illuminates and that the pitch command bar on the pilot's ADI is centered.
- Set the IVSI selector needle to zero. Then, on the F/D mode selector, press the VS key.
- Verify that:
  - The VS light illuminates (on F/D control panel).
  - The ALT light is extinguished.
  - The pitch command bar is centered.

- Move the VS bug on the IVSI alternatively to climb and to descend and check that the F/D pitch command bar on the ADI moves correctly.
- Press the FD SBY key on the pilot's to disengage the mode.

2.2.9.8. Go-Around Mode Selection

- On the F/D Mode Selector, press the GA key and verify that:
  - All the mode indicator lights are off and the GA light is illuminated.
  - The yellow GA advisory on both the ADI is illuminated.
  - The roll and pitch command bars on the ADI are centered.
  - COLL CUE is at the bottom of the scale on the ADI.
- Press the FD SBY key and repeat the above check with the GA button installed on the collective grip.
- Press the FD SBY key to disengage the mode.

2.3. COLLINS/ROGERSON KRATOS SUITE

VHF22A	VHF/AM #1 &2 System
EFIS160E015	Electronic Fiight Instrument System
VIR32	VOR/ILS/MB #1 &2 System
ADF60	ADF System
DME42	DME System
AA300	Radar Altimeter System
TDR90	Transponder System
FZ720	Flight Director System

2.3.1. VHF22A - VHF/AM #1 & 2 COM systems

2.3.1.1. On the pilot and copilot ICS panels, select VHF1 (2) as the active transmitter.

2.3.1.2. On the audio control panel, select the XMTR1 (2) switch ON.

2.3.1.3. Check the system using its internal Self-Test. Press the TEST button located on the control panel and verify that:

- Display intensity will modulate from Min. to Max. and a two-tone Note will heard in the headphone during test progress.
- At the End of the self-test, the "00" indication displayed in the Standby Frequency field and four dashes (----) displayed in the Active Frequency field are indications that the self-test has been satisfactory.

2.3.1.4. Select a manual or pre-selected frequency and establish two-way communications with a local radio station. Verify that:

- At the pilot, copilot and passengers positions, the signals transmitted and received are of good quality (loud and clear) and suitably adjustable using the volume control.
- The sidetone level is adequate.
- The squelch operates correctly.

2.3.1.5. Repeat check with VHF/AM 2 radio

Note Two communications receivers tuned to the same station could result in a reduction in audio volume.

2.3.2. VHF22C - VHF/AM #1 & 2 COM systems with 25/8.33kHz frequency spacing

2.3.2.1. Refer to Step 2.3.1 for system test procedure.

Note This system only differs from the one described Step 2.3.1 for the availability of 8.33kHz frequency spacing. Pull the inner frequency setting knob to access the narrower spacing.

2.3.3. EFIS - Electronic Flight Instrument System

2.3.3.1. EADI

Note The steps below must be carried out on both the pilot's and copilot's EADI.

a) Rotate the DIM control knob and verify that the control of the brightness of the EADI display is satisfactory.

b) Press and hold the TST button to carry out the Phase I and II self-tests.

c) During the Phase I self-test, check that:

- Pitch is 0° and roll is 20° to the right.
- The FD command bars (pitch and roll) are centered.
- The expanded localizer and glide slope deviation indicators are centered.
- The Radio Altitude indicator shows 100 feet.
- The Raise Runway is in sight.
- The Test flag is in sight.

d) During the Phase II self-test, check that the following parameters are flagged (red box): ATT, FD, GS, LOC, RA, MON.

e) Rotate the DH knob to increase and decrease the DH setting in the upper right corner of the display.

f) Press the M push-button and check that the EADI changes to the composite mode (REV).

g) Press and hold the HZN SYNC button for 3 seconds and verify that the horizon line is oriented at the mid position of the display.

h) Press the button again and check that the true horizon line is displayed.

2.3.3.2. EHSI

Note The checks below must be accomplished on both the pilot and copilot EHSI displays. To carry out the procedure, tune the VOR1, VOR2 and ADF receivers to local station frequencies (if available).

a) Select a navigation source (VOR1, VOR2 or GPS) using the N key. Couple the navigation receiver to bearing pointers BRG1 and BRG2.

b) Rotate the DIM control knob and verify that the control of the brightness of the EADI display is satisfactory.

c) Press and hold the TST button to carry out the Phase I and II self-tests.

d) During the Phase I self-test, check that:

- The Heading is at 0°.
- The Selected course is at 0°.
- The Selected heading at 0°.
- The Distance to Go is 0.0 nm.
- The Glide Slope deviation needle is centered.

e) During the Phase II self-test, check that the following parameters are flagged (red box): GS, HDG, WX, the selected navigation source and the selected bearing pointers.

f) Upon completion of the self-test, rotate the HDG SEL knob clockwise and counter-clockwise and check that the selected HDG display changes and the bug moves correctly.

g) Press the HDG SEL knob and check that the HDG bug is automatically aligned to the EHSI lubber line.

h) Press the N button on the EHSI and verify that the navigation sources VOR1, VOR2 and GPS (if available) appear in sequence.

i) Press the B button and turn the bearing selector knob. Check that the bearing pointers VOR1, ADF, DF and GPS appear in sequence on BRG1 and VOR2, ADF, DF, GPS appear in sequence on BRG2. (DF and GPS appear only if the correspondent receiver is available)

j) Repeat step h) on the copilot's EHSI and check that the Navigation sources change to VOR1, VOR2 and GPS.

k) Turn the CRS SEL knob and check that the selected course on the EHSI changes.

l) Press the M key and verify that the following display formats are available:

- HSI mode
- Full Map
- ARC
- ARC MAP
- ARC WX
- ARC WX+MAP
- VERT.PROFILE
- COMPOSITE MODE
- REV MODE (COMPOSITE)

m) Pull out the ADI PLT circuit breaker and verify that the PLT EHSI automatically reverts to the Composite mode in not more than 5 seconds and that the MON red flag appears on all the other displays near the ADI ball. With the circuit breaker pulled, make the following additional checks:

- Press the M key and increase and decrease the DH datum.
- Press the N key and check that all the navigation sources installed are available.
- Press the B key and check that the bearing pointers (BRG1 and BRG2) are selectable.
- Turn the HDG selector knob to increase and decrease the selected HDG value. Verify that the HDG bug moves correctly and check for the correct change of the displayed value.
- Push the HDG selector knob and check that the HDG bug is automatically aligned with the lubber line.
- Rotate the CRS selector knob clockwise and counter-clockwise and check that the course arrow moves and the CRS value changes correctly.

n) Push in the ADI PLT circuit breaker and pull-out the HSI PLT circuit breaker. Repeat all the checks listed under step (m), on the pilot's EADI.

o) Insert the HSI PLT circuit breaker and pull out the ADI CPLT circuit breaker. Repeat all the checks listed under step (m), on the copilot's EHSI.

p) Insert the ADI CPLT circuit breaker and pull-out the HSI CPLT circuit breaker.

q) Repeat step (m) on the copilot's EADI.

2.3.4. VIR32 - VOR/LOC/GS/MB systems (NAV #1 - NAV #2)

2.3.4.1. VOR1 - test

a) On the VOR # 1 and VOR # 2 receiver control panels, select a VOR frequency (108.2 MHz, for example). A specific frequency is not required for this test.

b) Select HSI format, press the B key on both EHSI control panels and select VOR1 on the bearing pointer, BRG1 .

c) Press the N key to select VOR1 as the navigation source, on both EHSI units.

d) Rotate the Course arrow and select 360 degrees.

e) Press and hold the TEST button on the VOR1 control panel and verify that, on both EHSI units:

- The VOR1 flags are out of view.
- The Lateral deviation bars are centered, with the TO flag in view.
- The Bearing pointer, BRG1, is indicating 360°.

2.3.4.2. VOR2- test

Note The steps below must be carried out on both EHSI units

a) Press the B key to select the BRG2 bearing pointer on VOR2.

b) Press the N key to select VOR2 as the active navigation source.

c) Repeat VOR1 tests (a) through (e) using the VOR2 receiver.

2.3.4.3. ILS 1 - test

a) On the VOR1 and VOR2 control panels, select any ILS frequency.

b) Press the N key on the EHSI control panels to select LOC1 on both the EHSI units.

c) Press and Hold the TEST button, on the VOR1 control panel, and verify that:

- The LOC1 and GS flags are out of view.
- The Lateral deviation bars on the EHSI are deflected to the right at 2/3 of full scale and the Glide-Slope pointers are deflected down at 2/3 of full scale.
- The glideslope pointers on the EADI are deflected down 2/3 of full scale and the Exp.Loc indicators are deflected full right.

2.3.4.4. ILS 2 - test

a) Select LOC2 on both EHSI units and repeat points (a) through (c), above, using the VOR2 receiver.

2.3.4.5. Marker Beacon - test

a) Select the MB receiver on both ICS panels.

b) On the VOR1 control panel, press the TEST button and check that, on the pilot's EADI, all the marker symbols are displayed in sequence and a 30 Hz tone is present in the pilot's headphone.

c) On the VOR2 control panel, press the TEST button and repeat step (b) on the copilot's EADI. Verify that the 30 HZ tone is present in the copilot's headphone.

2.3.5. ADF60A - ADF System

Note The steps below must be carried out on both EHSI displays

2.3.5.1. Select the ADF receiver on both ICS panels.

2.3.5.2. Push the ↑ button on the EHSI control panel to select A1 (the ADF1) pointer.

2.3.5.3. Tune the receiver to a local NDB station and select the ADF function.

2.3.5.4. Check the reception and the approximate indication of the ADF pointers (EHSI and the HSI blue pointer).

2.3.5.5. Press and hold the TEST button on the ADF control panel and check:

a) On the panel, verify that the display intensity modulates from min to max.

b) Over EHSI that the bearing pointer rotates 90° counter-clockwise from the previous indication.

c) A tone is heard in ICS (1000 Hz).

2.3.5.6. Release the TEST button and check that the bearing pointer returns to the previous indication.

2.3.5.7. Select the ANT mode and check that the ADF bearing needles, on the EHSI indicators, are removed.

2.3.5.8. Set the mode selector switch to TONE (BFO) and verify that a 1000 Hz tone is audible in the headphones.

2.3.6. DME42 - DME System

2.3.6.1. Select CH1 on the DME control panel.

2.3.6.2. On both EHSI units, press the N button to select VOR1.

2.3.6.3. On the VOR1 control panel, press the TEST button. This will activate self-test.

2.3.6.4. When the self-test starts, check that all DME display segments and annunciators illuminate for a few seconds. Then, check that the test value of 100 NM or 100 KTS or 60 MIN is displayed (the parameter displayed depends upon the key function active at that moment).

2.3.6.5. During the test, verify that, in the upper right corner of both EHSI units, a 0.0 nm indication is shown.

2.3.6.6. If the self-test has been satisfactory, the display will show "AOK" and a tone will be heard in the headphones.

2.3.6.7. Select CH2 on the DME control panel and VOR2 on both EHSI units (using the N key). Repeat the above procedures using VOR2.

2.3.7. AA 300 - Radar Altimeter system

Note The following steps must be carried out on both EADI units.

2.3.7.1. Verify that, on both EADI units, the instrument reads zero (±5 feet).

2.3.7.2. Ensure that the RA flags are not in view.

2.3.7.3. On both EADI units, set the DH value to 150 feet.

2.3.7.4. Press and hold the RA TST button, on the PLT EADI , for 3 seconds and verify that:

a) The height displayed is 100 feet +/-5 feet.

b) The DH advisory appears at the right side of the ADI.

2.3.7.5. Release the Test button and check that:

a) The height value returns to zero (+/- 5 feet)

b) The DH indicators are extinguished.

2.3.7.6. Repeat steps 2.3.7.2 through 2.3.7.5 on the copilot's EADI.

2.3.8. TDR90 / TDR94 - Transponder system

2.3.8.1. Select the mode switch to ON.

2.3.8.2. Press the TEST push-button and check that the active code display intensity modulates from minimum to maximum and that TX light go ON.

2.3.9. Flight Director

2.3.9.1. Set the F/D CPL/DECOUPL switch to the DECOUPL position; check that the advisory FD DECPLED illuminates on the EDU and that the FD advisory on both EADI units changes from to magenta.

2.3.9.2. Check that the SAS1, SAS2, ATTD/HLD and AUTOTRIM switches are in the ON position.

2.3.9.3. On the F/D mode selector, press the SBY button and verify that:

a) All the F/D mode switches illuminate.

b) The FD flags on both EADI units are visible.

c) The F/D command bars are not visible.

2.3.9.4. Repeat the above procedure using the SBY button on the pilot's and copilot's cyclic stick.

Note The following steps must be executed on helicopter with FD<> key installed (PLT/CPLT in command function)

2.3.9.5. Press the FD <> key to select copilot in command; verify that the green <-- symbol is displayed in the lower left corner of the pilot's EHSI.

2.3.9.6. Press the FD<> key again to select copilot in command and verify that the --> symbol is displayed in the lower right corner of the copilot's EHSI.

CAUTION

Operate with care when the F/D is COUPLED and the Autotrim is ON, because the cyclic stick moves as the F/D bar moves.

2.3.9.7. HDG Mode Selection

a) On the pilot's EHSI control panel, press the HDG sync knob to align the Heading Bug with the EHSI lubber line. Select the pilot in command with the FD<>key (if installed).

b) On the F/D Mode Selector, press the HDG key and verify that:

- The HDG lamp illuminates,
- The Roll Command bar on the EADI is centered.
- The HDG advisory illuminates (the advisory is green on the pilot's EADI and amber on the copilot's EADI).

c) Turn the pilot heading bug clockwise and counter-clockwise and verify that:

- The F/D cmd bar moves in the direction of the HDG bug.
- The cyclic stick and API roll indicator remain fixed (if the COUPL/DECOUPL switch on the Helipilot Control panel is in the DECOUPL position).

d) Press the SBY key on the F/D control panel to disengage the HDG mode.

2.3.9.8. IAS Mode Selection

a) On the F/D mode selector, press the IAS key and verify that the IAS advisory lights illuminate (green on the pilot's side and amber on the copilot's side) and that the pitch command bar on the ADI is centered.

b) Operate the A/S trim to increase (DW) and decrease (UP) the IAS with the cyclic DW/UP beep trim. Ensure that the ADI pitch command bar moves downwards as the A/S increases and upwards as the A/S decreases.

c) Verify that the cyclic stick and API pitch indicator remain fixed if the COUPL/DECOUPL switch on the Helipilot Control panel is in the DECOUPL position.

d) Press the SBY key on CPLT stick to disengage the mode.

2.3.9.9. ALT and VS Mode Selection

a) On the F/D Mode Selector, press the ALT key and verify that:

- The ALT light illuminates.
- The pitch command bar on the pilot's EADI is centered.
- The ALT advisory is displayed on both EADI units.

b) Set the IVSI selector needle to zero.

c) On the F/D mode selector, press the VS key and verify that:

- The VS light illuminates on both EADI units.
- The ALT light is extinguished.
- The pitch command bar is centered.

d) Move the VS bug, on the IVSI, to climb and to descend and check that the F/D pitch command bar on the EADI moves correctly.

e) Press the SBY key on PLT stick to disengage the mode.

2.3.9.10. Go-Around Mode Selection

a) On the F/D Mode Selector, press the GA key and verify that:

- All the mode indicator lights are off and the GA light illuminates.
- The GA advisory is displayed on both EADI units.
- The roll and pitch command bars on both EADI units are centered.
- COLL CUE is at the bottom of the scale on both EADI units.

b) Press the FD SBY key and repeat the above check with the GA button installed on the collective grip.

c) Press the FD SBY key to disengage the mode.

2.4. KING/EHSI-74 SUITE

KX165	VHF/AM #1 & 2System
EHSI 74B	Electronic HSI
KMR675	Marker Beacon System
KR87	ADF System
KDM706	DME System
AA300	Radar Altimeter System
KT71	Transponder System
FZ720	Flight Director System

2.4.1. KX165 - VHF/AM #1 & 2 COM systems

2.4.1.1. On the pilot and copilot ICS panels, select VHF # 1 (2) as the active transmitter.

2.4.1.2. Select a manual or pre-selected frequency on the active VHF radio and establish two-way communications with a local radio station.

2.4.1.3. For both the pilot and copilot stations, verify that the signals transmitted and received are of good quality (loud and clear) and suitably adjustable using the volume control. Check the sidetone adequacy and level.

2.4.1.4. Pull the VOL knob out and check squelch operation and functioning.

2.4.1.5. Repeat check with VHF/AM 2 radio

2.4.2. KX165A - VHF/AM #1 & 2 COM systems with 25/8.33kHz frequency spacing

2.4.2.1. Refer to step 2.4.1 for system test procedure.

Note This system only differs from the one described in step 2.4.1 for the availability of 8.33kHz frequency spacing.

2.4.2.2. Pull the inner frequency setting knob to access the narrower spacing.

2.4.3. EHSI 74B - Electronic HSI

2.4.3.1. Press HSI pushbutton to select the HSI display format.

2.4.3.2. Operate the INT knob to increase and decrease the brightness of the EHSI display on both control panels.

2.4.3.3. Turn the HDG knob left and right and verify that the selected HDG display changes. Push the HDG knob in and check that the HDG bug is automatically aligned to the EHSI lubber line.

2.4.3.4. Push the ↑ button and check that the V1(VOR1), A1(ADF), W1(GPS) bearing pointer appears.

2.4.3.5. Push the CRS button (Navigation data source selector for the CDI and Flight Director) and verify that VOR1, VOR2, LRN (opz) receiver are available.

2.4.3.6. Turn the CRS knob and verify that the selected course on the EHSI changes (only VOR1 & 2 mode).

2.4.3.7. Push the CRS Knob in and check that the course arrow automatically rotates until the course is equal to the VOR1 bearing (if signal available).

2.4.3.8. Push the CRS knob again and check for VOR2 data.

2.4.3.9. Push the ⇑ button and verify that the V2 (VOR2), A1(ADF), W1(GPS) bearing pointer appears.

2.4.3.10. Select ARC and check on the display the correct symbology.

2.4.3.11. Select MAP and check that 130-150-50-25-12.5-5 NM range are available

2.4.4. KMR675 - Marker Beacon system

2.4.4.1. Select the MB receiver on both ICS panels.

2.4.4.2. Press the TEST button on the MB control panel and check that all pilot and copilot marker lamps (O-M-I) are lighted and an 800 Hz tone is present in the pilot and copilot headphones.

2.4.5. KR87 - ADF system

2.4.5.1. Select the ADF receiver on both ICS panels.

2.4.5.2. Push the ↑ button on the EHSI control panel to select the A1 (ADF1) pointer.

2.4.5.3. Tune the receiver to a local NDB station.

2.4.5.4. Check the reception and the approximate indication of the ADF pointers (EHSI and the HSI blue pointer).

2.4.5.5. Push the ADF button to put the receiver in the ANT mode and check that the ADF bearing needles, on the EHSI indicators, are parked at the nine o'clock position and then removed.

2.4.5.6. Push the BFO switch and verify that a 1000 Hz tone is heard in the headphones.

2.4.6. AA 300 - Radar Altimeter system

2.4.6.1. Check instrument zero reading.

2.4.6.2. Ensure that the OFF flag is not in view.

2.4.6.3. Set the D.H. bug to 50 feet and check that the D.H. lights illuminate on the RAD-ALT indicator and on the pilot ADI.

2.4.6.4. Press the TEST button and verify that:

a) The height needle move up to 100 feet +/- 15 feet

b) The DH indicators are extinguished.

2.4.6.5. Release the Test button and check that:

a) The height needle returns to zero

b) The DH indicators (Radalt-ADI) illuminate.

2.4.7. KDM706A - DME system

2.4.7.1. Select the DME receiver on both ICS panels.

2.4.7.2. Press and hold the DME TEST pushbutton on instrument panel and verify that:

a) The DME and the EHSI display a distance of 0.0 nm.

2.4.8. KT71 / KT73 - Transponder system

2.4.8.1. Set the rotary mode switch to the TST position and check that all segments of the display are illuminated.

2.4.8.2. Set QNE reading on encoder altimeter and record PA. Select the mode switch to GND position and check that the FL value on the XPDR display is within +/-100 feet of PA reading.

2.4.8.3. Reselect XPDR to SBY or OFF position.

2.4.9. Flight Director

2.4.9.1. Set the F/D CPL/DECOUPL switch to the DECOUPL position; check that the advisory FD DECPLED illuminates on the EDU and that the FD advisory on both EADI units changes from to magenta.

2.4.9.2. Check that the SAS1, SAS2, ATTD/HLD and AUTOTRIM switches are in the ON position.

2.4.9.3. On the F/D mode selector, press the SBY button and verify that:

a) All the F/D mode switches illuminate.

b) The G/A & DH light on the ADI are illuminated.

c) The pilot F/D command bars and flag are out of view and FD flag is in sight.

2.4.9.4. Repeat the above procedure using the FD SBY button on the pilot's and copilot's cyclic stick.

CAUTION

Operate with care when the F/D is COUPLED and the Autotrim is ON, because the cyclic stick moves as the F/D bar moves.

2.4.9.5. HDG Mode Selection

a) On the pilot's EHSI control panel, press the HDG sync knob to align the Heading Bug with the EHSI lubber line.

b) On the F/D Mode Selector, press the HDG key and verify that the HDG lamp illuminates and that the Roll Command bar on the ADI is centered.

c) Turn the pilot heading bug clockwise and counterclockwise and check that the F/D command bar moves in the direction of the HDG bug and that the cyclic stick and API roll indicator remain fixed with the COUPL/DECOUPL switch on the Helipilot Control panel in the DECOUPL position.

d) Press the SBY key on FD control panel to disengage the mode.

2.4.9.6. IAS Mode Selection

a) On the F/D mode selector, press the IAS key and verify that the IAS light illuminates and that the pitch command bar on the ADI is centered.

b) Operate the A/S trim to increase (DN) and decrease (UP) the IAS with the cyclic DN/UP beep trim. Ensure that the ADI pitch command bar moves downwards as the A/S increases and upwards as the A/S decreases.

c) Verify that the cyclic stick and API pitch indicator remain fixed if the COUPL/DECOUPL switch on the Helipilot Control panel is in the DECOUPL position.

d) Press the SBY key on copilot stick to disengage the mode.

2.4.9.7. ALT and VS Mode Selection

a) On the F/D Mode Selector, press the ALT key. Verify that the ALT light illuminates and that the pitch command bar on the pilot's ADI is centered.

b) Set the IVSI selector needle to zero. Then, on the F/D mode selector, press the VS key.

c) Verify that:

- The VS light illuminates (on F/D control panel).
- The ALT light is extinguished.
- The pitch command bar is centered.

d) Move the VS bug on the IVSI alternatively to climb and to descend and check that the F/D pitch command bar on the ADI moves correctly.

e) Press the FD SBY key on the pilot's to disengage the mode.

2.4.9.8. Go-Around Mode Selection

a) On the F/D Mode Selector, press the GA key and verify that:

- All the mode indicator lights are off and the GA light is illuminated.
- The yellow GA advisory on both the ADI is illuminated.
- The roll and pitch command bars on the ADI are centered.
- COLL CUE is at the bottom of the scale on the ADI.

b) Press the FD SBY key and repeat the above check with the GA button installed on the collective grip.

c) Press the FD SBY key to disengage the mode.

2.5. KING/ROGERSON KRATOS SUITE

KX165	VHF/AM #1 & 2 System
EFIS 160E015	Electronic Flight Instrument System
KMR675	Marker Beacon System
KR87	ADF System
KDM706	DME System
AA300	Radar Altimeter System
KT71	Transponder System
FZ720	Flight Director System

2.5.1. KX165 - VHF/AM #1& 2 COM systems

2.5.1.1. On the pilot and copilot ICS panels, select the active VHF # 1(2) as the active transmitter.

2.5.1.2. Select a manual or pre-selected frequency on the active VHF radio and establish two-way communications with a local radio station.

2.5.1.3. For both the pilot and copilot stations, verify that the signals transmitted and received are of good quality (loud and clear) and suitably adjustable using the volume control. Check the sidetone adequacy and level.

2.5.1.4. Pull the VOL knob out and check squelch operation and functioning.

2.5.1.5. Repeat check with VHF/AM 2 radio

2.5.2. KX165A - VHF/AM #1 & 2 COM systems with 25/8.33kHz frequency spacing

2.5.2.1. Refer to step 2.5.1 for system test procedure.

Note This system only differs from the one described in step 2.5.1 for the availability of 8.33kHz frequency spacing.

2.5.2.2. Pull the inner frequency setting knob to access the narrower spacing.

2.5.3. EFIS – Electronic Flight Instrument system

2.5.3.1. EADI - test

Note The steps below must be carried out on both the pilot's and copilot's EADI.

a) Rotate the DIM control knob and verify that the control of the brightness of the EADI display is satisfactory.

b) Press and hold the TST button to carry out the Phase I and II self-tests.

c) During the Phase I self-test, check that:

- Pitch is 0° and roll is 20° to the right.
- The FD command bars (pitch and roll) are centered.
- The expanded localizer and glide slope deviation indicators are centered.
- The Radio Altitude indicator shows 100 feet.
- The Raise Runway is in sight.
- The Test flag is in sight.

d) During the Phase II self-test, check that the following parameters are flagged (red box): ATT, FD, GS, LOC, RA, MON.

e) Rotate the DH knob to increase and decrease the DH setting in the upper right corner of the display.

f) Press the M push-button and check that the EADI changes to the composite mode (REV).

g) Press and hold the HZN SYNC button for 3 seconds and verify that the horizon line is oriented at the mid position of the display.

h) Press the button again and check that the true horizon line is displayed.

2.5.3.2. EHSI - test

Note The checks below must be accomplished on both the pilot and copilot EHSI displays. To carry out the procedure, tune the VOR1, VOR2 and ADF receivers to local station frequencies (if available).

a) Select a navigation source (VOR1, VOR2 or GPS) using the N key. Couple the navigation receiver to bearing pointers BRG1 and BRG2.

b) Rotate the DIM control knob and verify that the control of the brightness of the EADI display is satisfactory.

c) Press and hold the TST button to carry out the Phase I and II self-tests.

d) During the Phase I self-test, check that:

- The Heading is at 0°.
- The Selected course is at 0°.
- The Selected heading at 0°.
- The Distance to Go is 0.0 nm.
- The Glide Slope deviation needle is centered.

e) During the Phase II self-test, check that the following parameters are flagged (red box): GS, HDG, WX, the selected navigation source and the selected bearing pointers.

f) Upon completion of the self-test, rotate the HDG SEL knob clockwise and counter-clockwise and check that the selected HDG display changes and the bug moves correctly.

g) Press the HDG SEL knob and check that the HDG bug is automatically aligned to the EHSI lubber line.

h) Press the N button on the EHSI and verify that the navigation sources VOR1, VOR2 and GPS appear in sequence.

i) Press the B button and turn the bearing selector knob. Check that the bearing pointers VOR1, ADF, DF and GPS appear in sequence on BRG1 and VOR2, ADF, DF, GPS appear in sequence on BRG2.

j) Repeat step (h) on the copilot's EHSI and check that the Navigation sources change to VOR1, VOR2 and GPS.

k) Turn the CRS SEL knob and check that the selected course on the EHSI changes.

l) Press the M key and verify that the following display formats are available:

- HSI mode
- Full Map
- ARC
- ARC MAP
- ARC WX
- ARC WX+MAP
- VERT.PROFILE
- COMPOSITE MODE
- REV MODE (COMPOSITE)

m) Pull out the ADI PLT circuit breaker and verify that the PLT EHSI automatically reverts to the Composite mode in not more than 5 seconds and that the MON red flag appears on all the other displays near the ADI ball. With the circuit breaker pulled, make the following additional checks:

- Press the M key and increase and decrease the DH datum.
- Press the N key and check that all the navigation sources installed are available.

- Press the B key and check that the bearing pointers (BRG1 and BRG2) are selectable.
- Turn the HDG selector knob to increase and decrease the selected HDG value. Verify that the HDG bug moves correctly and check for the correct change of the displayed value.
- Push the HDG selector knob and check that the HDG bug is automatically aligned with the lubber line .
- Rotate the CRS selector knob clockwise and counter-clockwise and check that the course arrow moves and the CRS value changes correctly.

n) Push in the ADI PLT circuit breaker and pull-out the HSI PLT circuit breaker. Repeat all the checks listed under step (m), on the pilot's EADI.

o) Insert the HSI PLT circuit breaker and pull out the ADI CPLT circuit breaker. Repeat all the checks listed under step (m), on the copilot's EHSI.

p) Insert the ADI CPLT circuit breaker and pull-out the HSI CPLT circuit breaker.

q) Repeat step (m) on the copilot's EADI.

2.5.4. KMR675 – Marker Beacon system

2.5.4.1. Select the MB receiver on both ICS panels.

2.5.4.2. Press the TEST button on the MB control panel and check that all pilot and copilot marker lights (O-M-I) are illuminated and an 800 Hz tone is present in the pilot and copilot headphones.

2.5.5. KR87 – ADF system

Note The following steps must be carried out on both EHSI displays

2.5.5.1. Select the ADF receiver on both ICS panels.

2.5.5.2. Couple the bearing pointers BRG1 and BRG2 to the ADF receiver.

2.5.5.3. Tune the receiver to a local NDB station.

2.5.5.4. Check the reception and the approximate indication of pointers BRG1 and BRG2.

2.5.5.5. Push the ADF button to put the receiver in the ANT mode and check that the ADF bearing needles, on the EHSI indicators, are removed.

2.5.5.6. Push the BFO switch and verify that a 1000 Hz tone is heard in the headphones.

2.5.6. KDM760A – DME system

2.5.6.1. Press the N button to select VOR1 on both EHSI units.

2.5.6.2. Press and hold the DME TEST pushbutton on instrument panel.

2.5.6.3. As the test proceeds, verify that, in the upper right corner of both EHSI displays:

a) The DME red flag (- - - -) is displayed for one second.

b) The displayed DME distance is 0.0 nm (green).

c) Using the N key, select VOR2 on both EHSI units and repeat steps 2.5.6.2 and 2.5.6.3. The distance indication should be yellow.

d) Tune the system to the appropriate channel and verify the approximate indication of distance.

2.5.7. AA 300 – Radar Altimeter system

Note The following steps must be carried out on both EHSI displays

2.5.7.1. Verify that, on both EADI units, the instrument reads zero (±5 feet).

2.5.7.2. Ensure that the RA flags are not in view.

2.5.7.3. On both EADI units, set the DH value to 150 feet.

2.5.7.4. Press and hold the RA TST button, on the PLT EADI, for 3 seconds and verify that:

a) The height displayed is 100 feet ±5 feet.

b) The DH advisory appears at the right side of the ADI.

c) Release the Test button and check that:

d) The height value returns to zero (±5 feet)

e) The DH indicators are extinguished.

2.5.7.5. Repeat steps 2.5.7.2 through 2.5.7.4 on the copilot's EADI.

2.5.8. KT71 / KT73 – Transponder system

2.5.8.1. Select the mode switch to TST and check that all segments of the display are illuminated.

2.5.8.2. Set QNE reading on encoder altimeter and record PA. Select the mode switch to GND position and check that the FL value on the XPDR display is within ±100 feet of PA reading.

2.5.8.3. Reselect XPDR to SBY or OFF position.

2.5.9. Flight Director

2.5.9.1. Set the F/D CPL/DECOUPL switch to the DECOUPL position; check that the advisory FD DECPLED illuminates on the EDU and that the FD advisory on both EADI units changes from to magenta .

2.5.9.2. Check that the SAS1, SAS2, ATTD/HLD and AUTOTRIM switches are in the ON position.

2.5.9.3. On the F/D mode selector, press the SBY button and verify that:

a) All the F/D mode switches illuminate.

b) The FD flags on both EADI units are visible.

c) The F/D command bars are not visible.

d) Repeat the above procedure using the SBY button on the pilot's and copilot's cyclic stick.

Note The following steps must be executed on helicopter with FD<> key installed (PLT/CPLT in command function)

e) Press the FD <> key to select copilot in command; verify that the green <-- symbol is displayed in the lower left corner of the pilot's EHSI .

f) Press the FD<> key again to select copilot in command and verify that the --> symbol is displayed in the lower right corner of the copilot's EHSI.

CAUTION

Operate with care when the F/D is COUPLED and the Autotrim is ON, because the cyclic stick moves as the F/D bar moves.

2.5.9.4. HDG Mode Selection

a) On the pilot's EHSI control panel, press the HDG sync knob to align the Heading Bug with the EHSI lubber line. Select the pilot in command with the FD<>key (if installed).

b) On the F/D Mode Selector, press the HDG key and verify that:

- The HDG lamp illuminates,
- The Roll Command bar on the EADI is centered.
- The HDG advisory illuminates (the advisory is green on the pilot's EADI and amber on the copilot's EADI).

c) Turn the pilot heading bug clockwise and counter-clockwise and verify that:

- The F/D cmd bar moves in the direction of the HDG bug.
- The cyclic stick and API roll indicator remain fixed (if the COUPL/DECOUPL switch on the Helipilot Control panel is in the DECOUPL position).

d) Press the SBY key on the F/D control panel to disengage the HDG mode.

2.5.9.5. IAS Mode Selection

a) On the F/D mode selector, press the IAS key and verify that the IAS advisory lights illuminate (green on the pilot's side and amber on the copilot's side) and that the pitch command bar on the ADI is centered.

b) Operate the A/S trim to increase (DW) and decrease (UP) the IAS with the cyclic DW/UP beep trim. Ensure that the ADI pitch command bar moves downwards as the A/S increases and upwards as the A/S decreases.

c) Verify that the cyclic stick and API pitch indicator remain fixed if the COUPL/DECOUPL switch on the Helipilot Control panel is in the DECOUPL position.

d) Press the SBY key on CPLT stick to disengage the mode.

2.5.9.6. ALT and VS Mode Selection

a) On the F/D Mode Selector, press the ALT key and verify that:

- The ALT light illuminates.
- The pitch command bar on the pilot's EADI is centered.
- The ALT advisory is displayed on both EADI units.

b) Set the IVSI selector needle to zero.

c) On the F/D mode selector, press the VS key and verify that:

- The VS light illuminates on both EADI units.
- The ALT light is extinguished.
- The pitch command bar is centered.

d) Move the VS bug, on the IVSI, to climb and to descend and check that the F/D pitch command bar on the EADI moves correctly.

e) Press the SBY key on PLT stick to disengage the mode.

2.5.9.7. Go-Around Mode Selection

a) On the F/D Mode Selector, press the GA key and verify that:

- All the mode indicator lights are off and the GA light illuminates.
- The GA advisory is displayed on both EADI units.
- The roll and pitch command bars on both EADI units are centered.
- COLL CUE is at the bottom of the scale on both EADI units.

b) Press the FD SBY key and repeat the above check with the GA button installed on the collective grip.

c) Press the FD SBY key to disengage the mode.

2.6. AVIONIC KITS (if installed)

2.6.1. AG 06 EMS - ICS System EMS configuration

2.6.1.1. On passengers' ICS control panel (cockpit) check that ICS is OFF(no light).

2.6.1.2. Check on cabin ICS control panel that MED/ISO and PAT/ISO switches are in NORM position.

2.6.1.3. On the cabin ICS control panel, press the ICS/PLT push button and check that the green lamps go ON, on both control panels (cockpit and cabin).

2.6.1.4. Check ICS functionality from PAX and PAT left, and from DOCTOR, PAT and PAX right.

2.6.1.5. Select the MED/ISO switch to the ISO position and check that the ISO/CALL light on the cockpit control panel illuminates and that only the radio and not the ICS, is functional from the DOCTOR station.

2.6.1.6. On the cockpit control panel, press and hold the ISO push button and check the ICS functionality from the pilot and copilot station with the DOCTOR station. Release the button and reselect the MED/ISO switch to NOR.

2.6.1.7. Select PAT/ISO switch to ISO position and check there is no sidetone or audio communication from either PAT position (PAT mike is ON).

2.6.1.8. Reselect the PAT/ISO switch to NOR.

2.6.1.9. Select TX switch to MED position and check RX/TX capability from DOCTOR position with all radios selectable from the cabin ICS control panel.

2.6.1.10. Select TX switch to PAX position and repeat previous check from PAX position.

2.6.2. RDR2000 - Weather Radar

2.6.2.1. STAND ALONE CONFIGURATION

WARNING

RADIATION SAFETY PRECAUTIONS MUST BE TAKEN BY PERSONNEL WHEN OPERATING AIRBORNE WEATHER RADAR ON THE GROUND.

1. **MAINTAIN THE MINIMUM SAFE DISTANCE OF 15 FEET FROM THE ANTENNA.**
2. **DO NOT TURN THE RADAR ON WITHIN 5 FEET OF CONTAINERS OF FLAMMABLE OR EXPLOSIVE MATERIAL.**
3. **THE RADAR SHOULD NEVER BE OPERATED DURING REFUELING.**

a) Set the radar selector switch to TEST and verify that, after 10 sec, the system test pattern appears on the radar display.

b) Check that the radar indicator display contains all the alphanumeric information for the TEST mode, range (80 nm), range mark and the test pattern (four color). Pull out the TILT control knob and check that "STAB OFF" appears on the screen.

c) After checking for safe operating conditions, set the radar selector switch to ON to activate the radar system.

Note The logic WOW inhibits the radar transmission during ground operation. On the screen, TX FLT (cyan) is displayed.

d) Operate the TILT control knob up and down. On the display, check that the right tilt value is correctly displayed in the upper right corner of the screen.

e) After 60 seconds of warm-up time, the display will automatically present the WX mode and the indication TX FLT (cyan) will appear in the lower right corner.

f) Press the RNG ⇑ ⇓ buttons to expand or reduce the scale of the presentation; check that the range selected and the corresponding range marks are correctly displayed.

g) Press and hold the TRACK ⇐⇒ left and right pushbuttons and check that the yellow track line moves in the correct direction.

h) Select the Vertical Profile (VP Key) format and verify that:

- The display contains all the alphanumeric information for this mode.
- The correct radar scan track angle is displayed in the upper left corner.

i) By means of the RNG key, expand or reduce the scale of the presentation; check that the range selected and the corresponding range marks are correctly displayed.

j) Adjust the TILT control knob full DN and turn the system to STBY.

2.6.2.2. EFIS CONFIGURATION

WARNING

RADIATION SAFETY PRECAUTIONS MUST BE TAKEN BY PERSONNEL WHEN OPERATING AIRBORNE WEATHER RADAR ON THE GROUND.

1. **MAINTAIN THE MINIMUM SAFE DISTANCE OF 15 FEET FROM THE ANTENNA.**
2. **DO NOT TURN THE RADAR ON WITHIN 5 FEET OF CONTAINERS OF FLAMMABLE OR EXPLOSIVE MATERIAL.**
3. **THE RADAR SHOULD NEVER BE OPERATED DURING REFUELING.**

a) Set the radar selector switch to TEST and verify that, after 10 sec, the system test pattern appears on the radar display. Press the N key on the EHSI to select WX page.

b) Check that the radar indicator display contains all the alphanumeric information for the TEST mode, range (80 nm), range mark (40 nm) and the test pattern.

c) After checking for safe operating conditions, set the radar selector switch to ON to activate the radar system.

Note The WOW logic inhibits the radar transmission during ground operation. On the screen, TX FAIL (red) is displayed.

d) Operate the TILT control knob up and down. On the display, check that the right tilt value is correctly displayed in the upper left corner of the screen.

e) After 60 seconds of warm-up time, the display will automatically present the WX mode and the indication TX FAIL (red) will appear in the lower right corner.

f) Press the R buttons (on EHSI) to expand or reduce the scale of the presentation; check that the range selected and the corresponding range marks are correctly displayed.

g) Press and hold the TRACK left and right pushbuttons on the radar control panel and check that the yellow track line moves in the correct direction.

h) Select the Vertical Profile format (press N key on EHSI) and verify that:

- The display contains all the alphanumeric information for this mode.
- The correct radar scan track angle is displayed in the upper left corner.

i) By means of the R key, expand or reduce the scale of the presentation; check that the range selected and the corresponding range marks are correctly displayed.

j) Adjust the TILT control knob full DN and turn the system to STBY.

2.6.3. GARMIN 165 - GPS System (if installed)

2.6.3.1. Switch on the system and check for the automatic BITE.

2.6.3.2. When the GPS present-position is available, check the displayed data against known geographical position data (Max error 0.125 nm).

2.6.3.3. Press the SET Key to select the SENSOR STATUS page.

2.6.3.4. Turn the large, outer knob to select the Satellites Status page and verify that at least 3 satellites are available. Record the receiver status, the DOP, the SV and the relative signal level in the check list table (Annex 1).

2.6.3.5. EFIS coupled

a) On both EHSI units, press the N key and select the GPS source.

b) On both EHSI units, press the B key and select the GPS bearing pointers (BRG1 and BRG2).

c) On the GPS receiver, press the D-> key and insert a WPT.

d) On both EHSI units, check that the correct values of DTK, course arrow and bearing are displayed (cross check with GPS nav data).

e) On each EHSI unit, select the Full Map mode and press the DIM/REF knob to scroll all the map formats available (WPT, AIRFIELD, NAVAID).

2.6.3.6. EHSI-74 coupled

a) On the EHSI unit, press the CRS key and select the GPS navigator (LRN).

b) On the EHSI unit, press the ⇑ or ↑ key and select the GPS bearing pointers (WPT1 and WPT2).

c) On the GPS receiver, press the D-> key and insert a WPT.

d) On the EHSI, check that the correct values of DTK, course arrow and bearing are displayed.

e) On the EHSI, select the Map mode and verify that all the data coming from the GPS internal database are correctly displayed.

2.6.4. TRIMBLE 2101- GPS System (if installed)

2.6.4.1. Switch on the system and wait for the automatic BITE.

2.6.4.2. If the self-test is satisfactory, the GPS should display the message “Ready for navigation”.

2.6.4.3. Press the AUX key three times to select the SENSOR STATUS page.

2.6.4.4. Turn the large, outer knob and check the GPS Status and Satellites Tracked. In the Satellite Data page, verify that at least 3 satellites are available, and record the signal level.

2.6.4.5. Push the AUX key to select the SYSTEM STATUS page. With the small inner selector knob, select the Present-Position page and check the displayed data (valid position data should be available within 5 minutes), against known geographical position data (Max error 0.125 nm).

2.6.4.6. EFIS Coupled & BRNAV operation

a) On both EHSI units, press the N key and select the GPS source.

b) On both EHSI units, press the B key and select the GPS bearing pointers (BRG1 and BRG2).

c) On the GPS receiver, press the WPT key and select a WPT. Press the D-> key twice to activate course steering to the selected waypoint.

d) On both EHSI units, check that the correct values of DTK, course arrow, bearing and distance are displayed.

e) On the EHSI units press M key to select the Full Map mode and verify that all the data coming from the GPS (relative positions of selected waypoints) are correctly displayed.

f) If equipment is configured for BRNAV operation (P/N 109-0822-91) press the AUX key to access the system status mode and with the inner and outer knob select the Altitude page. Check that the altitude source is PRS, Note the pressure altitude value displayed on GPS and check that is within (±120 feet) with pressure altitude indicate on the pilot altimeter.

2.6.4.7. EHSI-74 Coupled

a) On the EHSI control panel, press the CRS key and select the GPS source.

b) On the EHSI control panel, press the □ key and select the GPS bearing pointers (BRG1 and BRG2).

c) On the GPS receiver, press the WPT key and select a WPT. Press the D-> key twice to activate course steering to the selected waypoint.

d) On the EHSI units, check that the correct values of DTK, course arrow, bearing and distance are displayed.

e) Press the MAP key to select the Map mode and verify that all the data coming from the GPS (relative positions of selected waypoints) are correctly displayed.

2.6.5. Garmin GTN650 - VHF/NAV#1/GPS System (if installed)

Note The GTN650 system automatically turns on at helicopter power-up and carries out the internal BITE. At the end of the BITE, touch twice the CONTINUE softkey on system display to proceed to the MAIN page.

Note Selection of a Radio or NAV frequency can be carried out either by using the two concentric knobs or directly entering the frequency into the Frequency Selection numeric keypad. To open the frequency keypad, touch the active or the standby frequency fields.

Note COM frequencies, active and standby, are normally shown as default on the GTN650 display. To temporarily display the NAV frequencies, active and standby, press the internal (smaller) knob once. Squelch OFF function is activated by pushing once the VOL knob while valid COM frequencies are displayed in the active/standby frequency fields.

2.6.5.1. VHF/AM radio section

a) On the pilot and copilot ICS panels, select VHF as the active transmitter.

b) Select a manual or pre-selected frequency in the standby frequency field, then touch the active frequency field to swap active-standby. Establish two-way communications with a local radio station. Verify that:

- At the pilot, copilot and passengers positions, the signals transmitted and received are of good quality (loud and clear) and suitably adjustable using the volume control.
- The sidetone level is adequate.
- The squelch operates correctly.

NOTE Two communications receivers tuned to the same station could result in a reduction in audio volume.

2.6.5.2. GPS section

a) When the GPS present-position is available, check the displayed data against known geographical position data (max error 0.125 nm / 0.23 km).

b) Press in sequence the MENU and GPS STATUS to verify the GPS receiver status page.

c) Verify that at least 3 satellites are available. Record the GPS receiver status, the Latitude/Longitude, the HDOP, HFOM and VFOM data in the check list table (Annex 1).

d) EFIS coupled

- On both EHSI units, press the NAV key and select the GPS source.
- On both EHSI units, press the Bearing Selection keys and select the GPS bearing pointers (BRG1 and BRG2).
- On the GPS receiver, press the D-> key and insert a known WPT.

- On both EHSI units, check that the correct values of DTK, course arrow and bearing are displayed (cross check with GPS nav data).
- On each EHSI unit, select the Full Map mode and press the DIM/REF knob to scroll all the map formats available (WPT, AIRFIELD, NAVAID).

2.6.6. WX1000 - STORMOSCOPE System (if installed)

2.6.6.1. Rotate the OFF/BRT knob clockwise to turn the STORMOSCOPE system On.

2.6.6.2. At power up check that the message ALL TEST ARE OK appears at the end of the automatic self-test.

2.6.6.3. From the main menu press the 360 button to select the Weather Mapping Mode and check the correct HDG value is displayed on the screen.

2.6.6.4. Push the range push button and check the range changes through 200, 100, 50 and 25 nm.

2.6.6.5. Shut down the system.

2.6.6.6. Select the SERVICE MENU on the display while depressing the two left buttons.

2.6.6.7. Release the buttons only after the Service Menu appears on the display.

2.6.6.8. Select Noise Test function and then press the GO button.

2.6.6.9. Check that no strike points, caused by interference, appear on the screen. (Strike points caused by interference will always reappear at the same position on the screen. Press CLR to clean the screen).

2.6.6.10. Press the TEST push button to access the TEST STRIKE screen.

2.6.6.11. Check that a box appears in the upper right portion of the screen and that strikes points only appear inside the box and within one second. (if the check fails, press CLR and repeat)

2.6.6.12. Turn off the system

2.6.7. TAS 497- TRAFIC ALERT system (stand alone – if installed)

2.6.7.1. Turn OFF/BRT knob CW to the desired display brightness.

2.6.7.2. At the end of the Power On self test, check that the stand-by screen appears and no error code are displayed.

2.6.7.3. Press the test button and check for the TEST SCREEN symbol and upon successful completion of the self test, that the message "TRAFFIC ADVISORY SYSTEM TEST PASSED" is heard in the pilot and copilot headset.

2.6.7.4. Press the OPR button and check that the system switches from standby screen to the normal operating mode.

2.6.7.5. Press the display range button to toggle the display range between 6 and 2 nm, and check for range change.

2.6.7.6. Turn the system OFF.

2.6.8. TAS system (EFIS coupled – if installed)

2.6.8.1. On both the EHSIs select MAP and TFC overlay format and 10 NM scale (5NM on the internal ring). Check that the message TCAS OFF is present on both the displays.

2.6.8.2. On the TAS control panel select and release the OPR/STB/TEST switch to TEST position and check that the TAS system test is activate.

2.6.8.3. Check that TEST screen appears on both EFISs while self-test is in progress (with the TCAS TEST legend) and that, upon successful completion of the self-test, the audio message “TRAFFIC ADVISORY SYSTEM TEST PASSED” is heard in the pilot and copilot ICS system.

2.6.9. NAT NTX138 – VHF/FM COM system (if installed)

2.6.9.1. On the pilot, copilot and DOCT ICS panels, select VHF/FM as the active transmitter.

2.6.9.2. Select a manual or pre-selected frequency on the active VHF radio and establish two-way communications with a local radio station.

2.6.9.3. From the pilot, copilot and DOCT stations, verify that the signals transmitted and received are of good quality (loud and clear) and suitably adjustable using the volume control. Check the sidetone adequacy and level.

2.6.9.4. Push the SQ push button and check squelch operation and functioning.

2.6.10. HF950 – HF/SELCAL COM system (if installed)

2.6.10.1. HF Radio

a) Turn the volume control knob to switch the system ON.

b) On both COMM CONTR panels, rotate the transmitter selector switch to the HF position.

c) Select a desired HF frequency with the correct modulation and momentarily press the PTT key to initiate the coupler auto tune sequence.

d) The TX message flashes during the tuning sequence and upon completion, the selected frequency reappears.

e) Make some TX/RX test from pilot and copilot station and check RX/TX signals, side tone quality, squelch and clarifier (only USB modulation) functionality.

2.6.10.2. SELCAL (if module is installed)

a) On both COMM CONTR panels, select the SEL receiver switch to ON.

b) Press SELCAL TEST/RESET push button and check for:

- a typical RING audio, in the pilot and copilot headsets.
- A flashing green light in the button.

2.6.11. Honeywell KHF1050 HF COM system (if installed) (Figure 19)

2.6.11.1. Power the system up. After completion of internal BIT test, verify no anomaly or failure message is displayed.

2.6.11.2. Initialize the system as follows:

a) Tx Power: Max

b) Tx Mode: USB-V(oice)

c) SQL: SBH Min

d) Clarity: 3

CAUTION

Do not initiate an HF transmission with personnel in the vicinity of the helicopter.

2.6.11.3. Select a valid frequency. Press the PTT switch and confirm the noise of antenna tuning is heard in the ICS system.

2.6.12. CHELTON 931 - Direction finder system

CAUTION

Don't use MAIN frequencies for this check.

2.6.12.1. Couple the bearing pointers BRG1 and BRG2 to the DF receiver.

2.6.12.2. Select the HOM position on pilot and copilot COMM CONTR panel.

2.6.12.3. On the HOMING control panel, select the MAIN/OFF/AUX switch to AUX.

2.6.12.4. Select the VHF band and check the audio reception and BRG1 and BRG2 pointers indicate the approximate position of the ground station tuned on the VHF AUX frequency.

2.6.12.5. Repeat the check with the UHF AUX frequency.

2.6.12.6. Select the MAIN/OFF/AUX Switch to the OFF position

Note The AUX frequencies are customer frequency and depend from P/N of receiver

2.6.13. Skyforce Observer Mk.II/Mk.III – Moving Map system

2.6.13.1. Switch the MFD on (if available) and select the RGB video input using the VID SEL button.

2.6.13.2. Switch the system ON and check for the automatic BITE.

2.6.13.3. Check that the MAIN MENU appears (after the Observer front and mission warning screens). Select CONTINUE and check that the correct software standard is installed. Select MAP MODE.

2.6.13.4. Check that the Map Mode switches from a NO ENTRY icon to a helicopter icon once the GPS has a FIX.

2.6.13.5. Check the displayed data on the MAP against known geographical position data.

2.6.13.6. In MAP Mode check that the Joystick function works, North, South, East & West. Check also that ZOOM IN; ZOOM OUT, SEARCH and MAIN MENU are active.

2.6.13.7. Return to the Main Menu and select the SHUT DOWN option to shut down the system.

2.6.14. Ice Detector system

2.6.14.1. Set the ICE DET switch to ON position and verify the presence of the green advisory message ICE DET on the ICE detector annunciator.

2.6.14.2. Push and hold the ICE DET switch on TEST position for at least 1 second and verify on the annunciator the appearance in sequence of the following amber caution message (also refer to Figure 20):

a) ICE

b) ICE FAIL

c) ICE

2.6.14.3. Release the switch to ON position and verify that the amber caution message ICE disappears and the green message ICE DET is still present.

2.6.14.4. Rotate the INST PNL dimming potentiometer out of the OFF position and verify that the ICE DET message dims.

2.6.14.5. Reset to OFF the INST PNL dimming potentiometer and verify that the message returns to maximum brightness.

2.6.14.6. Set the ICE DET switch to OFF position and check that the ICE DET advisory message disappears from the annunciator.

2.6.15. V/UHF Wulfsberg FlexComm II COM system (if installed)

2.6.15.1. ON all ICS control panels select V/UHF receiver to ON.

2.6.15.2. On system control panel press the PUSH ON knob to switch the system on, then verify that the self test performs correctly. When self test is completed, the HOME page will appear.

2.6.15.3. Press the DIM button and adjust the display brightness with the UP and DOWN softkeys located to the left of the display.

2.6.15.4. Press and hold TEST button to unsquelch the radio and rotate the left INNER knob (RT1 volume) to adjust the volume level.

2.6.15.5. Check that audio signal is present in every ICS control panel.

2.6.15.6. Release the TEST button to re-activate the squelch.

2.6.15.7. Push and hold the PUSH ON knob for several seconds to power off of the system.

2.6.15.8. Continue to hold the knob until the message "!!! USE CAUTION !!! TURNING SYSTEM OFF" disappears from display.

2.6.16. V/UHF Rockwell Collins RT-8200 COM system (if installed) (Figure 9)

Note If more than one system of this type is installed, repeat below checks for each of them.

2.6.16.1. ON all ICS control panels select V/UHF receiver(s) to ON.

2.6.16.2. On RT-8200 control panel rotate the Operational Mode knob to TEST position to initiate the IBIT function. At the end of the IBIT, the result will be displayed on the system display.

2.6.16.3. Rotate the Operational Mode knob to TR position to start TX/RX operation.

2.6.16.4. Manually enter a frequency or use a pre-selected frequency in the standby frequency field by rotating the Frequency Mode knob to MAN or PRST positions respectively, then push the LOAD/OFST button to swap it to the active frequency field.

2.6.16.5. Establish two-way communications with a local radio station. Verify that:

a) At the pilot, copilot and passengers positions, the signals transmitted and received are of good quality (loud and clear) and suitably adjustable using the volume control knob (VOL).

b) The sidetone level is adequate.

Note Two COM receivers tuned to the same station could result in a reduction in audio volume.

2.6.16.6. Pull the VOL knob to unsquelch the radio and rotate the knob to adjust the volume level.

2.6.16.7. Check that audio signal is present in every ICS control panel.

2.6.16.8. Rotate the Frequency Mode knob to 243 ans 121 positions and verify that the Guard Frequencies 243.000 and 121.500 MHz are automatically loaded in the active frequency field.

2.6.16.9. Rotate the Frequency Mode knob back to MAN (or PRST) position, then rotate the Operational Mode knob to OFF position to power off the system.

2.6.17. External Loudspeakers (AA21 control panel)

CAUTION

During external loudspeaker checks all personnel in the vicinity of the helicopter must wear protective hearing equipment.

2.6.17.1. On the EXT LOUDSPEAKER control panel (NAT AA21) select in sequence the following switch position:

a) PA position
b) INT position
c) Adjust VOL control knob to minimum range

2.6.17.2. On cabin ICS control panel (PAP) select SPKR to ON (ICS and SPKR green lights illuminate).

2.6.17.3. On the EXT loudspeaker select POWER switch to ON.

2.6.17.4. While talking in the pilot and copilot microphone, verify that:

a) The communication is clearly heard through all the cabin loudspeakers and through all headsets.
b) The volume of the cabin loudspeakers is adjustable by the VOL knob on the NAT AA21 control panel.

2.6.17.5. Select VOL knob to minimum.

2.6.17.6. Set power switch to off position.

2.6.17.7. Select SPRK on PAP control panel to off (SPRK light off).

2.6.18. Alternative Lighting system

Note The following check must be carried out in low light conditions. If available use NVIS compatible system to evaluate cockpit light compatibility.

2.6.18.1. Select ALT LT switch to ON position and verify that all white instrument lights (normally internal lighting on pilot and copilot anemometers and ADI standby) are extinguished and that the additional cockpit green floodlight are illuminated.

2.6.18.2. Select the SCHLT switch (on the collective grip) to the ON position and check that the searchlight illuminates.

2.6.18.3. Select the SRCH LT switch on the overhead panel to IR position and check that search light visible lamp extinguishes. Check, using NVIS sensors, the lamp functionality or in alternative check the functionality by verifying thermal emission of the lamp.

2.6.18.4. Select SRCH LT switch to NORM position and check that visible searchlight lamp illuminates.

2.6.18.5. Select SCHL switch on the collective grip to STOW position.

2.6.18.6. Select ALT LT switch to OFF and check that all instrument lights illuminate and cockpit green floodlights extinguish.

2.6.19. Digital Video Recorder system (VRDV-3000) (Figure 10)

Note The next checks can be carried out only if a video source (external videocamera or FLIR) or a Digital Map Generator video signal is available.

Note The video source page selection on the 6.4” cockpit MFD depends on MFD configuration and can be performed by pressing the dedicated key (FLIR, VID or similar wording) on the display frame.

2.6.19.1. Insert a PCMCIA/Compact flash card (formatted as FAT32) in the video recorder slot.

2.6.19.2. Check, using the dedicated system’s controls, that video source (or DMG) system is switched ON and active.

2.6.19.3. Switch the 6.4” multifunction display (MFD) to ON and select the video source (or MAP) input using the MFD frame keys.

a) If VR SET key is available on the 6.4” MFD, perform the following setup:
b) press and hold the VR SET key and wait until the size of the displayed image appears rescaled;
c) press the FLIR (or MAP) key on the MFD to select the input source of recorder;

d) press again SET VR to confirm.

2.6.19.4. On the video recorder (VCR) control panel press and hold PREVIOUS and NEXT keys to format the playback recorder internal disk.

2.6.19.5. Press the RECORD pushbutton on the keys bottom line and check that both recorders (Evidential, upper deck, and Playback, lower deck) start recording by verifying that the green lights on the RECORD and REC/STOP pushbuttons illuminate and that PCMCIA/Flash card status indicator green LED illuminates.

2.6.19.6. Continue recording for a minimum of 5 minutes.

2.6.19.7. Stop recording on the Playback recorder by pressing the STOP key (located in the bottom keys line).

2.6.19.8. Stop Evidential recorder by pressing the REC/STOP key.

2.6.19.9. On the 6.4” MFD select VR input using dedicated key.

2.6.19.10. On VCR control panel press PREV key (recorder moves back 5 minutes) and then the PAUSE/PLAY key: check that recorded images are displayed on the MFD.

2.6.19.11. Check for acceptable image quality.

2.6.19.12. Extract PCMCIA/Compact flash card from recorder slot and check recorded images on a compatible PC (the recorded file could be reproduced by Windows Media Player).

2.6.20. Digital Video Recorder system (SAAB DiRECT CR)

Note The following checks require a video input from an Observation System. They are preferably to be performed during Observation System checks in flight.

2.6.20.1. Verify that GEN 1&2 switches are set to ON. Set NON ESS BUS switch to ON.

2.6.20.2. At system power-up, DVR display should show “LAMP/SWITCH TEST” on the upper line and SKIP on the lower line.

2.6.20.3. To initialize the system, press SKIP softkey and verify that the initialization phase starts (“INITIALIZING...” shown) and is correctly completed. At the end of initialization, “READY: WELCOME” will be displayed on the upper line. The following softkeys are active: SET (to enter DVR setup pages), DIM (to adjust display brightness), PG (to access DVR recording controls).

2.6.20.4. Press DIM softkey, rotate knob CCW and CW and confirm display brightness adjusts accordingly to knob rotation. Push knob to confirm brightness selection.

2.6.20.5. Press PG softkey to access DVR recording controls. “SETUP (1/3)” will be shown on the upper line. Rotate the knob CW to select the “RECORD (2/3)” menu and push the knob to confirm.

2.6.20.6. The upper line will display the recorder status (e.g. “REC STOPPED”) and percentage of available memory. The following softkeys are active: REC (to initiate recording), SQ/HQ (to change recording quality level), PLAY (to initiate replaying of recorded images), PG (to return to upper level).

2.6.20.7. To start recording, press REC softkey and confirm pushing the knob. The display returns to the previous page and should show a solid triangle (□) to the left of REC label and the green LED light shall remain continuously illuminated to indicate recording is in progress.

2.6.20.8. Record at least 10 minutes of images from the Observation System. During recording, set several Event Markers by pressing MK softkey.

2.6.20.9. To stop recording, press REC softkey and confirm pushing the knob. The display returns to the previous page and the green LED light extinguishes.

2.6.20.10. To verify recorded images, firstly select on the 20”MFD the video source to be displayed: press VR softkey twice to select digital HD video source (HD RECORDER displayed).

2.6.20.11. Press PLAY softkey on DVR panel, then rotate the knob CW by two clicks to start playback of HD source. Verify presence and quality of recorded images; confirm the synchronization between time displayed on MFD and on DVR panel. The following controls are available:

a) knob rotations controls the speed of forward (CW) and backward (CCW) playback among X1, X2, X4, X8, FF (Fast Forward), FB (Fast Backward), /2, /4 and /8 options;

b) the softkeys control navigation among Event Markers (⏮ and ⏭) or video frames (⏮ and ⏭).

2.6.20.12. Pause the playback (|| softkey).

2.6.20.13. On the DVR control panel change the video output source:

a) press the knob twice to access the video output selection page;

b) rotate the knob CCW until a chevron (>) appears to the left of SD CH;

c) press the knob to confirm video source change: the chevron will change to a solid triangle (▶).

2.6.20.14. Exit the page by confirming (press RTN softkey) and returning back one level (press STS softkey).

2.6.20.15. Rotate the knob CW by two clicks, to start playback of SD source, and press VR softkey on 20"MFD to select SD video input.

2.6.20.16. Verify presence and quality of recorded images; confirm the synchronization between time displayed on MFD and on DVR panel.

2.6.20.17. Pause the playback (⏸ softkey).

2.6.20.18. Push the knob, then rotate CW until 4/4P PLAY OFF is shown. Push the knob to confirm.

2.6.21. Digital Video Recorder system (DVFAR 2) (Figure 11)

Note The following checks require a video input from an Observation System. They are preferably to be performed during Observation System checks in flight.

2.6.21.1. Insert a Compact Flash Memory Card (formatted as FAT32) in the video recorder slot (open the front-end door).

2.6.21.2. Verify that GEN 1&2 switches are set to ON. Set NON ESS BUS switch to ON.

2.6.21.3. Turn on the DVFAR unit by pressing the ON-OFF button on the recorder panel.

2.6.21.4. At system power-up, DVFAR2 display should show "DVFAR 2 Welcome" message.

2.6.21.5. Acknowledge the DVAR unit by pressing again the ON-OFF button on the unit. Verify the system boots and after around 15s that "DVFAR 2 Ready" message appears.

2.6.21.6. When a video signal is available from an Observation System, press the REC-PAUSE button and verify that the system starts controlling the availability of valid signals ("Check Input", "Init rec Wait" and "Rec Vid Aud" message displayed in sequence) and then starts the recording.

Note The "Vid" and "Aud" parts of the messages are only displayed when the relevant signals are received.

2.6.21.7. Pronounce a test sentence in the ICS microphones (ex. "Operator test sequence"). Continue recording several minutes of images

2.6.21.8. Press the REC-PAUSE button on the unit to stop recording.

2.6.21.9. To verify recorded images, firstly select on one of the MFDs the video source to be displayed, then push the PLAY-PAUSE button on the system panel.

Note The images from the DVFAR can be displayed, depending by the helicopter configuration on the Mission Console MFD and/or on the Instrument Panel MFD.

2.6.22. Video Down-Link ECU (if installed) (Figure 12)

Note To verify the correct functioning of the Video Down-Link system a compatible receiving Ground Station is required.

Note To scroll through the available options/menus, use the ↓↑ buttons. To access to sub-menus or to confirm settings, use the ↵ button.

2.6.22.1. Verify that GEN 1&2 switches are set to ON. Set NON ESS BUS switch to ON. The Video Down-Link system automatically powers-up.

2.6.22.2. Enter the system sub-menus and setup the system options accordingly to the settings of the Ground Station:

a) Encryption Key
b) Channel
c) Encoder mode
d) Encryption mode
e) Status information (video sources and formats)

2.6.22.3. Exit the sub-menus and return to the display main page.

2.6.23. Operator Console p/n 109-0719-67-383/-411 (Figure 13)

2.6.23.1. Switch ON the 10.4" MFD.

2.6.23.2. Check, using the dedicated system's controls, that Digital Map Generator and FLIR systems are switched on and active. Select the MAP and FLIR video source on the MFD and confirm the correct interfacing with the selected system.

2.6.23.3. Select MAP input and check that moving map can be controlled by the bezels F1 thru F5 located on the right side of the display frame.

2.6.23.4. Select PIP mode using the dedicated bezel and select FLIR as input. Check that FLIR image is displayed on the PIP window. Deselect PIP mode pressing again the PIP bezel.

2.6.23.5. Select FLIR input and check the functionality of ZOOM +/-, CONTRAST +/- and FREEZE keys.

2.6.23.6. Setup the video recorder (if installed. Refer to 2.6.19, 2.6.20, 2.6.21, as applicable, for further details): erase Playback disk and insert a pre formatted PCMCIA/ Compact flash card (refer to paragraph 5.6.19 for more detailed instructions).

2.6.23.7. On the 10.4" MFD upper frame press the EVID REC and REP REC keys and check that the green lamps 1 and 2 (upper right corner of MFD frame) illuminate to confirm recorder functionality.

2.6.23.8. Record FLIR images for a minimum of 10 minutes.

2.6.23.9. Stop both recorders using the STOP key on the MFD upper frame. Press STEP |<< key to rewind the system.

2.6.23.10. Select VR input on the MFD lower frame, then press PLAY key on upper frame and check that images recorded by Evidential recorder are correctly displayed on the screen.

2.6.23.11. Check for acceptable image quality.

2.6.23.12. Press STOP key.

2.6.24. Operator Console p/n 109-B811-37-107 (Figure 14)

2.6.24.1. Confirm that all required equipment are installed (as per Figure 14) and correctly identified.

Note As the Laser Interlock Unit (LIU) is not EASA certified, its installation is prohibited. Nonetheless, as the system might be provided separately to the customer, its functionality should be verified on ground. See 5.6.26 for LIU checking procedure (if installed).

2.6.24.2. Verify that both GEN switches are set to ON. Set NON ESS BUS switch to ON.

2.6.24.3. Switch the 20”MFD on by pressing the BRIGHTNESS knob.

2.6.24.4. Check, using the dedicated system’s controls, that Digital Map Generator and FLIR systems are switched on and active.

Note See step 2.6.26 for FLIR system initialization. FLIR thermal imager requires up to 10 minutes cooling down and becoming fully operative. Preliminary checks can be performed selecting the HDTV sensor

2.6.24.5. Select MAP input by left/right MAIN arrows and check that moving map can be controlled by the bezels F1 thru F5 located on the upper side of the display frame.

2.6.24.6. Select PIP mode using the dedicated bezel and select FLIR as input by left/right AUX arrows. Check that FLIR image is displayed on the PIP window. Deselect PIP mode pressing the PIP bezel again.

2.6.24.7. Select FLIR HD 16:9 input as main image and check the functionality of ZOOM +/- (image automatically freezes), CONTRAST +/- and FREEZE keys.

2.6.24.8. Modify image aspect ratio using RATIO key and confirm image shape changes accordingly to information displayed on MFD. Return to HD 16:9 aspect ratio.

2.6.24.9. Select multi-image format and swap among Side-by-Side, Quad and 1+3 formats using dedicated keys on the lower left side of MFD frame. Confirm displayed image changes accordingly.

2.6.25. FLIR UltraForce UF350EP (Figure 15)

Note These checks may be carried out on ground with 28 VDC external power or with engines running at 100% NR.

Note Depending on the helicopter configuration, instrument panel 6.4” or 5.7” MFD and/or Operator Console MFD can be used to display the FLIR images.

2.6.25.1. Main functionalities

a) Verify that both GEN switches are set to ON.

b) On HCU verify that the STOW-CAGE switch is set to STOW position.

c) Select FLIR page on available MFD(s) connected to the FLIR.

d) Set the ON/OFF switch to ON position and verify that:

- the turret unlocks to STOW position;
- the IBIT is correctly performed (no error code displayed on MFD in text field 6);

e) Set the STOW/CAGE switch to the central position and verify that:

- the text field 1 becomes STEER
- the day light TV camera image is immediately available on the MFD(s).

f) Move the Thumb Joystick in the four directions and verify that the movement of the FLIR turret is coherent with the joystick commands and the elevation and azimuth positions of the turret are correctly displayed on MFD (display fields 14 and 15).

g) Momentarily select STOW-CAGE switch to CAGE and confirm turret goes to the operator programmed CAGE position. Set switch to STOW position and confirm the turret moves to the STOW position.

h) Wait approximately 5 minutes after system power-up, then select on HCU the 4-ways switch up (△) and down (▽) to change sensor: the sensor will cycle among daylight TV Camera, colour Spotter Camera, IR Thermal Imager and back.

i) Verify the correct image is immediately available for each selected sensor.

Note The color Spotter Camera image can be out of focus at first power-up of the day

2.6.25.2. TV Camera, Spotter Camera and IR Thermal Imager

a) Select the daylight TV Camera and verify that camera is in AutoFocus (default), with the 'TV/A' symbol displayed in MFD text field 2.

b) Move the FLIR turret using the Thumb Joystick, aim to a target, apply zoom by the ZOOM rocker switch to select NFOV (Narrow Field Of View) and verify that the target remains in focus. Apply zoom using the ZOOM rocker from W to T Field Of View, and vice versa, and verify the target remains in focus during the lens movement.

c) Rotate the "F" knob and verify the AutoFocus is suspended and 'TV/M' replaces the 'TV/A' symbol on MFD. Adjust manually in both directions the camera focus using the knob and verify proper operation. Then press "F" knob and verify that the Auto Focus function is reactivated ('TV/A' symbol displayed).

d) Press the EZOOM push button (electronic zoom) and confirm (text field 3 on MFD) that the current zoom percentage is doubled. Press again to return to normal zoom.

e) Press Auto pushbutton and confirm TV in AUTO Gain and Iris mode and 'TV/A' displayed.

f) Select 4-Ways switch to FRZ and confirm image cycles between frozen and active. Select to FLT and confirm that the IR cut-off filter of the TV camera is switched out, making the TV camera more sensitive to low light conditions ('FLT' in text filed 4).

g) Press the "G" knob and verify that 'STBY' symbol is displayed in MFD text field 11. Press again the "G" knob and verify that:

- COR' symbol replaces 'STBY'.
- Adjustable Track-Gate and automatic Tracker-Marker symbology appears on the MFD.

h) Using the Thumb Joystick aim to a moving target, rotate the "G" knob to adjust the Track-Gate and, when the Tracker-Marker is superimposed to the target, press the "T" pushbutton.

i) Verify that 'TRACK' symbol has replaced 'COR' on MFD and that the sensor is automatically moving to maintain the moving target into the Tracker-Gate. Deselect the Tracker function by pressing the "T" pushbutton and then twice the "G" knob.

j) Select 4-Ways switch to select the IR Thermal Imager and verify that the IR camera image is displayed with WFOV (Wide Field of View) and Manual Focus ('TI/M') as default.

k) Using the Thumb Joystick aim to a target, apply zoom by the ZOOM rocker to select NFOV (Narrow Field Of View), and vice versa. Verify the focus can be manually adjusted with the FOCUS knob. Press the FOCUS knob and verify that the one-shot AutoFocus functions and the 'TI/A' symbol appears.

l) Press the EZOOM push button (electronic zoom) and confirm the current FOVx2 is selected. Press again to return to normal.

m) Press POL pushbutton and verify the image polarity change from White Hot ('WHT' in text field 4) to Black Hot ('BLK'). Press again POL pushbutton and verify that the polarity comes back to White Hot, with White Hot label briefly displayed.

n) Press Auto pushbutton and confirm Auto Span and Level mode activate.

o) Select 4 Way switch to FRZ and confirm image cycles between frozen and active. Select to FLT and confirm the IR camera DDE (Digital Detail Enhancement) toggles between OFF, 25%, 40%, 55%.

2.6.26. FLIR Star Safire HD (Figure 16)

Note These checks may be carried out on ground with 28 VDC external power or with engines running at 100% NR.

Note Depending on the helicopter configuration, instrument panel 6.4" MFD and/or Operator Console MFD can be used to display the FLIR images.

Note LASER systems are inhibited.

2.6.26.1. Main functionalities

a) Verify that both GEN switches are set to ON. Select NON ESS BUS switch to ON.

b) Switch the 20"MFD on by pressing the BRIGHTNESS knob. Wait for MFD initialization, then select FLIR HD 16:9 page using MAIN ⇦⇨ keys.

c) Set the ON/OFF switch on FLIR SCU to ON position and wait for system initialization (refer to Figure 16 for controls positions on SCU). Verify that:

- the turret unlocks to STOW position (check STOW label displayed on MFD upper side menus);
- the IBIT is correctly performed (no FAULT indication displayed);

d) At the end of the IBIT, select the STOW/CAGE switch to CAGE and the IR/TV selector to TV (right). Verify that:

- the status label on MFD becomes CAGE;
- the daylight TV camera image is immediately available on the MFD(s);
- the sensor label (MFD upper menus on left screen corner) becomes HDTV;
- the turret is aiming forward and slightly up (confirm positive indications both on graphical AZ/EL scales and on digital AZ/EL readouts on lower MFD menus).

e) Move the Thumb Transducer in the four directions and verify that the movement of the FLIR turret is coherent with the joystick inputs and the elevation and azimuth positions of the turret are correctly displayed on MFD.

f) Momentarily select STOW-CAGE switch to CAGE and confirm turret returns to the CAGE position. Set switch to STOW position and confirm the turret moves to the STOW position (no image displayed on MFD).

2.6.26.2. HDTV Camera, Light Intensifier and IR Thermal Imager

a) Aim at a suitably distant target with the HDTV sensor, rotate the manual FOCUS wheel in both directions and:

- verify the possibility to unfocus-refocus the image;
- confirm MAN label displayed on MFD upper menus and focus adjustment symbology displayed;
- press the AutoFocus switch to reselect the function and observe it while refocusing the image;
- verify image quality, colours and sharpness;
- confirm stability of imagine (no airframe induced vibrations).

b) Select Field-of-View switch to FOV+ position and verify (on upper MFD menus) FOV changes from WFOV to MFOV, NFOR, SNFOV and UNFOV. During FOV changes confirm AutoFocus function operates to try refocusing the image (if required use Manual Focus wheel to fine adjust the focusing). Repeat selecting Field-of-View switch to FOV- and confirm return to WFOV.

c) Select WFOV and aim to a suitable image (different colours, lights and shades present). Manually adjust contrast and brightness using the 5-ways "Auto Gain/Level Gain+/- Level+/-" multifunction selector. Verify the manual Gain/Level symbology is correctly displayed on MFD and image quality changes accordingly to manual adjustments. Press the selector to reselect the automatic Gain/Level function and confirm image quality returns to default.

Note In the following check, the AutoTracker function is verified using the Centroid Tracker Scenario for better performance. If not selected by default (CENT displayed on MFD upper menus) it may be selected by navigating in the FLIR system menus: use MENU pushbutton to activate menus, Thumb Transducer to navigate up/down/left/right, EXE pushbutton to confirm selection and exit. To exit the menus select EXIT from the available list and confirm with EXE.

d) Confirm CENT label is displayed on upper MFD menus to indicate Centroid Tracker Scenario selected. Aim to a suitable target (moving target if the check is performed on ground), adjust Tracker window size accordingly to target size (using Autotrack Window Size wheel on SCU) and activate Tracker function using Breaklock/Autotrack switch. Confirm that:

- TRACK label appear on the MFD upper menus;
- the Tracker window changes format
- the turret moves to maintain the selected target within the window.

e) Release the Tracker function using the Breaklock/Autotrack switch.

CAUTION

HDLL sensor is intended to provide B&W, high resolution images for use in low light environments. Avoid aiming at bright images in low light conditions as this may damage the light intensifier.

Note Daylight images or low light images of close targets may be degraded from those of the HDTV sensor.

f) Repeat the above steps a) to e) after selection of the HDLL (High Definition Low Light - light intensifier) sensor using the IR/TV multifunction selector (left first step).

Note Up to 10 minutes, from FLIR system power-up, may be required to the IR sensor to cool down to normal operating conditions. During this period no image will be available from the IR sensor.

g) Repeat the above steps a) to e) after selection of the HDIR (Infra Red thermal imager) sensor using the IR/TV multifunction selector (left second step).

h) Change IR sensor polarity using the Polarity multifunction selector and confirm:

- polarity label (BLK or WHT) correctly displayed on MFD upper menus;
- polarity of image changes accordingly to selection, from White Hot to Black Hot

i) Stow the turret sensor by selecting the CAGE/STOW switch to STOW.

j) Power off the FLIR system selecting the ON/OFF switch to OFF.

2.6.27. Non Essential Bus check (if installed)

2.6.27.1. Set GEN1 switch to OFF and check that all the loads powered by the Non Essential Bus are automatically disconnected.

2.6.27.2. Reselect GEN1 back to ON. Switch back ON the affected systems and confirm they remain ON.

2.6.27.3. Repeat with GEN2 switch.

2.6.28. I-Band transponder (Figure 18)

2.6.28.1. Set the AE control switch on the IFF control panel to U position.

2.6.28.2. Set the power switch selector to SBY position.

2.6.28.3. Set the LAMP TEST/OFF/SELF TEST switch to LAMP TEST position and check that both lamps illuminate on the control panel.

2.6.28.4. Set the LAMP TEST/OFF/SELF TEST switch to SELF TEST position and check that no lamps illuminate on the control panel.

2.6.28.5. Set power switch selector to LO.

2.6.28.6. Set the LAMP TEST/OFF/SELF TEST switch to SELF TEST position and check that both lamps illuminate on the control panel.

2.6.28.7. Set the power switch selector to OFF.

2.6.29. 3rd ICS station in the cabin (if installed)

Note The 3rd ICS Station p/n 109G2350F05 installation includes a complete set of controls, as for the standard Plt/Cplt ICS control panels, connected to the forwardmost RH side PSU (Operator station). The installation works in conjunction with the CBN ICS SLCT control panel in the cockpit. The 3rd ICS Station installation is compatible with all avionics installations.

2.6.29.1. Check the levels adjustment capability of the ICS (volume) and VOX controls.

2.6.29.2. Tune a suitable test frequency into VHF1 radio equipment.

2.6.29.3. Set to OFF (green light extinguished) the XMTR1 button on the cockpit CBN ICS SLCT panel.

2.6.29.4. Check the inability to transmit (muting function) from the Operator station:

a) on 3rd ICS station control panel set the TX knob to VHF1;

b) push the XMTR button on the Operator's PSU (green light illuminated);

c) push the PTT button on the Operator's PSU and verify thet no TX occurs via the VHF1 radio equipment;

d) repeat the transmission attempt using the PTT button on the ICS headset cord.

2.6.29.5. Set to ON (green light illuminated) the XMTR1 button on the cockpit CBN ICS SLCT panel.

2.6.29.6. Repeat above sequence from 2.6.29.4.b) 2.6.29.4.d) verifying the transmission capability via the VHF1 radio equipment.

2.6.29.7. Repeat above sequence from 2.6.29.2 to 2.6.29.6 using VHF2 radio equipment, the XMTR2 button on CBN ICS SLCT and the TX knob set to VHF2 on 3rd ICS station contol panel.

Note Use of non-ATC transceivers (all but VHF1/2) from the 3rd ICS Station does not require to be enabled by the pilot via the CBN ICS SLCT.

2.6.29.8. Repeat above sequence from 2.6.29.2 to 2.6.29.7 using all other onboard radio equipment, verifying unrestricted transmission capability from the 3rd ICS station.

3. FLIGHT TEST PROCEDURES

3.1. Aircraft Configuration

Note Prior to commencing acceptance flight tests, verify that aircraft weight and balance data are current and accurate. Assure that all known production (or maintenance) "snags" are not critical to flight safety or the acquisition of required flight test data.

Note The production flight acceptance test is performed with the aircraft in the basic external configuration (no external options). The aircraft gross weight should be approximately 2600 Kg and the corresponding longitudinal Center of Gravity (C.G.) should be at or near the center of the C.G. envelope. For the basic "green" helicopter configuration, this combination of weight and C.G. can be obtained with a load consisting of pilot, copilot, full fuel and 150 Kg of ballast behind the crew seats, on the floor of the passenger compartment.

3.2. Ground Checks

3.2.1. Preflight, Start and Pre-takeoff Checks

3.2.1.1. Accomplish thorough, normal pre-flight checks in accordance with the Rotorcraft Flight Manual, with emphasis on the safety and security of linkages, fluid lines, flight and engine control circuits, etc.

3.2.1.2. Perform a normal engine start on battery power.

3.2.1.3. Perform normal engine run-up and "before take-off" checks as outlined in the Rotorcraft Flight Manual.

3.2.1.4. Perform a preliminary check of the SAS/ATT system (refer to the pertinent avionics paragraph).

3.2.2. Taxi Characteristics

3.2.2.1. Check the main rotor disk response to cyclic and collective inputs.

3.2.2.2. Check nose wheel lock (ON & OFF).

3.2.2.3. Check the pilot's toe brakes for effectiveness, smoothness and symmetry of action.

3.2.2.4. Check parking brake application and effectiveness.

3.2.2.5. Check ground handling qualities.

3.2.2.6. Check power required to taxi at moderate speeds (5 to 10 knots).

3.2.2.7. Check vibration levels at the crew seats.

3.3. Hover

3.3.1. Lift-off to Hover

3.3.1.1. With both engines running at a speed of 102%, slowly lift vertically to a five foot hover checking control response. If unusual control positions are required or unusual vibrations are sensed during the lift-off, terminate the flight and shut down for inspection.

3.3.2. Hovering IGE (3 foot skid height)

3.3.2.1. Stabilize in hovering flight at approximately 3 feet.

3.3.2.2. Monitor instruments for abnormal temperatures, pressures and indications.

3.3.2.3. Verify that no caution and warning messages appear on EDU 1 or EDU 2.

3.3.2.4. Check for unusual vibration levels (terminate the flight if unusual vibrations are present).

3.3.2.5. Rigging check (nil or negligible wind conditions):

a) Cyclic control: Observe the cyclic stick position to ensure correct rigging. The stick grip position should be approximately 25 mm (1 inch) rearward and slightly to the right of the centered position.

b) Anti-torque pedals: Observe the pedal position to ensure correct rigging. The left pedal should be displaced approximately 12 mm (½ inch) forward of the right pedal.

WARNING

IF UNUSUAL CYCLIC OR PEDAL POSITIONS ARE NOTED, OR IF CONTROL BINDING, DEAD-BANDS OR LACK OF CONTROL RESPONSE IS OBSERVED, THE FLIGHT SHOULD BE TERMINATED IMMEDIATELY AND THE CONTROL CIRCUITS INSPECTED.

3.3.3. Hovering IGE (10 foot skid height)

3.3.3.1. Climb vertically to a 10 foot skid height and stabilize at a hover.

3.3.3.2. Control response.

a) Collective: Check collective control response by increasing and decreasing collective pitch approximately 5% to 10% on either side of the torque required to hover. Observe the aircraft response and verify that N2/NR droop is not more than 1% of the steady value.

b) Cyclic: Check the cyclic control response by making small cyclic inputs in all directions; verify that the helicopter response is in the same direction as that of the input.

c) Anti-torque pedals: Check the anti-torque control response by making left-hand and right-hand spot turns; Verify that there is no unusual lag in response to pedal inputs

WARNING

IF UNUSUAL CYCLIC OR PEDAL POSITIONS ARE NOTED, OR IF CONTROL BINDING, DEAD-BANDS OR LACK OF CONTROL RESPONSE IS OBSERVED, THE FLIGHT SHOULD BE TERMINATED IMMEDIATELY AND THE CONTROL CIRCUITS INSPECTED.

3.3.3.3. Control force characteristics: During the maneuvers described in Step 3.3.3.1, above, check for correct functioning of the artificial force feel system. With the cyclic stick FORCE TRIM push button released, a control force should be required to displace the cyclic and anti-torque pedals from their trimmed positions and the controls should return to their trimmed positions when the control force is removed. With the cyclic stick FORCE TRIM push button depressed and held, no control force should be required to displace the cyclic and anti-torque pedals from their trimmed positions and the controls should remain in their displaced positions with no control force applied.

3.3.3.4. Engine matching check:

a) Pratt and Whitney 206C - At 100% NR, verify that the engine compressor (N1) speeds are matched (maximum allowable difference is 2%). Verify that the corresponding engine torque values are not split by more than 5%.

b) Turbomeca ARRIUS 2K1 - At 100% NR, verify that the engine compressor (N1) speeds are matched (maximum allowable difference is 1%). Verify that the corresponding engine torque values are not split by more than 5%.

3.3.3.5. Main rotor tracking check: At a stabilized hover, record tracking data.

Note If helicopter is equipped with EAPS system, perform the next checks with both EAPS ON and OFF and refer data to pertinent diagram.

3.3.3.6. Single engine power check: This check is initiated with the helicopter on the ground, with both engines running, with the collective at flat pitch and facing into the wind.

a) Select QNE (Altimeter set on 1013.2 mb or 29.92 Hg inches)

b) Check that ECS system is OFF (if installed).

c) Set EAPS system as necessary

d) Select engine #1 EPMS to FLIGHT and retard the engine #2 EPMS to IDLE.

e) Verify that the load on GEN #1 is below 28A (turn off non-essential loads, if necessary).

f) Select the rotor speed to 102%.

g) Increase collective pitch.

Note Pratt & Whitney 206C: Do not exceed an N1 speed of 97.4% OR a TOT value of 820°C.

Note Turbomeca ARRIUS 2K1: Do not exceed an ΔN1 of –2.4 OR a TOT value of 866°C.

3.3.3.7. If the helicopter leaves the ground prior to reaching the above engine limits, establish a stabilized hover at a maximum skid height of 3 feet.

3.3.3.8. Maintain the stabilized hover for one minute; then, record the ambient temperature (OAT), pressure altitude (Hp), compressor speed (N1), turbine outlet temperature (TOT) and engine torque (TRQ).

3.3.3.9. Land the helicopter and select engine #2 EPMS to the FLIGHT position.

3.3.3.10. Enter the pertinent chart for the power assurance check (Refer to RFM) at the recorded engine TRQ value, move down to intersect Hp, proceed to the right to intersect OAT, then move up to read values for maximum allowable TOT and N1.

3.3.3.11. If the recorded N1 or TOT values exceed the maximum allowable, repeat the hover check, stabilizing power for four minutes.

3.3.3.12. If recorded TOT or N1 values continue to exceed maximum allowable, engine performance is not acceptable. Engine inspection will be required prior to repeating the check.

3.3.3.13. Repeat steps 3.3.3.6.a) through 3.3.3.12 using engine #2.

3.4. Take-off

3.4.1. Transition and Acceleration to Level Flight

3.4.1.1. Perform a take-off from an IGE hover, simultaneously climbing to a minimum altitude of 200 feet AGL and accelerating to 65 kts. During the take-off, Note the acceptability of:

a) vibration levels.

b) control response.

c) power plant response.

d) Airspeed indications. Verify that both airspeed indicators provide stable indications commencing at a speed of approximately 15 knots (at very low airspeeds, needle oscillations may be present).

3.4.2. Landing Gear Operation Check

3.4.2.1. Check utility hydraulic system pressure within limits.

3.4.2.2. At 60 KIAS, in level flight and at an altitude of more than 200 feet AGL, perform a landing gear retraction.

3.4.2.3. During the retraction sequence, check that the red light on the landing gear position indicator illuminates.

3.4.2.4. During the retraction sequence, check that the HYD UTIL CHRG caution message is displayed and that the message extinguishes after the landing gear is locked UP.

3.4.2.5. Verify that the retraction time is approximately 10 seconds.

3.4.2.6. With the gear retracted, check that the green and red lights on the landing gear position indicator are extinguished.

3.5. Level Flight

3.5.1. Vibration/Tracking/Controllability/Engine/Transmission Checks

3.5.1.1. At low altitude, in stabilized level flight, with the rotor speed (NR) set to 100%, perform the following checks at the speeds shown:

a) 80 KIAS

- Check for abnormal vibration levels.
- Perform an in-flight tracking check and record the data.
- Check helicopter controllability and response to control displacements in pitch, roll and yaw and following collective inputs.

b) 140 KIAS

- Check for abnormal vibration levels.
- Perform an in-flight tracking check and record the data.
- Check helicopter controllability and response to control displacements in pitch, roll and yaw and following collective displacements.

c) VH (maximum continuous power)

- Check for abnormal vibration levels.
- Perform an in-flight tracking check and record the data.
- Check helicopter controllability and response to control displacements in pitch, roll and yaw and following collective displacements.
- Check the pedal positions. The right pedal should be 12 mm (1/2 inch) forward of the left pedal.
- Maintain stabilized flight until oil temperatures and pressures stabilize; then, record engine #1 and engine #2 oil temperature and pressure and the transmission oil temperature and pressure.

3.5.1.2. At low altitude, in stabilized diving flight, with the rotor speed (NR) set to 100% and the power set to maximum continuous, perform the following checks at the speeds shown:

a) VNE

- Check for abnormal vibration levels.
- Perform an in-flight tracking check and record the data.

3.5.2. Heavy Weight Vibration Level Check (TOGW = 2850 KG)

3.5.2.1. Install 4 accelerometers at the following locations and connect them to the CHADWICK HELMUT 8500C or ROTORTUNER (refer to Figure 17):

a) Pilot's vertical (See Fig. 17)

b) Pilot's lateral (See Fig. 17)

c) 2^Pax vertical (See Fig. 17)

d) 2^Pax lateral (See Fig. 17)

3.5.2.2. Stabilize the helicopter at each of the following flight conditions and record the vibration level:

a) On the ground/collective bottomed/NR = 102%

b) Hover (OGE)/NR = 102%

c) Level/40 KIAS/NR = 102%

d) Level/80 KIAS/Nr = 100%

e) Level/120 KIAS/Nr=100%

f) Level (MCP)/VH/Nr=100%

3.5.2.3. Upon completion of the flight, transcribe the results on the VIBRATION CHART of Annex 1.

3.5.3. IDS System Check (stabilized level flight at 100 KIAS)

3.5.3.1. Record the following data, for each engine, as displayed on EDU1: N1, TOT, TRQ, NR/N2.

3.5.3.2. On EDU1, select MENU 2/2 and then select DAU CH-A. Record the following displayed data, for each engine: N1, TOT, TRQ, NR/N2.

3.5.3.3. On EDU1, select MENU 2/2 and then select DAU CH-B. Record the following displayed data, for of each engine: N1, TOT, TRQ, NR/N2.

3.5.3.4. On EDU1, MENU 2/2, de-select DAU CH-B to return to EDU status.

3.5.3.5. Check that DAU CHA and CHB recorded data match the ECU data to within:

- 40°TOT and 7% TQ for Pratt and Whitney 206C.
- 10°TOT and 0.1 ΔN1 Turbomeca ARRIUS 2K1

3.5.4. Electrical System (Generator check)

3.5.4.1. Stabilize the helicopter in level flight with both engines in the FLT position, NR=100% and N1 at 90%.

3.5.4.2. Select EDU2 AUX page and proceed as follows:

a) check for balanced generator loads and Note the load value (load should be between 16-20 A);

b) switch GEN1 OFF and check that the GEN2 load is the sum of the previous GEN1 and GEN2 (with a tolerance of ±2 A);

c) switch GEN1 ON and GEN2 OFF and repeat step a);

d) switch GEN2 ON again and check there is no oscillation of load between the two generators;

e) switch on all systems to increase the electrical load to the maximum possible and check that the GEN loads are balanced with a tolerance of ±1% or 1 A.

3.5.4.3. During flight, check there is no instability of the generator load balance in the N1 range of 70% to the maximum achievable value.

3.6. Climb

3.6.1. Control Rigging/Force trim/Tracking/Vibration checks

3.6.1.1. Set up a stabilized climb at maximum continuous power and the speed for best rate of climb (65 KIAS) at a low altitude and perform the following checks:

3.6.1.2.

3.6.1.3. Cyclic control rigging: The cyclic control stick should be displaced approximately 25 mm (1 inch) forward of the neutral position and should be near the centered position, laterally.

3.6.1.4. Anti-torque control rigging: the left pedal should be displaced approximately 12 mm (1/2 inches) forward of the right pedal. It should be possible to yaw the helicopter approximately 30° to the left without encountering a control stop.

3.6.1.5. Force trim check: Check that the control forces can be trimmed to zero by using the force trim release button on the cyclic control.

3.6.1.6. Tracking check: Observe the main rotor tip path to verify that the combination of high power and low forward speed does not result in an out-of-track condition.

3.6.1.7. Vibration check: Note any unusual oscillatory amplitude at a frequency of approximately 4 Hz (Main rotor 2/3 per Rev). If this phenomenon is observed, it will be necessary to check the lead-lag dampers for proper installation and functioning.

3.7. Engine Power Assurance Check (MANUAL mode)

3.7.1. Select an altitude sufficiently high so that relatively high N1 and TOT values are required to sustain level flight with one engine in Manual mode (for flight safety reasons, the selected altitude should be at least 1000 feet AGL).

3.7.2. Verify that the ECS and EAPS systems are OFF (if installed).

3.7.3. Select QNE (set the altimeter to 1013.2 mb or 29.92” Hg)

3.7.4. Select #1 engine GOV to the MANUAL mode.

3.7.5. Verify that the generator load is less than 28 Amps.

3.7.6. Select 100% NR.

3.7.7. With the helicopter stabilized at the selected altitude, in level flight at 100 KIAS ± 10 KIAS, verify that:

3.7.7.1. For Pratt and Whitney PW206C the N1 value is less 97.4% and TOT is less than 820° C.

3.7.7.2. For Turbomeca ARRIUS 2K1 the □N1 value is less than –2.4 and TOT is less than 866° C.

Note If the N1 and TOT values are too low, increase #1 engine torque using the TRIM toggle switch on the collective control

3.7.8. Following one minute of stabilized flight, record the ambient temperature (OAT), pressure altitude (Hp), compressor speed (N1), engine torque (TRQ) and turbine outlet temperature (TOT).

3.7.9. Match the power and select the #1 engine GOV to the AUTO mode.

3.7.10. Repeat steps 3.7.1 through 3.7.9 using #2 engine.

3.7.11. With all checks completed, reset the altimeter to the local Sea Level value.

3.7.12. Upon completion of the flight, reduce the engine data as follows:

3.7.12.1. Enter the pertinent chart for the power assurance check (refer to RFM) at the recorded engine Torque value.

3.7.12.2. Move down to intersect the recorded pressure altitude.

3.7.12.3. Proceed to the right to intersect the recorded outside air temperature.

3.7.12.4. Move up to read values for the maximum allowable turbine outlet temperature (TOT) and compressor speed (N1).

3.7.12.5. If the recorded TOT or N1 values exceed the maximum allowable, repeat the flight check, stabilizing power four minutes prior to recording data.

3.7.12.6. If recorded TOT or N1 values continue to exceed maximum allowable, engine performance is not acceptable. Engine inspection will be required prior to repeating the check.

3.8. Autorotation

3.8.1. Rotor “RPM HIGH" Warning Check

3.8.1.1. This check may be accomplished at any safe altitude AGL.

3.8.1.2. Stabilize in autorotation at 70 KIAS, with the collective pitch positioned to maintain rotor speed (NR) at less than 110%.

3.8.1.3. Slowly decrease collective pitch. As the rotor speed increases, verify that the rotor "RPM HIGH" audio message and the visual warning occur at NR = 110% ±2%.

3.8.2. Collective Pitch Control Low Angle Setting

3.8.2.1. Conduct this check at any convenient combination of weight, pressure altitude and temperature within the ranges shown on applicable RFM chart. Estimate the weight based on the start weight minus the fuel burn-off. Read the pressure altitude (Hp), by setting the altimeter to 1013.2 mb (29.92" HG). Observe the ambient temperature (OAT). Note the selected pressure altitude and the corresponding OAT.

3.8.2.2. Climb to a pressure altitude sufficiently high above the selected pressure altitude so that the aircraft can be stabilized in autorotation, at 70 KIAS, with the collective control at the low angle stop, prior to descending through the Noted pressure altitude. Enter autorotation.

3.8.2.3. As the aircraft descends through the selected pressure altitude, record the following data, in the order shown:

a) Rotor speed (NR).

b) Outside air temperature (OAT).

c) Pressure altitude (Hp).

d) Fuel quantity.

3.8.2.4. Using the applicable RFM chart, locate the rotor speed which should have resulted for the test conditions. Compare this rotor speed to the actual, recorded test rotor speed. The recorded test rotor speed should match the chart rotor speed within a range of ±2%.

3.8.3. Controllability

3.8.3.1. In autorotation at 70 KIAS, check controllability to assure that adequate cyclic and pedal control margins are available in stabilized "wings level" autorotation as well as in coordinated 30 degree banked turns.

3.8.3.2. Verify that it is easily possible to maintain rotor speed (NR) within limits during the maneuvers described above.

3.8.4. Power Recovery

3.8.4.1. From a stabilized 70 KIAS autorotation, flare to reduce airspeed and perform a power recovery noting engine response and controllability.

3.9. Flight Instrument Checks

3.9.1. Airspeed indicator

3.9.1.1. Set up stabilized, straight and level flight conditions at a density altitude of 2000 feet, using maximum continuous power (MCP).

3.9.1.2. At a gross weight of approximately 2350 kg, the airspeed indicator should read 150 KIAS ±5 KIAS.

3.9.2. Altimeter

3.9.2.1. Shut the helicopter down at a point of known elevation (airport).

3.9.2.2. Set the altimeter to the local Sea Level pressure (QNH).

3.9.2.3. The altimeter indicated altitude, when corrected for instrument error, should display the known elevation ±80 feet.

3.9.2.4. Set the altimeter to the local pressure (QFE).

3.9.2.5. The altimeter indicated altitude, when corrected for instrument error, should display zero.

3.9.3. Static Alternate Source

3.9.3.1. Set up a steady level flight condition at 140 KTS IAS and constant indicated altitude (nil turbulence required).

3.9.3.2. Select Static alternate switch to ALTERNATE position and check on pilot's altimeter that altitude increase max 300 feet and airspeed increase max 10 KTS.

3.9.4. Vertical speed indicator (VSI)

3.9.4.1. Set up a steady level flight condition at constant indicated altitude (nil turbulence required). The vertical speed indicator should indicate zero feet per minute (FPM) ±50 FPM.

3.9.4.2. Set up a constant power, constant airspeed, timed climb and timed descent through a 500 foot altitude band. Calculate the rate of climb and descent based on the elapsed times. The observed indicated rate of climb and descent that was shown on the vertical speed indicator should be within ±10% of the actual timed rate of climb. The VSI needle oscillations should not have exceeded ±100 FPM.

3.9.5. Magnetic compass

3.9.5.1. Select a ground feature for which the magnetic heading is known (runway, railway, straight road).

3.9.5.2. Align the aircraft with the ground feature (nil turbulence required) and verify that the magnetic compass indication (corrected for deviation using the calibration card), corresponds to the ground feature known magnetic heading.

3.9.6. Copilot instruments (if installed)

3.9.6.1. As part of the above checks, verify that the copilot's instrument readings correspond with the pilot's instruments.

3.10. Landing Gear and Brake Checks

3.10.1. With landing gear retracted, execute a normal landing approach.

3.10.2. Monitor the radar altimeter and verify that the LANDING GEAR caution message appears and the LANDING GEAR audio warning message sounds as the aircraft descends through 200 FT AGL, as displayed on the radar altimeter.

3.10.3. Initiate a climbing go-around and verify that the warnings stop as the aircraft climbs through 200 feet, as displayed on the radar altimeter.

3.10.4. Execute another normal landing approach. Extend the landing gear and verify that the extension time is approximately 7-9 seconds.

3.10.5. Perform a running landing, noting the landing gear response and engine and flight controls characteristics.

3.10.6. Use the brakes, as necessary and check braking effectiveness, braking symmetry and brake feel.

3.11. ENGINE OUT Warning Check

3.11.1. Check the engine out audio and visual warning messages as follows:

3.11.1.1. Pull out the HYD_UTIL_CTL circuit breaker.

3.11.1.2. Reduce #1 engine EPMS to OFF and verify that the ENG1 OUT warning message appears and the audio warning message activates when the compressor speed (N1) decelerates to 35% ±2% (Pratt and Whitney 206C) or 60% ±2% (Turbomeca ARRIUS 2K1).

3.11.2. Repeat step 3.11.1 using #2 engine.

3.11.3. Push in the HYD UTIL CTL circuit breaker

3.12. Post-flight Checks

3.12.1. Inspect the engine compartment for fuel, oil and hydraulic leaks.

3.12.2. Inspect all visual sight gauges for abnormal oil/hydraulic fluid consumption.

3.12.3. Verify that no unusual oil, fuel or hydraulic fluid is visible on the ground.

3.12.4. Visually inspect dynamic groups, landing gear and structure for condition.

4. AVIONIC FLIGHT CHECKS

4.1. Basic Avionic System

4.1.1. AG-06 - ICS System

Note The intercommunication system (ICS) is identical for all avionics configurations. Consequently, the checks shown below are applicable to all avionics installations.

4.1.1.1. Check transmission capability in all positions of the selector knob, from both pilot's and copilot's stations, using the cyclic “push to talk” (PTT) trigger (2nd detent) and the foot pedal switch.

4.1.1.2. Check the radio communication capability using XMTR function from the passenger's position.

4.1.1.3. Check the reception capability of all the receiver selector switches at both the pilot's and copilot's station.

4.1.1.4. Check the clarity of loud speaker messages from the pilot/copilot stations to the passenger cabin under the following flight conditions:

a) Hover

b) Climb

c) Descent

d) Level flight at 40, 80, 120 KIAS ,VH

4.1.2. A.F.C.S.

Note Except where specified, the following checks should be executed with both SAS channels engaged, with only SAS 1 engaged and with only SAS 2 engaged.

4.1.2.1. Hovering

a) ATTD HOLD ON

- Ensure that the ATT HOLD switch on the HELIPILOT CONTROL panel is selected to the ON position
- From the trimmed, stabilized cyclic position, apply a ± 5° pitch change, without pushing the FTR push button, then release the cyclic control and the helicopter should re-stabilize in the original trimmed attitude.
- From the trimmed, stabilized cyclic position, apply a ± 10° roll change, without pushing the FTR push button, then release the cyclic control and the helicopter should re-stabilize in the original trimmed attitude.

Note With only SAS 2, engaged, directional stability augmentation is not provided. Some directional oscillatory behavior should be apparent.

b) SAS mode check (ATTD HOLD OFF)

- Ensure that the ATT HOLD switch on the HELIPILOT CONTROL panel is selected to the OFF position.
- From the trimmed, stabilized cyclic position, apply forward, aft, left and right one inch sharp pulses to the cyclic control (to obtain a sharp pulse, rap the stick with the side of the hand).
- Observe the resulting motion following each cyclic pulse input. The SAS system(s) should provide sufficient damping so that the helicopter stabilizes at a new attitude with no tendency to oscillate.

- From the trimmed, stabilized pedal position, apply left and right one inch sharp pulses to the anti-torque pedals (to obtain a sharp pulse, rap each pedal with the foot). This step is only applicable with :
  - both SAS channels engaged and
  - only SAS1 engaged.
- Observe the resulting motion following each anti-torque pulse input. The SAS system(s) should provide sufficient damping

Note With only SAS 2, engaged, directional stability augmentation is not provided. Some directional oscillatory behavior should be apparent.

4.1.2.2. Level Flight

a) Attitude Hold ON

- Ensure that the ATT HOLD switch on the HELIPILOT CONTROL panel is selected to the ON position.
- At a trimmed speed of 120 KIAS, repeat steps 4.1.2.1.a), as shown for the hover case, above.
- At a trimmed speed of 120 KIAS, check the attitude beep function by beeping the nose 5° up and 5° down and by beeping the roll angle 10° to the left and 10° to the right. Verify that the rate of pitch and roll change is approximately 2° per second and that there is no tendency of the helicopter to return to the initial trimmed position.

b) Attitude Hold OFF

- Ensure that the ATT HOLD switch on the HELIPILOT CONTROL panel is selected to the OFF position.
- At a trimmed speed of 120 KIAS, repeat step 4.1.2.1.b), as shown for the hover case, above

4.2. COLLINS/EHSI-74 SUITE

4.2.1. VHF22A/C - VHF/AM #1 and #2 Systems

Note The acceptance test procedure shown below is applicable to both the VHF/AM systems #1 and #2 and to both the versions. VHF22C system provides the capability to use 8.33 kHz spaced frequencies.

Note Two communications receivers tuned to the same station could result in a reduction in audio volume.

4.2.1.1. Execute these checks on both VHF/AM systems

a) At a height of 1000 feet (AGL), select a frequency and establish two-way radio communication with a ground station located at least 15 NM away.

b) Check the clarity of the communication, volume adjustment capability, sidetone characteristics and the squelch function.

4.2.2. VIR32A - VOR/LOC/GS/MB systems (NAV#1 - NAV#2)

a) Perform the procedure at an altitude of 2000 feet (AGL) (except for the approach and over-fly tests which are performed at 1000 feet AGL).

b) Preliminary steps

- Push the CRS button on the EHSI control panel to select the VOR1 course arrow.

- Push ↑ to select the V1 pointer on the EHSI.
- Push ↑ to select the V2 pointer on the EHSI
- Select the Marker Beacon sensing switch to the High position.
- On both ICS control panels, select the VOR1, VOR2 and Marker Beacon receivers.
- SET HSI mode on HSI (Stby)

4.2.2.2. VOR Check

Note Verify the validity of the VOR2 data displayed on the pilot's HSI

a) Tune both NAV receivers to the same VOR station located at least 10 NM away and record the station information as detailed in the checklist of Annex 1. Check the bearings and course. Verify that both identification signals are clear and that the volume is controllable.

b) Tune both VOR receivers to the same VOR station at a minimum distance of 10 nm and track inbound to the station. On the EHSI control panel, press the CRS SEL knob (TO function) and verify that the Course Arrows are automatically aligned with the bearing pointers and that the TO/FR indicator indicates TO. Set the NAV pointer selector on the pilot's HSI to the HSI position and select the correct course to the station.

c) Perform a course variation of ±10° on both systems (with the course selector knobs). On the EHSI and HSI displays, verify that the deviation bar deflects 2 dots to the left and to the right, respectively. Turn the helicopter to the left and right of the selected course and verify the correct reaction of the course deviation bar on the EHSI display.

d) Overfly the VOR station and check for the correct change of the TO/FR flags.

e) Over a ground reference point, compare the displayed bearings (manual and automatic) from the ground reference point to two different VOR stations against known bearing data. The maximum allowable displayed bearing error is ±3 degrees.

4.2.2.3. ILS / MB Check

a) On both receivers, select a localizer frequency and verify that the EHSI navigation course display automatically switches to ILS1 and the V1 bearing disappears. Proceed with an ILS approach, beginning at least 5 nm from the runway. As the approach proceeds, verify that all the NAV and G/S flags are out of view. Align the helicopter so that the course deviation bar (LOC) and the vertical deviation pointer (GS), are centered.

b) Turn the helicopter to the left and then to the right of the course localizer and check for the correct reaction of the course deviation bar on the EHSI display and of the EXP LOC index on the pilot's ADI.

c) Position the helicopter both above and below the glide path and check for the correct reaction of the glideslope pointer on the EHSI display and the pilot's ADI.

d) Verify that at least the yellow MM marker beacon light illuminates and the aural identification signal is heard when passing over the middle marker. At the over-fly position, check the H/L sensitivity control.

Note The functionality of the blue OM marker should be verified on the ground with an adequate simulator

e) Select the ILS2 pointer on the EHSI and repeat steps a) through c).

4.2.3. ADF60 - ADF System

Note The ADF pointers are identified as the A1 pointer on the EHSI display and the blue pointer on the pilot's HSI

4.2.3.1. Perform the procedure at an altitude of approximately 2000 feet (AGL).

4.2.3.2. Preliminary steps

a) Push the ↑ button on the EHSI control panel to select the A1 pointer.

b) Set the system mode selector to ADF.

c) On both ICS control panels, select the ADF receiver.

4.2.3.3. Procedure

a) Select a geographical reference point at least 20 nm away from an NDB station and record the details defined in Annex 1. Fly over the reference point at 0° relative bearing to the NDB station and check the accuracy of the system. Repeat this at every 45° interval of relative bearing. Compare the displayed bearing to the station with the known bearing. The maximum allowable bearing error is ±5°.

Note If the ADF displayed bearings exceed the maximum allowable, carry-out a Quadrantal Error correction before proceeding with the following steps.

b) Select a known reference point and two different NDB stations (spaced within the frequency band), located within the minimum guaranteed ADF range and verify that the displayed bearings are accurate within ±5° of the true bearings. Simultaneously, verify that the identification signals are clear and that the volume(s) are readily controllable.

c) Overfly an NDB station on a constant heading and verify that the ADF needle reverses by 180° degrees. The needle movement must be smooth and with no tendency to stick.

d) Set the ADF system mode selector to ANT and verify that the received signal is acceptable and that the indicator needles on the EHSI display are removed and on the HSI is parked at 90° counter-clockwise from the previous valid position.

4.2.4. DME 42 - DME System

Note As the DME indicated distance is the actual distance between the aircraft and the ground station (slant range), aircraft altitude constitutes an important factor in determining the accuracy of the system.

4.2.4.1. Preliminary steps

a) On the DME control panel, select 1 by means of the CH button.

b) On the EHSI control panel, use the CRS button to select VOR1 as the active navigator.

4.2.4.2. Procedure

a) Over a known reference point, at a height of approximately 2000 feet AGL, select two or more VOR/DME stations on the #1 VOR receiver and record details in Annex 1.

b) On the DME control panel and the EHSI display, check the distance indications to the stations and compare to the known distances. The maximum allowable error is +/- 0.5 Nm and/or 3% of the true distance. Check the stability of the indication and the quality of the audio identification signal.

c) On the EHSI display, select the #2 VOR receiver as the navigation source. On the DME control panel, press the CH button to select 2 and repeat steps a) through b), above. Verify that the displayed distances do not change from those obtained using the #1 VOR receiver.

d) On the DME control panel, select CH 3 and check the DME HOLD function. To perform this check, select the STBY frequency on the #1 VOR receiver and execute step b) above.

Note DME HOLD is not available on the EHSI display.

4.2.4.3. Execute an approach toward a VOR/DME station at least 10 nm away. By means of the SEL switch on the DME control panel, check the distance, ground speed and time indications. Check the final distance error during station over-fly.

4.2.5. AA-300 Radio Altimeter System

Note Below 2500 feet, the indicator will disappear from view if the return from the ground is weak. The Pointer should momentarily disappear if ±20° pitch or ±30° roll are exceeded.

4.2.5.1. Before take-off, check that the radio altimeter warning flag is hidden and that the altimeter indicates 0 ±5 feet.

4.2.5.2. Using a reference point of known height (within 100 feet from the ground) check the precision of the height indication which should be within ±5 feet.

4.2.5.3. Set the DH bug to 500 feet; descend below this height and verify that the DH annunciator illuminates when the radar altimeter needle indicates a height less than 500 feet AGL.

4.2.5.4. From a low height, climb back through 500 feet and verify that the DH light extinguishes as the needle passes through 500 feet AGL.

4.2.6. TDR 90 /TDR94 - Transponder System

4.2.6.1. Perform this procedure at a minimum altitude of 2000 feet (AGL) and at least 15 nm away from the Air Traffic Control Center (ATC).

4.2.6.2. Select the ALT mode on the transponder control panel and set the ATC assigned code.

4.2.6.3. Have the ATC station confirm the correct transmission of code and encoding altitude.

4.2.6.4. Push the IDENT button and check this mode capability with ATC.

4.2.7. Flight Director

4.2.7.1. HDG mode

a) Perform these checks during trimmed cruise at 120 KIAS.

b) Push the HGD Sync knob on the EHSI control panel to align the HDG selection bug with the EHSI lubber line.

c) Press the HDG button on the F/D mode control panel and check that the Roll Command bar is centered.

d) Rotate the HDG bug 90° to the left and verify that the helicopter rolls to the left and completes the turn on the new selected heading. The criteria are that:

- the roll-in and the roll-out are smooth,
- the maximum heading overshoot/undershoot should be less than 2°, and
- the maximum bank angles should be 20° ±2°.

e) Repeat the test with a right turn.

f) Press SBY to disengage the mode.

4.2.7.2. V/S mode-ALT mode

a) Perform these checks during trimmed cruise at 120 KIAS.

b) Set the IVSI selection bug to zero.

c) Push the VS mode button on the F/D mode control panel and check that the pitch bar is centered.

d) Select a 500 feet/minute climb and a 500 feet/minute descent and check the aircraft climb and descent rates.

e) Push the ALT mode button and check that the pitch bar is centered. The altitude at which the ALT mode was selected should maintain within approximately ±50 feet.

f) Press SBY to disengage the mode.

4.2.7.3. IAS Mode

a) Perform these checks during trimmed cruise at 120 KIAS.

b) Select the IAS mode on the F/D control panel.

c) Check that the pitch bar is centered and that the indicated airspeed remains within ±5 knots of the speed indicated when the mode was engaged.

d) Increase and reduce the airspeed with the A/S trim (F&A beep on the cyclic stick) and verify that the rate at which the airspeed changes is approximately 3 knots/second.

e) Press SBY to disengage the mode.

4.2.7.4. NAV Mode

Note The navigation data source selected on the EHSI is automatically used by the autopilot

a) Initiate these checks during trimmed cruise at 120 KIAS, at a minimum distance of 15 nm from the VOR station.

b) Tune the VOR frequency on VOR #1 receiver and select the desired radial.

c) Push the CRS push button on the EHSI control panel to select VOR1 as the navigation source.

d) Set the HDG bug to acquire a heading providing a course intercept greater than 30°, inbound.

e) On the F/D control panel, press the NAV mode key and check that the HDG and NAV ARM indicator lights illuminate.

f) During the course intercept, check the correct functioning of the ARM and CAP lights in the NAV key.

g) Note the system performance during capture and tracking of the selected radial. Maneuvering should be smooth with no evidence of overshoot or oscillation and the radial should be accurately tracked. The system should automatically supply the crab angles necessary for wind compensation.

h) Over-fly the station at a minimum height of 1000 feet AGL. During the over-fly, check that the OSS (over-station sensing) mode becomes active for at least 45 seconds.

i) Repeat the above procedure using the VOR #2 receiver.

4.2.7.5. VOR APR mode

a) Within 10 miles of the VOR station, tune the VOR #1 receiver to the VOR frequency and select a desired radial.

b) Set the the HDG bug to acquire a heading providing a course intercept greater than 30°, inbound.

c) On the F/D control panel, press VOR APR key and check that the VOR APR ARM and the HDG indicator lights illuminate.

d) When the radial has been intercepted, check that the HDG light goes out and that the CAP light illuminates.

e) On the EHSI display, check that the intercepted radial is accurately tracked and that the system is automatically supplying the crab angles necessary for wind compensation.

f) During station over-fly, verify that the OSS function is working correctly.

g) Repeat the above procedure using the VOR #2 receiver.

4.2.7.6. ILS mode

WARNING

IF THE F/D COMPUTER DOES NOT RECEIVE A VALID SIGNAL FROM THE RADAR ALTIMETER OR THE GLIDE SLOPE, THE AUTOLEVEL FUNCTION WILL NOT BE EXECUTED AND THE HELICOPTER WILL CONTINUE TO FOLLOW THE GLIDE SLOPE PATH.

a) Tune the VOR #1 and VOR #2 receivers to an ILS frequency and select ILS1 on the EHSI.

b) At the initial ILS approach altitude, select the F/D ALT mode ON.

c) Select a HDG which provides a course intercept greater than 30°.

d) On the F/D mode selector, select the ILS mode and check that the NAV ARM, ILS ARM , HDG and ALT indicator lights are illuminated.

e) Execute an ILS approach at a speed between 100-120 KIAS; check the performance of the system during interception, capture and tracking of the localizer and of the glide slope.

f) Verify that, when the localizer is captured, the NAV CAP light illuminates and the HDG light is extinguished. Similarly, when the GS is acquired, the ILS GS light should illuminate and the ALT light should extinguish.

g) Verify that the functioning of the flight-director command bars is rational (correct orientation) and record any substantial deviations from the localizer and glide slope path during the approach.

h) During the approach, temporarily fly in the de-coupled mode to verify that the sensitivity of the command bars is acceptable.

i) Verify that the Auto-level procedure is executed at 50 feet AGL (radio-altimeter).

j) Repeat the above procedure using the VOR #2 receiver.

4.2.7.7. Back COURSE mode

Note Autolevel is not functional in BC mode

Note Testing this function in flight may be difficult due to the non availability of airports equipped with this facility. Ground tests with an adequate simulator will be satisfactory

a) Tune the ILS frequency on the VOR #1 receiver.

b) Select LOC1 on the pilot's EHSI as the active navigation source.

c) Set the course pointer on the pilot's EHSI to the inbound front course of the localizer procedure.

d) Set the desired intercept heading on the EHSI.

e) Select the ALT mode on the F/D command panel.

f) Select the BC mode on the F/D command panel and check that:

- The BC arm and HDG lights are illuminated on the F/D command panel.
- The Exp LOC indications on the EADI changes to the opposite position.
- The glide slope scale and indications disappear on the EHSI display.

g) When the helicopter approaches the back course localizer, check that:

- Automatic capture occurs (HDG light should extinguish and the BC light should illuminate).
- The F/D lateral deviation bar on the EADI is sensing in the correct direction and displaying the correct indications.

h) Record any significant deviations from the localizer path.

i) During the descent phase, select the V/S mode and set a desired rate of descent with the VS bug on the IVSI. Verify the aircraft response.

4.2.7.8. GO AROUND mode

a) Press GA mode button at a speed exceeding 60 KIAS.

b) Centering the Coll-CUE should cause the aircraft to climb at 750 FPM.

4.3. COLLINS/ROGERSON KRATOS SUITE

4.3.1. VHF 22A/C - VHF/AM #1 and #2 Systems

Note The acceptance test procedure shown below is applicable to both the VHF/AM systems #1 and #2 and to both the versions. VHF22C system provides the capability to use 8.33 kHz spaced frequencies.

Note Two communications receivers tuned to the same station could result in a reduction in audio volume.

4.3.1.1. Execute these checks on both VHF/AM systems

4.3.1.2. At a height of 2000 feet (AGL), select a frequency and establish two-way radio communication with a ground station located at least 15 NM away.

4.3.1.3. Check the clarity of the communication, volume adjustment capability, sidetone characteristics and the squelch function.

4.3.2. VIR32A - VOR/LOC/GS/MB systems (NAV#1 - NAV#2)

4.3.2.1. Perform the procedure at an altitude of 2000 feet (AGL) (except for the approach and over-fly tests which are performed at 1000 feet AGL).

4.3.2.2. Preliminary steps

a) Push the N key on the pilot's EHSI to select the VOR1 course arrow.

b) On the copilot's EHSI, select VOR2 as navigation source.

c) On both EHSI displays, select the VOR1 and VOR2 bearing pointers.

d) On both ICS panels, select the VOR and M.B. receivers.

e) Select the M.B. sensing switch to the High position.

4.3.2.3. VOR Check

a) Tune both NAV receivers to the same VOR station located at least 10 NM away and record the station information as detailed in the checklist of Annex 1. Check the bearings and course. Verify that both identification signals are clear and that the volume is controllable.

b) Tune both VOR receivers to the same VOR station at a minimum distance of 10 nm and track inbound to the station. On the EHSI control panel, press the CRS SEL knob (TO function) and verify that the Course Arrows are automatically aligned with the bearing pointers and that the TO/FR indicator indicates TO.

c) Perform a course variation of ±10° on both systems (with the course selector knobs). On the EHSI display, verify that the deviation bar deflects 2 dots to the left and to the right, respectively. Turn the helicopter to the left and right of the selected course and verify the correct reaction of the course deviation bar on the EHSI display.

d) Overfly the VOR station and check for the correct change of the TO/FR flags.

e) Over a ground reference point, compare the displayed bearings (manual and automatic) from the ground reference point to two different VOR stations against known bearing data. The maximum allowable displayed bearing error is ±3 degrees.

4.3.2.4. ILS / MB Check

a) On both receivers, select a localizer frequency and verify that the EHSI navigation course display automatically switches to ILS1 and the V1 bearing disappears. Proceed with an ILS approach, beginning at least 5 nm from the runway. As the approach proceeds, verify that all the NAV and G/S flags are out of view. Align the helicopter so that the course deviation bar (LOC) and the vertical deviation pointer (GS), are centered.

b) Turn the helicopter to the left and then to the right of the course localizer and check for the correct reaction of the course deviation bar on the EHSI display and of the EXP LOC index on the pilot's EADI.

c) Position the helicopter both above and below the glide path and check for the correct reaction of the glide-slope pointer on the EHSI display and the pilot's EADI.

d) Verify that at least the yellow marker beacon light illuminates on EADI and the aural identification signal is heard when passing over the middle marker. At the over-fly position, check the H/L sensitivity control.

Note The functionality of the blue OM marker should be verified on the ground

e) Select the ILS2 pointer on the EHSI and repeat steps a) through c).

4.3.3. ADF60 - ADF System

Note The check must be executed on both EHSI units.

4.3.3.1. Perform the procedure at an altitude of approximately 2000 feet (AGL).

4.3.3.2. Preliminary steps

a) Set the system mode selector to ADF.

b) Select the ADF bearing pointers on both EHSI units.

c) On both ICS panels, select the ADF receiver.

4.3.3.3. Procedure

a) Select a geographical reference point at least 20 nm away from an NDB station and record the details defined in Annex 1. Fly over the reference point at 0° relative bearing to the NDB station and check the accuracy of the system. Repeat this at every 45° interval of relative bearing. Compare the displayed bearing to the station with the known bearing. The maximum allowable bearing error is ±5°.

Note If the ADF displayed bearings exceed the maximum allowable, carry-out a Quadrantal Error correction before proceeding with the following steps.

b) Select a known reference point and two different NDB stations (spaced within the frequency band), located within the minimum guaranteed ADF range and verify that the displayed bearings are accurate within ±5° of the true bearings. Simultaneously, verify that the identification signals are clear and that the volume(s) are readily controllable.

c) Overfly an NDB station on a constant heading and verify that the ADF needle reverses by 180°. The needle movement must be smooth and with no tendency to stick.

d) Set the ADF system mode selector to ANT and verify that the received signal is acceptable and that the indicator needles on the EHSI display are removed.

4.3.4. DME 42 - DME System

Note As the DME indicated distance is the actual distance between the aircraft and the ground station (slant range), aircraft altitude constitutes an important factor in determining the accuracy of the system.

4.3.4.1. Preliminary steps

a) On the DME control panel, select 1 by means of the CH button.

b) On the EHSI control panel, use the N key to select VOR1 as the active navigator.

4.3.4.2. Procedure

a) Over a known reference point, at a height of approximately 2000 feet AGL, select two or more VOR/DME stations on the #1 VOR receiver and record details in Annex 1.

b) On the DME control panel and the EHSI display, check the distance indications to the stations and compare to the known distances. The maximum allowable error is ±0.5 Nm and/or 3% of the true distance. Check the stability of the indication and the quality of the audio identification signal.

c) On the EHSI display, select the #2 VOR receiver as the navigation source. On the DME control panel, press the CH button to select 2 and repeat steps a) through b), above. Verify that the displayed distances does not change from those obtained using the #1 VOR receiver.

d) On the DME control panel, select CH 3 and check the DME HOLD function. To perform this check, select the STBY frequency on the #1 VOR receiver and execute step b) above.

Note DME HOLD is not available on the EHSI display.

e) On the DME control panel select 1 by means of the CH button; on both EHSI units, press the N key to select the VOR1 receiver.

f) Execute an approach toward a VOR/DME station at least 10 nm away. By means of the SEL switch on the DME control panel, check the distance, ground speed and time indications. Check the final distance error during station over-fly.

4.3.4.3. For helicopters equipped with a "pilot/copilot in command" key <> , check DME availability using the information in the table below:

NAV SEL		**PLT IN CMD**		**CPLT IN CMD**	
PLT	CPLT	PLT	CPLT	PLT	CPLT
VOR1	VOR1	VOR1	VOR1	VOR1	VOR1
VOR1	VOR2	VOR1	----	----	VOR2
VOR1	GPS	VOR1	GPS	VOR1	GPS
VOR2	VOR1	VOR2	----	----	VOR1
VOR2	VOR2	VOR2	VOR2	VOR2	VOR2
VOR2	GPS	VOR2	GPS	----	GPS
GPS	VOR1	GPS	VOR1	GPS	VOR1
GPS	VOR2	GPS	----	GPS	VOR2
GPS	GPS	GPS	GPS	GPS	GPS

4.3.5. AA-300 Radio Altimeter System

Note Below 2500 feet, the indicator will disappear from view if the return from the ground is weak. The Pointer should momentarily disappear if ±20° pitch or ±30° roll are exceeded.

4.3.5.1. Before take-off, check that the radio altimeter warning flag is hidden and that the altimeter indicates 0 ±5 feet.

4.3.5.2. Using a reference point of known height (within 100 feet from the ground) check the precision of the height indication which should be within ±5 feet.

4.3.5.3. Set the DH bug to 500 feet; descend below this height and verify that the DH annunciator illuminates when the radar altimeter needle indicates a height less than 500 feet AGL.

4.3.5.4. From a low height, climb back through 500 feet and verify that the DH light extinguishes as the needle passes through 500 feet AGL.

4.3.6. TDR 90 / TDR94 - Transponder System

4.3.6.1. Perform this procedure at a minimum altitude of 2000 feet (AGL) and at least 15 nm away from the Air Traffic Control Center (ATC).

4.3.6.2. Select the ALT mode on the transponder control panel and set the ATC assigned code.

4.3.6.3. Have the ATC station confirm the correct transmission of code and encoding altitude.

4.3.6.4. Push the IDENT button and check this mode capability with ATC.

4.3.7. Flight Director

4.3.7.1. HDG mode

a) Perform these checks during trimmed cruise at 120 KIAS.

b) Push the HGD SEL knob on the EHSI control panel to align the HDG selection bug with the EHSI lubber line.

c) Press the HDG button on the F/D mode control panel and check that the Roll Command bar is centered.

d) Rotate the HDG bug 90° to the left and verify that the helicopter rolls to the left and completes the turn on the new selected heading. The criteria are that (A) the roll-in and the roll-out are smooth, (B) the maximum heading overshoot/undershoot should be less than 2° and (3) the maximum bank angles should be 20° ±2°.

e) Repeat the test with a right turn.

f) If installed, select the copilot's position with the FD <> key and repeat the above checks using the copilot's EHSI.

g) Press the SBY key to disengage the mode and re-select "pilot in command".

4.3.7.2. V/S mode-ALT mode

a) Perform these checks during trimmed cruise at 120 KIAS.

b) Set the IVSI selection bug to zero.

c) Push the VS mode key on the F/D mode control panel and check that the pitch bar is centered.

d) Select a 500 foot/minute climb and a 500 feet/minute descent and check the aircraft climb and descent rates.

e) Push the ALT mode key and check that the pitch bar is centered. The altitude at which the ALT mode was selected should be maintained within approximately ±50 feet.

f) Press SBY to disengage the mode.

4.3.7.3. IAS Mode

a) Perform these checks during trimmed cruise at 120 KIAS.

b) Select the IAS mode on the F/D control panel.

c) Check that the pitch command bar is centered and that the indicated airspeed remains within ±5 knots of the indicated speed when the mode was engaged.

d) Increase and reduce the airspeed with the A/S trim (F&A beep on both cyclic sticks) and verify that the rate at which the airspeed changes is approximately 3 knots/second.

e) Press SBY to disengage the mode.

4.3.7.4. NAV mode with VOR coupled

Note The navigation data source selected on the EHSI is automatically used by the autopilot

a) Initiate these checks during trimmed cruise at 120 KIAS, at a minimum distance of 15 nm from the VOR station.

b) Tune the VOR frequency on VOR #1 receiver.

c) Push the N key on the EHSI control panel to select VOR1 as the navigation source; then, select the desired radial.

d) Set the HDG bug to acquire a heading providing a course intercept greater than 30°, inbound.

e) On the F/D control panel, press the NAV mode key and check that the HDG and NAV ARM indicator lights illuminate.

f) During the course intercept, check the functioning of the ARM and CAP lights in the NAV key.

g) Note the system performance during capture and tracking of the selected radial. Maneuvering should be smooth with no evidence of overshoot or oscillation and the radial should be accurately tracked. The system should automatically supply the crab angles necessary for wind compensation. The green HDG light and the white VOR light should be illuminated during capture. The VOR light should extinguish following capture.

h) Over-fly the station at a minimum height of 1000 feet AGL. During the over-fly, check that the OSS (over-station sensing) mode becomes active for at least 45 seconds.

i) Repeat the above procedure using the VOR #2 receiver.

4.3.7.5. VOR APR mode

a) Initiate these checks during trimmed cruise at approximately120 KIAS.

b) Within 10 miles of the VOR station, tune the VOR #1 receiver to the VOR frequency and select a desired radial.

c) Set the HDG bug to acquire a heading providing a course intercept greater than 30°, inbound.

d) On the F/D control panel, press the VOR APR key and check that the VOR APR ARM and the HDG indicator light illuminates.

e) When the radial has been intercepted, check that the HDG light goes out and that the CAP light illuminates.

f) During intercept, verify the correct change of advisories on the EADI. The green HDG light and the white VAPP light should be illuminated during capture. The green VOR APP light should be illuminated and the HDG light extinguished, following capture.

g) On the EHSI display, check that the intercepted radial is accurately tracked and that the system is automatically supplying the crab angles necessary for wind compensation.

h) During station over-fly, verify that the OSS function is working correctly.

i) Repeat the above procedure using the VOR #2 receiver.

4.3.7.6. ILS mode

WARNING

IF THE F/D COMPUTER DOES NOT RECEIVE A VALID SIGNAL FROM THE RADAR ALTIMETER OR THE GLIDE SLOPE, THE AUTOLEVEL FUNCTION WILL NOT BE EXECUTED AND THE HELICOPTER WILL CONTINUE TO FOLLOW THE GLIDE SLOPE PATH.

a) Tune the VOR #1 and VOR #2 receivers to an ILS frequency and select LOC1 on the pilot's EHSI.

b) At the initial ILS approach altitude, select the F/D ALT mode ON.

c) Select a HDG which provides a course intercept greater than 30°.

d) On the F/D mode selector, select the ILS mode and check that the NAV ARM, ILS ARM , HDG and ALT indicator lights are illuminated.

e) Verify that the HDG and ALT advisory lights (both green) and the LOC and GS advisory lights (both white), are illuminated on the pilot's EADI.

f) Execute an ILS approach at a speed between 100-120 KIAS; check the performance of the system during interception, capture and tracking of the localizer and of the glide slope.

g) On the F/D command panel, verify that, when the localizer is captured, the NAV CAP light illuminates and the HDG light is extinguished. Similarly, when the GS is acquired, the ILS GS light should illuminate and the ALT light should extinguish.

h) On the pilot's EADI, verify that, when the localizer is captured, the LOC advisory light is green and the HDG light is extinguished. Similarly, when the GS is acquired, the GS advisory light is green and the ALT light should extinguish.

i) Verify that the functioning of the flight-director command bars is rational (correct orientation) and record any substantial deviations from the localizer and glide slope path during the approach.

j) During the approach, press the N key on the pilot's EHSI; verify that only LOC1 and LOC2 receivers are available and that the LOC advisory on the EADI changes from green to flashing yellow. Re-select LOC1 as the navigation source.

k) During the approach, temporarily fly in the de-coupled mode to verify that the sensitivity of the command bars is acceptable.

l) Verify that the Auto-level procedure is executed at 50 feet AGL (radio-altimeter).

m) Repeat the above procedure using the VOR #2 receiver.

4.3.7.7. Back course (BC) mode

WARNING

AUTOLEVEL IS NOT FUNCTIONAL IN THE BC MODE

Note Testing this function in flight may be difficult due to the non-availability of airports equipped with this facility. Ground tests with an adequate simulator will be satisfactory

a) Tune the ILS frequency on the VOR #1 receiver.

b) Use the N key to select LOC1, on the pilot's EHSI, as the active navigation source.

c) Set the course pointer on the pilot's EHSI to the inbound front course of the localizer procedure.

d) Set the desired intercept heading on the EHSI.

e) Select the ALT mode on the F/D command panel.

f) Select the BC mode on the F/D command panel and check that:

- The BC arm and HDG lights are illuminated on the F/D command panel.
- The white BC advisory light and the green heading advisory light are illuminated on the pilot's EADI.
- The Exp.LOC indications on the EADI changes to the opposite position.
- The glide slope scale and indications disappear on the EADI and EHSI displays.

g) When the helicopter approaches the back course localizer, check that:

- Automatic capture occurs (HDG light should extinguish and the green BC CAP light should illuminate).
- The F/D lateral deviation bar on the EADI is sensing in the correct direction and displaying the correct indications.

h) Record any significant deviations from the localizer path.

i) During the descent phase, select the V/S mode and set a desired rate of descent with the VS bug on the IVSI. Verify the aircraft response.

4.3.7.8. GO AROUND mode

a) Press GA mode button on the collective grip at a speed exceeding 60 KIAS.

b) Centering the Coll-CUE should cause the aircraft to climb at 750 FPM.

4.3.7.9. REV mode with the F/D coupled

a) Pull out the pilot's EHSI circuit breaker.

b) Verify that the pilot's EADI automatically reverts to the Composite mode.

c) Execute a coupled ILS approach to verify that all signals are correctly interfaced with the Flight Director computer.

4.4. KING/EHSI-74 SUITE

4.4.1. KX165/165A - VHF/AM #1 and #2 Systems

Note The acceptance test procedure shown below is applicable to both the VHF/AM systems #1 and #2 and to both the versions.KX165A system provides the capability to use 8.33 kHz spaced frequencies.

Note Two communications receivers tuned to the same station could result in a reduction in audio volume.

4.4.1.1. Execute these checks on both VHF/AM systems

4.4.1.2. At a height of 2000 feet (AGL), select and establish two-way radio communication with a ground station located at least 15 nm away.

4.4.1.3. Check the clarity of the communication, volume adjustment capability, sidetone characteristics and the squelch function.

4.4.2. KX165/165A - VOR/LOC/GS/MB systems (NAV#1 - NAV#2)

4.4.2.1. Perform the procedure at an altitude of 2000 feet (AGL) (except for the approach and over-fly tests which are performed at 1000 feet AGL).

4.4.2.2. Preliminary steps

a) Push the CRS button on the EHSI control panel to select the VOR1 course arrow.

b) Push ↑ to select the V1 pointer on the EHSI.

c) Push ⇑ to select the V2 pointer on the EHSI

d) Select the Marker Beacon sensing switch to the High position.

e) On both ICS panels, select the VOR1, VOR2 and Marker Beacon receivers.

4.4.2.3. VOR Check

Note Verify the validity of the VOR2 data displayed on the pilot's HSI

a) Tune both NAV receivers to the same VOR station located at least 10 NM away and record the station information as detailed in the checklist of Annex 1. Check the bearings and course. Verify that both identification signals are clear and that the volume is controllable.

b) Tune both VOR receivers to the same VOR station at a minimum distance of 10 nm and track inbound to the station. On the EHSI control panel, press the CRS SEL knob (TO function) and verify that the Course Arrows are automatically aligned with the bearing pointers and that the TO/FR indicator indicates TO. Set the NAV pointer selector on the pilot's HSI to the HSI position and select the correct course to the station.

c) Perform a course variation of ±10° on both systems (with the course selector knobs). On the EHSI and HSI displays, verify that the deviation bar deflects 2 dots to the left and to the right, respectively. Turn the helicopter to the left and right of the selected course and verify the correct reaction of the course deviation bar on the EHSI display.

d) Overfly the VOR station and check for the correct change of the TO/FR flags.

e) Over a ground reference point, compare the displayed bearings (manual and automatic) from the ground reference point to two different VOR stations against known bearing data. The maximum allowable displayed bearing error is ±3 degrees.

4.4.2.4. ILS / MB Check

a) On both receivers, select a localizer frequency and verify that the EHSI navigation course display automatically switches to ILS1 and the V1 bearing disappears. Proceed with an ILS approach, beginning at least 5 nm from the runway. As the approach proceeds, verify that all the NAV and G/S flags are out of view. Align the helicopter so that the course deviation bar (LOC) and the vertical deviation pointer (GS), are centered.

b) Turn the helicopter to the left and then to the right of the course localizer and check for the correct reaction of the course deviation bar on the EHSI display and of the EXP LOC index on the pilot's ADI.

c) Position the helicopter both above and below the glide path and check for the correct reaction of the glideslope pointer on the EHSI display and the pilot's ADI.

d) Verify that at least the yellow marker beacon light illuminates and the aural identification signal is heard when passing over the middle marker. At the over-fly position, check the H/L sensitivity control.

Note The functionality of the blue OM marker should be verified on the ground with an adequate simulator

e) Select the ILS2 pointer on the EHSI and repeat steps a) through c).

4.4.3. KR87 - ADF System

Note The ADF pointers are identified as the A1 pointer on the EHSI display and the blue pointer on the pilot's HSI

a) Perform the procedure at an altitude of approximately 2000 feet (AGL).

b) Preliminary steps

- Push the ↑ button on the EHSI control panel to select the A1 pointer.
- Set the system mode selector to ADF.
- On both ICS panels, select the ADF receiver.

c) Procedure

- Select a geographical reference point at least 20 nm away from an NDB station and record the details defined in Annex 1. Fly over the reference point at 0° relative bearing to the NDB station and check the accuracy of the system. Repeat this at every 45° interval of relative bearing. Compare the displayed bearing to the station with the known bearing. The maximum allowable bearing error is ±5°.

Note If the ADF displayed bearings exceed the maximum allowable, carry-out a Quadrantal Error correction before proceeding with the following steps.

- Select a known reference point and two different NDB stations (spaced within the frequency band), located within the minimum guaranteed ADF range and verify that the displayed bearings are accurate within ±5° of the true bearings. Simultaneously, verify that the identification signals are clear and that the volume(s) are readily controllable.
- Overfly an NDB station on a constant heading and verify that the ADF needle reverses by 180°. The needle movement must be smooth and with no tendency to stick.

- Set the ADF system mode selector to ANT and verify that the received signal is acceptable and that the indicator needles on the EHSI display are removed and on the HSI is parked at 90° counter-clockwise from the previous valid position.

4.4.4. KDM706A- DME System

Note As the DME indicated distance is the actual distance between the aircraft and the ground station (slant range), aircraft altitude constitutes an important factor in determining the accuracy of the system.

4.4.4.1. Preliminary steps

a) On the DME control panel, select 1 by means of the CH button.

b) On the EHSI control panel, use the CRS button to select VOR1 as the active navigator.

4.4.4.2. Procedure

a) Over a known reference point, at a height of approximately 2000 feet AGL, select two or more VOR/DME stations on the #1 VOR receiver and record details in Annex 1.

b) On the DME control panel and the EHSI display, check the distance indications to the stations and compare to the known distances. The maximum allowable error is ±0.5 Nm and/or 3% of the true distance. Check the stability of the indication and the quality of the audio identification signal.

c) On the EHSI display, select the #2 VOR receiver as the navigation source. On the DME control panel, press the CH button to select 2 and repeat steps a) through c), above. Verify that the displayed distances do not change from those obtained using the #1 VOR receiver.

d) On the DME control panel, select CH 3 and check the DME HOLD function. To perform this check, select the STBY frequency on the #1 VOR receiver and execute step b), above.

Note DME HOLD is not available on the EHSI display.

e) Execute an approach toward a VOR/DME station at least 10 nm away. By means of the SEL switch on the DME control panel, check the distance, ground speed and time indications. Check the final distance error during station over-fly.

4.4.5. AA-300 Radio Altimeter System

Note Below 2500 feet, the indicator will disappear from view if the return from the ground is weak. The Pointer should momentarily disappear if ±20° pitch or ±30° roll are exceeded.

4.4.5.1. Before take-off, check that the radio altimeter warning flag is hidden and that the altimeter indicates 0 ±5 feet.

4.4.5.2. Using a reference point of known height (within 100 feet from the ground) check the precision of the height indication which should be within ±5 feet.

4.4.5.3. Set the DH bug to 500 feet; descend below this height and verify that the DH annunciator illuminates when the radar altimeter needle indicates a height less than 500 feet AGL.

4.4.5.4. From a low height, climb back through 500 feet and verify that the DH light extinguishes as the needle passes through 500 feet AGL.

4.4.6. KT71 / KT73 - Transponder System

4.4.6.1. Perform this procedure at a minimum altitude of 2000 feet (AGL) and at least 15 nm from the Air Traffic Control Center (ATC).

4.4.6.2. Select the ALT mode on the transponder control panel and set the ATC assigned code.

4.4.6.3. Have the ATC station confirm the correct transmission of code and encoding altitude.

4.4.6.4. Push the IDENT button and check this mode capability with ATC.

4.4.7. Flight Director

4.4.7.1. HDG mode

a) Perform these checks during trimmed cruise at 120 KIAS.

b) Push the HGD Sync knob on the EHSI control panel to align the HDG selection bug with the EHSI lubber line.

c) Press the HDG button on the F/D mode control panel and check that the Roll Command bar is centered.

d) Rotate the HDG bug 90° to the left and verify that the helicopter rolls to the left and completes the turn on the new selected heading. The criteria are that (a) the roll-in and the roll-out are smooth, (b) the maximum heading overshoot/undershoot should be less than 2° and (3) the maximum bank angles should be 20° ±2°.

e) Repeat the test with a right turn.

f) Press SBY to disengage the mode.

4.4.7.2. V/S mode-ALT mode

a) Perform these checks during trimmed cruise at 120 KIAS.

b) Set the IVSI selection bug to zero.

c) Push the VS mode button on the F/D mode control panel and check that the pitch bar is centered.

d) Select a 500 feet/minute climb and a 500 feet/minute descent and check the aircraft climb and descent rates.

e) Push the ALT mode button and check that the pitch bar is centered. The altitude at which the ALT mode was selected should maintain within approximately ±50 feet.

f) Press SBY to disengage the mode.

4.4.7.3. IAS Mode

a) Perform these checks during trimmed cruise at 120 KIAS.

b) Select the IAS mode on the F/D control panel.

c) Check that the pitch bar is centered and that the indicated airspeed remains within ±5 knots of the speed indicated when the mode was engaged.

d) Increase and reduce the airspeed with the A/S trim (F&A beep on the cyclic stick) and verify that the rate at which the airspeed changes is approximately 3 knots/second.

e) Press SBY to disengage the mode.

4.4.7.4. NAV mode

Note The navigation data source selected on the EHSI is automatically used by the autopilot

a) Initiate these checks during trimmed cruise at 120 KIAS, at a minimum distance of 15 nm from the VOR station.

b) Tune the VOR frequency on VOR #1 receiver and select the desired radial.

c) Push the CRS push button on the EHSI control panel to select VOR1 as the navigation source.

d) Set the HDG bug to acquire a heading providing a course intercept greater than 30°, inbound.

e) On the F/D control panel, press the NAV mode key and check that the HDG and NAV ARM indicator lights illuminate.

f) During the course intercept, check the correct functioning of the ARM and CAP lights in the NAV key.

g) Note the system performance during capture and tracking of the selected radial. Maneuvering should be smooth with no evidence of overshoot or oscillation and the radial should be accurately tracked. The system should automatically supply the crab angles necessary for wind compensation.

h) Over-fly the station at a minimum height of 1000 feet AGL. During the over-fly, check that the OSS (over-station sensing) mode becomes active for at least 45 seconds.

i) Repeat the above procedure using the VOR #2 receiver.

4.4.7.5. VOR APR mode

a) Within 10 miles of the VOR station, tune the VOR #1 receiver to the VOR frequency and select a desired radial.

b) Set the the HDG bug to acquire a heading providing a course intercept greater than 30°, inbound.

c) On the F/D control panel, press VOR APR key and check that the VOR APR ARM and the HDG indicator lights illuminate.

d) When the radial has been intercepted, check that the HDG light goes out and that the CAP light illuminates.

e) On the EHSI display, check that the intercepted radial is accurately tracked and that the system is automatically supplying the crab angles necessary for wind compensation.

f) During station over-fly, verify that the OSS function is working correctly.

g) Repeat the above procedure using the VOR #2 receiver.

4.4.7.6. ILS mode

WARNING

IF THE F/D COMPUTER DOES NOT RECEIVE A VALID SIGNAL FROM THE RADAR ALTIMETER OR THE GLIDE SLOPE, THE AUTOLEVEL FUNCTION WILL NOT BE EXECUTED AND THE HELICOPTER WILL CONTINUE TO FOLLOW THE GLIDE SLOPE PATH.

a) Tune the VOR #1 and VOR #2 receivers to an ILS frequency and select ILS1 on the EHSI.

b) At the initial ILS approach altitude, select the F/D ALT mode ON.

c) Select a HDG which provides a course intercept greater than 30°.

d) On the F/D mode selector, select the ILS mode and check that the NAV ARM, ILS ARM, HDG and ALT indicator lights are illuminated.

e) Execute an ILS approach at a speed between 100-120 KIAS; check the performance of the system during interception, capture and tracking of the localizer and of the glide slope.

f) Verify that, when the localizer is captured, the NAV CAP light illuminates and the HDG light is extinguished. Similarly, when the GS is acquired, the ILS GS light should illuminate and the ALT light should extinguish.

g) Verify that the functioning of the flight-director command bars is rational (correct orientation) and record any substantial deviations from the localizer and glide slope path during the approach.

h) During the approach, temporarily fly in the de-coupled mode to verify that the sensitivity of the command bars is acceptable.

i) Verify that the Auto-level procedure is executed at 50 feet AGL (radio-altimeter).

j) Repeat the above procedure using the VOR #2 receiver.

4.4.7.7. Back COURSE mode

Note Autolevel is not functional in BC mode

Note Testing this function in flight may be difficult due to the non availability of airports equipped with this facility. Ground tests with an adequate simulator will be satisfactory

a) Tune the ILS frequency on the VOR #1 receiver.

b) Select LOC1 on the pilot's EHSI as the active navigation source.

c) Set the course pointer on the pilot's EHSI to the inbound front course of the localizer procedure.

d) Set the desired intercept heading on the EHSI.

e) Select the ALT mode on the F/D command panel.

f) Select the BC mode on the F/D command panel and check that:

- The BC arm and HDG lights are illuminated on the F/D command panel.
- The Exp.LOC indications on the EADI changes to the opposite position.
- The glide slope scale and indications disappear on the EHSI display.

g) When the helicopter approaches the back course localizer, check that:

- Automatic capture occurs (HDG light should extinguish and the BC light should illuminate).
- The F/D lateral deviation bar on the EADI is sensing in the correct direction and displaying the correct indications.

h) Record any significant deviations from the localizer path.

i) During the descent phase, select the V/S mode and set a desired rate of descent with the VS bug on the IVSI. Verify the aircraft response.

4.4.7.8. GO AROUND mode

a) Press GA mode button at a speed exceeding 60 KIAS.

b) Centering the Coll-CUE should cause the aircraft to climb at 750 FPM.

4.5. KING/EFIS ROGERSON KRATOS SUITE

4.5.1. KX165/165A - VHF/AM #1 and #2 Systems

Note The acceptance test procedure shown below is applicable to both the VHF/AM systems #1 and #2 and to both the versions. KX165A system provides the capability to use 8.33 kHz spaced frequencies.

Note Two communications receivers tuned to the same station could result in a reduction in audio volume.

4.5.1.1. Execute these checks on both VHF/AM systems

4.5.1.2. At a height of 2000 feet (AGL), select a frequency and establish two-way radio communication with a ground station located at least 15 NM away.

4.5.1.3. Check the clarity of the communication, volume adjustment capability, sidetone characteristics and the squelch function.

4.5.2. KX165/165A - VOR/LOC/GS/MB systems (NAV#1 - NAV#2)

4.5.2.1. Perform the procedure at an altitude of 2000 feet (AGL) (except for the approach and over-fly tests which are performed at 1000 feet AGL).

4.5.2.2. Preliminary steps

a) Push the N key on the pilot's EHSI to select the VOR1 course arrow.

b) On the copilot's EHSI, select VOR2 as navigation source.

c) On both EHSI displays, select the VOR1 and VOR2 bearing pointers.

d) On both ICS panels, select the VOR and M.B. receivers.

e) Select the M.B. sensing switch to the High position.

4.5.2.3. VOR Check

a) Tune both NAV receivers to the same VOR station located at least 10 NM away and record the station information as detailed in the checklist of Annex 1. Check the bearings and course. Verify that both identification signals are clear and that the volume is controllable.

b) Tune both VOR receivers to the same VOR station at a minimum distance of 10 nm and track inbound to the station. On the EHSI control panel, press the CRS SEL knob (TO function) and verify that the Course Arrows are automatically aligned with the bearing pointers and that the TO/FR indicator indicates TO.

c) Perform a course variation of ±10° on both systems (with the course selector knobs). On the EHSI display, verify that the deviation bar deflects 2 dots to the left and to the right, respectively. Turn the helicopter to the left and right of the selected course and verify the correct reaction of the course deviation bar on the EHSI display.

d) Overfly the VOR station and check for the correct change of the TO/FR flags.

e) Over a ground reference point, compare the displayed bearings (manual and automatic) from the ground reference point to two different VOR stations against known bearing data. The maximum allowable displayed bearing error is +/-3 degrees.

4.5.2.4. ILS / MB Check

a) On both receivers, select a localizer frequency and verify that the EHSI navigation course display automatically switches to ILS1 and the V1 bearing disappears. Proceed with an ILS approach, beginning at least 5 nm from the runway. As the approach proceeds, verify that all the NAV and G/S flags are out of view. Align the helicopter so that the course deviation bar (LOC) and the vertical deviation pointer (GS), are centered.

b) Turn the helicopter to the left and then to the right of the course localizer and check for the correct reaction of the course deviation bar on the EHSI display and of the EXP LOC index on the pilot's EADI.

c) Position the helicopter both above and below the glide path and check for the correct reaction of the glideslope pointer on the EHSI display and the pilot's EADI.

d) Verify that at least the yellow marker beacon light illuminates on EADI and the aural identification signal is heard when passing over the middle marker. At the over-fly position, check the H/L sensitivity control.

Note The functionality of the blue OM marker should be verified on the ground with an adequate simulator

e) Select the ILS2 pointer on the EHSI and repeat steps a) through c).

4.5.3. KR87 - ADF System

Note The check must be executed on both EHSI units.

4.5.3.1. Perform the procedure at an altitude of approximately 2000 feet (AGL).

4.5.3.2. Preliminary steps

a) Set the system mode selector to ADF.

b) Select the ADF bearing pointers on both EHSI units.

c) On both ICS panels, select the ADF receiver.

4.5.3.3. Procedure

a) Select a geographical reference point at least 20 nm away from an NDB station and record the details defined in Annex 1. Fly over the reference point at 0° relative bearing

to the NDB station and check the accuracy of the system. Repeat this at every 45° interval of relative bearing. Compare the displayed bearing to the station with the known bearing. The maximum allowable bearing error is ±5°.

Note If the ADF displayed bearings exceed the maximum allowable, carry-out a Quadrantal Error correction before proceeding with the following steps.

b) Select a known reference point and two different NDB stations (spaced within the frequency band), located within the minimum guaranteed ADF range and verify that the displayed bearings are accurate within ±5° of the true bearings. Simultaneously, verify that the identification signals are clear and that the volume(s) are readily controllable.

c) Overfly an NDB station on a constant heading and verify that the ADF needle reverses by 180°. The needle movement must be smooth and with no tendency to stick.

d) Set the ADF system mode selector to ANT and verify that the received signal is acceptable and that the indicator needles on the EHSI display are removed and on the HSI is parked at 90° counter-clockwise from the previous valid position.

4.5.4. KDM706 - DME System

Note As the DME indicated distance is the actual distance between the aircraft and the ground station (slant range), aircraft altitude constitutes an important factor in determining the accuracy of the system.

4.5.4.1. Preliminary steps

a) On the EHSI control panel, use the N key to select VOR1 as the active navigator.

4.5.4.2. Procedure

a) Over a known reference point, at a height of approximately 2000 feet AGL, select two or more VOR/DME stations on the #1 VOR receiver and record details in Annex 1.

b) On the DME control panel and the EHSI display, check the distance indications to the stations and compare to the known distances. The maximum allowable error is ±0.5 Nm and/or 3% of the true distance. Check the stability of the indication and the quality of the audio identification signal.

c) On the EHSI display, select the #2 VOR receiver as the navigation source. On the DME control panel, press the CH button to select 2 and repeat steps a) through b), above. Verify that the displayed distances do not change from those obtained using the #1 VOR receiver.

d) On the DME control panel, select CH 3 and check the DME HOLD function. To perform this check, select the STBY frequency on the #1 VOR receiver and execute step b), above.

Note DME HOLD is not available on the EHSI display.

e) On the DME control panel, select 1 by means of the CH button; on both EHSI units, press the N key to select the VOR1 receiver.

f) Execute an approach toward a VOR/DME station at least 10 nm away. By means of the SEL switch on the DME control panel, check the distance, ground speed and time indications. Check the final distance error during station over-fly.

4.5.5. AA-300 Radio Altimeter System

Note Below 2500 feet, the indicator will disappear from view if the return from the ground is weak. The Pointer should momentarily disappear if ±20° pitch or ±30° roll are exceeded.

4.5.5.1. Before take-off, check that the radio altimeter warning flag is hidden and that the altimeter indicates 0 ±5 feet.

4.5.5.2. Using a reference point of known height (within 100 feet from the ground) check the precision of the height indication which should be within ±5 feet.

4.5.5.3. Set the DH bug to 500 feet; descend below this height and verify that the DH annunciator illuminates when the radar altimeter needle indicates a height less than 500 feet AGL.

4.5.5.4. From a low height, climb back through 500 feet and verify that the DH light extinguishes as the needle passes through 500 feet AGL.

4.5.6. KT71 / KT73 - Transponder System

4.5.6.1. Perform this procedure at a minimum altitude of 2000 feet (AGL) and at least 15 nm from the Air Traffic Control Center (ATC).

4.5.6.2. Select the ALT mode on the transponder control panel and set the ATC assigned code.

4.5.6.3. Have the ATC station confirm the correct transmission of code and encoding altitude.

4.5.6.4. Push the IDENT button and check this mode capability with ATC.

4.5.7. Flight Director

4.5.7.1. HDG mode

a) Perform these checks during trimmed cruise at 120 KIAS.

b) Push the HGD SEL knob on the EHSI control panel to align the HDG selection bug with the EHSI lubber line.

c) Press the HDG button on the F/D mode control panel and check that the Roll Command bar is centered.

d) Rotate the HDG bug 90° to the left and verify that the helicopter rolls to the left and completes the turn on the new selected heading. The criteria are that (a) the roll-in and the roll-out are smooth, (b) the maximum heading overshoot/undershoot should be less than 2° and (3) the maximum bank angles should be 20° ±2°.

e) Repeat the test with a right turn.

f) Press the SBY key to disengage the mode and re-select "pilot in command".

4.5.7.2. V/S mode-ALT mode

a) Perform these checks during trimmed cruise at 120 KIAS.

b) Set the IVSI selection bug to zero.

c) Push the VS mode key on the F/D mode control panel and check that the pitch bar is centered.

d) Select a 500 foot/minute climb and a 500 feet/minute descent and check the aircraft climb and descent rates.

e) Push the ALT mode key and check that the pitch bar is centered. The altitude at which the ALT mode was selected should be maintained within approximately ±50 feet.

f) Press SBY to disengage the mode.

4.5.7.3. IAS Mode

a) Perform these checks during trimmed cruise at 120 KIAS.

b) Select the IAS mode on the F/D control panel.

c) Check that the pitch command bar is centered and that the indicated airspeed remains within ±5 knots of the indicated speed when the mode was engaged.

d) Increase and reduce the airspeed with the A/S trim (F&A beep on both cyclic sticks) and verify that the rate at which the airspeed changes is approximately 3 knots/second.

e) Press SBY to disengage the mode.

4.5.7.4. NAV mode with VOR coupled

Note The navigation data source selected on the EHSI is automatically used by the autopilot

a) Initiate these checks during trimmed cruise at 120 KIAS, at a minimum distance of 15 nm from the VOR station.

b) Tune the VOR frequency on VOR #1 receiver.

c) Push the N key on the EHSI control panel to select VOR1 as the navigation source; then, select the desired radial.

d) Set the HDG bug to acquire a heading providing a course intercept greater than 30°, inbound.

e) On the F/D control panel, press the NAV mode key and check that the HDG and NAV ARM indicator lights illuminate.

f) During the course intercept, check the functioning of the ARM and CAP lights in the NAV key.

g) Note the system performance during capture and tracking of the selected radial. Maneuvering should be smooth with no evidence of overshoot or oscillation and the radial should be accurately tracked. The system should automatically supply the crab angles necessary for wind compensation. The green HDG light and the white VOR light should be illuminated during capture. The VOR light should extinguish following capture.

h) Over-fly the station at a minimum height of 1000 feet AGL. During the over-fly, check that the OSS (over-station sensing) mode becomes active for at least 45 seconds.

i) Repeat the above procedure using the VOR #2 receiver.

4.5.7.5. VOR APR mode

a) Initiate these checks during trimmed cruise at approximately120 KIAS.

b) Within 10 miles of the VOR station, tune the VOR #1 receiver to the VOR frequency and select a desired radial.

c) Set the HDG bug to acquire a heading providing a course intercept greater than 30°, inbound.

d) On the F/D control panel, press the VOR APR key and check that the VOR APR ARM and the HDG indicator light illuminates.

e) When the radial has been intercepted, check that the HDG light goes out and that the CAP light illuminates.

f) During intercept, verify the correct change of advisories on the EADI. The green HDG light and the white VAPP light should be illuminated during capture. The green VOR APP light should be illuminated and the HDG light extinguished, following capture.

g) On the EHSI display, check that the intercepted radial is accurately tracked and that the system is automatically supplying the crab angles necessary for wind compensation.

h) During station over-fly, verify that the OSS function is working correctly.

i) Repeat the above procedure using the VOR #2 receiver.

4.5.7.6. ILS mode

WARNING

IF THE F/D COMPUTER DOES NOT RECEIVE A VALID SIGNAL FROM THE RADAR ALTIMETER OR THE GLIDE SLOPE, THE AUTOLEVEL FUNCTION WILL NOT BE EXECUTED AND THE HELICOPTER WILL CONTINUE TO FOLLOW THE GLIDE SLOPE PATH.

a) Tune the VOR #1 and VOR #2 receivers to an ILS frequency and select LOC1 on the pilot's EHSI.

b) At the initial ILS approach altitude, select the F/D ALT mode ON.

c) Select a HDG which provides a course intercept greater than 30°.

d) On the F/D mode selector, select the ILS mode and check that the NAV ARM, ILS ARM, HDG and ALT indicator lights are illuminated.

e) Verify that the HDG and ALT advisory lights (both green) and the LOC and GS advisory lights (both white), are illuminated on the pilot's EADI.

f) Execute an ILS approach at a speed between 100-120 KIAS; check the performance of the system during interception, capture and tracking of the localizer and of the glide slope.

g) On the F/D command panel, verify that, when the localizer is captured, the NAV CAP light illuminates and the HDG light is extinguished. Similarly, when the GS is acquired, the ILS GS light should illuminate and the ALT light should extinguish.

h) On the pilot's EADI, verify that, when the localizer is captured, the LOC advisory light is green and the HDG light is extinguished. Similarly, when the GS is acquired, the GS advisory light is green and the ALT light should extinguish.

i) Verify that the functioning of the flight-director command bars is rational (correct orientation) and record any substantial deviations from the localizer and glide slope path during the approach.

j) During the approach, press the N key on the pilot's EHSI; verify that only LOC1 and LOC2 receivers are available and that the LOC advisory on the EADI changes from green to flashing yellow. Re-select LOC1 as the navigation source.

k) During the approach, temporarily fly in the de-coupled mode to verify that the sensitivity of the command bars is acceptable.

l) Verify that the Auto-level procedure is executed at 50 feet AGL (radio-altimeter).

m) Repeat the above procedure using the VOR #2 receiver.

4.5.7.7. Back course (BC) mode

WARNING

AUTOLEVEL IS NOT FUNCTIONAL IN THE BC MODE

Note Testing this function in flight may be difficult due to the non availability of airports equipped with this facility. Ground tests with an adequate simulator will be satisfactory

a) Tune the ILS frequency on the VOR #1 receiver.

b) Use the N key to select LOC1, on the pilot's EHSI, as the active navigation source.

c) Set the course pointer on the pilot's EHSI to the inbound front course of the localizer procedure.

d) Set the desired intercept heading on the EHSI.

e) Select the ALT mode on the F/D command panel.

f) Select the BC mode on the F/D command panel and check that:

- the BC arm and HDG lights are illuminated on the F/D command panel.
- The white BC advisory light and the green heading advisory light are illuminated on the pilot's EADI.
- The Exp.LOC indications on the EADI changes to the opposite position.
- The glide slope scale and indications disappear on the EADI and EHSI displays.

g) When the helicopter approaches the back course localizer, check that:

- Automatic capture occurs (HDG light should extinguish and the green BC CAP light should illuminate).
- The F/D lateral deviation bar on the EADI is sensing in the correct direction and displaying the correct indications.

h) Record any significant deviations from the localizer path.

i) During the descent phase, select the V/S mode and set a desired rate of descent with the VS bug on the IVSI. Verify the aircraft response.

4.5.7.8. GO AROUND mode

a) Press GA mode button on the collective grip at a speed exceeding 60 KIAS.

b) Centering the Coll-CUE should cause the aircraft to climb at 750 FPM. Correct orientation) and record any substantial deviations from the localizer and glide slope path during the approach.

c) During approach, press the N key on the pilot's EHSI; verify that only LOC1 and LOC2 receivers are available and that the LOC advisory on the EADI changes from green to flashing yellow. Re-select LOC1 as the navigation source.

d) During the approach, temporarily fly in the de-coupled mode to verify that the sensitivity of the command bars is acceptable.

e) Verify that the Auto-level procedure is executed at 50 feet AGL (radio-altimeter)

f) Repeat the above procedure using the VOR#2 receiver.

4.5.7.9. REV mode with the F/D coupled

a) Pull out the pilot's EHSI circuit breaker.

b) Verify that the pilot's EADI automatically reverts to the Composite mode.

c) Execute a coupled ILS approach to verify that all signals are correctly interfaced with the Flight Director computer.

4.6. AVIONICS KITS (if installed)

4.6.1. RDR 2000 Weather Radar

4.6.1.1. Fly over areas containing large, easily identifiable landmarks such as rivers, towns, islands, lakes with the system set in MAP mode. Compare the form of these objects, on the indicator, with their actual shape as visually observed from the cockpit.

4.6.1.2. Check the performance of the stabilization system during normal climb, cruise, descent and turns. Antenna stabilization should eliminate blurring of the display within pitch and roll angles of ±25 degrees.

4.6.1.3. In straight level flight over suitable terrain, at the maximum downward tilt angle, verify that spurious returns do not reach unacceptable levels.

4.6.1.4. Verify that the system will detect and produce a satisfactory display from suitable cloud formations in the WX and VP modes.

4.6.2. GARMIN 165 - GPS System

4.6.2.1. Preliminary steps

a) Verify that GPS position information is available and the system is at least in 2D mode.

b) Record the receiver status and the DOP.

4.6.2.2. Procedure

a) On EHSI unit, select the GPS receiver as the navigation source and the GPS bearing pointers. On the GPS receiver, verify that the CDI deviation is set to the appropriate scale (1 nm).

b) Select the RTE mode, insert a flight plan with at least 3 waypoints which, if available, should include a VOR or NDB station. Activate the flight plan.

c) Press the NAV key and select the CDI page.

d) Fly toward the first waypoint with the CDI bar centered and check that the CDI deviation bars on the GPS receiver and the EHSI displays are coherent.

e) During the flight, monitor the receiver to assure that there is no loss of satellite signals (NO GPS POSITION flag)

f) Record the present position value at the over-fly of each waypoint. Compare to the known waypoint positions. The maximum allowable error is 0.125 nm.

g) During the flight, verify that correct data are also displayed on the EHSI in MAP format.

4.6.2.3. NAV mode with GPS coupled

a) Initiate these checks during trimmed cruise at 120 KIAS.

b) Select the GPS receiver as the navigation source on PLT EHSI.

c) On the GPS receiver, check for the correct CDI scale (1 Nm).

d) Create a route with 4 or more waypoints.

e) Press the D-> key twice to activate the route.

f) When the EHSI displays the DTK relative to the first leg, press the NAV key on the F/D control panel. Check that the CAP light in the NAV key illuminates and that the EADI displays the GPS advisory (only on EFIS configuration).

Note If the deviation is greater than 1 dot (0.5 nm), perform a normal intercept procedure to capture the desired track, selecting a heading which provides a track intercept greater than 30°.

g) Flying the leg, check that the desired track is accurately maintained, including any required wind correction.

h) Upon reaching the enroute waypoints, check that the DTK, the bearing information, the CDI arrow and all other navigation information are correctly displayed for the next leg and that the flight director automatically steers to the correct direction.

Note If the DTK for the next leg requires a course change greater than 90 degrees, depending on the ground speed, the F/D could require up to 5 nm to intercept the new track.

4.6.3. TRIMBLE 2101 - GPS System

4.6.3.1. Preliminary steps

a) Verify that GPS position information is available and the system is at least in 2D mode.

b) Record the receiver status and the DOP

4.6.3.2. Procedure

a) On EHSI unit, select the GPS receiver as the navigation source and the GPS bearing pointers. On the GPS receiver, verify that the CDI deviation is set to the appropriate scale (1 nm).

b) Select the FPL mode, insert a flight plan with at least 3 waypoints which, if available, should include a VOR or NDB station.

c) Press the D-> key twice to activate the flight plan.

d) Fly toward the first waypoint with the CDI bar centered and check that the CDI deviation bars on the GPS receiver and the EHSI displays are coherent.

e) During the flight, monitor the receiver to assure that there is no loss of satellite signals

f) Record the present position value at the over-fly of each waypoint. Compare to the known waypoint positions. The maximum allowable error is 0.125 nm.

g) During the flight, verify that correct data are also displayed on the EHSI in MAP format.

4.6.3.3. NAV mode with GPS coupled

a) Initiate these checks during trimmed cruise at 120 KIAS.

b) Select the GPS receiver as the navigation source on PLT EHSI.

c) On the GPS receiver, check for the correct CDI scale (1 Nm).

d) Create a route with 4 or more waypoints.

e) Press the D-> key twice to activate the route.

f) When the EHSI displays the DTK relative to the first leg, press the NAV key on the F/D control panel. Check that the CAP light in the NAV key illuminates and that the EADI displays the GPS advisory (only on EFIS configuration).

Note If the deviation is greater than 1 dot (0.5 nm), perform a normal intercept procedure to capture the desired track, selecting a heading which provides a track intercept greater than 30°.

g) Flying the leg, check that the desired track is accurately maintained, including any required wind correction.

h) Upon reaching the enroute waypoints, check that the DTK, the bearing information, the CDI arrow and all other navigation information are correctly displayed for the next leg and that the flight director automatically steers to the correct direction.

Note If the DTK for the next leg requires a course change greater than 90 degrees, depending on the ground speed, the F/D could require up to 5 nm to intercept the new track.

4.6.4. Garmin GTN650 - VHF/NAV#1/GPS System (if installed) (Figure 8)

4.6.4.1. VHF/AM radio section

Note GTN650 VHF/AM radio section provides the capability to use 8.33 kHz spaced frequencies. If needed, to activate the functionality push once the HOME hardkey, then touch SYSTEM and SETUP softkeys.

Note Two communications receivers tuned to the same station could result in a reduction in audio volume.

a) At a height of 2000 feet (AGL), select and establish two-way radio communication with a ground station located at least 15 NM away.

b) Check the clarity of the communication, volume adjustment capability, sidetone characteristics and the squelch function.

4.6.4.2. NAV #1 section

Note Perform the check of the GTN650 NAV #1 section together with the check of the NAV#2 system.

a) Perform the procedure at an altitude of 2000 feet (AGL) (except for the approach and over-fly tests which are performed at 1000 feet AGL).

b) Preliminary steps

- Push the NAV key on the pilot's EHSI to select the VOR1 as navigation source, then press CRS knob to align the Course arrow to the received source.
- On the copilot's EHSI, select VOR2 as navigation source.
- On both EHSI displays, select the VOR1 and VOR2 bearing pointers.
- On both ICS panels, select the VOR and MB receivers.
- Select the MB sensing switch to the High position.
- Select the GTN650 to the Default Navigation page.

Note Cross-check for correctness and coherence the indications of the EHSI system connected to GTN650 NAV with the indications of the GTN650 Default Navigation page.

4.6.4.3. VOR#1 Check (together with VOR#2)

a) Tune both NAV receivers to the same VOR station located at least 10 NM away and record the station information as detailed in the checklist of Annex 1. Check the bearings and course. Verify that both identification signals are clear and that the volume is controllable.

b) Tune both VOR receivers to the same VOR station at a minimum distance of 10 nm and track inbound to the station. On the EHSI control panel, press the CRS SEL knob (TO function) and verify that the Course Arrows are automatically aligned with the bearing pointers and that the TO/FR indicator indicates TO.

c) Perform a course variation of ±10° on both systems (with the Course selector knobs). On the EHSI display, verify that the deviation bar deflects 2 dots to the left and to the right, respectively. Turn the helicopter to the left and right of the selected course and verify the correct reaction of the course deviation bar on the EHSI display.

d) Overfly the VOR station and check for the correct change of the TO/FR flags.

e) Over a ground reference point, compare the displayed bearings (manual and automatic) from the ground reference point to two different VOR stations against known bearing data. The maximum allowable displayed bearing error is ±3 degrees.

4.6.4.4. ILS#1 / MB Check (together with ILS#2)

a) On both receivers, select a localizer frequency and verify that the EHSI displayed bearings automatically update to ILS and the VOR bearing indications disappear. Proceed with an ILS approach, beginning at least 5 nm from the runway. As the approach proceeds, verify that all the NAV and G/S flags are out of view. Align the helicopter so that the course deviation bar (LOC) and the vertical deviation pointer (GS), are centered.

b) Turn the helicopter to the left and then to the right of the course localizer and check for the correct reaction of the course deviation bar on the EHSI display and of the EXP LOC index on the pilot's EADI.

c) Position the helicopter above and below the glide path and check for the correct reaction of the glideslope pointer on the EHSI display and the pilot's EADI.

d) Verify that at least the yellow marker beacon light illuminates on EADI and the aural identification signal is heard when passing over the middle marker. At the over-fly position, check the H/L sensitivity control.

Note The functionality of the blue OM marker should be verified on the ground with an adequate simulator

4.6.4.5. GPS section

a) Preliminary steps

- Verify that GPS position information is available and the system is at least in 2D mode.
- Record the receiver status and the DOP

4.6.4.6. Procedure

- On EHSI system, select LNAV as navigation source and the GPS bearing pointers. On the GPS receiver, verify that the CDI deviation is set to the appropriate scale (1 NM).
- On GTN650 select the FPL mode, insert a flight plan with at least 3 waypoints which, if available, should include a VOR or NDB station.
- Activate the flight plan and fly toward the first waypoint with the CDI bar centered and check that the CDI deviation bars on the GPS receiver and the EHSI displays are coherent.
- During the flight, monitor the receiver to assure that there is no loss of satellite signals
- Record the present position value at the over-fly of each waypoint. Compare to the known waypoint positions. The maximum allowable error is 0.125 nm.
- During the flight, verify that correct data are also displayed on the EHSI in MAP format.

4.6.4.7. NAV mode with GPS coupled

a) Initiate these checks during trimmed cruise at 120 KIAS.

b) Select LNAV as the navigation source on PLT EHSI.

c) On the GPS receiver, check for the correct CDI scale (1 Nm).

d) Create a Flight Plan with 4 or more waypoints.

e) Press the D-> hardkey, select the first Wpt of the Flight Plan, then touch the Activate D-> sftkey to activate the route.

f) When the EHSI displays the DTK relative to the first leg, press the NAV key on the F/D control panel. Check that the CAP light in the NAV key illuminates and that the EADI displays the GPS advisory.

Note If the deviation is greater than 1 dot (0.5 nm), perform a normal intercept procedure to capture the desired track, selecting a heading which provides a track intercept greater than 30°.

g) Flying the leg, check that the desired track is accurately maintained, including any required wind correction.

h) Upon reaching the enroute waypoints, check that the DTK, the bearing information, the CDI arrow and all other navigation information are correctly displayed for the next leg and that the flight director automatically steers to the correct direction.

Note If the DTK for the next leg requires a course change greater than 90 degrees, depending on the ground speed, the F/D could require up to 5 nm to intercept the new track.

4.6.5. KN53 - VOR/LOC/GS system (NAV#2) (if installed)

Note Perform the check of the KN53 NAV #2 system together with the check of the first NAV system.

4.6.5.1. Perform the procedure at an altitude of 2000 feet (AGL) (except for the approach and over-fly tests which are performed at 1000 feet AGL).

4.6.5.2. Preliminary steps

a) Push the NAV key on the pilot's EHSI to select the VOR1 as navigation source, then press CRS knob to align the Course arrow to the received source.

b) On the copilot's EHSI, select VOR2 as navigation source.

c) On both EHSI displays, select the VOR1 and VOR2 bearing pointers.

d) On both ICS panels, select the VOR and MB receivers.

e) Select the MB sensing switch to the High position.

4.6.5.3. VOR#2 Check (together with VOR#1)

a) Tune both NAV receivers to the same VOR station located at least 10 NM away and record the station information as detailed in the checklist of Annex 1. Check the bearings and course. Verify that both identification signals are clear and that the volume is controllable.

b) Tune both VOR receivers to the same VOR station at a minimum distance of 10 nm and track inbound to the station. On the EHSI control panel, press the CRS SEL knob (TO function) and verify that the Course Arrows are automatically aligned with the bearing pointers and that the TO/FR indicator indicates TO.

c) Perform a course variation of ±10° on both systems (with the Course selector knobs). On the EHSI display, verify that the deviation bar deflects 2 dots to the left and to the right, respectively. Turn the helicopter to the left and right of the selected course and verify the correct reaction of the course deviation bar on the EHSI display.

d) Overfly the VOR station and check for the correct change of the TO/FR flags.

e) Over a ground reference point, compare the displayed bearings (manual and automatic) from the ground reference point to two different VOR stations against known bearing data. The maximum allowable displayed bearing error is ±3 degrees.

4.6.5.4. ILS / MB Check

a) On both receivers, select a localizer frequency and verify that the EHSI displayed bearings automatically update to ILS and the VOR bearing indications disappear. Proceed with an ILS approach, beginning at least 5 nm from the runway. As the approach proceeds, verify that all the NAV and G/S flags are out of view. Align the helicopter so that the course deviation bar (LOC) and the vertical deviation pointer (GS), are centered.

b) Turn the helicopter to the left and then to the right of the course localizer and check for the correct reaction of the course deviation bar on the EHSI display and of the EXP LOC index on the pilot's EADI.

c) Position the helicopter above and below the glide path and check for the correct reaction of the glideslope pointer on the EHSI display and the pilot's EADI.

d) Verify that at least the yellow marker beacon light illuminates on EADI and the aural identification signal is heard when passing over the middle marker. At the over-fly position, check the H/L sensitivity control.

Note The functionality of the blue OM marker should be verified on the ground with an adequate simulator

4.6.6. TAS 497- TRAFIC ALERT System

Note For this check use a helicopter on ground as target with transponder ON and set in 3A+C mode (ALT mode).

4.6.6.1. Switch on the system and wait for the standby screen.

4.6.6.2. Take off and check after 8-10 seconds that the system automatically switches to the Normal operating mode.

4.6.6.3. Select 2 nm display range and start an approach to overfly the target from 2 nm, at a height of 500 feet(AGL), with a speed of 80 Kts and with landing gear UP.

4.6.6.4. Check during the approach and overfly that the system displays the correct relative height (±100 feet) and position with respect to the target, and that alarm symbol and audio message appear 0.55 nm (or 30 sec) before the overfly.

4.6.6.5. Lower the landing gear and repeat the previous step. Check that the alarm symbol appears 0.2 nm (or 20 sec.) before the overfly and that audio alarm is not generated.

4.6.6.6. Land and check that after 24 seconds, the system automatically goes into STBY mode.

4.6.7. TAS System (EFIS coupled)

Note For the following test a chase helicopter, equipped with an ATC transponder (modes 3+C) is required.

4.6.7.1. On EHSIs select MAP and TRF overlay mode, 5 Nm range and verify that the system is in STBY (TCAS OFF cyan legend).

4.6.7.2. Take off and check after 8-10 seconds that the system automatically switches to the normal operating mode (TCAS TA cyan legend).

4.6.7.3. Hover the helicopter at 500ft above the “CHASE”, then aim to the chase.

4.6.7.4. Perform a clockwise rotation, in steps of 30deg, and take Note of the chase position indicated on the display. Verify that the BRG of the chase aircraft is displayed with an accuracy of ±30deg.

4.6.7.5. Repeat step 4.6.7.4 500 ft below the chase.

4.6.7.6. Select 5 nm display range and start an approach to overfly the chase target from 2 nm at a height of 500 ft AGL, with a speed of 80 Kts and with landing gear up.

4.6.7.7. Check during the approach and overfly that the system displays the correct relative height (±100 ft) and position with respect to the target and that alarm symbol and audio message activate 0.55 nm (or 30 sec) before the overfly.

4.6.7.8. Using the ALT switch located on the TAS control panel, select in sequence the altitude sub-modes ABOVE and BELOW and check on EHSIs for the correct legend ABV and BLW.

4.6.7.9. Deselect MAP and TRF overlay on EFISs and check during intruder overfly that the TRAFFIC caution appears in the upper right corner of EHSI.

4.6.7.10. Lower the landing gear and repeat step 4.6.7.7. Check that the alarm symbol appears 0.2 nm (or 20 sec) before the overfly and that audio alarm is not generated.

4.6.7.11. Land and check that after 25 seconds the system automatically goes in stand-by mode (TCAS OFF).

4.6.8. NAT NTX138 – VHF/FM COM system (if installed)

4.6.8.1. At a height of 2000 feet (AGL), select a frequency and establish two-way radio communication with a ground station located at least 15 Nm away.

4.6.8.2. Check the clarity of the communication, volume adjustment capability, sidetone characteristics and the squelch function.

4.6.9. HF950 – HF/SELCAL COM system (if installed)

4.6.9.1. On the HF control panel, select a HF ground station and establish a two way radio communication.

4.6.9.2. Check the quality of communication, volume adjustment, sidetone and squelch.

4.6.9.3. Carry out the previous step with two or more stations (if available) in order to check tuning over all the band, with different type of modulation.

Note Since the satisfactory performance of the equipment with respect to reception depends on frequency, distance, weather and time of day, it is impossible to predetermine any value of signal report that may be recorded as acceptable. Therefore the radio operator should judge the reception reports as satisfactory or unsatisfactory

4.6.10. Collins KHF1050 HF COM system (if installed)

4.6.10.1. On the HF control panel, select a HF ground station and establish a two way radio communication.

4.6.10.2. Check the quality of communication, volume adjustment, sidetone and squelch.

4.6.10.3. Carry out the previous step with two or more stations (if available) in order to check tuning over all the band, with different type of modulation.

Note Since the satisfactory performance of the equipment with respect to reception depends on frequency, distance, weather and time of day, it is impossible to predetermine any value of signal report that may be recorded as acceptable. Therefore the radio operator should judge the reception reports as satisfactory or unsatisfactory.

4.6.11. CHELTON 931- Direction finder system

CAUTION

Don't use MAIN frequencies for this check.

4.6.11.1. Couple the bearing pointers BRG1 and BRG2 to the DF receiver.

4.6.11.2. Select HOM position on pilot and copilot COMM CONTR panel.

4.6.11.3. On the HOMING control panel, select the MAIN/OFF/AUX switch to AUX.

4.6.11.4. Approach the ground station from a distance of 3 nm at an height of 500 feet .

4.6.11.5. Check for linear approach and that the overfly error is within 300 meters with both system (VHF & UHF).

4.6.12. SunLight SX16 Searchlight

Note Do not direct the beam towards other aircraft or vehicles to prevent temporary blinding effect.

4.6.12.1. With the aircraft in the hover at 100 feet(AGL), select and hold the search light master switch in START position for approximately 5 seconds, or until ignition has occurred.

4.6.12.2. Operate the FOCUS switch to adjust the beam spread and check that the beam cycles from large to narrow and back until the switch is released.

4.6.12.3. Operate the directional control switch and check that the elevation motor is supplied and the search light moves DOWN and UP as controlled.

4.6.12.4. Move the LEFT and RIGHT control switch and check that the azimuth motor is supplied and the search light moves as controlled.

4.6.12.5. Before shutting down the system, move the search light to the horizontal position and select the master switch to OFF.

4.6.13. External Loudspeaker

Note For this test an observer is required to be on the ground positioned approximately 100 meters from the aircraft with the external loudspeaker facing him.

4.6.13.1. On the loudspeaker control panel, check that the POWER and SIREN switches are in the OFF position.

4.6.13.2. With the aircraft in hover at 100 feet(AGL), select the POWER switch to ON and SIREN switch to WAIL or YELP position.

4.6.13.3. The man on ground must confirm that the siren tone can be clearly heard.

4.6.13.4. Select SIREN switch to OFF.

4.6.13.5. On loudspeaker control panel select PA/RADIO selector switch to PA position.

4.6.13.6. On both ICS control panels set the transmitter selector to the PA position.

4.6.13.7. Press the pilot PTT trigger to the TX position and check with man the on ground that any message spoken into the headset microphone can be heard.

4.6.13.8. Check the VOL control knob functionality.

4.6.13.9. Repeat check 4.6.13.7 from the copilot position.

4.6.13.10. Switch POWER switch to OFF and select COMM CONTR panel as desired.

4.6.14. External Loudspeaker (AA21 control panel)

Note For this test a observer is required to be on the ground positioned approximately 100 meters from the aircraft with the external loudspeaker facing him.

4.6.14.1. Set the helicopter in hover at 100 feet AGL.

4.6.14.2. On the EXT LOUDSPEAKER control panel (NAT AA21) select in sequence the following switch position:

a) PA position

b) EXT position

4.6.14.3. Adjust VOL control knob to minimum range.

4.6.14.4. On cabin ICS control panel (PAP) select SPKR to ON (ICS and SPKR green lights illuminate).

4.6.14.5. On the EXT loudspeaker select POWER switch to ON.

4.6.14.6. While talking in the pilot and copilot microphone, verify with ground observer that:

4.6.14.7. The communication is clearly heard through the external loudspeakers and through all headsets.

4.6.14.8. The volume of the loudspeakers is adjustable by the VOL knob on the NAT AA21 control panel.

4.6.14.9. Set WAIL/YELP switch to WAIL and verify that the siren sound is heard on external loudspeakers.

4.6.14.10. Repeat check setting WAIL/YELP switch to YELP.

4.6.14.11. Set WAIL/YELP switch to off position.

4.6.14.12. Select VOL knob to minimum.

4.6.14.13. Set power switch to off position.

4.6.14.14. Select SPRK on PAP control panel to off (SPRK light off).

4.6.15. TETRA Radio TMR 880i

Note For this test use a TETRA compatible hand-held equipment preset with same channel and group.

4.6.15.1. Select UHF receiver and set PTT selector to UHF position on every ICS control panel.

4.6.15.2. At a height of 2000 feet (AGL), select a channel and a group and establish two-way radio communication with a ground station located at 5nm away.

4.6.15.3. Check the clarity of the communication, volume adjustment capability, side tone characteristics and the squelch function.

4.6.16. V/UHF Wulfsberg FlexComm II

4.6.16.1. On every ICS control panel interfaced with the system, select V/UHF receiver to ON.

4.6.16.2. Select PTT selector on V/UHF.

Note If available, check at least one frequency in VHF/AM, VHF/FM and UHF band.

4.6.16.3. Tune the system on a known authorized local ground station located at least at 25 NM away and with a relative altitude difference of 1500 feet.

4.6.16.4. On the radio control panel push DIR 1 button for single frequency operation and check that the displayed TX and RX frequencies are the same.

4.6.16.5. On every ICS control panel interfaced with the system, press the PTT switch and check the transmission and reception quality of audio signal.

4.6.17. V/UHF Rockwell Collins RT-8200 COM system (if installed)

Note If more than one system of this type is installed, repeat below checks for each of them.

4.6.17.1. On every ICS control panel interfaced with the system, select V/UHF receiver to ON and TX selector to V/UHF.

Note If available, check at least one frequency in VHF/AM, VHF/FM and UHF band.

4.6.17.2. Tune the system on a known authorized local ground station located at least at 25 NM away and with a relative altitude difference of 1500 feet.

4.6.17.3. From every ICS station interfaced with the system, press the PTT switch and check the transmission and reception quality of audio signal.

4.6.18. Skyforce Observer Mk.III - MOVING MAP system

4.6.18.1. Load a flight plan (FPL) with at least 3 waypoints in the Moving Map system.

4.6.18.2. Check on the display, using the joystick and zoom in/out functions, that the waypoints are positioned in the correct position on the MAP.

4.6.18.3. Load the same flight plan on the onboard navigation system (GPS) and check in flight that all navigation data calculated by moving map system (DTK, Bearing, distance to every waypoint, ground speed and track) are coherent with the same calculated by navigation system.

4.6.18.4. Check system functionality with different map orientation:

a) North up

b) Track up (only available above 5 Kts ground speed)

c) Heading Up (if available).

4.6.18.5. Select maximum zoom level of map and check system accuracy crosschecking the position on the map (using topographic reference as river, railway or bridge) with real ground reference.

4.6.19. I-Band transponder (Figure 18)

Note The following check is possible only if an I-Band compatible surveillance radar with Beacon mode capability is available.

4.6.19.1. Set the AE control switch on the IFF control panel to AE position (intermediate).

4.6.19.2. Set code selector switch to CODE RET position and select a code by the SET CODE selector.

Note The beacon code detection may be possible only by DO172 compatible radar.

4.6.19.3. Set the power switch selector to SBY position. Wait for warm-up of the system and after 30 second select HI position.

4.6.19.4. At the distance of 10 Nm form the radar facility check that the beacon return is received .

4.6.19.5. Set the power switch to LOW and repeat previous check.

4.6.19.6. Set the power switch selector to OFF.

4.6.20. Video Down-Link ECU (if installed)

Note Maintain coordination by radio with the receiving Ground Station.

4.6.20.1. While still at close distance (less than 1 nm) and in Line-of-Sight (LOS) with the Ground Station, set the Down-Link to TX mode by pushing either the □ or □ buttons.

4.6.20.2. Ensure the Ground Station is correctly receiving the flow of images from the helicopter Observation System.

4.6.20.3. Progressively increase the distance from the Ground Station while continuously ensuring the signal is not lost (perform periodic radio checks).

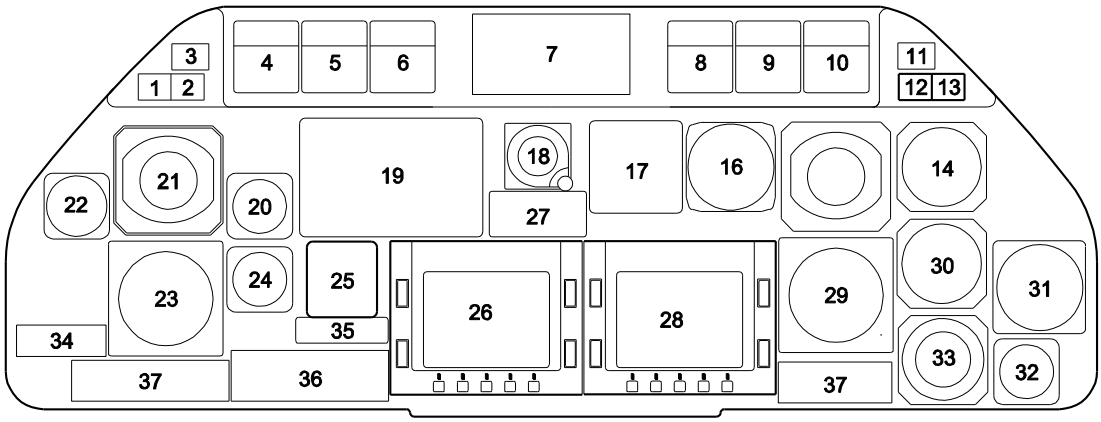
Note Quality of received signal is affected by presence of obstacles between the transmitting and receiving stations. Select a route permitting the LOS to be maintained and use a flight profile with altitude increasing proportionally to distance. An altitude difference, relative to the Ground Station

altitude, of (Dx100 + 500) is considered suitable to verify the system functionality. Es.: distance D=20nm → altitude difference = 20x100 + 500 = 2500ft
If the Ground Station is located at 800ft altitude, the helicopter altitude at 20nm must be 2500+800 = 3300ft QNH.

4.6.20.4. When at 20nm distance, perform two 360deg orbits, to right and left, with maximum 10deg of Roll Angle and verify with the Ground Station the continuity of the received signal for all helicopter azimuths.

Requirements after job completion

1. Remove loose items from the work area.



1. MASTER CAUTION lighted push-button
2. MASTER WARNING lighted push-button
3. Marker Beacon indicator
4. A.D.F. control panel
5. NAV2 control panel (VOR2)
6. NAV1 control panel (VOR1)
7. Empty
8. Transponder control panel
9. VHF/AM2 control panel
10. VHF/AM1 control panel
11. Master Beacon indicator
12. MASTER CAUTION lighted push-button
13. MASTER WARNING lighted push-button
14. Altimeter, encoder
15. Attitude Director Indicator
16. Airspeed indicator
17. Flight Director mode selector
18. Attitude Director Indicator, stand-by
19.
20.
21. Attitude Director Indicator
22. Airspeed Indicator
23. E.H.S.I.
24. Vertical velocity indicator
25. Empty
26. E.D.U.2
27. D.M.E. indicator
28. E.D.U.1
29. E.H.S.I.
30. Vertical velocity indicator
31. Radio altimeter indicator
32. Clock
33. Horizontal Situation Indicator
34. Empty
35. Marker Beacon control panel
36. Intercommunication control panel
37. E.H.S.I. control panel

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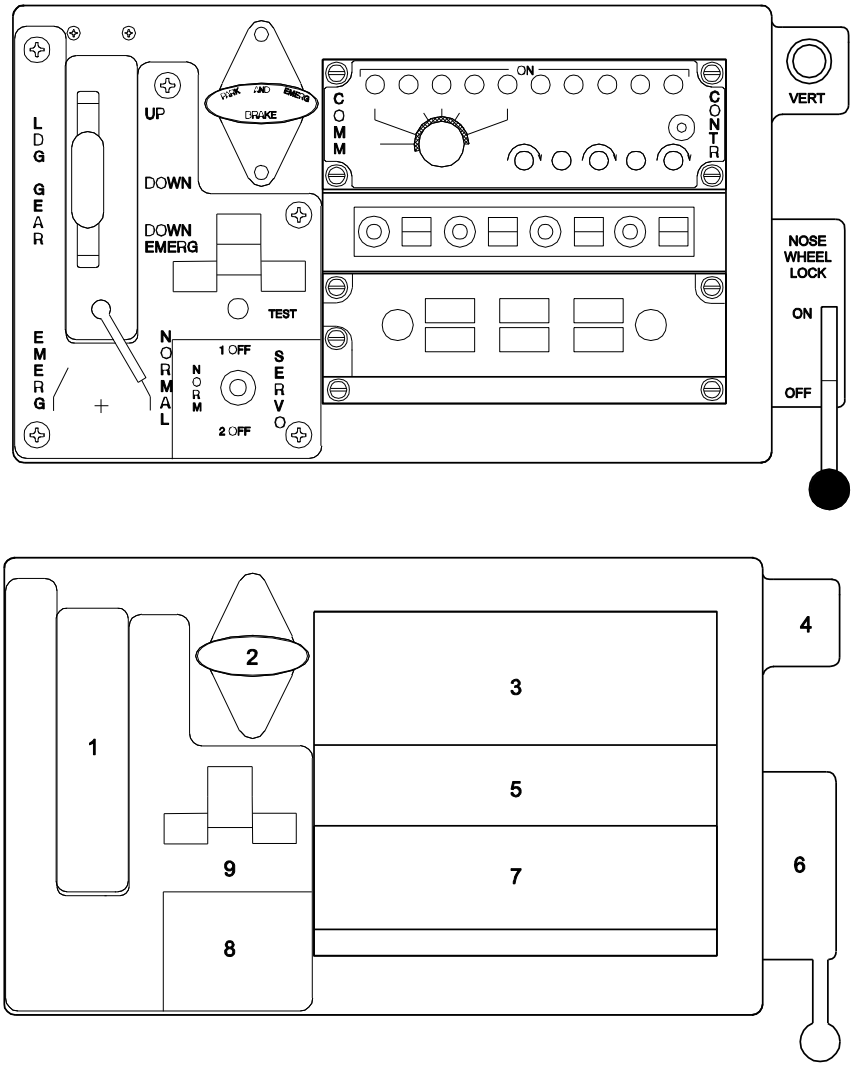
Figure 1 – Instrument panel (typical)



1. Landing gear selector
2. Parking brake handle
3. Intercommunication control panel
4. Cabin ventilation knob
5. ICS selector control panel
6. Nose wheel lock lever
7.
8. Hydraulic system switch
9. Landing gear position indicator

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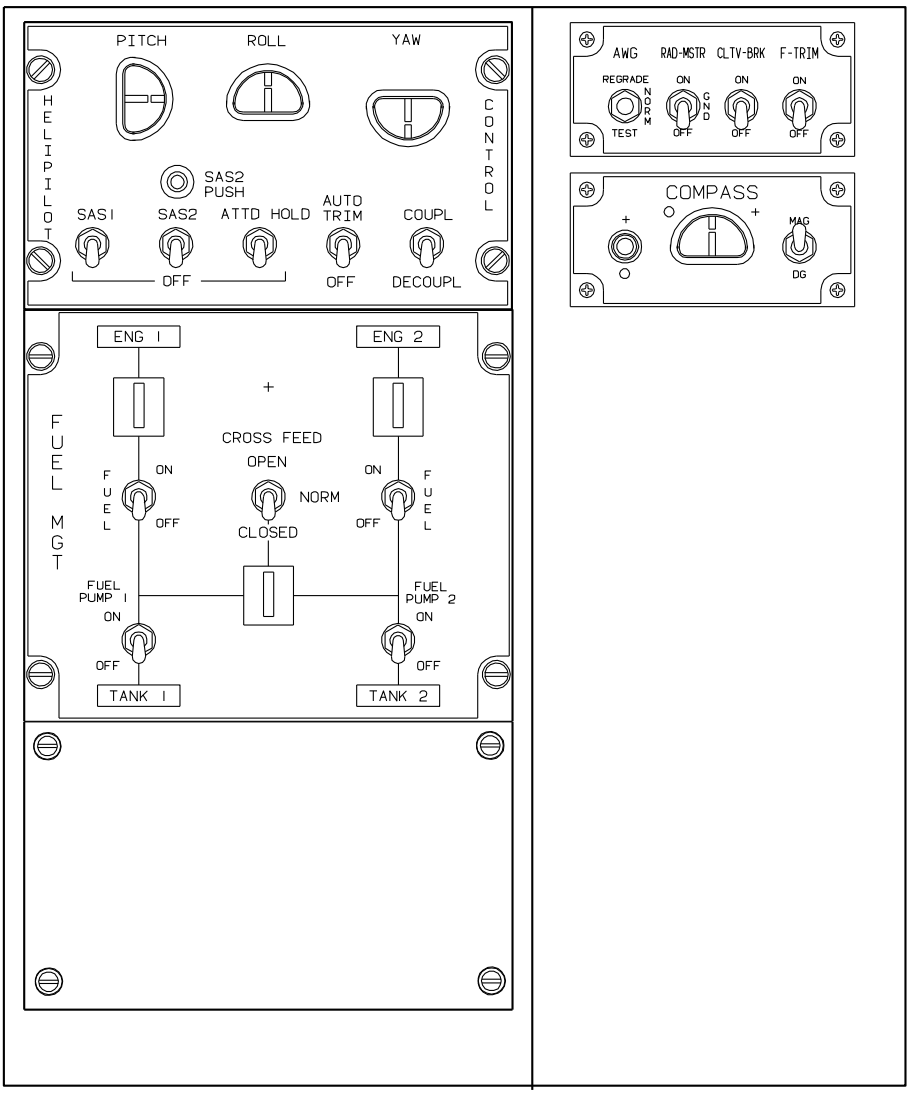
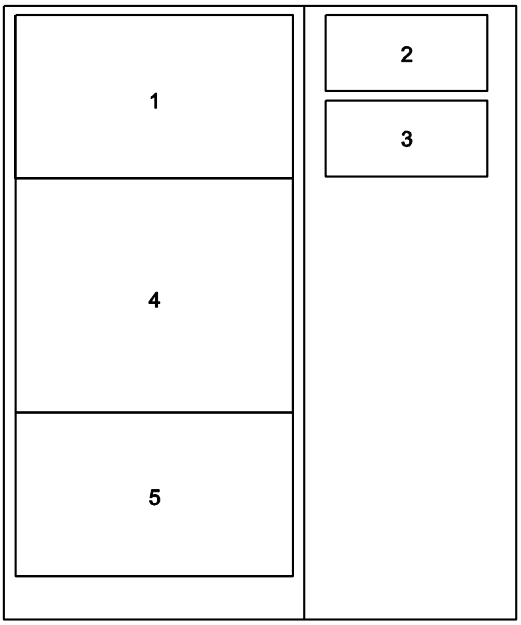
Figure 2 – Front console





1. Helicopter control panel
2. Miscellaneous panel
3. Gyrocompass control panel
4. Fuel management control panel
5. Empty

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Figure 3 – Central console

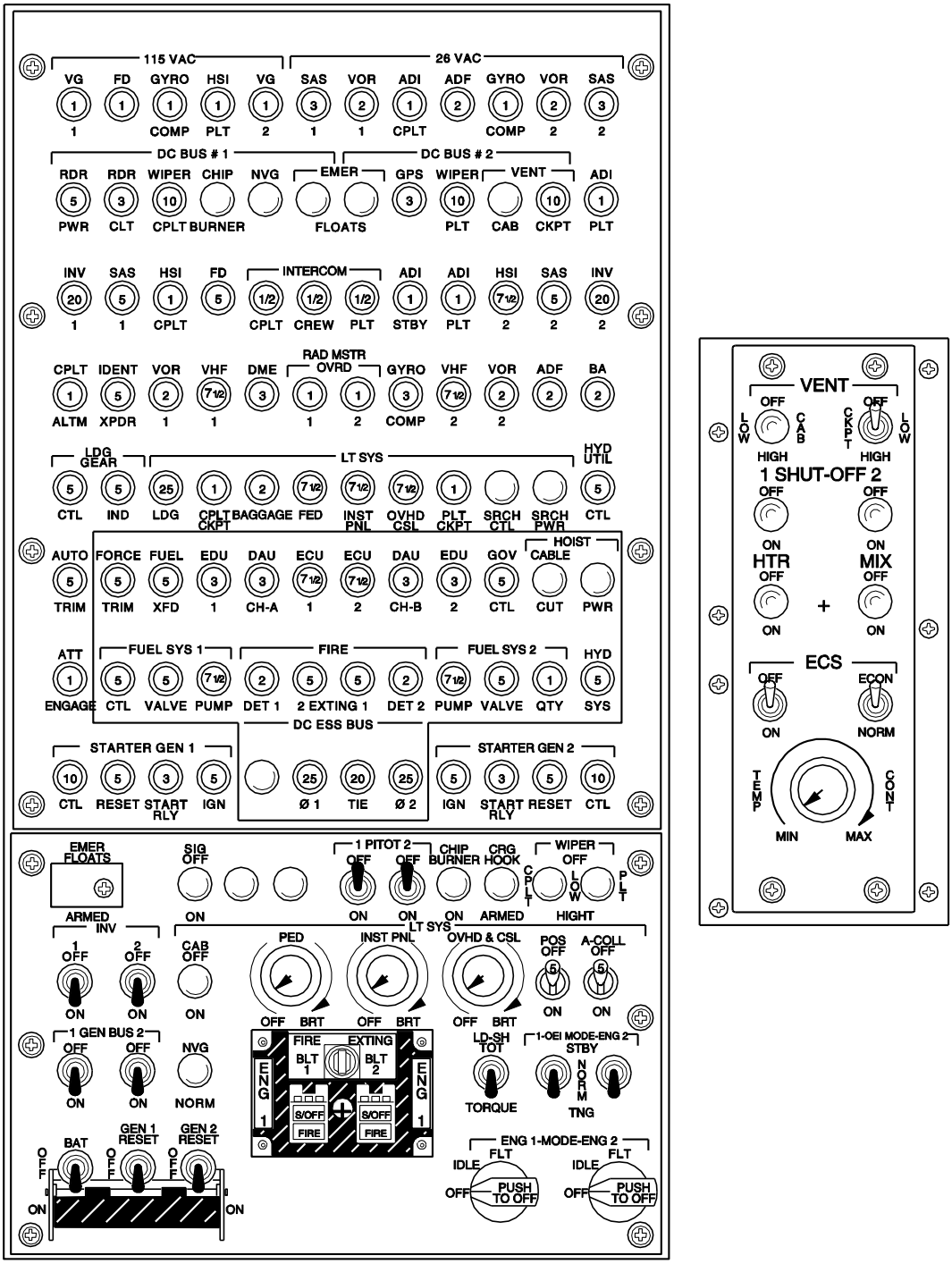

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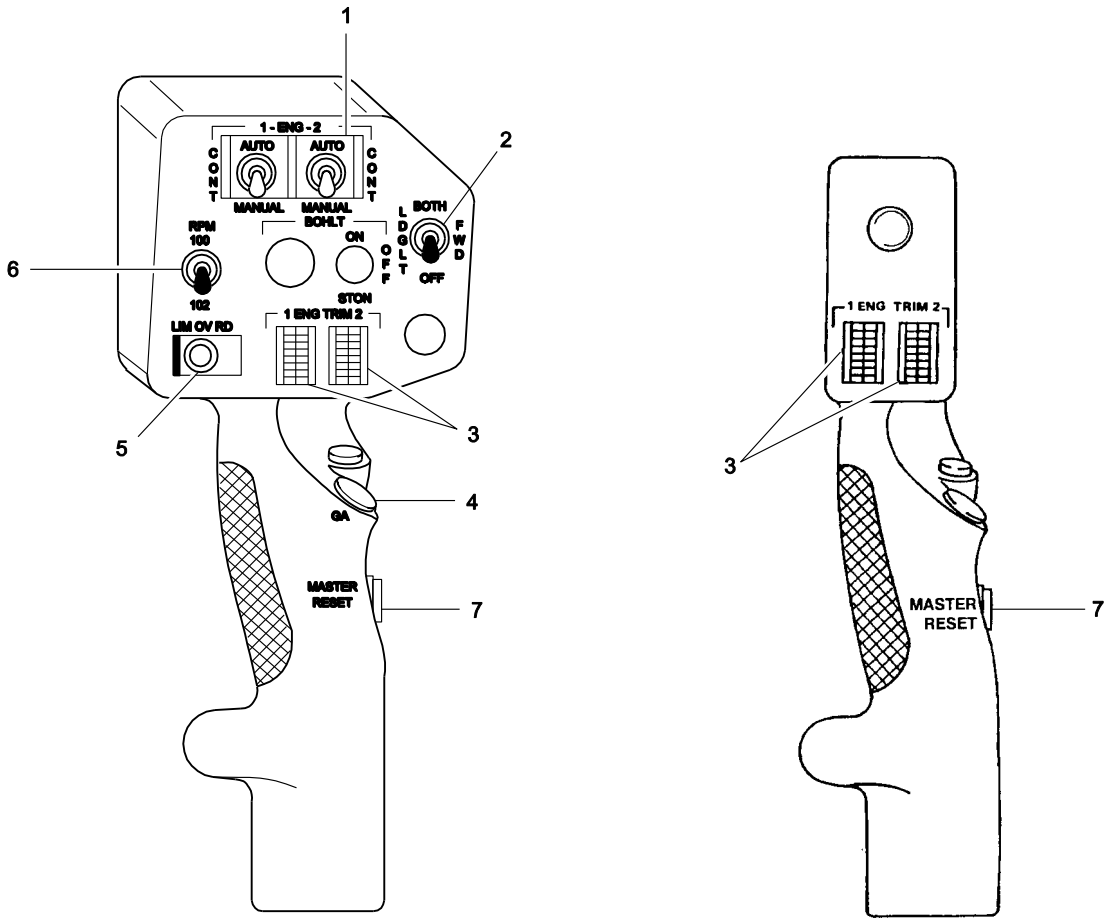
Figure 4 – Overhead console (typical)



1. ENG 1, ENG 2 auto/manual control switches
2. Landing light control switch
3. ENG 1, Eng 2 trim switch
4. Go around switch
5. Limit override switch
6. RPM selector switch
7. Master reset

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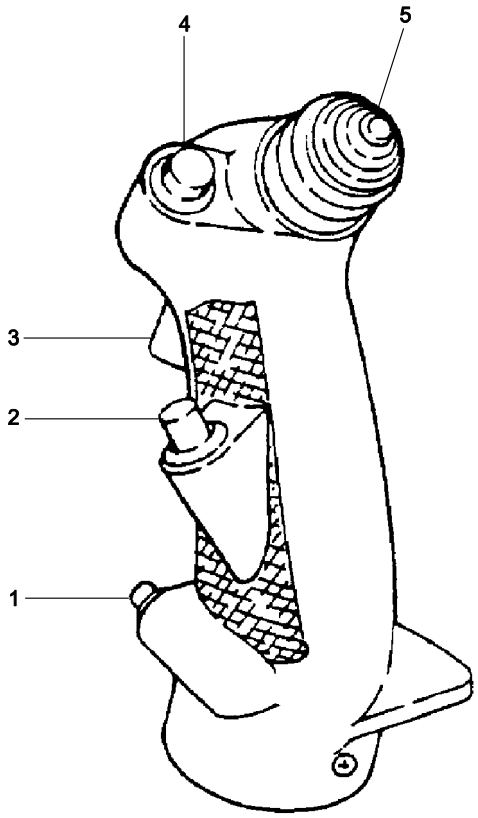
Figure 5 – Collective Grip Assembly (typical)



1. Cargo release pushbutton switch
2. Force trim pushbutton switch
3. Microphone/Intercommunication trigger switch
4. Flight Director remote/standby pushbutton switch
5. Beeper trim switch

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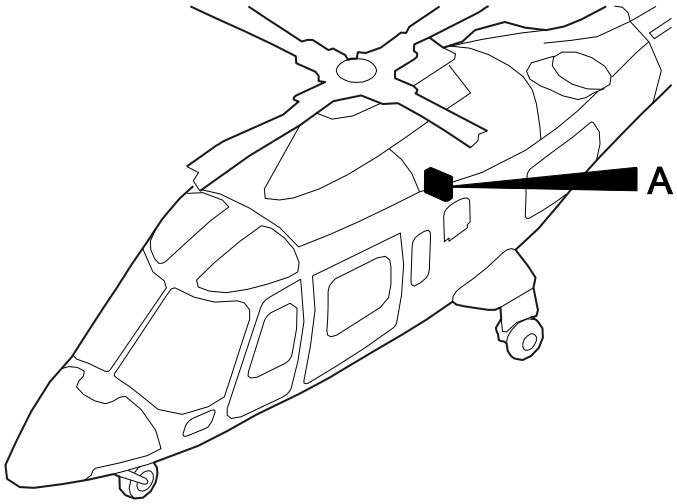
Figure 6 – Cyclic Grip Assembly (typical)



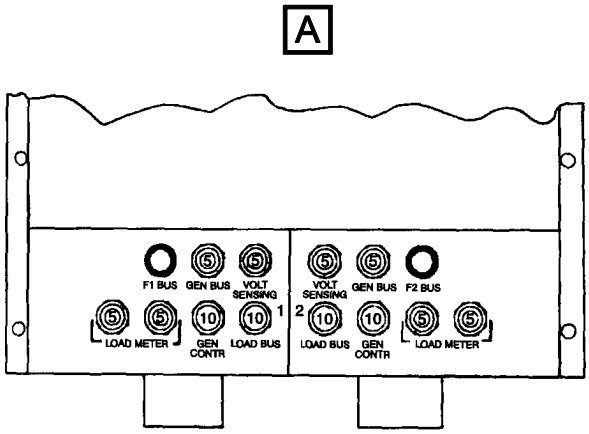


Figure 7 - Baggage Compartment

Figure 8 - Garmin GTN650 - VHF/NAV#1/GPS System

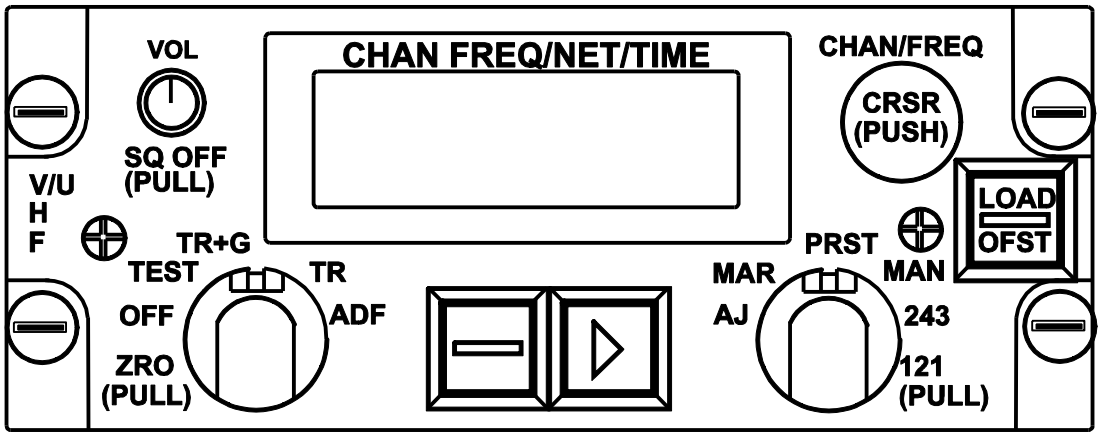


Figure 9 - V/UHF Rockwell Collins RT-8200 COM system

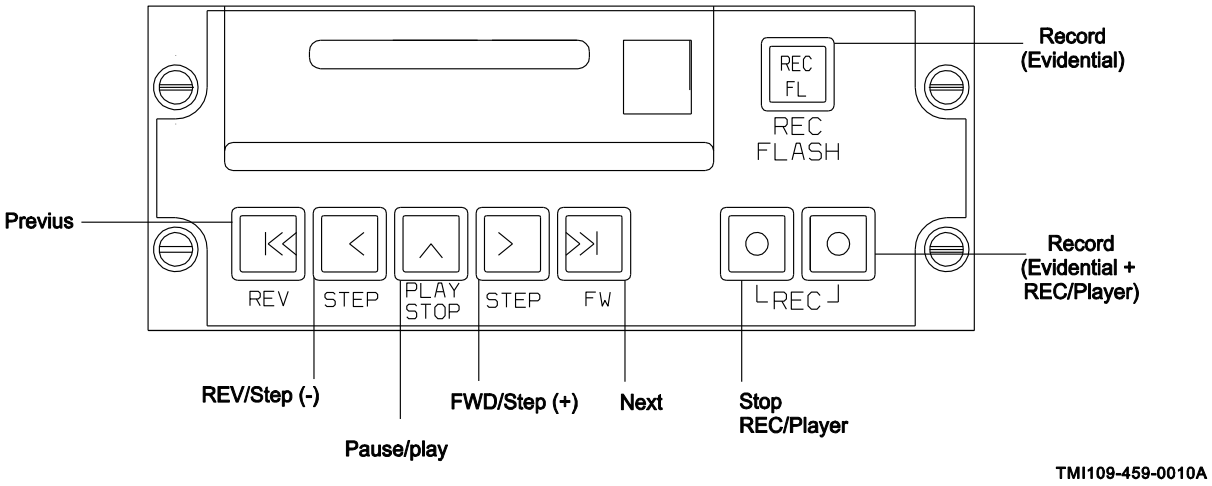
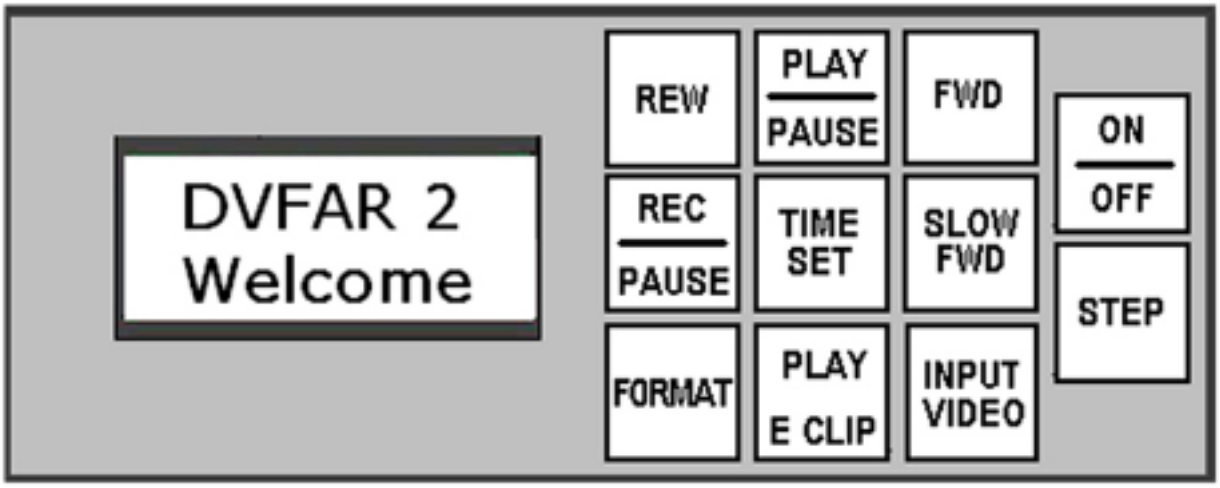


Figure 10 - Digital Video Recorder system (VRDV-3000)



ON OFF	Powers the system control electronics after the aircraft power has been applied. Ends recording and finalizes video file.
REC PAUSE	Activates the record function. Pauses recording.
PLAY PAUSE	Begins playback from beginning of footage on the CF card. Pauses playback if in PLAY mode.
PLAY E CLIP	For playback from the end of footage and begins auto rewind
SLOW FWD	Activates forward slow motion playback.
REW	Fast rewind function.
STEP	Step forward frame by frame from PAUSE mode.
FORMAT	Formats CF cards to DVFAR II format before recording.
INPUT VIDEO	Displays video input.
TIME SET	Sets the time for time zone or daylight saving.

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Figure 11 - Digital Video Recorder system (DVFAR 2)

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Figure 12 - Video Down-Link ECU

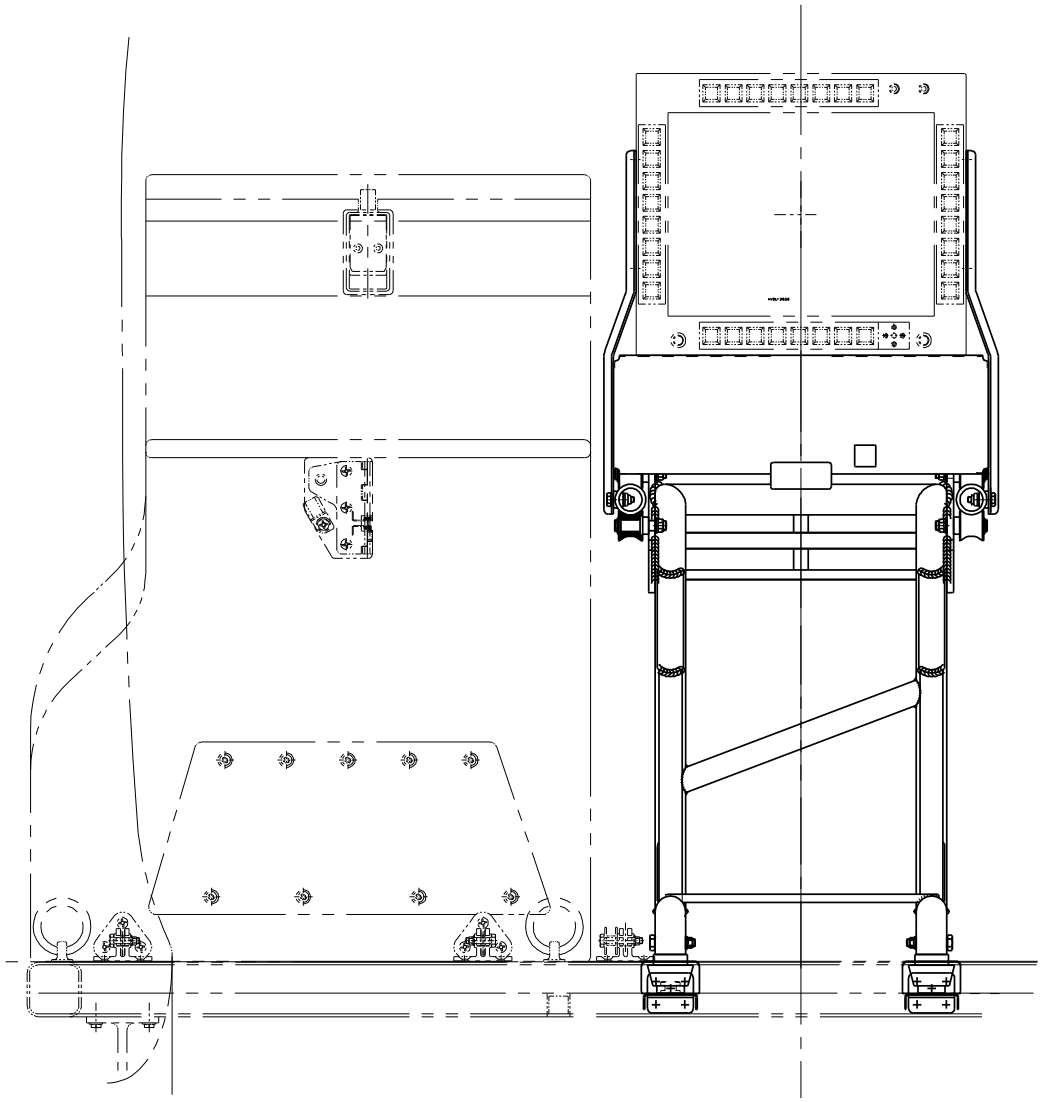

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Figure 13 - Operator Console p/n 109-0719-67-383/-411

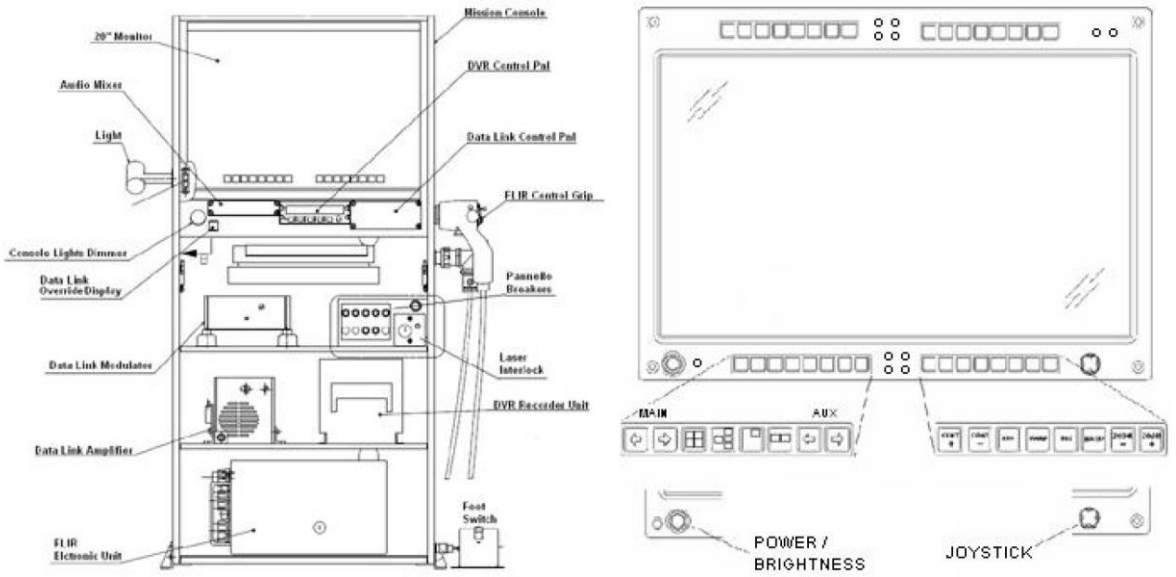

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Figure 14 - Operator Console p/n 109-B811-37-107

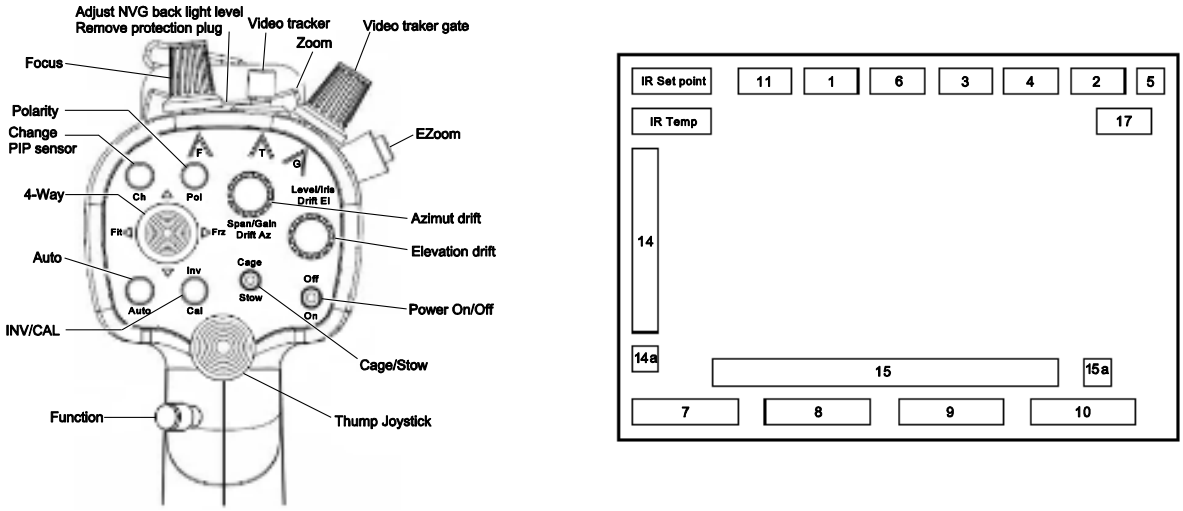

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Figure 15 - FLIR UltraForce UF350EP

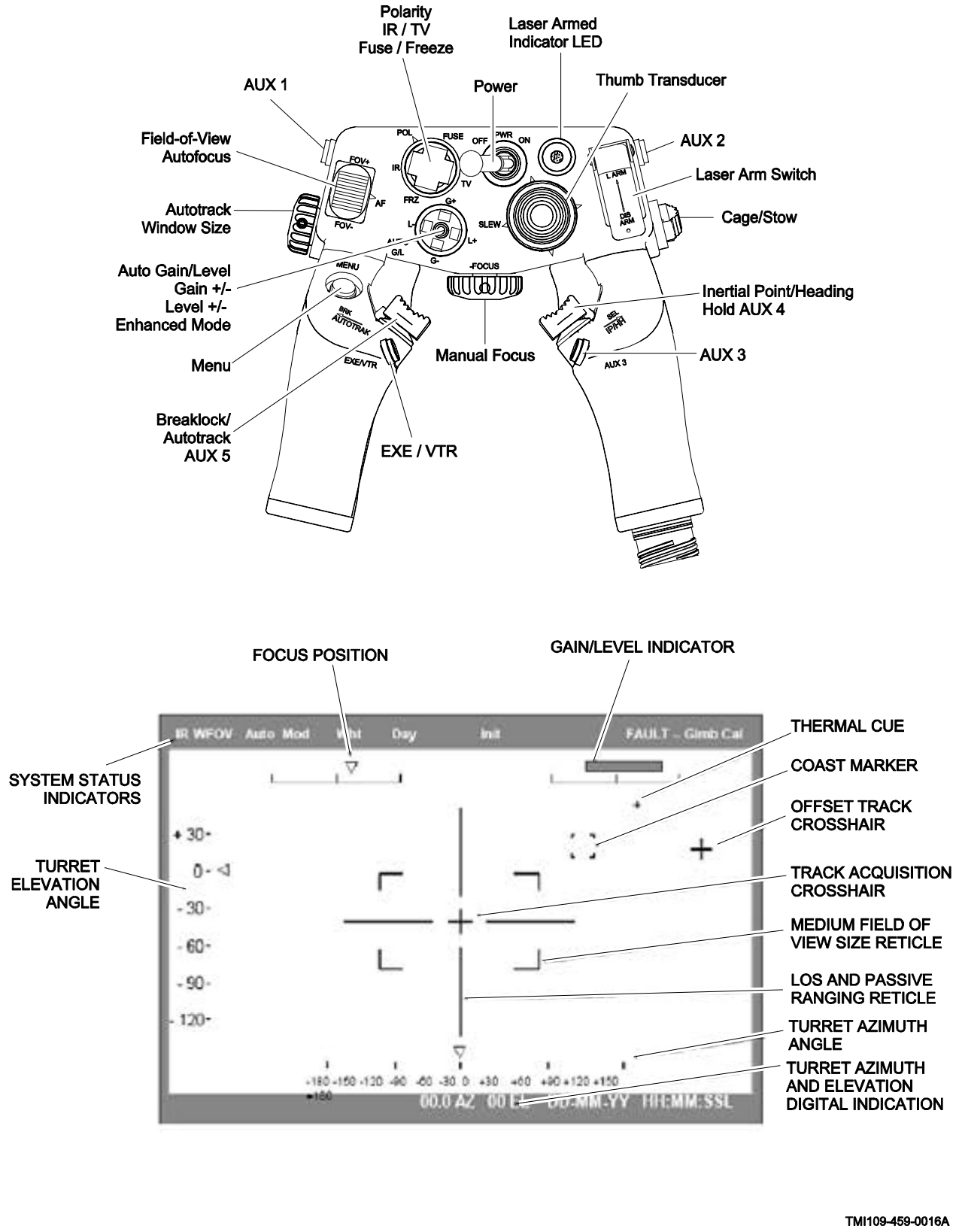

Figure 16 - FLIR Star Safire HD

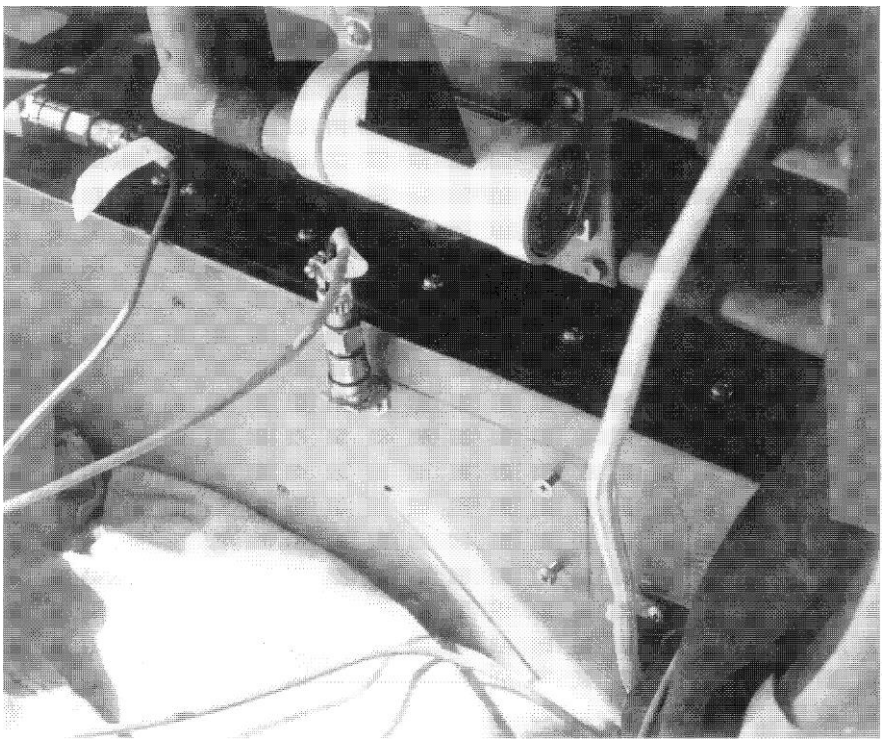

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Figure 17 – Heavy Weight Vibration Level Check – Accelerometer installation (Sheet 1 of 2)

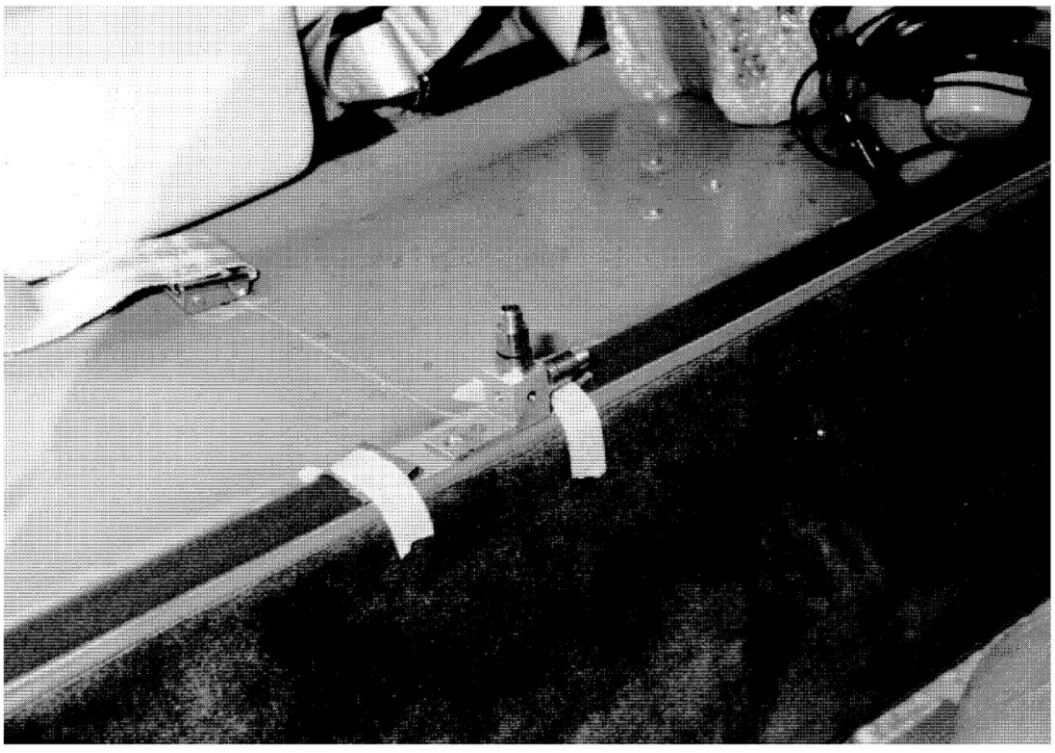

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Figure 17 – Heavy Weight Vibration Level Check – Accelerometer installation (Sheet 2 of 2)

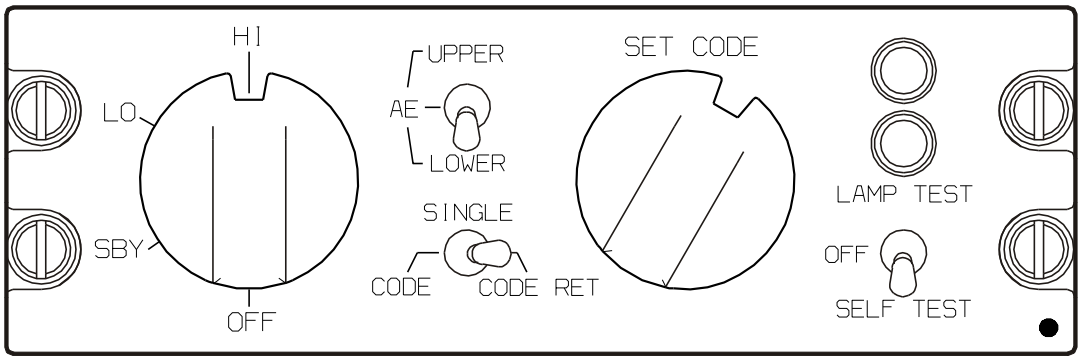

Figure 18 –I-Band transponder

1. **ON/OFF/ Volume**- Inner concentric knob. Press ON and press OFF. Rotate to adjust volume.
2. **Function Selector** Outer concentric knob. Rotate to select FREQ, CHAN, MOD, SQL or OPT.
3. **Emergency Channel Access Button**Press to gain access to selection of emergency channels.
4. **Functional Test Button**Press to initiate the built-in functional test.
5. **Display Area**- Digital display of frequencies, modes, channel numbers, etc.
6. **Sub-Function Select Button**Press to enter and select sub-functions.
7. **Transmit Lamp**- Illuminates when the system is transmitting.
8. **Outer Selector Knob** Right outer concentric knob. Rotate to select frequency, channel numbers, etc.
9. **Inner Selector Knob** Right inner concentric knob. Rotate to select frequency, channel numbers, etc.
10. **Enter Button**- Press to store data entries.

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Figure 19 – Honeywell KHF1050 HF COM system

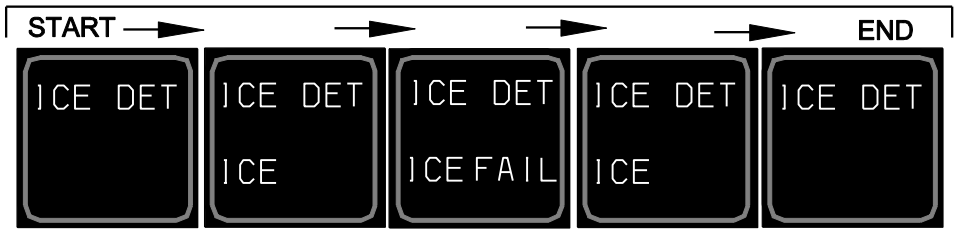
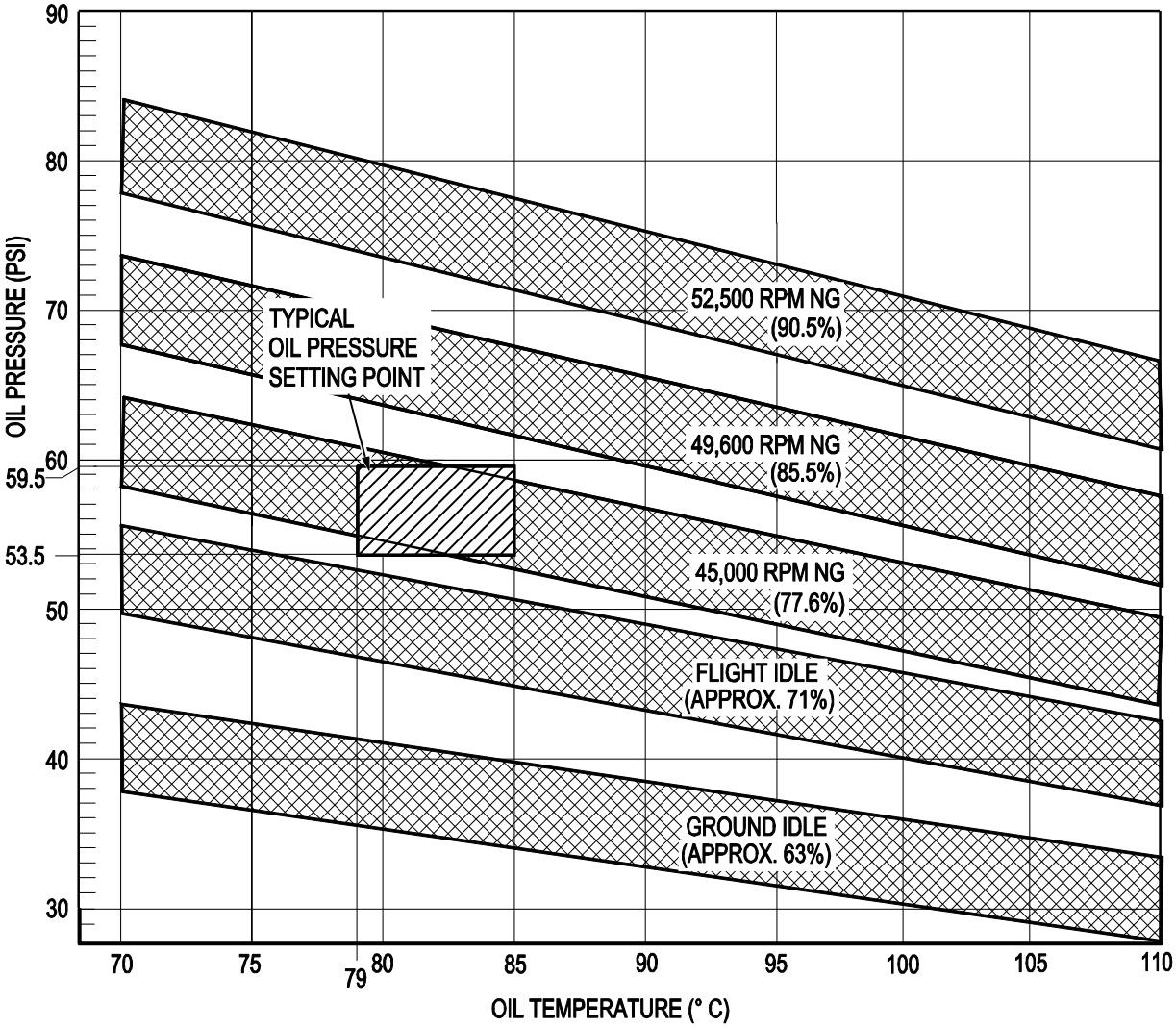


Figure 20 – Ice Detector system



NOTES:

1. OIL PRESSURE (OP) MUST BE SET VIA THE PRESSURE ADJUSTING VALVE (PAV) TO OPERATE BETWEEN 53.5 PSI WITH OIL TEMPERATURE (OT) BETWEEN 79 °C AND 85 °C WITH N1 AT 77.6%
2. THE ABOVE LINES SHOW THE TYPICAL EFFECT OF OT ON OP. THE UPPER AND LOWER LINES FOR EACH ENGINE CONDITION REPRESENT TYPICAL OP VALUES FOR A GIVEN OT. THE RANGES MAY BE USED TO ADJUST OP UNTIL A N1 AT 77.6% CAN BE REACHED
3. NOTE THAT AS THE PRESSURE DROP OF OIL SYSTEM COMPONENTS (e.g. FILTER(S) AND COOLER) INCREASES OVER A PERIOD OF TIME, OP DECREASES.

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Figure 21 – Engine Oil Pressure setting PW206C

Annex 1

CHECKLIST AND VIBRATION SUMMARY CHART

The following checklist has been divided into three sections titled Ground Checks, Ground Run and Flight Checks which correspond with the main text. The GROUND CHECKS are to be completed prior to engine start, the GROUND RUN is with engine running on the ground and the FLIGHT CHECKS include hover, climb, level, autorotation and after shutdown checks.

In the interest of safety, the checklist should be completed sequentially as it has been ordered to minimise risk. Where this is not possible, at minimum all safety related items from preceding sections must be completed.

This checklist records the various steps in the ATP procedure and provides a column for recording information:

- a sequence of …… indicates that a numeric value is required;
- an empty square (☐) must be used, by ticking (☒), to indicate that all portions of the test have been successfully completed;
- a double-arrow symbol (⇔) indicates alternative procedures depending by configuration.

This column only provides the minimum space for recording information and if necessary, a carefully indexed accompanying sheet should be used. The checklist requires the signature of the person filling in the list and it this person's responsibility to ensure that all tests are done in accordance with the documentation.

A109E S/N : ..... Sheet 1 of 5	Acceptance Test Procedure Check List **1. GROUND CHECKS**	Date : ..... Checked By : .....

Paragraph	Test	Tick or comment
1.1	**Preliminary steps**	☐
1.2	**Internal Inspection**	☐
1.3	**External Inspection**	☐
1.4	**System Functional checks (power OFF)**	
1.4.1	Controls Installation and Marking	☐
1.4.2	Instrument Installation and Markings	☐
1.4.3	Switches/Circuit breakers Inst. and Mark.	☐
1.4.4	Initial Electrical System Power-up	☐
1.4.5	Caution and Warning Annunciators/Audio Warnings	☐
1.4.6	Engine fire test	☐
1.4.7	Electrical system - DC GEN BUS switches	☐ 1 GEN BUS ☐ 2 GEN BUS
1.4.8	Electrical system - AC Inverter Switches	☐ INV 1 ☐ INV 2
1.4.9	Electrical system - Engine Starting Circuit	☐
1.4.10	Fuel system	☐
1.4.11	Engine Air Particle Separator (EAPS)	☐ (if installed)
1.4.12	Cabin Ventilation system	☐
1.4.13	Windshield Wiper System	☐ (if installed)
1.4.14	Pitot Heat system	☐ Pitot 1 ☐ Pitot 2
1.4.15	Instrument Lighting System PED LT INST PNL OVHD/CSL	 ☐ ☐ ☐
1.4.16	Auxiliary and ANTISTORM Lighting system	☐ (if installed)
1.4.17	Cabin Light System	☐ (if installed)
1.4.18	Passenger's Warning Lights	☐ (if installed)

A109E S/N : …… Sheet 2 of 5	Acceptance Test Procedure Check List **1. GROUND CHECKS**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
1.4.19	Position Lights	☐
1.4.20	Anti-collision Lights	☐
1.4.21	Alternative Lights System	☐ (if installed)
1.4.22	Strobe Lights	☐ (if installed)
1.4.23	Landing Lights	☐
1.4.24	Landing Light (Search Light)	☐
1.4.25	Flood Lights	☐ (if installed)
1.4.26	ICS system and VHF radios (preliminary check)	
1-4	ICS	☐
5-9	VHF Radio	☐
10-12	ICS Fail mode	☐
13	Radio Master OVRD	☐
1.4.27	External Hoist	☐ (if installed)
1.4.28	Cargo Hook	(if installed)
1-8	Electrical release	☐
9-10	Manual release	☐
1.4.29	Emergency Floats	☐ (if installed)
1.4.30	Oxygen system	☐ (if installed)

A109E S/N : …… Sheet 3 of 5	Acceptance Test Procedure Check List **1. GROUND CHECKS**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
2 ⇔	**Initial Engine Start Procedures PW206C**	
2.1	Pre-start checks	☐
1.5.2	Engine starting	☐
1-5	Auto mode	☐
6-7	Manual mode	☐
8	Engine start	☐
9	Starter disengagement (N1= 50± 2)	.....NG1 .....NG2
1.6 ⇔	**Initial Engine Start Procedures ARRIUS 2K1**	
1.6.1	Pre-start checks	☐
1.6.2	Engine starting	☐
1-5	Auto mode	☐
6-7	Manual mode	☐
8	Engine start	☐
9	Starter disengagement (N1= 50± 2)	.....NG1 .....NG2
1.7	**Engine/Rotor checks**	
1.7.1	Throttle FLIGHT Setting	☐
1-6		Hp……ft OAT……°C
7	Generators Checks VDC=28±1	VDC1..... VDC2.....
		AMP1..... AMP2.....
8	Engine Instrument reading	N2/NR.....%
	Engine 1	N1.....% - TRQ.....%
	Engine 2	N1.....% - TRQ.....%
1.7.2 ⇔	Engine Oil pressure setting **PW206C**	ENG.1 oil Temp: ……°C Press: …….PSI ENG.2 oil Temp: ……°C Press: …….PSI
1.7.3 ⇔	Engine Oil pressure setting **ARRIUS 2K1**	ENG.1 oil Temp: ……°C Press: …….PSI ENG.2 oil Temp: ……°C Press: …….PSI

A109E S/N : …… Sheet 4 of 5	Acceptance Test Procedure Checklist **1. GROUND RUN**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
1.7.4	Rotor RPM Low warning (90±2)	NR.....%
	Rotor Warning (EDU1)	☐
	Aural Warning	☐
	Cabin acoustic signal	☐
1.7.5	Droop Compensation Control	☐
1.7.6 ⇔	Engine Matching **PW 206C**	
	TQ match (spilt < 2%)	TRQ1.....TRQ2.....
	TOT match (split < 5°C)	TOT1.....TOT2.....
1.7.7 ⇔	Engine Matching **ARRIUS 2K1**	
	TQ match (spilt < 2%)	TRQ1.....TRQ2.....
	TOT match (split < 10°C)	TOT1.....TOT2.....
	ΔN1 match (split < 0.5%)	ΔN1 (1)…….ΔN1 (2)…….
1.8	**System Functional check**	
1.8.1	Rotor tracking and balance	☐
1.8.2	N2 overspeed test **PW 206C**	☐
1.8.3 ⇔	Manual engine mode **PW 206C**	☐
1.8.4 ⇔	Manual engine mode **ARRIUS 2K1**	☐
1.8.5	Electrical System (Generator switches and Bus connections)	
1-6	Essential Bar 1	☐
7-12	Essential Bar 2	☐
1.8.6	Electrical system (Emergency Bus check)	☐
	Battery discharge caution	.....Volt
1.8.7	Electrical system (Emergency bus check with 22Ah battery)	☐
1.8.8	Fuel system	☐
1.8.9	Hydraulic Servo system	☐
1.8.10	Cyclic Control Magnetic Brake/Force gradient	☐

A109E S/N : ..... Sheet 5 of 5	Acceptance Test Procedure Checklist **1. GROUND RUN**	Date : ..... Checked By : .....

Paragraph	Test	Tick or comment	
1.8.11	IDS system		
2	ECU	Engine 1	Engine 2
	N1 %	.....	.....
	TOT C°	.....	.....
	TRQ %	.....	.....
	N2/NR %	.....	.....
3	DAU CH-A	Engine 1	Engine 2
	N1 %	.....	.....
	TOT C°	.....	.....
	TRQ %	.....	.....
	N2/NR %	.....	.....
4	DAU CH-B	Engine 1	Engine 2
	N1 %	.....	.....
	TOT C°	.....	.....
	TRQ %	.....	.....
	N2/NR %	.....	.....
6	Match data DAU/ECU		
⇔	(40C° TOT and 7%TQ) **PW206C**	☐	
⇔	(10°C TOT and 0.1% ΔN1) **TM ARRIUS 2K1**	☐	
1.8.12	E.C.S.	☐	
1.8.13	Bleed Air Heating	☐	
1.8.14	E.A.P.S.	☐	
1.8.15	Training Mode	☐	
1.8.16 ⇔	Engine shutdown **PW206C**		
3	Rotor Brake time to stop from 40% NR	.....sec (max 12sec)	
4	Engine deceleration 30% N1 to 0	.....sec (min 30 sec)	
1.8.17 ⇔	Engine shutdown **ARRIUS 2K1**		
3	Rotor Brake time to stop from 40% NR	.....sec (max 12sec)	
4	Engine deceleration 30% N1 to 0	.....sec (min 30 sec)	
1.8.18	**Post ground run check**	☐	

A109E S/N : …… Sheet 1 of 3	Acceptance Test Procedure Checklist **2. AVIONIC RUN** **Basic Avionic System & Kits**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
2.1	**Basic Avionic System**	
2.1.1	AG-06 ICS System	☐
2.1.2	A.F.C.S.	
1-8	SAS mode	☐
9-14	ATT mode	☐
For §§ 2.2 to 2.5 see page 10 and following		
2.6	**Kits**	(if installed)
2.6.1	**AG-06 ICS system EMS configuration**	☐
2.6.2	**RDR2000 Weather radar system**	
⇔ 1-10	Stand alone configuration	☐
⇔ 1-10	EFIS configuration	☐
2.6.3	**GARMIN 165 - GPS system**	Rec.Status.....
2	Present position (Ref Lat.....)	P.P. Lat.....
	(Ref Long.....)	Long.....
4		SV__ __ __ __ __ __ __ __
		SL__ __ __ __ __ __ __ __
⇔ 5-9	EFIS coupled	☐
⇔ 5-9	EHSI74 coupled	☐
2.6.4	**TRIMBLE 2101 - GPS system**	GPS Status.....
5	Present position (Ref Lat.....)	P.P. Lat.....
	(Ref Long.....)	Long.....
		SV__ __ __ __ __ __ __ __
		SL__ __ __ __ __ __ __ __
⇔ 6-11	EFIS coupled	☐
	BRNAV configuration	PA GPS.....mb
		PA ALT (pilot).....mb (1013.25)
⇔ 6-10	EHSI74 coupled	☐

A109E S/N : …… Sheet 2 of 3	Acceptance Test Procedure Checklist **2. AVIONIC RUN** **Kits**	Date : …… Checked By : ……
Paragraph	**Test**	**Tick or comment**
2.6.5	**Garmin GTN650 VHF/NAV#1/GP system**	
1	VHF radio section	☐
3	GPS section	GPS Status.....
4	Present position (Ref Lat.....)	P.P. Lat.....
	(Ref Long.....)	Long.....
		HDOP__ __ __ __ __ __ __ __
		HFOM __ __ (ft) - VFOM __ __ (ft)
6-12	EFIS coupled	☐
2.6.6	**WX1000 STORMOSCOPE system**	
1-5	Functional check	☐
6-9	Noise test	☐
10-12	Test Strike	☐
2.6.7 ⇔	**TAS497 TRAFIC ALERT SYSTEM (stand alone)**	
1-2	Power on self test	☐
3	Test screen	☐ test and audio
4-6	Range check	☐
1.6.8 ⇔	**TAS System (EFIS coupled)**	☐
2.6.9	**NAT NTX-138 VHF/FM – COM system**	
1-3	Radio check	☐ PLT ☐ CPLT ☐ DOCT
4	Squelch	☐
2.6.10	**HF950 HF/SELCAL - COM system**	
1-5	HF check	☐
6-7	SELCAL check	☐ (if module is installed)
2.6.11	**KHF1050 HF - COM system**	☐
2.6.12	**CHELTON 931 - DF system**	
1-4	VHF	☐
5-6	UHF	☐

A109E S/N : …… Sheet 3 of 3	Acceptance Test Procedure Checklist **2. AVIONIC RUN** **Kits**	Date : …… Checked By : ……
Paragraph	**Test**	**Tick or comment**
2.6.13	**MMD Skyforce Observer Mk.II/Mk.III - Moving Map system**	
1-3	GPS FIX	☐
4-6	Joystick and zoom check	☐
2.6.14	**Ice Detector System**	☐
2.6.15	**V/UHF FlexComm II – COM system**	☐
2.6.16	**V/UHF Rockwell Collins RT-8200 COM system**	
	V/UHF1	☐
	V/UHF2 (if installed)	☐
2.6.17	**External Loudspeakers (AA21 control panel)**	☐
2.6.18	**Alternative Lighting System**	☐
2.6.19	**DVR system VRDV-3000**	☐
2.6.20	**DVR system SAAB DiRECT CR**	☐
2.6.21	**DVR system DVFAR 2**	☐
2.6.22	**Video Down-Link ECU**	☐
2.6.23 ⇔	**Operator Console p/n 109-0719-67-383/-411**	☐
2.6.24 ⇔	**Operator Console p/n 109-B811-37-107**	☐
2.6.25 ⇔	**FLIR Ultraforce UF350EP**	☐
2.6.26 ⇔	**FLIR Star Safire HD**	☐
2.6.27	**Non-Essential Bus (if installed)**	☐
2.6.28	**I-Band transponder (if installed)**	☐
2.6.29	**3rd ICS Station (if installed)**	
	VHF1 check	☐
	VHF2 check	☐
	All other transceivers check	☐

A109E S/N : …… Sheet 1 of 1	Acceptance Test Procedure Checklist **2. AVIONIC RUN Collins/EHSI74**	Date : …… Checked By : ……
Paragraph	**Test**	**Tick or comment**
2.2	**COLLINS/EHSI74 SUITE**	**(if installed)**
2.2.1 ⇔	**VHF22A VHF/AM 1&2 COM systems**	
	VHF1	☐ Self test
		☐ Squelch
	VHF2	☐ Self test
		☐ Squelch
2.2.2 ⇔	**VHF22C VHF/AM 1&2 COM systems with 25 and 8.33 kHz frequency spacing**	☐
2.2.3	**EHSI74B – Electronic HSI**	☐
2.2.4	**VIR32 – NAV systems 1&2**	
	VOR1 self test	☐
	VOR2 self test	☐
	VOR test on pilot HSI (Stby)	☐
	ILS1 self test	☐
	ILS2 self test	☐
	ILS test on pilot HSI (Stby)	☐
	Marker beacon Self test	☐
2.2.5	**ADF60A - ADF system**	
	ADF self test	☐
	ANT mode	☐
	BFO mode	☐
2.2.6	**DME42 - DME system**	
	DME 1 test	☐
	DME 2 test	☐
2.2.7	**AA300 - Radar Altimeter system**	
1	Zero check	……feet
2-5	Self test e DH test	☐
2.2.8	**TDR90/TDR94 - Transponder system**	
	Self test	☐
2.2.9	**Flight director**	
1-4	System flag and advisory check	☐
	HDG mode	☐
	IAS mode	☐
	ALT & VS mode	☐
	GO AROUND mode	☐

A109E S/N : …… Sheet 1 of 2	Acceptance Test Procedure Checklist **2. AVIONIC RUN** **Collins/EFIS**	Date : …… Checked By : ……
Paragraph	**Test**	**Tick or comment**
2.3	**COLLINS/ROGERSON KRATOS SUITE**	**(if installed)**
2.3.1 ⇔	**VHF22A – VHF/AM 1&2 COM systems**	
	VHF1	☐ Self test
		☐ Squelch
	VHF2	☐ Self test
		☐ Squelch
2.3.2 ⇔	**VHF22C VHF/AM 1&2 COM systems with 25 and 8.33 kHz frequency spacing**	☐
2.3.3	**EFIS**	
2.3.3.1	**EADI**	
a-e	Self Test	☐ Test I ☐ Test II
f-h	DH/HZN SYNC	☐
2.3.3.2	**EHSI**	
a-e	Self Test	☐ Test I ☐ Test II
f-l	System Check	☐
m-q	Rev Mode check	
	ADI PLT	☐
	HSI PLT	☐
	ADI CPLT	☐
	HSI CPLT	☐
2.3.4	**VIR32 - NAV systems 1&2**	
2.3.4.1	VOR1 self test	☐
2.3.4.2	VOR2 self test	☐
2.3.4.3	ILS1 self test	☐
2.3.4.4	ILS2 self test	☐
2.3.4.5	Marker beacon Self test	☐
2.3.5 ⇔	**ADF60 - ADF system**	
	ADF self test	☐
	ANT mode	☐
	BFO mode	☐
2.3.6	**DME42 - DME system**	
	DME 1 test	☐
	DME2 test	☐

A109E S/N : …… Sheet 2 of 2	Acceptance Test Procedure Checklist **2. AVIONIC RUN** **Collins/EFIS**	Date : …… Checked By : ……
Paragraph	**Test**	**Tick or comment**
2.3.7	**AA300 - Radar Altimeter system**	
1	Zero check	…… feet
2-5	Self test e DH test	☐
2.3.8	**TDR90/TDR94 - Transponder system**	
	Self test	☐
2.3.9	**Flight director**	
a-d	System flag and advisory check	☐
e-f	Pilot/Copilot in cmd	☐
	HDG mode	☐
	IAS mode	☐
	ALT & VS mode	☐
	GO AROUND mode	☐

A109E S/N : …… Sheet 1 of 1	Acceptance Test Procedure Checklist **2. AVIONIC RUN King/EHSI74**	Date : …… Checked By : ……
Paragraph	**Test**	**Tick or comment**
2.4	**KING/EHSI74 SUITE**	
2.4.1 ⇔	**KX165 - VHF/AM 1&2 COM systems**	
	VHF1	☐ Squelch
	VHF2	☐ Squelch
2.4.2 ⇔	**KX165A VHF/AM 1&2 COM systems with 25 and 8.33 kHz frequency spacing**	☐
2.4.3	**EHSI74B**	☐
2.4.4	**KMR675 - Marker Beacon system**	
	Self test	☐
2.4.5	**KR87 - ADF system**	
1-4	ADF mode	☐
5	ANT mode	☐
6	BFO mode	☐
2.4.6	**AA300 - Radar Altimeter system**	
1-3	Zero check	☐
4-5	Self test e DH test	☐
2.4.7	**KDM706A - DME system**	
	Self test	☐
2.4.8	**KT71 / KT73 – Transponder system**	
	Self test	☐
2.4.9	**Flight director**	
1-4	System flag and advisory check	☐
	HDG mode	☐
	IAS mode	☐
	ALT & VS mode	☐
	GO AROUND mode	☐

A109E S/N : …… Sheet 1 of 2	Acceptance Test Procedure Checklist **2. AVIONIC RUN** **King/EFIS**	Date : …… Checked By : ……
Paragraph	**Test**	**Tick or comment**
2.5	**KING/EFIS SUITE**	(if installed)
2.5.1 ⇔	**KX165 - VHF/AM 1&2 COM systems**	
	VHF1	☐ Squelch
	VHF2	☐ Squelch
2.5.2 ⇔	**KX165A VHF/AM 1&2 COM systems with 25 and 8.33 kHz frequency spacing**	☐
2.5.3	**EFIS**	
2.5.3.1	**EADI**	
	Self Test	☐ Test I ☐ Test II
	DH/HZN SYNC	☐
2.5.3.2	**EHSI**	
	Self Test	☐ Test I ☐ Test II
	System Check	☐
	Rev Mode check	
	ADI PLT	☐
	HSI PLT	☐
	ADI CPLT	☐
	HSI CPLT	☐
2.5.4	**KMR675 - Marker Beacon system**	
	Self test	☐
2.5.5	**KR87 - ADF system**	
1-4	ADF mode	☐
5	ANT mode	☐
6	BFO mode	☐
2.5.6	**KDM706A - DME system**	
	Self test	☐
2.5.7	**AA300 - Radar Altimeter system**	
1-3	Zero check	☐
4-5	Self test e DH test	☐
2.5.8	**KT71 / KT73 – Transponder system**	
	Self test	☐

A109E S/N : …… Sheet 2 of 2	Acceptance Test Procedure Checklist **2. AVIONIC RUN** **King/EFIS**	Date : …… Checked By : ……
Paragraph	**Test**	**Tick or comment**
2.5.9	**Flight director**	
1-4	System flag and advisory check	☐
	HDG mode	☐
	IAS mode	☐
	ALT & VS mode	☐
	GO AROUND mode	☐

A109E S/N : …… Sheet 1 of 4	Acceptance Test Procedure Checklist **3. FLIGHT CHECKS**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
3.1	**Aircraft Configuration**	
3.2	**Ground checks**	
3.2.1	Preflight, Start, Pre-Takeoff Checks	☐
4	SAS/ATT check	☐
3.2.2	Taxi Characteristics	☐
b	Nose Wheel control	☐
c-d	Parking and Toe brake check	☐
3.3	**Hover**	
3.3.1	Lift-Off to Hover Control and Vibration Checks	☐
3.3.2	Hovering IGE (3 Feet Skid Height)	
1-4	Instrument Vibration and Caution Check	☐
5	Rigging Check Cyclic	☐
	Pedals	☐
3.3.3	Hovering IGE (10 Feet Skid Height)	
1-3	Control Response and Forces	☐
4	Engine maching check	☐
5	Main Rotor Tracking	☐
6	Power Assurance Check in Hover	Hp……..ft OAT……..°C
	ENG 1 (FLT) ENG2 (IDLE)	N1……% TOT……°C TRQ.....%
	ENG 1 (IDLE) ENG2 (FLT)	N1……% TOT……°C TRQ.....%
3.4	**Take-Off**	
3.4.1	Take-off and Acceleration to Level Flt	☐ Vib Levels ☐ Contr Resp ☐ Eng Resp ☐ Airspeed Indicators
3.4.2	Landing Gear Operation Check	☐ …… retraction time (max 10 sec)

A109E S/N : ..... Sheet 2 of 4	Acceptance Test Procedure Checklist **3. FLIGHT CHECKS**	Date : ..... Checked By : .....

Paragraph	Test	Tick or comment			
3.5	**Level Flight**				
3.5.1	Vibs, Track, Contr, Eng / Transmission				
1 to 2		80 IAS	140 IAS	Vh	VNE
	Vibration Check	☐	☐	☐	☐
	Main Rotor Track	☐	☐	☐	☐
	Controllability	☐	☐	☐	
	Pedal Position			☐	
	Eng 1 Oil Press			.....PSI	
	Temp			.....C°	
	Eng 2 Oil Press			.....PSI	
	Temp			.....C°	
	Transmission Oil Press			.....PSI	
	Temp			.....C°	
3.5.2	Heavy Weight Vibration Levels				
1 to 3		Pilot Vertical	Pilot Lateral	2nd Pax Vertical	2nd Pax Lateral
	MPOG	☐	☐	☐	☐
	OGE Hover (102%)	☐	☐	☐	☐
	40 KIAS(102%)	☐	☐	☐	☐
	40 KIAS(100%)	☐	☐	☐	☐
	80 KIAS	☐	☐	☐	☐
	120 KIAS	☐	☐	☐	☐
	Vh	☐	☐	☐	☐
3.5.3	IDS System Check				
1	ECU	Engine 1		Engine 2	
	N1 %	.....		.....	
	TOT C°	.....		.....	
	TRQ %	.....		.....	
	N2/NR %	.....		.....	

A109E S/N : ..... Sheet 3 of 4	Acceptance Test Procedure Checklist **3. FLIGHT CHECKS**	Date : ..... Checked By : .....

Paragraph	Test	Tick or comment
2	EDU CH-A	Engine 1 Engine 2
	N1 %	....
	TOT C°	....
	TRQ %	....
	N2/NR %	....
3	EDU CH-B	Engine 1 Engine 2
	N1 %	....
	TOT C°	....
	TRQ %	....
	N2/NR %	....
5	Match data DAU/ECU	
	(40C° TOT and 7%TQ) **PW206C**	☐
	(10°C TOT and 0.1% ΔN1) **TM ARRIUS 2K1**	☐
3.5.4	Electrical System (generator check)	
	Generators load (between 16 and 20 Amp)	1:..... Amp - 2: .....Amp
	Gen 2 Load (Gen 1 OFF)	..... Amp
	Gen 1 Load (Gen 2 OFF)	..... Amp
	Max Gen Load	1:..... Amp - 2: .....Amp
	Generator Stability	☐
3.6	**Climb**	
3.6.1	Rigging, Force Trim, Track, Vib Checks	☐ Cyclic Rigging ☐ Pedal Rigging ☐ F-TRIM ☐ Tracking ☐ Vib Levels
3.7	**Engine Power Assurance Check**	
	Power Assurance Check	Hp……..ft OAT……..°C
	ENG 1 (MAN) ENG2 (AUTO)	N1……% - TOT……°C - TRQ.....%
	ENG 1 (AUTO) ENG2 (MAN)	N1……% - TOT……°C - TRQ.....%
3.8	**Autorotation**	
3.8.1	ROTOR RPM High Warning	☐
3.8.2	Collective Control Min Pitch Setting	NR……..% Hp……..ft Fuel 1/2 ……/……kg OAT……°C

A109E S/N : ..... Sheet 4 of 4	Acceptance Test Procedure Checklist **3. FLIGHT CHECKS**	Date : ..... Checked By : .....
Paragraph	**Test**	**Tick or comment**
3.8.3	Autorotation Controllability	☐
3.8.4	Power Recovery from Autorotation	☐
3.9	**Flight Instruments Checks**	
	Flight Instruments Checks	☐ Airspeed Indicator ☐ Altimeter ☐ Alternate static source ☐ Vertical Speed Indicator ☐ Magnetic Compass
3.10	**Landing Gear and Brake Checks** Landing Gear Extension time Running Landing	☐ Caution/audio ..... sec (max 9 sec.) ☐
3.11	**ENGINE OUT Warning check** ENG1 Warning ENG2 Warning	☐ Warning/audio ☐ Warning/audio
3.12	**Post-Flight Checks**	☐

A109E S/N : …… Sheet 1 of 1	Acceptance Test Procedure Checklist **4. AVIONIC FLIGHT**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment	
4.1	**Basic Avionic System**		
4.1.1	AG-06 ICS System	Pilot	Copilot (if installed)
1	Reception Capability	☐ VHF 1 ☐ VHF 2 ☐ …… ☐ VOR ☐ DME ☐ ADF ☐ MKR	☐ VHF 1 ☐ VHF 2 ☐ …….. ☐ VOR ☐ DME ☐ ADF ☐ MKR
2	Internal Loud Speaker Operation	☐ Hover ☐ Climb MCP ☐ Descent ☐ 40 KIAS ☐ 100 KIAS ☐ Vh	☐ Hover ☐ Climb MCP ☐ Descent ☐ 40 KIAS ☐ 100 KIAS ☐ Vh
4.1.2	**AFCS System**		
	SAS #1 and #2 engaged	ATTD HOLD ON	ATTD HOLD OFF
1	Hover	☐	☐
2	120 KIAS Level Flight (and Beep Trim)	☐	☐
	SAS #1 engaged	ATTD HOLD ON	ATTD HOLD OFF
1	Hover	☐	☐
2	120 KIAS Level Flight (and Beep Trim)	☐	☐
	SAS #2 engaged	ATTD HOLD ON	ATTD HOLD OFF
1	Hover	☐	☐
2	120 KIAS Level Flight (and Beep Trim)	☐	☐

A109E S/N : …… Sheet 1 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **COLLINS EHSI74**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
4.2	**COLLINS/EHSI74 SUITE**	
4.2.1	**VHF22A/C - VHF/AM #1 COM system**	
1 to 3	Clarity	RX TX
	Stat……..... Freq ……MHz.	……/5 ……/5
	Volume Adjustment	☐
	Sidetone	☐
	Squelch	☐
	VHF22A/C - VHF/AM #2 COM system	
1 to 3	Clarity	RX TX
	Stat……..... Freq ……MHz.	……/5 ……/5
	Volume Adjustment	☐
	Sidetone	☐
	Squelch	☐
4.2.2	**VIR32A - VOR/LOC/GS/MB System**	
4.2.2.2	<u>VOR 1 Check</u>	
a-b	Station …… - Freq …… MHz	…… BRG Auto / …… BRG Man
	Height …… ft Dist …… nm	☐ Clarity ☐ Volume
c	Select CRS = Ref. BRG -10°	☐ Deviation bar deflects 2 dots left
	Select CRS = Ref. BRG +10°	☐ Deviation bar deflects 2 dots right
	Left and Right Heading Changes	☐ Deviation bar deflects
d	Overfly	☐ TO/FR Direction Change
e	Reference Point ID ……..	Lat …… Long ……
	Station 1…… - Known BRG ……	…… BRG Auto / …… BRG Man
	Station 2…… - Known BRG ……	…… BRG Auto / …… BRG Man
4.2.2.2	<u>VOR 2 Check</u>	
a-b	Station …… Freq …… MHz	…… BRG Auto / …… BRG Man
	Height …… ft Dist …… nm	☐ Clarity ☐ Volume

A109E S/N : …… Sheet 2 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **COLLINS EHSI74**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
c	Select CRS = Ref. BRG -10°	☐ Deviation Bar deflects 2 left
	Select CRS = Ref. BRG +10°	☐ Deviation Bar deflects 2 right
	Left and Right Heading Changes	☐ Deviation Bar deflects
d	Overfly	☐ TO/FR Direction Change
e	Ref. Point ID ……..	Lat …… Long ……
	Station 1…… - Known BRG ……	…… BRG Auto / …… BRG Man
	Station 2…… - Known BRG ……	…… BRG Auto / …… BRG Man
4.2.2.3.	ILS1 check	☐
a-c	Station …… - Freq …… MHz	☐ LOC Functionality
	Dist …… nm	☐ GS Functionality
4.2.2.3.	ILS2 check	
a-c	Station …… - Freq …… MHz	☐ LOC Functionality
	Dist …… nm	☐ GS Functionality
4.2.2.3.	Marker Beacon System	1 2
d	* Blue Light at OM 300 Hz Audio (_ _ _)	☐ ☐
	Orange Light at MM 1000 Hz Audio (. _ . _)	☐ ☐
	H/L sensitivity	☐ ☐
4.2.3	**ADF60 – ADF system**	
4.2.3.3.a	Ref. Point ID …… or	HDG Rel BRG Disp BRG
	Lat …… Long ……	…… 0° ……
		…… 45° ……
	NDB Station ……	…… 90° ……
	Freq ……MHz	…… 135° ……
	Ref. BRG ……	…… 180° ……
		…… 225° ……
		…… 270° ……
		…… 315° ……

* This item may be tested on the ground with adequate an simulator

A109E **S/N :** …… **Sheet 3 of 4**	**Acceptance Test Procedure Checklist** **4. FLIGHT CHECKS** **COLLINS EHSI74**	**Date :** …… **Checked By :** ……
4.2.3.3.b	Receiver Check Station Freq (kHz) Ref. BRG 1 …… …… …… 2 …… …… ……	Ref. Point …… or Lat …… Long …… Disp BRG …… Audio ☐ Disp BRG …… Audio ☐
4.2.3.3.c	Needle Reversal	Needle ☐
4.2.3.3.d	ANT mode	☐
4.2.4	**DME42 - DME system**	
DME1	Ref. Point ID…… Lat …… Long …… Stations Freq (MHz) Dist (nm) 1 …… …… …… 2 …… …… ……	☐ Audio Signal Ind. Dist (nm) 1 …… 2 ……
DME2	Ref. Point ID…… Lat …… Long …… Stations Freq (MHz) Dist (nm) 1 …… …… …… 2 …… …… ……	☐ Audio Signal Ind. Dist (nm) 1 …… 2 ……
DME HOLD	Ref. Point ID…… Lat …… Long …… Stations Freq (MHz) Dist (nm) 1 …… …… …… 2 …… …… ……	☐ Audio Signal Ind. Dist (nm) 1 …… 2 ……
	Ground Speed and TTS Check Final Dist Error	☐ …… nm
4.2.5	**AA300 - Radar Altimeter system**	
a	Zero Check	…… ft (max ±5 ft)
b	Low Height Check (max error ±5 ft)	Ref. Ht …… ft RA reading …… ft
c to d	DH Annunciator Test	☐ DH light

A109E S/N : …… Sheet 4 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **COLLINS EHSI74**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
4.2.6	**TDR90/TDR94 - Transponder system**	
1 to 4	Mode 3C code …… Altitude …… ft (QNE) Ident Capability	ATC Reply: Code …… Altitude …… ft (QNE) ☐
4.2.7	**FLIGHT DIRECTOR**	
4.2.7.1	HDG mode	☐
4.2.7.2	V/S mode	☐
	ALT mode	☐
4.2.7.3	IAS mode	☐
	A/S trim	☐
4.2.7.4	NAV mode	
	VOR 1	☐
	VOR 2	☐
	OSS	☐
4.2.7.5	VOR APR mode	
	VOR 1	☐
	VOR 2	☐
	OSS	☐
4.2.7.6	ILS mode	
	ILS 1	☐
	ILS 2	☐
	AUTOLEVEL	☐
4.2.7.7*	BACK COURSE mode	☐
4.2.7.8	GO AROUND mode	☐ ROC ……fpm

* This function may be verified with a ground test using an adequate simulator

A109E S/N : …… Sheet 1 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **COLLINS EFIS**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
4.3	**COLLINS/EFIS SUITE**	
4.3.1	**VHF 22A/C VHF/AM #1 COM system**	
1 to 3	Clarity	RX TX
	Stat……..... Freq ……MHz.	……/5 ……/5
	Volume Adjustment	☐
	Sidetone	☐
	Squelch	☐
4.3.1	**VHF 22A/C VHF/AM #2 COM system**	
1 to 3	Clarity	RX TX
	Stat……..... Freq ……MHz.	……/5 ……/5
	Volume Adjustment	☐
	Sidetone	☐
	Squelch	☐
4.3.2	**VIR32A - VOR/LOC/GS/MB system**	
4.3.2.3	<u>VOR 1 Check</u>	
a-b	Station …… - Freq …… MHz	…… BRG Auto / …… BRG Man
	Height …… ft Dist …… nm	☐ Clarity ☐ Volume
c	Select CRS = Ref. BRG -10°	☐ Deviation bar deflects 2 dots left
	Select CRS = Ref. BRG +10°	☐ Deviation bar deflects 2 dots right
	Left and Right Heading Changes	☐ Deviation bar deflects
d	Overfly	☐ TO/FR Direction Change
e	Reference Point ID ……..	Lat …… Long ……
	Station 1…… - Known BRG ……	…… BRG Auto / …… BRG Man
	Station 2…… - Known BRG ……	…… BRG Auto / …… BRG Man
4.3.2.3	<u>VOR 2 Check</u>	
a-b	Station …… Freq …… MHz	…… BRG Auto / …… BRG Man
	Height …… ft Dist …… nm	☐ Clarity ☐ Volume

A109E S/N : …… Sheet 2 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **COLLINS EFIS**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
c	Select CRS = Ref. BRG -10°	☐ Deviation Bar deflects 2 left
	Select CRS = Ref. BRG +10°	☐ Deviation Bar deflects 2 right
	Left and Right Heading Changes	☐ Deviation Bar deflects
d	Overfly	☐ TO/FR Direction Change
e	Ref. Point ID ……..	Lat …… Long ……
	Station 1…… - Known BRG ……	…… BRG Auto / …… BRG Man
	Station 2…… - Known BRG ……	…… BRG Auto / …… BRG Man
4.3.2.4	ILS1 check	☐
a-c	Station …… Freq …… MHz	☐ LOC Functionality
	Dist …… nm	☐ GS Functionality
4.3.2.4	ILS2 check	
a-c	Station …… Freq …… MHz	☐ LOC Functionality
	Dist …… nm	☐ GS Functionality
4.3.2.4	Marker Beacon System	1 2
e	* Blue Light at OM 300 Hz Audio (_ _ _)	☐ ☐
	Orange Light at MM 1000 Hz Audio (. _ . _)	☐ ☐
	H/L sensitivity	☐ ☐
4.3.3	**ADF60 - ADF system**	
	Ref. Point ID …… or	HDG Rel. BRG Disp. BRG
	Lat …… Long ……	…… 0° ……
		…… 45° ……
	NDB Station ……	…… 90° ……
	Freq ……MHz	…… 135° ……
	Ref BRG ……	…… 180° ……
		…… 225° ……
		…… 270° ……
		…… 315° ……

* This item may be tested on the ground with adequate an simulator

A109E **S/N :** …… **Sheet 3 of 4**	**Acceptance Test Procedure Checklist** **4. FLIGHT CHECKS** **COLLINS EFIS**	**Date :** …… **Checked By :** ……
	Receiver Check Stations Freq (kHz) Ref BRG 1 …… …… …… 2 …… …… …… Needle Reversal ANT mode	Ref. Position …… or Lat …… Lon …… Disp BRG …… Audio ☐ Disp BRG …… Audio ☐ Needle ☐ ☐
4.3.4	**DME42 - DME System**	
DME1	Ref. Point ID…… Lat …… Long …… Stations Freq (MHz) Dist (nm) 1 …… …… …… 2 …… …… ……	☐ Audio Signal Ind. Dist (nm) 1 …… 2 ……
DME2	Ref. Point ID…… Lat …… Long …… Stations Freq (MHz) Dist (nm) 1 …… …… …… 2 …… …… ……	☐ Audio Signal Ind. Dist (nm) 1 …… 2 ……
DME HOLD	Ref. Point ID…… Lat …… Long …… Stations Freq (MHz) Dist (nm) 1 …… …… …… 2 …… …… ……	☐ Audio Signal Ind. Dist (nm) 1 …… 2 ……
	Ground Speed and TTS Check Final Dist Error	☐ …… nm
4.3.5	**AA300 - Radar Altimeter system**	
1 2 3 to 4	Zero Check Low Height Check (max error ±5 ft) DH Annunciator Test	…… ft (max ±5 ft) Ref. Ht …… ft Reading …… ft ☐ DH light

A109E S/N : …… Sheet 4 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **COLLINS EFIS**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
4.3.6	**TDR90 /TDR94 - Transponder system**	
1 to 4	Mode 3C code …… Altitude …… ft (QNE) Ident Capability	ATC Reply: Code …… Altitude …… ft (QNE) ☐
4.3.7	**FLIGHT DIRECTOR**	
4.3.7.1	HDG mode	☐
	Copilot in command	☐
4.3.7.2	V/S mode	☐
	ALT mode	☐
4.3.7.3	IAS mode	☐
	A/S trim	☐
4.3.7.4	NAV mode	
	VOR 1	☐
	VOR 2	☐
	OSS	☐
4.3.7.5	VOR APR mode	
	VOR 1	☐
	VOR 2	☐
	OSS	☐
4.3.7.6	ILS mode	
	ILS 1	☐
	ILS 2	☐
	AUTOLEVEL	☐
*4.3.7.7	BACK COURSE mode	☐
4.3.7.8	GO AROUND mode	☐ ROC……fpm
4.3.7.9	REV MODE with the F/D coupled	☐

* This function may be verified with a ground test using an adequate simulator

A109E S/N : …… Sheet 1 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **KING EHSI74**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
4.4	**KING/EHSI74 SUITE**	
4.4.1	**KX165/165A VHF/AM #1 COM system**	
1 to 3	Clarity	RX TX
	Stat……..... Freq ……MHz.	……/5 ……/5
	Volume Adjustment	☐
	Sidetone	☐
	Squelch	☐
	KX165/165A VHF/AM #2 COM system	
1 to 3	Clarity	RX TX
	Stat……..... Freq ……MHz.	……/5 ……/5
	Volume Adjustment	☐
	Sidetone	☐
	Squelch	☐
4.4.2	**KX165/165A - VOR/LOC/GS/MB System**	
4.4.2.3	<u>VOR 1 Check</u>	
a-b	Station …… - Freq …… MHz	…… BRG Auto / …… BRG Man
	Height …… ft Dist …… nm	☐ Clarity ☐ Volume
c	Select CRS = Ref. BRG -10°	☐ Deviation bar deflects 2 dots left
	Select CRS = Ref. BRG +10°	☐ Deviation bar deflects 2 dots right
	Left and Right Heading Changes	☐ Deviation bar deflects
d	Overfly	☐ TO/FR Direction Change
e	Reference Point ID ……..	Lat …… Long ……
	Station 1…… - Known BRG ……	…… BRG Auto / …… BRG Man
	Station 2…… - Known BRG ……	…… BRG Auto / …… BRG Man
4.4.2.3	<u>VOR 2 Check</u>	
a-b	Station …… Freq …… MHz	…… BRG Auto / …… BRG Man
	Height …… ft Dist …… nm	☐ Clarity ☐ Volume

A109E S/N : …… Sheet 2 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **KING EHSI74**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
c	Select CRS = Ref. BRG -10°	☐ Deviation Bar deflects 2 left
	Select CRS = Ref. BRG +10°	☐ Deviation Bar deflects 2 right
	Left and Right Heading Changes	☐ Deviation Bar deflects
d	Overfly	☐ TO/FR Direction Change
e	Ref. Point ID ……..	Lat …… Long ……
	Station 1…… - Known BRG ……	…… BRG Auto / …… BRG Man
	Station 2…… - Known BRG ……	…… BRG Auto / …… BRG Man
4.4.2.4	ILS1 check	☐
a-c	Station …… Freq …… MHz	☐ LOC Functionality
	Dist …… nm	☐ GS Functionality
4.4.2.4	ILS2 check	
a-c	Station …… Freq …… MHz	☐ LOC Functionality
	Dist …… nm	☐ GS Functionality
4.4.2.5	Marker Beacon System	1 2
a-c	* Blue Light at OM 300 Hz Audio (_ _ _)	☐ ☐
	Orange Light at MM 1000 Hz Audio (. _ . _)	☐ ☐
	H/L sensitivity	☐ ☐
4.4.3	**KR87 - ADF system**	
c	Ref. Point ID …… or	HDG Rel. BRG Disp. BRG
	Lat …… Long ……	…… 0° ……
		…… 45° ……
	NDB Station ……	…… 90° ……
	Freq ……MHz	…… 135° ……
	Ref BRG ……	…… 180° ……
		…… 225° ……
		…… 270° ……
		…… 315° ……

* This item may be tested on the ground with adequate an simulator

A109E **S/N :** …… **Sheet 3 of 4**	**Acceptance Test Procedure Checklist** **4. FLIGHT CHECKS** **KING EHSI74**	**Date :** …… **Checked By :** ……
	Receiver Check Stations Freq (kHz) Ref BRG 1 …… …… …… 2 …… …… ……	Ref. Position …… or Lat …… Lon …… Disp BRG …… Audio ☐ Disp BRG …… Audio ☐
	Needle Reversal ANT mode	Needle ☐ ☐
4.4.4	**KDM706A - DME System**	
DME1	Ref. Point ID…… Lat …… Long …… Stations Freq (MHz) Dist (nm) 1 …… …… …… 2 …… …… ……	☐ Audio Signal Ind. Dist (nm) 1 …… 2 ……
DME2	Ref. Point ID…… Lat …… Long …… Stations Freq (MHz) Dist (nm) 1 …… …… …… 2 …… …… ……	☐ Audio Signal Ind. Dist (nm) 1 …… 2 ……
DME HOLD	Ref. Point ID…… Lat …… Long …… Stations Freq (MHz) Dist (nm) 1 …… …… …… 2 …… …… ……	☐ Audio Signal Ind. Dist (nm) 1 …… 2 ……
	Ground Speed and TTS Check Final Dist Error	☐ …… nm
4.4.5	**AA300 - Radar Altimeter system**	
1 2 3 to 4	Zero Check Low Height Check (max error ±5 ft) DH Annunciator Test	…… ft (max ±5 ft) Ref. Ht …… ft Reading …… ft ☐ DH light

A109E S/N : …… Sheet 4 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **KING EHSI74**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
4.4.6	**KT71 - Transponder System**	
1 to 4	Mode 3C code …… Altitude …… ft (QNE) Ident Capability	ATC Reply: Code …… Altitude …… ft (QNE) ☐
4.4.7	**FLIGHT DIRECTOR**	
4.4.7.1	HDG mode	☐
4.4.7.2	V/S mode	☐
	ALT mode	☐
4.4.7.3	IAS mode	☐
	A/S trim	☐
4.4.7.4	NAV mode	
	VOR 1	☐
	VOR 2	☐
	OSS	☐
4.4.7.5	VOR APR mode	
	VOR 1	☐
	VOR 2	☐
	OSS	☐
4.4.7.6	ILS mode	
	ILS 1	☐
	ILS 2	☐
	AUTOLEVEL	☐
*4.4.7.7	BACK COURSE	☐
4.4.7.8	GO AROUND	☐ ROC ……fpm

* This function may be verified with a ground test using an adequate simulator

A109E S/N : …… Sheet 1 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **KING-EFIS**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
4.5	**KING/EFIS SUITE**	
4.5.1	**KX165/165A VHF/AM #1 COM system**	
1 to 3	Clarity	RX TX
	Stat……..... Freq ……MHz.	……/5 ……/5
	Volume Adjustment	☐
	Sidetone	☐
	Squelch	☐
4.5.1	**KX165/165A VHF/AM #2 COM system**	
1 to 3	Clarity	RX TX
	Stat……..... Freq ……MHz.	……/5 ……/5
	Volume Adjustment	☐
	Sidetone	☐
	Squelch	☐
4.5.2	**KX165/165A - VOR/LOC/GS/MB System**	
4.5.2.3	<u>VOR 1 Check</u>	
a-b	Station …… - Freq …… MHz	…… BRG Auto / …… BRG Man
	Height …… ft Dist …… nm	☐ Clarity ☐ Volume
c	Select CRS = Ref. BRG -10°	☐ Deviation bar deflects 2 dots left
	Select CRS = Ref. BRG +10°	☐ Deviation bar deflects 2 dots right
	Left and Right Heading Changes	☐ Deviation bar deflects
d	Overfly	☐ TO/FR Direction Change
e	Reference Point ID ……..	Lat …… Long ……
	Station 1…… - Known BRG ……	…… BRG Auto / …… BRG Man
	Station 2…… - Known BRG ……	…… BRG Auto / …… BRG Man
4.5.2.3	<u>VOR 2 Check</u>	
a-b	Station …… Freq …… MHz	…… BRG Auto / …… BRG Man
	Height …… ft Dist …… nm	☐ Clarity ☐ Volume

A109E S/N : …… Sheet 2 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **KING EFIS**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
c	Select CRS = Ref. BRG -10°	☐ Deviation Bar deflects 2 left
	Select CRS = Ref. BRG +10°	☐ Deviation Bar deflects 2 right
	Left and Right Heading Changes	☐ Deviation Bar deflects
d	Overfly	☐ TO/FR Direction Change
e	Ref. Point ID ……..	Lat …… Long ……
	Station 1…… - Known BRG ……	…… BRG Auto / …… BRG Man
	Station 2…… - Known BRG ……	…… BRG Auto / …… BRG Man
4.5.2.4	ILS1 check	☐
a-c	Station …… Freq …… MHz	☐ LOC Functionality
	Dist …… nm	☐ GS Functionality
4.5.2.4	ILS2 check	
a-c	Station …… Freq …… MHz	☐ LOC Functionality
	Dist …… nm	☐ GS Functionality
4.5.2.4	Marker Beacon System	1 2
e	* Blue Light at OM 300 Hz Audio (_ _ _)	☐ ☐
	Orange Light at MM 1000 Hz Audio (. _ . _)	☐ ☐
	H/L sensitivity	☐ ☐
4.5.3	**KR87 - ADF system**	
4.5.3.3 a	Ref. Point ID …… or	HDG Rel. BRG Disp. BRG
	Lat …… Long ……	…… 0° ……
		…… 45° ……
	NDB Station ……	…… 90° ……
	Freq ……MHz	…… 135° ……
	Ref BRG ……	…… 180° ……
		…… 225° ……
		…… 270° ……
		…… 315° ……

* This item may be tested on the ground with adequate an simulator

A109E S/N : ..... Sheet 3 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **KING EFIS**	Date : ..... Checked By : .....
b	Receiver Check Stations Freq (kHz) Ref BRG 1 .... 2	Ref. Position ..... or Lat ..... Lon ..... Disp BRG ..... Audio ☐ Disp BRG ..... Audio ☐
c	Needle Reversal	Needle ☐
d	ANT mode	☐
4.5.4	**KDM706 - DME System**	
DME1	Ref. Point ID..... Lat ..... Long ..... Stations Freq (MHz) Dist (nm) 1 .... 2	☐ Audio Signal Ind. Dist (nm) 1 ..... 2 .....
DME2	Ref. Point ID..... Lat ..... Long ..... Stations Freq (MHz) Dist (nm) 1 .... 2	☐ Audio Signal Ind. Dist (nm) 1 ..... 2 .....
DME HOLD	Ref. Point ID..... Lat ..... Long ..... Stations Freq (MHz) Dist (nm) 1 .... 2	☐ Audio Signal Ind. Dist (nm) 1 ..... 2 .....
	Ground Speed and TTS Check Final Dist Error	☐ ..... nm
4.5.5	**AA300 - Radar Altimeter System**	
1	Zero Check	..... ft (max ±5 ft)
2	Low Height Check (max error ±5 ft)	Ref. Ht ..... ft Reading ..... ft
3 to 4	DH Annunciator Test	☐ DH light

A109E S/N : ..... Sheet 4 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **KING EFIS**	Date : ..... Checked By : .....

Paragraph	Test	Tick or comment
4.5.6	**KT71 - Transponder System**	
1 to 4	Mode 3C code ..... Altitude ..... ft (QNE) Ident Capability	ATC Reply: Code ..... Altitude ..... ft (QNE) ☐
4.5.7	**FLIGHT DIRECTOR**	
1	HDG mode	☐
2	V/S mode	☐
	ALT mode	☐
3	IAS mode	☐
	A/S trim	☐
4	NAV mode	
	VOR 1	☐
	VOR 2	☐
	OSS	☐
5	VOR APR mode	
	VOR 1	☐
	VOR 2	☐
	OSS	☐
6	ILS mode	
	ILS 1	☐
	ILS 2	☐
	AUTOLEVEL	☐
*7	BACK COURSE	☐
8	GO AROUND	☐ ROC .....fpm
9	HDG mode	☐

* This function may be verified with a ground test using an adequate simulator

A109E S/N : ..... Sheet 1 of 3	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **Avionics kits**	Date : ..... Checked By : .....

Paragraph	Test	Tick or comment
4.6	**AVIONIC KITS**	**(if installed)**
4.6.1	**RDR2000 Weather Radar**	☐
4.6.2	**GARMIN 165 - GPS System**	
4.6.2.2	GPS	..... Receiver Status
		..... DOP (1 = good/ 10 = poor)
	GPS	Present Position at overfly.
	Waypoint 1	
	Lat	Lat .....
	Long	Long .....
	Waypoint 2	
	Lat	Lat .....
	Long	Long .....
	Waypoint 3	
	Lat	Lat .....
	Long	Long .....
4.6.2.3	NAV MODE with GPS COUPLED	☐
4.6.3	**TRIMBLE 2101 - GPS System**	
4.6.3.2	GPS	..... Receiver Status
		..... DOP (1 = good/ 10 = poor)
	GPS	Present Position at overfly.
	Waypoint 1	
	Lat	Lat .....
	Long	Long .....
	Waypoint 2	
	Lat	Lat .....
	Long	Long .....
	Waypoint 3	
	Lat	Lat .....
	Long	Long .....
4.6.3.3	NAV MODE with GPS COUPLED	☐

A109E S/N : …… Sheet 2 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **Avionics kits**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
4.6.4	**GARMIN GTN650 VHF/NAV#1/GPS System**	
4.6.4.1	VHF/AM radio section	☐
4.6.4.2	NAV#1 section - VOR#1 Station …… - Freq …… MHz Height …… ft Dist …… nm Select CRS = Ref. BRG -10° Select CRS = Ref. BRG +10° Left and Right Heading Changes Overfly Reference Point ID …….. Station 1…… - Known BRG …… Station 2…… - Known BRG ……	 …… BRG Auto / …… BRG Man ☐ Clarity ☐ Volume ☐ Deviation bar deflects 2 dots left ☐ Deviation bar deflects 2 dots right ☐ Deviation bar deflects ☐ TO/FR Direction Change Lat …… Long …… …… BRG Auto / …… BRG Man …… BRG Auto / …… BRG Man
4.6.4.3	NAV#1 section - ILS#1 Station …… Freq …… MHz Dist …… nm	 ☐ LOC Functionality ☐ GS Functionality
4.6.4.5	GPS section GPS Waypoint 1 …… Lat …… Long …… Waypoint 2 …… Lat …… Long …… Waypoint 3 …… Lat …… Long …… NAV MODE with GPS COUPLED	 Present Position at overfly. Lat …… Long …… Lat …… Long …… Lat …… Long …… ☐

A109E S/N : …… Sheet 3 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **Avionics kits**	Date : …… Checked By : ……

Paragraph	Test	Tick or comment
4.6.5	**KN53 NAV#2 System**	
4.6.5.3	VOR#2	
	Station …… - Freq …… MHz	…… BRG Auto / …… BRG Man
	Height …… ft Dist …… nm	☐ Clarity ☐ Volume
	Select CRS = Ref. BRG -10°	☐ Deviation bar deflects 2 dots left
	Select CRS = Ref. BRG +10°	☐ Deviation bar deflects 2 dots right
	Left and Right Heading Changes	☐ Deviation bar deflects
	Overfly	☐ TO/FR Direction Change
	Reference Point ID ……..	Lat …… Long ……
	Station 1…… - Known BRG ……	…… BRG Auto / …… BRG Man
	Station 2…… - Known BRG ……	…… BRG Auto / …… BRG Man
4.6.5.4	ILS#2	
	Station …… Freq …… MHz	☐ LOC Functionality
	Dist …… nm	☐ GS Functionality
4.6.6	**TAS 497 – Traffic Alerting system**	☐
4.6.7	**TAS System (EFIS coupled)**	☐
4.6.8	**NAT NTX-138 - VHF/FM COM system**	
	Clarity	RX TX
	Stat……..... Freq ……..MHz	……/5 ……/5
	Mod……..	
	Volume Adjustment	☐
	Sidetone	☐
	Squelch	☐

A109E S/N : …… Sheet 4 of 4	Acceptance Test Procedure Checklist **4. FLIGHT CHECKS** **Avionics kits**	Date : …… Checked By : ……
Paragraph	**Test**	**Tick or comment**
4.6.9	**HF950 - HF/SELCAL COM system** Clarity Stat……..... Freq ……..MHz Mod…….. Volume Adjustment Sidetone Squelch	 RX TX ……/5 ……/5 ☐ ☐ ☐
4.6.10	**KHF1050 - HF COM system** Clarity Stat……..... Freq ……..MHz Mod…….. Volume Adjustment Sidetone Squelch	 RX TX ……/5 ……/5 ☐ ☐ ☐
4.6.11	**CHELTON 931 - DF System**	☐
4.6.12	**SunLight SX-16 searchlight**	☐
4.6.13	**External Loudspeaker**	☐
4.6.14	**External Loudspeaker (AA21 control panel)**	☐
4.6.15	**TETRA Radio TMR 880i COM system**	☐
4.6.16	**V/UHF Wulfsberg FlexComm II COM system**	☐
4.6.17	**V/UHF Rockwell Collins RT-8200 COM system(s)** V/UHF1 V/UHF2 (if installed)	 ☐ ☐
4.6.18	**Skyforce Observer Mk.III - Moving Map**	☐
4.6.19	**I-Band transponder**	☐
4.6.20	**Video Down-Link ECU**	☐

Acceptance Test Procedure

A109E VIBRATION SUMMARY CHART

S/N : ..... **Marking :** .....

OAT : ..... **(°C)** **Hp :** ..... **(ft)** **Instrumentation :** .....

Test Conditions

Helicopter Weight:	2850 kg
Loading Configuration:	1 Pilot + 1 Copilot 2 Pax (1st Row) 2 Pax (2nd Row) Max Fuel (Main Tanks 480 kg) Ballast ..... kg to get 2850 kg
Accelerometers:	Pilot Vertical Pilot Lateral 2nd Pax Vertical 2nd Pax Lateral
NR: Density Altitude:	100% -102% 2000 to 3000 ft
Helicopter Configuration:	Air-conditioning (ECS) ☐ Bleed-Air Heating ☐ Rescue Hoist ☐ ..... ☐

Note :

Conditions	Hp (ft)	OAT (°C)	Torque (%)	Vibration Level (IPS) at Freq 4xRev					
				Pilot Vert	Pilot Lat	2nd Pax Vert	2nd Pax Lat		
MPOG									
HOGE 60 feet NR102%									
Level 40 KIAS NR102%									
Level 40 KIAS									
Level 80 KIAS									
Level 120 KIAS									
Level Vh (MCP)									

Location : ..... **Date :** ..... **Signature :** .....