CHAPTER

23

COMMUNICATIONS

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CHAPTER 23 - COMMUNICATIONS
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COMMUNICATIONS - DESCRIPTION AND OPERATION

1. General

A. The communications chapter contains description and maintenance instructions related to the equipment which furnish the means of remote communication within the airplane, and between the airplane and other airplanes or a ground station.

2. Description

A. The communications chapter includes the following sections:

(1) Speech Communication 23-00-00
   1. VHF Communication System 23-11-00
   2. HF Communication System 23-13-00
   3. SATCOM 23-15-00 (only for s/n 1106)

(2) Audio Integrating 23-50-00

(3) Static Discharging 23-60-00

(4) Audio and Video Monitoring 23-70-00

B. Speech Communications. This section relates to the VHF system and to the SATCOM system.

(1) VHF Communication System. It includes two separate systems, VHF1 and VHF2. Each system is composed by a transceiver and an antenna, while the functions are controlled through the Radio Tuning Unit (RTU, namely the on-side control for COM1) and the CONTROL DISPLAY UNIT (CDU, namely the on-side control for COM2). Power supplies are also separated, with VHF1 power supply maintained by the battery in the event of generated power supply failure.

(2) HF Communication System. It includes a control panel with a bus adapter, a transceiver, an antenna with an antenna coupler.

(3) (only for s/n 1106). SATCOM. It is a speech communications system between the airplane and any telephone number in the world. It consists of a cordless handset, a handset base, a transceiver and an antenna, accessing the Iridium Satellite Network of 66 Low Earth Orbit (LEO) satellites.

C. Audio integrating. It comprises an audio control unit at each crew station which provides the crew member with access to all the communication systems, intercommunication between crewmembers, communications from a crew member to the passengers cabin, audio monitoring of navigational aids and reception of audio warning tones generated by the aural warning system.

D. The static discharging system consists of the static wicks used to disperse electrical charges from the airframe to prevent radio interference.

E. Audio and Video Monitoring. It consists of a Cockpit Voice Recorder System. The components parts are a recorder unit, a recorder control panel, a cockpit area microphone and an impact switch (G-switch).

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SPEECH COMMUNICATION - DESCRIPTION AND OPERATION

1. General

A. This section contains description and maintenance instructions related to the equipment which furnish the means of speech communication for the airplane.

2. Description

A. The speech communication section includes the following subsections:

(1) VHF Communication System, 23-11
(2) HF Communication System, 23-13
(3) (only for s/n 1106) SATCOM, 23-15.

B. VHF Communication System. It includes two separate systems, VHF1 COM1 and VHF2 COM2. Each system has a dedicated transceiver (VHF 4000), several control units (shared with other airplane systems) and a dedicated antenna. Power supplies are also separated, with VHF1 power supply maintained by the battery in the event of generated power supply failure.

C. HF Communication System. It includes a control panel with a bus adapter, a transceiver, an antenna with an antenna coupler. A pedestal and a tail cone end are also provided.

D. (only for s/n 1106). SATCOM. It is a speech communications system between the airplane and any telephone number in the world. It consists of a cordless handset, a handset base, a transceiver and an antenna, accessing the Iridium Satellite Network of 66 Low Earth Orbit (LEO) satellites.

E. The VHF Communication System and the SATCOM (only mounted for s/n 1106 version) are independent each other.

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VHF COMMUNICATION SYSTEM - DESCRIPTION AND OPERATION

1. General

A. The VHF system provides speech communications between the airplane and a ground station, or with another airplane.

2. Description

A. The communications system is based on Collins Pro Line 21 Avionics System. It is a completely integrated flight instrument, autopilot, and navigation system. All functions have been combined into a compact, highly reliable system designed for ease of operation and reduced flight deck workload.

B. In this chapter, description is given for that portion of the system which provides radio communications and inboard audio management. Some equipment and control units installed for communication and audio management are used for navigation, direction and distance measurement purposes also.

Refer to Fig. 1 for the block diagram.

Refer to Fig. 2 for the components location.

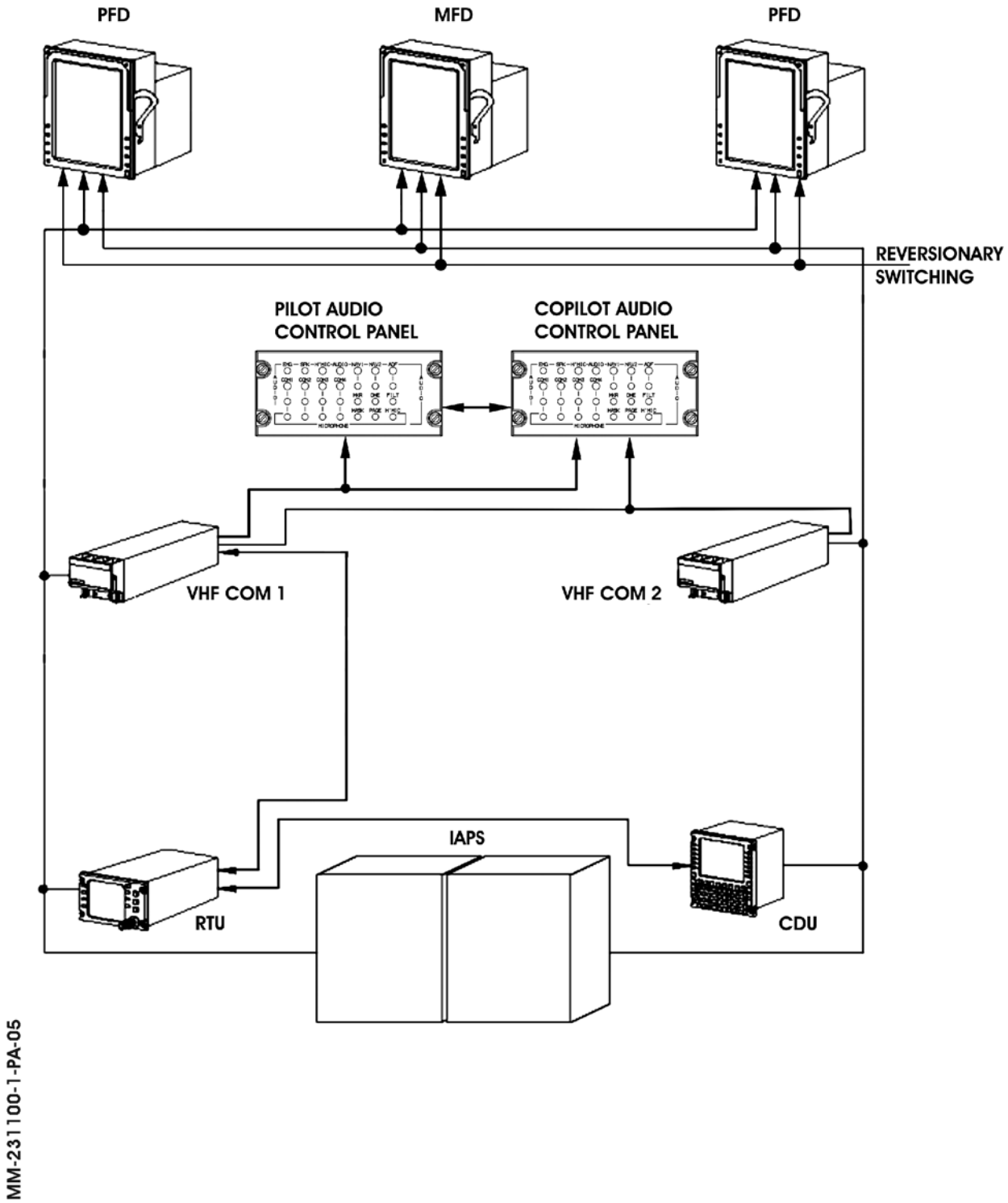

Fig. 1 - VHF System - Block Diagram

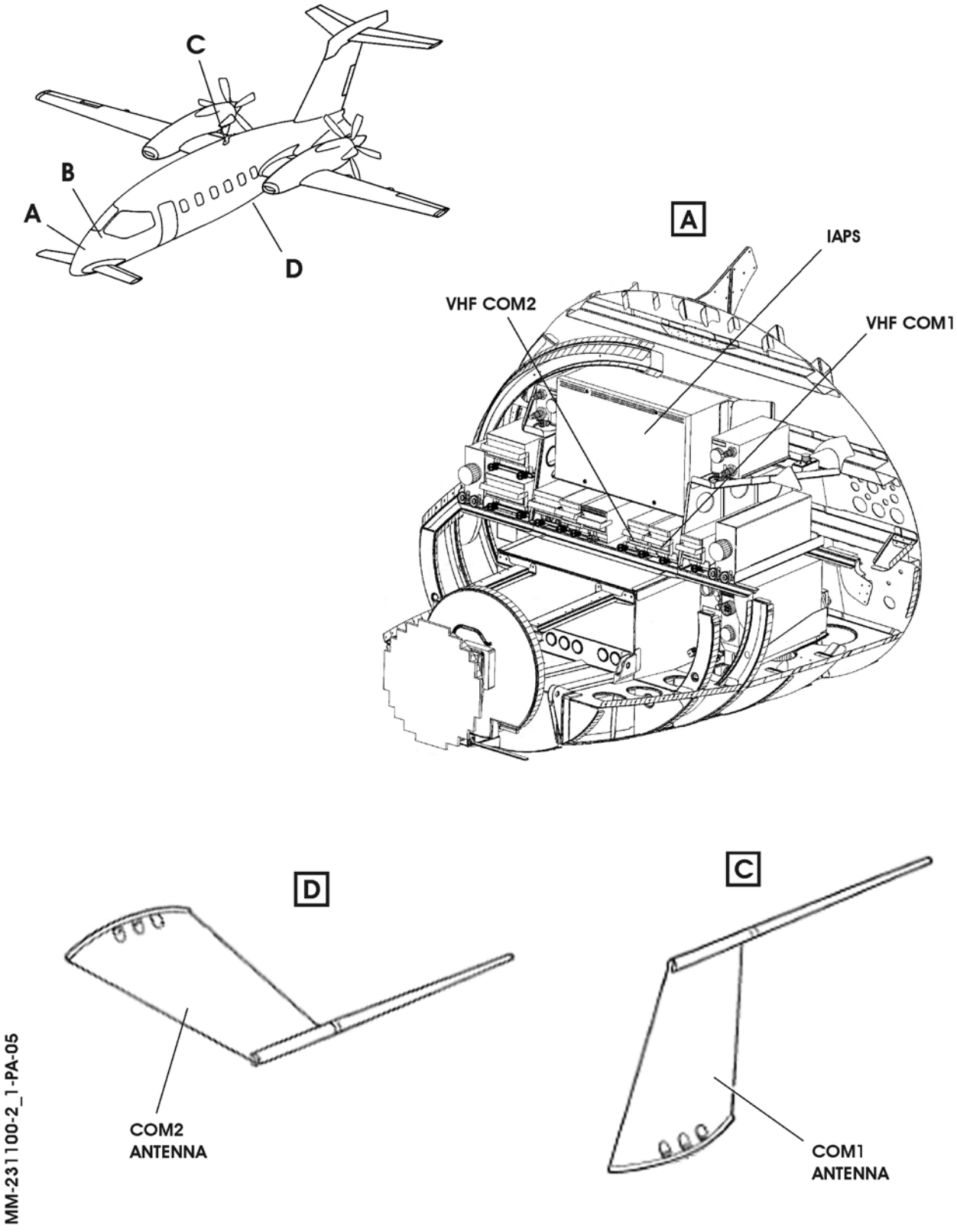

Fig. 2 - VHF System Component Location (Sheet 1 of 2)

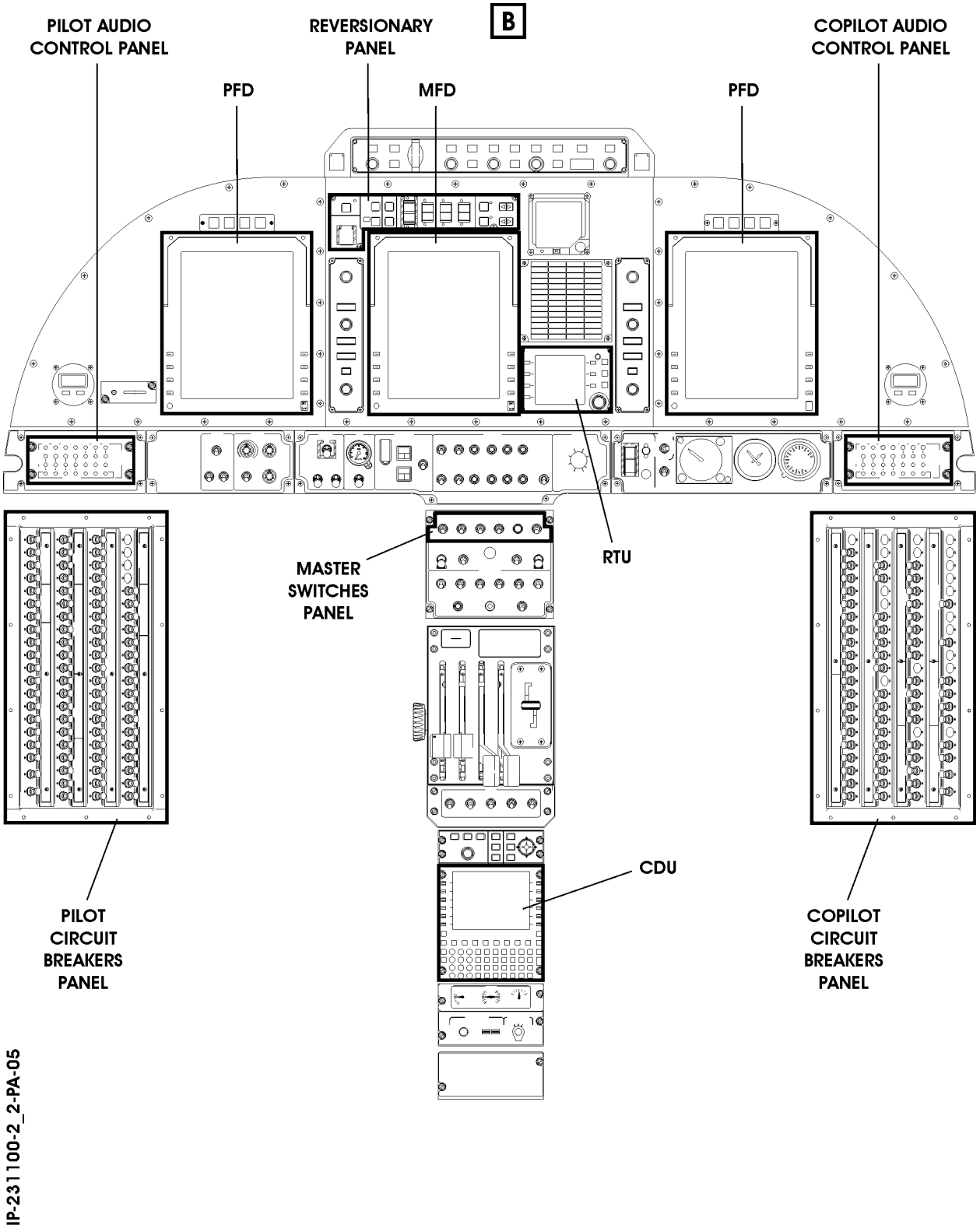

Fig. 2 - VHF System Component Location (Sheet 2 of 2)

3. Controls and Indicators

A. RTU - Radio Tuning Unit (Refer to Fig. 3)

B. Reversionary Panel (Refer to Fig. 4)

C. CDU - Control Display Unit (Refer to Fig. 5)

D. PFD - Primary Flight Display (Refer to Fig. 6)

Refer to Para. 5.

E. Power Supplies
+28 Vdc power supply is applied to VHF COM1 system from the essential bus via circuit breaker COMM1 (Refer to 23-11-00 Fig. 201), via Master Switches Panel.
+28 Vdc power supply is applied to VHF COM2 system from the right avionics dual feed bus via circuit breaker COMM2 (Refer 23-11-00, Fig. 201).

4. System Description

Two transceivers VHF 4000 (COM1 and COM2) are installed in the central section of the nose avionics bay. The transceivers can be tuned in 25 or 8.33 kHz steps. Tuning, self-test, and squelch are controlled via CDU and RTU.

The following paragraphs describe:

- VHF 4000 Transceivers
- VHF COMM Antennas
- Related Equipment.

A. VHF 4000 Transceivers

Every transceiver provides Double-Sideband (DSB) amplitude modulated (AM) voice/analog data operation. The standard version of the VHF-4000 transceiver operates in the aeronautical VHF communications band from 118.000 to 136.975 MHz with 25 kHz channel spacing. Moreover, operation in the aeronautical VHF communications band from 118.000 to 136.99166 MHz with 8.33 kHz channel spacing, which corresponds to the standard International Civil Aviation Organization (ICAO) channels 118.000 to 136.990, is available.

The VHF 4000 is a multi-channel COM transceiver that provides 2-way AM voice communications. It is tuned by CSDB or ARINC 429 bus. The VHF audio output is applied to the aircraft audio system.

From the +28 Vdc aircraft supply it generates all internal supply levels.

ARINC 429 I/O
A dedicated high-speed ARINC 429 diagnostic input/output bus provide for requests and responses regarding the operational status of the unit. This bus is also used for initiating and controlling the alignment function.

B. VHF COMM Antennas

Every VHF-4000 transceiver is coupled with a Dayton-Granger antenna. COM1 and COM2 antennas are located in different position to guarantee a complete communication area covering. COM1 antenna is installed above the airplane fuselage, while COM2 antenna is located on the fuselage underside, just below the baggage compartment.

C. Related Components

(1) Radio Tuning Unit (RTU)

The RTU provides centralized control and display functions for the communication system. These functions include frequency/channel/code select, mode select, and self-test select. The RTU is capable of commanding the cross-side radios when cross-side tuning or reversionary tuning is selected.

(2) Control Display Unit (CDU)

The CDU is a shared user interface that provides control and display functions for communication system also. Like the RTU, the CDU is the means of radio tuning for both pilot and copilot radios. Its functions include frequency/ channel/code select, mode select, and self-test select.

(3) Integrated Avionics Processor System (IAPS)

The IAPS physically houses some avionics units and provides a central data collection and distribution point for the avionics systems. It receives data inputs from avionics and aircraft systems, sorts the data and transmits to each receiving avionics unit.

5. Operation

The controls involved in operation are the following (Refer to Fig. 2):

– Radio Tuning Unit (RTU)
– Reversionary Panel
– Control Display Unit (CDU)
– Primary Flight Display (PFD)

The Multifunction Display is not directly involved in the VHF operation.

A. Radio Tuning Unit (RTU)

The RTU provides centralized control and display functions for the COM subsystem (frequency/channel/code select, mode select, and self-test select). There are three methods of RTU radio tuning: direct tuning, recall tuning, and tuning from the preset pages. The RTU can also control the cross-side radios when cross-side tuning or reversionary tuning is selected. In some installations the COM radios are automatically tuned to the emergency frequency 121.5 MHz when the RTU is powered-down and all tuning capability is lost (emergency COM tuning).

MM-231100-3-PA-05

Fig. 3 - Radio Tuning Unit (RTU)

Controls and Indicators

Line Select Keys
The RTU has seven line select keys adjacent to the display, four on the left side and three on the right. The line select keys have momentary non-latching action. Some of the line select keys may have simulated latching functions implemented through software. The functions performed by any specific line select key depend solely on the page format present on the display. Each line select key is continually monitored. When a key is pressed, only the function associated with that key is activated. A stuck line select key will disable only its associated function and cannot disable or affect the overall operation of the RTU. Pressing an unassigned line select key does not affect the operation of the RTU. Detection of the line select key is disabled when the tune knobs are rotated.

IDENT Key
Pressing this key initiates the command for the active ATC to transmit the aircraft identifier. Refer to 34-55-00.

DME-H Key
Pressing this key toggles the DME hold function on the controlled DME channel. This key has no effect if pressed from the cross-side radio tuning inoperative page, configuration error page, menu page, or any display page under these pages in the hierarchy.

1 / 2 Key
Pressing the 1/2 key displays the cross-side top-level page (assuming valid operation of the cross-side RTU). Pressing the 1/2 key again returns the display to the on-side display page that was present before the 1/2 key was pressed. Operation of the 1/2 key is disabled if the configuration error page, menu page, or any page under these pages in the hierarchy is displayed, except for radio main and radio diagnostics pages. If a radio main page is displayed when the 1/2 key is pressed the first time, the radio main page for the cross-side radio is displayed. Pressing the 1/2 key a second time returns the display to the on-side radio main page. If a radio diagnostic page is displayed when the 1/2 key is pressed the first time, the radio diagnostic page for the cross-side radio is displayed. Pressing the 1/ 2 key, a second time returns the display to the radio diagnostic page for the on-side radio.

Concentric Tune Knobs
The RTU have a two-tier concentric knob assembly, used as a tune knob, to perform the frequency/channel select functions. Subsystem functions controlled by the tune knobs include active frequency/channel selection, preset frequency/ channel selection, channel numbers in the preset field, page scrolling, and configuration codes.

LCD Display
The RTU uses a color active matrix LCD graphic display.

BRT Control
The BRT control in the upper right hand corner of the front panel serves as the primary LCD brightness control when the RTU is not connected to an external dimming source. When the RTU is connected to an external dimming source, the BRT control functions as a secondary, or trim control for the LCD brightness. The BRT control also functions as an on/off switch.

B. Reversionary Panel

Reversionary Tuning
It is a method of controlling both on-side and cross-side radios when one of the controllers has failed. If the CDU has failed, selecting the 1/2 function key on the RTU causes the Cross-Side Radio Tuning Inoperative message to show on the RTU. To clear this page, push the 1/2 function key, or any line select key. To restore full tuning capability to the RTU in the event of a CDU failure, select RTU with rocker switch on the Reversionary Panel. Operate the 1/2 function key on the RTU to select the on-side or cross-side radios.

Emergency Operations
Two methods for the immediate tuning of VHF Communications System on Emergency Frequency are applicable:

(1) In case of emergency, an Emergency Switch is available on the Reversionary Panel, providing immediate tuning of COM1 transceiver on Emergency frequency 121.5 MHz (refer to Fig. 4).

(2) In the event all tuning capability is lost, the procedure that follows can be used to tune the VHF COM radios to 121.5 MHz.

(a) Turn off the RTU and CDU
(b) Remove Power from the VHF COM radio
(c) Reapply power to the VHF COM radios

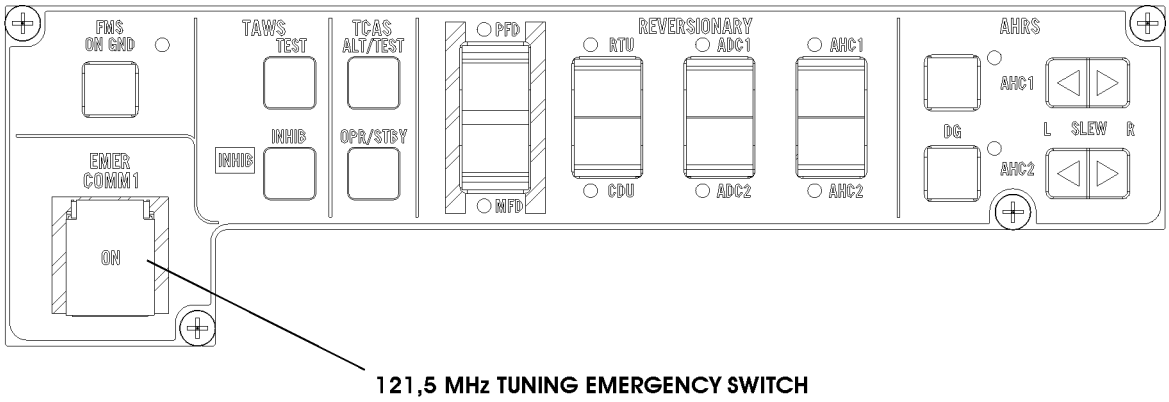

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Fig. 4 - Reversionary Panel

C. Control Display Unit (CDU)

VHF Communication System is controlled by CDU. The CDU is a shared user interface that provides control and display functions for the Flight Management System and Radio Navigation System.
The CDU is the normal direct means of radio tuning for both pilot and copilot radios. Control and display functions for the NAV, ADF subsystems are provided by the CDU.
These functions include frequency/channel/code select, mode select, and self-test select.
The Control Display Unit (CDU) is a color display with an integrated keyboard.
The display area supports 12 display lines, a title line, a scratchpad, and a message line. The keyboard has 16 function keys plus a full alphanumeric keypad. In addition, the CDU has 6 line select keys located in the bezel on each side of the display.

CDU Tuning
There are three methods of CDU radio tuning: direct tuning and recall tuning / preset tuning (radios are directly tuned by changing the active frequency or code or the COM radios can be recall tuned by setting a frequency or preset into the recall field, and then swapping the active and recall frequencies).

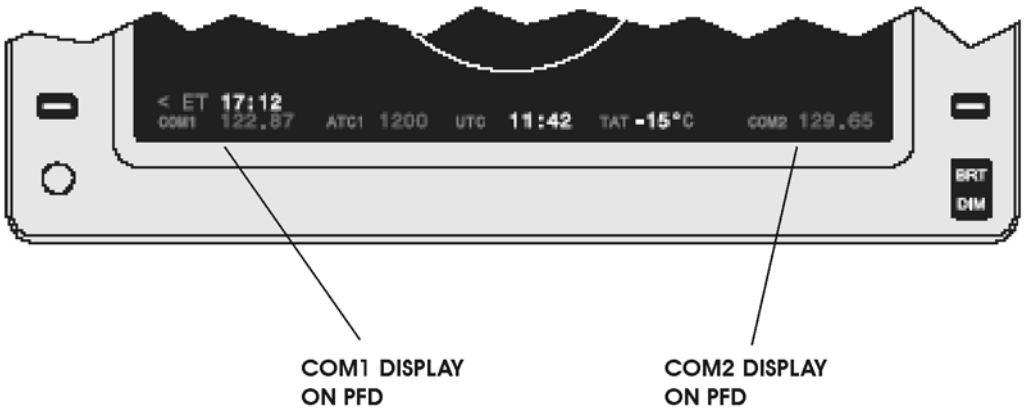
COM Operation on CDU
The active and recall frequency can be tuned from the COM subdisplay on the TUNE page. The active and recall frequency can also be tuned from the COM CONTROL 1/5 page. COM squelch, self test and preset tuning access is controlled from the COM CONTROL page.

MM-231100-5-PA-05

Fig. 5 - Control Display Unit (CDU)

D. Primary Flight Display (PFD)

In addition to the radio frequencies presented with various navigational displays on the PFD, the current VHF COM1 and COM2 frequencies are shown on the PFD.



MM-231100-6-PA-05

Fig. 6 - VHF COM1 and COM2 Display on PFD

VHF COMMUNICATION SYSTEM - TROUBLESHOOTING

1. General

When a malfunction occurs in the VHF system operation, carry out the following steps, if applicable:

A. Set the battery switch to BAT (Refer to 23-11-00, Fig. 201).

B. Set the Avionics Master Switch to AVIONICS (Refer 23-11-00, Fig. 201).

C. Check the relevant circuit breakers are in ON position on the pilot and copilot Circuit Breakers Panels (Refer 23-11-00, Fig. 201):

(1) COMM1
(2) COMM2
(3) AUDIO1
(4) AUDIO2.

D. Visually check the proper wiring of the mobile parts (Refer to 23-50-00, Fig. 2) (microphones/headset/oxygen mask, base of the control wheel column, jack panel - pilot and copilot side).

E. Manually check the correct position (pushbutton) and the proper operation (potentiometer) of the controls on the Audio Control Panel (Refer to 23-50-00, Fig. 2).

F. Visually check the proper operation of the display unit (RTU, CDU, PFD, MFD) and of the Reversionary Panel (Refer to 23-11-00 Fig. 2 to 6).

G. Perform a test of the related equipment (Refer to Installation paragraphs).

H. Refer also to the Rockwell Collins documentation.

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VHF COMMUNICATION SYSTEM - MAINTENANCE PRACTICES

1. General

This topic gives the maintenance practices for the components which follow:

A. VHF COM1 and VHF COM2 transceivers

B. COM1 and COM2 antennas.

C. Figure 203 shows the VHF/COM2 Antenna location when the Flir System is installed.

2. VHF1 and VHF2 Transceivers - Removal (Refer to Fig. 201)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags	
Blanking caps	Not specified

B. Referenced Information

Maintenance Manual Chapter 24-00-00

Maintenance Manual Chapter 53-00-00

C. Procedure:

NOTE: Removal of VHF transceivers is identical except for location.

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Set the battery switch to OFF.
(3) Set the Avionics Master Switch to OFF.
(4) Open, tag and safety these circuit breakers:
  – COMM1
  – COMM2.
(5) Remove the nose avionics compartment cover (Refer to 53-00-00).
(6) Loosen hold-down nut and disengage it from transceiver.
(7) Raise handle and carefully lift and pull transceiver forward to remove from airplane.
(8) Put caps on the electrical connectors.

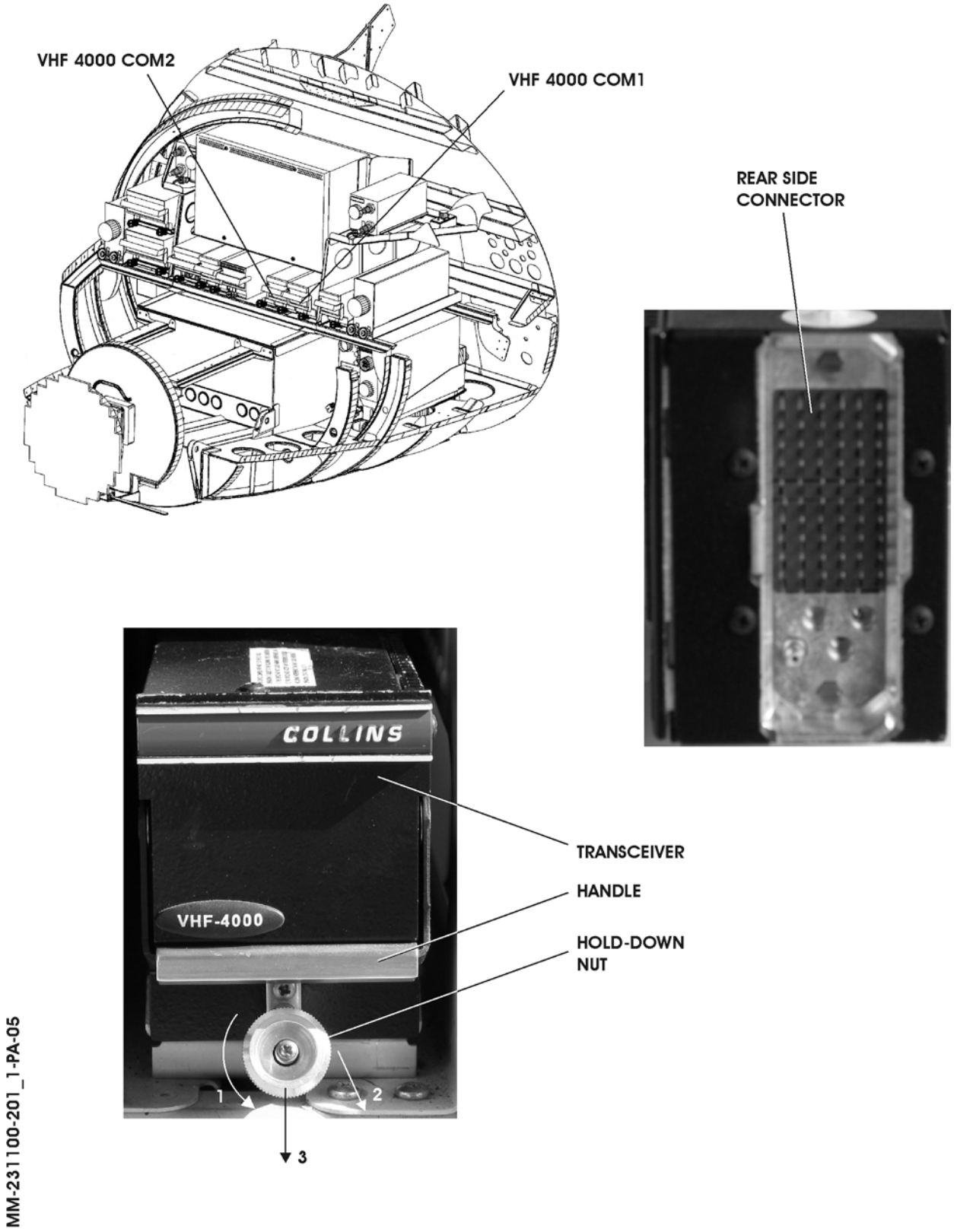

Fig. 201 - VHF COM1 and COM2 Transceiver (Sheet 1 of 2)

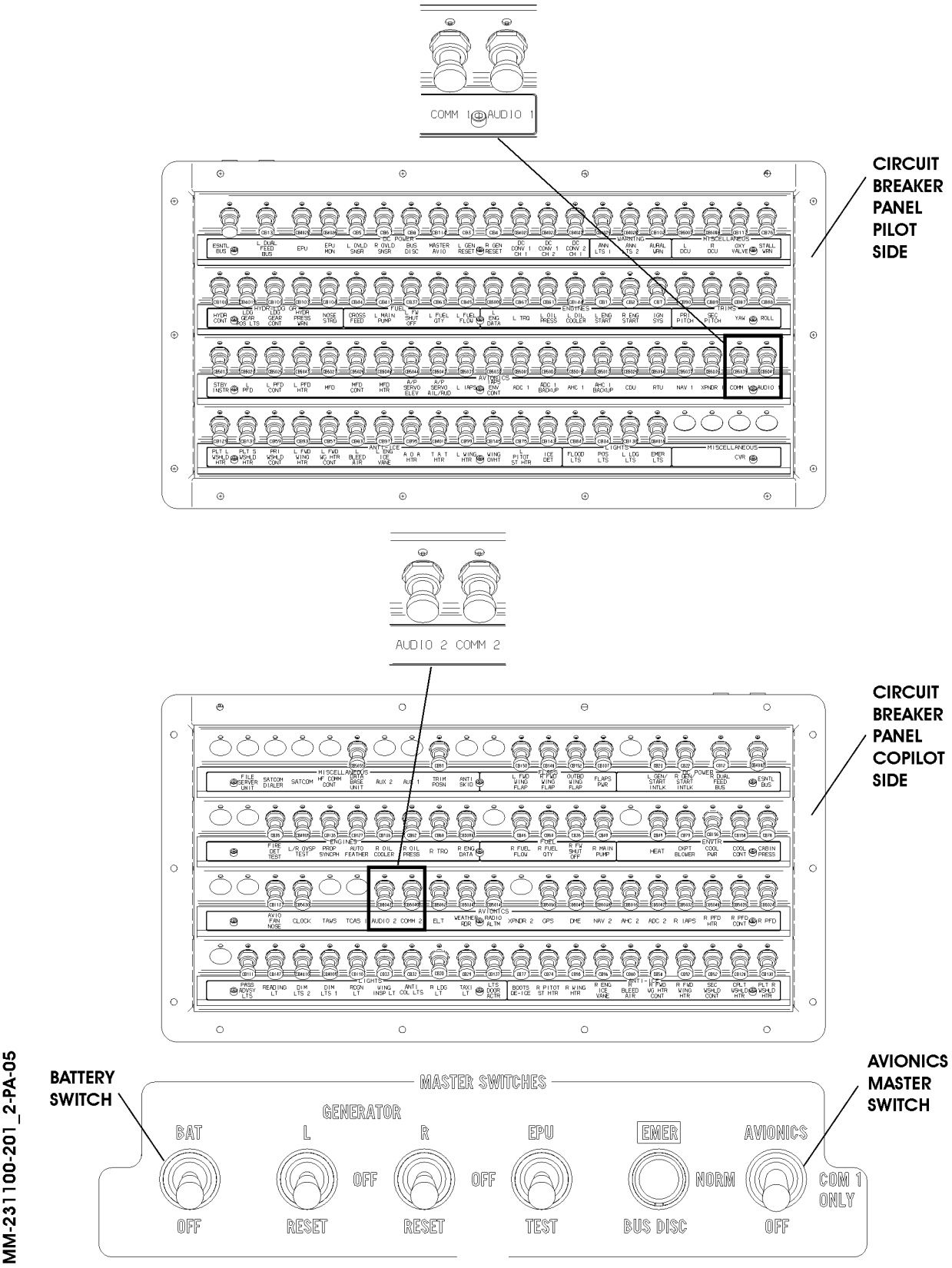

Fig. 201 - VHF COM1 and COM2 Transceiver (Sheet 2 of 2)

3. VHF1 and VHF2 Transceivers - Installation (Refer to Fig. 201)

A. Referenced Information

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 53-00-00

B. Procedure

NOTE: Installation of VHF transceivers is identical except for location.

(1) Remove the caps from electrical connectors, if present (Ref. Para. 2, point C, item 7).
(2) Carefully slide transceiver onto rack.

NOTE: Make sure that the electrical connector properly aligns. Do not use force to engage pins.

(3) Engage hold-down nut and tighten it.
(4) Remove the safety tags and close the previously opened circuit breakers:
– COMM1
– COMM2.
(5) Set the Avionics Master Switch to AVIONICS.
(6) Set the battery switch to BAT.
(7) Push the TEST line select key on the COM main display page to activate the COM self-test. When active the message TEST shows in cyan and large letters. The COM self-test remains active for 10 seconds. For the Diagnostic Code refer to Chapter 5 of the Collins Maintenance Manual n° 523-0780702 "PL 21 CNS (Communication Navigation Systems).
(8) Remove the Warning Notice in the flight compartment.

4. VHF 4000 - Ground Operational Test

A. Procedure

(1) Call a local communication facility from the cockpit station and verify a signal strength check.

5. VHF1 and VHF2 Antennas - Removal (Refer to Fig. 202)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags

B. Procedure

NOTE: Removal of VHF antennas is identical except for location.

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.

(2) Set the battery switch to OFF (Refer to Fig. 201)
(3) Set the Avionics Master Switch to OFF.
(4) Open, tag and safety these circuit breakers:
  – COMM1
  – COMM2.
(5) Remove the six screws from the antenna base.
(6) Cut sealant and withdraw the antenna to access the co-axial cable connector.
(7) Disconnect the co-axial cable and remove the antenna.

6. VHF1 and VHF2 Antennas - Installation (Refer to Fig. 202)

A. Fixture, Test and Support Equipment

0.5 in (12 mm) paint brush	Not specified
Lint-free cloth	Not specified
Non-metallic spatula	Not specified
Trueline Wattmeter	No. 4311 (or equivalent)
50 Watt VHF Plug-in element	
Connecting co-axial cable	27 inches long (See Note)

NOTE: The co-ax cable used to connect the wattmeter should be a multiple of one-half wave length. For RG58 cable, one half-wave length is 31 inches from which four inches are subtracted to allow for the addition of the wattmeter.

B. Materials

06-005, Sealant
02-009, Metyl-Ethyl-Ketone

C. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 25-00-00
Maintenance Manual Chapter 53-18-00

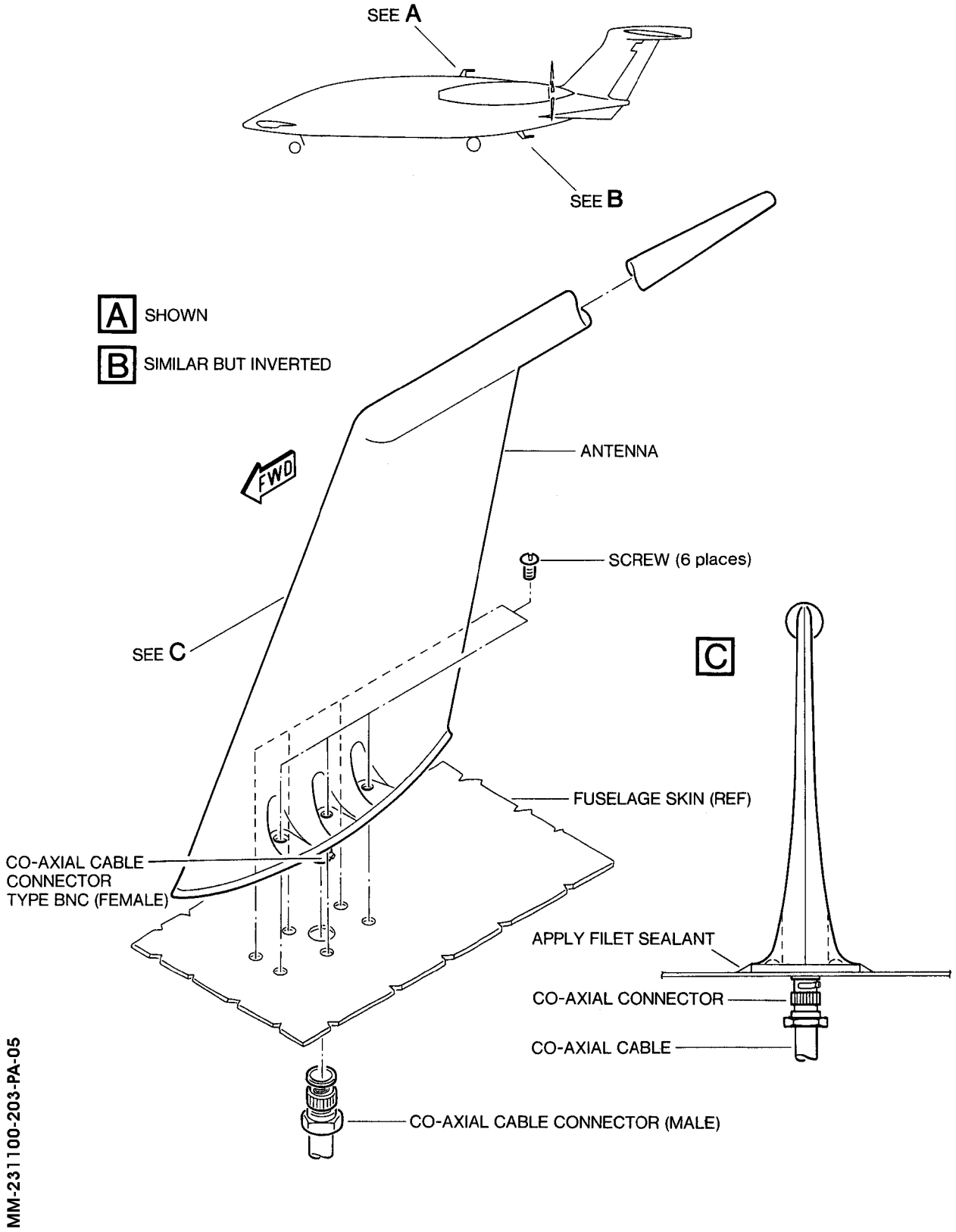

Fig. 202 - VHF1 and VHF2 Antennas

D. Procedure

NOTE: Installation of VHF antennas is identical except for location.

(1) Make sure that the system is electrically safe.

WARNING: BE CAREFUL WHEN YOU USE MEK. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(2) Clean the replacement parts and their interfaces (Refer 20-00-00).
(3) Connect the co-axial cable to the antenna.
(4) Locate antenna and attach with six screws.
(5) Apply a fillet of sealant around antenna base (Refer 20-00-00).
(6) Remove excessive sealant (Refer 20-00-00).
(7) Remove the safety tags and close the previously opened circuit breakers (Refer to Fig. 201):
   – COMM1
   – COMM2.
(8) Set the Avionics Master Switch to AVIONICS.
(9) Do a test:
   1. Connect the wattmeter to the antenna:
      A. For VHF1, remove ceiling panel (Refer 25-00-00)
      B. For VHF2, remove lower antenna access panel (Refer 53-18-00).
   2. Set the battery switch to BAT.
   3. Measure the forward and reflected power from the transmitter at frequencies 118.3 MHz, 122.2 MHz, 126.55 MHz, 129.67 MHz, 131.72 MHz and 133.05 MHz.
   4. Calculate the voltage standing wave ratio (VSWR) using the instructions provided with the wattmeter.
   5. The target values are given in the following table.

Frequency	VSWR	
	VHF1	VHF2
118.30	1.7	1.9
122.20	1.7	2.2
126.55	2.2	2.1
129.67	2.3	2.2
131.72	2.5	2.5
133.05	2.7	2.5

Table 201 - VSWR Values

If the VSWR exceeds a value of 3.00:

(1) Make sure that all foreign metal objects not mounted on the airplane are removed from the antenna by at least five feet
(2) Move the airplane to a different location and repeat the test

(3) Check antenna bonding to airplane skin
(4) Replace the antenna.

6. Set the battery switch to OFF.
7. Disconnect the wattmeter and connecting cable.
8. Connect the antenna co-axial cable.
9. Install the access panel:
   A. For VHF1, install ceiling panel (Refer 25-00-00)
   B. For VHF2, install the lower antenna access panel (Refer 53-00-00).
10. Restore the surface finish (Refer 20-00-00)
11. Remove the Warning Notice in the flight compartment..

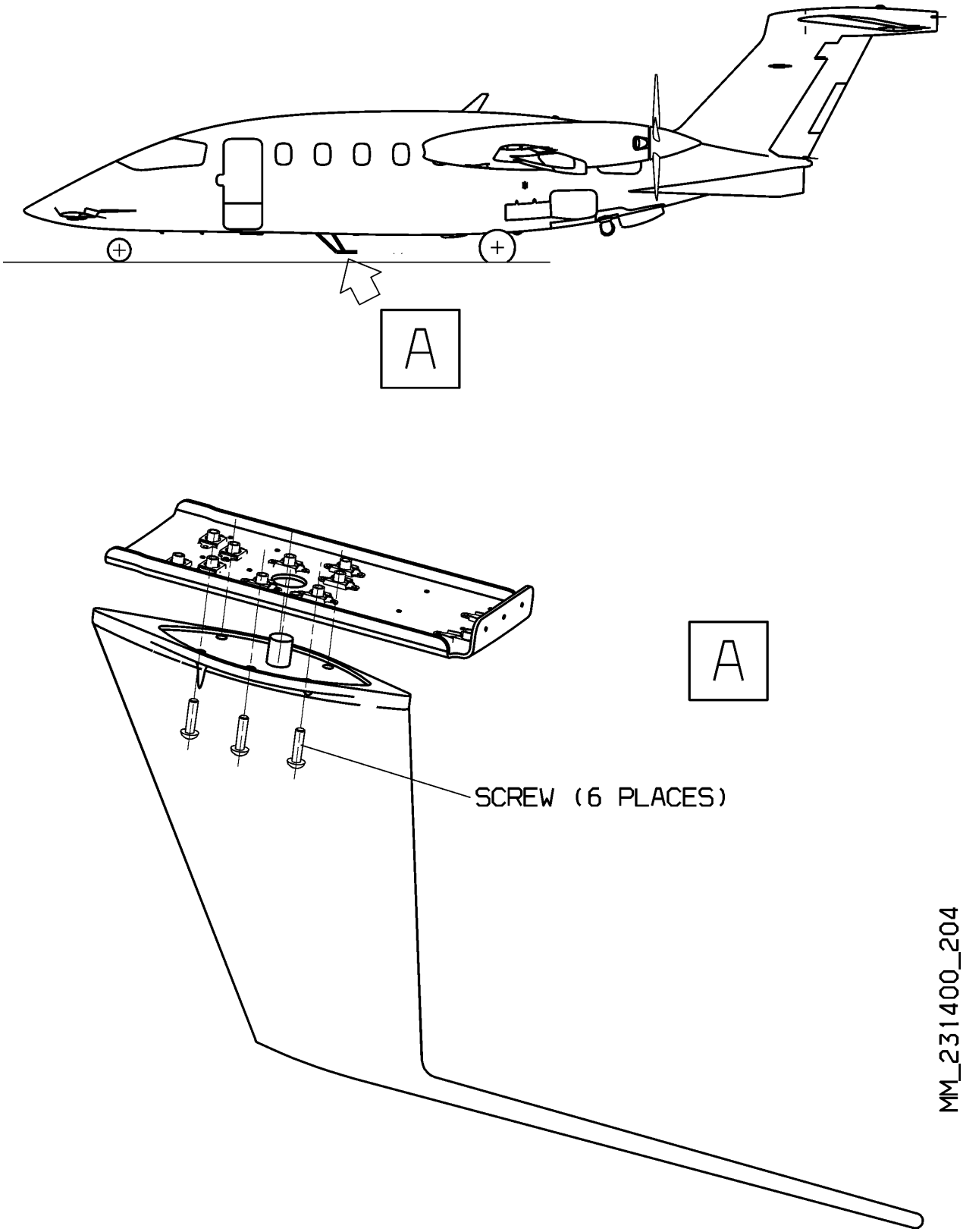

Fig. 203 - VHF/COM2 Antenna Location (Flir System Installed)

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HF COMMUNICATION SYSTEM - DESCRIPTION AND OPERATION

1. General

A. The HF system provides speech communications between the airplane and a ground station or with another airplane.

2. Description

A. The HF Communication System includes a control panel with a bus adapter, a transceiver, an antenna with an antenna coupler. A holed tail cone end, to allow antenna cennection to the coupler, is also provided.

B. Refer to Fig. 1 for the block diagram

Refer to Fig. 2 for the components locations.

3. System Description and Operation

A. The main components of the HF Communication System are the control panel with the bus adapter, the transceiver and the antenna with the antenna coupler.

B. Control Panel KFS 594 with Bus Adapter KA 594

The Control Panel KFS 594 (Fig. 3) with Bus Adapter KA 594 (Fig. 4) provides the pilot with access to 19 programmable channels plus a full 280,000 operating frequencies in the 2.0 MHz to 29.9999 MHz range. In addition, all 245 ITU maritime radiotelephone network (public correspondence) channels have been stored in nonvolatile memory along with the appropriately paired transmit and receive frequencies. The KFS 594 have a display unit to display frequency and channel information. All necessary controls for operation of the system, including programming of all preset channels, are on the KFS 594.

The 19 channels can be easily programmed by the pilot on the ground or in the air, and the nonvolatile memory stores this information and the 245 ITU maritime radiotelephone channels even when the system is turned off.

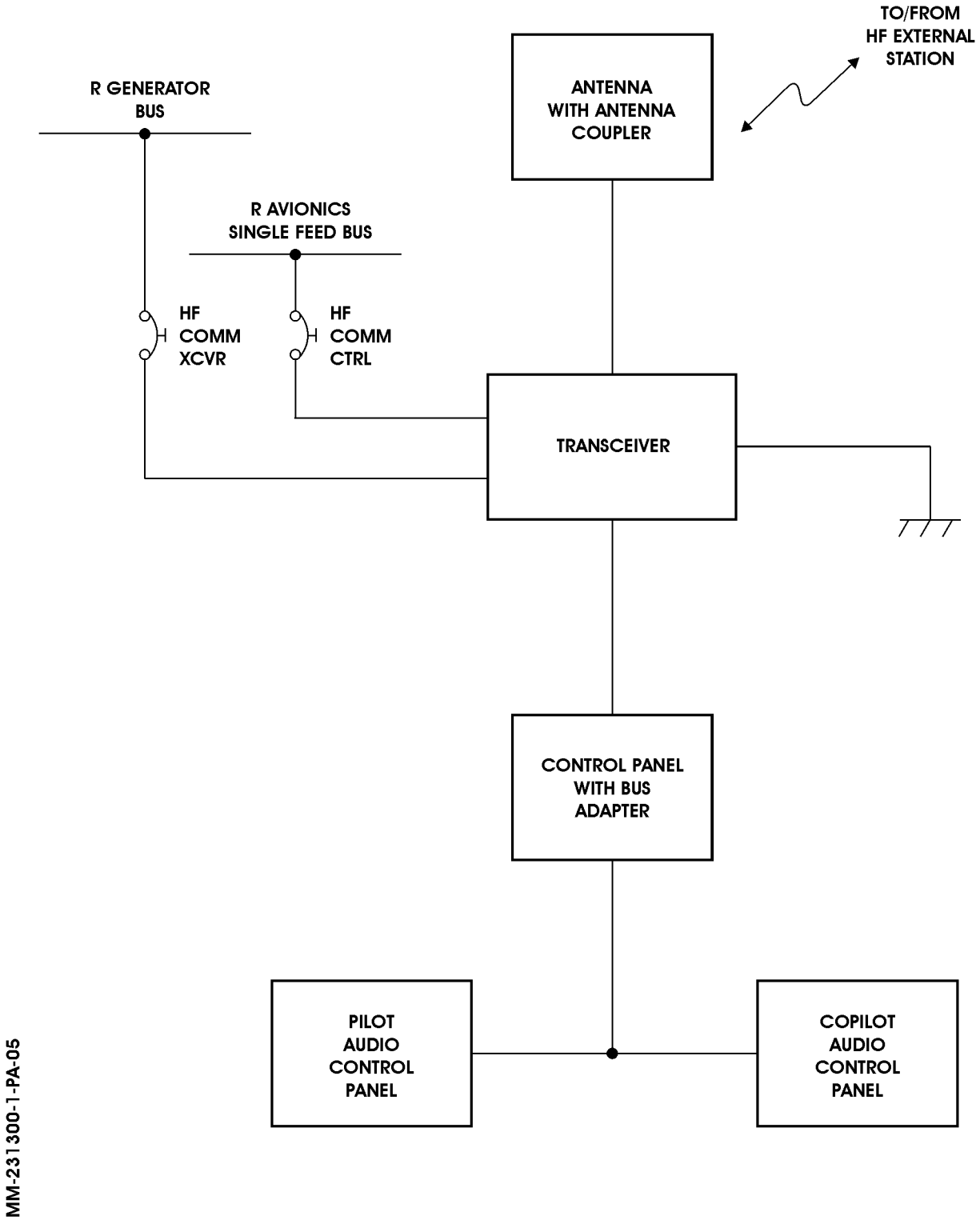


Fig. 1 - HF Communication System - Block Diagram

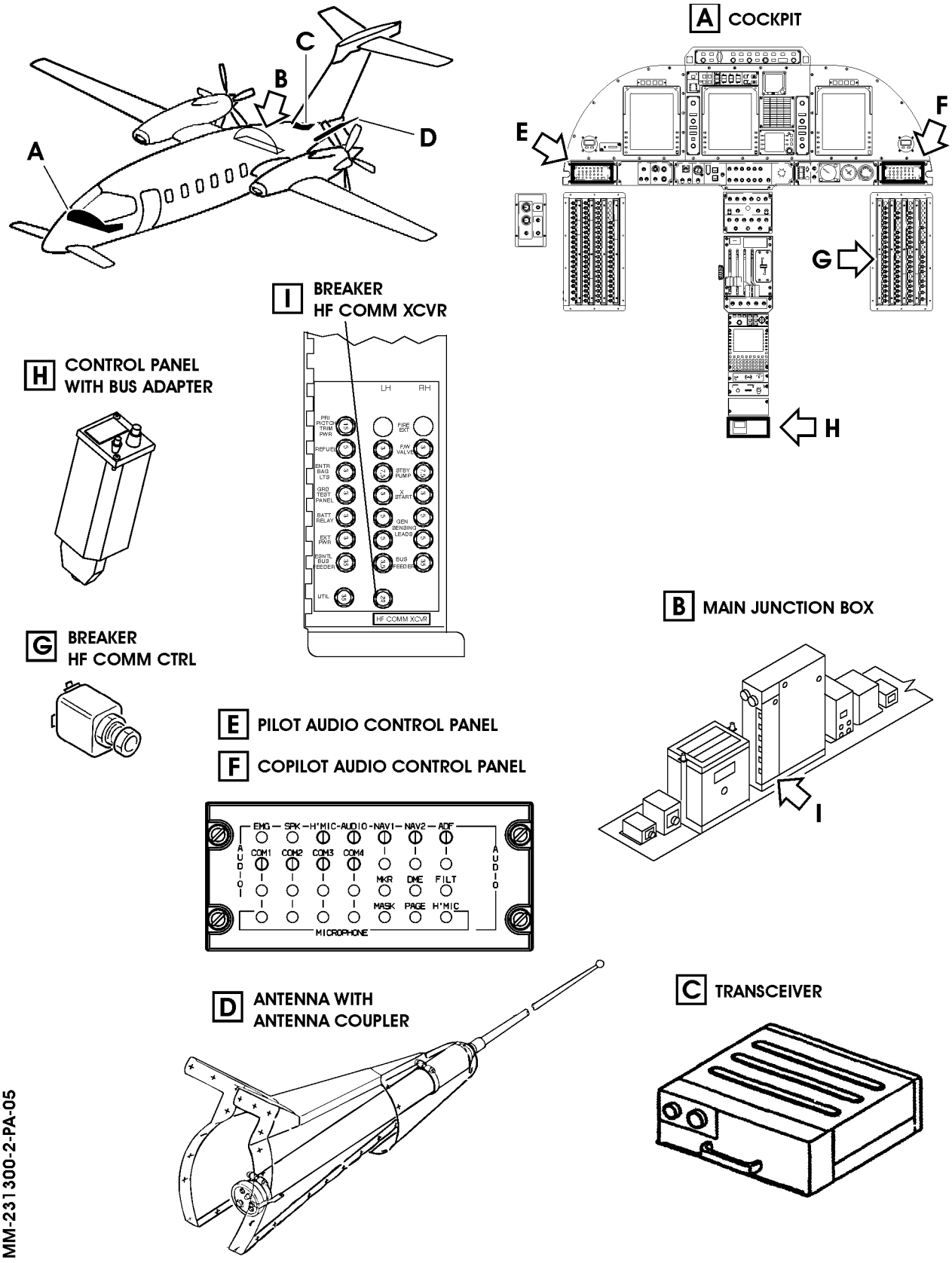


Fig. 2 - HF Communication System - Location

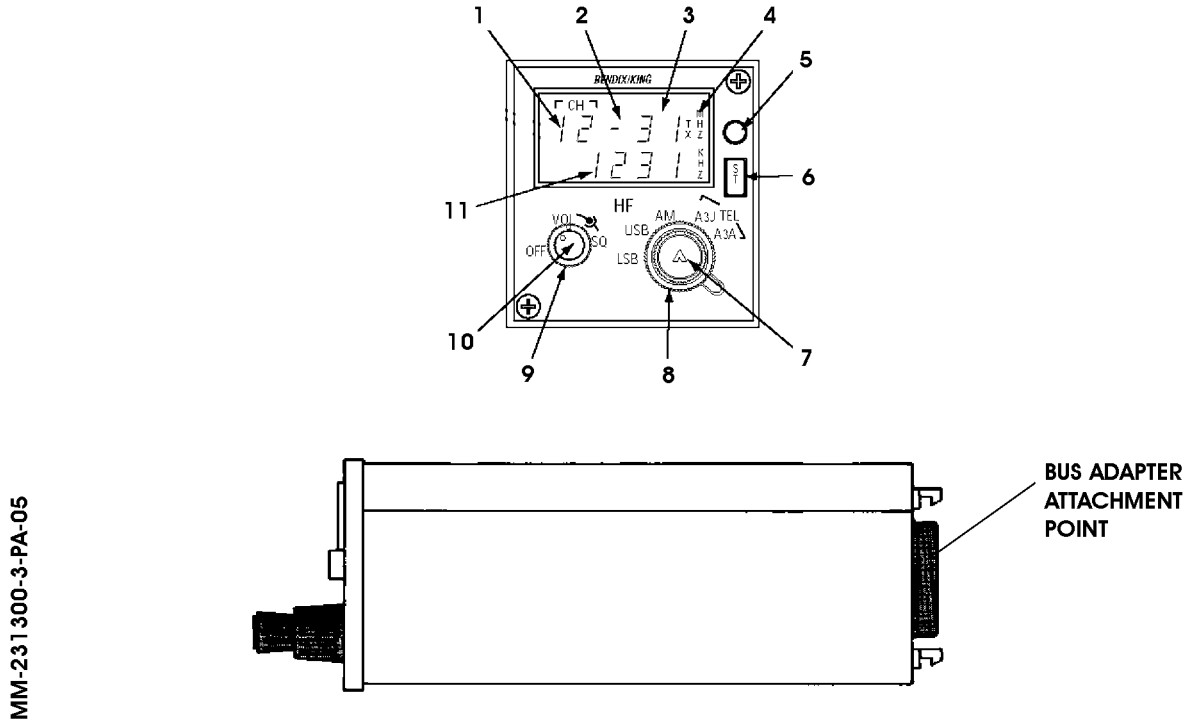


Fig. 3 - Control Panel KFS 594

The controls and indicators are as follows:

(1) Programmed channel number (appears when using one of the 19 programmable channels).

(2) Dash indicates unit is in the Program Mode.

(3) With Emission Mode switch in LSB, USB or AM position, the first one or two digits (MHz) of the operating frequency are displayed here.

(4) Smaller characters display transmission indication.

(5) Photocell dims display automatically

(6) STO switch stored displayed frequency in memory. When pressed simultaneously with microphone push-to-talk switch, transmits 1000 Hz "operator attention" tone as required by some Canadian radiotelephone stations.

(7) Frequency/Channel Control knob (inner concentric) allows you to perform a variety of channel and frequency changing functions.
Depressing switch causes flashing "cursor" to move to the digit that the pilot desired to change. Appropriate frequency or channel is then selected with rotary action. This switch also serves as the clarifier function to adjust or receive frequency and improve speech quality in single sideband operating mode.

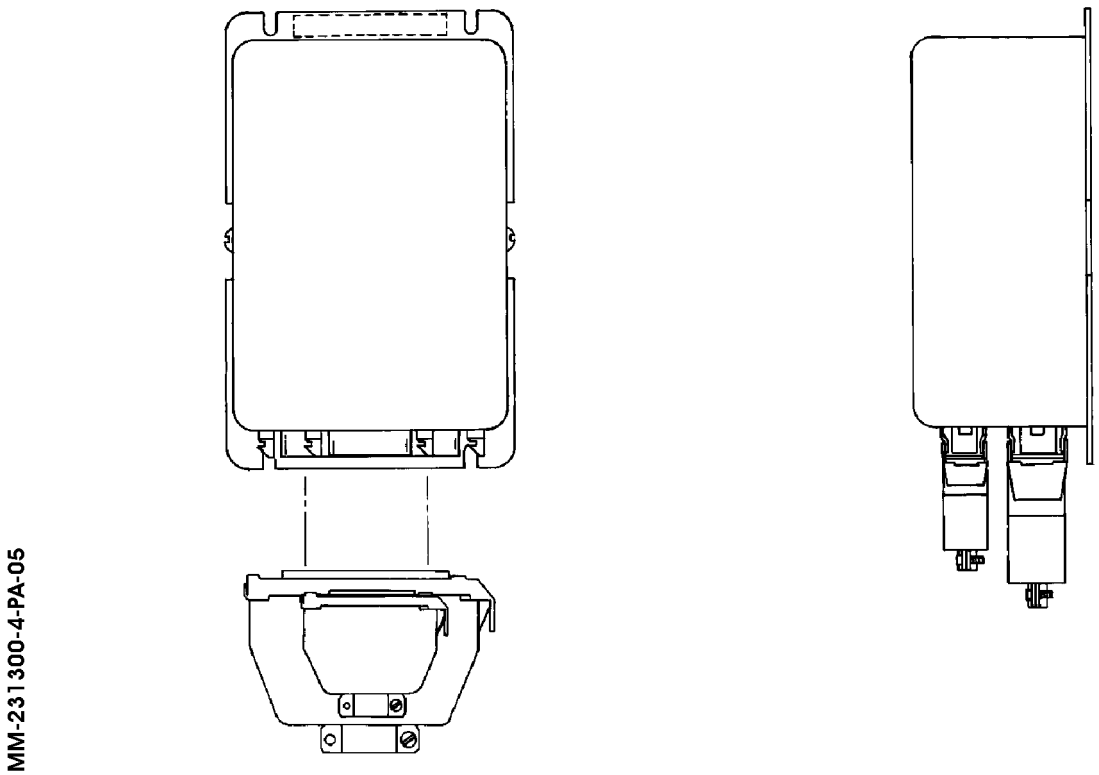
(8) Emission Mode switch (outer concentric) selects lower sideband (LSB), AM modes, and a choice of either A3J or A3A in maritime radiotelephone network channels.

(9) SQUELCH knob (outer concentric) helps reduce background noise when not receiving a signal.

(10) OFF/VOLUME knob (inner concentric) turns system on and adjusts volume.

(11) Last four digits (kHz) of operating frequency are displayed in this area when Emission Mode switch is in LSB, USB or AM position.
Maritime radiotelephone ITU channel number appears in this area when Emission Mode switch is in A3J or A3A position.

The KA 594 Bus Adapter decodes data for frequency/channel and tune monitoring and is mounted on the rear of the Control Panel KFS 594.



MM-231300-4-PA-05

Fig. 4 - Bus Adapter KA 594

C. Transceiver KTR 993

The Transceiver KTR 993 (Fig. 5) contains the receiver/exciter, RF power amplifier, Low pass filters, and control circuitry necessary for generation of SSB and AME signals. It is capable of 150 watts peak envelope power output on any of 280,000 frequencies from 2 MHz to 29.9999 MHz.

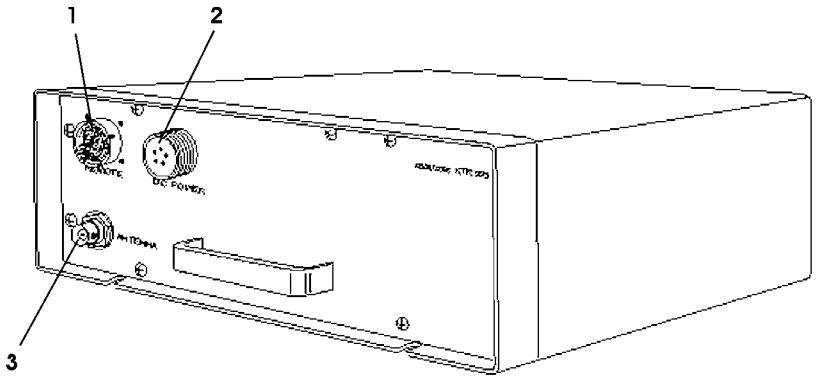


Fig. 5 - Transceiver KTR 993

The controls are as follows:

(1) Control Panel interface connector
(2) DC power input connector (via circuit breakers)
(3) Antenna coupler connector.

NOTE: The system is designed for continuous duty cycle (transmission) at 150 watts peak envelope power for voice transmission on upper sideband (USB). On all other type transmissions, the unit will operate continuously; however, after an extended period of transmission the power will begin to back down to protect the power amplifier from overheating.

The exact time required depends on the ambient temperature. For example, after seven minutes transmission in the AM Mode the power is approximately 1/3 of normal power output. A duty cycle of 3 minutes on and 3 minutes off will insure maximum power output.

D. Antenna and Antenna Coupler KAC 992

The Antenna and Antenna Coupler KAC (Fig. 6) is a combined Whip Antenna and Coupler designed to automatically match the impedance of the antenna to 50 ohms over the full frequency range of 2.0 to 29.999 MHz. The KAC 992 Coupler is hermetically sealed.

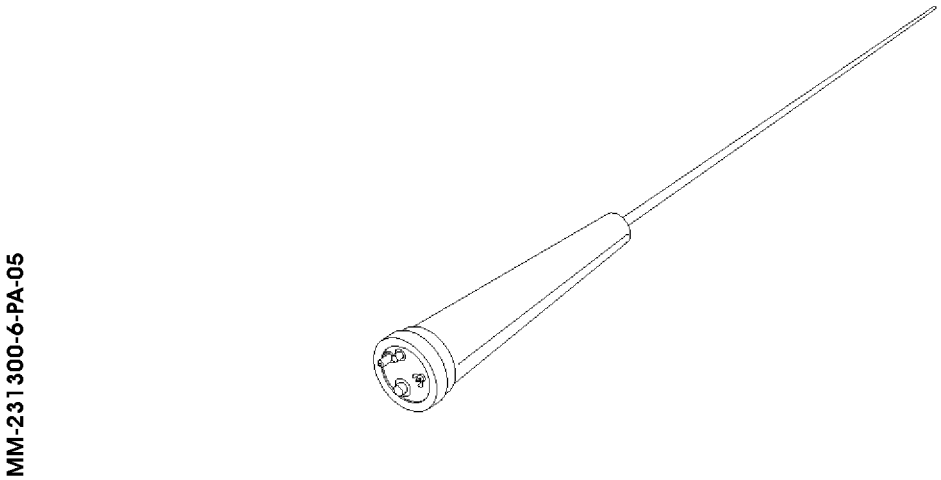


Fig. 6 - Antenna and Antenna Coupler KAC 992

E. Pilot and Copilot Audio Control Panels

Pilot and Copilot Control Panels connect the Control Panel KFS 594 on COM3 port of the Communication System (refer to 23-50-00).

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HF COMMUNICATION SYSTEM - MAINTENANCE PRACTICES

1. General

This section describes the maintenance procedures for the following equipment:

A. Control Panel KFS 594 with Bus Adapter KA 594

B. Control Panel KFS 594 with Bus Adapter KA 594 (Ferry Flight Configuration)

C. Transceiver KTR 993

D. Transceiver KTR 993 (Ferry Flight Configuration)

E. Antenna with Antenna Coupler KAC 992.

F. Antenna with Antenna Coupler KAC 992 (Ferry Flight Configuration)

2. Control Panel KFS 594 with Bus Adapter KA 594 - Removal (Refer to Fig. 201)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags
Blanking cap

B. Referenced Information

Maintenance Manual Chapter 06-00-00

C. Procedure

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Set the battery switch to OFF.
(3) Set the Avionics Master Switch to OFF.
(4) Open, tag and safety the HF COMM CTRL and LTS DIM 1 circuit breakers on Copilot Circuit Breakers Panel.
(5) Open the baggage compartment door, open, tag and safety the HF COMM XCVR on the Main Junction Box circuit breaker panel.
(6) Remove the two fixing screws from the Control Panel KFS 594.
(7) Extract the unit from its housing and disconnect the cable.
(8) Put cap on electrical connector.

3. Control Panel KFS 594 with Bus Adapter KA 594 (Ferry Flight Configuration) - Removal (Refer to Fig. 201)

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Set the battery switch to OFF.
(3) Set the Avionics Master Switch to OFF.
(4) Open, tag and safety the HF COMM CTRL and LTS DIM 1 circuit breakers on Copilot Circuit Breakers Panel.
(5) Open the baggage compartment door, open, tag and safety the HF COMM XCVR on the Main Junction Box circuit breaker panel.
(6) Remove the two fixing screws from the Control Panel KFS 594.
(7) Extract the unit from its housing and disconnect the cable.
(8) Put cap on electrical connector.
(9) Remove the four fixing screws from the HF housing.
(10) Remove the HF housing from the pedestal repositioning the screws in the proper holes on the pedestal.
(11) Put the HF wiring harness in a safe position inside the pedestal.
(12) Remove the grommet from the pedestal and install the pedestal cover.

4. Control Panel KFS 594 with Bus Adapter KA 594 - Installation (Refer to Fig. 201)

A. Referenced Information Procedure

Maintenance Manual Chapter 06-00-00

(1) Remove the cap from electrical connector, if present.
(2) Connect the cable and insert the unit in its housing.
(3) Lock the unit in the housing using the two fixing screws.
(4) Open the baggage compartment door (if closed), remove the safety tag and close the HF COMM XCVR circuit breaker.
(5) Close the baggage compartment door.
(6) Remove the safety tag and close the HF COMM CTRL and LTS DIM 1 circuit breaker on Copilot Circuit Breakers Panel.
(7) Set the Avionics Master Switch to AVIONICS.
(8) Set the battery switch to BAT.
(9) Remove the Warning Notice in the flight compartment.

5. Control Panel KFS 594 with Bus Adapter KA 594 (Ferry Flight Configuration) - Installation

NOTE: For Control Panel KFS 594 with Bus Adapter KA 594 "Ferry Flight Configuration"installation procedure, refer to para 4 of this section.

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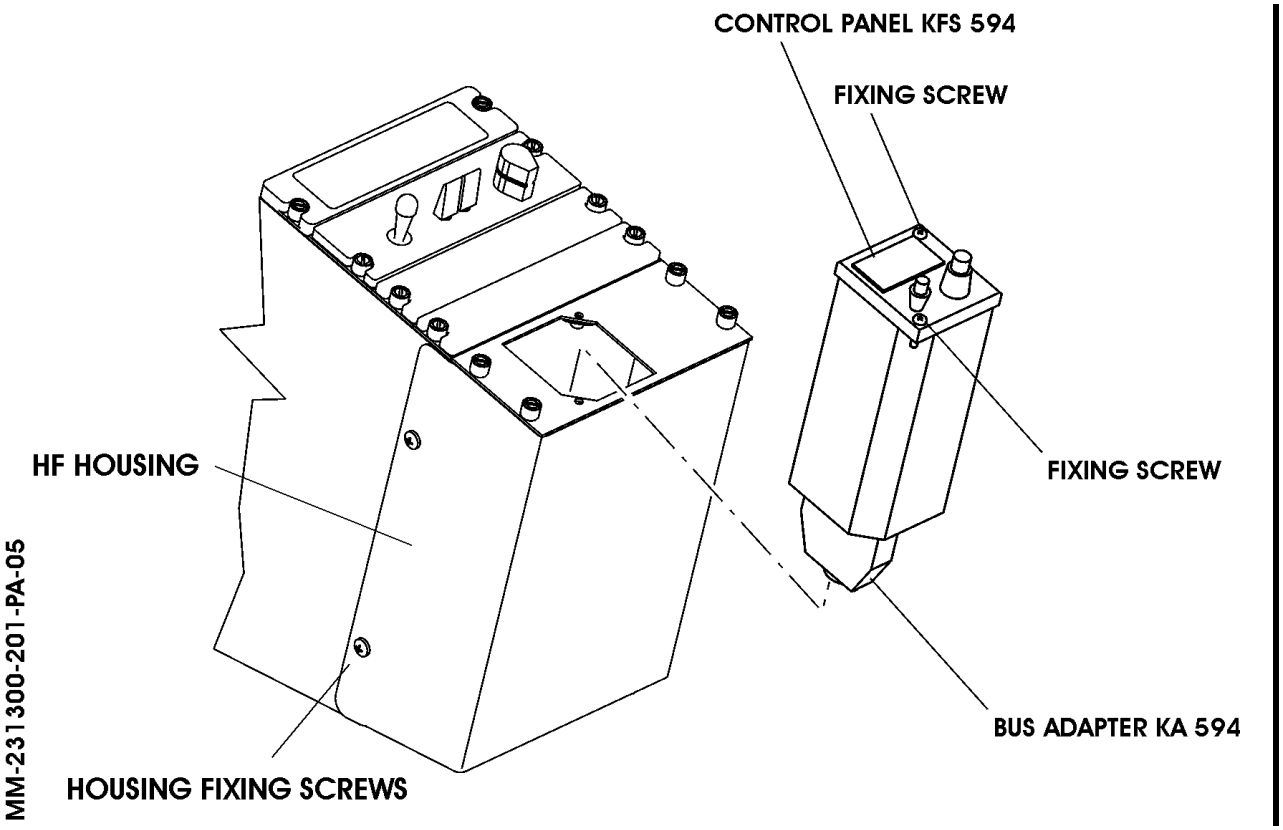

Fig. 201 - Control Panel KFS 594

6. Transceiver KTR 993 - Removal (Refer to Fig. 202)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags
Blanking cap

B. Referenced Information

Maintenance Manual Chapter 06-00-00

C. Procedure

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Set the battery switch to OFF.
(3) Set the Avionics Master Switch to OFF.
(4) Open, tag and safety the HF COMM CTRL circuit breaker on Copilot Circuit Breakers Panel.
(5) Open the baggage compartment door, open, tag and safety the HF COMM XCVR on the Main Junction Box circuit breaker panel.
(6) Disconnect the three electrical connectors.
(7) Loosen the two hold down nuts
(8) Raise handle and pull out unit from the rack.
(9) Put caps on the electrical connectors

7. Transceiver KTR 993 (Ferry Flight Configuration) - Removal (Refer to Fig. 203)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags
Blanking cap

B. Referenced Information

Maintenance Manual Chapter 06-00-00

C. Procedure

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Set the battery switch to OFF.
(3) Set the Avionics Master Switch to OFF.
(4) Open, tag and safety the HF circuit breaker on the Main Junction Box circuit breaker panel.
(5) Disconnect the two electrical connectors (4) and the antenna connector (5) from the Transceiver.
(6) Loosen the two hold down nuts (2).
(7) With the handle pull up HF Transceiver (1) from the support (3).

(8) Put caps on the electrical connectors.
(9) Remove the two fixing screws (7) from the relay bracket.
(10) Remove the relay (6).
(11) Remove the fixing screws, washers and nuts from the transceiver support.
(12) Remove the tranceiver support (3).
(13) Remove the relay bracket (8).

8. Transceiver KTR 993 - Installation (Refer to Fig. 202)

A. Referenced Information Procedure

Maintenance Manual Chapter 06-00-00

(1) Open the baggage compartment door, if closed.
(2) Remove the caps from electrical connectors, if present.
(3) Insert the transceiver in the rack.
(4) Engage and tighten the two hold down screws.
(5) Connect the three electrical connectors.
(6) Remove the safety tag and close the HF COMM XCVR on the Main Junction Box circuit breaker panel.
(7) Close the baggage compartment door.
(8) Remove the safety tag and close the HF COMM CTRL circuit breaker on Copilot Circuit Breakers Panel.
(9) Set the Avionics Master Switch to AVIONICS.
(10) Set the battery switch to BAT.
(11) Remove the Warning Notice in the flight compartment.

9. Transceiver KTR 993 (Ferry Flight Configuration) - Installation (Refer to Fig. 203)

A. Referenced Information Procedure

Maintenance Manual Chapter 06-00-00

(1) Open the baggage compartment door, if closed.
(2) Remove the caps from electrical connectors, if present.
(3) Place the HF Transceiver on its own support (3).
(4) Engage and tighten the two hold down nuts (2).
(5) Connect the two electrical connectors and the antenna connector (5) to the Transceiver.
(6) Remove the safety tag and close the HF circuit breaker on the Main Junction Box circuit breaker panel.
(7) Close the baggage compartment door.
(8) Set the Avionics Master Switch to AVIONICS.
(9) Set the battery switch to BAT.
(10) Remove the Warning Notice in the flight compartment. .

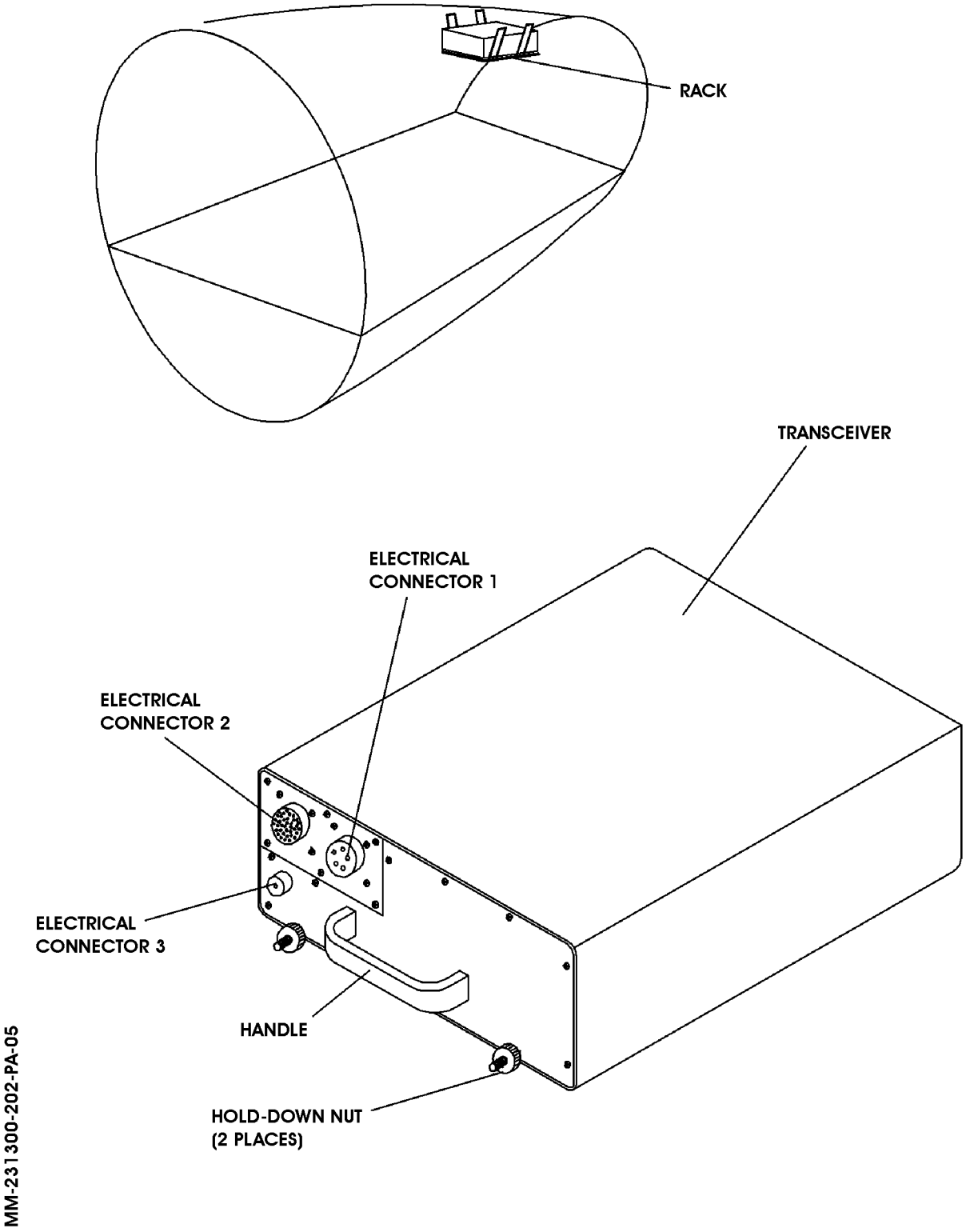

Fig. 202 - Transceiver KTR 993

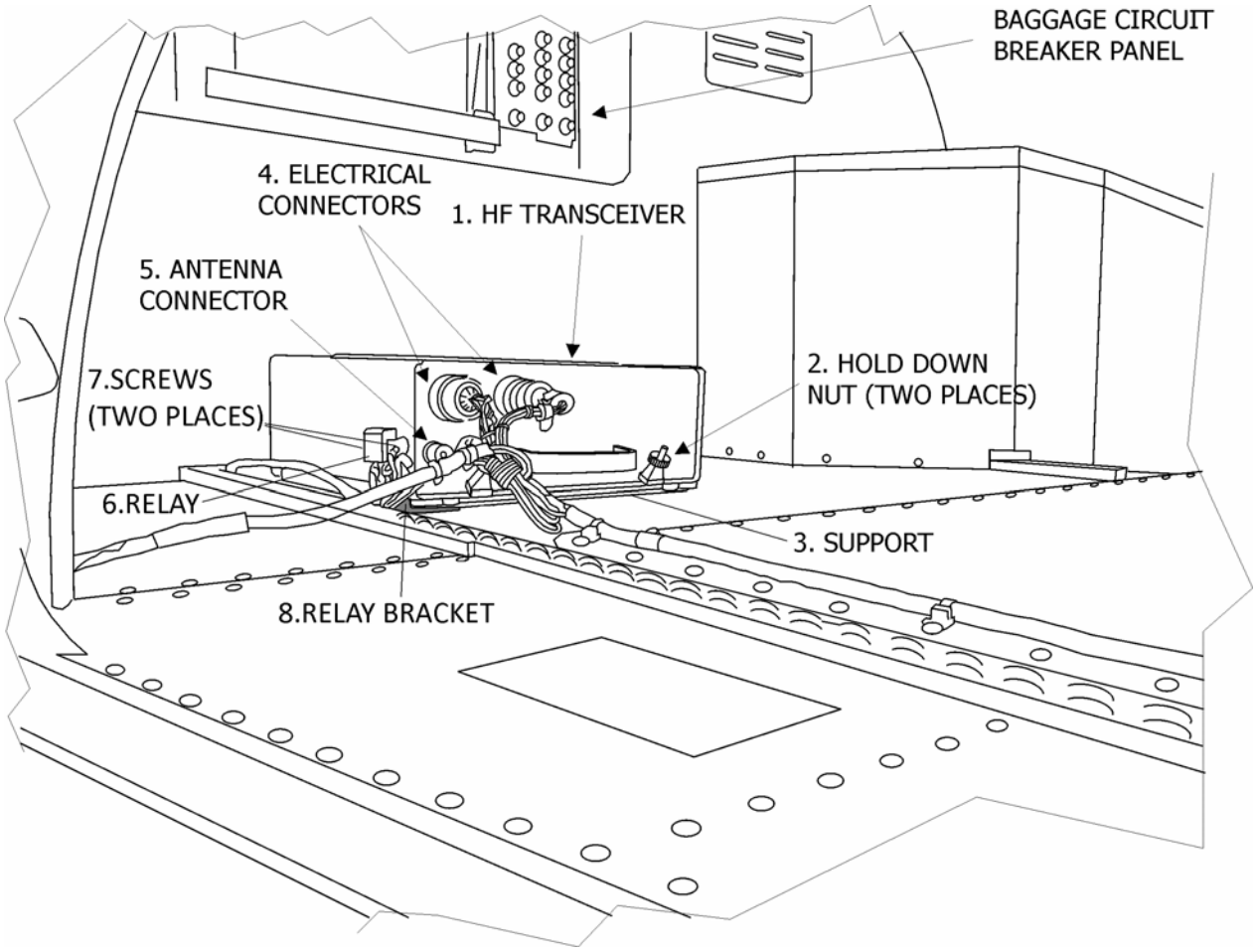

Fig. 203 - Transceiver KTR 993 Ferry Flight Configuration - Removal / Installation

10. Antenna and Antenna Coupler KAC 992 - Removal (Refer to Fig. 204)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags
Blanking cap
Wrench

B. Referenced Information

Maintenance Manual Chapter 06-00-00

C. Procedure

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Set the battery switch to OFF.
(3) Set the Avionics Master Switch to OFF.
(4) Open, tag and safety the HF COMM CTRL circuit breaker on Copilot Circuit Breakers Panel.
(5) Open the baggage compartment door, open, tag and safety the HF COMM XCVR on the Main Junction Box circuit breaker panel.
(6) Remove the tail cone and access panels.
(7) Loosen the fixing screw that secure the antenna to the coupler.
(8) With a wrench keep the position of the coupler/antenna attachment and at the same time unscrew the antenna.
(9) Remove the antenna.
(10) Disconnect the electrical connector and the RF strap from the coupler.
(11) Loosen the two clamps that secure the coupler to the airplane structure.
(12) Withdrawn the coupler out of the tail cone.

11. Antenna and Antenna Coupler KAC 992 (Ferry Flight Configuration) - Removal

NOTE: For Antenna and Antenna Coupler KAC 992 "Ferry Flight Configuration" removal procedure, refer to para 10 of this section.

12. Antenna and Antenna Coupler KAC 992 - Installation (Refer to Fig. 204)

A. Referenced Information

Maintenance Manual Chapter 06-00-00

B. Procedure

(1) Remove the cap from electrical connector, if present.
(2) Carefully slide the coupler into clamps until reach its own position.
(3) Connect the electrical connector.
(4) Tighten the two clamps.
(5) Install the tail cone fairing and access panels.
(6) Connect antenna to the coupler and secure it with fixing screw.
(7) Open the baggage compartment door (if closed), remove the safety tag, close and close the HF COMM XCVR on the Main Junction Box circuit breaker panel.
(8) Close the baggage compartment door.
(9) Remove the safety tag and close the HF COMM CTRL circuit breaker on Copilot Circuit Breakers Panel.
(10) Set the Avionics Master Switch to AVIONICS.
(11) Set the battery switch to BAT

13. Antenna and Antenna Coupler KAC 992 (Ferry Flight Configuration) - Installation

NOTE: For the Antenna and Antenna Coupler KAC 992 "Ferry Flight Configuration" installation procedure, refer to para 12 of this section.

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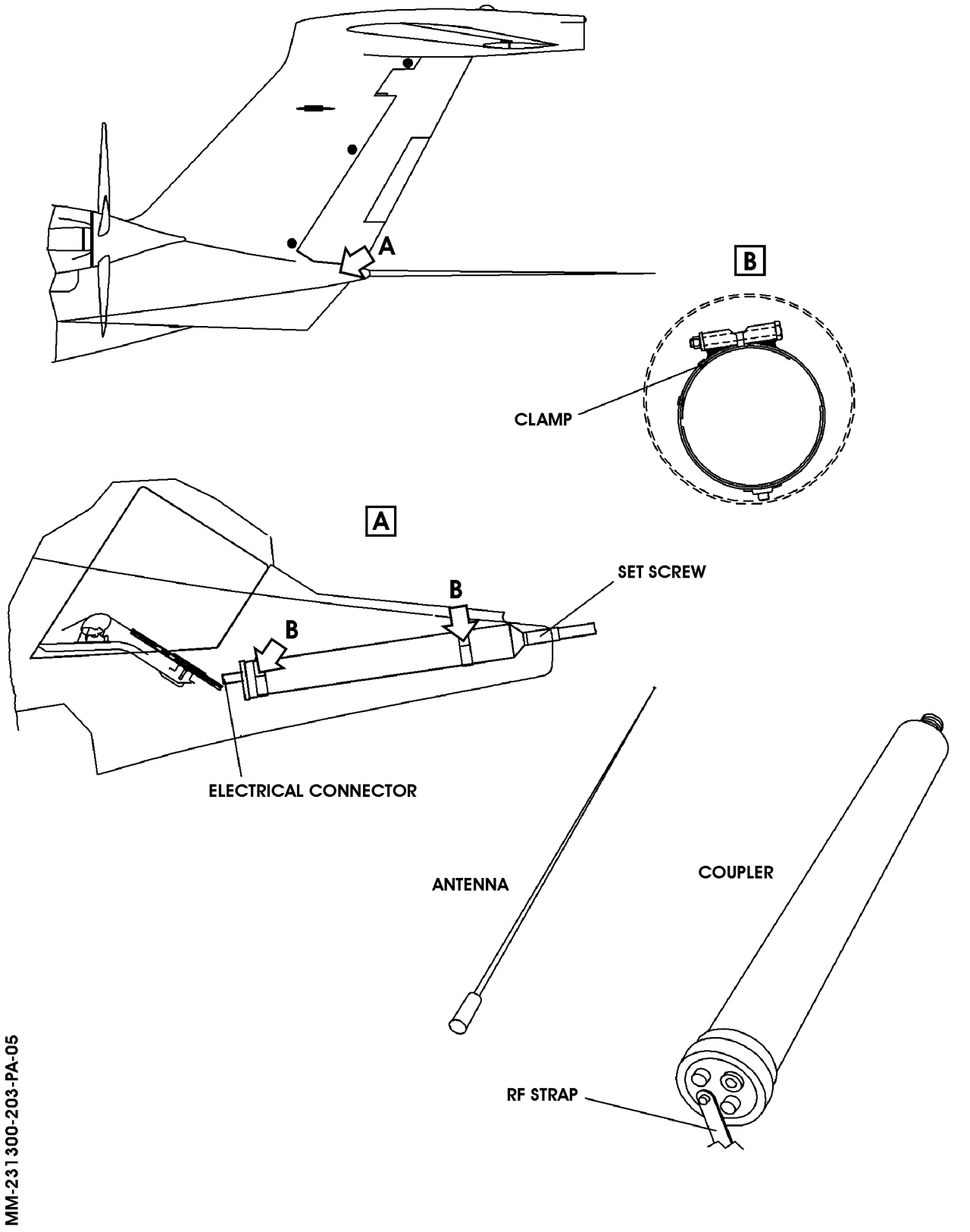

Fig. 204 - Antenna and Antenna Coupler KAC 992

14. HF Circuit Breakers Removal

(1) Open the main junction box circuit breaker door.
(2) Disconnect the terminals from CB 5058 and CB5066.
(3) Remove the cable between the two circuit breakers.
(4) Remove the cable between the CB5058 and CB16.
(5) Remove the CB5058 (PWR) and CB5066 (CONT).
(6) Place plastic stopper in place of removed circuit breakers
(7) Detach the "PWR HF CONT" label below the two circuit breakers
(8) Close the main junction box circuit breaker door.

15. Antenna Wiring Harness Removal

(1) Disconnect the antenna connector from the tranceiver.
(2) Disconnect the coupler electrical connector from the transceiver.
(3) Remove the back side panel of the baggage compartment.
(4) Disconnect the antenna connector from the antenna coupler.
(5) Disconnect the electrical connector from the antenna coupler.
(6) Cut the cable straps and remove them with the antenna cable.
(7) Install the back side interior panel.

16. HF Control Panel Wiring Harness Removal

(1) Disconnect the HF Control Panel electrical connector from the tranceiver.
(2) Disconnect the P5017 connector from the J5017 socket on frame 6000.
(3) Disassemble the P5017 connector in order to remove this connector from the cable.
(4) Cut all the cable straps that tie up the HF Control Panel cable to the existing harness.
(5) Pull up the LH FWD corner of the baggage compartment interior panel.
(6) Pull the cable and remove it from the aircraft.

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UHF/AM SYSTEM - DESCRIPTION AND OPERATION

1. Description

The UHF/AM radio communication system consists of a receiver-transmitter (located in the passenger compartment, inside the Cabinet Vanity Closet on a suitable mount) and of a control unit (located on the central instrument panel); for the antenna the UHF section of the VHF/UHF dual antenna is used (located on the top of the fuselage in the same position of the basic VHF antenna).
The system can operate in UHF/AM mode from 225 to 399.975 MHz with 25KHz increments. The receiver transmitter has a second receiver at fixed frequency (international guard frequency: 243 MHz) continuously monitored.
The system is powered by Right Avionics Single Feed Bus being the AVIONICS switch set to ON position.
The system is electrically protected by the circuit breaker labeled COMM3 located on the copilot circuit breaker panel.
The audio system interface allows the selection and the operation of the system either by the pilot or the copilot through the COM3 pushbuttons on their respective audio control panels.

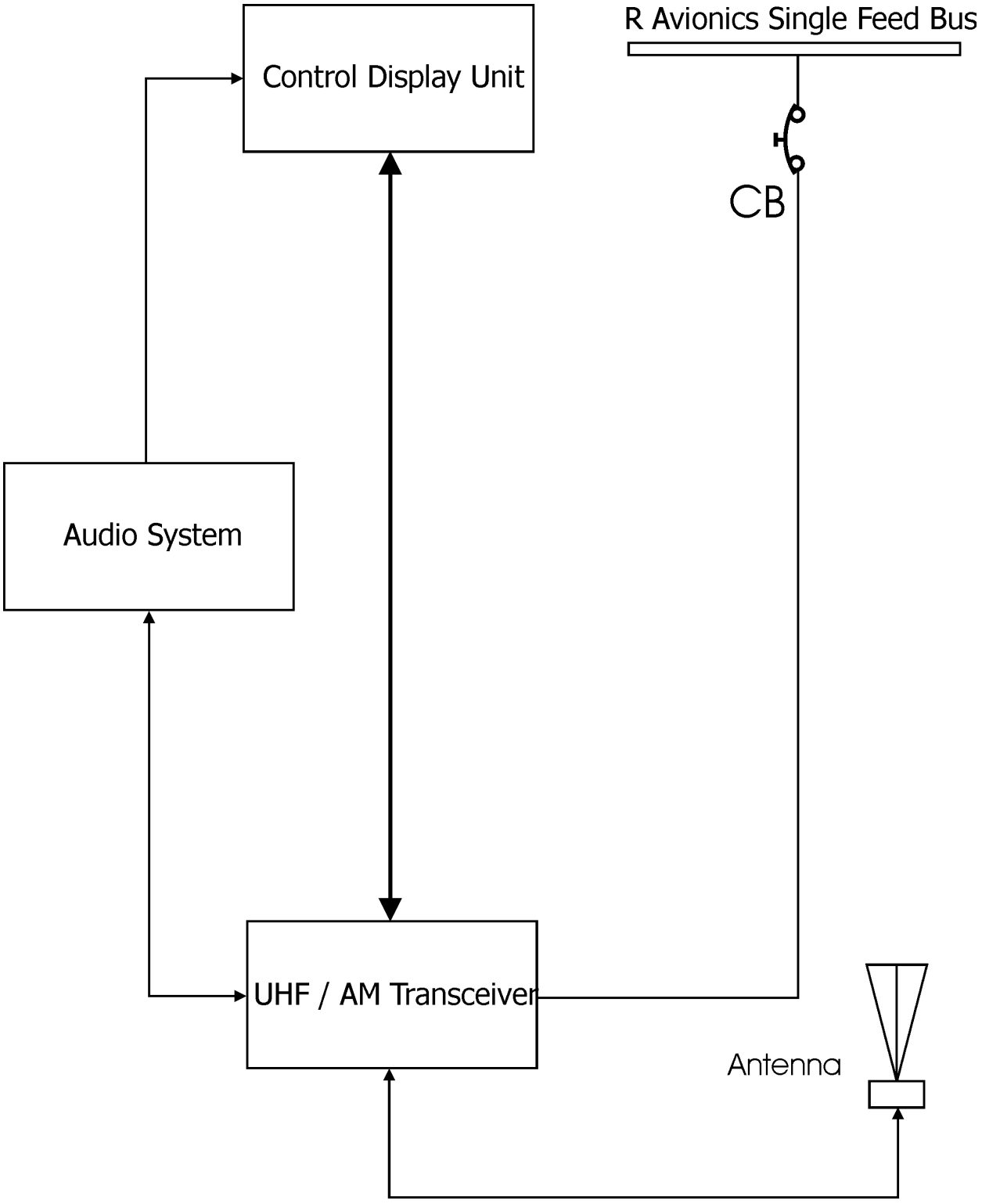


Fig. 1 - UHF/AM System - Block Diagram

-UHF/AM SYSTEM - MAINTENANCE PRACTICES

1. General

A. This topic gives the maintenance practices for the components which follows:

- UHF/AM Transceiver
- UHF/AM Control Panel
- Dual VHF/UHF Antenna

2. UHF/AM Transceiver - Removal(Ref. Fig. 201)

NOTE: The transceiver is located in the passenger compartment, inside the Cabinet Vanity Closet on a suitable mount.

A. Fixture Test and Support equipment

Protective caps - electrical connector and receptacle

B. Referenced Information

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 06-00-00

C. Procedure

(1) Set the battery switch to OFF.
(2) Open, tag and safety this circuit breaker:

Copilot CB panel:
COMM 3

(3) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(4) Remove the Cabinet Vanity Closet Floor (1).
(5) Disconnect the Electrical Connectors (2, 3) from the Transceiver (4).
(6) Loosen the Hold-Down Nut (5).
(7) Pull out slowly the Transceiver (4) from rack (6).
(8) Cap and stow the electrical connectors and the wiring harness from dust if replacement unit is not to be installed immediately.

3. UHF/AM Transceivers - Installation(Ref. Fig. 201)

A. Reference Information

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 06-00-00

B. Procedure

(1) Make sure as necessary that:

- The applicable circuit breakers are open, tagged and safetied
- The Warning Notices are in position
- The system is safe
- Access is available

(2) If previeously installed, remove the cap from the electrical connectors and free the electrical harness.
(3) Carefully slide the Transceiver (4) onto rack (6).
(4) Connect the Electrical Connectors (2, 3) .
(5) Engage the Hold-Down Nut (5) and tighten.
(6) Install the Cabinet Vanity Closet Floor (1).
(7) Remove the safety tags and close the circuit breaker COMM 3.
(8) Remove the Warning Notices in the flight compartment.

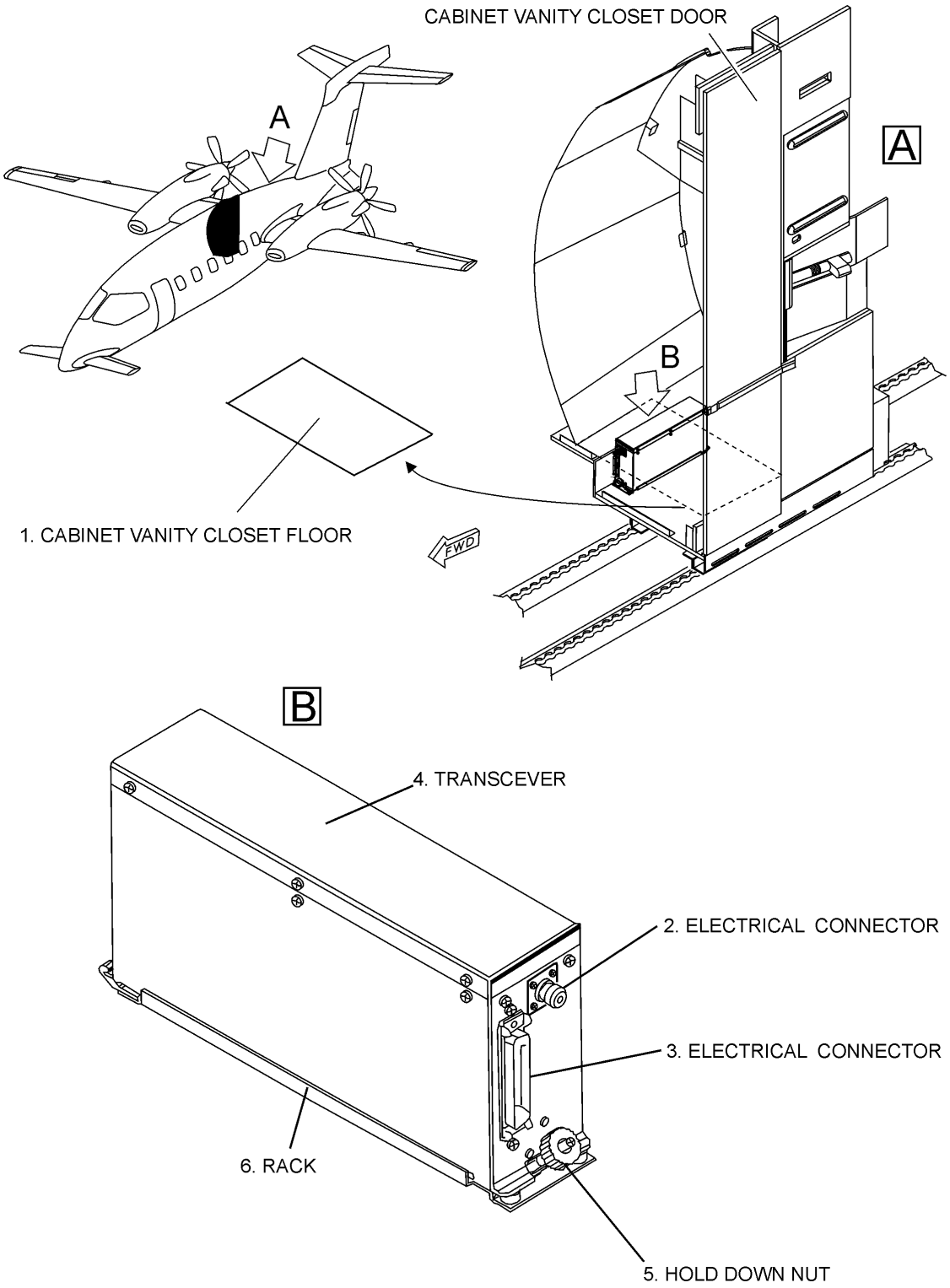


Fig. 201 - UHF/AM - Transceiver - Removal/Installation

4. UHF/AM Control Panel - Removal (Ref. Fig. 202)

A. Fixture Test and Support equipment

Protective caps - electrical connector and receptacle

B. Procedure

(1) Set the battery switch to OFF.
(2) Open, tag and safety this circuit breaker:

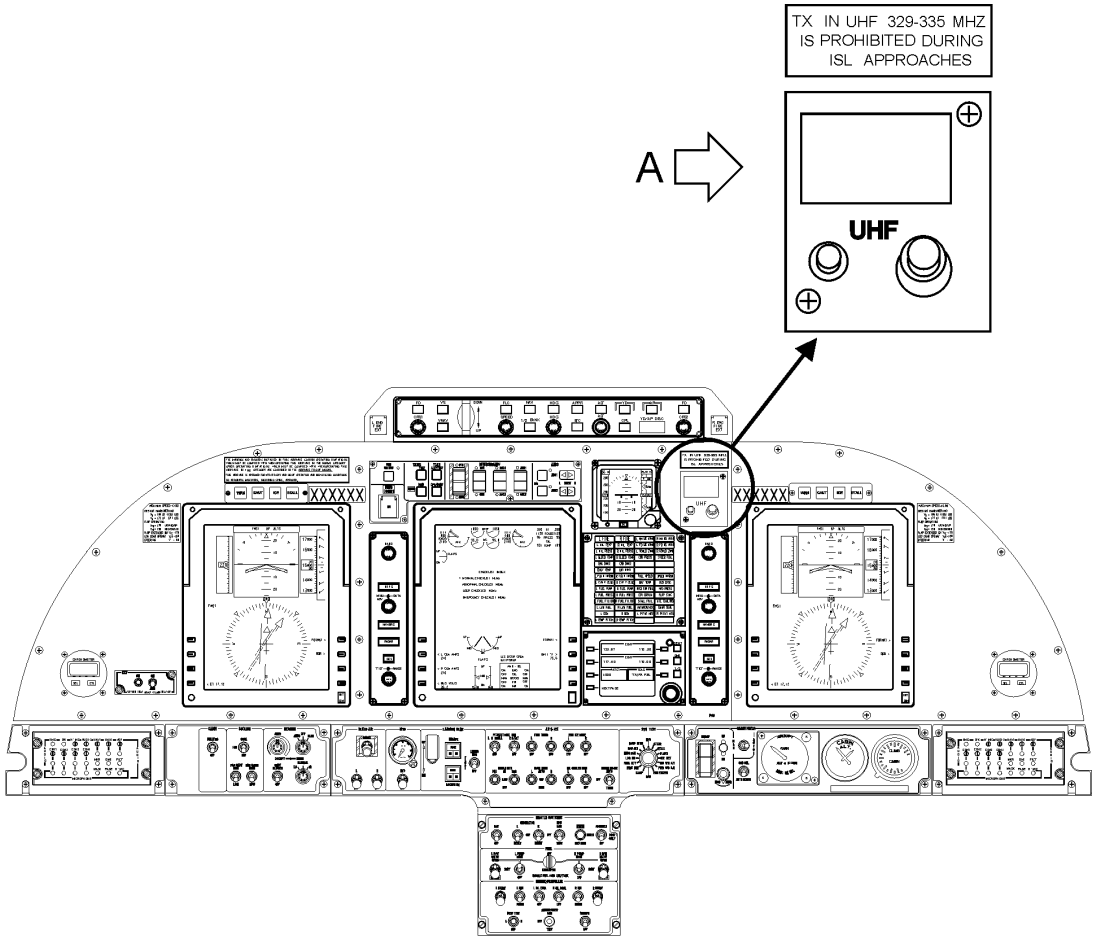
Copilot CB panel:
COMM 3

(3) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(4) Unscrew the two screws (1) that secure the UHF/AM control panel (3) to the instrument copilot side.
(5) Withdraw the unit to access the electrical connector (2).
(6) Disconnect the electrical connector (2) and remove the control unit.
(7) Cap and stow the electrical connector and the wiring harness from dust if replacement unit is not to be installed immediately.

5. UHF/AM Control Panel - Installation (Ref. Fig. 202)

A. Procedure

(1) Make sure as necessary that:
– The applicable circuit breakers are open, tagged and safetied
– The Warning Notices are in position
– The system is safe
– Access is available
(2) If previeously installed, remove the cap from the electrical connector and free the electrical harness.
(3) Mate the electrical connector (2) to the control unit (3).
(4) Insert the unit in its own position in the instrument panel.
(5) Rotate the two mounting screw (1) until the unit is firmly held in place.
(6) Remove the safety clips and tags and close the circuit breaker COMM 3
(7) Remove the Warning Notices in the flight compartment..



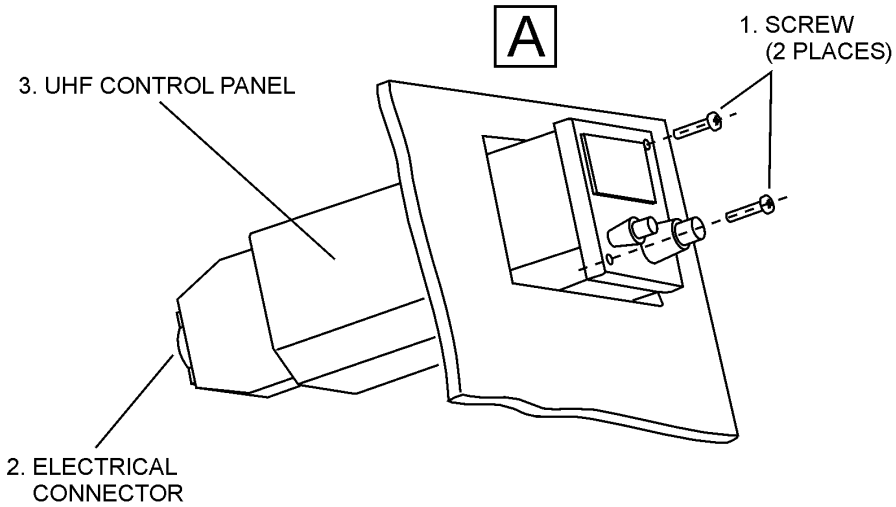


Fig. 202 - UHF/AM Control Panel - Removal/Installation

6. HR Smith V/UHF Combined Antenna - COM 1 - Removal (Ref. Fig. 203)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags

B. Procedure

(1) Set the battery switch to OFF.
(2) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
COMM 1	COMM 3

(3) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(4) Remove the six screws (1) from the antenna base.
(5) Cut sealant and withdraw the antenna (2) to gain access to the co-axial cable connector (3).
(6) Disconnect the co-axial cable and remove the antenna.
(7) Cap and stow the electrical connector and the wiring harness from dust if replacement unit is not to be installed immediately.

7. HR Smith V/UHF Combined Antenna - COM 1 - Installation(Ref. Fig. 203)

A. Fixtures, Test and Support Equipment

0.5 in (13 mm) paint brush	Not specified
Non-metallic spatula	Not specified

B. Materials

Sealant, PR1422B2	As required
Methyl-Ethyl-Ketone (MEK)	As required

C. Referenced Information

Maintenance Manual Chapter 20-00-00

D. Procedure

(1) Make sure as necessary that:
- The applicable circuit breakers are open, tagged and safetied
- The Warning Notices are in position
- The system is safe
- Access is available

(2) If previeously installed, remove the cap from the electrical connector and free the electrical harness.

WARNING: BE CAREFUL WHEN YOU USE MEK. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20

(3) Clean the replacement parts and their interfaces (Refer to 20-00-00).
(4) Connect the co-axial cable to the antenna (1).
(5) Locate antenna and attach with six screws (2).
(6) Apply a fillet of sealant around the antenna base (Refer to 20-00-00).
(7) Remove excessive sealant (Refer to 20-00-00).
(8) Remove safety clips and tags and set circuit breakers COMM 1 and COMM 3.
(9) Remove the Warning Notices in the flight compartment.

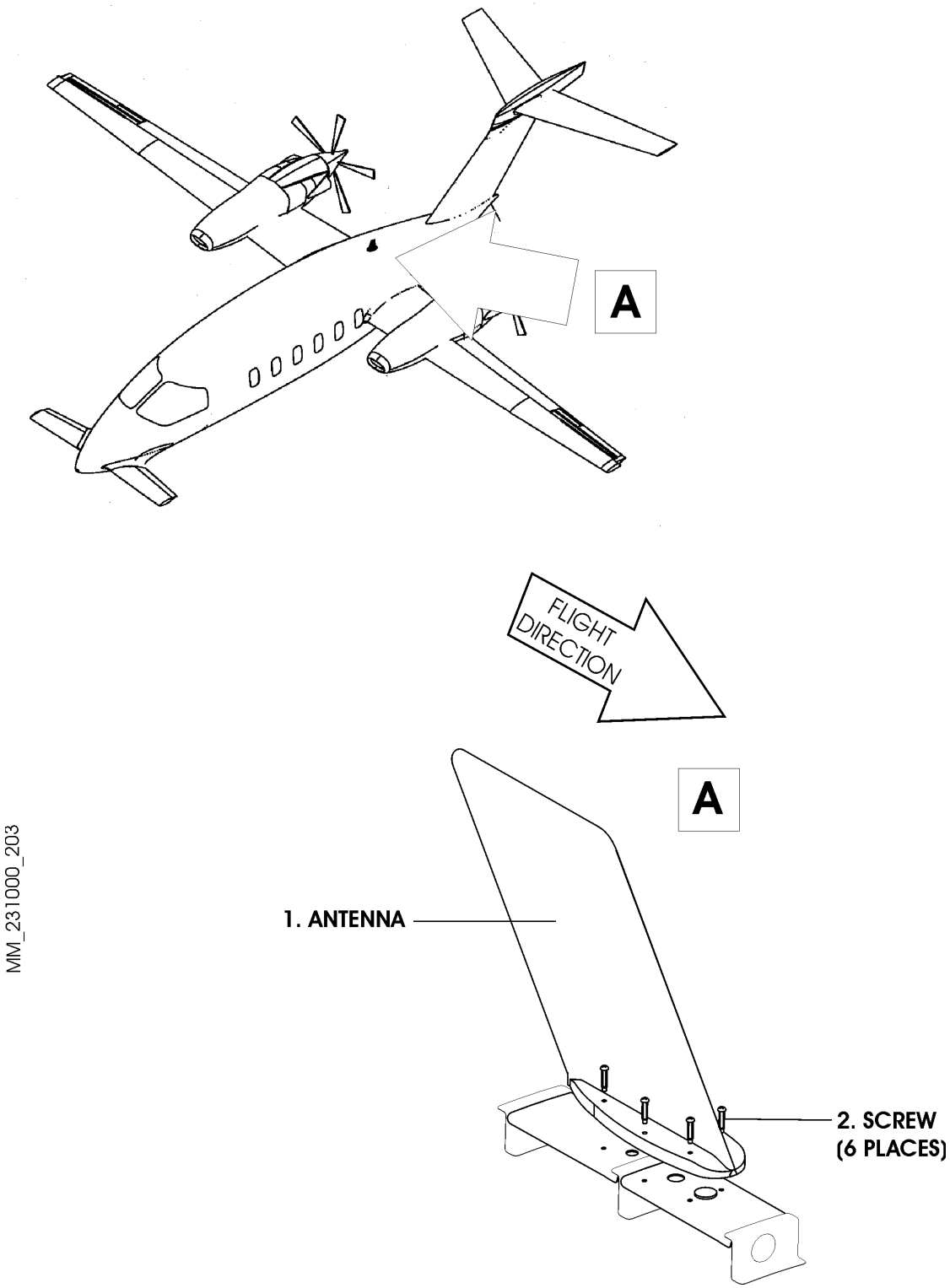


Fig. 203 - HR Smith V/UHF Combined Antenna - Removal/Installation

SAT COM - DESCRIPTION AND OPERATION

1. General

A. The SAT COM system provides speech communications between the airplane and any telephone number in the world.

2. Description

A. SATCOM. It is a speech communications system between the airplane and any telephone number in the world. It consists of a cordless handset, a handset base, a transceiver and an antenna, accessing the Iridium Satellite Network of 66 Low Earth Orbit (LEO) satellites.

Refer to Fig. 1 for the block diagram

Refer to Fig. 2 for the components locations.

3. System Description

The SAT COM system is based on AirCell ST 3100 Iridium Network Telephone. It is a mobile transmitter and receiver, accessing the Iridium Satellite Network of 66 Low Earth Orbit (LEO) satellites and operating in the frequency range of 1,616 MHz to 1,625.5 MHz. When the telephone is active, the system controls the power level at which it transmits. The transmit power level can range up to a maximum of 7 watts.

The components of the system are:

A. Iridium Patch Antenna

B. Transceiver

C. Handset Base

D. Handset

A. Iridium Patch Antenna
The patch antenna is a low profile Iridium antenna that provides continuous coverage from 1,565 MHz to 1,626.5 MHz for Iridium applications. Mechanical configuration is a spherical-radius molded random that provides enhanced protection against rain, ice, and lightening strikes. It has a TNC female connector.

B. Transceiver
The transceiver is the main component of the system. It transmit/receive voice to/ from the antenna and to/from the base station.

C. Handset Base
The handset base houses the cordless handset, providing the communication to/ from the cordless handset itself and provides power charging to the handset battery. The handset base can be installed either close to the copilot half partition or in the RH armrest when GEVEN interiors are installed; it can be installed either close to the copilot half partition or/and on the Evaporator Cover Box,

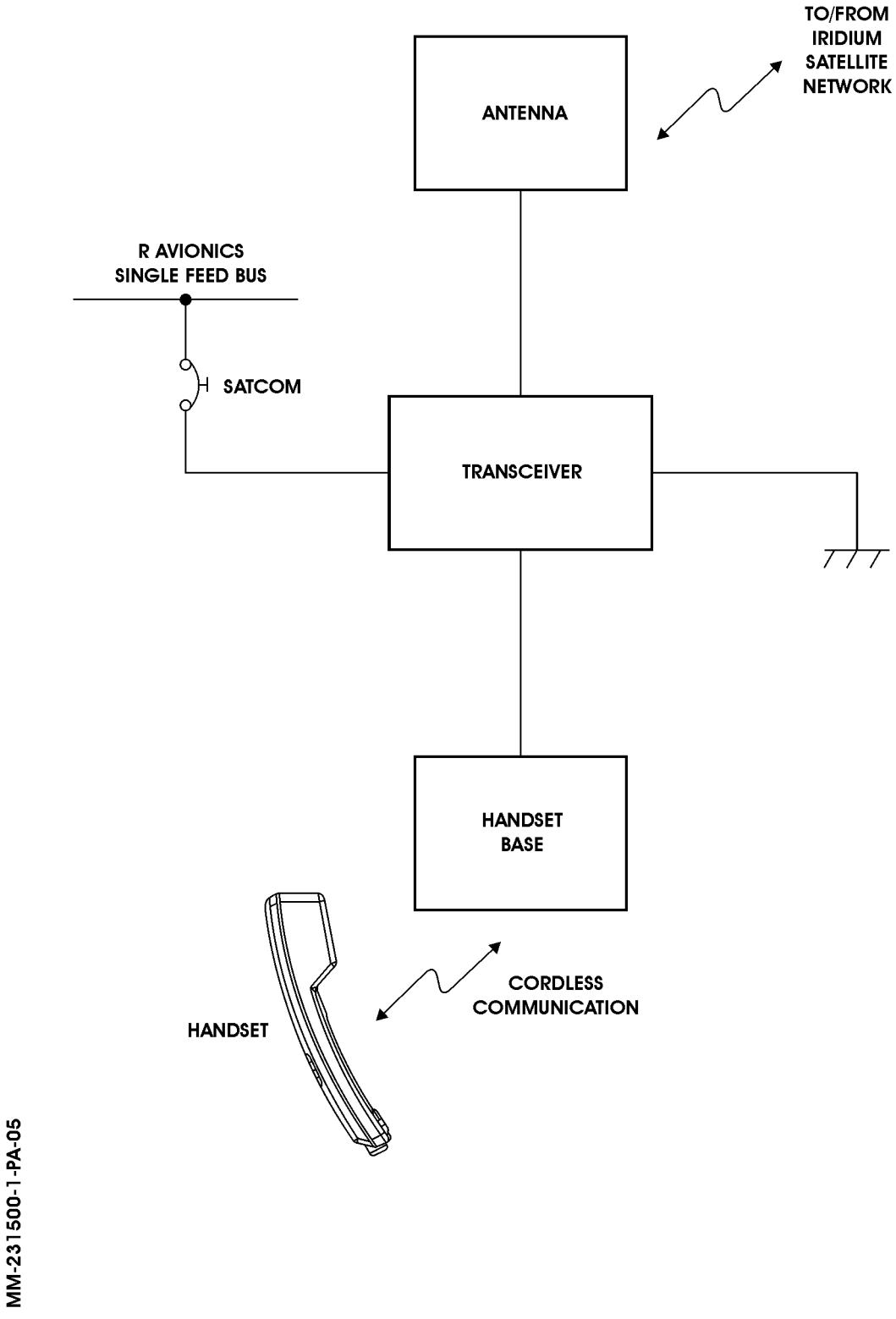


Fig. 1 - SAT COM System - Block Diagram

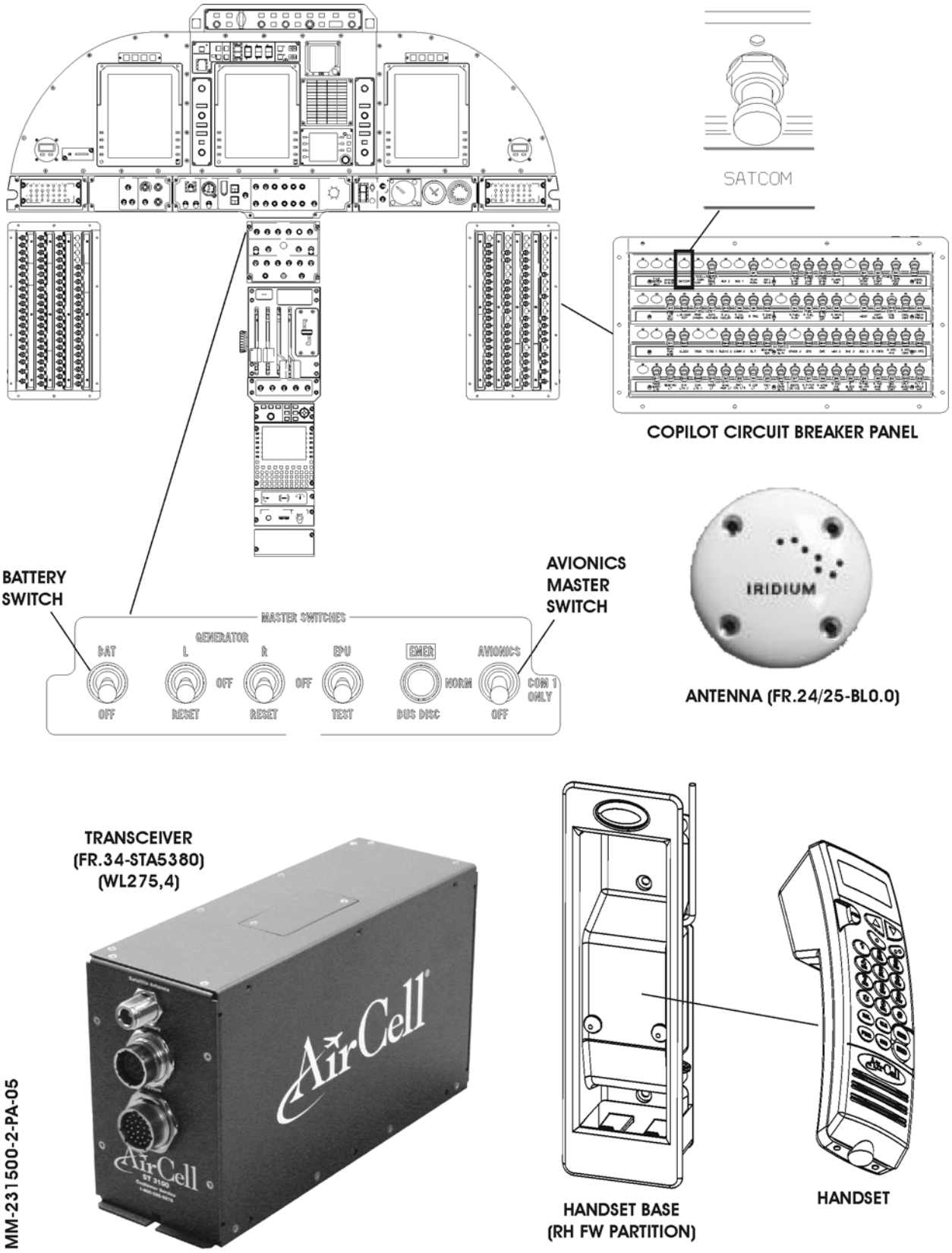


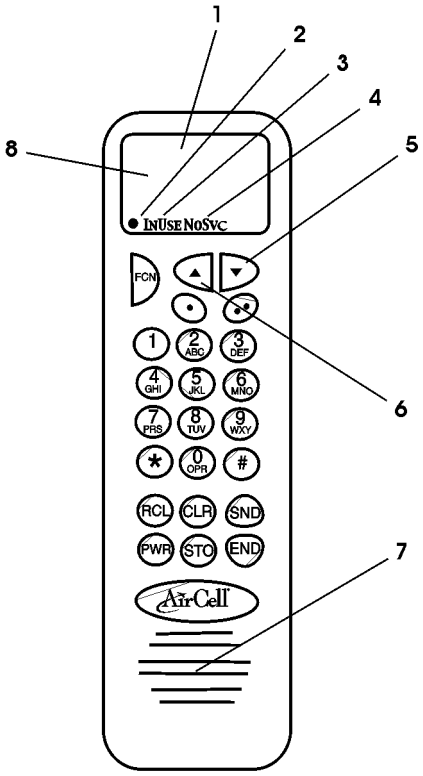
Fig. 2 - SAT COM System - Location

located close to LH rear partition passenger side, when NORDAM interiors are installed.

D. Handset.
The cordless handset constitutes the operation terminal for the use of the system. It includes the operating display, the operating keyboard, the speaker and the microphone. The internal transmitter/receiver is powered by a 9 V rechargeable internal battery. When NORDAM interiors are installed it is possible to install also a corded handset version in either position or any combination of the two handset types.

4. System Operation

A. The operating controls are on the cordless handset.



MM-231500-3-PA-05

1. Operating display and status indicators provide a visual indication of telephone numbers and system operational status.
2. Dot in lower left corner of display is illuminated when the phone is on.
3. **InUse** lights when the phone is in use.
4. **NoSvc** lights when the telephone is not registered.
5. Volume keys adjust ear piece volume (Scrolls Up/Volume Up)
6. Volume keys adjust ear piece volume (Scrolls Down/Volume Down)
7. Microphone
8. Speaker (rear the display)

Fig. 3 - Cordless Handset

A. Volume Settings

(1) Volume Meter. The volume meter represents the current volume setting and will display the current setting whenever you adjust the volume by pushing the volume keys. The volume level is displayed as a bar graph following the letter **V** on the left side of the display.
Each additional bar represents a higher volume setting to a maximum of six.

(2) Ear Piece Volume. While a call is in progress or handset is out of the cradle, ear piece volume may be increased or decreased by pressing and holding the volume keys. The maximum is six bars.

B. Power On. Anytime the aircraft power switches are on, the phone has power. During initial power up, a small dot "•" appears in the lower left corner of the display; the dot will remain as long as the phone has power. The word **IRIDIUM** will appear in the display. During this time, the words **NoSvc** will appear briefly at the bottom center of the display. However, a call cannot be placed until the **NoSvc** light goes out.
Power off may be achieved only by turning off the main avionics power switch.

C. Placing a Call from the Aircraft

(1) With the power on and the **NoSvc** light out, enter the number to call.

(2) Press the SND key.

(3) When a call has been placed, an **InUse** message will illuminate at the bottom left of the display. The **InUse** message will remain until the phone call has been terminated by pressing the END key.

(4) The caller may hear up to five "beeps" in the 10-12 seconds required for the system to complete the call.

D. Receiving a Call
When the telephone rings, remove the handset from the cradle and press the SND key to answer the phone.

E. End a Call
Always press the END key to terminate your current call.

F. Automatic Redial
To redial the last number that you called, press the SND key and the number will be redialed but will not appear on the display.

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SATCOM - MAINTENANCE PRACTICES

1. General

This section describes the maintenance procedures for the following equipment:

A. Iridium Patch Antenna

B. Transceiver

C. Handset Base

D. Handset.

2. Iridium Patch Antenna - Removal (Refer Fig. 2 and Fig. 201).

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags

B. Procedure

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Set the battery switch to OFF.
(3) Set the Avionics Master Switch to OFF.
(4) Open, tag and safety the circuit breaker SATCOM.
(5) Remove the four screws from the antenna.
(6) Cut sealant and withdraw the antenna to access the co-axial cable connector.
(7) Disconnect the co-axial cable and remove the antenna.

3. Iridium Patch Antenna - Installation (Ref. Fig. 2 and Fig. 201)

A. Fixture, Test and Support Equipment

0.5 in (12 mm) paint brush	Not specified
Lint-free cloth	Not specified
Non-metallic spatula	Not specified

B. Materials

06-005, Sealant
02-009, Metyl-Ethyl-Ketone

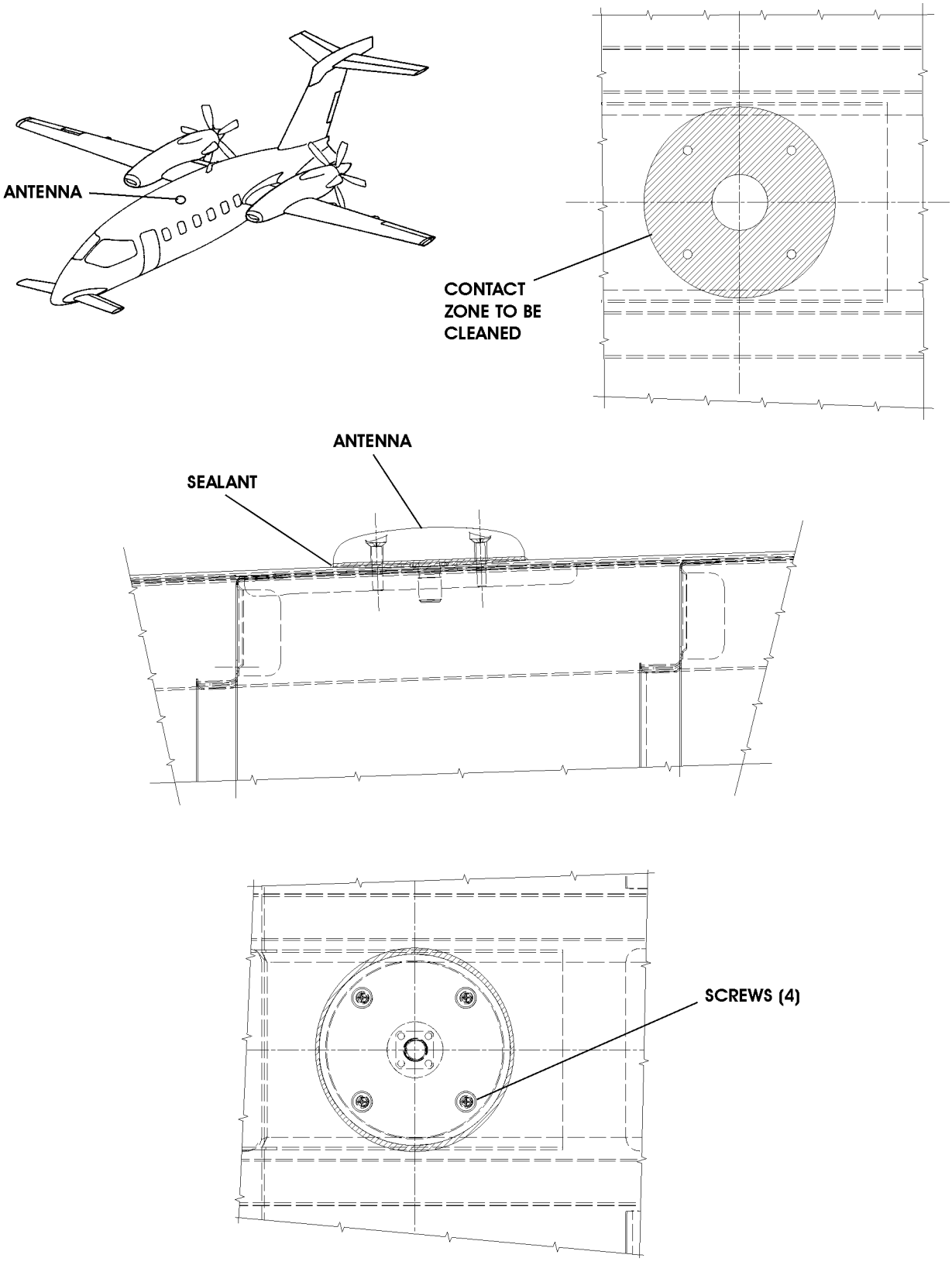

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Fig. 201 - Iridium Patch Antenna

C. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 53-18-00

D. Procedure

(1) Make sure that the system is electrically safe.

WARNING: BE CAREFUL WHEN YOU USE MEK. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(2) Clean the replacement parts and their interfaces (Refer 20-00-00).
(3) Connect the co-axial cable to the antenna.
(4) Locate antenna and attach with four screws.
(5) Apply a fillet of sealant around antenna base (Refer 20-00-00).
(6) Remove excessive sealant (Refer 20-00-00).
(7) Remove the safety tags and close the previously opened circuit breaker SATCOM.
(8) Set the Avionics Master Switch to AVIONICS.
(9) Set the battery switch to BAT.
(10) Remove the Warning Notice in the flight compartment.

4. Transceiver - Removal (Refer Fig. 2 and Fig. 202).

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags	
Blanking caps	Not specified

B. Procedure

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Set the battery switch to OFF.
(3) Set the Avionics Master Switch to OFF.
(4) Open, tag and safety the circuit breaker SATCOM.
(5) Open the transceiver compartment.
(6) Disconnect all the cable from the rear of the trasceiver.
(7) Loosen hold-down nut on the rear side and disengage it from transceiver.
(8) From the rear of the transceiver, carefully lift and pull up the transceiver to remove it ed extract it from the compartment.
(9) Put caps on the electrical connectors.

5. Transceiver - Installation (Ref. Fig. 2 and Fig. 202)

A. Referenced Information

Maintenance Manual Chapter 53-18-00

B. Procedure

(1) Remove the caps from electrical connectors, if present (Ref. Para. 4, item 8).
(2) Carefully slide transceiver onto its mounting base.
(3) Connect all the connectors on the rear side of the transceiver.
(4) Engage hold-down nut and tighten it.
(5) Remove the safety tags and close the previously opened circuit breaker SATCOM.
(6) Set the Avionics Master Switch to AVIONICS.
(7) Set the battery switch to BAT.
(8) Remove the Warning Notice in the flight compartment.

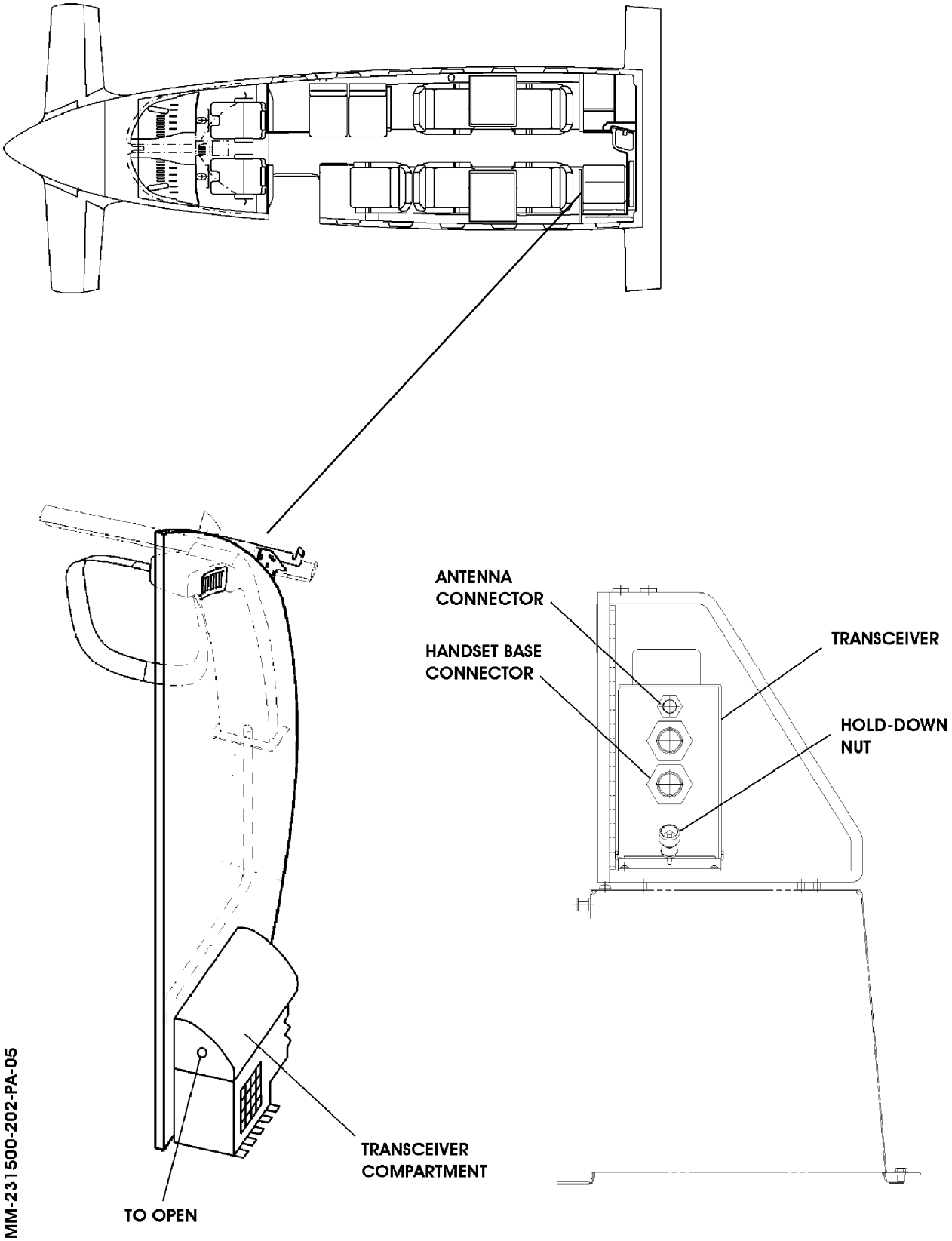


Fig. 202 - Transceiver

6. Handset Base - Removal (Refer Fig. 203).

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags	
Blanking caps	Not specified

B. Procedure

NOTE: The handset base can be installed either close to the copilot half partition or in the RH armrest, the removal procedure is the same for both positions.

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Set the battery switch to OFF.
(3) Set the Avionics Master Switch to OFF.
(4) Open, tag and safety the circuit breaker SATCOM.
(5) Remove the handset from the handset base.
(6) Unscrew and remove the two fixing screws from the bottom of the handset base.
(7) Extract the handset base from its housing and disconnect the cable.
(8) Put caps on the electrical connector.

7. Handset Base - Installation (Ref. Fig. 203)

A. Referenced Information

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 53-18-00

B. Procedure

NOTE: The handset base can be installed either close to the copilot half partition or in the RH armrest, the installation procedure is the same for both positions.

(1) Remove the cap from electrical connector, if present (Ref. Para. 6, point B, item 7).
(2) Insert the connector on the rear of the unit.
(3) Insert the handset base in its housing.
(4) Screw the two screws on the bottom of the handset base.
(5) Insert the handset in the handset base.
(6) Remove the safety tags and close the previously opened circuit breaker SATCOM.
(7) Set the Avionics Master Switch to AVIONICS.
(8) Set the battery switch to BAT.
(9) Remove the Warning Notice in the flight compartment.

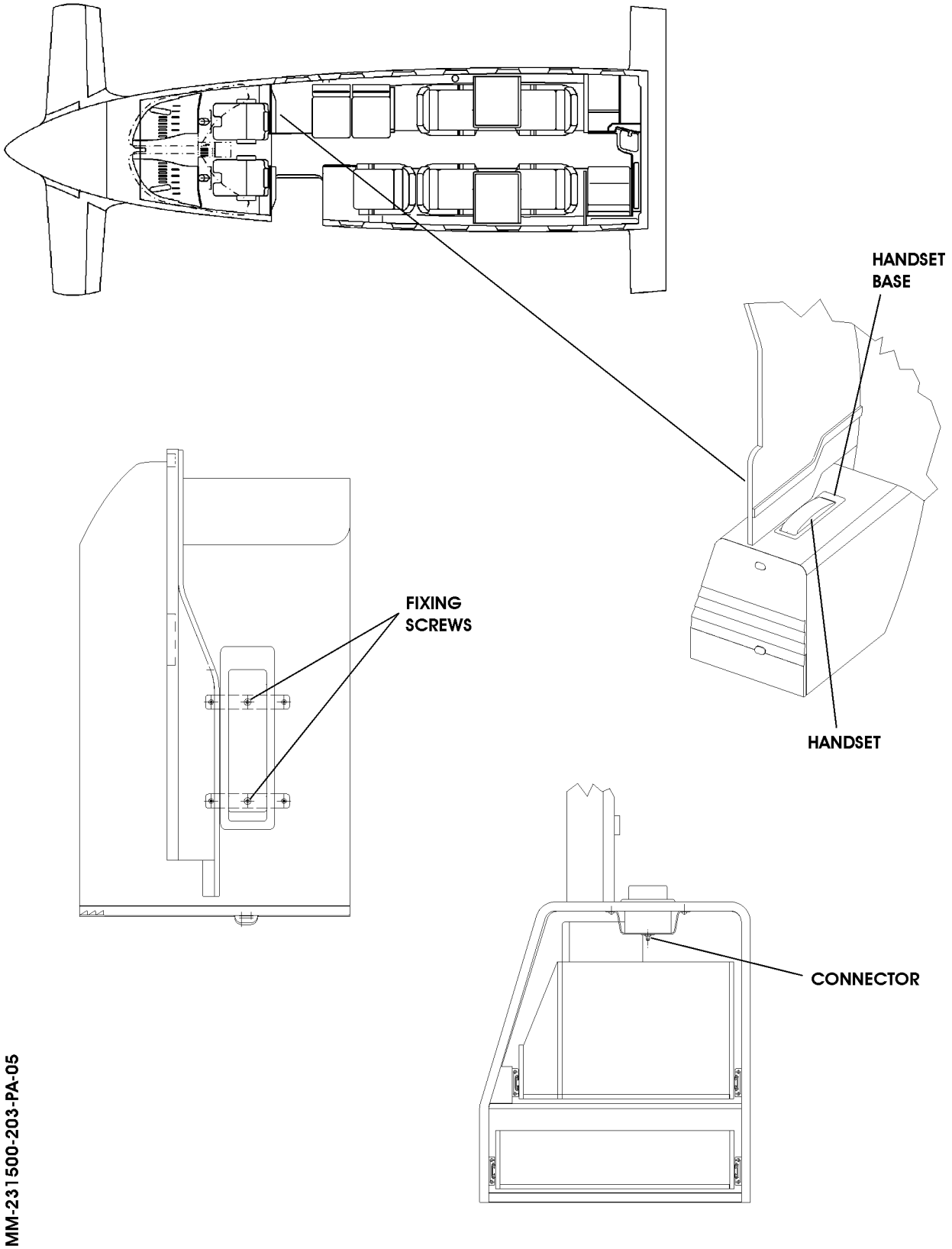


Fig. 203 - Handset Base

8. Handset - Removal/Insertion

A. The handset can be removed/inserted at any time from/to the handset base. There is no mechanical linking between the two units. The electrical connection is obtained by contact between the base and the handset.

CAUTION: THE HANDSET IS 9 VDC POWERED VIA HANDSET BASE. WHEN THE HANDSET IS REMOVED FROM THE BASE, THE CHARGING CIRCUIT IS DISCONNECTED AND THE BATTERY SLOWLY LOSS ITS CHARGE. REINSERT THE HANDSET IN ITS BASE TO RESTORE THE BATTERY CHARGE. IF NECESSARY, CHANGE THE BATTERY WHEN ITS PERFORMANCES BECOME TOO POOR.

AUDIO INTEGRATING - DESCRIPTION AND OPERATION

1. General

A. This section contains description and maintenance instructions related to the management and distribution of audio signals to crew and to the passenger cabin speakers.

2. Description

A. Two identical Audio Control Panels, by Baker Electronics, controls the audio signals coming from COM, NAV, MKR, DME and ADF, the signals from the Aural Warning, the communications between crewmembers and between crew and passengers.

The other components are:

(1) Speakers
(2) Microphones (Jack Panels Microphones and Hand Microphones)
(3) Push-to-talk (PTT) buttons on Control Wheel
(4) Aural Warning System.

Refer to Fig. 1 for the block diagram.

Refer to Fig. 2 for the components location.

B. An Optional third Audio Panel can be installed. This optional kit adds audio listening and interphone communications between the pilots seats and an audio station located in the left side of the passenger compartment (Ref. Fig. 3). The Panel is powered from the RH Avionics Bus through a dedicated 3 Amps Circuit Breaker, named "CABIN AUDIO", located into the Copilot's C/B Panel.
The passenger Cabin Audio Interphonic is not used by crew members so the system functionality is limited to:

(1) listening of all audio communications between pilots and ATC ground station;
(2) interphone communications with pilot and copilot.

No transmission capability is allowed for the Passenger Cabin Audio Interphonic station.

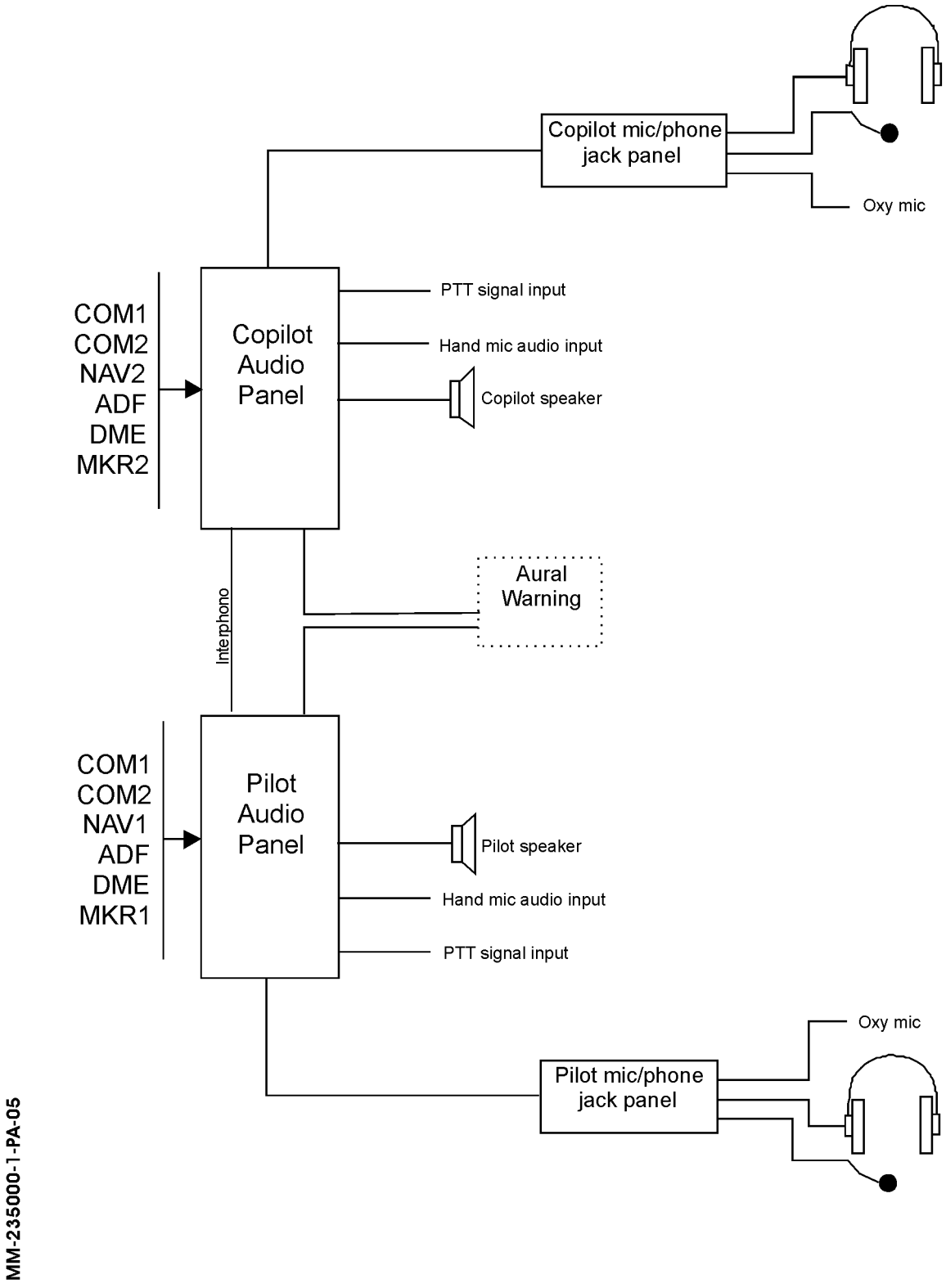


Fig. 1 - Audio Integrating - Block Diagram

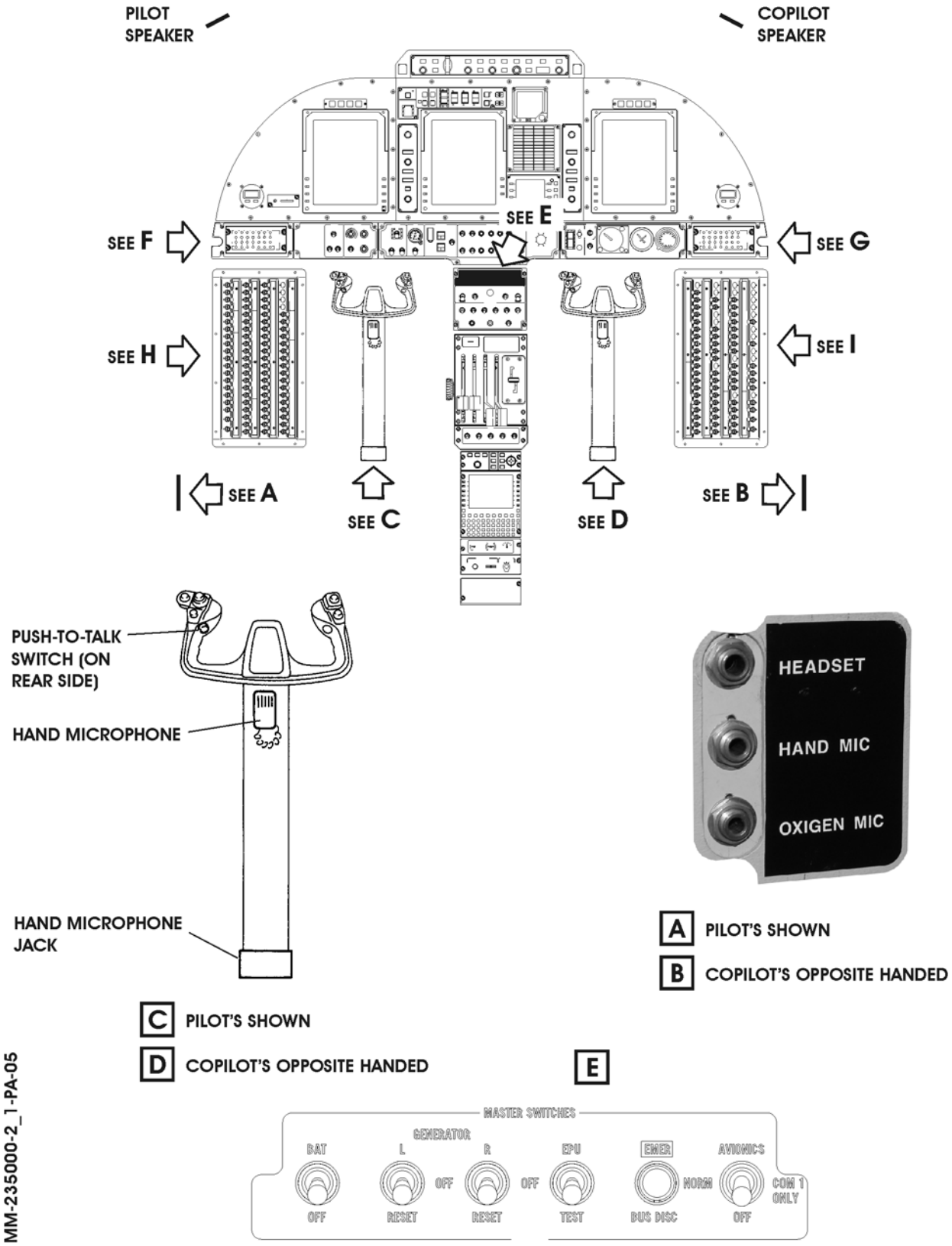
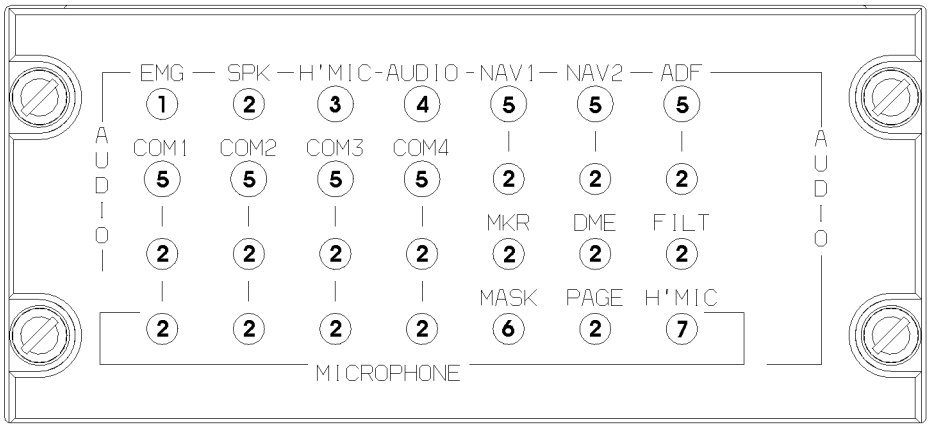


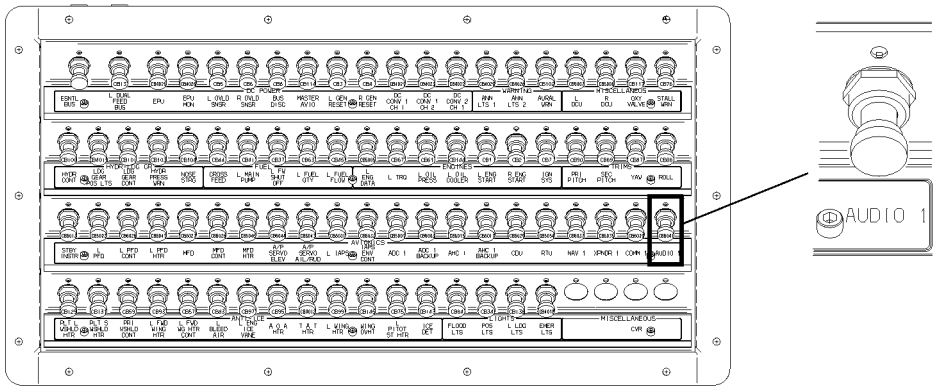
Fig. 2 - Audio Integrating - Location (Sheet 1 of 2)

F **G** **AUDIO PANEL**



1. RED PUSHBUTTON
2. WHITE PUSHBUTTON
3. GREEN POTENTIOMETER
4. BLACK POTENTIOMETER
5. GREY POTENTIOMETER
6. ORANGE PUSHBUTTON
7. GREEN PUSHBUTTON

H **CIRCUIT BREAKER PANEL - PILOT SIDE**



I **CIRCUIT BREAKER PANEL - COPILOT SIDE**

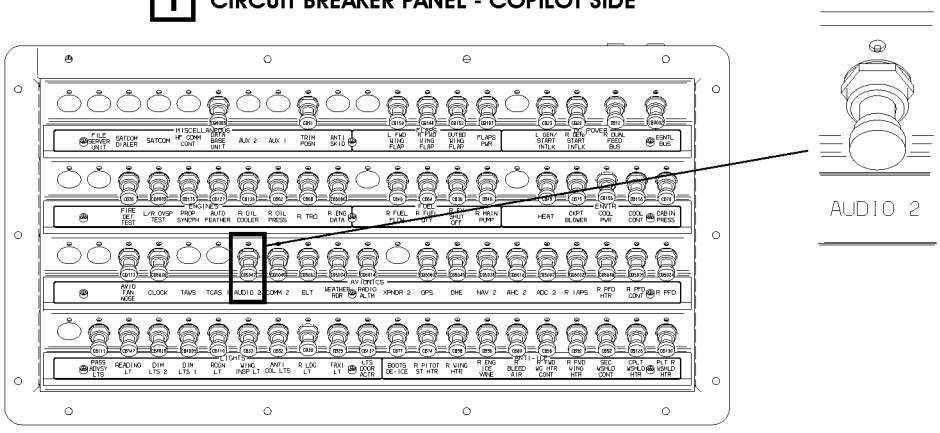


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Fig. 2 - Audio Integrating - Location (Sheet 2 of 2)

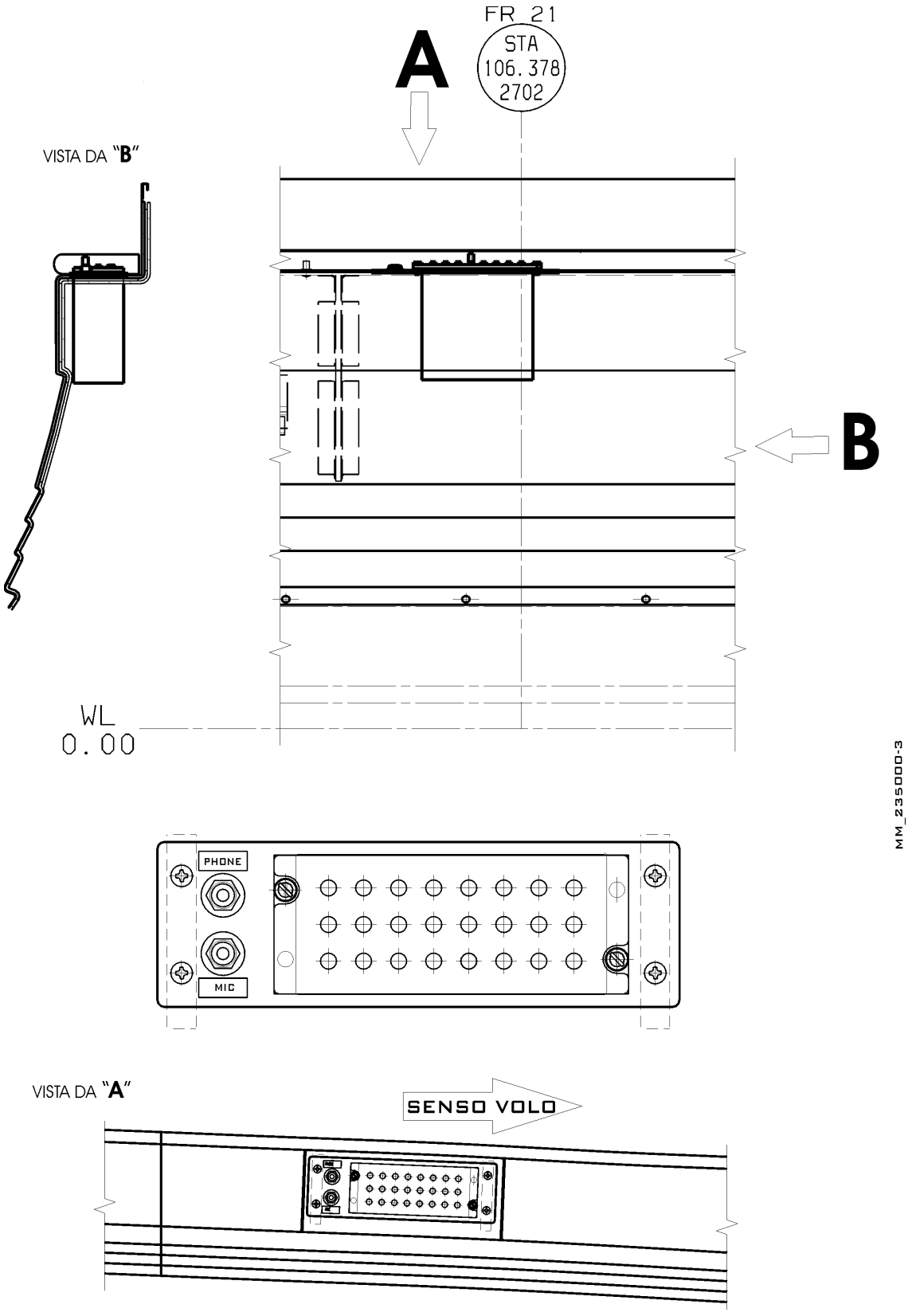

Fig. 3 - Passenger Cabin Audio Interphonic

3. System Description

A. Audio Control Panels

The pilot and copilot Audio Control Panel are installed in the low side of the cockpit and allow pilot and copilot to choose:

(1) To speak through any COM equipment or in the interphone
(2) To listen to COM, NAV, ADF, MKR or DME source and to listen to a combination of these
(3) To select the microphone input (if from mask or boom set)
(4) To select the cockpit output devices (headphones or speakers)
(5) To select the passengers cabin speakers
(6) To adjust the volume from NAV (1, 2) and COM (up to 4 channels), ADF and H'MIC input to adjust the output volume to speakers, interphone or headphones.

The Audio Control Panels are composed by four lines of controls (potentiometers and pushbuttons). Three upper lines control the audio signals in and out, while the line below manages the microphone entrances. The potentiometers are utilized for audio signal adjustment. The pushbuttons are different depending on the required function:

(1) Interlocking buttons are used for microphones management. They aremechanically joined, to avoid simultaneous selection of more than one microphone a time.
(2) Pushbuttons are used when a function has to be selected but no other functions have to be necessarily deselected. Pressing the button the relevant function is alternatively selected or deselected.

B. Speakers

Two speakers are installed on the cockpit roof covering, near the pilot and copilot heads. Four speakers are installed in the passenger cabin, on the louver.

All the speaker are identical. They allow communications from crew to passengers.

C. Microphones (Jack Panels, Oxygen Mask and Hand Microphones)

Two different jack panels are available installed on the left of the pilot and on the right of the copilot. Every jack panel disposes of two jack point for the connection of the crew headset and a jack point for the connection of the oxygen mask microphone. A hand microphone is hung up on each control column (pilot and copilot); the connection is on the jack point on the floor.

D. Push-to-talk (PTT) Control Wheel

Two push-to-talk (PTT) buttons, on the two control wheels, is available for speaking through the COM transceiver selected by the relevant microphone push-button. The PTT function is available if only the desired COM microphone button is switched on. From the COM transceiver the voice signal is delivered to the antenna and to the audio control panel, for further distribution to headphones or speakers.

E. Aural Warning System

The Aural Warning System provides different acoustical warning tones in presence of particular events requiring the pilot to be alerted. The system generates an audible tone according to a priority order. Less important tones may be silenced and replaced by a more important one if the latter is activated.

The following tones may be generated:

(1) Stall warning (higher importance)
(2) Overspeed warning
(3) Cabin pressure warning
(4) Fire warning (provision)
(5) Gear warning
(6) Low level alert (provision)
(7) Trim-in-motion warning
(8) Engines Excedance warning (ITT/Torque)
(9) Autopilot disconnect warning
(10) Cabin chime (provision).

4. Operation

A. Control Panel Function

AUDIO

EMG	Selects the emergency-operating mode. When engaged, the internal electronics are by-passed and all selected audios are routed to the operator headphones. The operator microphone is connected directly to the COM unit. The front panel AUDIO control has no effect: the loudspeakers do not function.
SPK	Selects the operator loudspeaker as the active audio monitor. When de-selected, the headphones are active.
H'MIC	Adjusts the volume of interphone.
AUDIO	Simultaneously adjusts the volume of all selected audio sources except interphone.
NAV1-2	The pushbuttons (lower line), select NAV1-2 to receive audio. The potentiometers (upper line), adjust the volume of input NAV1-2 signal.
ADF	The push-button (lower line), selects ADF to receive audio. The potentiometer (upper line), adjusts the volume of input ADF signal.
COM1-4	The pushbuttons select COM1-4 to receive audio (only COM1 and COM2 are used). The potentiometers adjust the volume of input COM1-4 signal.
MRK	Selects MKR to receive audio.
DME	Selects DME to receive audio.
FILT	Selects a 1,020 Hz notch filter which removes the 1,020 Hz identifier from ADF and NAV audios and both signals are automatically levelled. When not selected, the ADF is unlevelled and the identifier signal is present.

MICROPHONE

COM1-4	Transmits operator voice to COM1-4 transceiver (only COM1 and COM2 are used), which allows monitoring sending back the sidetone, through the audio panel, to the operator loudspeaker or headphones.
MASK	Enables the microphone on the oxygen mask.
PAGE	Connects the operator output to the passenger compartment speakers.
H'MIC	Enables interphone between crewmembers. When selected the operator's mask or boom microphone is connected to the internal interphone amplifier without the need for keying. Note that a light touch on any interconnected button releases all three. In this condition the interphone can be keyed using the PTT button.

B. Transceiver Operation

To monitor the receive function of a transceiver, irrespective of the operator, select COM1 or COM2 in the AUDIO area of the panel. The input volume level is adjustable through the COM1 or COM2 potentiometer. Any combination of COM or navigation aid audios can be monitored simultaneously.
To transmit, select COM1 or COM2 push-button in the MICROPHONE area of the panel. In this case, the selection of the audio switch is not necessary. The transceiver is keyed by the hand microphone or by the boom microphone using the PTT switch on the control wheel. To key the transceiver using the oxygen mask microphone, first press the MASK switch on the panel before using the PTT switch. Any COM or navigational aid, incoming interphone or aural warning box signals are muted while the transmitter is keyed.

C. Cabin Paging

To address the passenger cabin, press the PAGE button then key the paging amplifier using the hand microphone, or the boom microphone and the PTT switch. To use the oxygen mask microphone, first press the MASK switch before using the PTT switch.

D. Interphone

The listening function of the interphone is always active. To adjust the volume, turn the H'MIC switch on the AUDIO area of the panel. To converse with the other crewmember, press the H'MIC switch on the MICROPHONE area of the panel and use any microphone. It is not necessary to key a microphone. If the microphone is keyed with a COM transceiver enabled, the conversation will be transmitted on the VHF frequency selected.
Any incoming interphone or aural warning signals are not muted while the interphone is keyed; any COM or navigational aid audios being monitored are not muted.

E. Navigational Aid Monitoring

Select the navigational aid with the appropriate switch. For NAV and ADF equipment it is possible to adjust the volume of the received signal using the relating potentiometer. If NAV plus FILT or ADF plus FILT is selected the volume is automatically levelled to the desired volume set on the AUDIO switch.
Any desired combination of COM or navigational aids may be monitored simultaneously. To utilize the build and fade of MKR audio, set the base level with the AUDIO switch.

F. Auxiliary Audio

Operation Auxiliary audios (i.e. Aural Warning Tone Generator) bypass the front panel switches and cannot be adjusted during operation. The auxiliary audio is muted any time a microphone key is pressed.

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AUDIO INTEGRATING - MAINTENANCE PRACTICES

1. General

This section describes the maintenance procedures for the following equipment.

A. Audio Control Panel

B. Speaker.

2. Audio Control Panel - Removal (Refer to Fig. 2 and Fig. 201)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags	
Blanking cap	Not specified

B. Procedure

NOTE: Removal of the two Audio Control Panels is identical, except for location.

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Set the battery switch to OFF.
(3) Set the Avionics Master Switch to OFF.
(4) Open, tag and safety the following circuit breakers:
- AUDIO1
- AUDIO2
- LTS DIM 1

(5) Disconnect the cable on the rear side of the control panel (gain access to the rear side by inserting the hand below the panel and disengage the connector unscrewing the fixing ring nut.
(6) Unscrew the four captive screws securing the control panel to the structure.
(7) Extract the panel by pulling it outwards.
(8) Put cap on the electrical connector.

3. Audio Control Panel - Installation (Refer to Fig. 2 and Fig. 201)

A. Procedure

(1) Make sure that the system is electrically safe.
(2) Remove the cap from electrical connector, if present (Ref. Para. 2, point B, item 7).
(3) Insert the panel in its location.
(4) Screw the four screws securing the panel to the structure.

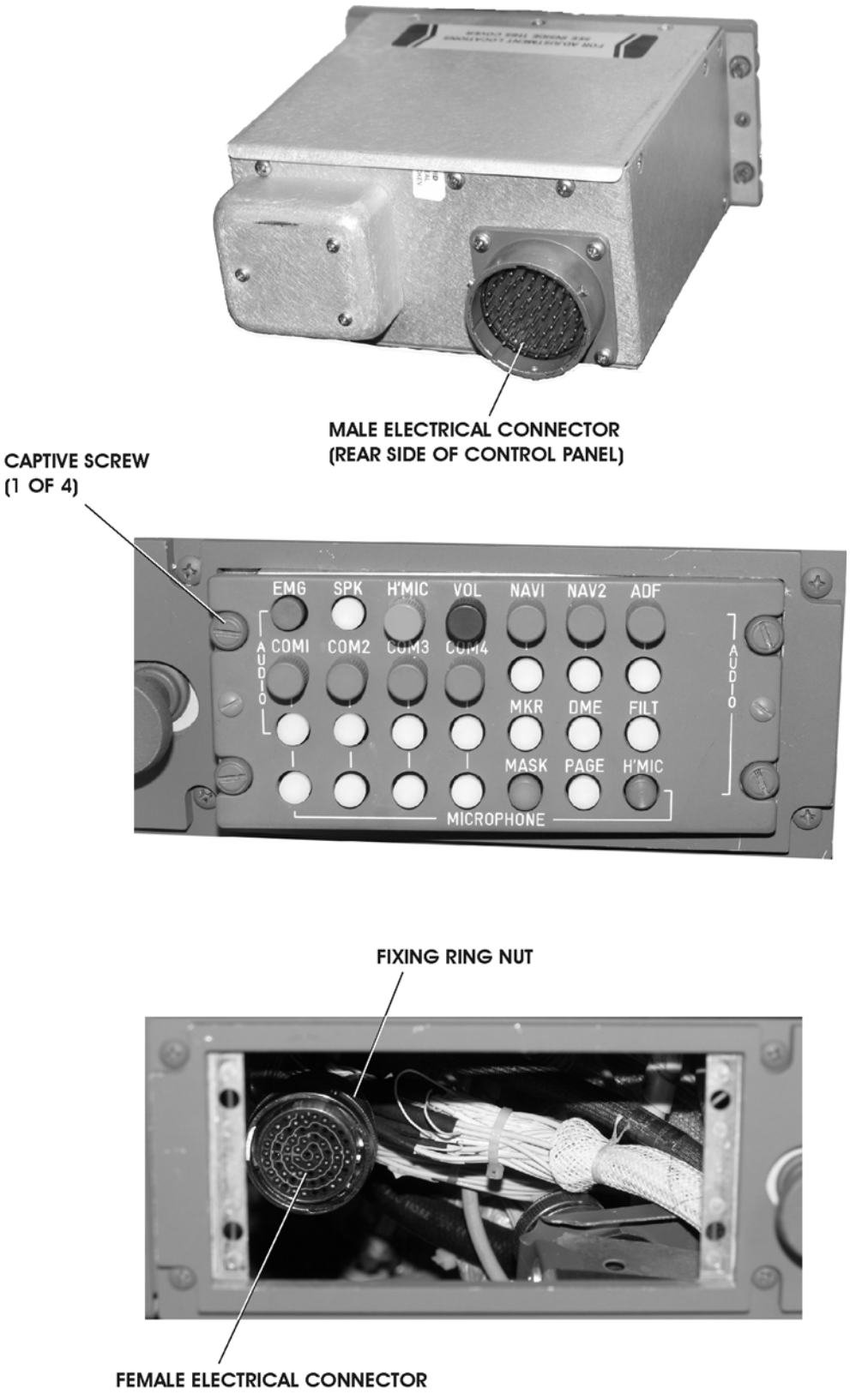

Fig. 201 - Audio Panel

(5) Connect and fix the cable on the rear side of the control panel.
(6) Remove the safety tags and close the previously opened circuit breakers:
- AUDIO1
- AUDIO2
- LTS DIM 1

(7) Set the Avionics Master Switch to AVIONICS.
(8) Set the battery switch to BAT.
(9) Check the Audio System using the headset and/or the hand microphone and enabling/disabling/adjusting the available audio signals on the installed Audio Control Panel.
(10) Remove the Warning Notice in the flight compartment.

4. Passenger Cabin Speakers - Removal (Refer to Fig. 2 and Fig. 202)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags.

B. Procedure

NOTE: Removal of each speaker is identical except for location.

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Set the battery switch to OFF.
(3) Set the Avionics Master Switch to OFF.
(4) Open, tag and safety the following circuit breakers:
- AUDIO1
- AUDIO2

(5) By using a flat tool as a lever, open the louver panel.
(6) Remove the four screws attaching the speaker.
(7) Extract the speaker. Note the wire connections and disconnect the wires. Put temporary insulation on the ends of the wires if replacement unit is not to be installed immediately.

5. Passenger Cabin Speaker - Installation (Refer to Fig. 2 and Fig. 202)

A. Procedure

(1) Remove any temporary insulation and connect the speaker wires as noted in Para. 4, point B, item 6).

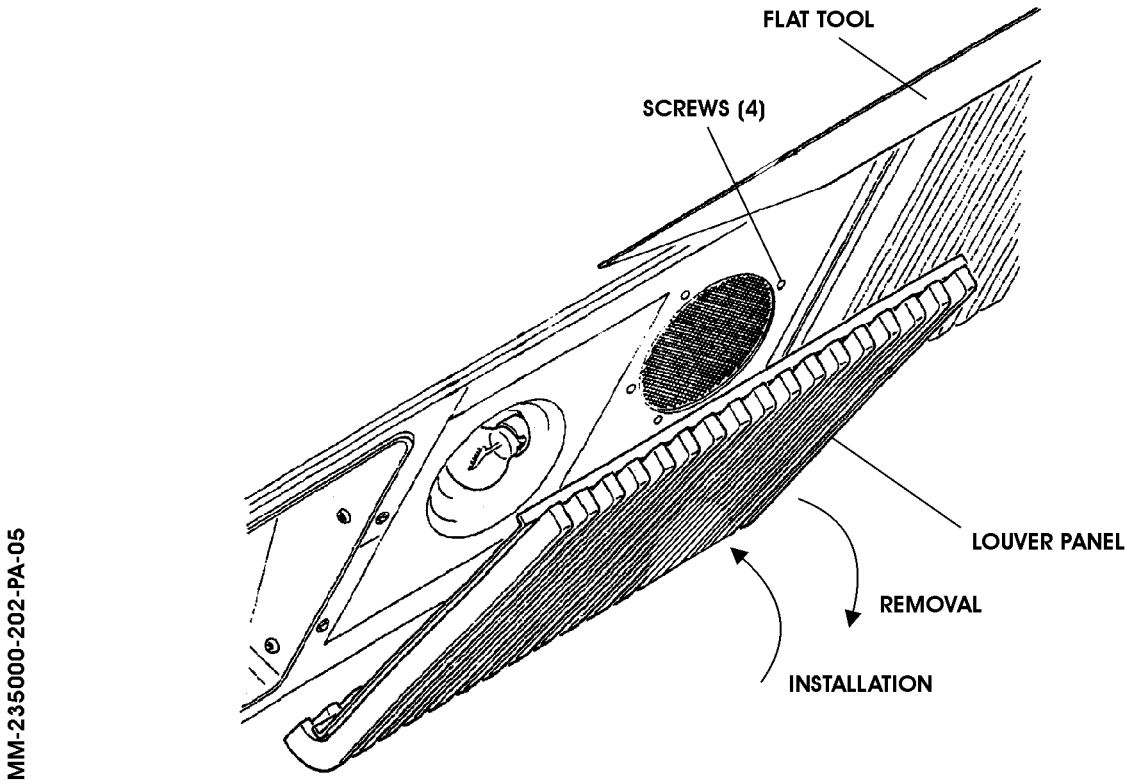

Fig. 202 - Speaker

(2) Install the speaker using the four screws.
(3) Apply the louver panel.
(4) Remove the safety tags and close the previously opened circuit breakers:
  – AUDIO1
  – AUDIO2
(5) Set the Avionics Master Switch to AVIONICS.
(6) Set the battery switch to BAT.
(7) Select the passenger speakers by means of the "Page" pushbutton on the Audio Control Panel and verify the audio signal is correctly audible on the replaced speaker.
(8) Remove the Warning Notice in the flight compartment.

STATIC DISCHARGING - DESCRIPTION AND OPERATION

1. General

A. Static dischargers are installed on the airplane trailing edge extremities to dissipate static electricity with a minimum amount of radio interference.

B. The sixteen static dischargers are fitted:

(1) One on each forward wing flap
(2) Three on each aileron
(3) Three on each elevator
(4) One on the rudder
(5) One on the vertical fin fairing

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STATIC DISCHARGING - MAINTENANCE PRACTICES

1. General

   A. Maintenance practices for static discharging includes removal and installation of the wicks and bases, and an inspection and check of the static wick installation.

   B. The resistance between the aircraft skin and the discharging base and the resistance between the base and the wick is critical to prevent radio interference. It is therefore recommended that the resistance between the discharge pin and aircraft structure be checked after replacement of an installation or installation part, and after 2,400 to 3,000 flight hours (9-15 months).

   C. Wrench flats are provided on the wick retainer. Under no circumstances should leverage be applied elsewhere other than to the flat.

2. Static Discharger Wick - Removal (Refer to Fig. 201)

   A. Procedure

      (1) Using a wrench flat on the wick retainer, unscrew the wick.

      NOTE: Some maintenance facilities apply one drop of Loctite (Refer to Chapter 91, Chart 201, item 01-004) to the base of the stud. If unusual resistance is encountered when unscrewing the wick, heat the stud with an infra-red lamp to melt the Loctite.

3. Static Discharger Wick - Installation (Refer to Fig. 201)

   A. Procedure

      (1) Make certain that there is no damage to the discharger base before inserting a new wick.
      (2) Screw wick onto the base and tighten using a wrench on the wick flat.

      NOTE: If Loctite is to be used, apply one drop only to the threads where the wick enters the base.

4. Static Discharger Base - Removal (Refer to Fig. 201)

   A. Referenced Information

      Maintenance Manual Chapter 20-00-00
      Structural Repair Manual Chapter 51-00-00

   B. Procedure

      (1) Drill out any rivets attaching the base to the aircraft structure.
      (2) Using extreme care, pry off the discharger base.

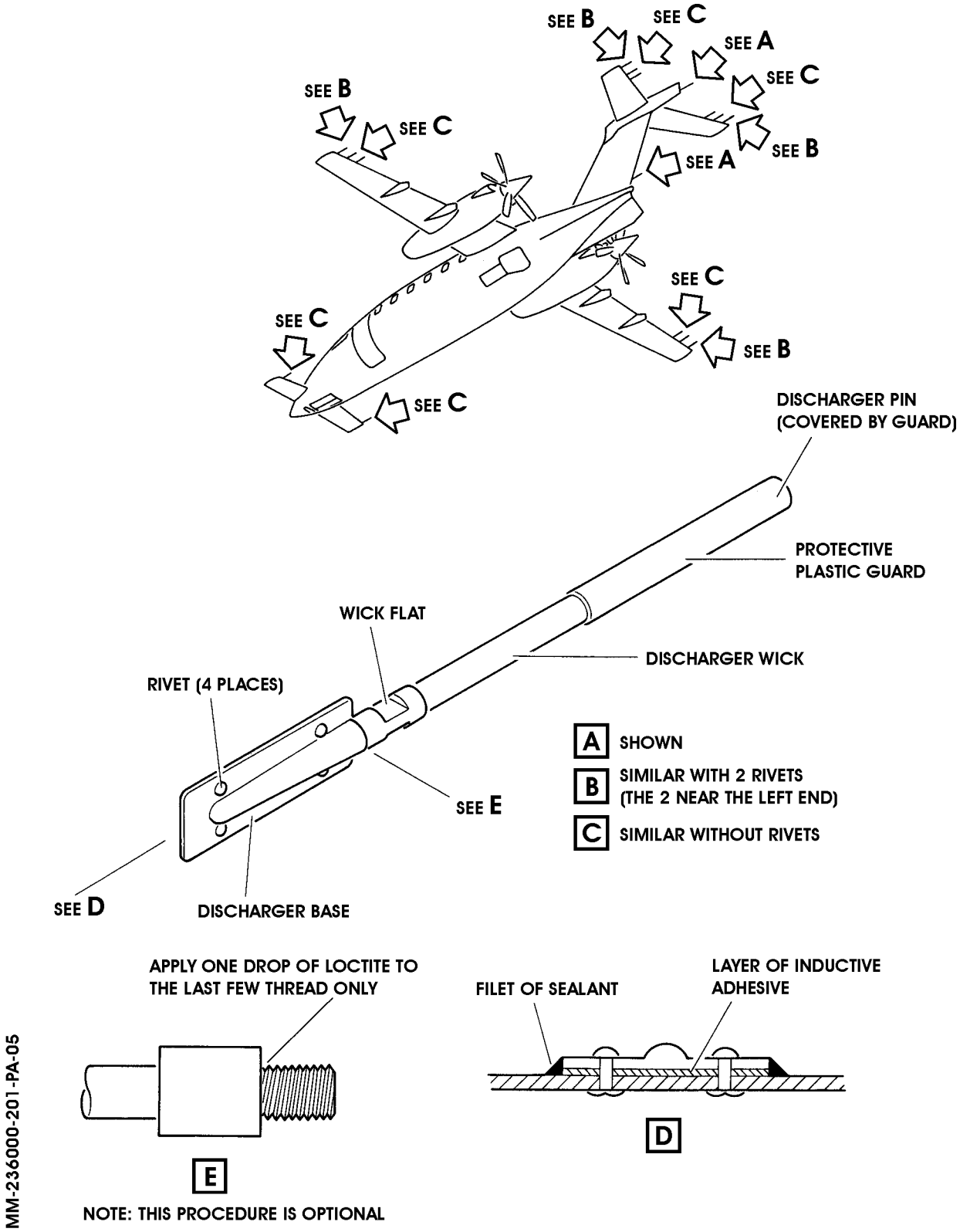

Fig. 201 - Static Discharger - Installation

5. Static Discharger Base - Installation (Ref. Fig. 201)

A. Fixtures, Test and Support Equipment

0.5 in (12.7 mm) paint brush	Not specified
Lint-free cloth	Not specified
Non-metallic spatula	Not specified
Infra-red lamp	Not specified

B. Materials

06-005, Sealant	As required
Inductive adhesive P/N 16307	As required
02-009, Methil-Ethyl-Ketone (MEK),	As required

C. Procedure - Metallic Surfaces

NOTE: Refer to Table 201 to determine procedural steps applicable to each installation.

WARNING: BE CAREFUL WHEN YOU USE MEK. OBEY THE SAFETY AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(1) Clean the replacement parts and their interfaces (Refer to 20-00-00).
(2) Polish attachment surface with abrasive paper.
(3) Heat attachment surface with infra-red lamp at approx. 60 °C for 30 minutes.
(4) Apply inductive adhesive to mating surfaces (Refer to 51-35-00).
(5) Position new base. If required, align with fastener holes and rivet in place.
(6) Check for proper resistance.
(7) Seal edge of base to surface with sealant (Refer to 51-35-00 and to Chapter 91, Chart 201, item 06-2005).
(8) Restore the surface finish (Refer to 20-00-00).

Location	No.	Notes
Forward wing flaps	1 per wing	Inductive adhesive and sealant.
Aileron	3 per aileron - Outer - Two inner	 Two rivets plus inductive adhesive and sealant. Inductive adhesive and sealant only.
Elevator	3 per elevator - Outer - Two inner	 Two rivets plus inductive adhesive and sealant. Inductive adhesive and sealant only.
Vertical fin upper fairing	1	Riveted on the anti-lightning strip (internal), glued and sealed (without heating the surface)
Rudder	1	Four rivets plus inductive adhesive and sealant.

Table 201 - Static Discharger Base Attachment

D. Procedure - Composite Surfaces

WARNING: BE CAREFUL WHEN YOU USE MEK. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(1) Degrease the attaching surfaces using MEK (Refer to 20-00-00).
(2) Apply inductive adhesive to mating surfaces (Refer to SRM 51-00-00).
(3) Position new base. If required, align with fastener holes and rivet in place.
(4) Seal edge of base to surface with sealant (Refer to SRM 51-00-00 and to Chapter 91, Chart 201, item 06-005).
(5) Restore the surface finish (Refer to 20-00-00).

6. Static Discharger - Inspection/Check

A. Inspect Static Discharge Wicks

(1) Make certain that all dischargers are secure on the mounting bases. Replace wick if loose.
(2) Inspect for broken or missing dischargers. Replace broken or missing dischargers.
(3) Inspect for damaged pins.
(a) Replace dischargers with broken pins. Broken plastic guards do not affect discharger performance.
(b) Replace dischargers having blunt or bent pins. Check as you would a phonograph needle.

(4) Inspect for lightning damage. Replace as necessary.

NOTE: Lightning damage is evidenced by a burning and roughening of the black conductive coating of the dischargers and pitting of the metal shank of the trailing edge dischargers. A lightning struck discharger may continue in service only if it meets the resistance tolerances in the functional test (refer to Para. B.), and the pin is sharp.

NOTE: If a lightning-damaged discharger is discovered, inspect carefully for other lightning damage in the close vicinity and at the opposite extremity of the aircraft.

(5) Inspect for excessive erosion, or peeling of tip cap. Replace any discharger showing excessive erosion or peeling of the tip cap, also any airfoil dischargers with leading edge erosion extending back more than one third the width of the discharger.

(6) Inspect for evidence of cracking or burning on the vertical stabilizer static discharger base. If damage is noted it may be possible that the bond between the lightning strip and the discharger is damaged. Make a resistance check.

B. Static Discharger - Check

CAUTION: DO NOT USE A BONDING METER OR A HIGH CURRENT TEST SET.

(1) Measure the resistance of all dischargers between the discharge base and the aircraft structure. Replace any discharger base if the resistance is higher than 100 milliohms.

NOTE: Procedure (1) is for a milliohmeter of the 500 V type (General Radio Type 1862C or equivalent).

(2) Measure the resistance of the adhesive bonds with a low resistance test set of a type which will not exceed 1.0 ampere current. Rework a new bond if the measured resistance exceeds 0.1 ohms. Replace a retainer if the measured resistance exceeds 0.5 ohms.

NOTE: Procedure (2) is for a low-ohm multimeter. Kelvin bridges are satisfactory.

NOTE: If the resistance of an existing installation exceeds 0.5 ohms there is a definite possibility of moderate to heavy structural burning in the area of the retainer due to lightning attachment in flight or the possibility of bond deterioration due to moisture. The higher the resistance, the greater the possibility of skin burning due to lightning.

(3) Check condition of sealant. Reseal if any exposed areas are noted.

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AUDIO AND VIDEO MONITORING - DESCRIPTION AND OPERATION

1. CVR - General

A. The Audio and Video Monitoring System consists of a Cockpit Voice Recorder System. It provides up to 120 minutes of recording time.

2. CVR - Description

A. The Cockpit Voice Recorder System includes a recorder unit, a recorder control panel, a cockpit area microphone and an impact switch (G-switch).

Ad additional CVR Portable Interface Unit is available for ground checks only, including capability to make copy of the CVR registered data.

Refer to Fig. 1 for the block diagram

Refer to Fig. 2 for the components locations.

The Recorder Unit is located rearward of the aft baggage compartment, either over or under the baggage floor, beyond station 8140, and is powered by Essential Avionics Bus via circuit breaker CVR (located on Pilot Circuit Breaker Panel).

The audio inputs are all the voice communications (via Pilot and Copilot Audio Control Panel - refer to 53-00-00) and the Cockpit Area Microphone, via Recorder Control Panel. The Cockpit Area microphone is located in the pedestal, on copilot side. The Recorder Control Panel is located on the pedestal, amid pilot and copilot.

The Impact Switch (located on the fuselage left side wall in the toilet compartment - between frame 34 and 35) stops automatically the recorder in case of a crash event.

The Recorder Unit receive the time/date information (Greenwich Mean Time) from left DCU and EDC units (refer to 31-00-00).

The control panel lights are powered from instrument lights circuit (refer to 33-00-00).

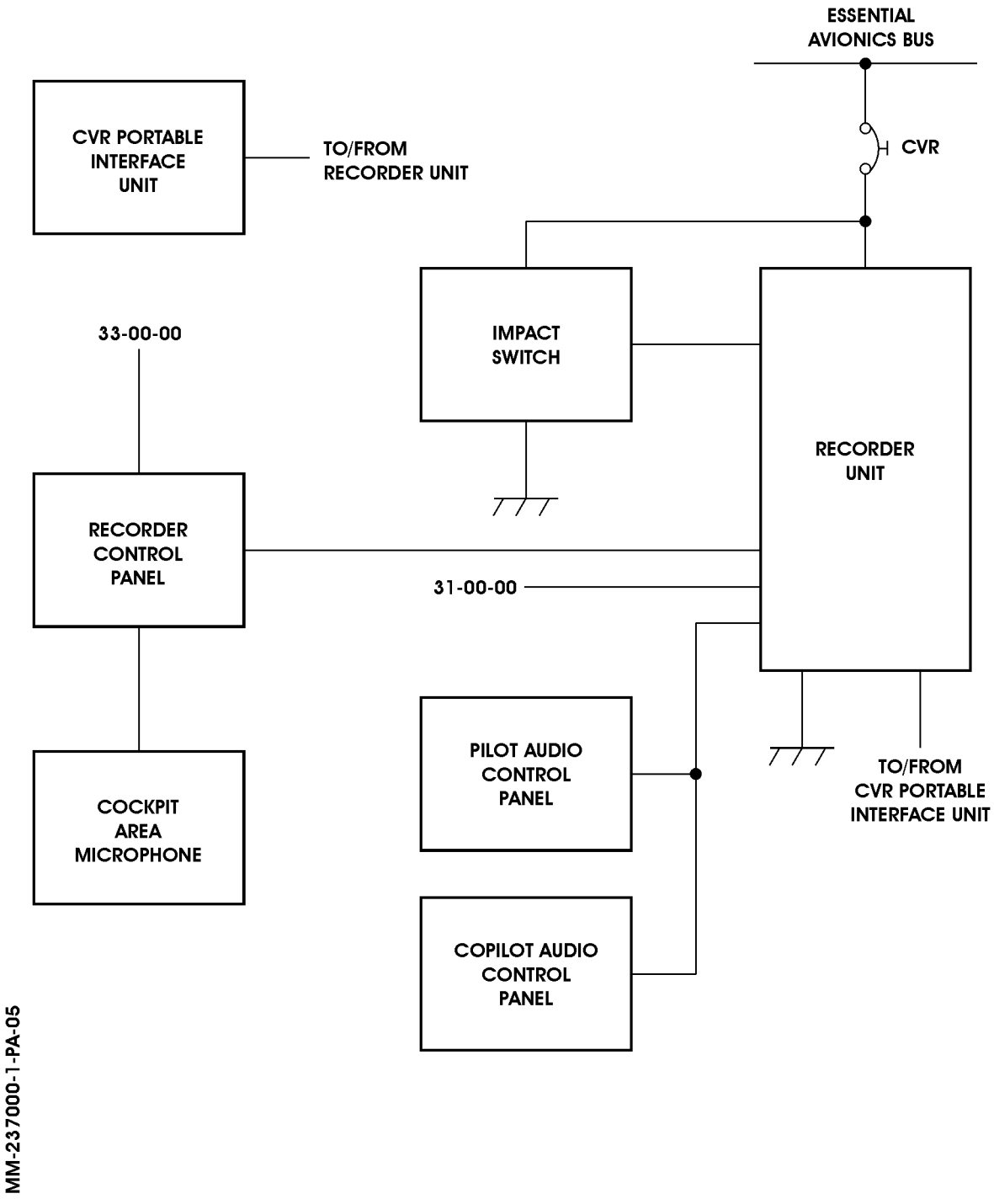

Fig. 1 - Audio and Video Monitoring System - Block Diagram

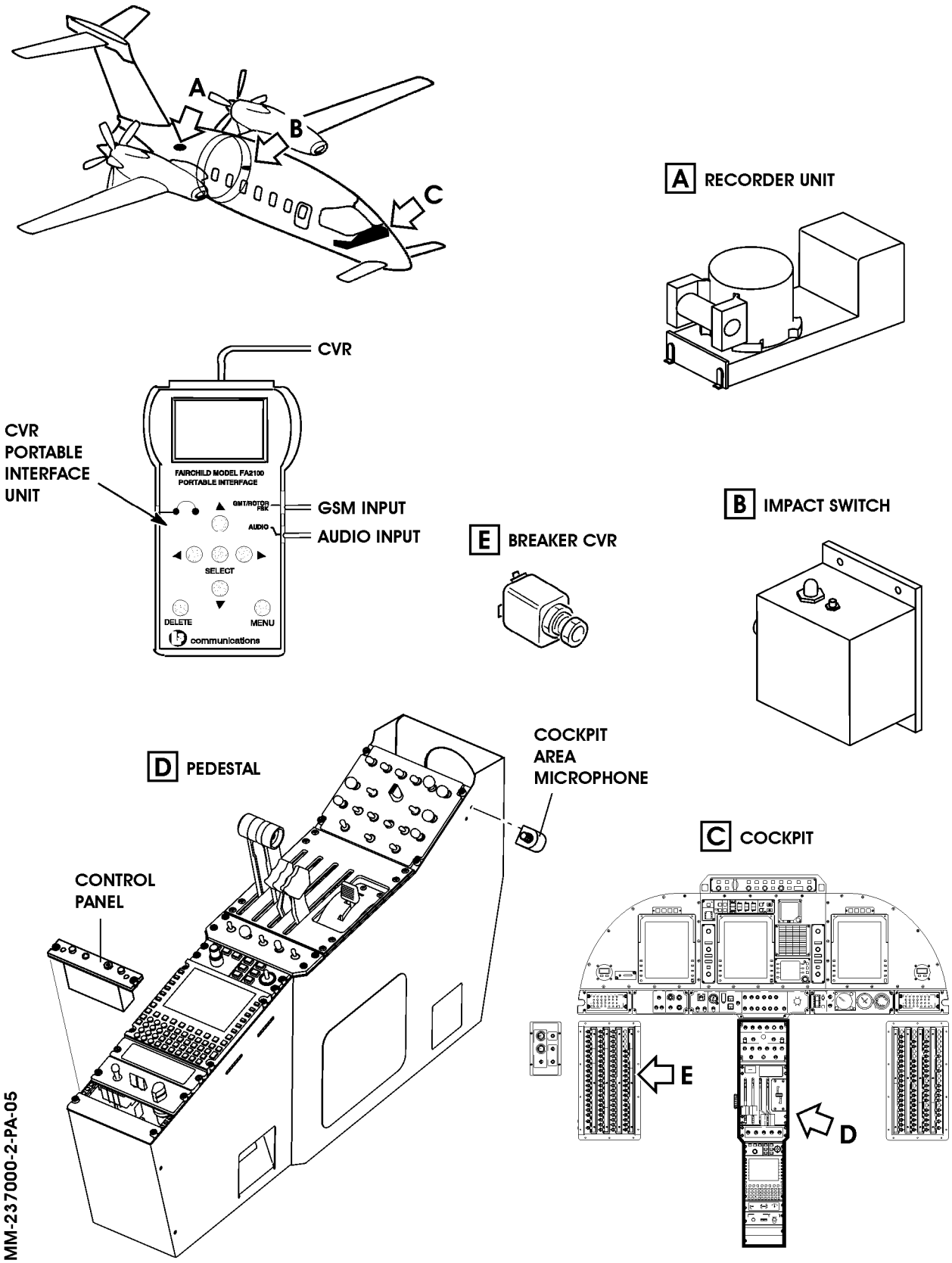

Fig. 2 - Audio and Video Monitoring System - Location

3. System Description and Operation

A. The components of the Cockpit Voice Recorder System are the recorder unit, a recorder control panel, a cockpit area microphone and an impact switch.

B. Recorder Unit FA2100-1020-00 CVR (Refer to Fig. 3)

The CVR consists of a chassis and front panel, three printed wiring assemblies (Aircraft Interface, Audio Compressor, and Acquisition Processor), and the Crash Survivable Memory Unit (CSMU). The CSMU contains the solid state flash memory used as the recording medium.

The chassis and CSMU are painted international orange. Two reflective stripes are located on the CSMU.

An Underwater Locator Device (ULD) is mounted horizontally on the front of the CSMU and is also used as the recorder's carrying handle. The ULD is equipped with a battery that has an expected life of six years. The Ground Support Equipment (GSE) connector is located on the front of the CVR and provides the interface from the recorder to GSE for checkout of the recorder, or to transfer data to a readout device.

The CVR simultaneously records four separate channels of cockpit audio, converts the audio to a digital format, and stores the data in a solid state memory. The audio inputs are the following:

(1) Channel 1: Cockpit Spare Audio Input (3rd Crew Member, Public Address System)
(2) Channel 2: Co-Pilot's Audio, Boom, Mask, and Hand-Held Microphone Input
(3) Channel 3: Pilot's Audio, Boom, Mask and Hand-Held Microphone Input
(4) Channel 4: Cockpit Area Microphone (CAM) Input.

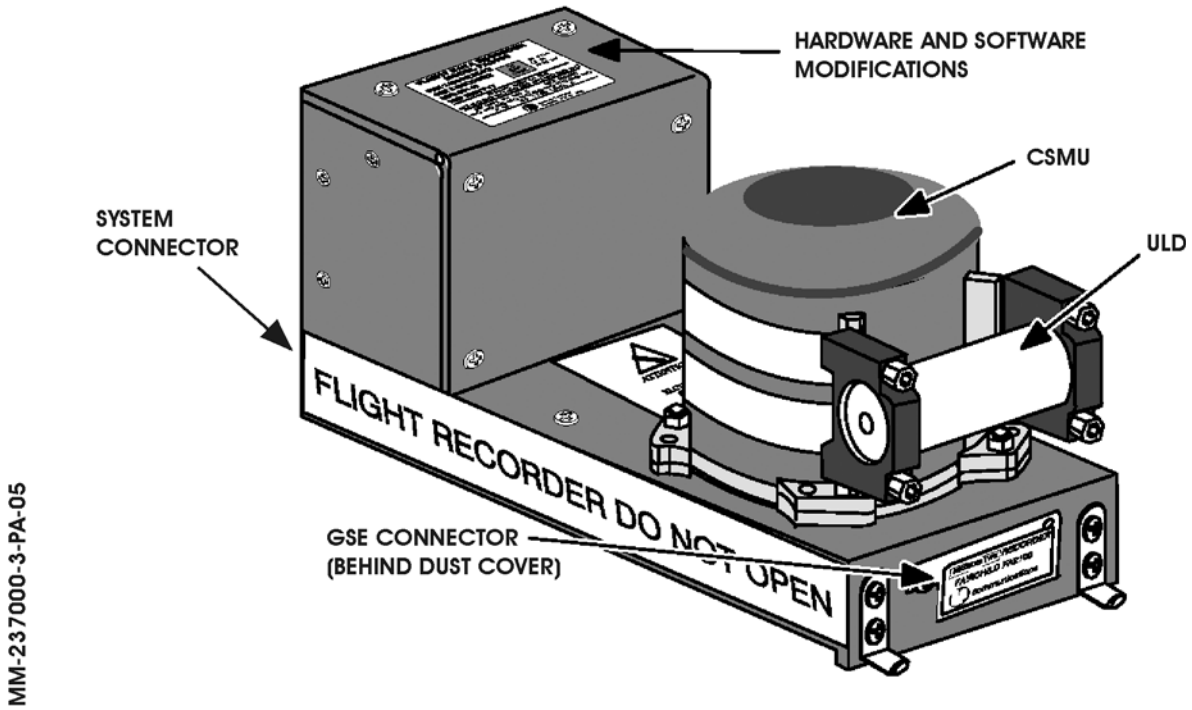

Fig. 3 - Recorder Unit FA2100-1020-00 CVR

The CVR records a fifth internal audio stream for a minimum of 120 minutes. It is a standard quality recording of the combination of the Pilot, Copilot, and Public Address or 3rd Crew Member audio inputs. It also records a sixth audio stream, a standard quality recording of the Cockpit Area Microphone (CAM) audio input, for a minimum of 120 minutes. The audio inputs are conditioned, amplified, and equalized as necessary. The resulting signals are converted to digital pulse code modulation (PCM) data.
The CVR records Greenwich Mean Time (GMT) via a specific input.

C. Recorder Control Panel S261 (Refer to Fig. 4)

The Recorder Control Panel functions as the CVR cockpit user interface.

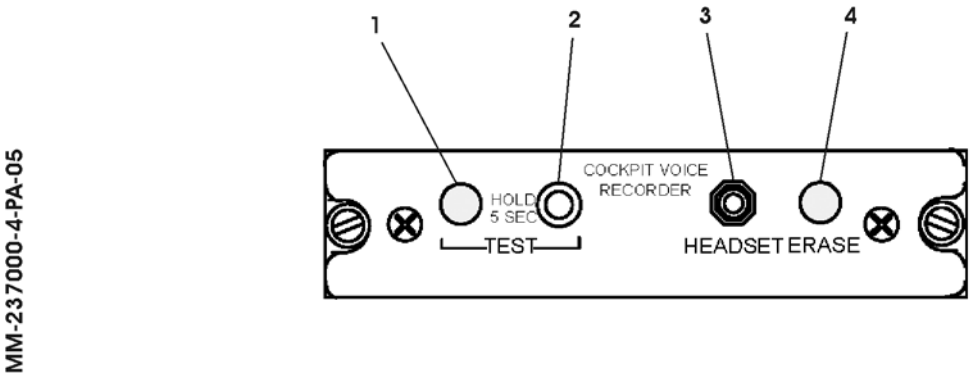

Fig. 4 - Control Panel S261

The controls and indicators are as follows:

(1) TEST switch. Green push-button, activates the test function.
(2) TEST lamp. Green lamp, show the results of the test.
(3) HEADSET jack. Output connector, to verify system operation.
(4) ERASE. Red push-button. Switch, to erase the CVR storage media not enabled on this installation.

D. Cockpit Area Microphone S056 (Refer to Fig. 5)

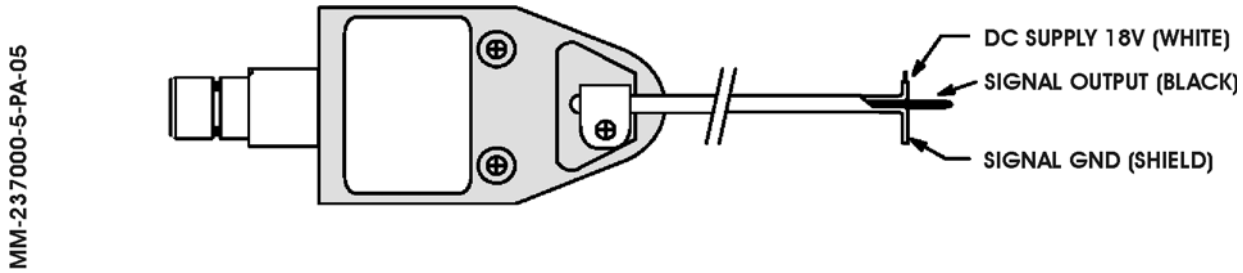

Fig. 5 - Cockpit Area Microphone S056

E. Pilot and Copilot Audio Control Panels

Pilot and Copilot Control Panels connect the CVR to the Communication System (refer to 23-50-00).

AUDIO AND VIDEO MONITORING - MAINTENANCE PRACTICES

1. General

This section describes the maintenance procedures for the following equipment:

A. Recorder Unit FA2100-1020-00 CVR

B. Recorder Control Panel S261

2. Recorder Unit FA2100-1020-00 CVR - Removal (Refer to Fig. 201)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags
Blanking cap

B. Referenced Information

Maintenance Manual Chapter 06-00-00

C. Procedure

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Set the battery switch to OFF.
(3) Set the Avionics Master Switch to OFF.
(4) Open, tag and safety the CVR circuit breaker on Pilot Circuit Breakers Panel.
(5) Open the baggage compartment door.
(6) Loosen the two hold down nuts and disengage them.
(7) Extract the recorder from its housing. The system connector on the rear is automatically disconnected.
(8) Put caps on electrical connectors.

3. Recorder Unit FA2100-1020-00 CVR - Installation (Refer to Fig. 201)

A. Referenced Information

Maintenance Manual Chapter 06-00-00

B. Procedure

(1) Open the baggage compartment door, if closed.
(2) Remove the caps from electrical connectors, if present.
(3) Insert the unit in its housing. The system connector on the rear is automatically connected.
(4) Engage and tighten the two hold down screws.
(5) Close the baggage compartment door.

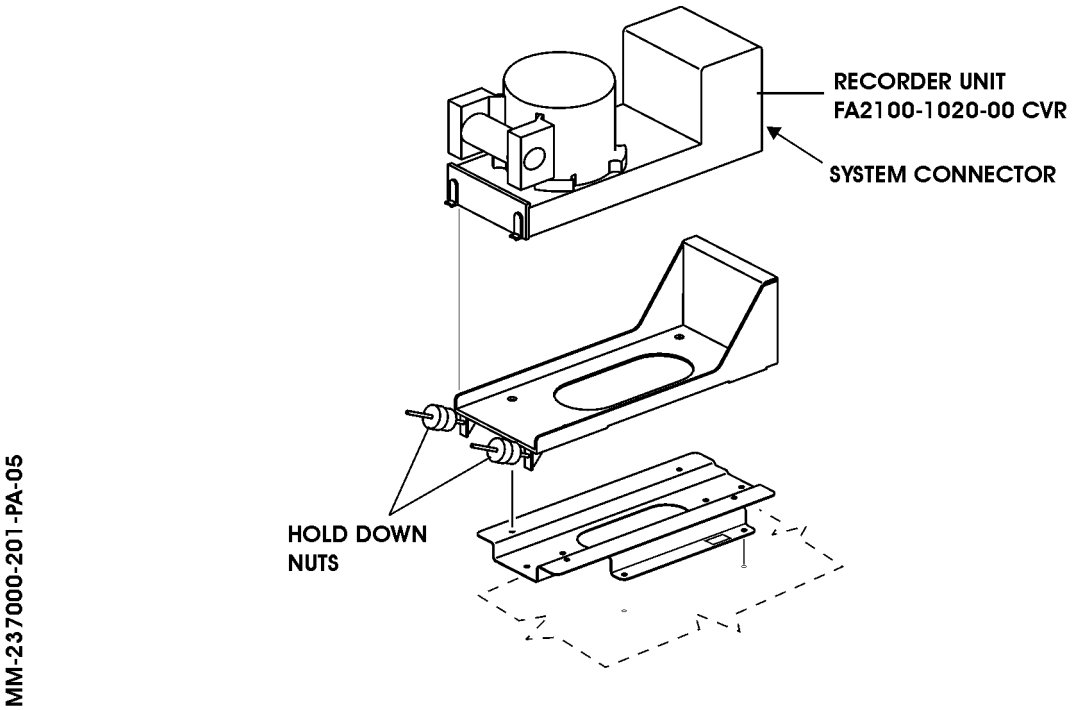

Fig. 201 - Recorder Unit FA2100-1020-00 CVR

(6) Remove the safety tag and close the CVR circuit breaker on Copilot Circuit Breakers Panel.
(7) Set the Avionics Master Switch to AVIONICS.
(8) Set the battery switch to BAT.
(9) Remove the Warning Notice in the flight compartment.

4. Recorder Control Panel S261 - Removal (Refer to Fig. 202)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags
Blanking cap

B. Procedure

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Set the battery switch to OFF.
(3) Set the Avionics Master Switch to OFF.
(4) Open, tag and safety the CVR and LTS DIM 1 circuit breakers on Copilot Circuit Breakers Panel.
(5) Remove the two screws that fasten the Recorder Control Panel S261 to the pedestal.
(6) Extract the Recorder Control Panel and disconnect the electrical connector on the rear.
(7) Put caps on the electrical connectors.

5. Recorder Control Panel S261 - Installation (Refer to Fig. 202)

A. Procedure

(1) Remove caps from electrical connectors, if present.
(2) Connect the electrical connector on the rear.
(3) Insert the Recorder Control Panel in its housing.
(4) Tighten the two screws.
(5) Remove the safety tag and close the CVR and LTS DIM 1 circuit breakers on Copilot Circuit Breakers Panel.
(6) Set the Avionics Master Switch to AVIONICS.
(7) Set the battery switch to BAT.
(8) Remove the Warning Notice in the flight compartment.

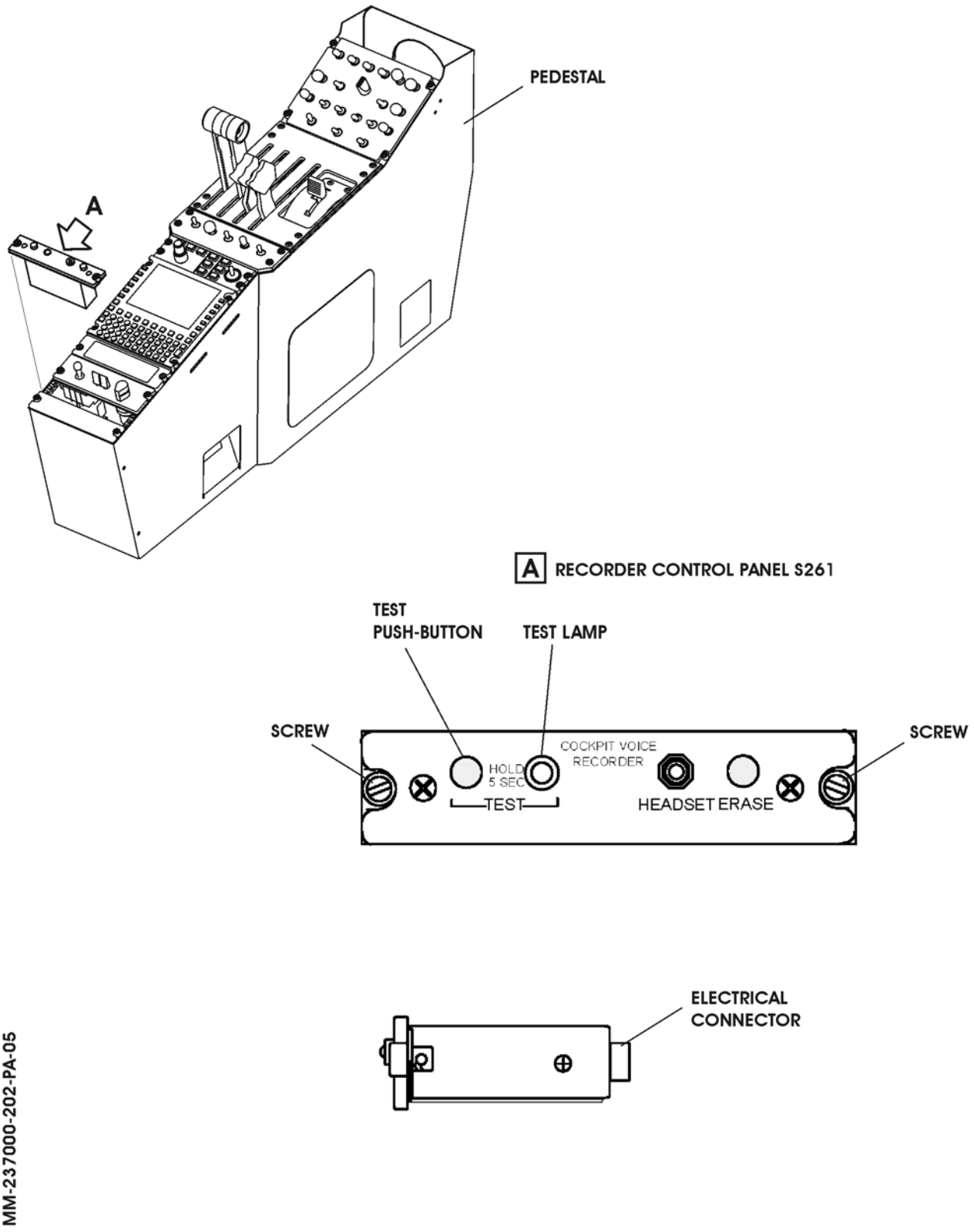

Fig. 202 - Recorder Control Panel S261

6. CVR G-Switch - Removal (Refer to Fig. 203)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags
Blanking cap

B. Procedure

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Set the battery switch to OFF.
(3) Set the Avionics Master Switch to OFF.
(4) Open, tag and safety the CVR circuit breaker on Pilot Circuit Breakers Panel.
(5) Remove the cushion located to the toilet seat back.
(6) Remove the Seat Panel (1).
(7) Disconnect the CVR G-Switch Electrical Connector (4).
(8) Remove the four screws (3) that fasten the CVR G-Switch to the support.
(9) Remove the CVR G-Switch (2).
(10) Put cap on the electrical connector.

7. CVR G-Switch - Installation (Refer to Fig. 203)

A. Procedure

(1) Remove the cap from electrical connector.
(2) Place the CVR G-Switch (2) in its own position on the support.
(3) Install the four screws (3) that fasten the CVR G-Switch to the support.
(4) Connect the Electrical Connector (4).
(5) Install the Seat Panel (1).
(6) Install the cushion located to the toilet seat back.
(7) Remove the safety tag and close the CVR circuit breaker on Pilot Circuit Breakers Panel.

8. Test (Refer to Fig. 202)

A. Functional Test

(1) Push and hold the TEST pushbutton.
(2) CVR test is passed when the green lamp near to the TEST switch illuminates after 5 seconds the switch is held and remains on until the switch is released.

B. Ground Test

To perform the test with the CVR Portable Interface Unit (Refer to Fig. 2) refer to the L3 Communications documentation.

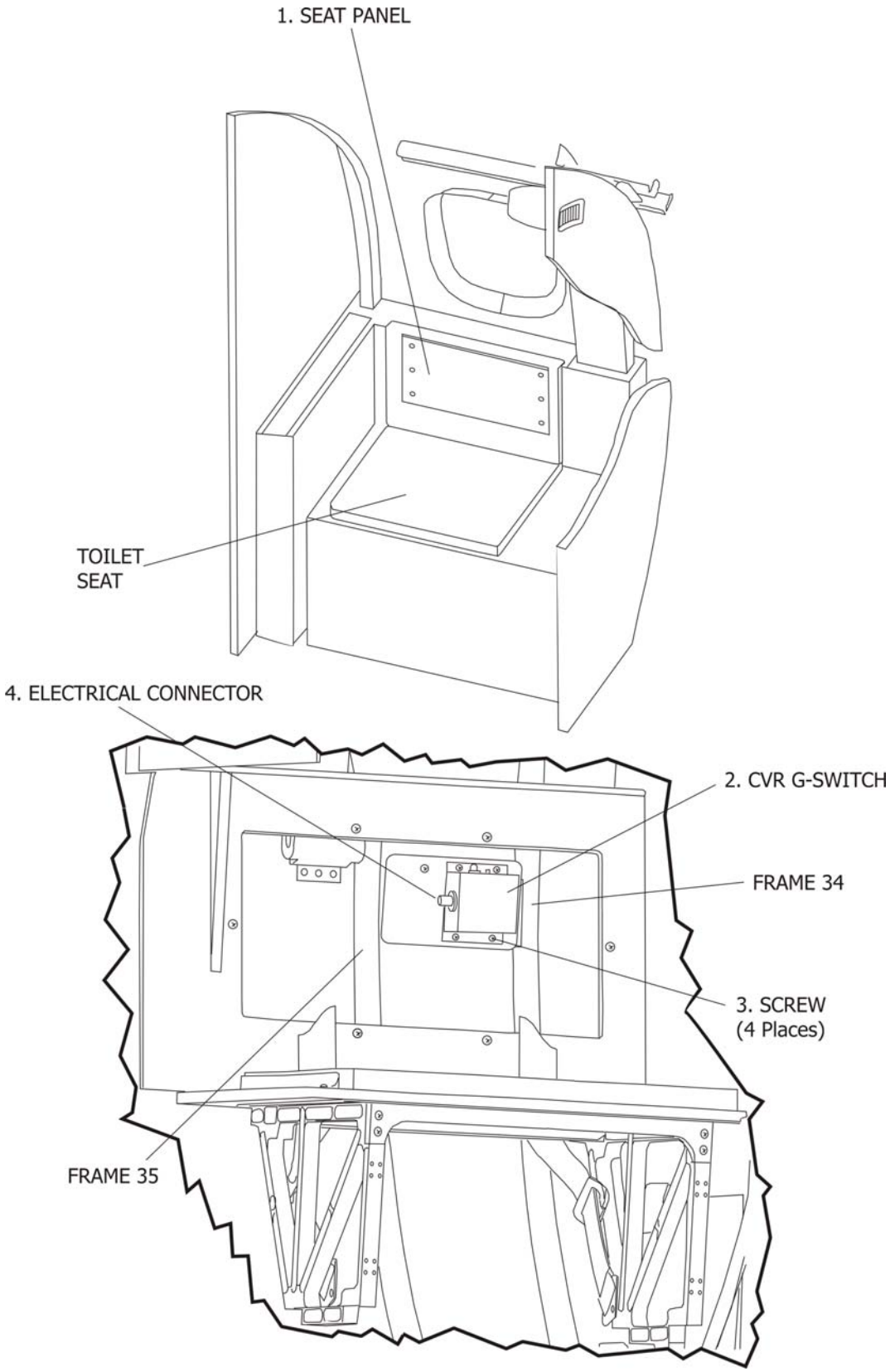

Fig. 203 - CVR G-Switch - Removal / Installation

AUDIO AND VIDEO MONITORING - DESCRIPTION AND OPERATION

1. CVDR - General

A. The Audio and Video Monitoring System consists of a combined Cockpit Voice and Flight Data Recorder (CVDR)

2. CVDR - Description

A. The CVDR system is composed of the items listed below:

- Cockpit Voice and Flight Data Recorder
- CVDR Mount
- CVR Control Panel
- Mini FDAU
- Three Axis Accelerometer
- Area Microphone
- CVDR Test Panel
- G Switch

The CVDR system carries out the following two functions:

(1) Cockpit Voice Recording: a minimum of 2 hours of standard quality and 30 minutes of high quality audio in separate data streams.

(2) Flight Data Recording: at least the last 25 hours with 256 words/second.

Voice data recordings are segregated from flight data recordings.

B. Cockpit Voice Recording

The FA2100 is capable to simultaneously record four separate channels of cockpit audio, for a minimum of 30 minutes of high quality audio from the following audio sources:

- Pilot's Audio, Boom, Mask and Hand-Held Microphone Input;
- Co-Pilot's Audio, Boom, Mask, and Hand-Held Microphone Input;
- Cockpit Area Microphone (CAM) Input;

Furthermore, the following additional audio signals / combined channels are recorded for a minimum of 120 minutes of standard quality audio:

- Combination of the Pilot, Co-Pilot, and Public Address or Third Crew Member audio inputs;
- Cockpit Area Microphone (CAM) audio input.

The audio inputs are conditioned, amplified, and equalized as necessary. The resulting signals are converted to digital pulse code modulation (PCM) data and stored in a solid state memory.

Greenwich Mean Time (GMT) datum is received by the CVR on the ARINC 429 bus (R-DCU-1) and recorded synchronized with audio inputs, independently from the GMT datum registered by the flight data recorder function.

C. Flight Data Recording

The Flight Data parameters are indicated in the following Table 1:

Table 1: Flight Data Registered Parameters

N°	EUROCAE ED-112 Parameter	Minimum Recording Range	Maximum Recording Interval (seconds)	Recording Accuracy	Recording Resolution	Remarks
1	Time	24 hours	4	± 0,125% per hour	1 second	
2	Pressure Altitude	-1000 ft to 47 000 ft	1	± 100 ft to ± 700 ft Refer to Table II-A.3[1]	5 ft	
3	Indicated Airspeed	50 kt to 390 kt	1	± 5 %	1 kt (0,5 kt recommended)	
4	Heading	0-360 degrees	1	± 2 degrees	0,5 degrees	
5	Normal Acceleration	-3g to +6g	0.125	± 0,09 g excluding a datum error of ± 0,45g	0,004g	
6	Pitch Attitude	± 90 degrees	0,25	± 2 degrees	0,5 degree	Accuracy applicable only for ± 75 degrees range
7	Roll Attitude	± 180 degrees	0,5	± 2 degrees	0,5 degree	Accuracy applicable only for ± 75 degrees range
8	Manual Radio Transmission Keying	Discrete	1	-	-	Each crew member
9	Thrust/ Power	Torque - (0-130)% Propeller RPM - 0-2400 rpm	Each engine each second	± 2%	0,2% of full range	
10	Trailing Edge Flap Position	0-45 degrees	2 - Each flap[1]: Main Wing Outer Main Wing Inner L FWD Wing R FWD Wing	± 3 degrees	0,5% of full range	Left and right sides may be each sampled at 4 seconds intervals in order to give 2 seconds interval points
11	Slats	Not Applicable for P.180				
12	Thrust Reverse Status	Reverse	Each reverser, each second			
13	Ground Spoiler and Speed Brake	Not Applicable for P.180				
14	Total Air Temperature	-50 °C to +90°C	2	± 2 °C	0,3 °C	

Table 1: Flight Data Registered Parameters

15	Autopilot/ Autothrottle / AFCS Mode and Engagement Status		1		-	Discretes should show which systems are engaged and which primary modes are controlling the flight path and speed of the aircraft
16	Angle of Attack	Full range	0,5		0,3% of full range	
17	Longitudinal Acceleration (body axis)	± 1 g	0,25	± 0,015 g excluding a datum error of ± 0,05g	0,004 g	
18	Lateral Acceleration	± 1 g	0,25	± 0,015 g excluding a datum error of ± 0,05g	0,004 g	
19	Selected Barometric Setting (each pilot)		64		0,1 mb/0,01 in-Hg	
20	Selected Altitude		1			
21	Selected Speed		1			
22	Selected Mach		1			
23	Selected Vertical Speed		1			
24	Selected Heading		1			
25	Selected Flight Path		1			
26	Selected Decision Height		64			
27	EFIS Display Format		4			
28	Multifunction/ Engine/ Alerts Display Format		4			
29	Date		1			

NOTE 1: Both the Main Wing Outer and the Main Wing Inner flaps information is provided on L-DCU-1. Both the Left Forward Wing and Right Forward Wing flaps information is provided on L-EDC-1. Label 137, Flap Position, appears twice on each of these busses but with different SDI bits to show the different flap position values in Volts as defined in the Attachment of the RSP. On the L-DCU-1 bus, the label 137 with SDI 10 contains the value of the Main Wing Outer flap voltage and the label 137 with SDI 01 contains the value of the Main Wing Inner flap voltage. On the L-EDC-1 bus label 137 with SDI 00 contains the value of the Left Forward Wing flap voltage and the label 137 with SDI 11 contains the value of the Right Forward Wing flap voltage.

Parameters are supplied to the CVDR by the A/C sensors in analog, discrete and digital formats, as described in the following.

D. Analog Parameters

The Three Axis Accelerometer is the only dedicated source, as per the definitions in the AC 20-141A (namely a sensor installed solely to produce an input signal to the Flight Data Recorder), while all the other sensors, already installed in the A/C, are not exclusively interfaced with the CVDR.
Parameters 5, 17 and 18, Normal, Longitudinal and Lateral accelerations, respectively, are supplied to the FDAU by the Three Axes Accelerometer in analog format.

E. Discrete Parameters

Parameters 8 (Manual Transmission Key) and 12 (Thrust Reverse Status) are supplied to the FDAU as discrete inputs

The Discrete Inputs, compatible with the following logic, are double ones and are described below:

1. Parameter 8, PTT discrete for Captain and First Officer
   _ Normal - Open / PTT - GROUND
2. Parameter 12 - Thrust Reverse Status is identified by the low pressure switch status for #1 and #2 Engines
   _ Normal - Open / Thrust Reverse - GROUND

F. Digital Parameters

All the other parameters are available from already installed basic sensors part of the Central Computer System, supplied to the FDAU through four ARINC-429 digital busses, namely L-GP-5 and R-GP-5 from the Input / Output Concentrator Units (IOC), L-EDC-1 and L-DCU-1 from the Data Concentrator Units.

Table 2 lists the involved parameters, the related Arinc-429 words, words rate and the bus form which the parameters are taken for registration (the same parameter numbers of Table 1 has been maintained to facilitate their identification).

Table 2: ARINC-429 Digital Parameters

N°	EUROCAE ED-112 Parameter	A429 Labels - Parameter (octal)	Rate (Wds/ sec)	A429 Input Buses			
				L-GP-5 (HS)	R- -5 GP (HS)	L-EDC-1 (LS)	L-DCU-1 (LS)
1.	Time	151 - UTC (GPS)	1	X			
2	Pressure Altitude	203 - Altitude (29,92)	20	X	X		
3.	Indicated Airspeed	206 - Airspeed	20	X	X		
4.	Heading	320 - Magnetic Heading	52	X	X		
6.	Pitch Attitude	324 - Pitch Angle	52	X	X		
7.	Roll Attitude	325 - Roll Angle	52	X	X		
9.	Parameters to Determine Propulsive Thrust/Power on each engin	340 - Torque	20			X	
		344 - Propeller RPM	20				X
10.	10.Trailing Edge Flap Position	137 - Flap Position (forward wing)	10			X	
		137 - Flap Position (main wing)	10				X
14.	Total or Static Air Temperature	211 - TAT	2,5	X	X		
15..	Autopilot/Autothrottle/ AFCS Mode and Engagement Status	270 - FGC Mode Wd. 1 271 - FGC Mode Wd. 2 272 - FGC Mode Wd. 3 273 - FGC Mode Wd. 4 274 - FGC Mode Wd. 5	10	X	X		
16.	Angle of Attack	241 - Normalized AOA	10			X	
19.	Selected Barometric Setting (each pilot)	172 - PFD Mode select Wd 2 176 - PFD Mode select Wd 3 234 - Baro-Correction (hPa) 235 - Baro-Correction (Hg)	5 20 10 10	X	X		
20.	Selected Altitude	102 - Preselected Altitude	10	X	X		
21.	Selected Speed	103 - Reference Airspeed	10	X	X		
22.	Selected Mach	106 - Reference Mach	10	X	X		
23.	Selected Vertical Speed	104 - Reference Vertical Speed	10	X	X		
24.	Selected Heading	101 - Selected Heading/ Track	5	X	X		
25.	Selected Flight Path	100 - Selected Course	5	X	X		
26.	Selected Decision Height	370 - Selected Decision Height	5	X	X		
27.	EFIS Display Format	155 - MFD Mode Wd 1 161 - MFD Mode Wd 2 163 - PFD Mode Select Wd 1 172 - PFD Mode select Wd 2 176 - PFD Mode select Wd 3	20 20 5 5 20	X X X X X	- - X X X		
28.	Multifunction/Engine/ Alerts Display Format	155 - MFD Mode Wd 1 161 - MFD Mode Wd 2	20	X	-		
29.	Date	261 - Date (GPS)	1	X			

G. Data Stream

The registered parameters after being downloaded using ROSE software are displayed using the same program with the dedicated P180 Database. The database is a template which identifies the correct parameter information in the packed registered data.

The following data are shown:

The Parameter List table includes:

- Assigned parameter number
- Allocated words
- Input signal range
- E/U (Engineering Units) range
- E/U converted resolution

The parameter Definition table includes:

- Output type
- Units of measure
- Allocated words
- Repartition of words in frames
- MSB (Most Significant Bit) and LSB (Least Significant Bit) positions
- Decimals used
- Resolution
- Coefficients of the algorithm

The P180 database will be delivered to the airplane operator company. Using the ROSE software (see User's Manual document for more details regarding the necessary software and hardware) it is possible to download and read the recorded parameters.

3. CVDR - Main Components

A. Cockpit Voice And Flight Data Recorder (CVDR)

The CVDR (see below Figure 1), which functions are the registration and safe storage of cockpit voice and flight data.

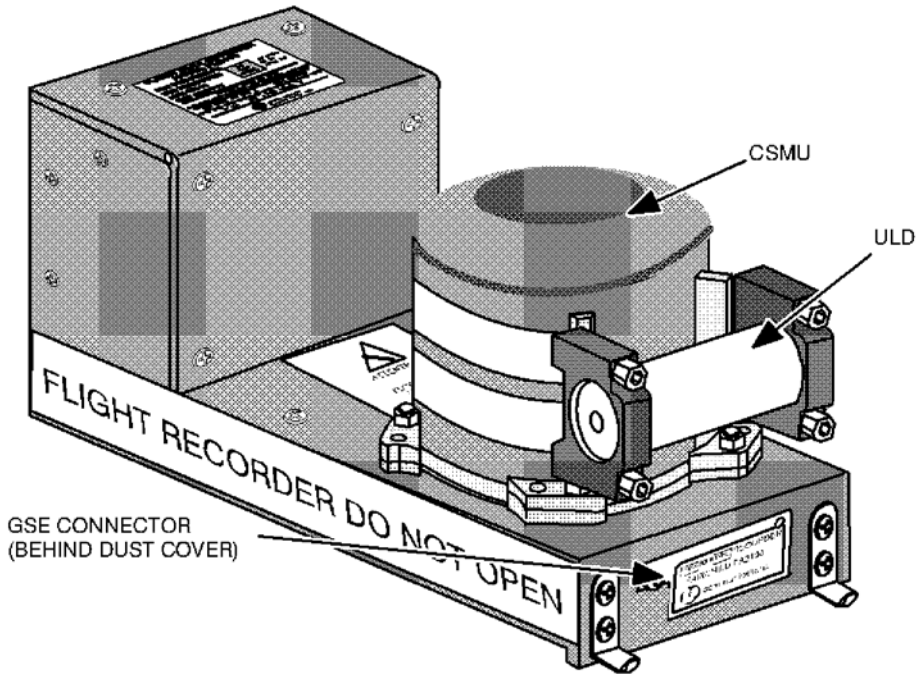

Fig. 1 - Cockpit Voice And Flight Data Recorder (CVDR)

The CVDR is installed in the baggage area, under the floor (- see following figure 2).

The CVDR registers cockpit voice data separated in the following four high quality (HQ) and two standard quality (SQ) channels.

The flight data recorder function receives flight data from an ARINC 717 Mini Flight Data Acquisition Unit (Mini FDAU) at 256 words-per second.

The CVDR consists of a chassis (ARINC 404A, 1/2 short case) and front panel, three Printed Wiring Assemblies (Aircraft Interface PWA, Audio Compressor PWA, and Acquisition Processor PWA), and the Crash Survivable Memory Unit (CSMU). The CSMU contains the flash memory used as the recording medium

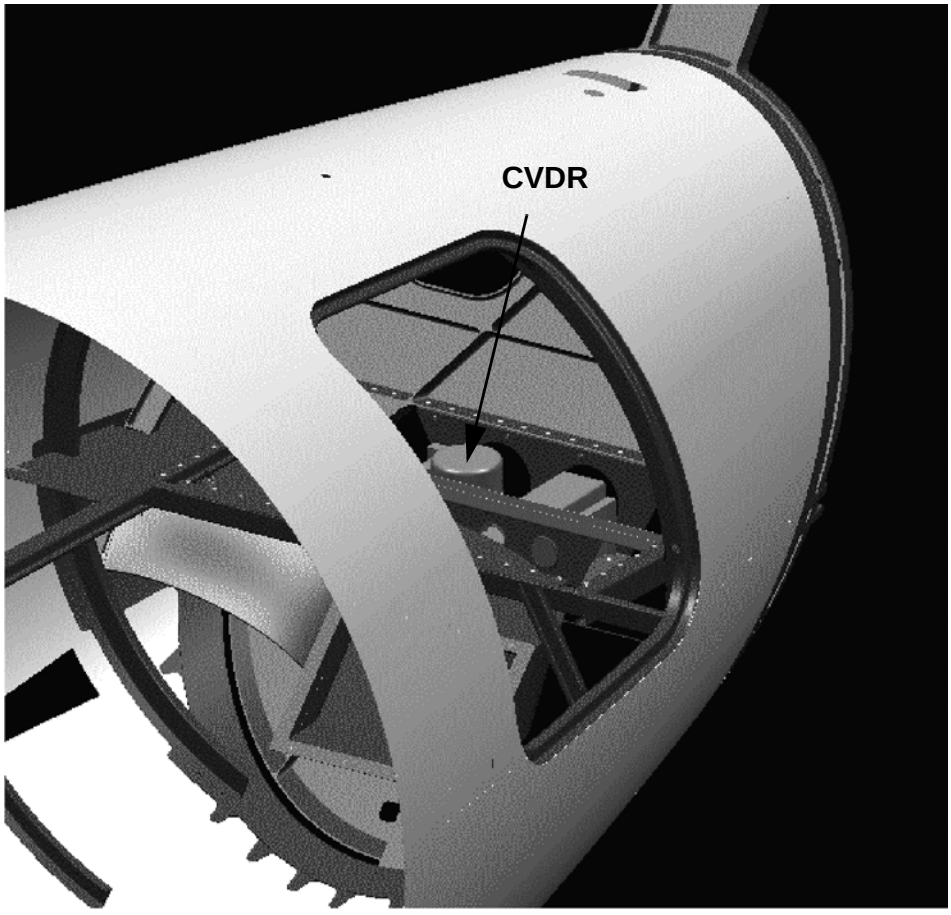

Fig. 2 - CVDR - Location

The CVDR is painted international orange. Two reflective stripes are also located on the CSMU.

An Underwater Locator Device (ULD), is mounted horizontally on the front of the CSMU and is also used as the recorder's carrying handle. The ULD is equipped with a battery that has an expected life of six years.

The Ground Support Equipment (GSE) connector is located on the front of the CVDR. This connector provides the interface from the recorder to GSE for checkout of the recorder, or to transfer voice and flight data to a readout device.

NOTE: Previously recorded voice information cannot be read from the CVDR while it is installed in the aircraft. However, the flight data may be monitored in real time or copied out to the GSE even onboard

B. CVR Control Panel

The S261 equipment controls and tests the audio functions of the CVDR.

It has front panel TEST and Bulk ERASE switches, TEST indicator lamp and a HEADSET jack for verifying system operation. Bulk Erase function is not enabled on this installation.

C. CVDR Area Microphone

It collects all the audio present in the pilots cockpit area, using an internal amplifier for reducing RF interference.

D. G-Switch

It is a G sensor including a normally open contact, a Status Advisory Lamp and a Reset pushbutton.
The normally open contact is connected to the Recorder Unit "stop-record" input, for enabling the automatic stop of voice and data recording ten minutes after a crash impact.

E. Mini Flight Data Acquisition Unit (Mini FDAU)

The Mini FDAU provides the capability to convert the following types of flight data to the
ARINC 717 digital format required by the CVDR:

- Discrete (up to 35)
- Analog (up to 10)
- ARINC 429 (up to 8)
- Ethernet (not used onboard P180)

The Mini FDAU captures the parameters defined by PAI and described in Table 1.
The Mini FDAU, heritage of a long experience in similar equipment gained by L-3/ Aviation Recorders (former Fairchild), was developed starting from a Hard Landing Indication System by configuring the inputs as required by PAI, by eliminating the original memory module used to store the records and by outputting the acquired data via an ARINC 717 digital bus to the CVDR.

The Mini FDAU consists of the following PWA: Multi-Purpose Processor Board, Discrete/ARINC429 Board, Connection Board, Power Supply Board, Analog Converter 32-Channels and Power Interface.

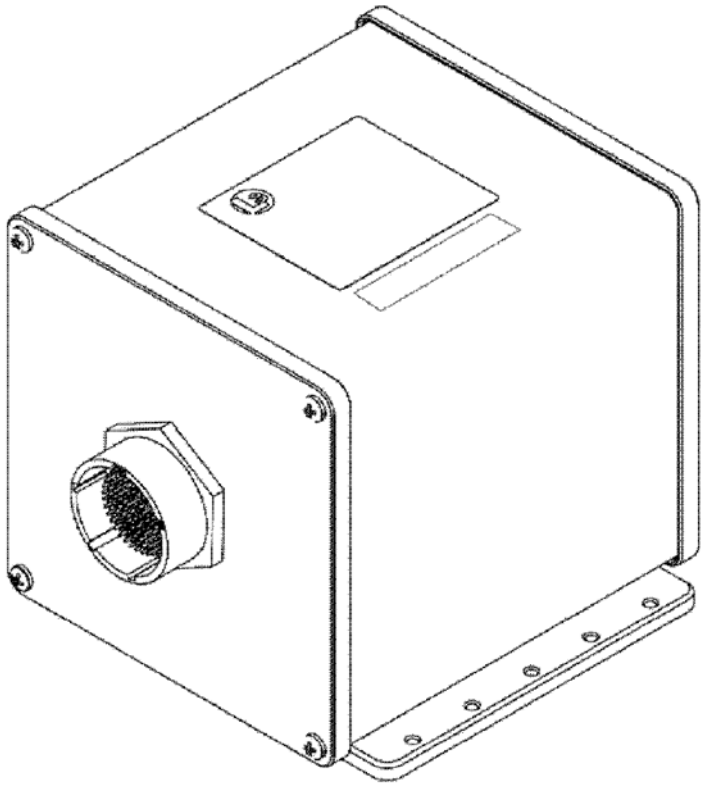

Fig. 3 - Mini FDAU

F. CVDR Test Panel

The CVDR Test Panel is used to preflight check the CVDR system.

It includes off the shelf components (pushbutton and annunciator) qualified for installation in cockpit environment, mechanically assembled in a plate equipped with d-zus fastener, to be installed in the A/C radio pedestal.

G. CVDR Test Panel Switches

The test panel integrates the testing of both cockpit voice recording and flight data recording functions. This way the mandatory preflight check may be performed from a single

pushbutton - CVDR TEST. The CVR function and FDR/FDAU function lamps are separately powered by the BIT of the recording functions.

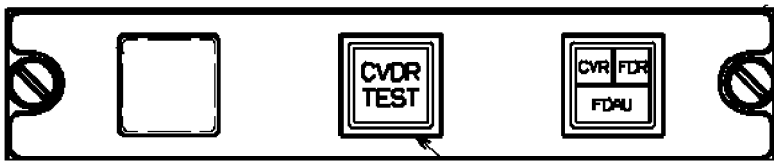

Fig. 4 - CVDR Test Panel

H. Three Axis Accelerometer

Even if acceleration parameters would be available from the A/C avionics architecture, a dedicated three axis accelerometer has been installed.

The accelerometer, is an analog device used to measure the vertical, longitudinal and lateral accelerations.

The Three Axis Accelerometer, is powered by the Mini FDAU.
The accelerometer is installed in the wardrobe zone.

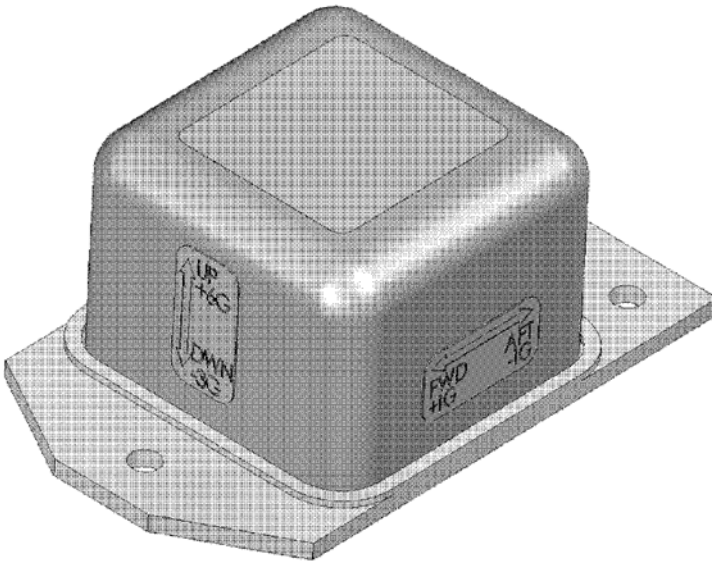

Fig. 5 - Three Axis Accelerometer

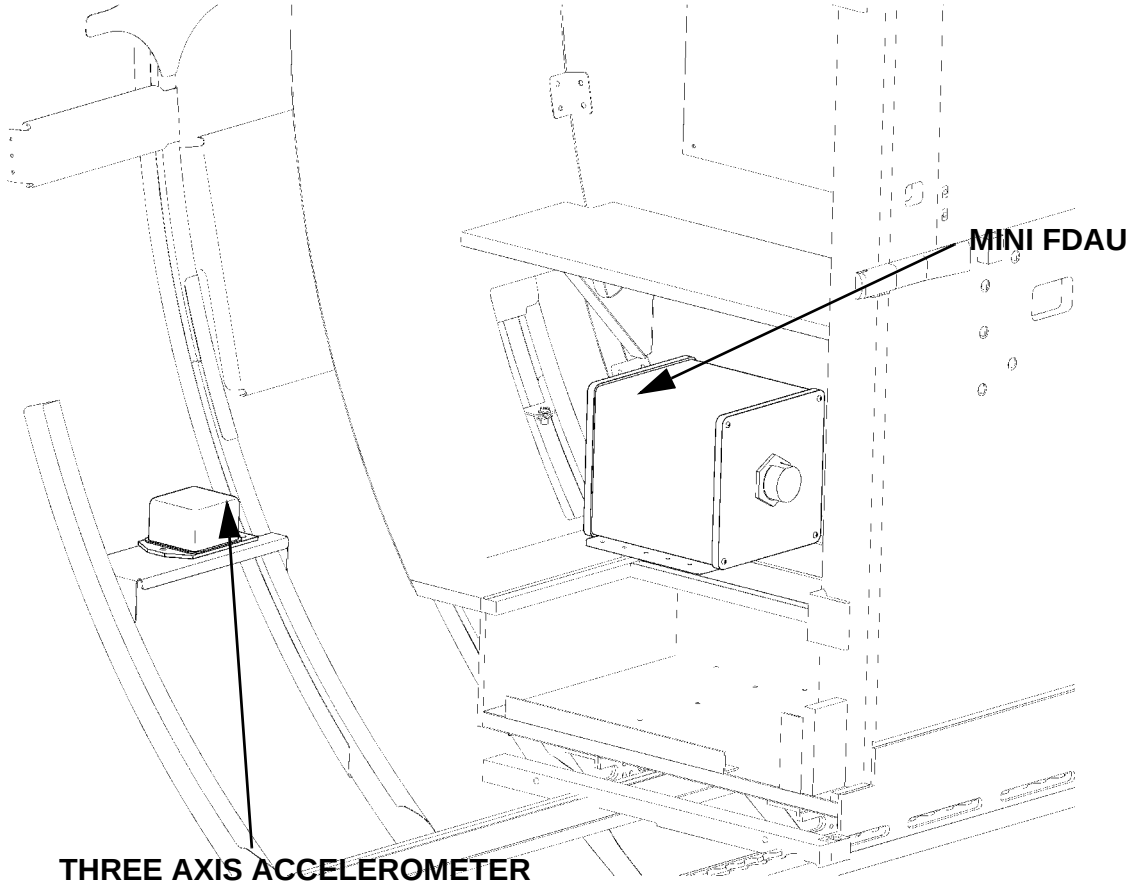

Fig. 6 - Mini FDAU and Three Axis Accelerometer - Location

4. Related Components

A. Audio System

There are two basic B1045 Audio Panels (pilot's and copilot's) that integrates and controls the communication and navigation audio signals and communications between crew members as well as between crew members and passengers.
Dedicated not mutable auxiliary audio output lines are connected to CVDR system. In this way, all the received audio selected on the audio panels as well as aural tones and crew's interphone communications are always available to the CVDR for recording means.
The same Audio System sends PTT discrete from both Pilot and Co-Pilot to be registered.

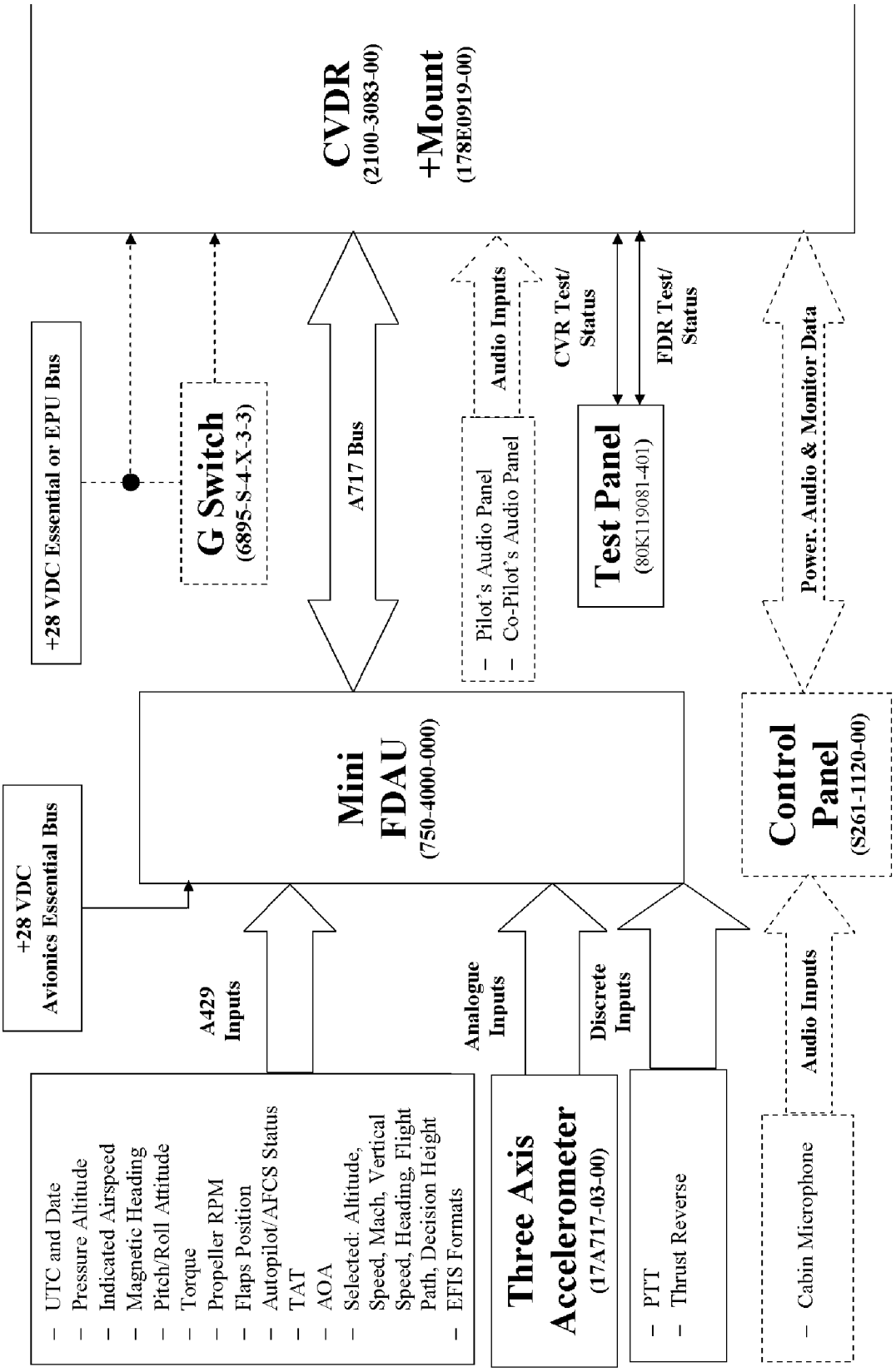

Fig. 7 - CVDR - Block Diagram

AUDIO AND VIDEO MONITORING - MAINTENANCE PRACTICES

1. General

This section describes the maintenance procedures for the following equipment:

- Recorder Unit FA2100-3083-00 CVDR
- Recorder Control Panel S 261
- G-Switch
- CVDR Test Panel
- CVDR Flight Data Acquisition Unit (FDAU)
- CVDR Flight Data Acquisition Unit (FDAU) (Nordam Interior)
- CVDR Accelerometer
- CVDR Accelerometer (Nordam Interior)

2. Recorder Unit FA2100-3083-00 CVDR - Removal/Installation

NOTE: The Removal/Installation procedures of the FA2100-3083-00 CVDR are identical to procedure related to FA2100-1020-00 CVR as described in the AMM (Refer to 23-70-00).

3. Recorder Control Panel S 261- Removal/Installation

NOTE: The Recorder Control Panel S 261 Removal/Installation procedures are described in the AMM (Refer to 23-70-00).

4. G-Switch - Removal/Installation

NOTE: The G-Switch Removal/Installation procedures are described in the AMM (Refer to 23-70-00).

5. CVDR Test Panel - Removal(Refer to Fig. 201)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags
Blanking cap

B. Referenced Information

Maintenance Manual Chapter 24-00-00

C. Procedure

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.

(2) Remove the electrical power (Refer to 24-00-00).
(3) Open, tag and safety the CVDR and FDAU circuit breakers on Copilot Circuit Breaker Panel.
(4) Remove the two screws that fasten the CVDR Test Panel to the pedestal.
(5) Extract the CVDR Test Panel to gain access to the rear side of each Pushbutton and Lamp.
(6) Extract the wires from the Pushbutton and Lamp rear side and make a note of the extracted wires.
(7) Remove the Test Panel.
(8) Protect and stow the electrical wires from dust if replacement unit is not to be installed immediately.

6. CVDR Test Panel - Installation(Refer to Fig. 201)

A. Procedure

(1) Make sure as necessary that:
– The applicable circuit breakers are open, tagged and safetied
– The Warning Notices are in position
– The system is safe
– Access is available
(2) If previeously installed, remove the protection and free the electrical wires.
(3) Insert the wires to the Pushbutton and Lamp rear side previously marked.
(4) Insert the CVDR Test Panel in its housing.
(5) Tighten the two screws.
(6) Remove the safety tag and close the CVDR and FDAU circuit breakers on Copilot Circuit Breaker Panel.
(7) Remove the Warning Notice in the flight compartment.

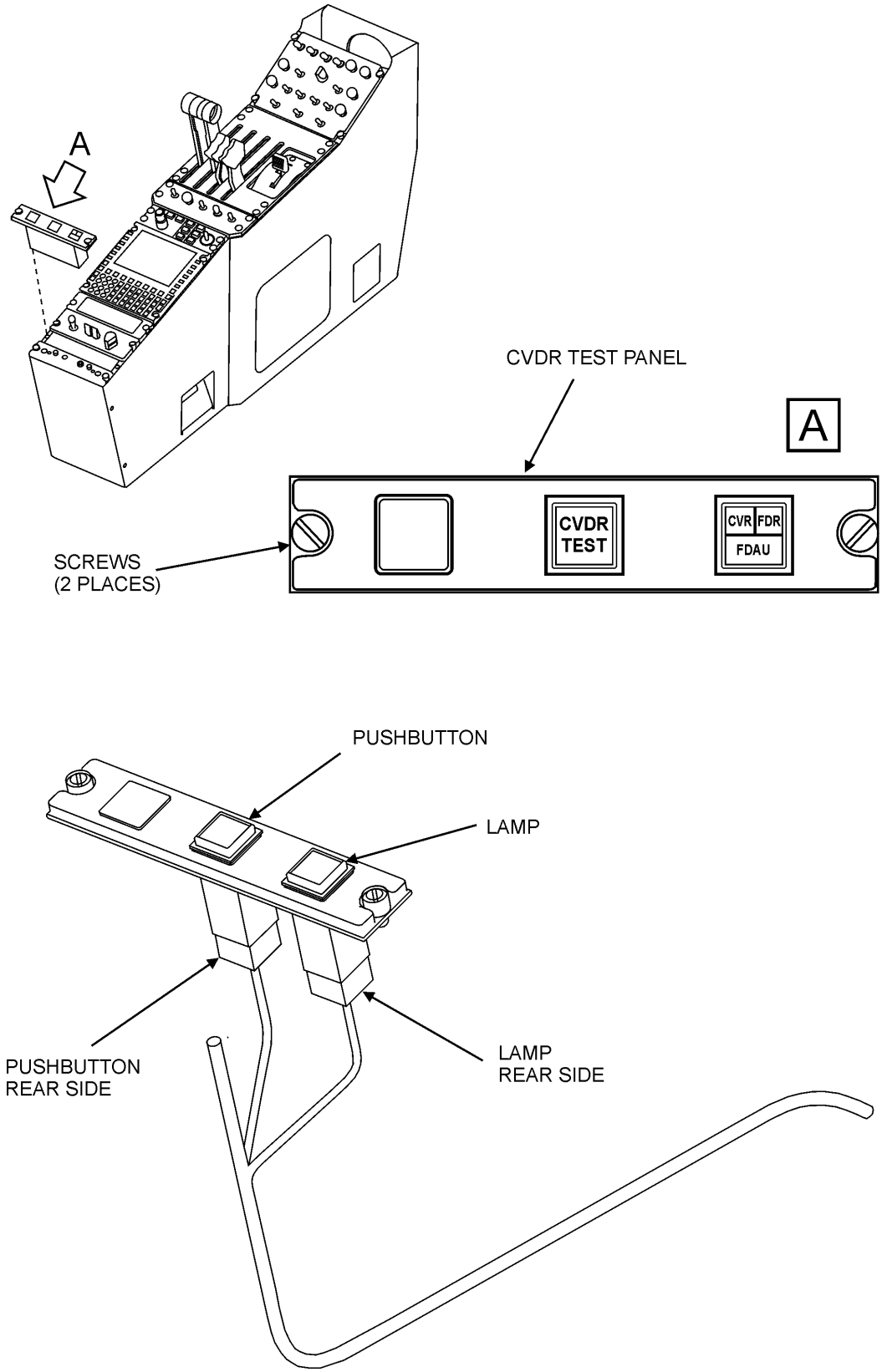

Fig. 201 - CVDR Test Panel - Removal / Installation

7. CVDR Flight Data Acquisition Unit (FDAU) - Removal (Refer to Fig 202)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags	Not Specified
Blanking cap	Not Specified

B. Referenced Information

Maintenance Manual Chapter 24-00-00

C. Procedure

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Remove the electrical power (Refer to 24-00-00).
(3) Open, tag and safety these circuit breakers:

Pilot CB panel:

CVDR

FDAU

(4) Open the Cabin Vanity Closet Door.
(5) To gain access to FDAU (1), detach the Cabin Vanity Closet Wall located inside the Vanity Closet forward.
(6) Disconnect the Electrical Connector (2).
(7) Remove the three screws (3) that secure the FDAU to the support.
(8) Slide out the FDAU from the FDAU Track (4).
(9) Remove the FDAU.
(10) Cap and stow the electrical connectors and the wiring harness from dust if replacement unit is not to be installed immediately.

8. CVDR Flight Data Acquisition Unit (FDAU) - Installation (Refer to Fig 202)

A. Procedure

(1) Make sure, as necessary that:
- There is no electrical power on the airplane
- The Warning Notices are in position
- The system is safe
- Access is available

(2) If previeously installed, remove the cap from the electrical connectors and free the electrical harness.
(3) Place FDAU (1) lower tab in the Track (4).
(4) Secure the FDAU to the support with the three screws (3).
(5) Remove the Electrical Connectors Cap if previously installed.
(6) Connect the Electrical Connector (2).

(7) Attach with velcro the Cabin Vanity Closet Wall located inside the Vanity Closet backward.

(8) Remove the safety tags and close these circuit breakers:

Pilot CB panel:

CVDR

FDAU

(9) Remove the Warning Notices in the flight compartment.

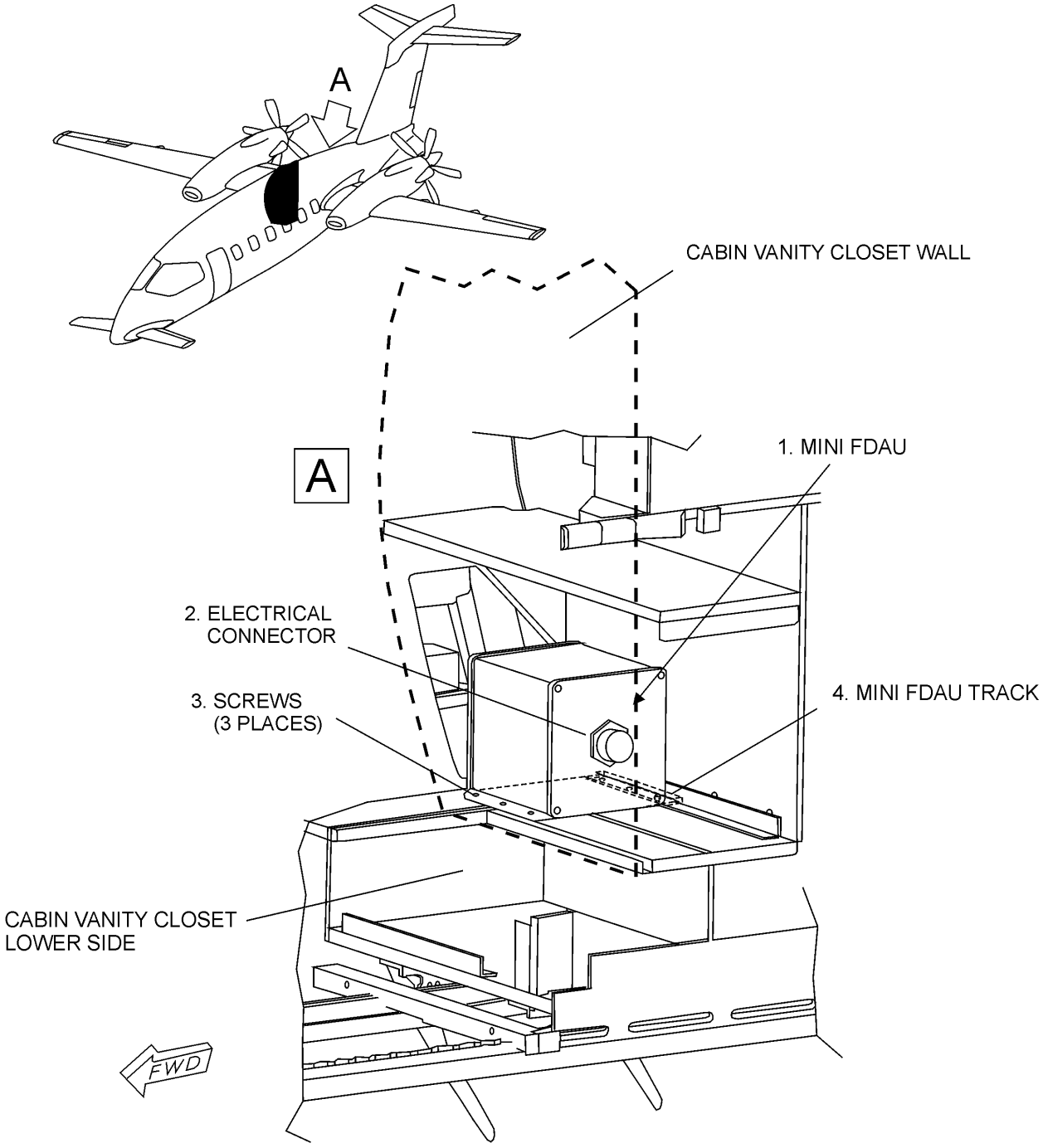

Fig. 202 - Flight Data Acquisition Unit (FDAU) - Removal / Installation

9. CVDR Flight Data Acquisition Unit (FDAU) (Nordam Interior) - Removal (Refer to Fig 203)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags	Not Specified
Blanking cap	Not Specified

B. Referenced Information

Maintenance Manual Chapter 24-00-00

C. Procedure

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Remove the electrical power (Refer to 24-00-00).
(3) Open, tag and safety these circuit breakers:

Pilot CB panel:

CVDR

FDAU

(4) Open the Cabin Vanity Closet Door.
(5) To gain access to FDAU (1), open the Cabin Vanity Closet Door.
(6) Disconnect the Electrical Connector (2).
(7) Remove the three screws (3) that secure the FDAU to the support.
(8) Slide out the FDAU from the FDAU Track (4).
(9) Remove the FDAU.
(10) Cap and stow the electrical connectors and the wiring harness from dust if replacement unit is not to be installed immediately.

10. CVDR Flight Data Acquisition Unit (FDAU) (Nordam Interior) - Installation (Refer to Fig 203)

A. Procedure

(1) Make sure, as necessary that:
- There is no electrical power on the airplane
- The Warning Notices are in position
- The system is safe
- Access is available

(2) If previeously installed, remove the cap from the electrical connectors and free the electrical harness.
(3) Place FDAU (1) lower tab in the Track (4).
(4) Secure the FDAU to the support with the three screws (3).
(5) Remove the Electrical Connectors Cap if previously installed.
(6) Connect the Electrical Connector (2).

(7) Close the Cabin Vanity Closet Door.
(8) Remove the safety tags and close these circuit breakers:

Pilot CB panel:
CVDR
FDAU

(9) Remove the Warning Notices in the flight compartment

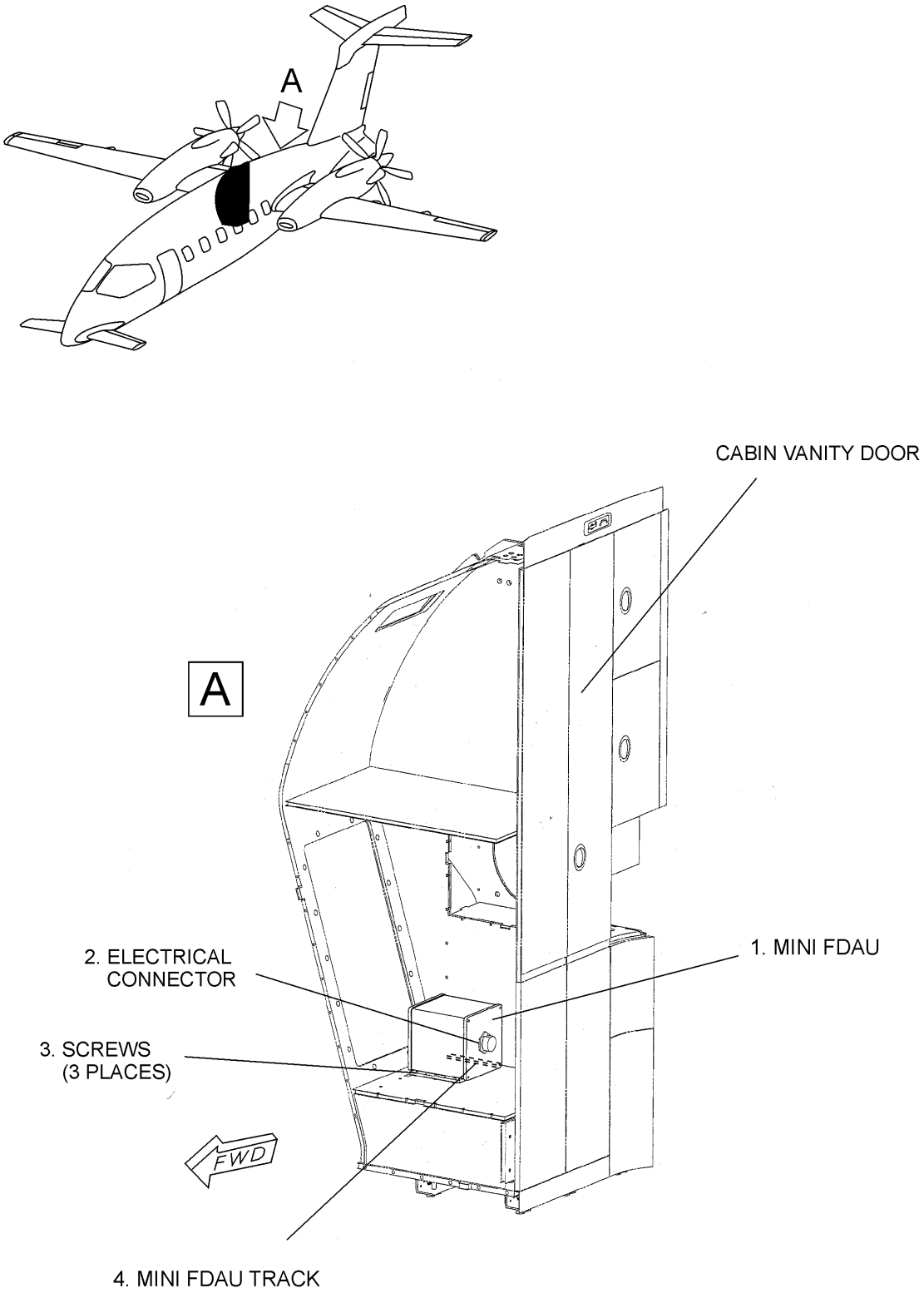

Fig. 203 - Flight Data Acquisition Unit (FDAU) (Nordam Interior) - Removal / Installation

11. CVDR Accelerometer - Removal(Refer to Fig.204)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags	Not Specified
Blanking cap	Not Specified

B. Referenced Information

Maintenance Manual Chapter 24-00-00

Maintenance Manual Chapter 25-00-00

C. Procedure

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Remove the electrical power (Refer to 24-00-00).
(3) Open, tag and safety these circuit breakers:

Pilot CB panel:

CVDR

FDAU

(4) Remove the interior panel(s) to gain access to Accelerometer (2).
(5) Disconnect the Electrical Connector (4).
(6) Remove the three nut (3) that secure the Accelerometer to the support (5).
(7) Remove the Accelerometer.
(8) Cap and stow the electrical connectors and the wiring harness from dust if replacement unit is not to be installed immediately.

12. CVDR Accelerometer - Installation(Refer to Fig.204)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags	Not Specified
Blanking cap	Not Specified

B. Referenced Information

Maintenance Manual Chapter 25-00-00

C. Procedure

(1) Make sure, as necessary that:
- There is no electrical power on the airplane
- The Warning Notices are in position
- The system is safe
- Access is available

(2) If previeously installed, remove the cap from the electrical connectors and free the electrical harness.
(3) Place the Accelerometer (2) on the Support (5).
(4) Secure the Accelerometer to the support with the three nut (3).
(5) Remove the Electrical Connectors Cap if previously installed.
(6) Connect the Electrical Connector (4).
(7) Install the the interior panel(s) previously removed.
(8) Remove the safety tags and close these circuit breakers:

Copilot CB panel:

CVDR

FDAU

(9) Remove the Warning Notices in the flight compartment.

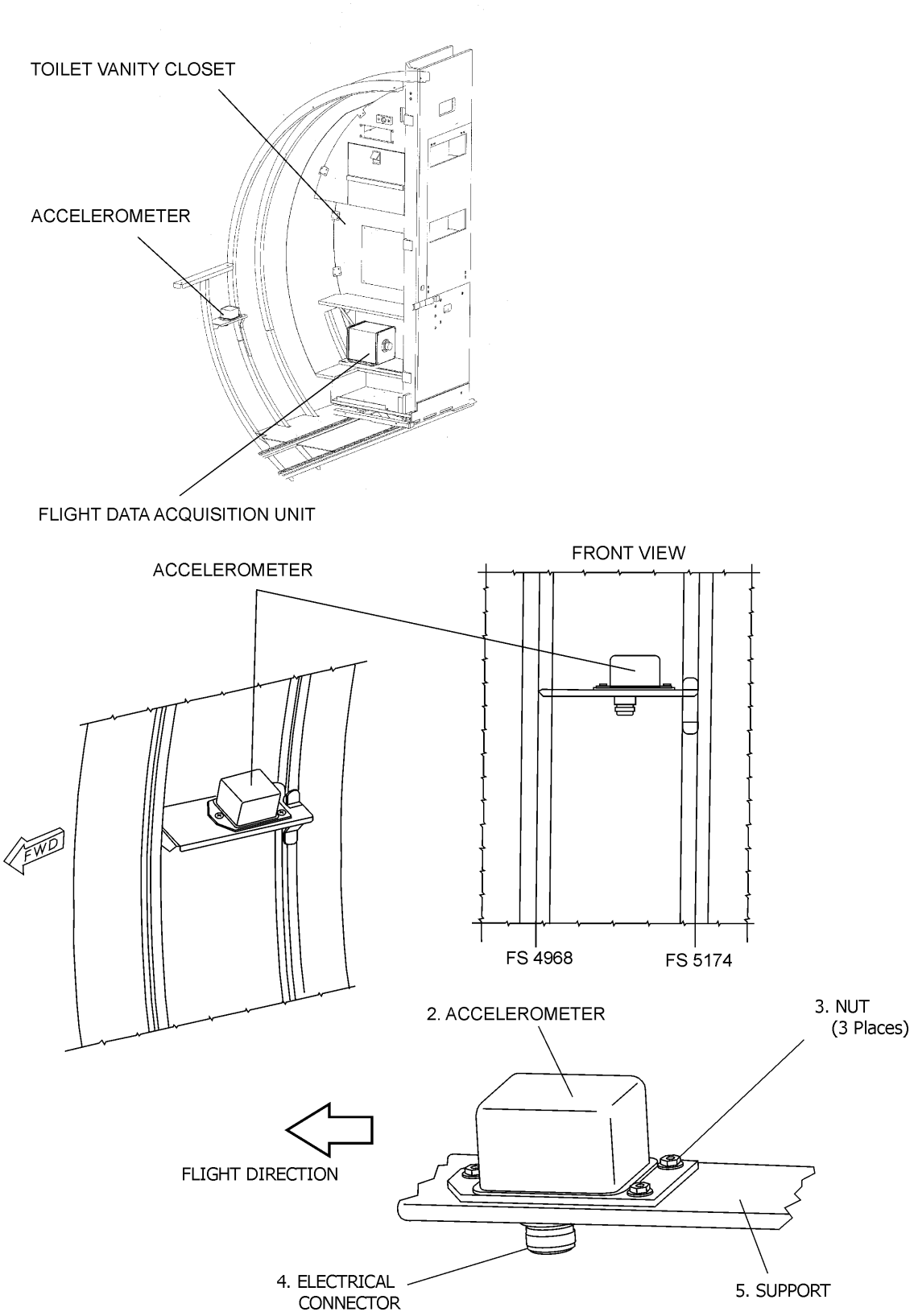

Fig. 204 - CVDR Accelerometer - Removal / Installation

13. CVDR Accelerometer (Nordam Interior)- Removal(Refer to Fig.205)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags	Not Specified
Blanking cap	Not Specified

B. Referenced Information

Maintenance Manual Chapter 24-00-00

C. Procedure

(1) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(2) Remove the electrical power (Refer to 24-00-00).
(3) Open, tag and safety these circuit breakers:

Pilot CB panel:
CVDR
FDAU

(4) Remove the cushion located to the toilet seat back.
(5) Remove the Seat Panel (1).
(6) Disconnect the Electrical Connector (4) from the Accelerometer (2).
(7) Remove the three nut (3) that secure the Accelerometer to the support (5).
(8) Remove the Accelerometer.
(9) Cap and stow the electrical connectors and the wiring harness from dust if replacement unit is not to be installed immediately.

14. CVDR Accelerometer (Nordam Interior) - Installation(Refer to Fig.205)

A. Fixtures, Test and Support Equipment

Circuit breaker safety clips and tags	Not Specified
Blanking cap	Not Specified

B. Procedure

(1) Make sure, as necessary that:
- There is no electrical power on the airplane
- The Warning Notices are in position
- The system is safe
- Access is available

(2) If previeously installed, remove the cap from the electrical connectors and free the electrical harness.
(3) Place the Accelerometer (2) on the Support (5).
(4) Secure the Accelerometer to the support with the three nut (3).

(5) Remove the Electrical Connectors Cap if previously installed.
(6) Connect the Electrical Connector (4).
(7) Install the Seat Panel (1).
(8) Install the cushion located to the toilet seat back.
(9) Remove the safety tags and close these circuit breakers:

Copilot CB panel:

CVDR

FDAU

(10) Remove the Warning Notices in the flight compartment.

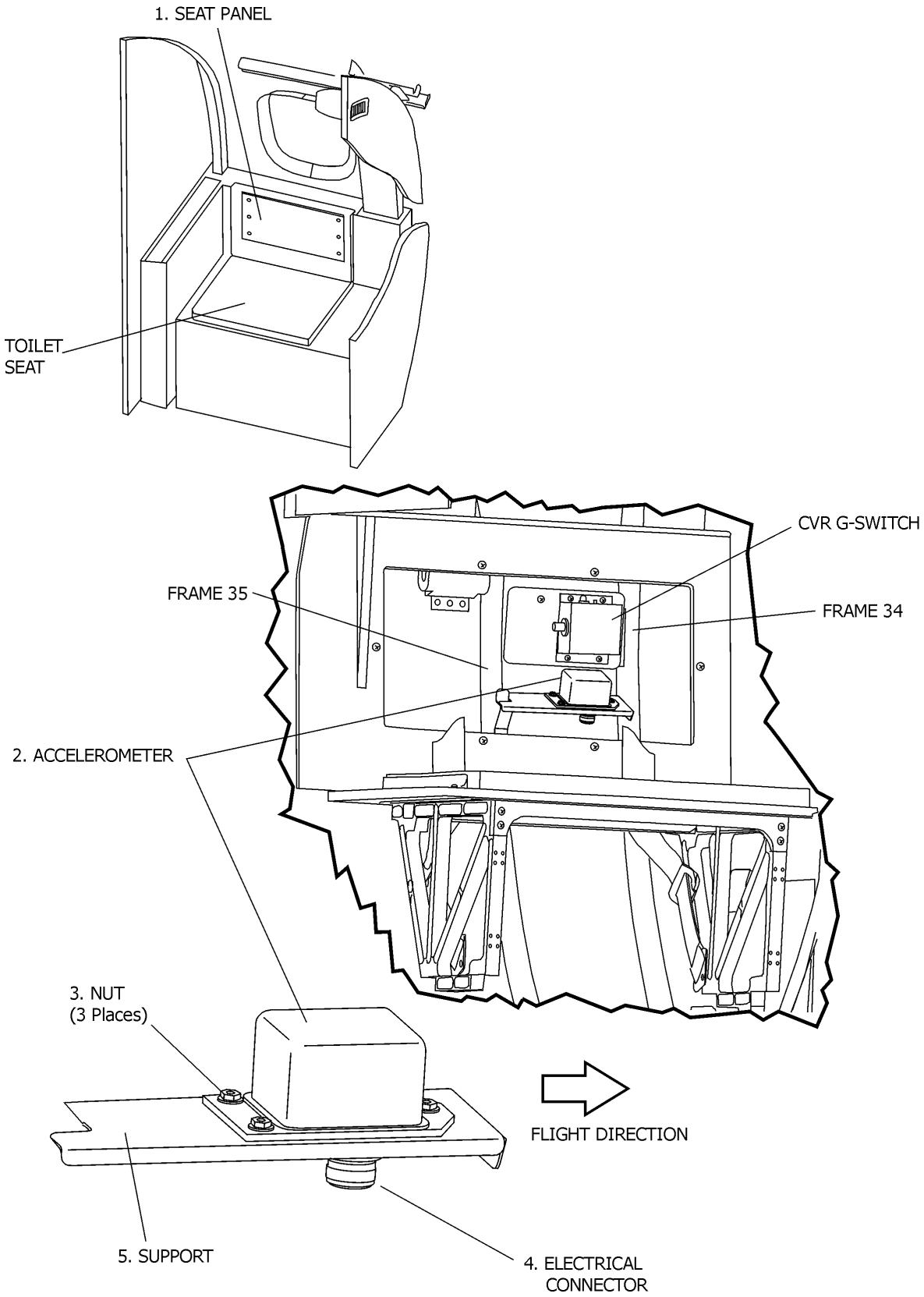

Fig. 205 - CVDR Accelerometer (Nordam Interior) - Removal / Installation

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