CHAPTER

23

COMMUNICATIONS

LEARJET 35/35A/36/36A
MAINTENANCE MANUAL

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RECORD OF TEMPORARY REVISIONS

TEMP REV NO	DESCRIPTION	ISSUE DATE	ATP REV DATE	INSERT BY	DATE REMOVED	REV INCOR	REMOVE BY
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COMMUNICATIONS - DESCRIPTION AND OPERATION

1. Description

A. This chapter includes maintenance information for speech communication, passenger address and entertainment, ground maintenance interphone, audio integrating, static discharging and voice recording systems.

1. **Adjustment/Test**
   A. Radio Radiation Interference Test *(LES-FT-1422G)*

WARNING: STAND CLEAR AND DO NOT TOUCH HF ANTENNA OR HF ANTENNA FEEDLINE WHILE HF SYSTEM IS TRANSMITTING, AS PAINFUL RF BURNS AND DEATH MAY RESULT FROM HIGH RF VOLTAGE.

CAUTION: PERFORM RADIO RADIATION INTERFERENCE TEST WHENEVER THE HF TRANSMITTER IS REMOVED AND REPLACED, OR WHEN AN ENGINE OR ENGINE FUEL COMPUTER IS REMOVED AND REPLACED.

NOTE: This test is to be performed to detect HF, VHF, and UHF radio radiation interference throughout entire frequency range for which aircraft is certified.

A flight test is necessary only if, during the ground test, interference exceeds the following limits.

(1) Start engines. (Refer to FAA Approved Airplane Flight Manual.)
(2) Adjust the communication transceivers and navigation receivers to a normal audio level.
(3) Ensure that the following systems are operating normally:
   (a) Interstage turbine temperature (ITT)
   (b) Engine fan speed (N1)
   (c) Engine turbine speed (N2)
   (d) Autopilot
   (e) Fuel flow
   (f) Fuel quantity
   (g) Ram air temperature
   (h) Anti-skid
   (i) VHF navigation
   (j) Compasses
   (k) Automatic direction finder (ADF)
   (l) VHF communication
   (m) Audio
   (n) Flight director
   (o) Engine synchronization
   (p) Long range navigation
   (q) Passenger entertainment
(4) In the following tests, radio radiation interference shall not exceed tolerances listed below. Should these tolerances be exceeded, interference shall be corrected or interfering frequency must be eliminated from operation.
   (a) Engine ITT Indicator - fluctuations not to exceed ±10°C.
   (b) Engine N1 Indicator - fluctuations not to exceed ± 0.5%.
   (c) Engine N2 Indicator - fluctuations not to exceed ± 0.5%.
   (d) Fuel Flow Indicator - fluctuations not to exceed ± 100 pounds per hour.
   (e) Autopilot - shall not cause a discernible change of pitch or roll attitude. Slight bumps which do not change pitch or roll attitudes are acceptable.
   (f) Other systems - interference which requires crew corrective action or constitutes a hazardous cockpit distraction should not occur.

(5) Set Inverter Switches on, then off. (Applicable only during the ground test.)
(6) Set Generator Switches on.
(7) Set Engine Synchronizer Switch off.
(8) Set throttle levers until there is a 1/2% to 2% N1 RPM difference.
(9) Set throttle levers until the engine fan speeds (N1) are synchronized and set Engine Synchronizer Switch on.
(10) Depress Trim and Trim Arming Switch and set switch to NOSE UP, NOSE DN, RWD, and LWD. Release Trim and Trim Tab Arming Switch.
(11) Set Windshield Auxiliary Defog Switch on, then off.
(12) On *aircraft equipped with electrically heated windshields,* set Windshield Heat Switch on, then off.
(13) Set Strobe Light Switch on, then off.
(14) Set Stabilizer Wing Heat Switch on, then off.
(15) Transmit on the HF radio in AM mode throughout its frequency range in one MHz increments.
(16) Transmit on the VHF radio throughout its frequency range in one MHz increments.
(17) Transmit on the UHF radio throughout its frequency range in ten MHz increments.
(18) Set Cool/Fan Switch to COOL, then to OFF.
(19) Operate entertainment components (when installed).
  (a) Television - operate on high and low VHF and UHF channels.
  (b) Video cassette recorder - operate with tape installed and playing.
  (c) Tape player - operate with tape installed and playing.
  (d) Stereo - operate on high and low AM and FM stations.
  (e) Compact disk player - operate with disk installed and playing.
(20) Operate any remaining systems that may be installed which produce radio radiation. This includes oscillators, transformers, fluorescent lights, flitefone, intercom, and heaters which may be used in flight.
(21) Taxi aircraft and utilize the nose wheel steering system.
  (a) Evaluate the effects of nose wheel steering system on equipment listed in step (3).
  (b) Evaluate the effects of items listed in steps (8) thru (20) on nose wheel steering system.
(22) Operate any of the above systems simultaneously which may be used simultaneously in flight.
(23) Shut down communication transceivers and navigation receivers.
(24) Shut down engines. (Refer to FAA Approved Airplane Flight Manual.)

SPEECH COMMUNICATION - DESCRIPTION AND OPERATION

1. Description

A. The speech communication system consists of the VHF communication system, HF communication system, and UHF Flitefone system.

NOTE: The speech communications installations may vary depending on optional equipment installed. The mechanic should check the list of optional equipment on his particular aircraft to determine which systems are installed before proceeding.

2. Operation

A. VHF and HF systems provide for communications between aircraft and ground stations and from aircraft to aircraft. Flitefone systems provide for communications from aircraft to ground stations using UHF frequencies (or HF frequencies if so equipped).

VHF COMMUNICATIONS - DESCRIPTION AND OPERATION

1. **Description (See figures 1 and 2.)**
   A. Collins VHF20A/20B System

      NOTE: The dual VHF system may utilize the VHF20A or VHF20B in any combination for COMM1 and COMM2.

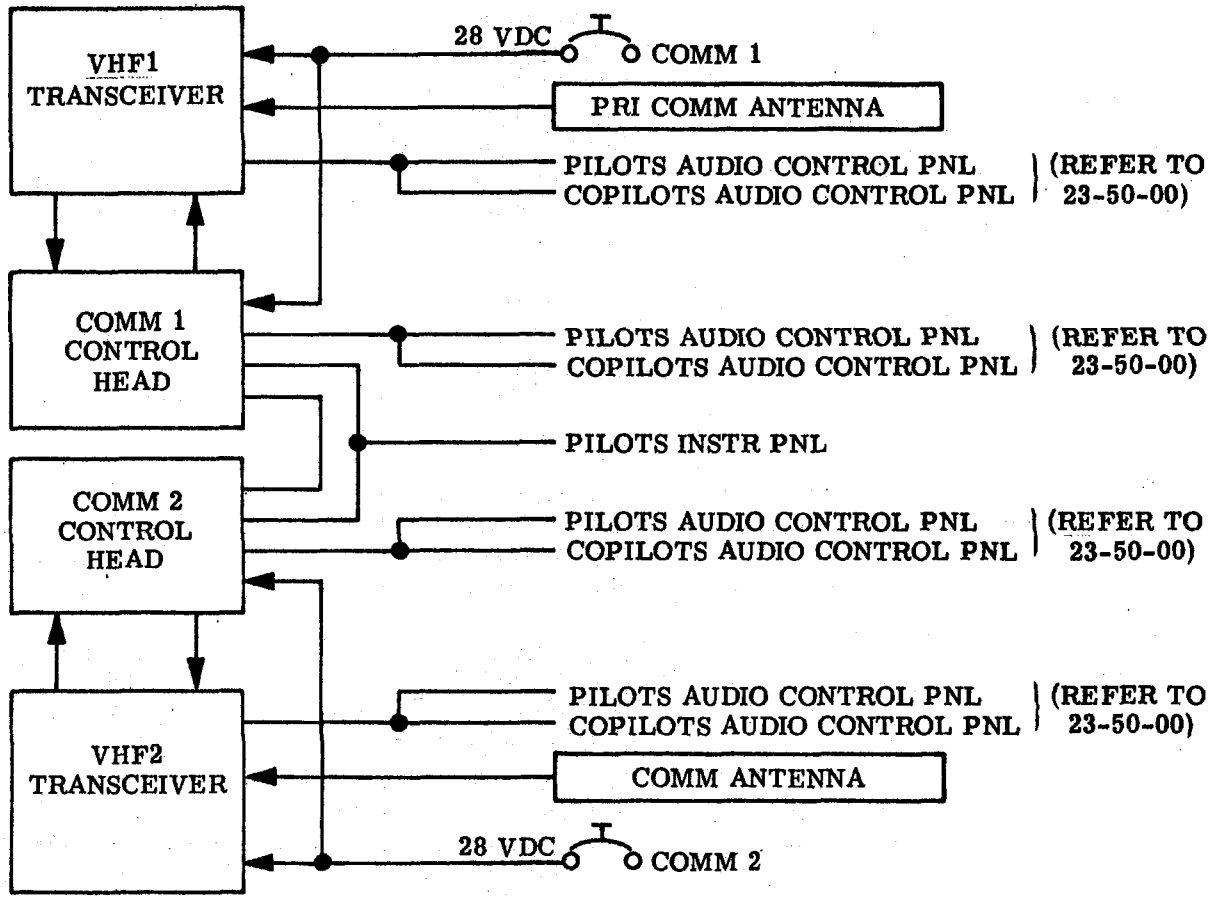
      (1) The dual VHF20A/20B system provides for VHF airborne communication for COMM1 (VHF20A) in the frequency range from 117.00 MHz to 135.975 MHz and COMM2 (VHF20B) in the frequency range from 116.00MHz to 151.975 MHz, both in 25 kHz increments.
      (2) The COMM1 (VHF20A) system consists of a transceiver, antenna and control head.
         (a) The transceiver is mounted in the nose compartment.
         (b) The antenna is mounted on top of the fuselage at frame 17.
         (c) The control head is located on the center instrument panel.
      (3) The COMM2 (VHF20B) system consists of a transceiver, antenna and control head.
         (a) The transceiver is mounted in the nose compartment.
         (b) The antenna is mounted on the bottom of the fuselage at frame 17.
         (c) The control head is located on the center instrument panel.
      (4) The transceivers are completely solid-state and contain automatic carrier-to-noise and carrier-override squelch circuits. A modulator compression circuit prevents transmitter overmodulation.
      (5) The received VHF information is routed through the pilot's or copilot's audio control panel for audible control.

   B. Wulfsberg WT200, Triple VHF System
      (1) The triple VHF system provides for VHF airborne communications.
      (2) The triple VHF system utilizes three separate systems. Two systems make up COMM1A and COMM1B, and the third system makes up COMM2.
      (3) COMM2 is used as a secondary system and as the emergency system in the event of electrical power loss on the aircraft.
      (4) COMM1A and COMM1B utilize the same antenna, located on top of the fuselage at frame 17.
      (5) The COMM2 antenna is located on the bottom of the fuselage at frame 17.
      (6) The three VHF transceivers are mounted in racks located in the nose compartment.
      (7) Frequency range of each transceiver is from 118.00 MHz to 135.975 MHz in 25 kHz increments.
      (8) Control heads for COMM1A, COMM1B, and COMM2 are located on the center instrument panel.

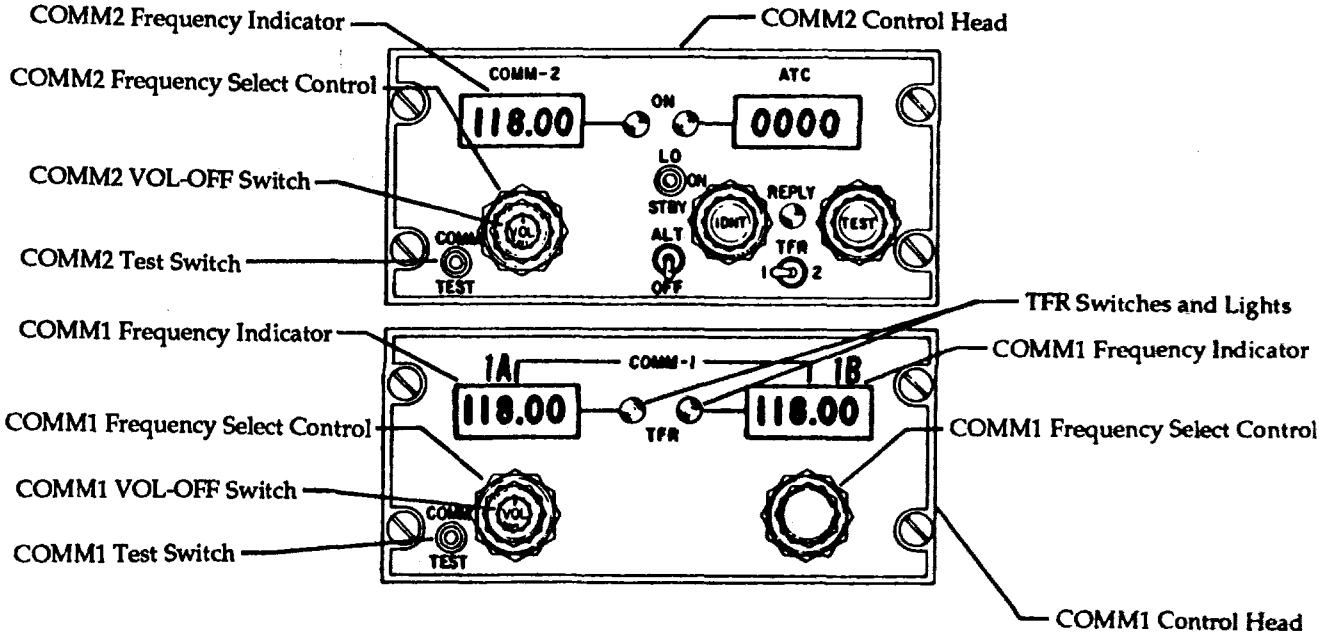
   C. Collins VHF22A/22B System
      (1) The VHF22A/22B transceivers are remote mounted, multichannel VHF voice transceivers providing AM voice communications. The VHF22A operates in the frequency range from 118.000 to 135.975 MHz, and the VHF22B operates in the frequency range from 118.000 MHz to 151.975 MHz. Both tranceivers can be tuned in 25 kHz increments.
      (1) The two VHF-22A/22B transceivers are installed in the nose compartment.
      (2) The primary VHF communications antenna is located on top of the aircraft at frame 17. The secondary VHF communications antenna is located on the bottom of the fuselage at frame 17.
      (3) The dual communications control heads are installed in the center instrument panel.

2. **Operation**
   A. Operating Procedure.
      (1) Select the frequency on the VHF control head to be used for communication.
      (2) The selected transceiver will receive all communications transmitted within its range on the selected frequency.

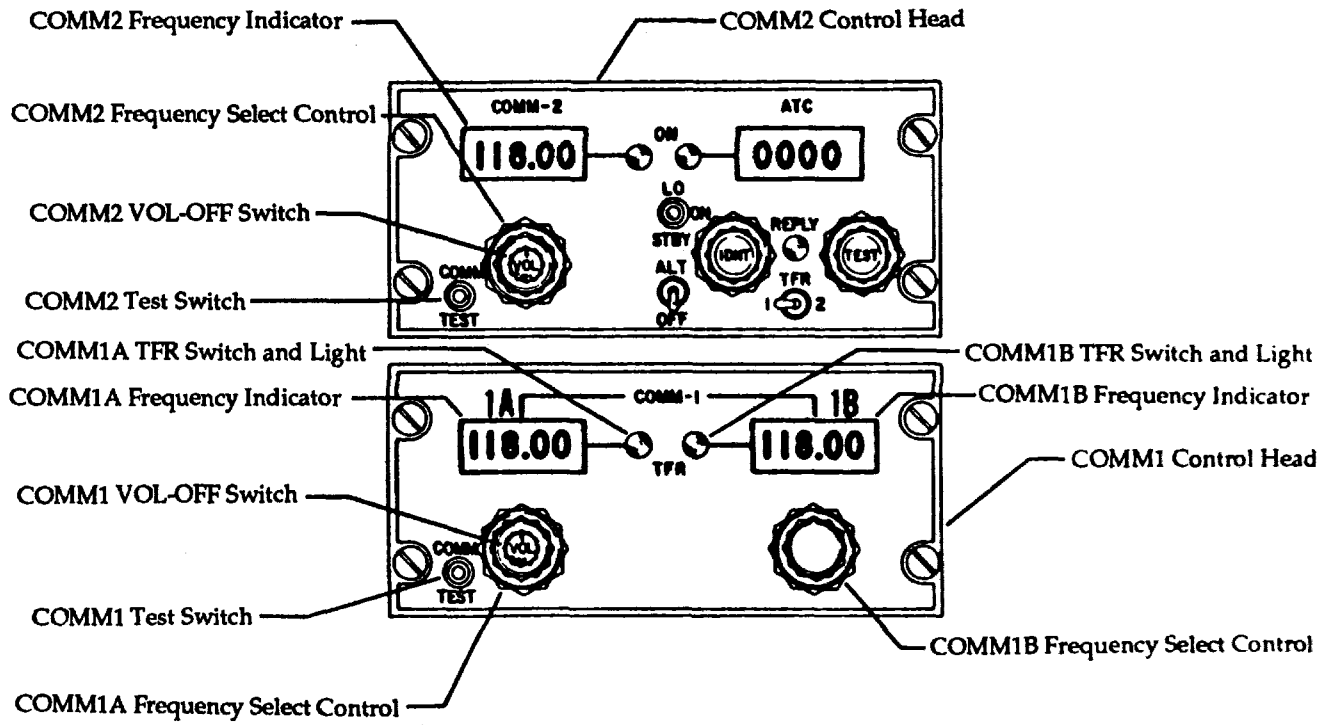
(3) The received signal is picked up by the VHF antenna and routed to the transceiver, which will filter the audible communication from the carrier signal. The audible signal is amplified and sent to the audio control panel where it is directed to the speakers or headphones.
(4) To transmit, the operator speaks into the keyed microphone which will modulate the carrier frequency being transmitted by the transceiver.
(5) The carrier frequency is the frequency selected on the control head.



VHF Communications Block Diagram
Figure 1



(DUAL COLLINS VHF20A/20B SYSTEM)



(TRIPLE WULFSBERG WT200 SYSTEM)

VHF Control Heads
Figure 2 (Sheet 1 of 2)

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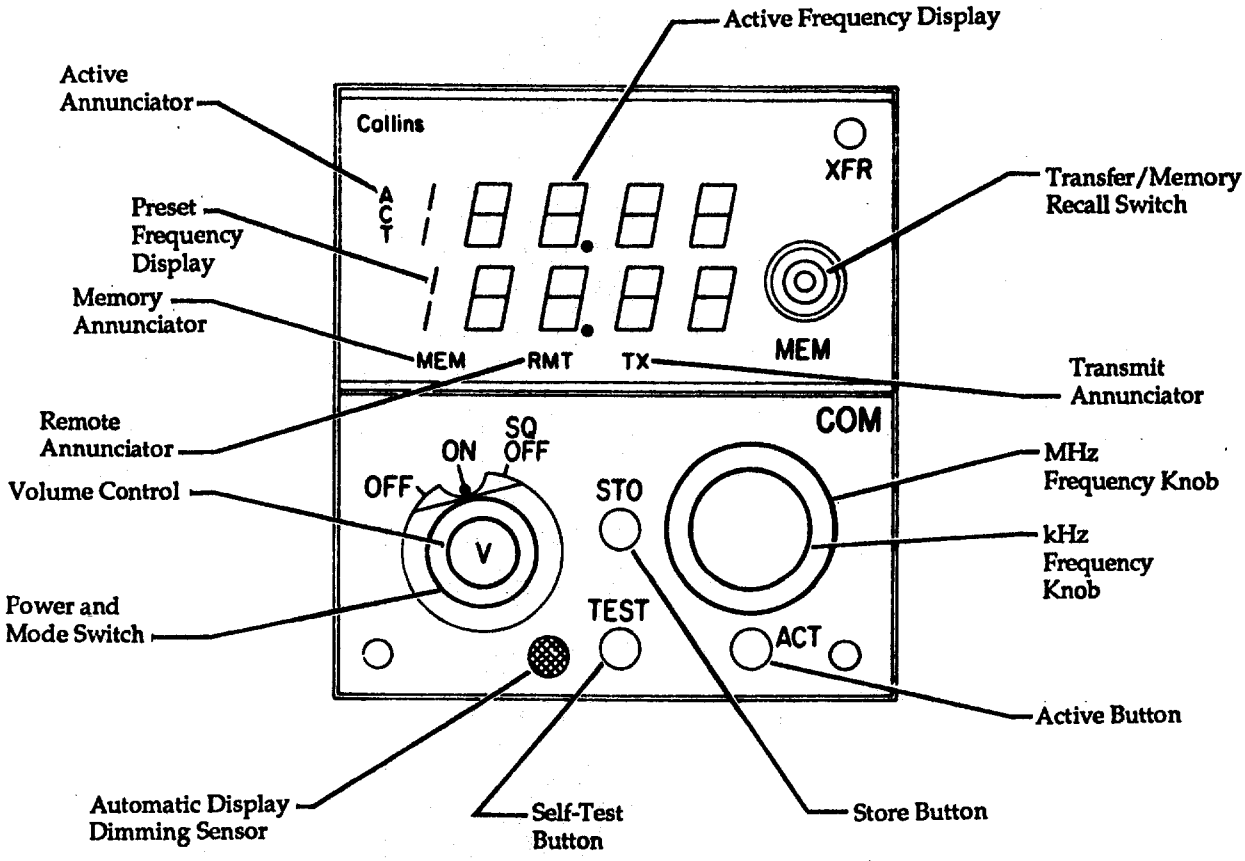


(DUAL COLLINS VHF22A/22B SYSTEM)

VHF Control Heads
Figure 2 (Sheet 2 of 2)

VHF COMMUNICATION - MAINTENANCE PRACTICES

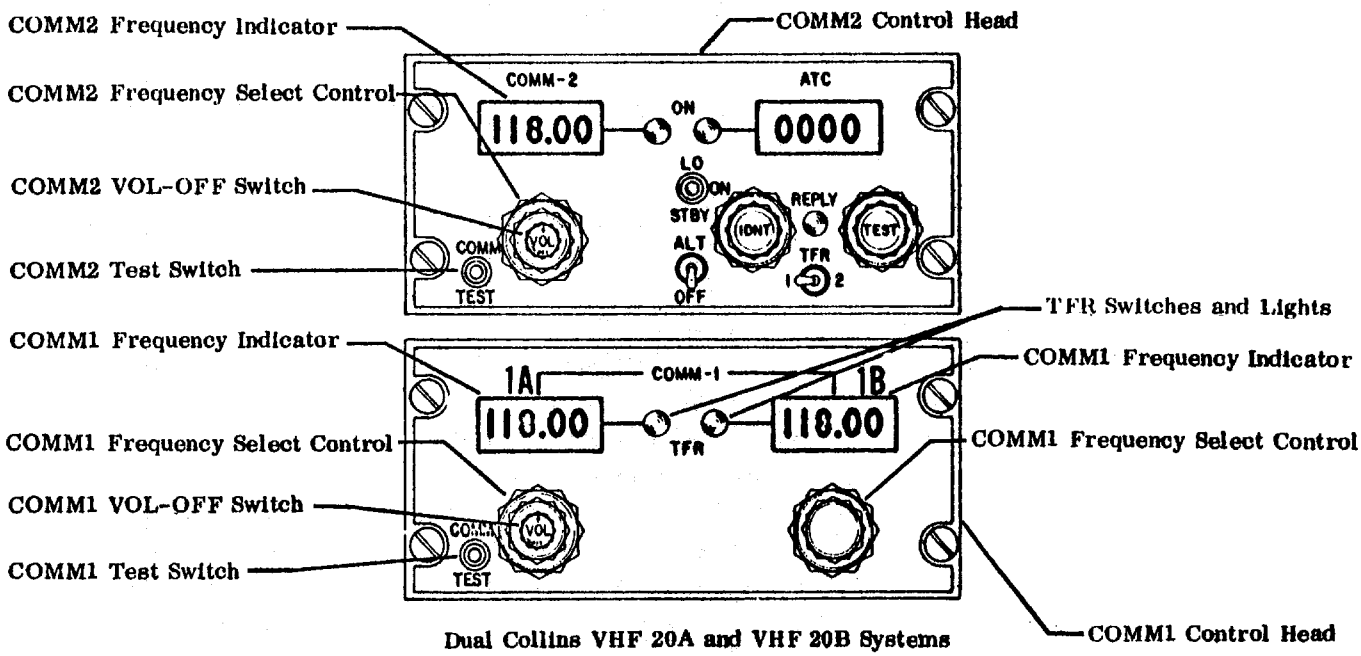
1. Inspection/Check

A. Operational Check (Dual Collins 20A/20B VHF System) (See figures 201 and 202.)

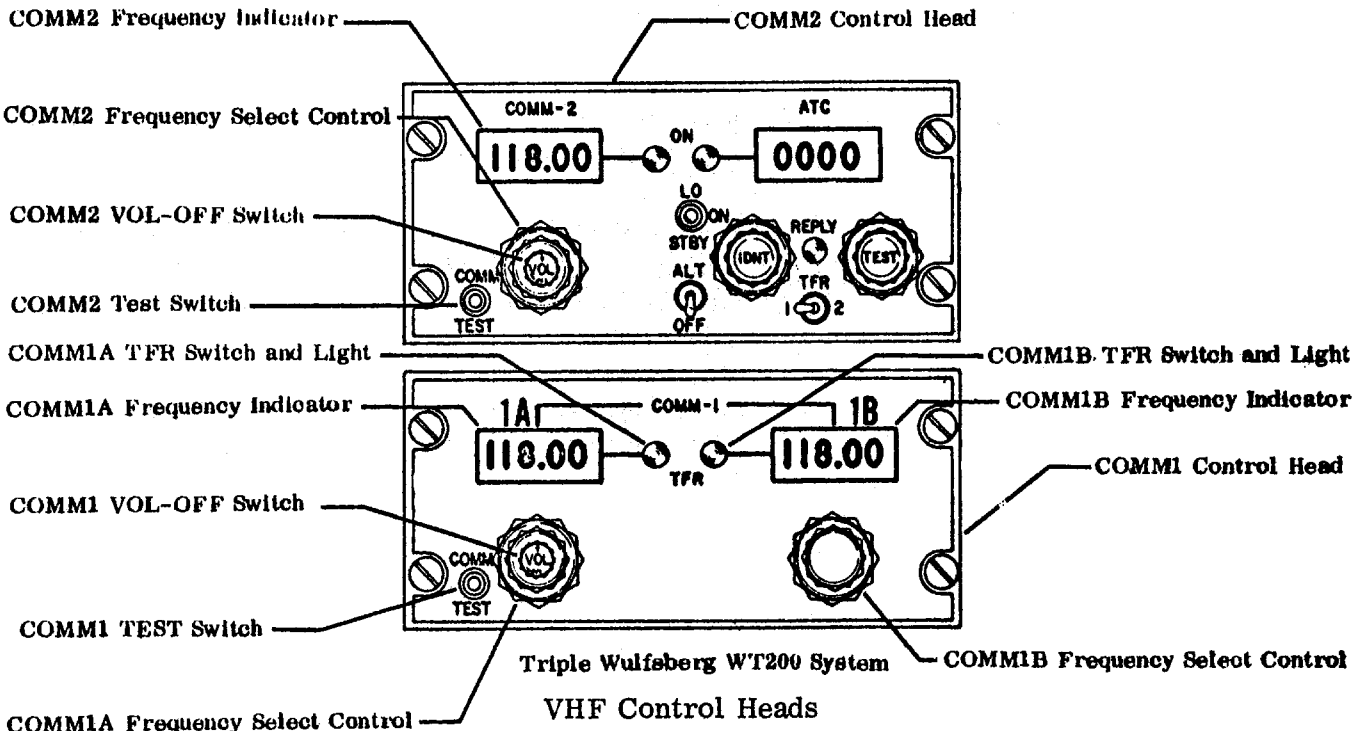
NOTE: Operation of the dual Collins 20A/20B VHF system is the same for each system.

(1) Apply electrical power to aircraft.
(2) Depress COMM1 and/or COMM2 circuit breaker located on pilot's and/or copilot's circuit breaker panel.
(3) Turn VOL-OFF Switch on control head CW until it clicks. Further rotation of switch adjusts transmit volume.
(4) Set Frequency Select Control on control head to desired frequency.
(5) On pilot's or copilot's audio control panel, set Microphone Function Selector Switch to desired VHF system and set VHF1-OFF and/or VHF2-OFF Switch to either VHF1 or VHF2. Then set SPKR/PHONE-PH-EMER Switch to PH.
(6) Push COMM TEST Switch on control head and listen for noise on headset as transceiver squelch circuit is overridden and noise is applied to aircraft audio system.
(7) Adjust MASTER VOL control on audio control panel to desired audio level.
(8) Key microphone and obtain communication check with selected local station.

NOTE:
- The VHF communication range is generally termed as line of sight within a maximum range of 200 miles.
- Aircraft altitude affects line-of-sight range as follows: At 10,000 feet, range is approximately 100 miles. The 200-mile range or maximum range occurs at 30,000 feet and above.
- Communication range while aircraft is on ground will vary drastically due to interference from buildings and other objects.



Dual Collins VHF 20A and VHF 20B Systems



Triple Wulfsberg WT200 System

VHF Control Heads
Figure 201

B. Operational Check (Triple Wulfsberg WT200 VHF System) (See figures 201 and 202.)

(1) Apply electrical power to aircraft.

(2) Obtain two local VHF test frequencies from tower or test facility and set COMM1A Frequency Select Control to highest test frequency and set COMM1B Frequency Select Control to lowest test frequency.

(3) Assure that COMM1A circuit breaker located on pilot's circuit breaker panel is depressed.

(4) Assure that COMM1B, COMM2, and COMM2 A/C BAT circuit breakers located on copilot's circuit breaker panel are depressed.

(5) On COMM1 and COMM2 control heads, rotate VOL-OFF Switches CW until they click. Further rotation adjusts transmit volume.

(6) On pilot's or copilot's audio control panel, set Microphone Function Selector Switch to VHF1 and VHF1-OFF Switch to VHF1, and SPKR/PHONE-PH-EMER Switch to PH.

(7) Depress COMM1 TEST Switch on control head and listen for noise on headset as transceiver squelch circuit is overridden and noise is applied to aircraft audio system.

(8) Adjust MASTER VOL control on audio control panel to desired audio level.

(9) Depress COMM1A TFR Switch on COMM1 control head. COMM1A TFR light shall illuminate.

(10) Make contact with local tower or test facility and verify frequency setting and transceiver operation.

(11) Depress COMM1B TFR Switch on COMM1 control head. COMM1B TFR light shall illuminate.

(12) Make contact with local tower or test facility and verify frequency setting and transceiver operation.

(13) Set COMM2 Frequency Select Control to highest test frequency obtained.

(14) On pilot's and copilot's audio control panels set Microphone Function Selector Switch to VHF2, VHF2-OFF Switch to VHF2, and VHF1-OFF Switch to OFF.

(15) Make contact with local tower or test facility and verify frequency setting and transceiver operation.

(16) Set EMER PWR BAT2-STBY-OFF Switch, located on center switch panel, to BAT2. EMER PWR light located on pilot's instrument panel shall illuminate.

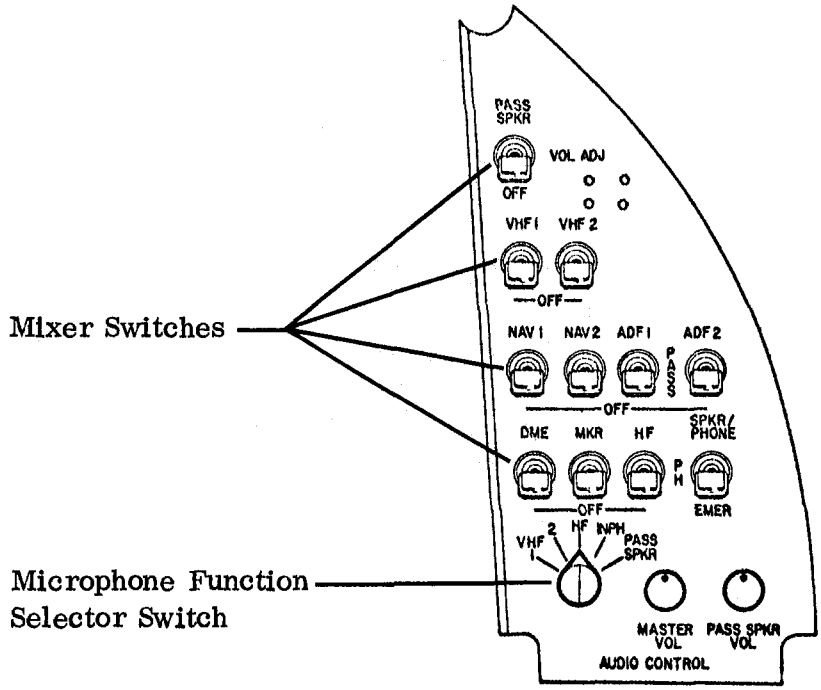
(17) Remove electrical power from aircraft.

(18) Set pilot's and copilot's audio control panel SPKR/PHONE-PH-EMER Switches to EMER.

(19) Make contact with local tower or test facility and verify frequency setting and transceiver operation on emergency power.

NOTE: Limit transmitter operation to maximum of 10 seconds.

(20) Set EMER PWR BAT2-STBY-OFF Switch to OFF. Emergency power light shall extinguish.
(21) Set pilot's and copilot's audio control panel SPKR/PHONE-PH-EMER Switches to PH, VHF2-OFF Switches to OFF, and VHF1-OFF Switches to VHF1.
(22) Apply electrical power to aircraft.
(23) Depress COMM1A TFR Switch. COMM1A TFR light shall illuminate.
(24) Pull COMM1A circuit breaker. COMM1A TFR light shall extinguish and COMM1B TFR light shall illuminate.
(25) Contact local tower or test facility and verify that contact is made on COMM1B frequency setting.
(26) Depress COMM1A circuit breaker.
(27) Depress COMM1B TFR Switch. COMM1B TFR light shall illuminate.
(28) Pull COMM1B circuit breaker. COMM1B TFR light shall extinguish and COMM1A TFR light shall illuminate.
(29) Contact local tower or test facility and verify that contact is made on COMM1A frequency setting.
(30) Rotate COMM1A, COMM1B, and COMM1 VOL-OFF Switches to OFF.
(31) Remove electrical power from aircraft.



Copilot's Audio Control Panel (Pilot's Similar)
Figure 202

VHF TRANSCEIVER - MAINTENANCE PRACTICES

1. Removal/Installation

A. Remove Transceiver (Collins VHF20A/VHF20B) (See figure 201.)

(1) Remove electrical power from aircraft.

(2) Remove RH nose compartment access door.

CAUTION: DO NOT SHAKE SIDEWAYS OR TWIST TRANSCEIVER WHILE REMOVING FROM MOUNT RACK AS DAMAGE TO MATING CONNECTORS CAN RESULT.

(3) Loosen hold-down nuts securing transceiver in mounting rack.

(4) Pull transceiver straight out of mounting rack.

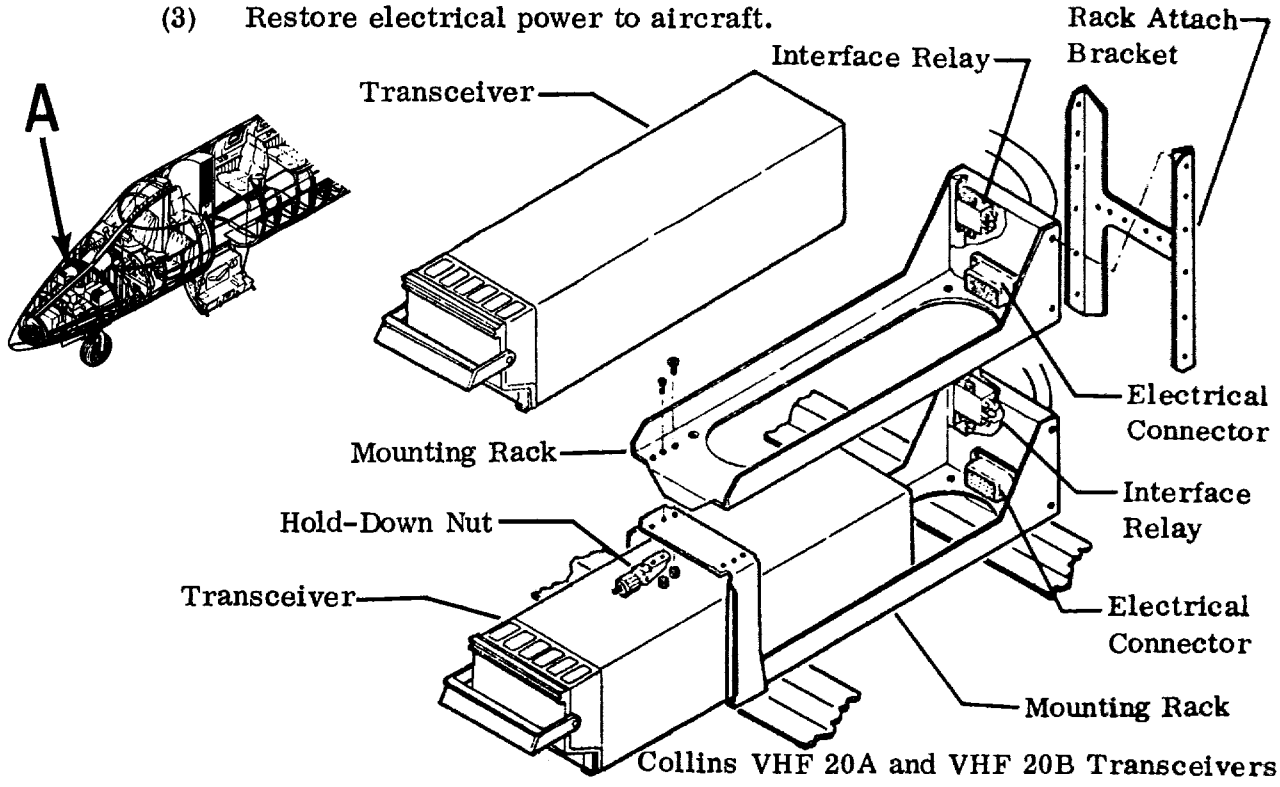
B. Install Transceiver (Collins VHF20A/VHF20B) (See figure 201.)

NOTE: Inspect transceiver and mounting rack electrical connectors for damaged, tarnished, or bent pins and sockets before installation.

(1) Install transceiver in mounting rack and secure with hold-down nuts.

(2) Install RH nose compartment access door.

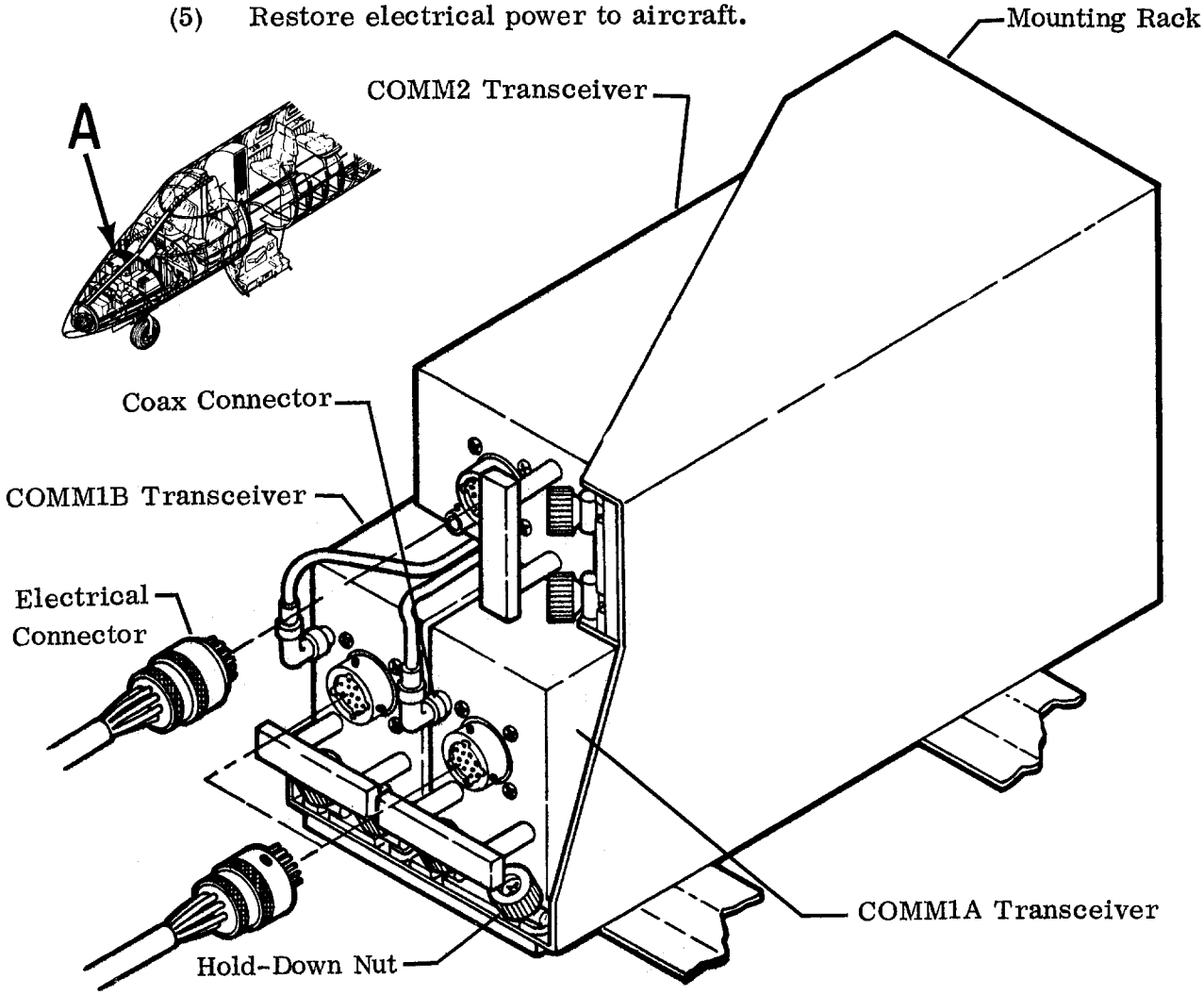
(3) Restore electrical power to aircraft.



VHF Transceiver and Rack Installation
Figure 201

C. Remove Transceiver (Wulfsberg WT200) (See figure 202.)
   (1) Remove electrical power from aircraft.
   (2) Remove RH nose compartment access door.
   (3) Disconnect antenna coax connector from transceiver.
   (4) Disconnect electrical connector from transceiver.
   (5) Loosen hold-down nuts and remove transceiver from mounting rack.

D. Install Transceiver (Wulfsberg WT200) (See figure 202.)
   (1) Install transceiver in mounting rack and secure with hold-down nuts.
   (2) Connect antenna coax connector to transceiver.
   (3) Connect electrical connector to transceiver.
   (4) Install RH nose compartment access door.
   (5) Restore electrical power to aircraft.



Wulfsberg Triple (WT200) Transceivers

Detail A

VHF Transceiver and Rack Installation
Figure 202

VHF ANTENNA - MAINTENANCE PRACTICES

1. Removal/Installation

A. Remove VHF antenna (Aircraft 35-002 thru 35-124 and 35-002 thru 36-032) (See figure 201.)

(1) Remove electrical power from aircraft.
(2) Remove items as necessary to gain access to base of antenna.
(3) Loosen nut and remove antenna rod.
(4) Disconnect coax cable from antenna base.

CAUTION: USE CARE NOT TO DAMAGE AIRCRAFT SKIN WHEN REMOVING SEALANT.

(5) Cut sealant. Loosen and remove knurled nut from aircraft exterior.
(6) Remove antenna base and washers from aircraft.

B. Install VHF antenna (Aircraft 35-002 thru 35-124 and 36-002 thru 36-032) (See figure 201.)

(1) Clean all traces of old sealant from fuselage skin.
(2) Install top of antenna base in hole in fuselage and secure with attaching parts.
(3) Install antenna rod, assuring that it is aligned with aircraft centerline. Tighten antenna rod nut.
(4) Apply Pro-Seal 890 sealant around knurled nut. (Refer to Chapter 20.)
(5) Connect coax cable to antenna base.
(6) Install items previously removed to gain access to antenna base.
(7) Restore electrical power to aircraft.

C. Remove VHF antenna (Aircraft 35-125 and Subsequent and 36-033 and Subsequent) (See figure 201.)

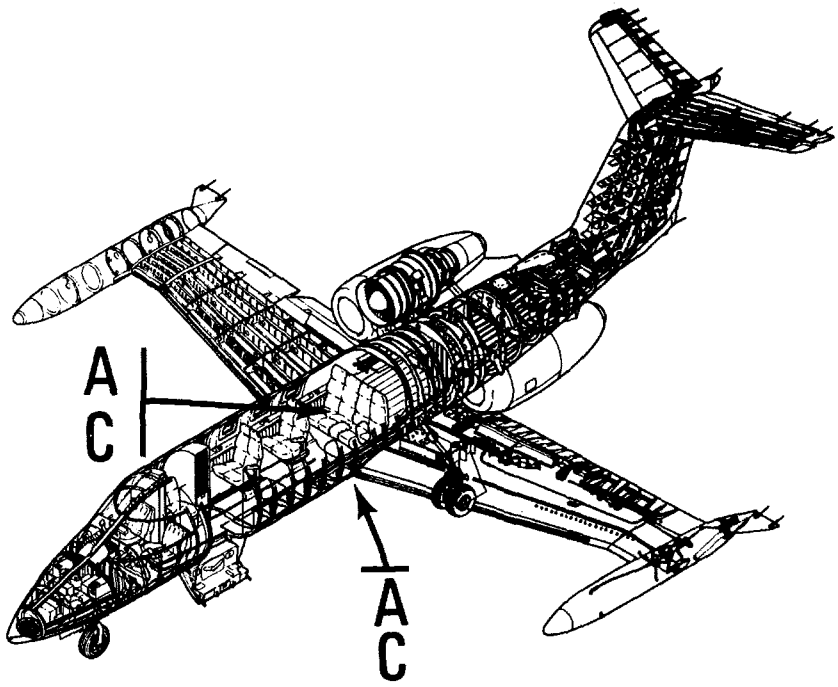
(1) Remove electrical power from aircraft.
(2) Remove attaching parts securing antenna to fuselage.

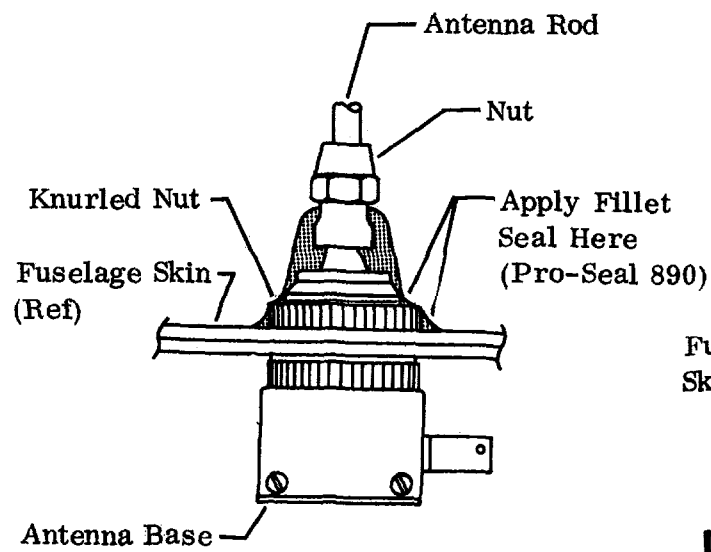
CAUTION: USE CARE NOT TO DAMAGE AIRCRAFT SKIN WHEN REMOVING SEALANT.

(3) Using caution, break sealant bond between antenna and fuselage.
(4) Pull antenna from fuselage and attach a length of string around the coax cable just behind the connector.
(5) Disconnect coax connector from antenna and secure loose end of string to keep coax connector from slipping back into fuselage.
(6) Remove antenna from aircraft area.

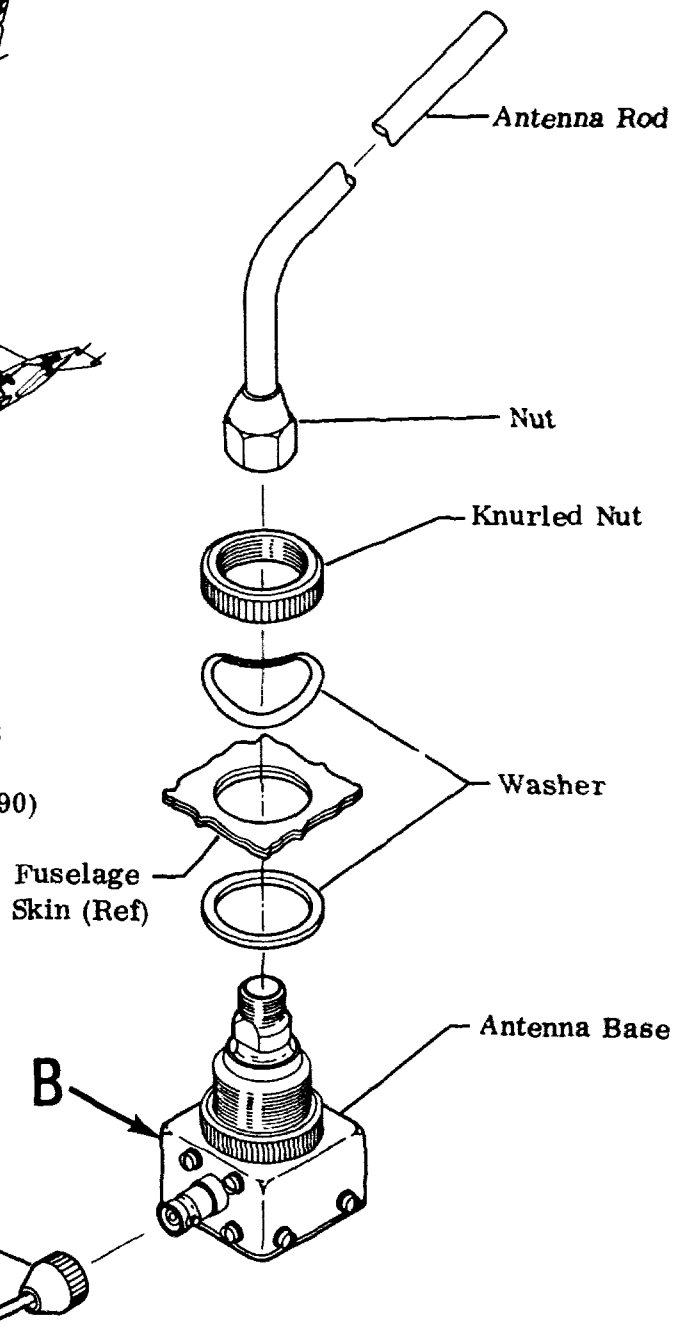
D. Install VHF antenna (Aircraft 35-125 and Subsequent and 36-033 and Subsequent) (See figure 201.)

(1) Prepare antenna mounting surface and mounting area on fuselage for electrical bonding. (Refer to Chaper 20 of Wiring Manual.)
(2) Connect coax connector to antenna and remove string.
(3) Clean coax connector with N-BUTYL alcohol (TT-B-846).
(4) Cover entire area of coax connector with clear Silastic 732 potting compound.
(5) Attach antenna to fuselage with attaching screws.
(6) Clean antenna base and fuselage mating area with a clean cloth and methyl-ethyl-ketone (MEK).
(7) Apply fillet seal (Pro-Seal 890) around entire base of antenna. (Refer to Chapter 20.)
(8) Restore electrical power to aircraft.





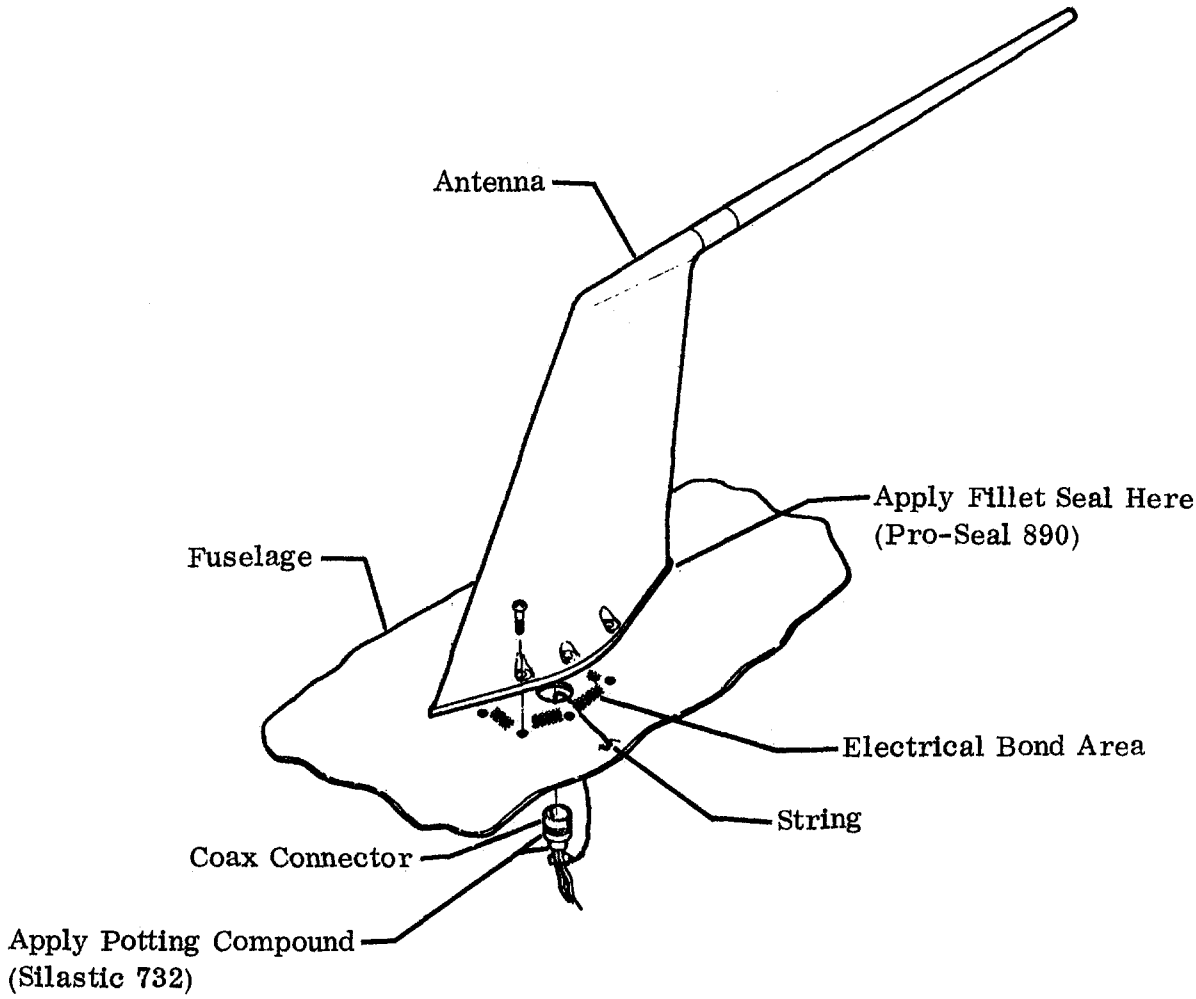
Detail B



Aircraft 35-002 thru 35-124 and 36-002 thru 36-032

Detail A

VHF Antenna Installation
Figure 201 (Sheet 1 of 2)



Aircraft 35-125 and Subsequent and 36-033 and Subsequent

Detail C

VHF Antenna Installation
Figure 201 (Sheet 2 of 2)

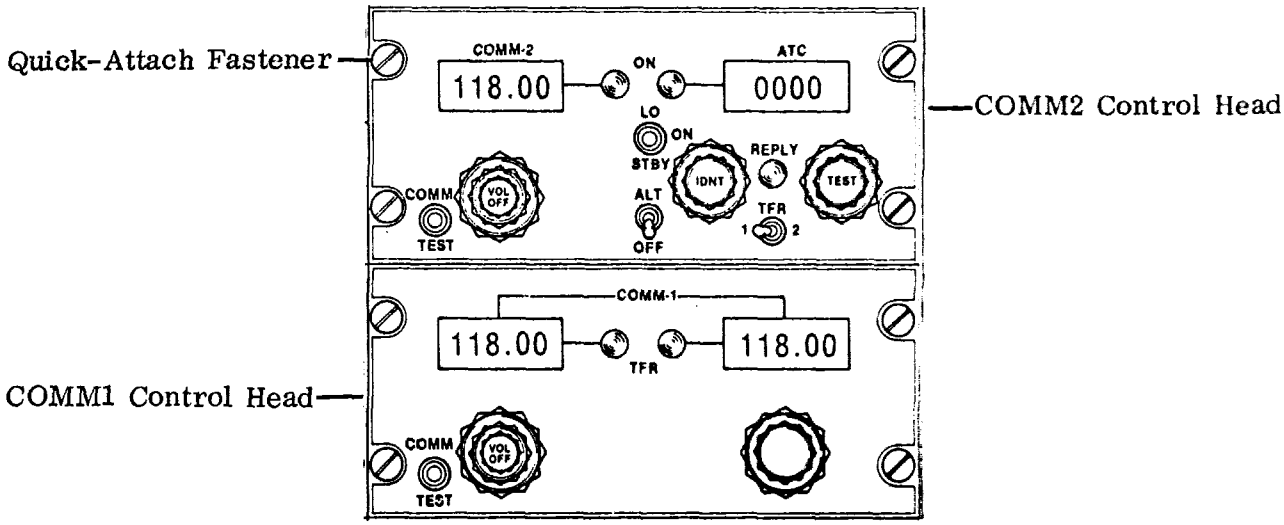
VHF CONTROL HEAD - MAINTENANCE PRACTICES

1. Removal/Installation

NOTE: Removal/Installation procedures for both panels are identical.

A. Remove COMM Control Head (See figure 201.)
   (1) Remove electrical power from aircraft.
   (2) Release quick-attach fasteners on face of control head.
   (3) Pull control head out of instrument panel to gain access to electrical connectors.
   (4) Disconnect electrical connectors from control head.
   (5) Remove control head from aircraft.

B. Install COMM Control Head (See figure 201.)
   (1) Connect electrical connectors to control head.
   (2) Slide control head into position.
   (3) Fasten quick-attach fasteners.
   (4) Restore electrical power to aircraft.



VHF Control Head Installation
Figure 201

HF COMMUNICATION - DESCRIPTION AND OPERATION

1. Description

A. Collins 718U-5M HF Communication System (See figure 1.)

(1) The HF communication system consists of a receiver/exciter, power amplifier-coupler, control panel, an antenna, and an audio adapter box.

(a) The receiver/exciter is located on the forward side of the aft pressure bulkhead.

(b) The power amplifier-coupler is located on the forward side of the aft pressure bulkhead.

(c) The antenna is suspended between the antenna support bracket, on the upper leading edge of the vertical stabilizer, and the insulated feedthru, located on top of the fuselage at the aircraft centerline at the aft pressure bulkhead.

(d) The HF control panel is located in the pedestal.

(e) On Aircraft 35-058 and Subsequent and 36-018 and Subsequent, an audio adapter box is installed on the RH side panel of the forward pedestal. An optional location on Aircraft 35-392 and Subsequent and 36-048 and Subsequent is on the LH side panel of the forward pedestal.

(2) The HF control panel is used to remotely control and monitor the receive and transmit functions of the receiver/exciter by the following selectors and indicators:

(a) The Mode Select Switch selects the desired function mode.

(b) The five Frequency Select Switches may be operated in any order until the desired operating frequency is indicated.

(c) The Volume Control (VOL) is used to adjust for desired audio from the speaker. CW position equals maximum volume.

(d) The Squelch Control (SQL) is used to mute the undesired background noise.

(e) The Channel Select Switch provides for nine preset channels with half-duplex capability and one (MAN) position that is for simplex operation only.

(f) Preset control consists of the Preset Switch, LOAD Switch, and Channel Selector Switch. These switches allow for front-panel programming of the preset channels.

(g) The three indicators on the HF control panel indicate the following:

1) The MODE indicator indicates the mode in which system is operating.

2) The MHz indicator indicates the frequency in which system is operating.

3) The CHAN indicator indicates the channel on which system is operating.

(h) The RF TEST lamp indicates operational status of the HF system.

B. Sunair ASB 500 HF Communication System (See figure 1.)

(1) The HF communication system consists of a transceiver, control panel, antenna and antenna coupler, and an audio adapter box.

(a) The transceiver is located on the forward side of the aft pressure bulkhead.

(b) The HF control panel is located in the pedestal.

(c) The antenna is suspended between the antenna support bracket, on the upper leading edge of the vertical stabilizer, and the insulated feedthru, located on top of the fuselage at the aft pressure bulkhead.

(d) On Aircraft 35-058 and Subsequent and 36-018 and Subsequent, an audio adapter box is installed on the RH side panel of the forward pedestal. An optional location on Aircraft 35-392 and Subsequent and 36-048 and Subsequent, is on the LH side panel of the forward pedestal.

(2) The HF control panel is used to remotely control and monitor the receive and transmit functions of the transceiver by the following selectors and indicators. (See figure 2.)

(a) The Volume Control (VOLUME) is used to adjust for desired audio. Clockwise position equals maximum volume.

(b) The Frequency Selectors may be operated in any order until desired operating frequency is indicated.

(c) The Squelch Control (SQUELCH) is used to mute undesired background noise.

(d) The ON Switch controls electrical primary power to the HF system.

(e) The Mode Select Switches (LSB), (AM) and (USB) are used to select mode or modes for receiving and transmitting communications.

(f) When the Tune Switch (TUNE) is depressed, it starts the antenna coupler tuning cycle at the frequency selected.

(g) The Frequency Display displays the frequency selected by the Frequency Selectors.

NOTE: If a frequency below 2.00 MHz or above 17.999 MHz is selected, the transceiver is disabled and display flashes on and off.

(h) The READY XMIT light (green) indicates the antenna is tuned and system is ready for use when in receive mode. When in transmit mode it indicates transmitter RF output on modulation peaks.

(i) The TUNE-FAULT light (amber) indicates a fault in the transmitting system, coupler, or antenna.

2. Operation

A. Collins 718U-5M (See figure 2.)

(1) The HF communication system is capable of receiving continuously in all modes once power has been applied to the system. Transmitting is limited to 1.0 minute transmit and 3.0 minutes receive for SSB voice.

WARNING: STAND CLEAR AND DO NOT TOUCH THE ANTENNA OR ANTENNA FEEDLINE WHILE SYSTEM IS TRANSMITTING, AS PAINFUL RF BURNS AND DEATH MAY RESULT FROM HIGH RF VOLTAGE.

(2) The HF system will perform as stated in the following modes.

(a) OFF mode. When the Mode Select Switch on the control panel is set to OFF, the HF system is turned off. Independently of Channel Select Switch setting and control panel display, all controlled indicators will be extinguished and the transceiver will go on low power.

(b) MAN mode. With the Channel Select Switch set to MAN and the Mode Select Switch set to OFF, the HF system is turned off. The transceiver will respond to the Mode Select Switch setting, and the mode is displayed on the control panel. The operating frequency is selected with the Frequency Select Switches and is displayed by the frequency indicator on the control panel. If the Channel Selector Switch is set to a preset channel, the manual mode information is stored in memory and is recalled when the Channel Select Switch is returned to MAN.

(c) USB, LSB, or AM mode.

NOTE: The sequence is the same for USB (upper sideband), LSB (lower sideband), and AM (amplitude modulation).

Set the Frequency Select Switches to the desired operating frequency and rotate the SQL control fully clockwise. With no signal present, rotate the SQL control CCW until the background noise is reduced to a low level or until the SQL control is rotated fully CCW. The receiver should mute after a short delay. Tune the system by depressing the MIC switch momentarily; the system will then tune automatically.

NOTE:
- A constant tone will be heard in the headset during tune cycle.
- The tune cycle is approximately 3 seconds in duration.
- When the tune cycle is complete, the constant tone will disappear and receiver noise will be heard.

(d) VOL control. By rotating the VOL (volume) control CW or CCW, the audio can be adjusted to the desired level.

(3) To preset operation, perform the following:
- (a) Assure that the Mode Selector Switch is in any position other than OFF.
- (b) Set OPR/PGM Switch to OPR.
- (c) Set Channel Select Switch to preset channel desired.

(4) To preset channel loading, perform the following:
- (a) Assure that Mode Select Switch is in any position other than OFF.
- (b) Set OPR/PGM Switch to PGM.
- (c) Set Channel Select Switch to channel desired.
- (d) For single frequency for both transmit and receive (simplex operation), set Mode Select Switch to desired mode and Frequency Select Switches to desired frequency.
- (e) Depress LOAD Switch on control panel.
- (f) For separate frequencies for transmit and receive (half duplex operation), perform steps 1 thru 5 to load the receive frequency. Hold MIC Switch closed while setting Frequency Select Switches to the desired transmit frequency. Depress the LOAD Switch; loading is now complete.

B. Sunair ASB 500 HF Communication System (See figure 2.)

(1) The HF communication system is capable of receiving continuously in all modes.

WARNING: STAND CLEAR AND DO NOT TOUCH THE ANTENNA OR ANTENNA FEEDLINE WHILE SYSTEM IS TRANSMITTING, AS PAINFUL RF BURNS AND DEATH MAY RESULT FROM HIGH RF VOLTAGE.

(2) The HF system will perform as stated in the following modes:
- (a) On the HF control panel, press the ON Switch. The ON light shall illuminate, the frequency display shall indicate the frequency to which the system is tuned, and the TUNE-FAULT light shall illuminate.

(b) On pilot's or copilot's audio panel, set Selector Switch to HF.

(c) On HF control panel, rotate Squelch Control and Volume Control fully CW. Audio noise will be present in aircraft speakers. Reduce volume to desired level.

(d) Rotate Squelch Control fully CCW. The aircraft speakers will be silenced except when a strong signal is present. Rotate Squelch Control to mid-range.

(e) Adjust Light Dimming Control on HF control panel. The control panel lamps and frequency display shall vary in intensity.

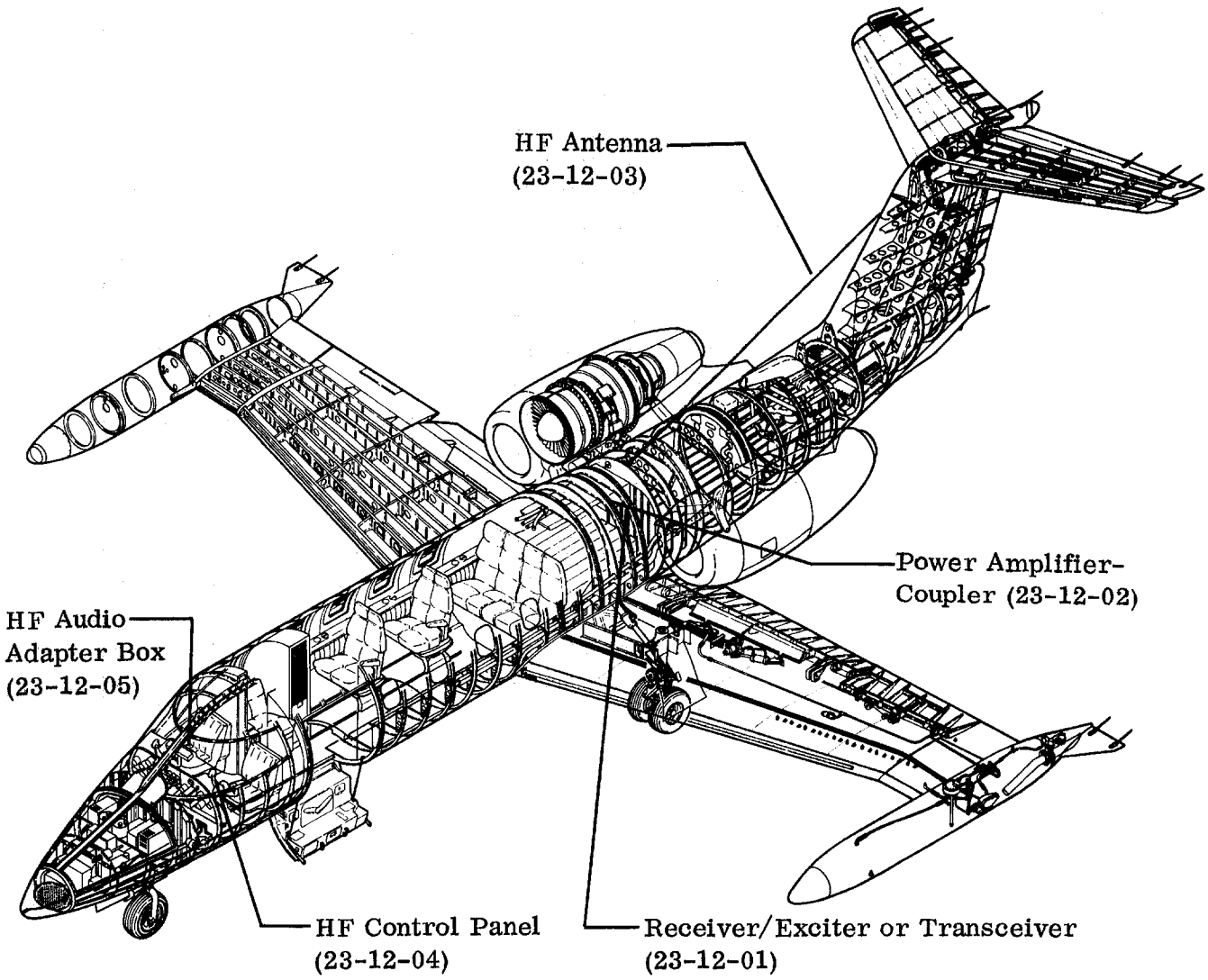
(f) Set Frequency Selectors to a local ground station frequency, then depress the desired Mode Select Switch and depress the TUNE Switch. The TUNE-FAULT or READY light shall not illuminate, and the TUNE light shall remain illuminated during the antenna coupler tune cycle. The TUNE light shall extinguish, the READY light shall illuminate, and audio noise should be heard from aircraft speakers when the tune cycle is complete.

(g) Make contact with ground station and request a radio check. The READY light shall extinguish when transceiver is keyed but shall illuminate when operator speaks into microphone (starts modulating transmitter).

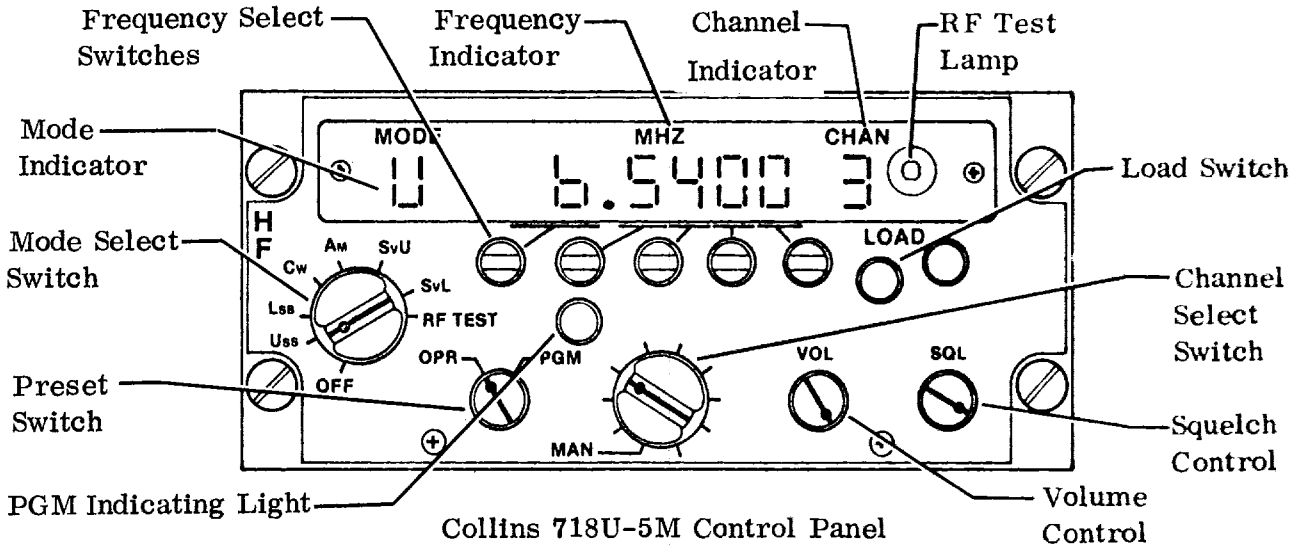
(h) Using the Frequency Selectors, select and depress TUNE Switch. The antenna coupler shall tune all frequencies selected.

(i) Verify frequency settings with ground station.

(j) Depress ON Switch on the HF control panel. The ON light shall extinguish and power shall be removed from the HF system.

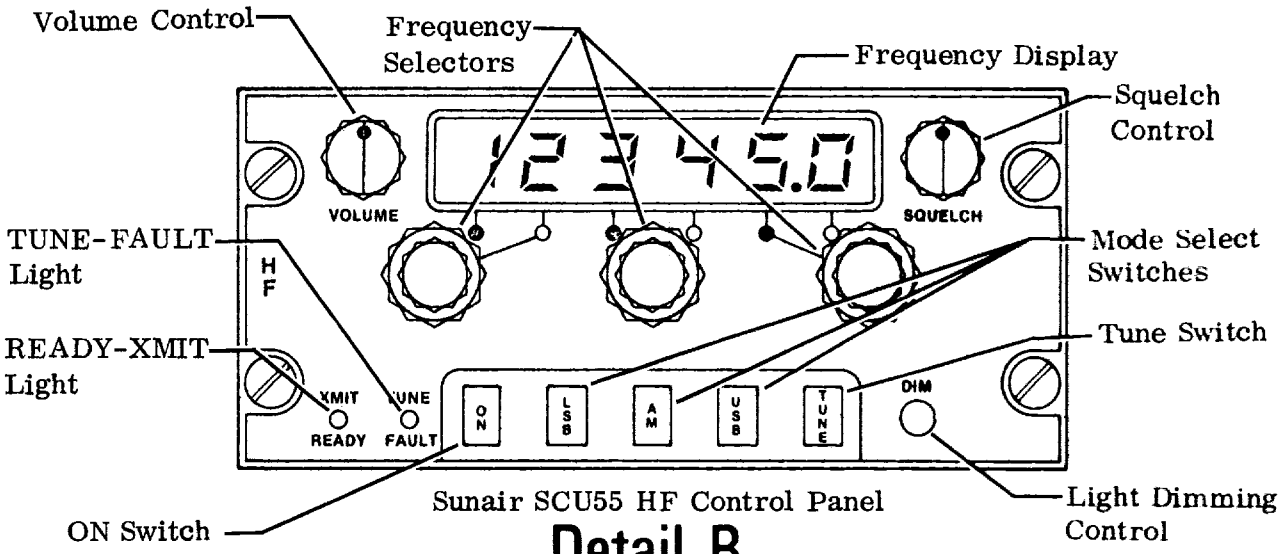


HF Communication Equipment Locator
Figure 1



Collins 718U-5M Control Panel

Detail A



Sunair SCU55 HF Control Panel

Detail B

HF Communication Control Panels
Figure 2

1. Inspection/Check

WARNING: STAND CLEAR AND DO NOT TOUCH HF ANTENNA OR HF ANTENNA FEEDLINE WHILE HF SYSTEM IS TRANSMITTING, AS PAINFUL RF BURNS AND DEATH MAY RESULT FROM HIGH RF VOLTAGE.

A. Collins 718U-5M HF Communication

(1) The following information contains possible malfunctions and checks for the system.

(a) Tuning Fault. A tuning fault is indicated by a beeping sound on the headset approximately eight (8) seconds after the tuning cycle is initiated. Initiate a new tune cycle either by turning the Mode Selector to OFF and back to the operating mode, or by changing any Frequency Selector away from and back to the operating frequency. Key the system and the tune tone shall be present for approximately three to six (3 to 6) seconds and then disappear. If the beeping sound recurs, try clearing procedure a second time. If the fault is still indicated, a unit failure is probable.

(b) Receive Check. To check the receive portion of the HF receiver/exciter, perform the following:

1) Turn the SQL control fully CCW and tune the HF system to WWV.
2) Set Mode Select Switch to USB.
3) Set Frequency Select Switches to 20.7010 MHz. A 1-KHz tone will be detected.
4) Set Mode Select Switch to LSB.
5) Set Frequency Select Switches to 20.6990 MHz. If a 1-KHz tone is heard, the system is operational.

(c) RF Test Lamp Check. With power on system, set Mode Select Switch to RF TEST. Do not key system. Observe RF TEST lamp for following indications:

1) RF TEST lamp does not illuminate. This indicates the lamp is defective or the receiver/exciter is faulty.
2) RF TEST lamp blinks for more than one (1) minute. This indicates the receiver/exceiter is faulty.
3) RF TEST lamp illuminates immediately or after an initial period of blinking. This indicates the RF TEST lamp and fault circuits are operational.

(d) Tune Check.

1) With power on system, set Mode Select Switch to RF TEST.
2) Set Frequency Select Switches to a random frequency and key system momentarily.

NOTE: Nominal tune time of power amplifier-coupler (pa-coupler) is approximately five (5) seconds after system has been keyed.

RF TEST lamp indications in this test are only valid for approximately five (5) seconds after system has been keyed.

3) Observe RF TEST lamp during tune cycle while tune tone is audible. Normal tune tone is three to eight (3 to 8) seconds.
4) If no tune tone is heard after system has been keyed, the fault is in either the MIC switch, receiver/exciter, or the power amplifier coupler.
5) Should RF TEST lamp stay illuminated continuously, the fault is in the receier/exciter.
6) Should RF TEST lamp blink on and off, the power amplifier coupler is faulty.
7) Should system remain keyed and tune tone does not stop after 15 seconds, determine which unit is faulty by disconnecting connector J1 from the power amplifier coupler front panel. If tone drops and a beeping tone is heard, the power amplifier is faulty. If tune tone persists, the receiver/exciter or receiver/exciter mount is faulty.

8) If test lamp is out, tune tone drops, and a beeping tone is heard at end of tuning cycle, the power amplifier coupler and coupler mount failed to tune antenna.
9) Should RF TEST lamp be extinguished, set Mode Select Switch to USB, key and talk into MIC, and keep MIC keyed. If sidetone is not heard, check interphone system (23-50-00) before replacing receiver/exciter.

NOTE: Presence of a sidetone indicates system is working.

B. Sunair ASB 500 HF Communication
(1) Apply power to HF communication system. The TUNE-FAULT light on the HF control panel shall illuminate, indicating a fault.
(2) Set Frequency Selectors on HF control panel to desired frequency and depress the TUNE Switch. The TUNE-FAULT light shall extinguish and the XMIT-READY light shall illuminate, indicating the HF system is tuned and ready for operation.
(3) Should the TUNE-FAULT light illuminate during operation, it indicates the antenna has become untuned. Depress the TUNE Switch; the HF system shall retune to selected frequency, and the XMIT-READY light shall illuminate, indicating system is ready for operation.

RECEIVER/EXCITER OR TRANSCEIVER - MAINTENANCE PRACTICES

1. Removal/Installation

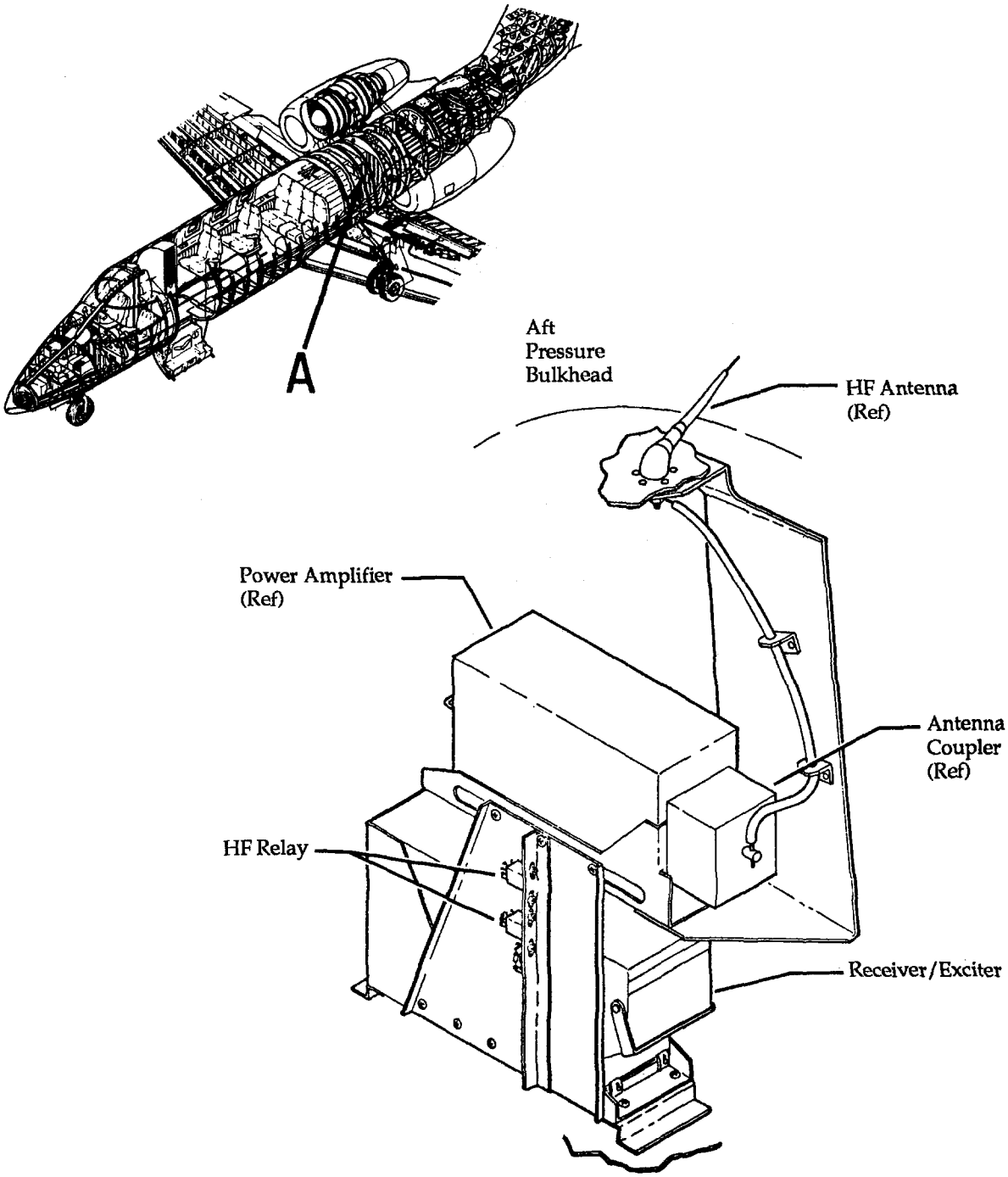
CAUTION: PERFORM RADIO RADIATION INTERFERENCE TEST WHENEVER THE HF TRANSMITTER IS REMOVED OR REPLACED.

A. Remove Collins 718U-5M Receiver/Exciter (See Figure 201.)
   (1) Remove electrical power from aircraft.
   (2) Remove necessary equipment to gain access to aft pressure bulkhead.
   (3) Disconnect electrical connectors from receiver/exciter.
   (4) Loosen attaching parts and remove receiver/exciter from mounting rack and aircraft.

B. Install Collins 718U-5M Receiver/Exciter (See Figure 201.)
   (1) Install receiver/exciter in mounting rack and secure with attaching parts.
   (2) Connect electrical connectors to receiver/exciter.
   (3) Install previously removed equipment.
   (4) Restore electrical power to aircraft.
   (5) Perform Radio Radiation Interference Test. (Refer to 23-00-00.)

C. Remove Sunair ASB500 Transceiver (See Figure 201.)
   (1) Remove electrical power from aircraft.
   (2) Remove necessary equipment to gain access to aft pressure bulkhead.
   (3) Disconnect electrical and coax connectors from transceiver.
   (4) Loosen attaching parts and remove transceiver from mounting rack and aircraft.

D. Install Sunair ASB500 Transceiver (See Figure 201.)
   (1) Install transceiver in mounting rack and secure with attaching parts.
   (2) Connect electrical and coax connectors to transceiver.
   (3) Install previously removed equipment and secure with attaching parts.
   (4) Restore electrical power to aircraft.
   (5) Perform Radio Radiation Interference Test. (Refer to 23-00-00.)



Collins 718U-5M Receiver/Exciter System Installation

Detail A

Receiver/Exciter or Transceiver Installation (Typical)
Figure 201

POWER AMPLIFIER-COUPLER - MAINTENANCE PRACTICES

1. **REMOVAL/INSTALLATION**

A. Remove Power Amplifier (Collins 718U-5M) (See figure 201.)

WARNING: DO NOT TOUCH OUTPUT WIRE OR ANTENNA WHILE SYSTEM IS TRANSMITTING, AS RF BURNS OR DEATH COULD RESULT.

(1) Remove electrical power from aircraft.
(2) Remove equipment as required to gain access to aft pressure bulkhead.
(3) Disconnect electrical connectors from power amplifier.
(4) Loosen attaching parts and remove power from amplifier from mounting rack and aircraft.

B. Install Power Amplifier (Collins 718U-5M) (See figure 201.)

(1) Install power amplifier in mounting rack and secure with attaching parts.
(2) Connect electrical connectors to power amplifier.
(3) Install all equipment that was removed to gain access to aft pressure bulkhead.
(4) Restore electrical power to aircraft.

C. Remove Antenna Coupler (Collins 718U-5M) (See figure 201.)

(1) Remove power amplifier as stated in steps A.(1) thru A.(4).
(2) Remove screws attaching ground strap to coupler
(3) Loosen knurl nut on coupler and remove wire interconnecting coupler and antenna.
(4) Remove attaching parts and antenna coupler from aircraft.

D. Install Antenna Coupler (Collins 718U-5M) (See figure 201.)

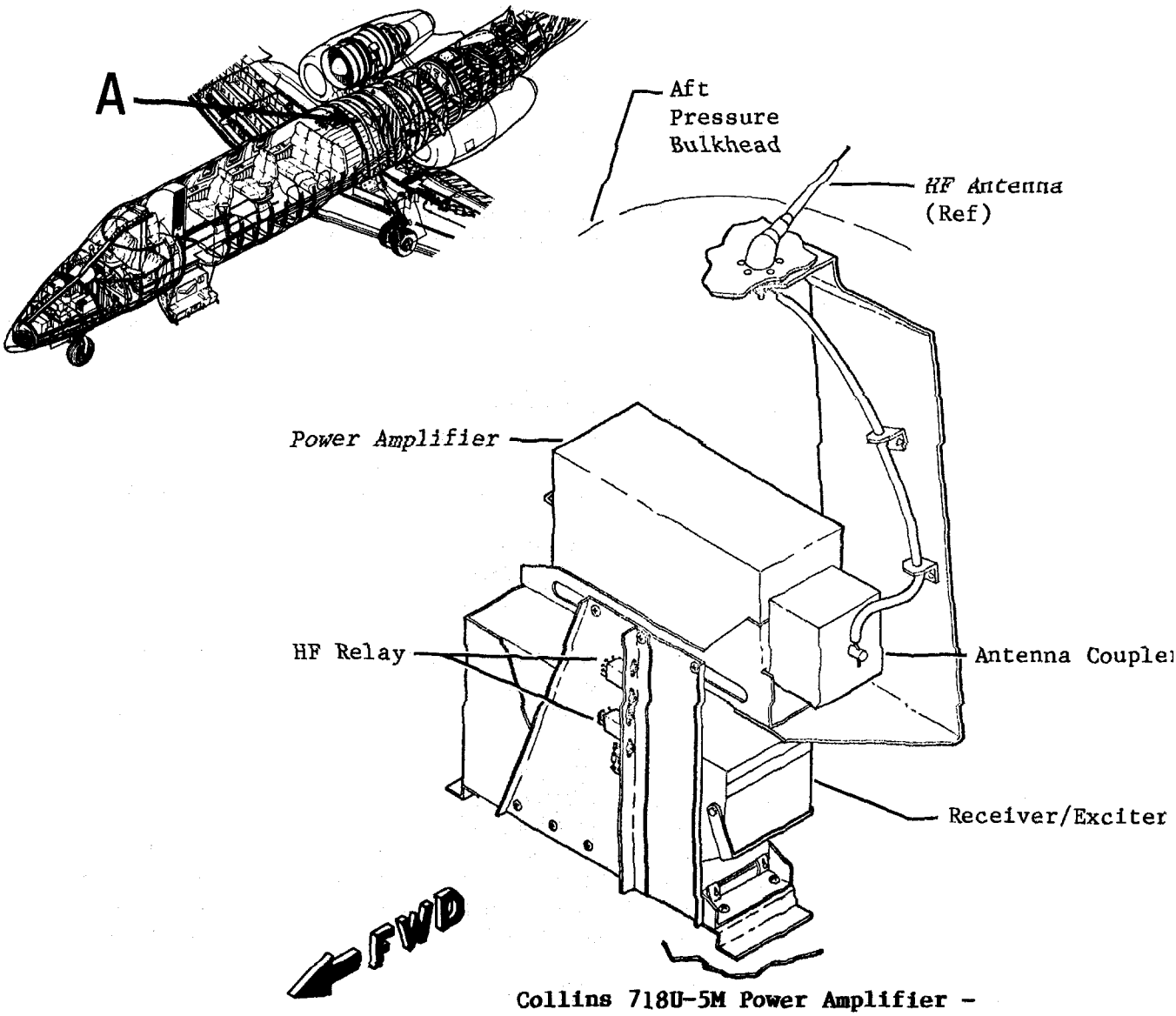
(1) Install antenna coupler on mounting rack and secure with attaching parts.
(2) Install interconnecting wire between antenna and coupler into terminal post on coupler. Tighten knurl nut finger tight.
(3) Install power amplifier as stated in steps B.(1) thru B.(2) of this section.
(4) Install all previously removed equipment.

E. Remove Antenna Coupler (Sunair ACU150)

(1) Remove electrical power from aircraft.
(2) Remove necessary equipment to gain access to aft pressure bulkhead.
(3) Disconnect connector attaching antenna feedthru to antenna coupler.
(4) Disconnect electrical and coax connectors from antenna coupler.
(5) Remove antenna coupler and attaching parts from mounting rack and aircraft.

F. Install Antenna Coupler (Sunair ACU150)

(1) Install antenna coupler in mounting rack and secure with attaching parts.
(2) Connect electrical and coax connectors to antenna coupler.
(3) Connect antenna feedthru to antenna coupler with attaching parts.
(4) Install previously removed equipment and secure with attaching parts.
(5) Restore electrical power to aircraft.



Collins 718U-5M Power Amplifier - Coupler System Installation

Detail A

Power Amplifier-Coupler Installation (Typical)
Figure 201

HF ANTENNA - MAINTENANCE PRACTICES

1. **REMOVAL/INSTALLATION**

A. Remove Antenna (See figure 201.)

WARNING: DO NOT TOUCH THE ANTENNA WHILE SYSTEM IS TRANSMITTING, AS RF BURNS OR DEATH COULD RESULT.

(1) Remove electrical power from aircraft.
(2) Using an aerostand or other suitable equipment, gain access to leading edge of vertical stabilizer where antenna is attached.
(3) Remove tension on antenna by loosening tension ring.
(4) Support antenna and remove nut, bolt, solder lug, and spacer attaching antenna to vertical stabilizer.
(5) Lower loose end of antenna to ground.
(6) Pull slack in antenna and, using emery paper between fingers as a grip, remove insulator sleeve located on top of fuselage at aircraft centerline at aft pressure bulkhead.
(7) Remove antenna wire from jaws in insulator body.
(8) Retain insulator sleeve for reinstallation.

B. Install Antenna (See figure 201.)

(1) Install insulator sleeve on antenna wire and insert stripped end of antenna wire in jaws embedded in insulator body.

NOTE: ° Assure that 3/8-inch length of bare conductor is firmly secured by the jaws.

° Fay surface seal all interfacing surfaces of this installation with Pro-Seal 890.

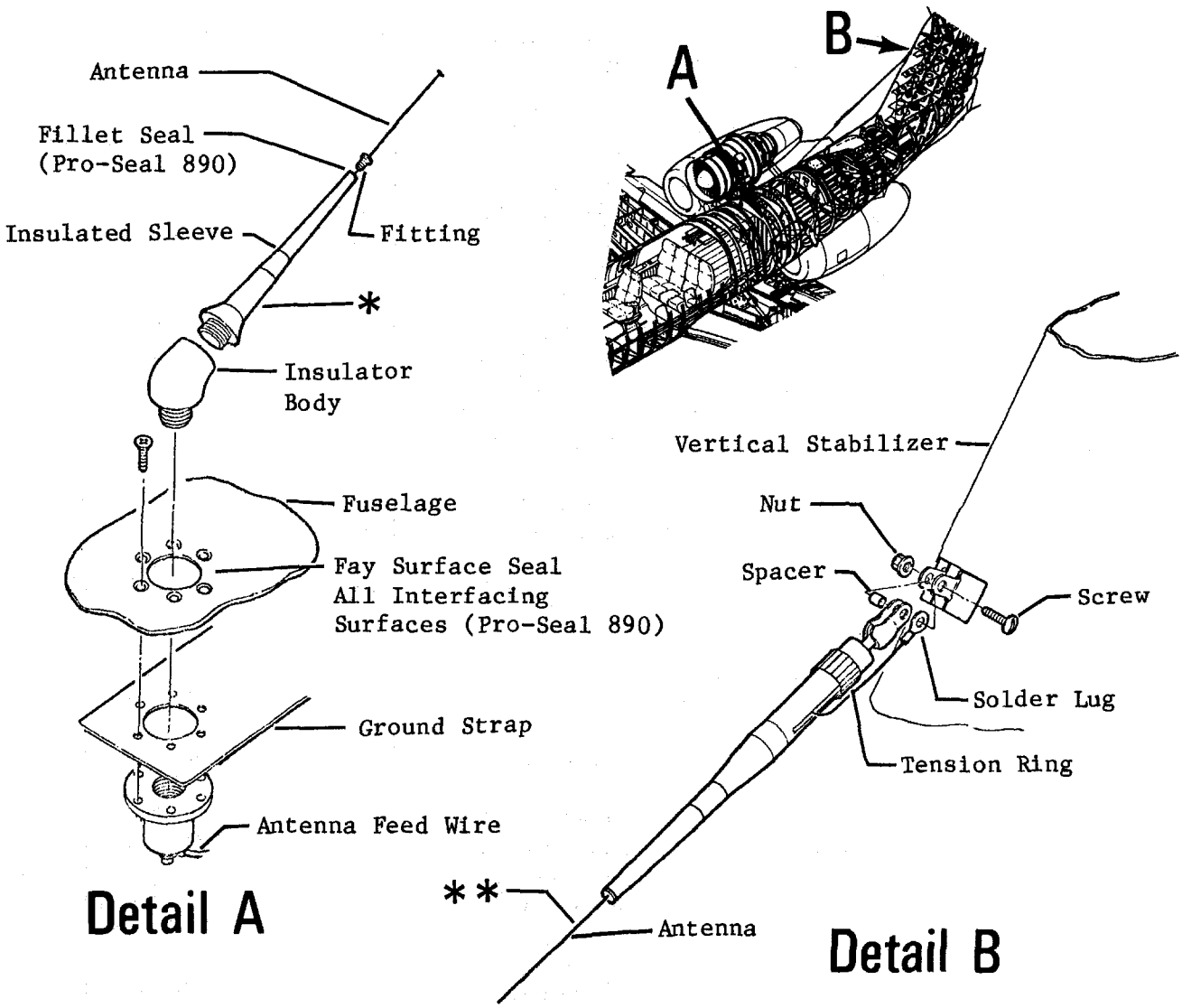
(2) Fill threaded cavity of insulator with Dow Corning DC-4 silicone grease.
(3) Screw sleeve into insulator body, forcing grease into sleeve hole.
(4) Unscrew sleeve and refill threaded cavity of insulator with DC-4.
(5) Screw sleeve into insulator body finger tight. Emery paper may be used between fingers to assure maximum finger torque. Do not use pliers.

NOTE: ° Adequate quantity of packed DC-4 and a tight connection are of critical importance.

° Fillet seal with Pro-Seal 890 around fitting where antenna enters insulated sleeve.

(6) Using an aerostand or other suitable equipment gain access to antenna attachment point on leading edge of vertical stabilizer.
(7) Attach antenna to vertical stabilizer using bolt, solder lug, spacer, and nut.

(8) Apply 30 (±5) pounds tension to antenna by tightening tension knurl nut.
(9) Restore electrical power to aircraft.



* **WARNING:** DO NOT TOUCH ANTENNA WHILE SYSTEM IS TRANSMITTING, AS RF BURNS OR DEATH COULD RESULT.

** PACK CAVITY IN INSULATED SLEEVE WITH DC4.

HF Antenna Installation (Typical)
Figure 201

CONTROL PANEL - MAINTENANCE PRACTICES

1. Removal/Installation

A. Remove Control Panel (See figure 201.)

(1) Remove electrical power from aircraft.

(2) Release quick-attach fasteners securing control panel in pedestal.

(3) Pull control panel out of pedestal sufficiently to disconnect electrical connectors from control panel.

(4) Remove control panel from aircraft.

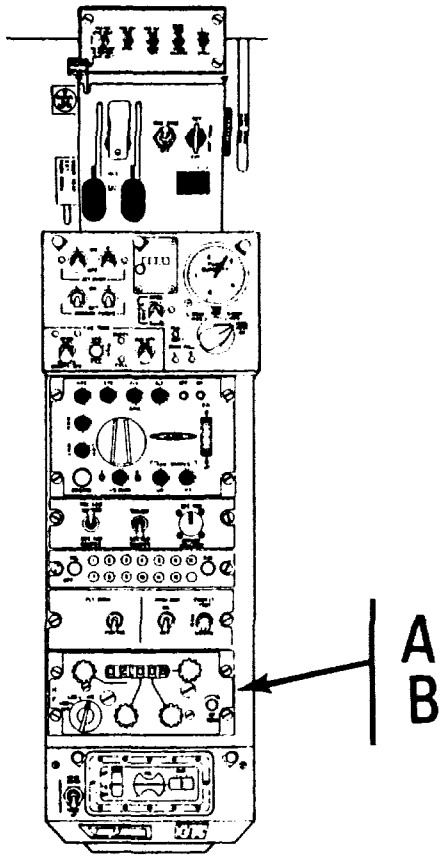
B. Install Control Panel (See figure 201.)

(1) Connect electrical connectors to control panel.

(2) Slide control panel into pedestal.

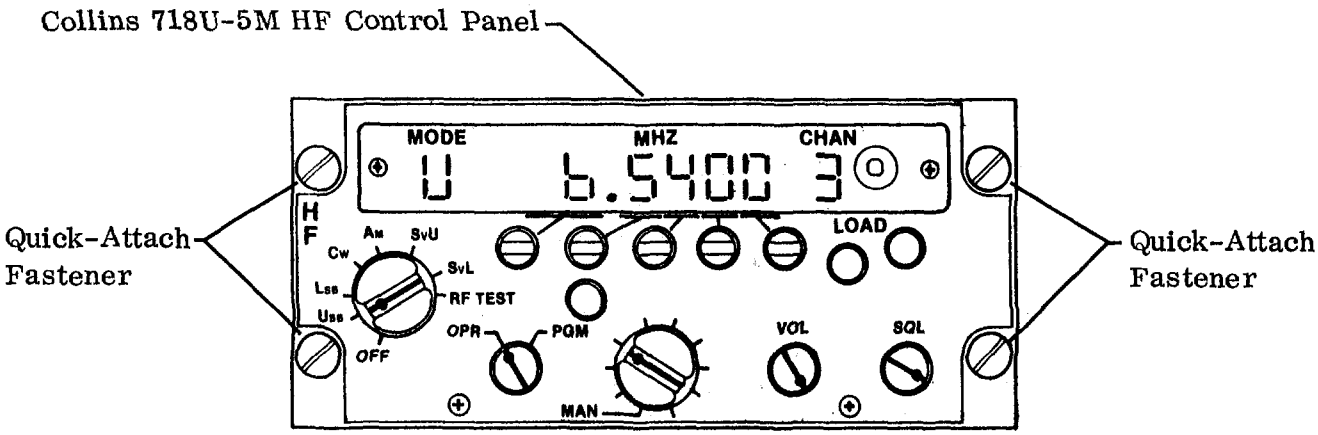
(3) Fasten quick-attach fasteners.

(4) Restore electrical power to aircraft.



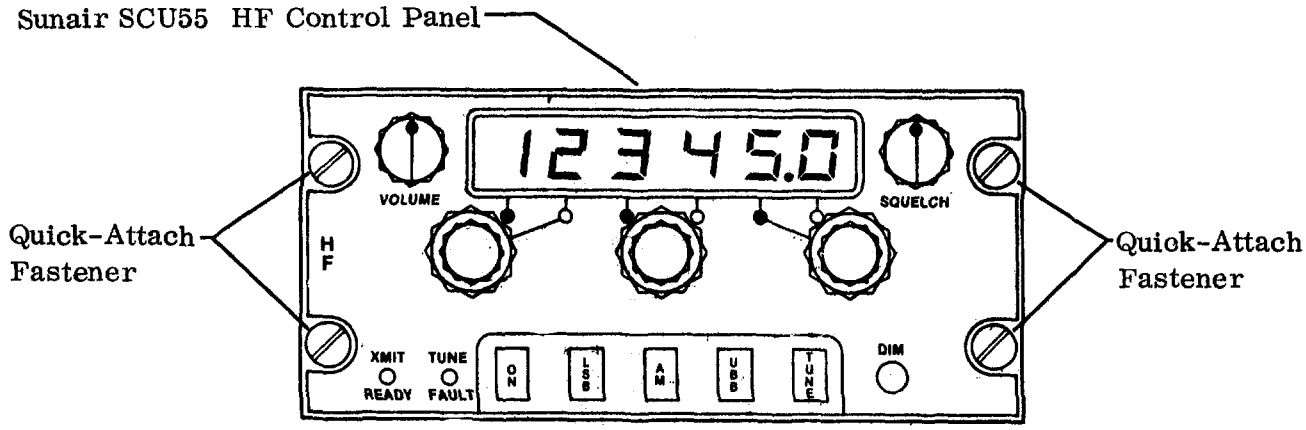
16-30A
16-29A

HF Control Panel
Figure 201 (Sheet 1 of 2)



HF CONTROL PANEL
(COLLINS 718U-5M)

Detail A



HF CONTROL PANEL
(SUNAIR SCU55)

Detail B

HF Control Panel
Figure 201 (Sheet 2 of 2)

HF AUDIO ADAPTER BOX - MAINTENANCE PRACTICES

1. Removal/Installation

A. Remove HF Audio Adapter Box (See figure 201.)

(1) Remove electrical power from aircraft.

(2) Remove LH or RH side panel of forward pedestal, depending upon optional installation of audio adapter box.

(3) Disconnect electrical connector from adapter box.

(4) Remove audio adapter box and attaching parts from aircraft.

B. Install HF Audio Adapter Box (See figure 201.)

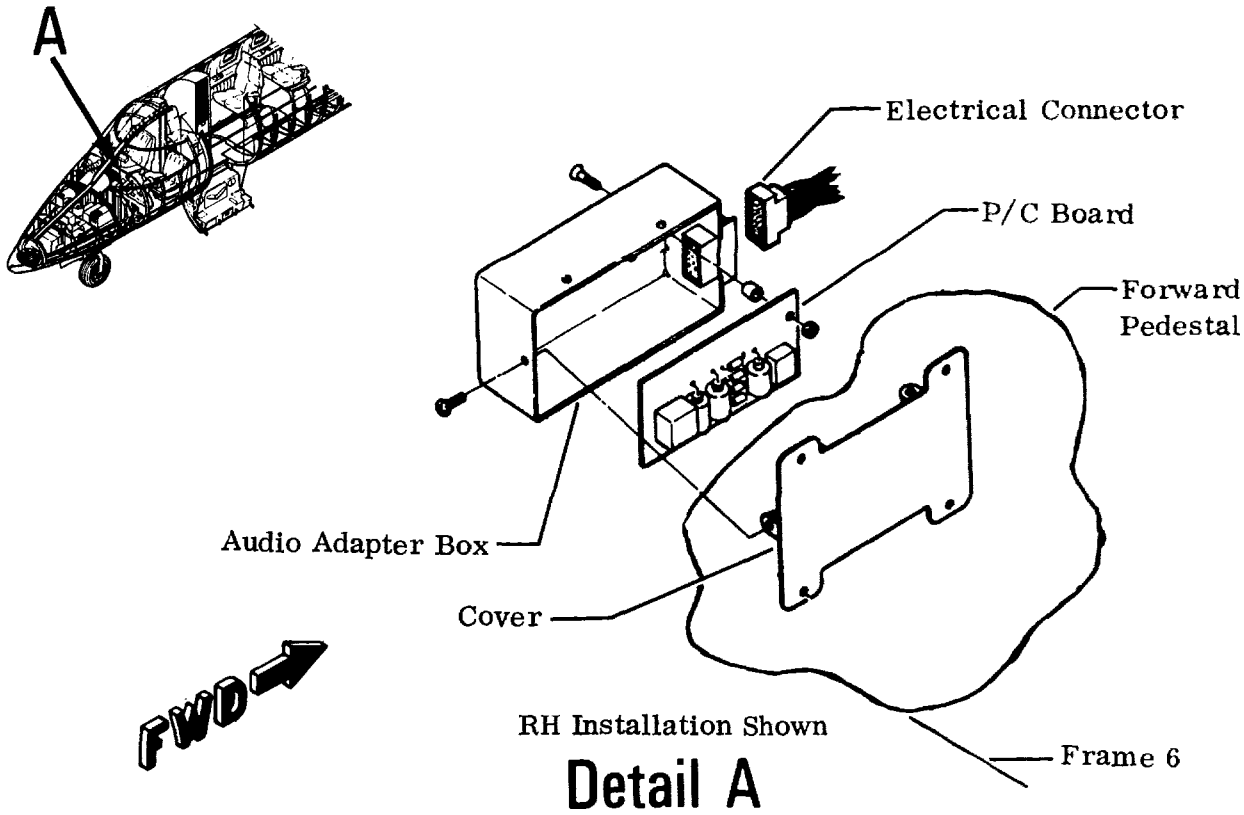
(1) Install audio adapter box on applicable pedestal side panel and secure with attaching parts.

(2) Connect electrical connector to audio adapter box.

(3) Install applicable panel on pedestal.

NOTE: The HF audio adapter box is to be electrically bonded to support structure with a maximum resistance of 0.0015 ohm.

(4) Restore electrical power to aircraft.



HF Audio Adapter Box Installation
Figure 201

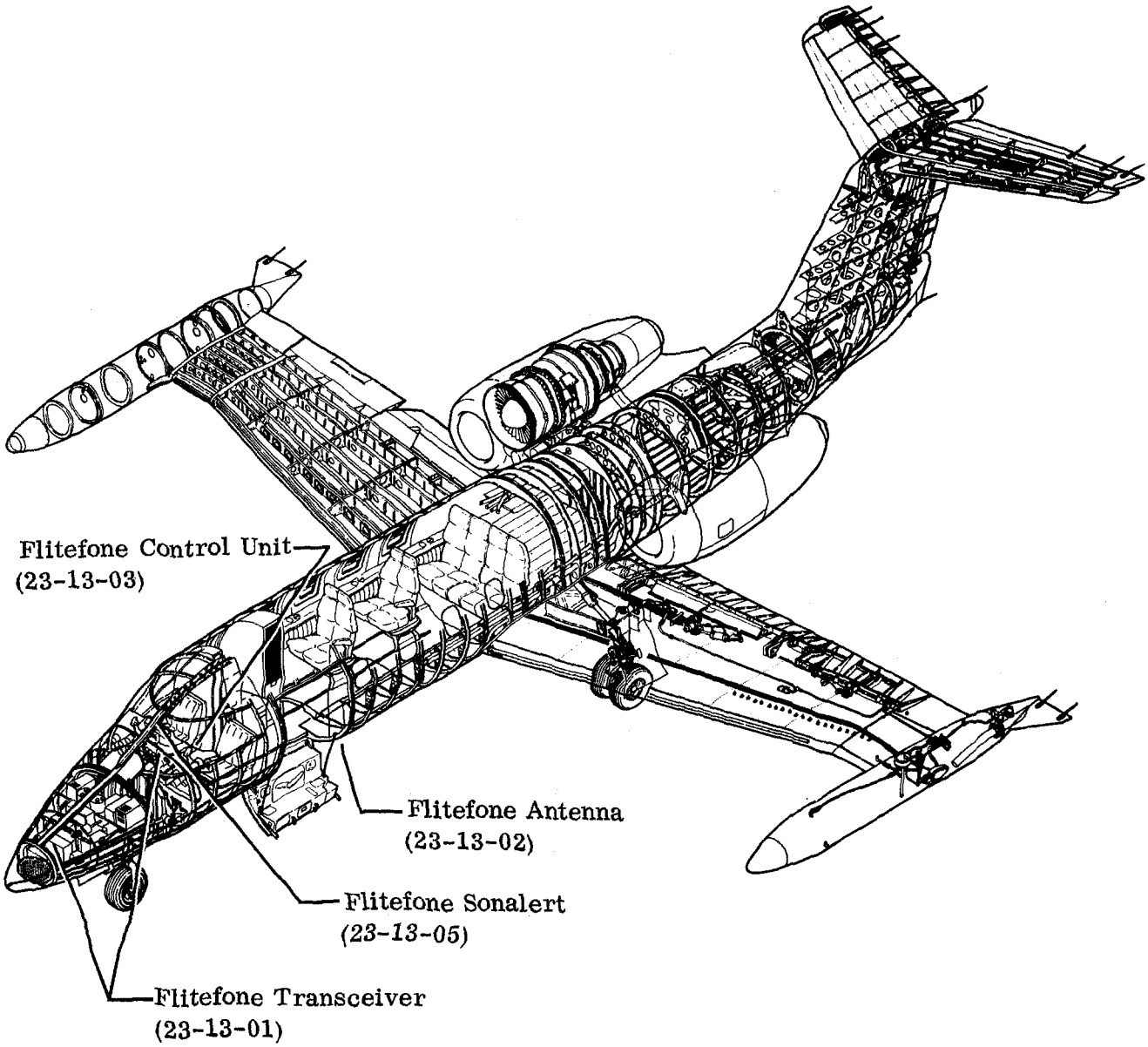
FLITEFONE - DESCRIPTION AND OPERATION

1. Description (See figures 1 and 2.)
   A. The Flitefone provides for telephone communications between the aircraft and ground locations through the use of HF and UHF frequencies.
   B. The Flitefone system consists of a transceiver, antenna, two control units, two HF/Flitefone interface relays, Flitefone Sonalert, and handset/hanger.
      (1) The Flitefone transceiver is located in the nose compartment at approximately frame 4 on either the LH or RH side depending on optional location.
      (2) The blade antenna is located just aft of frame 15 on the bottom of the fuselage.
      (3) The cockpit control unit is located in the pedestal.
      (4) The cabin control unit is located in the aft cabin with the handset.
      (5) The HF/Flitefone interface consists of two relays mounted on the HF receiver/exciter mount rack.
      (6) The Flitefone Sonalert is located on the cockpit wall, adjacent to the copilot's seat.
   C. Maintenance of the Flitefone communication system is limited to the replacement of plug-in modules and an inspection/check.
   D. Overhaul of Flitefone communication system components may be accomplished only by certified Flitefone mechanics.
   E. Power requirements are 27.5 vdc, 0.45 ampere (12 watts) to receive, and 2.3 amperes (55 watts) to transmit.

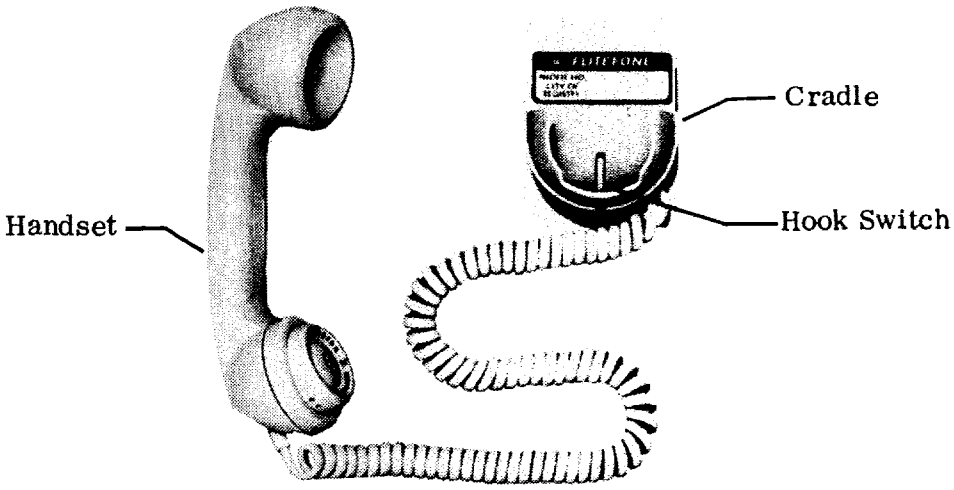
2. Operation (See figure 2.)

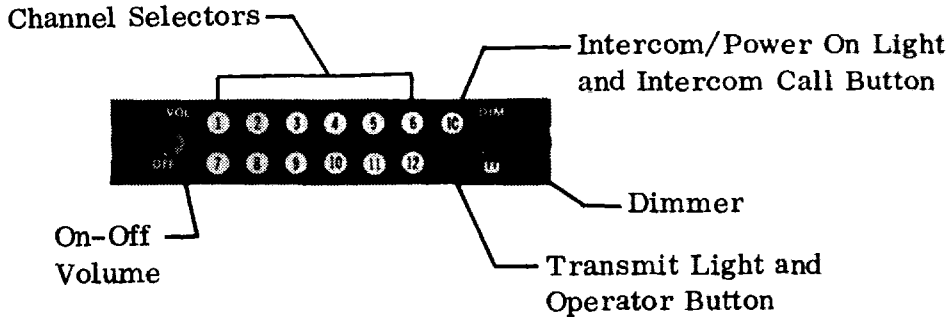
   NOTE: Operator of the Flitefone must be licensed with the FCC.

   A. To operate the Flitefone, proceed as follows:
      (1) Assure that UHF circuit breaker is depressed.
      (2) Turn system on and allow for one-minute warm-up.
      (3) Either in cockpit or cabin, remove the handset from cradle.
      (4) Select desired ground station by pressing channel number on control unit.
      (5) Adjust volume control knob on control unit for desired voice or dial tone level.
      (6) Call the operator by pushing "OPERATOR" black button on control unit or, if so equipped, the PUSH-TO-TALK button on the handset.
      (7) Give operator required information to make call.
      (8) When call is complete, place handset in cradle. This will depress the hook switch and disconnect the connection.



Flitefone Equipment Locator
Figure 1





Flitefone Cockpit Control, Handset and Cradle
Figure 2

FLITEFONE SYSTEM - MAINTENANCE PRACTICES

1. Inspection/Check

A. Tools and Equipment

NOTE: Equivalent substitutes may be used in lieu of the following.

NAME	PART NUMBER	MANUFACTURER	USE
Airborne Radio Telephone Test Set	TS-25	Wulfsburg Electronics Inc.	To simulate ground station.
Thruline Wattmeter (with 200-500 MHz, 25 watt detector)	Model 43	Bird Electronics	To measure transmission power.

B. Operational Check (Flitefone System)

NOTE: The following procedure may be performed using either the cabin control unit or the cockpit control unit (if installed).

(1) Position aircraft a minimum of 50 feet away from any metallic structures.
(2) Set Battery Switches to OFF and pull UHF circuit breaker.
(3) Disconnect antenna coax at transceiver.
(4) Connect thruline wattmeter in series with transceiver, antenna connector, and coax line to antenna. Assure that RG8/U coax cable is used between transceiver and wattmeter.

NOTE: A bulkhead jack is located in the forward pressure bulkhead at RBL 7 and WL 24.

(5) Connect a ground power cart to aircraft.
(6) Set Battery Switches on and depress UHF circuit breaker.
(7) Set Flitefone VOL/OFF Switch on and allow approximately 3 minutes warm-up.
(8) Lift handset from cradle and press channel 1 button. Channel 1 button shall illuminate.
(9) Place handset to ear, rotate VOL-OFF Switch clockwise, and listen for receiver noise volume to vary as the switch is turned.
(10) Depress OPERATOR button (labeled T) on control unit and monitor forward power indicated on wattmeter. Minimum forward power is 8 watts.

(11) Monitor reflected power on wattmeter. Maximum reflected power is 1 watt.
(12) Signal wave ratio shall not exceed 1.4.
(13) Repeat steps (8) through (12) for all remaining channels.

NOTE: When OPERATOR button is depressed, the transmit light shall illuminate and remain illuminated until the hook switch is depressed.

(14) With handset off hook switch, depress intercom button. The intercom light shall illuminate, and signaling device shall sound.
(15) Place handset back in cradle.
(16) Turn unit off and pull UHF circuit breaker.
(17) Disconnect wattmeter from aircraft and reconnect antenna coax to transceiver.
(18) Place telephone test set near aircraft.
(19) Depress UHF circuit breaker and turn Flitefone and test set on.
(20) Select a common channel for test set and Flitefone to transmit on.
(21) Depress OPERATOR button in aircraft. Test set shall receive a signal, and two-way voice communication shall be possible. Check for clarity of voice transmission.
(22) Depress hook switch.
(23) Call aircraft from test set using aircraft telephone number. Aircraft shall receive a signal and two-way voice communication shall be possible. Check for clarity of voice transmission.
(24) Place handset back in cradle and turn unit off.

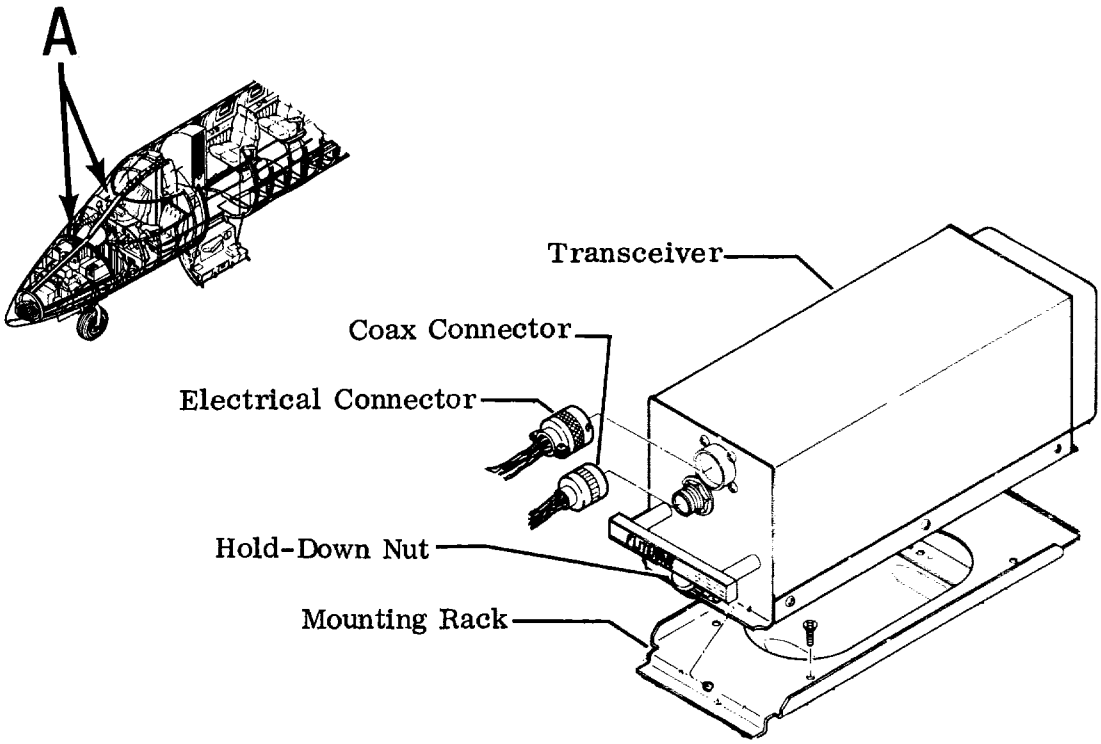
FLITEFONE TRANSCEIVER - MAINTENANCE PRACTICES

1. Removal/Installation

NOTE: The Flitefone transceiver may be installed in the RH or LH forward nose compartment, depending upon optional installation. Removal and installation procedures are identical for both installations.

A. Remove Transceiver (See figure 201.)
   (1) Remove electrical power from aircraft.
   (2) Gain access to transceiver and disconnect electrical connector and coax connector from transceiver.
   (3) Loosen hold-down nut and remove transceiver from aircraft.

B. Install Transceiver (See figure 201.)
   (1) Install transceiver in mounting rack and tighten hold-down nut.
   (2) Connect electrical connector and coax connector to transceiver.
   (3) Install equipment previously removed to gain access to transceiver.
   (4) Restore electrical power to aircraft.
   (5) Perform operational check of Flitefone system. (Refer to 23-13-00.)



Flitefone Transceiver Installation
Figure 201

FLITEFONE ANTENNA - MAINTENANCE PRACTICES

1. Removal/Installation

A. Remove Flitefone Antenna (See figure 201.)

(1) Remove electrical power from aircraft.

(2) Remove screws securing antenna to fuselage just aft of frame 15.

CAUTION: USE CARE NOT TO DAMAGE AIRCRAFT SKIN WHEN REMOVING SEALANT.

(3) Using caution, break sealant bond between antenna and fuselage.

(4) Pull antenna away from fuselage and disconnect coax connector from antenna. Ensure that coax cable does not slip back into hole in fuselage.

(5) Remove antenna from aircraft area.

B. Install Flitefone Antenna (See figure 201.)

(1) Prepare antenna mounting surface and mounting area on fuselage for electrical bonding. (Refer to Chapter 20 of Wiring Manual.)

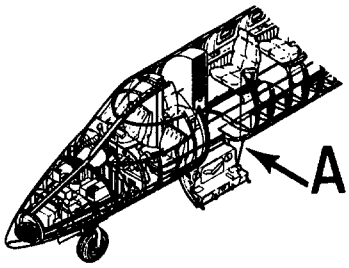
(2) Connect coax connector to antenna.

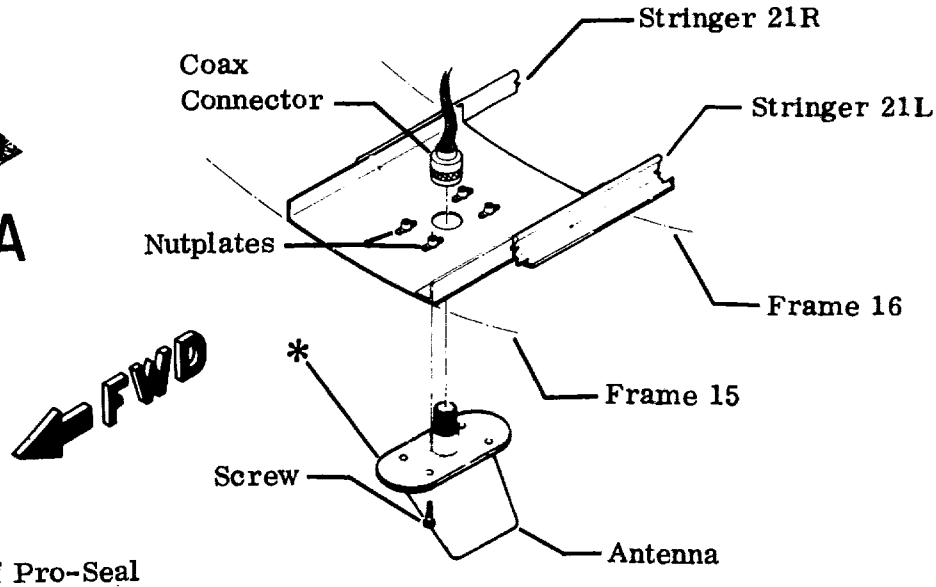
(3) Install antenna in fuselage and secure with screws.

(4) Clean antenna base and fuselage mating area with a clean cloth and methyl-ethyl-ketone (MEK).

(5) Apply fillet seal (Pro-Seal 890) around entire base of antenna.

(6) Restore electrical power to aircraft.





* Apply a fillet seal of Pro-Seal 890 around base of antenna after installation.

Detail A

Flitefone Antenna Installation
Figure 201

14-158B

EFFECTIVITY: OPTIONAL

FLITEFONE CONTROL UNIT - MAINTENANCE PRACTICES

1. Removal/Installation

A. Remove Cockpit Control Unit (See figure 201.)

(1) Remove electrical power from aircraft.

(2) Using a slot screwdriver, disengage quick-attach fasteners and carefully pull the cockpit control unit out of the pedestal.

(3) Disconnect electrical connectors from cockpit control unit and remove cockpit control unit from aircraft.

B. Install Cockpit Control Unit (See figure 201.)

(1) Connect electrical connectors to cockpit control unit.

(2) Slide cockpit control unit into position and secure with quick-attach fasteners.

(3) Restore electrical power to aircraft.

C. Remove Cabin Control Unit (See figure 202.)

(1) Remove electrical power from aircraft.

(2) Raise cover and remove attaching parts securing control unit in armrest.

(3) Pull control unit from armrest and disconnect electrical connectors.

(4) Remove control unit from aircraft.

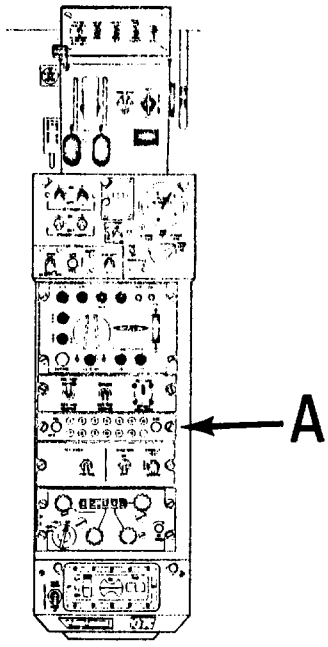
D. Install Cabin Control Unit (See figure 202.)

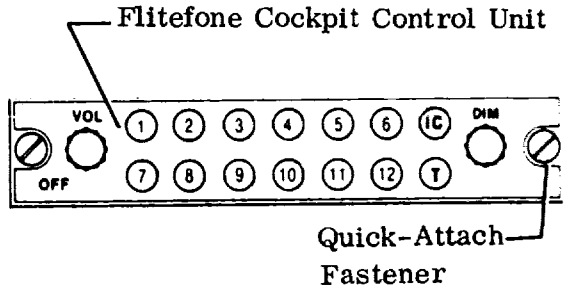
(1) Connect electrical connectors to control unit.

(2) Slide control unit into armrest and secure with attaching parts.

(3) Close armrest cover.

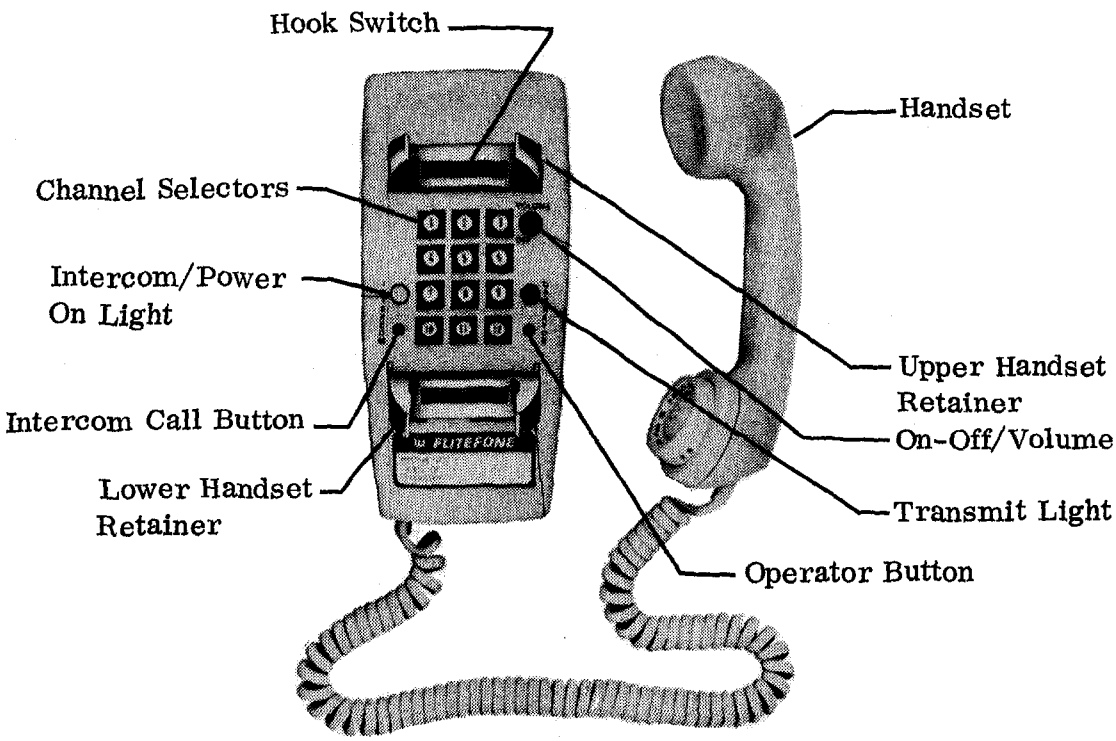
(4) Restore electrical power to aircraft.





Detail A

Cockpit Control Unit Installation
Figure 201.



Flitefone Cabin Control
Figure 202

HF/FLITEFONE INTERFACE RELAYS - MAINTENANCE PRACTICES

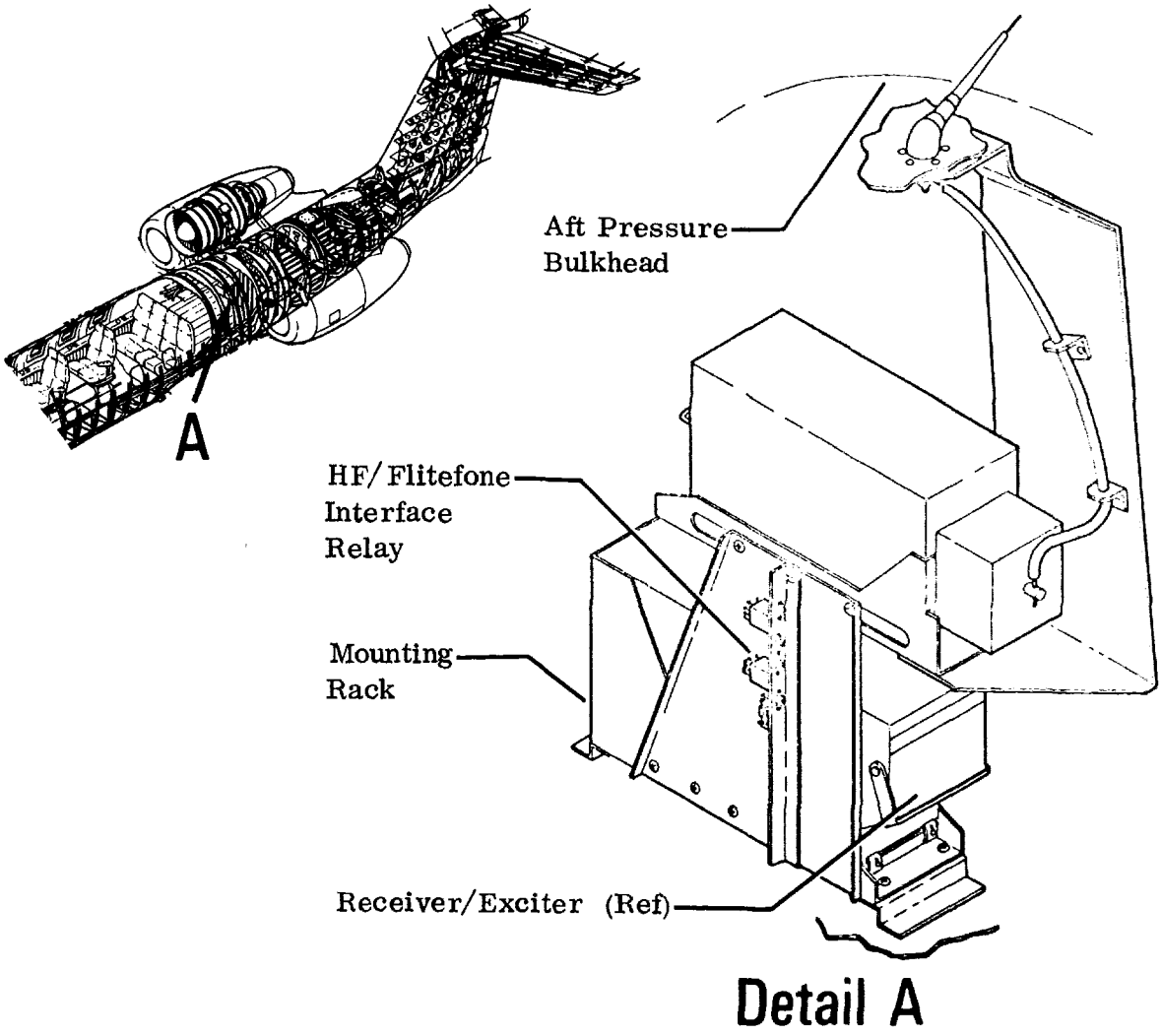
1. Removal/Installation

A. Remove Interface Relays (See figure 201.)

(1) Remove HF receiver/exciter. (Refer to 23-12-01.)
(2) Remove attaching parts securing relays to mounting rack.
(3) Tag each wire attached to relays.
(4) Unsolder wires from relays and remove relays from aircraft.

B. Install Interface Relays (See figure 201.)

(1) Solder wires to relays.
(2) Remove tags from wires.
(3) Attach relays to mounting rack with attaching parts.
(4) Install HF receiver/exciter. (Refer to 23-12-01.)



HF/Flitefone Interface Relay Installation (Typical)
Figure 201

FLITEFONE SONALERT - MAINTENANCE PRACTICES

1. Removal/Installation

A. Remove Sonalert (See figure 201.)

(1) Remove electrical power from aircraft.

(2) Remove upholstery as required to gain access to Sonalert at frame 8 on RH side of cockpit.

(3) Cut and tag Sonalert wires.

(4) Unscrew top of Sonalert to release it.

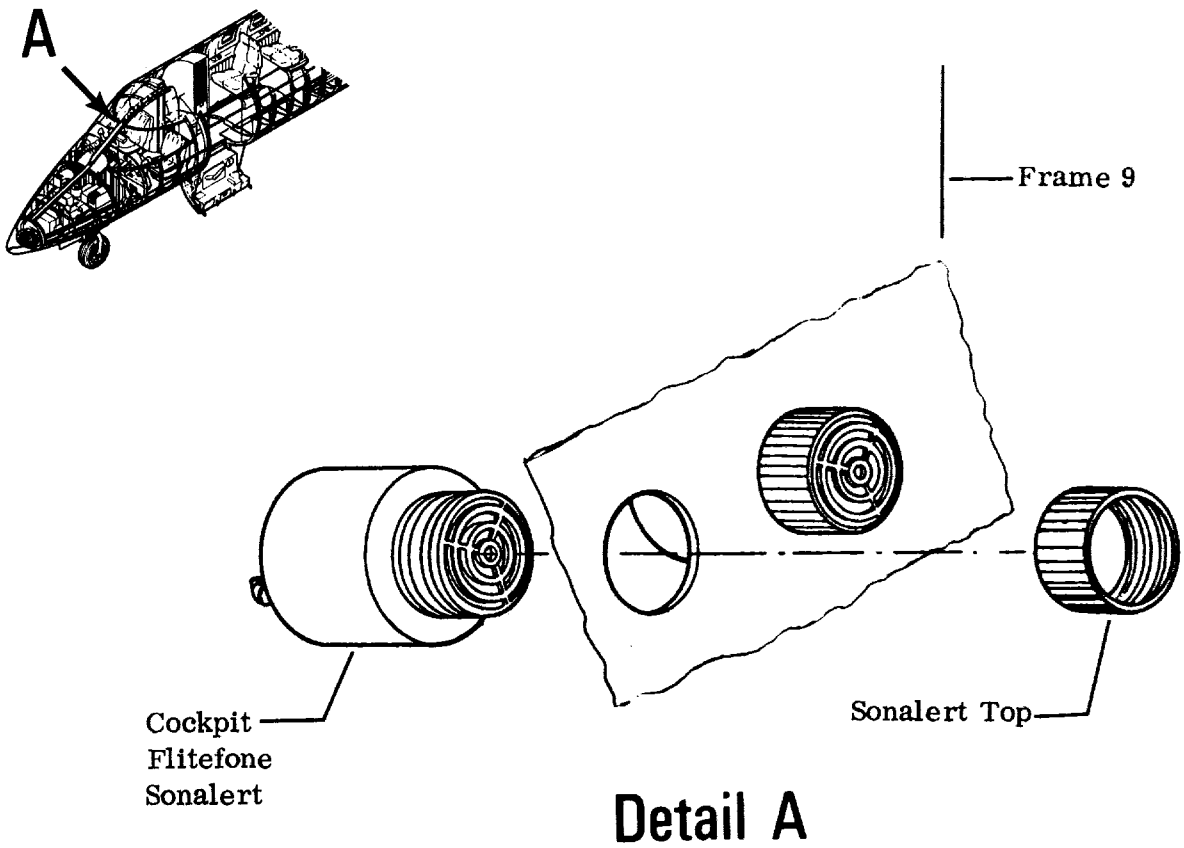
B. Install Sonalert (See figure 201.)

(1) Remove top from Sonalert.

(2) Insert Sonalert through hole in upholstery and secure with Sonalert top.

(3) Connect electrical wiring to Sonalert at splice. (Refer to Chapter 20 of Wiring Manual.)

(4) Restore electrical power to aircraft.

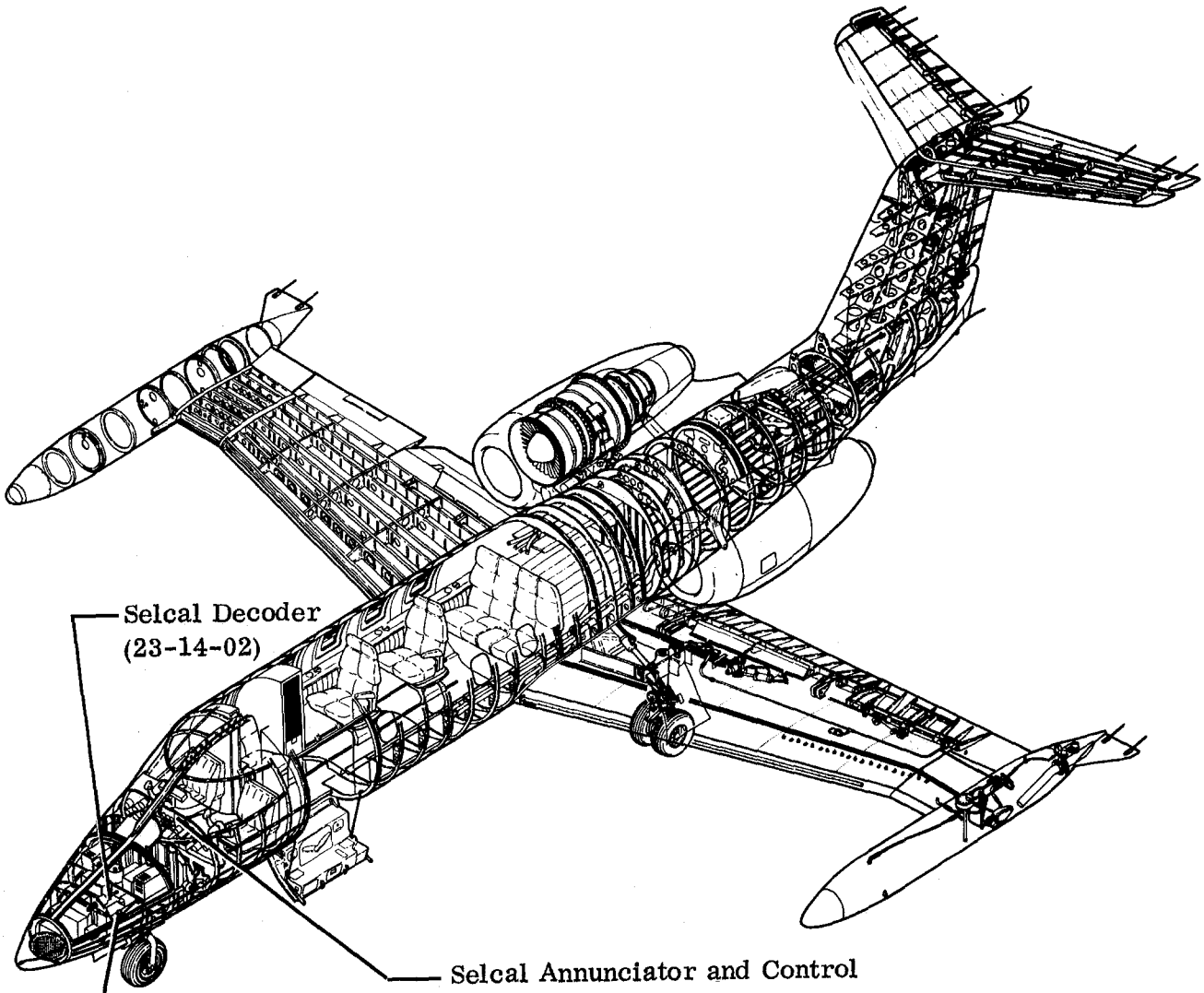


Sonalert Installation (Typical)
Figure 201

SELCAL - DESCRIPTION AND OPERATION

1. Description
   A. Motorola Selcal NA135
      (1) The Selcal system consists of a Selcal annunciator and control panel, decoder, and an interface transformer box assembly.
         (a) The annunciator and control panel is located on the center instrument panel.
         (b) The decoder is located on the LH side of the nose compartment between frames 2 and 3.
         (c) The interface transformer box assembly may be installed adjacent to the decoder between frames 2 and 3 or on the aft LH side of frame 2, depending on optional installation. Removal and installation practices for both installations are identical.
   B. The Selcal system is integrated into the VHF1, VHF2, and HF communication systems for the purpose of relieving the flight crew from continuously maintaining the VHF and HF channels.

2. Operation
   A. Motorola Selcal NA135
      (1) The Selcal system utilizes a tone code that is assigned to the aircraft.
      (2) When the coded tone is transmitted on either the VHF and HF carrier frequency within the range of the aircraft receiver units, the respective aircraft receiver will receive the coded carrier. At the Selcal interface the signal is sent to the Selcal decoder. Should the coded tones match the decoder, the alerter will sound and the respective annunciator on the Selcal control panel will illuminate, advising the operator as to which system is calling the aircraft.
      (3) The operator will press the illuminated annunciator light/switch and make contact with the caller on the indicated system.
      (4) After call is complete, the operator will press the respective annunciator reset switch, readying the Selcal system to receive another call.



Selcal System Locator
Figure 1

EFFECTIVITY: OPTIONAL

SELCAL ANNUNCIATOR AND CONTROL PANEL - MAINTENANCE PRACTICES

1. Removal/Installation

A. Remove Selcal Annunciator and Control Panel (See figure 201.)

(1) Remove electrical power from aircraft.

(2) Disconnect quick-attach fasteners and pull control panel from instrument panel.

(3) Disconnect electrical connectors from control panel.

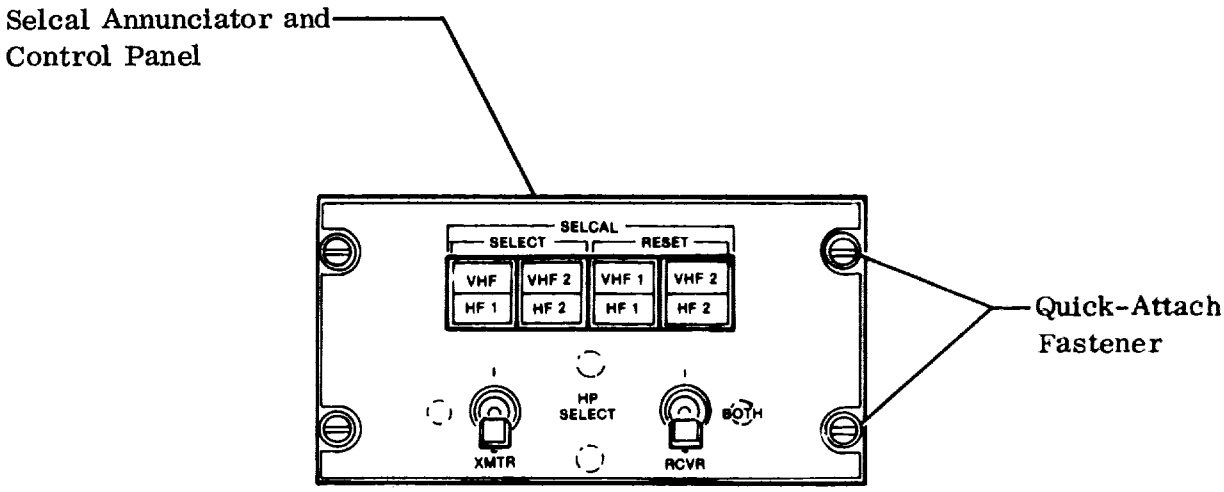
(4) Remove control panel from aircraft.

B. Install Selcal Annunciator and Control Panel (See figure 201.)

(1) Connect electrical connectors to Selcal control panel.

(2) Slide Selcal control panel into instrument panel and fasten quick-attach fasteners.

(3) Restore electrical power to aircraft.



Selcal Annunciator and Control Panel Installation (Typical)
Figure 201

SELCAL DECODER - MAINTENANCE PRACTICES

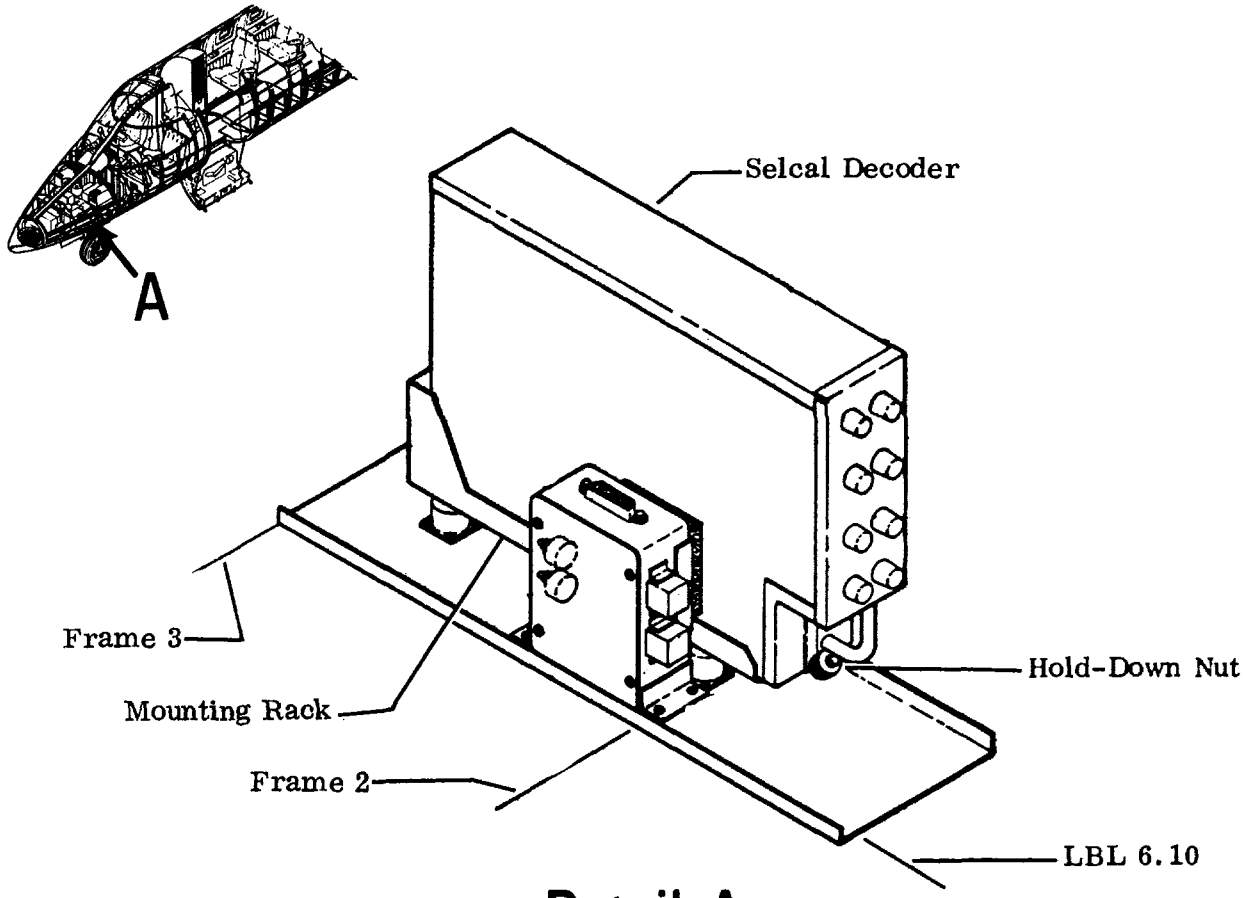
1. Removal/Installation

A. Remove Selcal Decoder (See figure 201.)

(1) Remove electrical power from aircraft.
(2) Remove LH nose compartment door.
(3) Cut safety wire and loosen hold-down nut.
(4) Pull Selcal decoder from mounting rack.
(5) Remove decoder from aircraft.

B. Install Selcal Decoder (See figure 201.)

(1) Slide Selcal decoder into mounting rack and tighten hold-down nut.
(2) Install safety wire on hold-down nut.
(3) Install LH nose compartment door.
(4) Restore electrical power to aircraft.



Selcal Decoder Installation (Typical)
Figure 201

SELCAL INTERFACE TRANSFORMER BOX - MAINTENANCE PRACTICES

1. Removal/Installation

A. Remove Selcal Interface Transformer Box (See figure 201.)

(1) Remove electrical power from aircraft.

(2) Remove LH nose compartment door.

(3) Disconnect electrical connector from bottom of interface transformer box.

(4) Remove attaching parts and interface transformer box from equipment tray and aircraft.

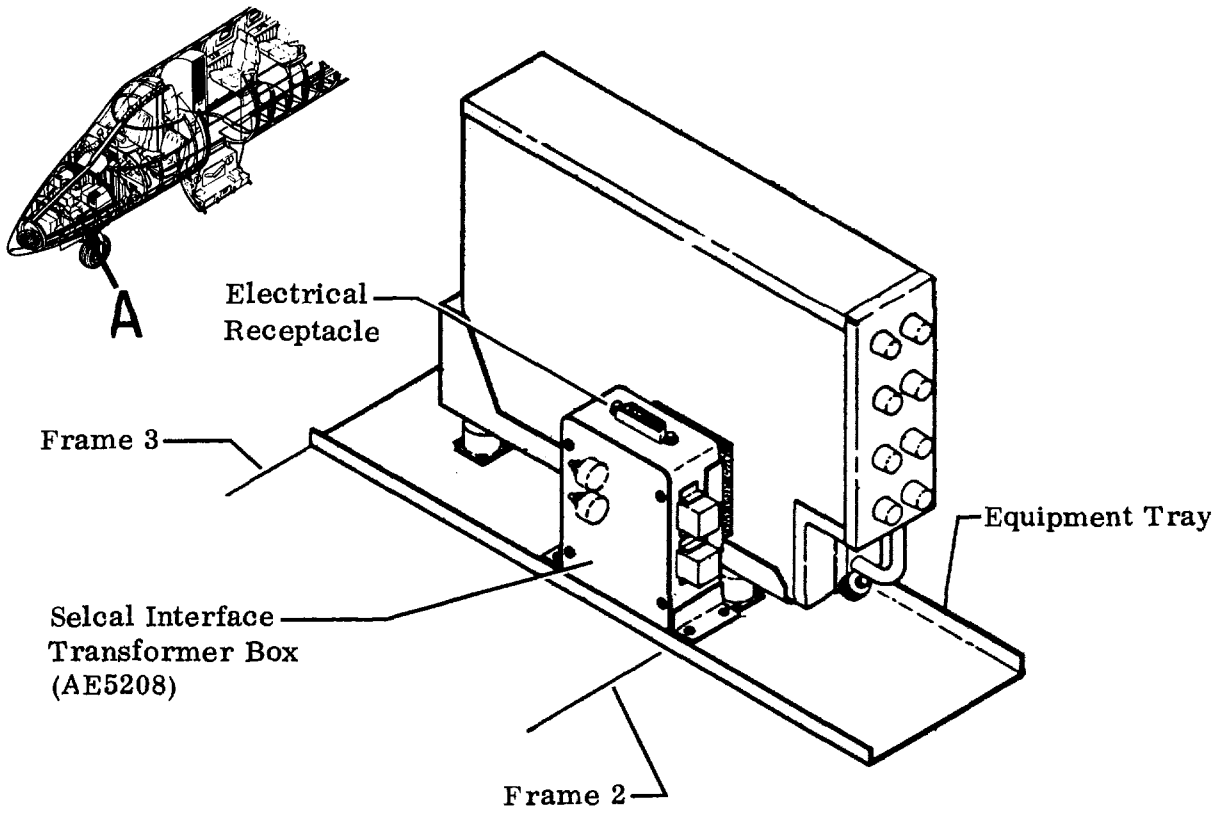
B. Install Selcal Interface Transformer (See figure 201.)

(1) Install Selcal interface transformer box on equipment tray and secure with attaching parts.

(2) Connect electrical connector to interface transformer box.

(3) Install LH nose compartment door.

(4) Restore electrical power to aircraft.



Detail A

Selcal Interface Installation (Typical)
Figure 201

PASSENGER ADDRESS AND ENTERTAINMENT - DESCRIPTION AND OPERATION

1. **Description**
   A. *Aircraft equipped with Avtech Audio Systems*
      (1) The passenger address and entertainment system consists of a cabin speaker and a tone generator. *On Aircraft equipped with stereo passenger address and entertainment system*, two tone generators are required.
   B. *Aircraft equipped with DB Audio Systems*
      (1) The passenger address and entertainment system consists of a cabin speaker and a passenger audio amplifier.
   C. Component Description (*Aircraft equipped with Avtech Audio Systems)*
      (1) The cabin speaker is located in the cabin upper center panel and is controlled by switches on the audio control panels.
      (2) The tone generator (E137) is installed between frames 16 and 19 and stringers 8L and 9L. *On Model 35 aircraft equipped with stereo passenger address and entertainment system*, a second tone generator (AE137) is installed aft of frame 19 between stringers 8 and 9. *On Model 36 aircraft equipped with stereo passenger address and entertainment system*, a second tone generator (AE137) is installed on the aft pressure bulkhead at RBL 12, WL 44.
   D. Component Description *(Aircraft equipped with DB Audio Systems)*
      (1) *Optional 35-589 thru 35-622 and 36-054 and Subsequent*, the passenger audio amplifier is located on the divan seat floor, forward of frame 17A at BL 0.0. *Optional 35-623 and Subsequent*, the passenger audio amplifier is located on the floor beneath the cockpit pedestal at frame 9.

2. **Operation**
   A. The PASS SPKR VOL control regulates the volume level of the ADF audio to the cabin speaker when the PASS ADF Switch is in the up position. The PASS SPKR VOL control also affects passenger speaker volume while addressing passengers when the Microphone Function Selector is in the PASS SPKR position. Refer to 23-50-00 for further information on switch functions.
   B. Additional passenger speaker audio is provided when the NO SMOKING FASTEN SEAT BELT - OFF - FASTEN SEAT BELT Switch is set to either the up or down position. In either position, a tone generator produces an audible, 800-cycle tone through the passenger speaker.

PASSENGER SPEAKER - MAINTENANCE PRACTICES

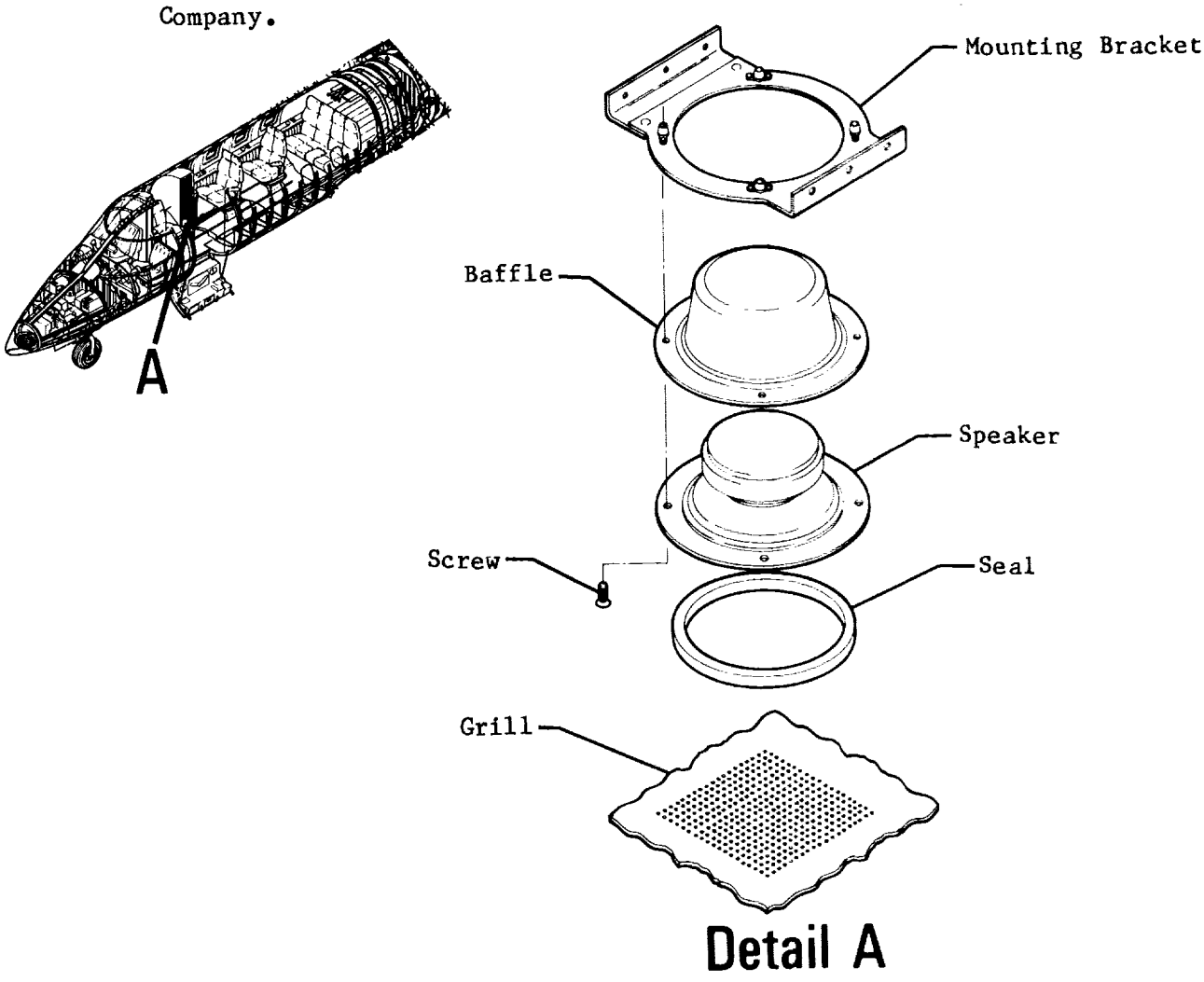
1. REMOVAL/INSTALLATION

A. Remove Passenger Speaker (See figure 201.)

(1) Carefully pry off speaker grill using extreme care not to damage grill or surrounding area.
(2) Remove screws which secure speaker to bracket.
(3) Lower speaker and disconnect wiring. Tag wiring.
(4) Remove speaker from aircraft.

B. Install Passenger Speaker (See figure 201.)

(1) Connect electrical wiring to speaker and install speaker in center panel.
(2) Secure speaker to structure with screws.
(3) Install speaker grill using Y9122 adhesive tape manufactured by the 3M Company.



Passenger Speaker Installation (Typical)
Figure 201

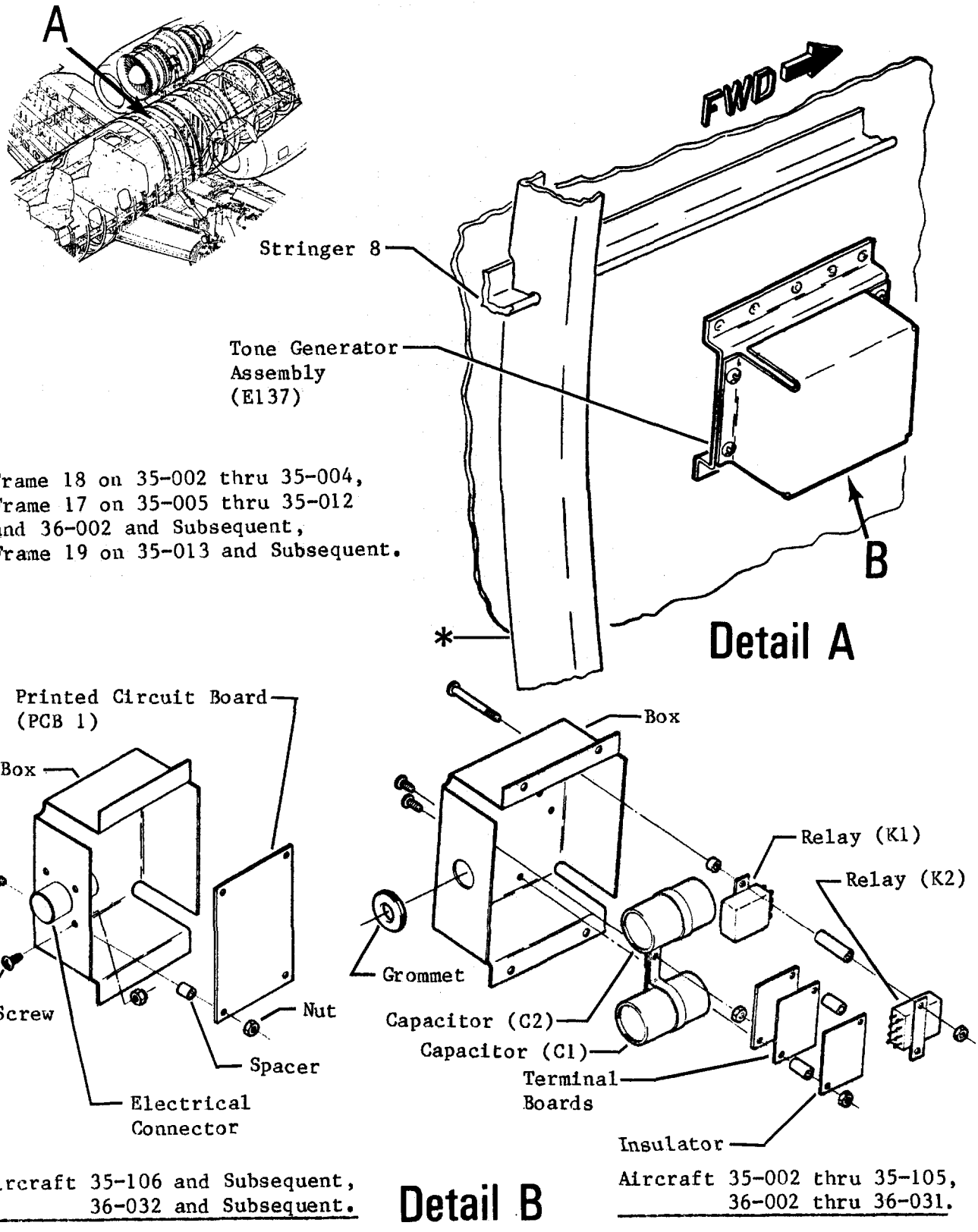
TONE GENERATOR - MAINTENANCE PRACTICES

1. **Removal/Installation**
   A. Removal of Tone Generator (See Figure 201.)

      NOTE: *On Aircraft 35-002 thru 35-004*, the tone generator is located between frames 17 and 18. On *Aircraft 35-005 thru 35-012 and 36-002 and Subsequent*, the tone generator is located between frames 16 and 17. *On Aircraft 35-013 and Subsequent*, the tone generator is located between frames 18 and 19. *On Model 35 aircraft equipped with stereo passenger address and entertainment system*, a second tone generator (AE137) is installed aft of frame 19 between stringers 8 and 9. *On Model 36 aircraft equipped with stereo passenger address and entertainment system*, a second tone generator (AE137) is installed on the aft pressure bulkhead at RBL12, WL44.

      (1) Set Battery Switch(es) off and disconnect aircraft batteries.
      (2) Remove upholstery as required to gain access to the tone generator.
      (3) *On Aircraft 35-002 thru 35-105 and 36-002 thru 36-031*, locate electrical wiring splices and cut wiring. Tag wiring. *On Aircraft 35-106 and Subsequent and 36-032 and Subsequent*, disconnect electrical connector from tone generator.
      (4) Remove attaching parts and tone generator from aircraft.

   B. Installation of Tone Generator (See Figure 201.)
      (1) Set tone generator on bracket and secure with attaching parts.
      (2) *On Aircraft 35-002 thru 35-105 and 36-002 thru 36-031*, splice aircraft wiring to tone generator wiring using splices of the same size and type as those which were originally installed. Refer to Chapter 20 in the Wiring Manual for splice sizes and installation instructions. *On Aircraft 35-106 and Subsequent and 36-032 and Subsequent*, connect electrical connector to tone generator.
      (3) Install previously removed upholstery.
      (4) Connect electrical connectors to aircraft batteries.



Tone Generator Installation
Figure 201

PASSENGER AUDIO AMPLIFIER - MAINTENANCE PRACTICES

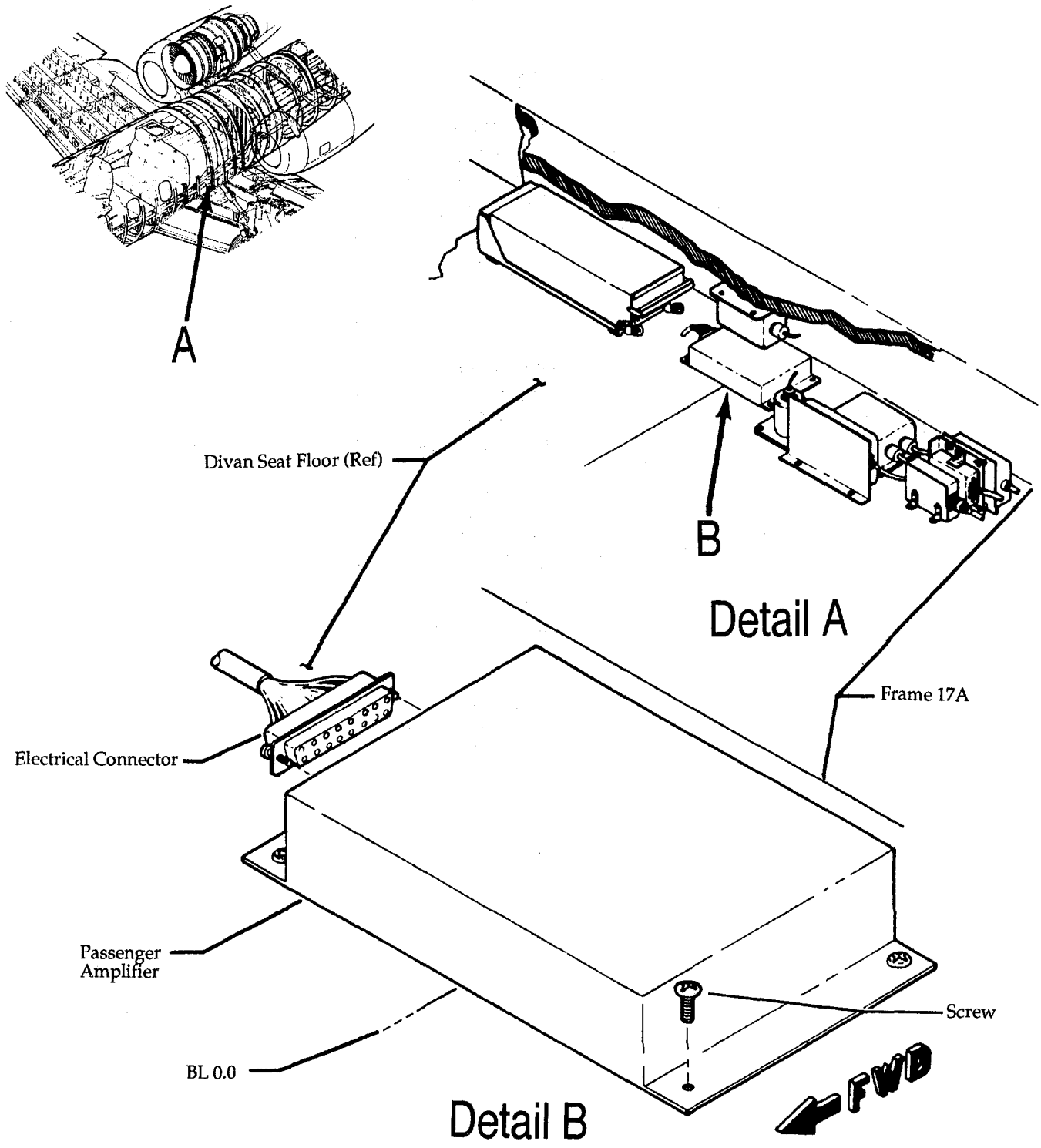
1. Removal/Installation

A. Removal of Passenger Audio Amplifier *(Optional 35-589 thru 35-622 and 36-054 and Subsequent)* (See Figure 201.)
   (1) Set Battery Switch(es) off and disconnect aircraft batteries.
   (2) Remove closeout below baggage floor overhang.
   (3) Disconnect electrical connectors from passenger audio amplifier.
   (4) Remove attaching parts and passenger audio amplifier from aircraft.

B. Installation of Passenger Audio Amplifier *(Optional 35-589 thru 35-622 and 36-054 and Subsequent)* (See Figure 201.)
   (1) Connect electrical connector to passenger audio amplifier.
   (2) Set amplifier on floor and secure with attaching parts. Check electrical resistance between amplifier and aircraft structure. Resistance shall not be greater than the value specified in Chapter 20 of the Wiring Manual.
   (3) Connect electrical connectors to aircraft batteries.
   (4) Perform Audio System Functional Test. (Refer to 23-50-00, Adjustment/Test.)
   (5) Install closeout below baggage floor overhang.

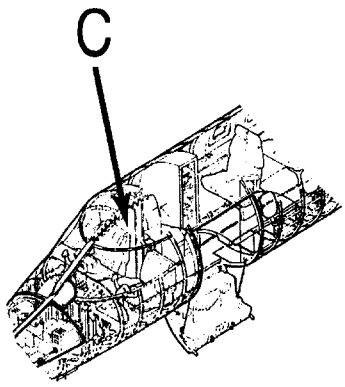
C. Removal of Passenger Audio Amplifier *(Optional 35-623 and Subsequent.)* (See Figure 201.)
   (1) Set Battery Switch(es) off and disconnect aircraft batteries.
   (2) Remove equipment from pedestal as necessary to gain access to passenger audio amplifier.
   (3) Disconnect electrical connector from passenger audio amplifier.
   (4) Remove attaching parts and amplifier from aircraft.

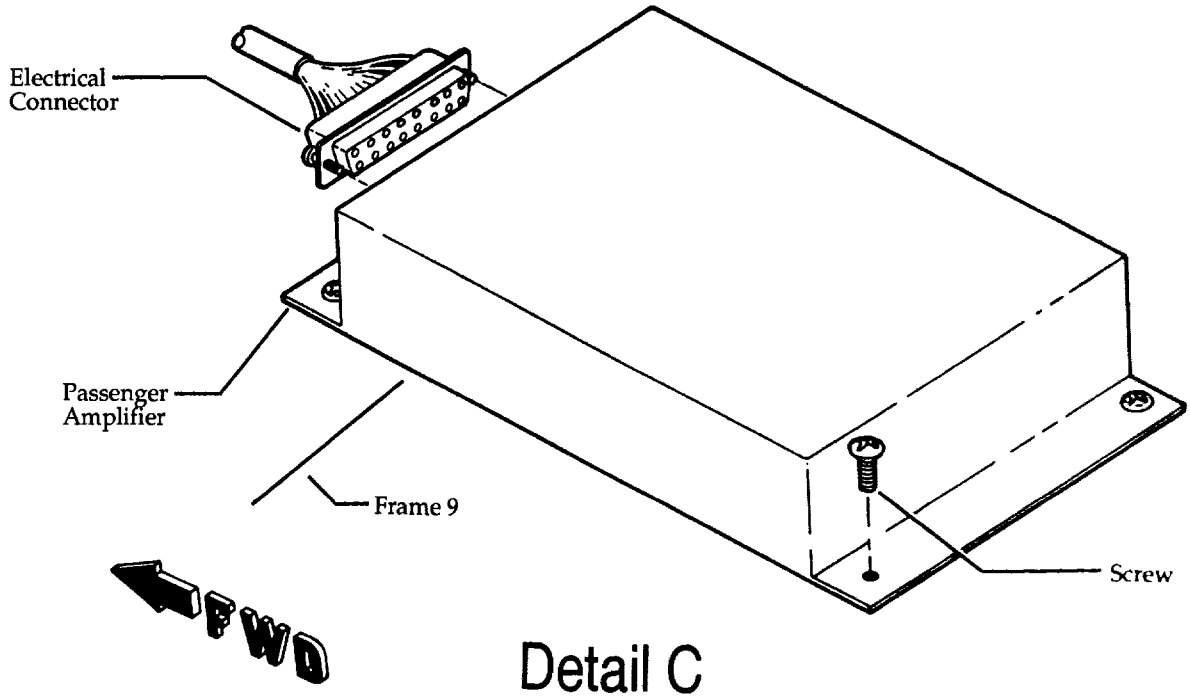
D. Installation of Passenger Audio Amplifier *(Optional 35-623 and Subsequent.)* (See Figure 201.)
   (1) Connect electrical connector to passenger audio amplifier.
   (2) Set amplifier on floor and secure with attaching parts. Check electrical resistance between amplifier and aircraft structure. Resistance shall not be greater than the value specified in Chapter 20 of the Wiring Manual.
   (3) Install previously removed equipment on pedestal.
   (4) Connect electrical connectors to aircraft batteries.
   (5) Perform Audio System Functional Test. (Refer to 23-50-00, Adjustment/Test.)



(Optional 35-589 thru 35-622 and 36-054 and Subsequent)

Passenger Audio Amplifier Installation
Figure 201 (Sheet 1 of 2)





Detail C

(Optional 35-623 and Subsequent)

Passenger Audio Amplifier Installation
Figure 201 (Sheet 2 of 2)

GROUND MAINTENANCE INTERPHONE SYSTEM - DESCRIPTION AND OPERATION

1. DESCRIPTION (See figure 1.)

A. The ground maintenance interphone system provides two-way communications for aircraft service personnel. This system is used to assist in the performance of maintenance efforts which require close verbal coordination when distance, noise, or location separate personnel.

B. The ground maintenance interphone system consists of the following: a STEREO/MAINT ICS circuit breaker; an audio amplifier; two PHONE and MIC jacks; and a PHONE and MIC jack box assembly.

C. Component Description

(1) A 7.5 amp STEREO/MAINT ICS circuit breaker is located on the copilot's circuit breaker panel and provides 28 vdc to the audio amplifier.

(2) An audio amplifier is located in the nose aft of frame 1 and has internal adjustments to set audio levels for each PHONE and MIC jack station.

(3) A PHONE and MIC jack set is located on the underside of the nose compartment just forward of the nose wheel well at LBL 2.5. The PHONE and MIC jacks, protected by spring-loaded covers, provide a headset interconnecting point at the forward end of the aircraft.

(4) Another PHONE and MIC jack set is located on the aft side of the aft pedestal. The PHONE and MIC jacks provide a headset interconnect point inside of the aircraft.

NOTE: On Aircraft 35-601 thru 35-603, the PHONE and MIC jacks are located on the LH side of the aft pedestal.

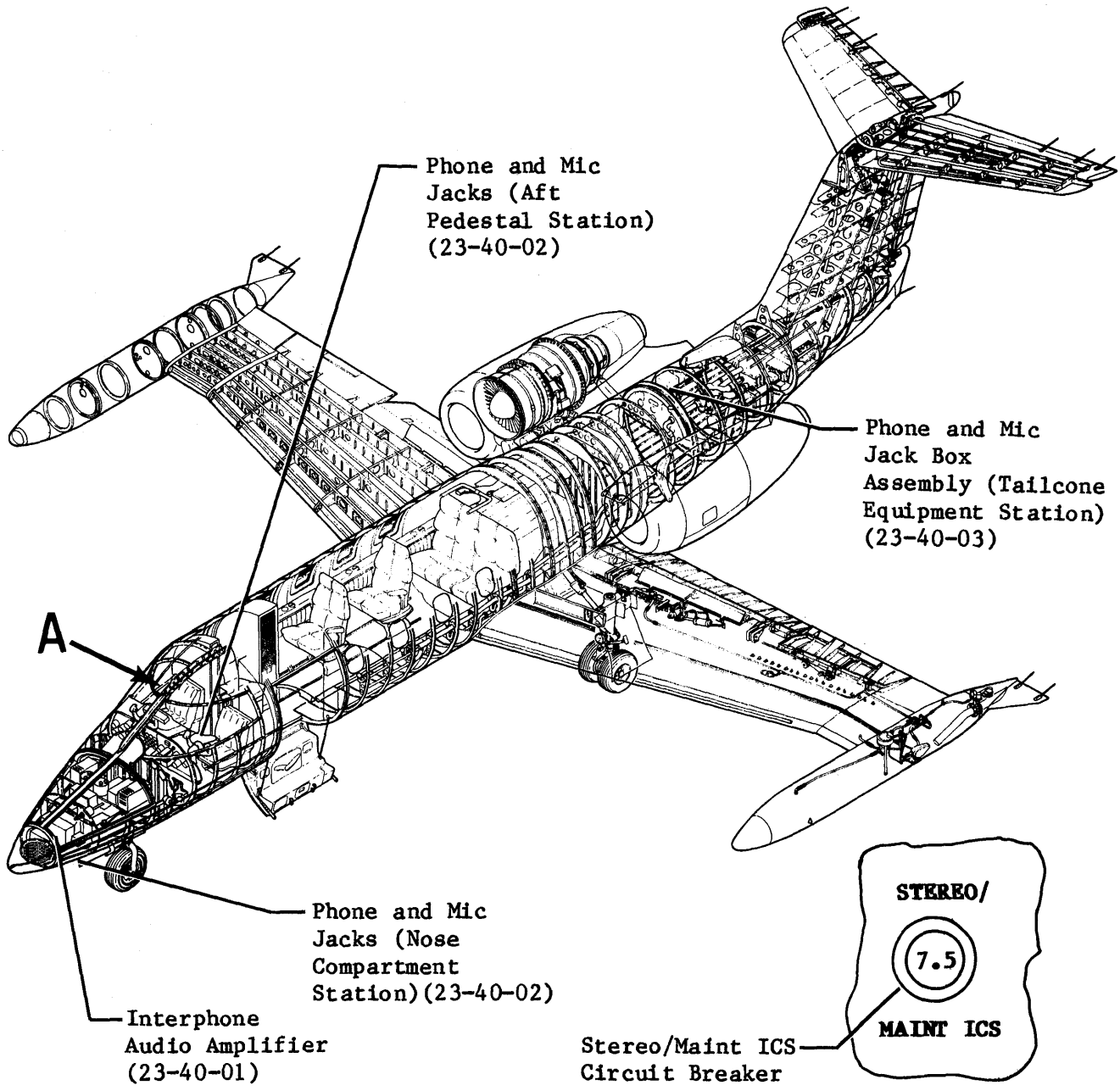
(5) A PHONE and MIC jack box assembly is located on the hydraulic reservoir support pan. The PHONE and MIC jack box assembly provides a headset interconnect point at the aft end of the aircraft.

2. OPERATION (See figure 2.)

A. By depressing the STEREO/MAINT ICS circuit breaker, 28 vdc is provided to power the audio amplifier.

B. Activate the interphone headset(s) by inserting the phone and microphone plugs into their respective PHONE and MIC jacks in the desired location (nose compartment, cockpit, or tailcone stations.) The spring-loaded jack covers over the nose PHONE and MIC jacks must be held open to allow insertion of the phone and mic plugs.

C. When the interphone system headset(s) is donned, two-way communication with another station, or between all three stations, is available.



(TYPICAL)

Ground Maintenance Interphone System Locator
Figure 1

EFFECTIVITY: **35-601 and Subsequent**
36-054, 36-056 and Subsequent

GROUND MAINTENANCE INTERPHONE SYSTEM - MAINTENANCE PRACTICES

1. ADJUSTMENT/TEST

A. Tools and Equipment

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Slot-Type Screwdriver		Commercially Available	Adjust audio level potentiometers

B. Functional Test of Ground Maintenance Interphone System

(1) Connect external power source to aircraft.
(2) Set Battery Switches to BAT 1 and BAT 2.
(3) Depress STEREO/MAINT ICS circuit breaker.
(4) Using aircraft's headsets, connect a headset at each interphone station.
(5) Verify that there exists an appropriate audio level.
(6) Should audio level require adjustment, perform the following:
  (a) Remove nose compartment access doors and equipment as necessary to gain access to audio amplifier.
  (b) Remove cover from audio amplifier.
  (c) Using a slot-type screwdriver, adjust potentiometer marked for appropriate interphone station:
    Adj #1 — controls cockpit headset audio level
    Adj #2 — controls tailcone headset audio level
    Adj #3 — controls nose headset audio level
  (d) Install cover on audio amplifier.
  (e) Install previously removed equipment, and nose compartment access doors.
  (f) Restore aircraft to normal.
(7) Verify that audio is clear and crisp without overriding background noise.
(8) Set Primary Inverter Switch and AC Bus Switch to PRI.
(9) Depress AC BUS TIE circuit breaker.
(10) Verify that AC inverter's 115 vac, 400 Hertz, single phase output does not create an obtrusive hum on headset audio.
(11) Pull AC BUS TIE circuit breaker.
(12) Set Primary Inverter Switch and AC BUS Switch to OFF.
(13) Pull STEREO/MAINT ICS circuit breaker.
(14) Verify that interphone system is off.
(15) Set Battery Switches to OFF.
(16) Disconnect external electrical power source from aircraft.
(17) Stow interphone system headsets.
(18) Restore aircraft to normal.

INTERPHONE AUDIO AMPLIFIER - MAINTENANCE PRACTICES

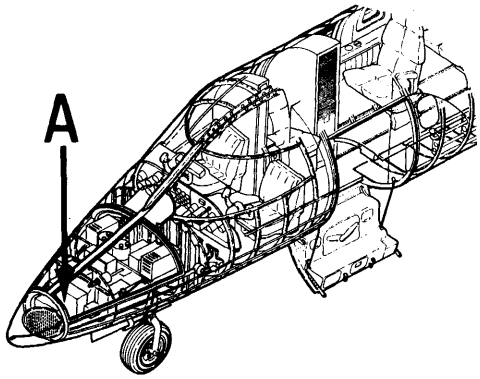
1. REMOVAL/INSTALLATION

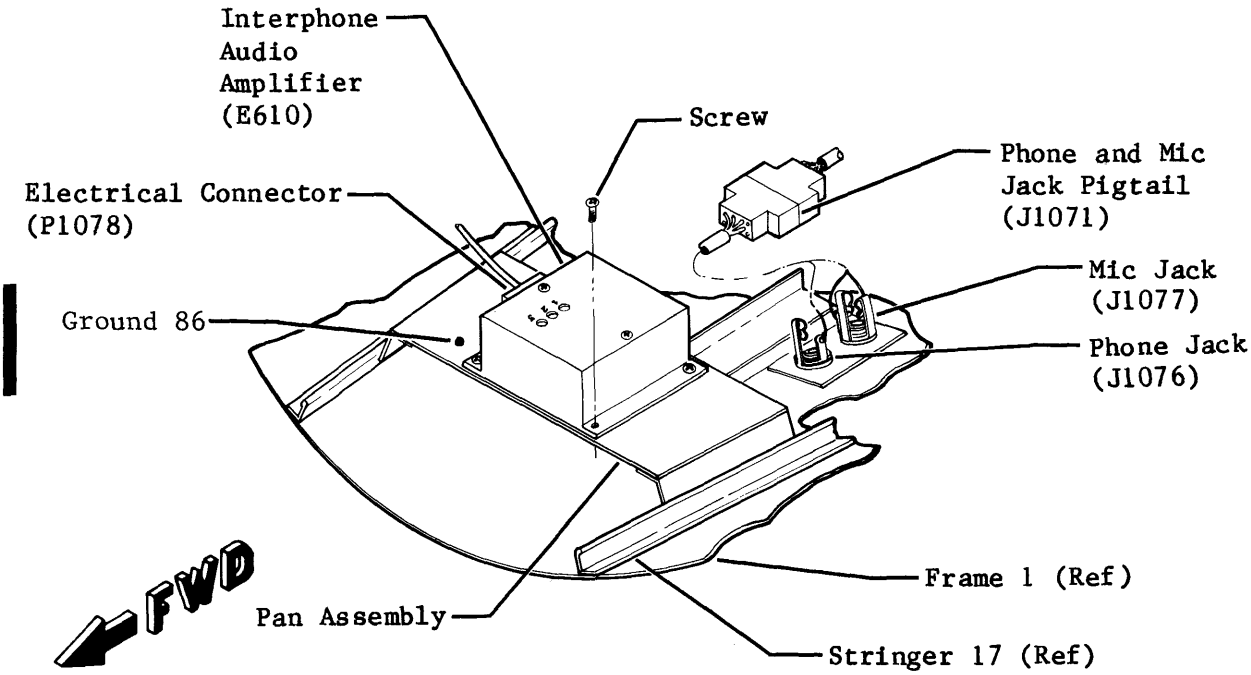
A. Remove Interphone Audio Amplifier (See figure 201.)

(1) Remove electrical power from aircraft.
(2) Remove nose compartment access doors and applicable equipment as necessary to gain access to interphone audio amplifier.
(3) Disconnect electrical connector from audio amplifier.
(4) Remove attaching parts securing audio amplifier and remove from aircraft.

B. Install Interphone Audio Amplifier (See figure 201.)

(1) Position interphone audio amplifier on pan assembly and secure with attaching parts.
(2) Connect electrical connector to audio amplifier.
(3) Restore electrical power to aircraft.
(4) Perform Functional Test of Ground Maintenance Interphone System. (Refer to 23-40-00.)
(5) Install previously removed equipment, nose compartment access doors.
(6) Restore aircraft to normal.





Detail A

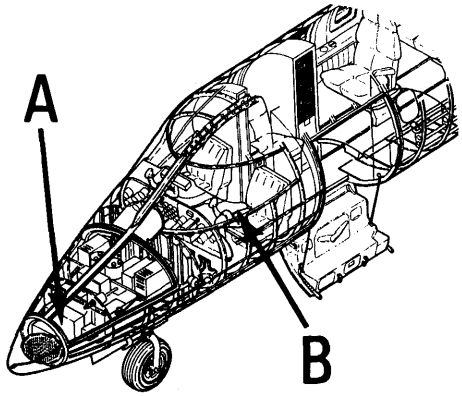
Interphone Audio Amplifier Installation
Figure 201

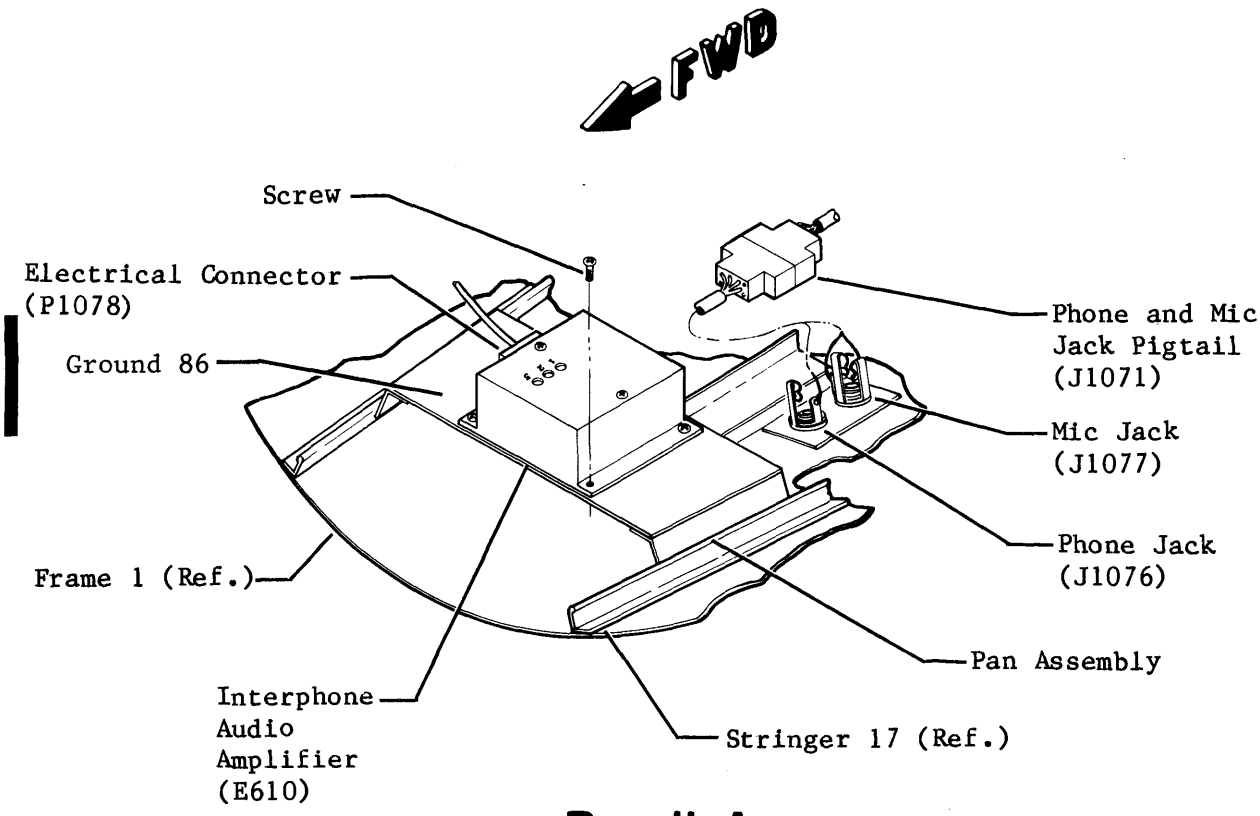
A10-51B-1

EFFECTIVITY: **35-601 and Subsequent**
36-054, 36-056 and Subsequent

INTERPHONE PHONE AND MIC JACK - MAINTENANCE PRACTICES

1. **REMOVAL/INSTALLATION**
   - **A. Remove Interphone Phone and Mic Jacks (Nose)** (See figure 201.)
     - (1) Remove electrical power from aircraft.
     - (2) Remove nose compartment access doors to gain access to PHONE and MIC jacks.
     - (3) Disconnect electrical connector from PHONE and MIC jack pigtail.
     - (4) Remove attaching parts securing individual PHONE and MIC jacks to aircraft skin and remove from aircraft.
   - **B. Install Interphone Phone and Mic Jacks (Nose)** (See figure 201.)
     - (1) Position individual PHONE and MIC jacks on aircraft inner skin and secure with attaching parts.
     - (2) Connect electrical connector to PHONE and MIC jack pigtail.
     - (3) Restore electrical power to aircraft.
     - (4) Perform Functional Test of Ground Maintenance Interphone System. (Refer to 23-40-00.)
     - (5) Install nose compartment access doors and restore aircraft to normal.
   - **C. Remove Interphone Phone and Mic Jacks (Aft Pedestal)** (See figure 201.)
     - (1) Remove electrical power from aircraft.
     - (2) Remove only that equipment necessary from aft pedestal to gain access to PHONE and MIC jacks.
     - (3) Disconnect electrical connector from PHONE and MIC jack pigtail.
     - (4) Remove attaching parts securing individual PHONE and MIC jacks to LH side of aft pedestal and remove from aircraft.
   - **D. Install Interphone Phone and Mic Jacks (Aft Pedestal)** (See figure 201.)
     - (1) Position individual PHONE and MIC jacks on aft pedestal and secure with attaching parts.
     - (2) Connect electrical connector to PHONE and MIC jack pigtail.
     - (3) Install previously removed equipment in aft pedestal.
     - (4) Restore aircraft to normal.
     - (5) Restore electrical power to aircraft.
     - (6) Perform Functional Test of Ground Maintenance Interphone System. (Refer to 23-40-00.)

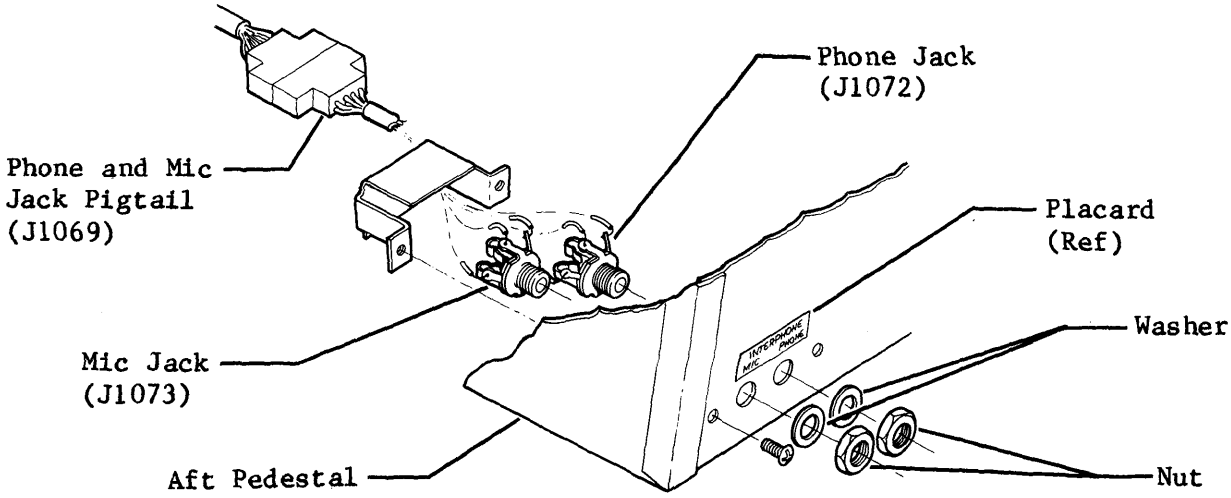




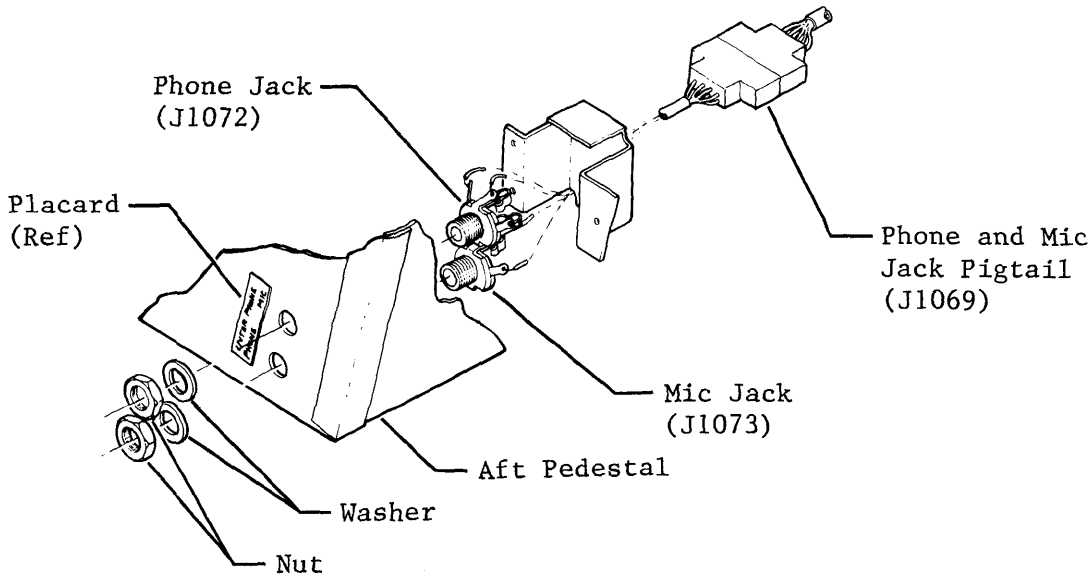
Detail A

Interphone Phone and Mic Jack Installation
Figure 201 (Sheet 1 of 2)

A10-51B-1



Aircraft 35-604 and Subsequent and 36-054, 36-056 and Subsequent



Aircraft 35-601 thru 35-603

Detail B

Interphone Phone and Mic Jack Installation
Figure 201 (Sheet 2 of 2)

B10-151A

EFFECTIVITY: 35-601 and Subsequent
36-054, 36-066 and Subsequent

INTERPHONE PHONE AND MIC JACK BOX ASSEMBLY - MAINTENANCE PRACTICES

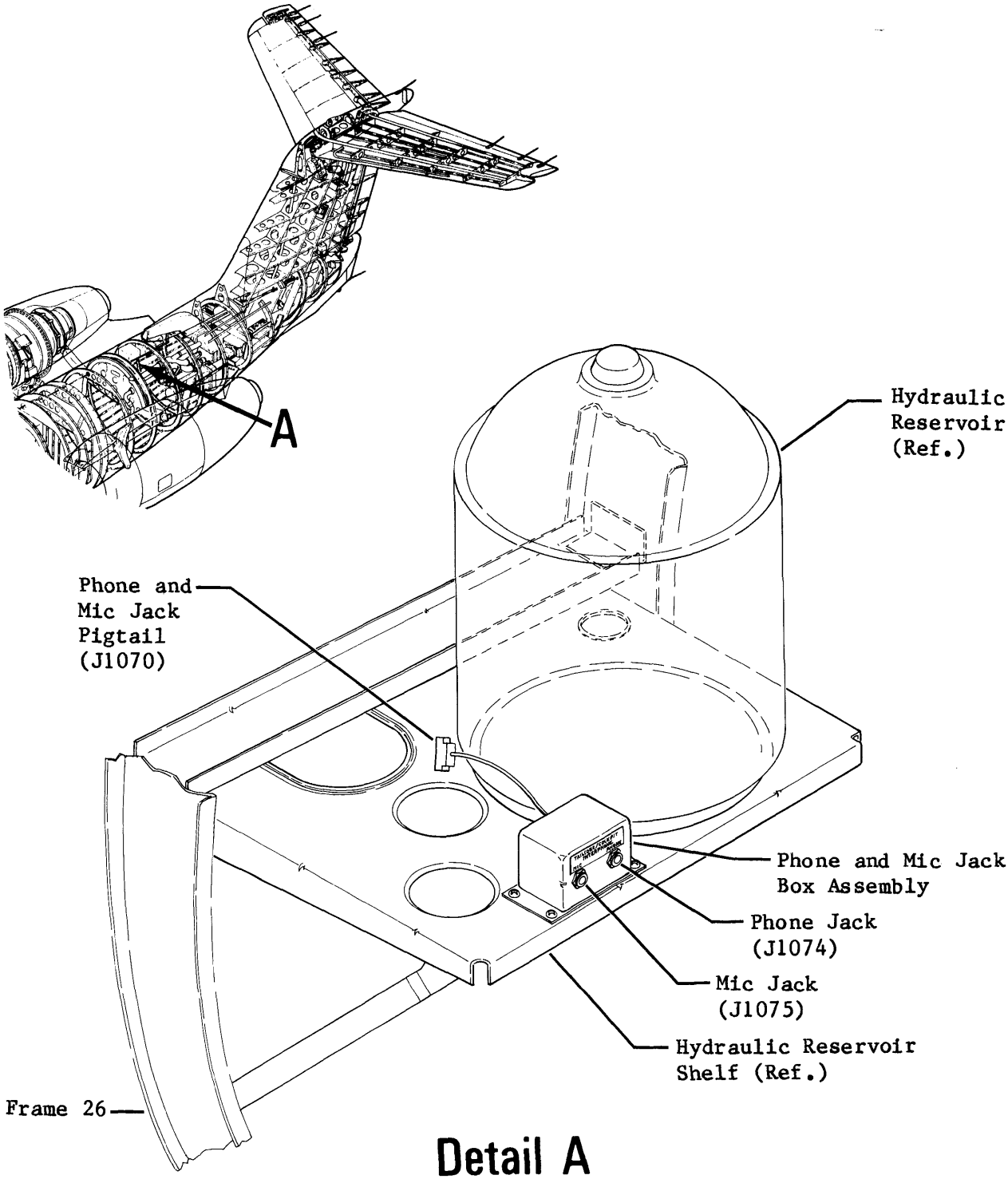
1. **REMOVAL/INSTALLATION**

   A. Remove Interphone Phone and Mic Jack Box Assembly (See figure 201.)

   (1) Remove electrical power from aircraft.
   (2) In tailcone, locate PHONE and MIC jack box assembly on hydraulic reservoir shelf.
   (3) Remove attaching parts securing PHONE and MIC jack box assembly to shelf.
   (4) Disconnect electrical connector from PHONE and MIC jack box assembly pigtail and remove box assembly from aircraft.

   B. Install Interphone Phone and Mic Jack Box Assembly

   (1) Connect electrical connector to PHONE and MIC jack box assembly pigtail.
   (2) Position PHONE and MIC jack box assembly on hydraulic reservoir shelf and secure with attaching parts.
   (3) Restore aircraft to normal.
   (4) Restore electrical power to aircraft.
   (5) Perform Functional Test of Ground Maintenance Interphone System. (Refer to 23-40-00.)



Detail A

Interphone Phone and Mic Jack Box Assembly Installation
Figure 201

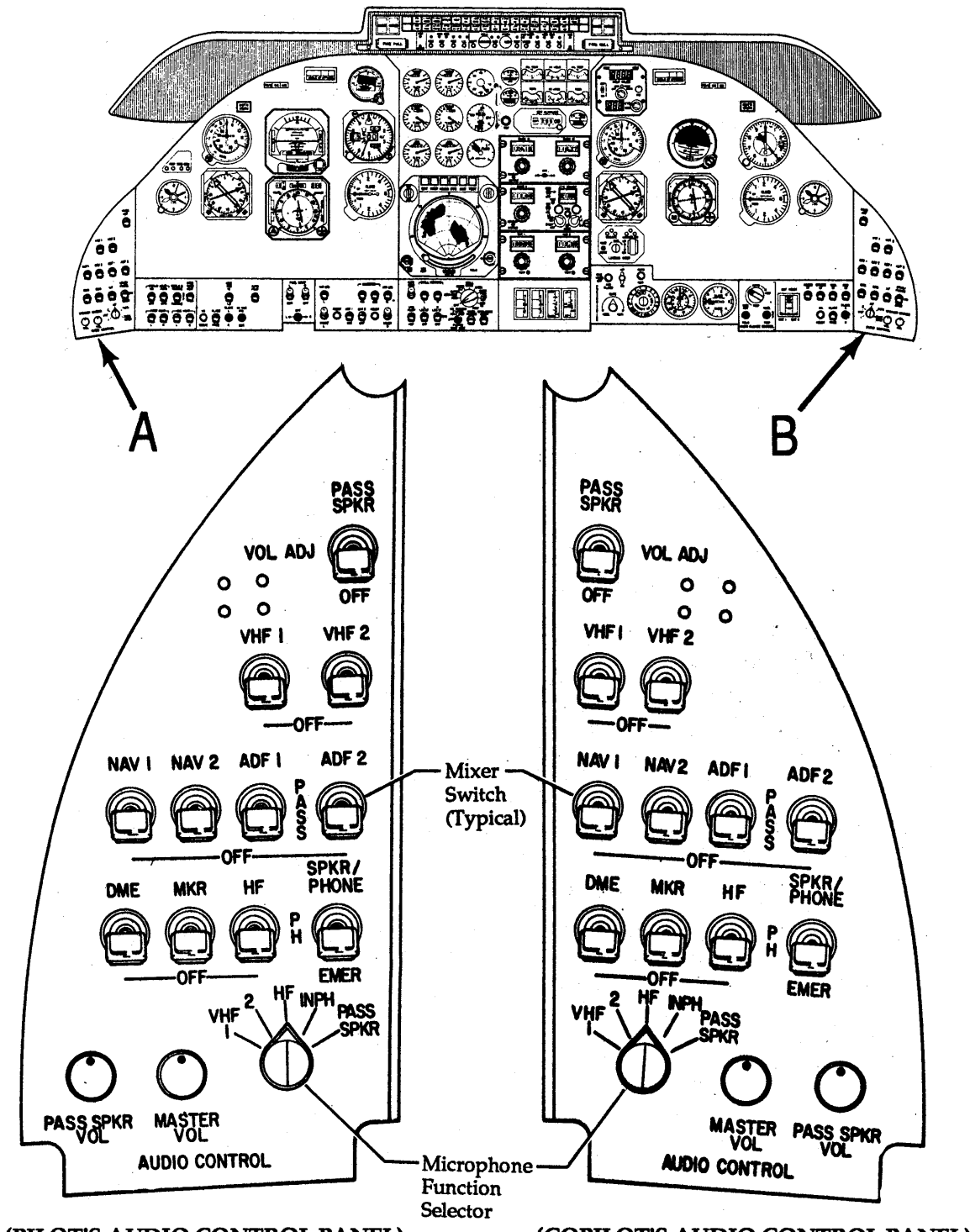
A14-184C

EFFECTIVITY: **35-601 and Subsequent**
36-054, 36-056 and Subsequent

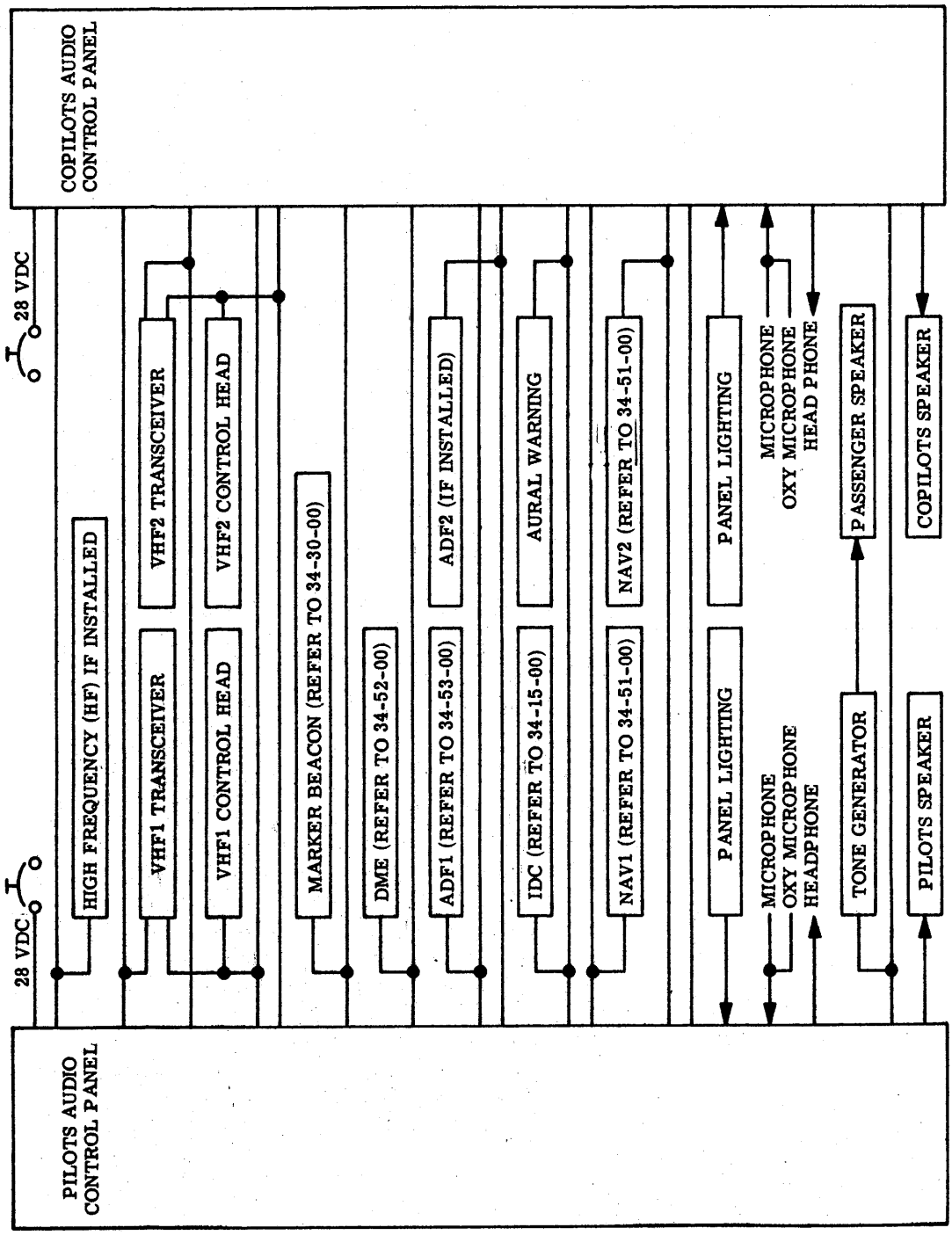
AUDIO INTEGRATING - DESCRIPTION AND OPERATION

1. **Description** (See figures 1 and 2.)
   A. The audio control system is an integral part of the communications and navigational audio systems. Two independent identical audio control panels are installed, one in the pilot's subpanel and one in the copilot's subpanel. Each audio control panel controls its respective cockpit speaker and headphone and both panels feed audio into the passenger speaker. The audio control system provides a means of controlling communications and/or navigation audio information being received or transmitted. The audio control system also controls communications within the aircraft.
   B. *On Aircraft with DB Audio System installed*, two remote audio control amplifiers are installed in the nose compartment. The audio amplifiers are controlled by the audio control panels.

2. **Operation**
   A. *On Aircraft with Avtech Audio System installed*, the audio control panel switches and their functions are as follows: (See figures 1 and 2.)
      (1) MASTER VOL regulates the volume of all audio input except for sidetone audio, the passenger speaker audio, aural warning signals, and the microphone or headphone audio when the SPKR/PHONE-PH-EMER Switch is set to EMER.
      (2) PASS SPKR VOL is used to adjust passenger ADF audio. Volume adjustment is made with the PASS SPKR-VOL ADJ-OFF Switch set to VOL ADJ. Once the desired volume is obtained through the cockpit speaker, the PASS SPKR-VOL ADJ-OFF Switch is set to PASS SPKR to transfer ADF audio to the passenger speaker.
      (3) SPKR/PHONE-PH-EMER Switch controls audio to the cockpit speaker and headphones. With the switch set to SPKR/PHONE, audio is directed to both the cockpit speaker and headphones. When the switch is set to PH, audio is directed to the headphones only. Setting the switch to EMER feeds audio directly into the headphones only, bypassing all amplifiers.
      (4) Microphone Function Selector is a five-position rotary switch labeled VHF1, VHF2, HF, INPH, and PASS SPKR. The switch provides the proper push-to-talk and microphone audio inputs for the five functions. When the switch is set to either VHF1, VHF2, or HF, microphone audio and push-to-talk capabilities are provided for the respective transceivers. Setting the switch to INPH provides audio to the opposite cockpit speaker and headphones except when the opposite audio control panel Microphone Function Selector is set to PASS SPKR. In this case, the audio is fed into the opposite headphone only. Setting the switch to PASS SPKR enables the respective crew member to speak to the passengers through the passenger speaker. If ADF audio is being received on the passenger speakers, it will be automatically disconnected when the switch is set to PASS SPKR. When the passenger speaker is in use, aural warning audio is automatically transferred to the cockpit speaker and is not transmitted to the passengers.
      (5) Nine Mixer Switches are located on the audio control panel and are labeled to perform the following functions:
         (a) VHF1 and VHF2, when set to the up position, provide audio from the VHF1 and VHF2 transceiver respectively.
         (b) ADF1 and ADF2 are three-position switches. The PASS position provides passenger speaker audio when the PASS SPKR-VOL ADJ-OFF Switch is set to PASS SPKR. Setting the switches to the up position provides cockpit speaker and headphone audio and omits the passenger speaker audio.
         (c) NAV1 and NAV2, when set to the up position, provide audio from the NAV1 and NAV2 receivers respectively.
         (d) DME, when set to the up position, provides audio identification signals from the DME receiver.
         (e) MKR, when set to the up position, provides marker audio from the marker beacon receiver.
         (f) HF, when set to the up position, provides audio from the HF transceiver.



Audio Control Panel
Figure 1



Audio Integrating System Block Diagram
Figure 2

(6) PASS SPKR-VOL ADJ-OFF is a three-position switch and is used only when the ADF Switch is set to PASS; otherwise it is set to OFF. When set to VOL ADJ, ADF audio is heard in the cockpit speaker for the purpose of tuning and volume adjustment. With the switch set to VOL ADJ, any other mixer audio to the cockpit speaker is muted. Setting the switch to PASS SPKR transfers ADF audio from the cockpit speaker to the passenger speaker. The PASS SPKR switch setting also mutes any other mixer audio in the cockpit speaker and transfers it to the headphones.

B. *On Aircraft with DB Audio System installed*, the audio control panel switches and their functions are as follows: (See figures 3 and 4.)

(1) MASTER VOLUME CONTROL regulates the volume of all audio input except for sidetone audio, marker audio, the passenger speaker audio, and aural warning signals.

(2) Microphone Function Selector is a five-position rotary switch labeled VHF1, VHF2, HF, INPH, and PASS SPKR. The switch provides the proper push-to-talk and microphone audio inputs for the five functions. When the switch is set to either VHF1, VHF2, or HF, microphone audio and push-to-talk capabilities are provided for the respective transceivers. Setting the switch to INPH provides audio to the opposite cockpit speaker and headphones except when the opposite audio control panel Microphone Function Selector is set to PASS SPKR. In this case, the audio is fed into the opposite headphone only. Setting the switch to PASS SPKR enables the respective crew member to speak to the passengers through the passenger speaker. If ADF audio is being received on the passenger speakers, it will be automatically disconnected when the switch is set to PASS SPKR. When the passenger speaker is in use, aural warning audio is automatically transferred to the cockpit speaker and is not transmitted to the passengers.

(3) MKR1 VOLUME CONTROL regulates the volume of audio received from the marker beacons. Must be used in conjunction with NAV TEST switch.

(4) MKR1 HI and LO, set to HI position for normal operation and set to LO to reduce the sensitivity of the marker beacon reception.

(5) DME1 and DME2, when set to the up position, provides audio identification signals from the DME receivers.

(6) MKR1 and MKR2, when set to the up position, provides marker audio from the marker beacon receivers.

(7) NAV1 and NAV2, when set to the up position, provides audio from the NAV1 and NAV2 receivers respectively.

(8) ADF1 and ADF2, when set to the up position, provides audio from the ADF1 and ADF2 receivers respectively.

(9) IDENT-BOTH-VOICE, when set to IDENT, filters out voice reception but permits identification signal to be received. When set to VOICE, filters out the morse identification but permits voice reception. When the switch is set to the BOTH position, filtering will be off and both the station identifier and voice transmission will be heard. The BOTH position is the normal position.

(10) VHF1 and VHF2, when in up position, provide audio from the VHF1 and VHF2 transceivers respectively.

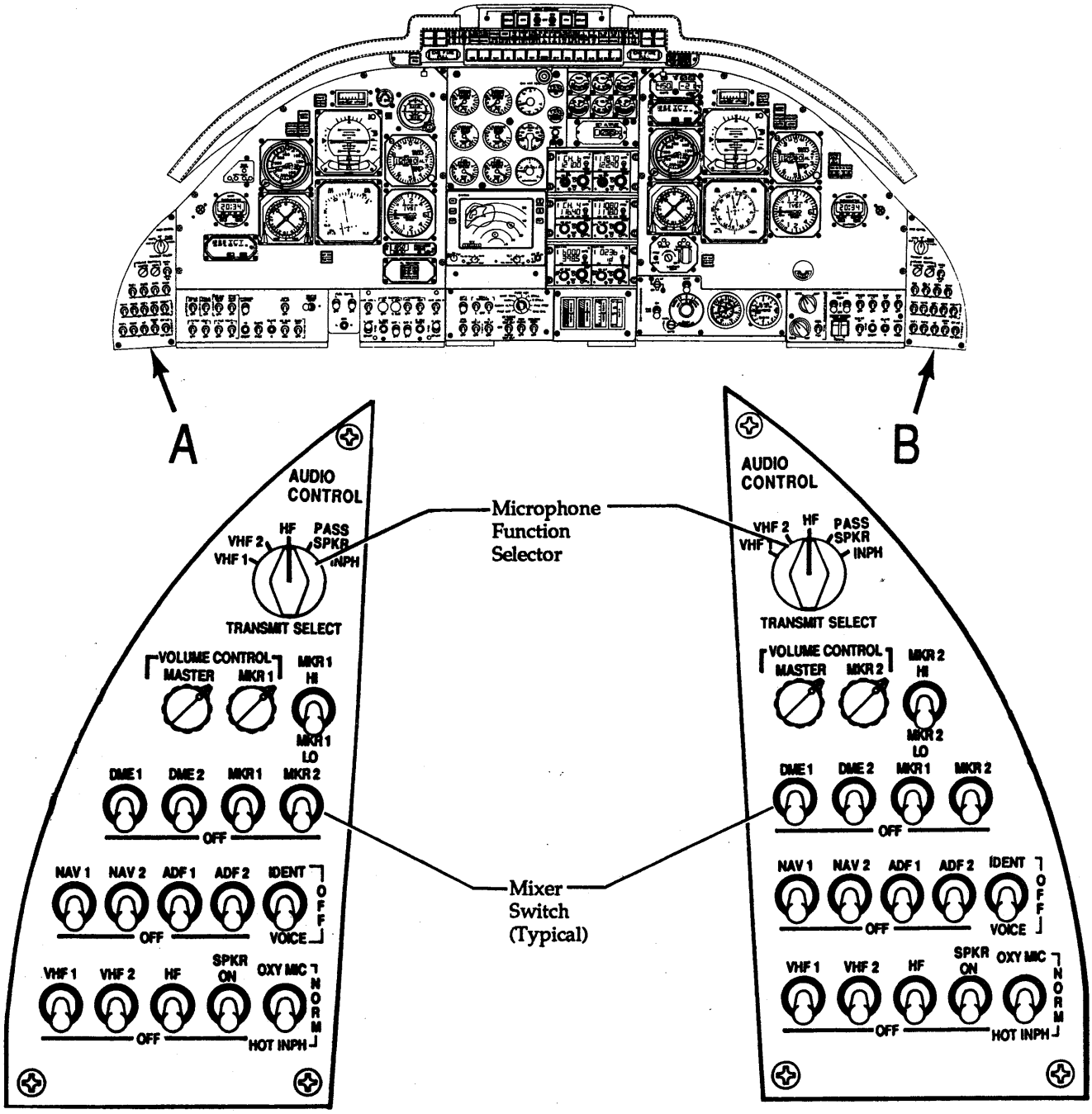
(11) HF, when set to the up position, provides audio from the HF transceiver.

(12) SPKR ON, provides controls for cockpit speaker.

(13) OXY-MIC-NORM-HOT INPH transmit selector switch is a three position switch. In OXY MIC position, communications are via the oxygen mask microphone. In HOT INPH position transmission is via the interphone to the opposite crew member. NORM is the standard position during flight.

B. Provisions have been made for adjustment of aural warning volume, speaker sidetone level, headphone sidetone level, and interphone sidetone level. (Refer to 23-50-00, Adjustment/Test.)

C. Audio control panel lighting is accomplished by an electroluminescent overlay.



(PILOT'S AUDIO CONTROL PANEL)

Detail A

(COPILOT'S AUDIO CONTROL PANEL)

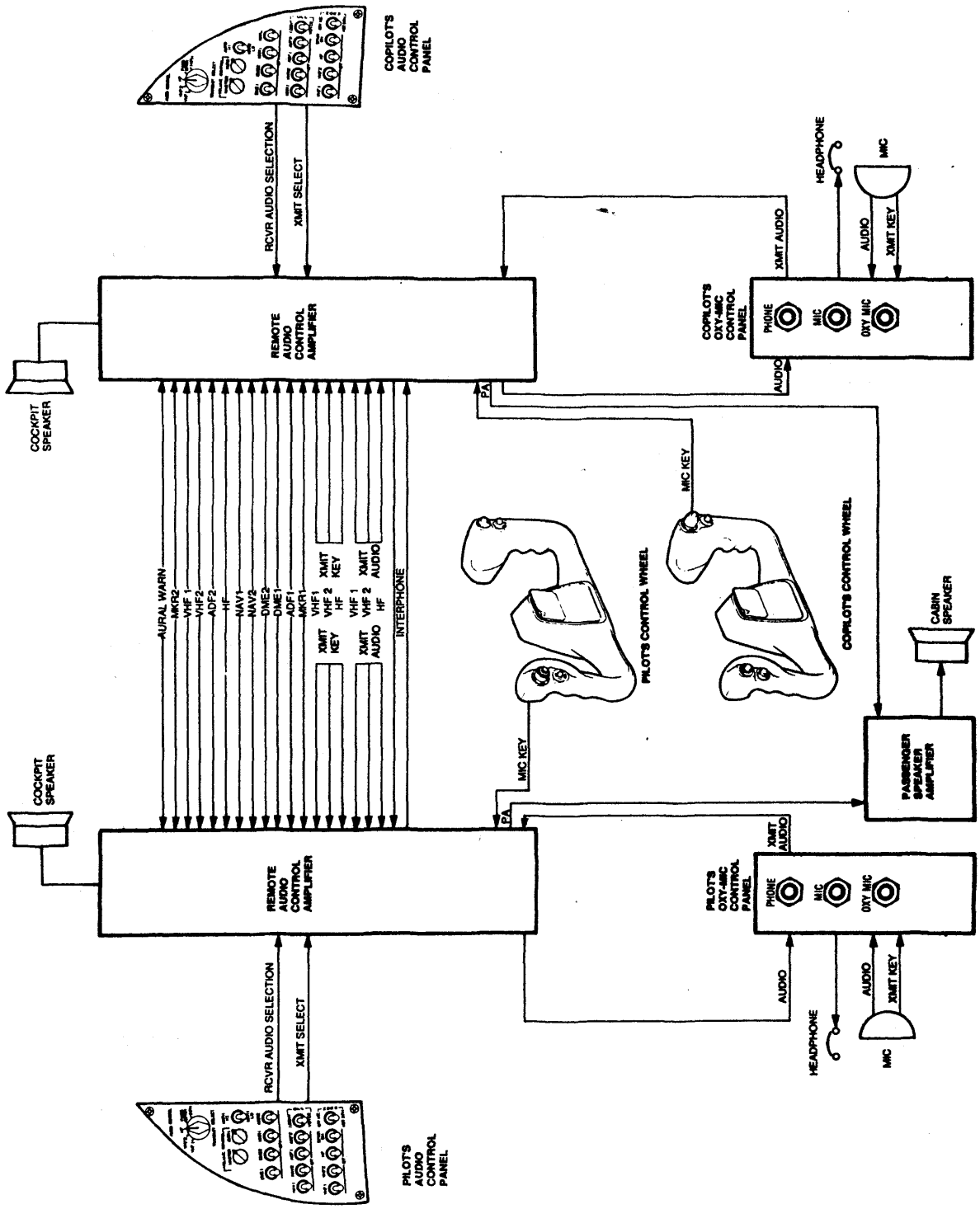
Detail B

16-97B

Audio Control Panel
Figure 3

EFFECTIVITY: AIRCRAFT EQUIPPED WITH DB AUDIO SYSTEM

MM-99



20-26C

Audio Integrating System Block Diagram
Figure 4

1. Inspection/Check

A. Operational Check of Audio Control Panel (Avtech Audio System)

(1) Apply electrical power to aircraft.

(2) Depress all circuit breakers for all equipment supplying information to, or controlled by, the audio control panels.

(3) Set up Ramp Test equipment required to operate systems supplying audio information into audio control.

(4) Set all Mixer Switches to OFF. Rotate MASTER VOL to an arbitrary setting at the 12 o'clock position. Set SPKR/PHONE-PH-EMER Switch to SPKR/PH. Rotate Microphone Function Selector to VHF. Set PASS-ADF Switch to OFF. Plug pilot and copilot microphones and headphones into normal jacks.

(5) Set all Mixer Switches on pilot's audio control panel to up position. Adjust audio gain control settings to a comfortable level on systems control panels of VHF1, VHF2, NAV1, NAV2, ADF1, ADF2, DME, MKR, and HF (as applicable). Audio shall be heard in pilot's cockpit speaker and headphones. No audio shall be heard in copilot's speaker or headphones.

(6) Set pilot's SPKR/PHONE-PH-EMER Switch to PH. Repeat adjustments in step (5). Audio shall be heard in pilot's headphones. No audio shall be heard in pilot's speaker or copilot's speaker or headphones.

(7) Set pilot's SPKR/PHONE-PH-EMER Switch to EMER. Repeat adjustments in step (5). Audio shall be heard in pilot's headphones.

NOTE: MASTER VOL and PASS SPKR VOL controls have no effect when SPKR/PHONE-PH-EMER Switch is set to EMER.

(8) Repeat steps (5) through (7), substituting copilot for pilot and vice versa where applicable.

(9) Set all audio control panel Mixer Switches to OFF.

(10) Set SPKR/PHONE-PH-EMER Switches to SPKR/PHONE. Rotate Microphone Function Selector Switches to VHF1. Set VHF1 Mixer Switches to up position.

(11) Key and talk into pilot's microphone. VHF sidetone shall be heard in copilot's cockpit speaker and headphones and in pilot's headphones.

(12) Plug microphone into OXY MIC jack. Repeat steps (10) and (11).

(13) Plug microphone into control column microphone jack, if applicable. Repeat steps (10) and (11).

NOTE: Microphone must be unplugged from normal microphone jack to make control column jack operational.

(14) Repeat steps (10) and (11), substituting VHF2 for VHF1 where applicable.

(15) Repeat steps (10) and (11), substituting HF for VHF1 where applicable.

(16) Set all Mixer Switches on pilot's audio control panel to OFF.

(17) Repeat steps (10) through (13), substituting copilot for pilot and vice versa where applicable.

(18) Rotate pilot's and copilot's Microphone Function Selector to INPH. Ensure that microphones are plugged into normal jacks. Key and talk into pilot's microphone. Audio shall be heard in pilot's and copilot's headphones and in copilot's speaker.

(19) Rotate copilot's Microphone Function Selector to VHF1. Key and talk into pilot's microphone. Audio shall be heard in pilot's and copilot's headphones and copilot's cockpit speaker.

(20) Repeat step (19), substituting VHF2 for VHF1.

(21) Repeat step (19), substituting HF for VHF1.

(22) Repeat step (19), substituting PASS SPKR for VHF1. No audio shall be heard in the passenger speaker.

(23) Repeat steps (18) through (22), substituting pilot for copilot and vice versa as applicable.
(24) Rotate copilot's Microphone Function Selector to VHF1. Rotate pilot's Microphone Function Selector to PASS SPKR. Key and talk into pilot's microphone. Audio shall be heard only in the passenger speaker.
(25) Set all Mixer Switches to OFF.
(26) Rotate pilot's and copilot's Microphone Function Selector to VHF1.
(27) Set pilot's ADF1 Mixer Switch to center position. Set pilot's PASS SPKR-VOL ADJ-OFF Switch to VOL ADJ. ADF1 audio shall be heard in the pilot's speaker. ADF1 volume shall be controlled by the PASS SPKR VOL control.
(28) Set any pilot Mixer Switch on, leaving ADF1 in the center position. Mixer audio shall be heard in pilot's headphones and speaker. Headphone and speaker volume for mixer audio shall be controlled by MASTER VOL control.
(29) Set pilot's ADF1-PASS-OFF Switch to full up position. ADF1 audio shall be heard in the passenger speaker. ADF1 audio volume shall be controlled by PASS SPKR VOL control. Pilot mixer audio shall be heard in pilot's headphones and cockpit speaker. Pilot mixer audio shall be controlled by MASTER VOL control.
(30) Ensure pilot's Microphone Function Selector is in VHF1 position. Set copilot's VHF1 Mixer Switch on. Key and talk into pilot's microphone. VHF1 sidetone shall be heard in pilot's headphones and in copilot's speaker and headphones. ADF1 audio shall be heard in the passenger speaker.
(31) Repeat step (30), substituting VHF2 for VHF1.
(32) Repeat step (30), substituting HF (if installed), for VHF1.
(33) Repeat step (30), substituting INPH for VHF1.
(34) Repeat step (30), substituting PASS SPKR for VHF1. ADF1 audio shall not be heard in passenger speaker. Key and talk into pilot's microphone. Microphone audio shall be heard only in passenger speaker.
(35) Set pilot's ADF1 Mixer Switch to the full up position. ADF1 audio shall be heard in pilot's headphones and cockpit speaker. ADF1 audio volume shall be controlled by MASTER VOL control.
(36) Set pilot's ADF1-PASS-OFF Mixer Switch to OFF. ADF1 audio shall be heard in pilot's headphones and speaker. ADF1 audio shall be controlled by MASTER VOL control.
(37) Repeat steps (25) through (36), substituting copilot for pilot and vice versa as applicable.
(38) Rotate pilot's and copilot's Microphone Function Selectors to PASS SPKR. In the following steps, verify that during the Functional Tests, an audible warning signal is not produced in the passenger speaker.

NOTE:
- The position of the Microphone Function Selectors shall not affect the expected results in the following steps.
- Functional Tests referred to in this step means:
  (a) Select each of the following positions on the rotary test switch located on the pilot's instrument panel and press-to-test — CABIN ALT, MACH, and MACH TRIM.
  (b) With the flaps in the up position, activation of the secondary pitch trim system will produce a clicker-type aural tone.

(39) Pull pilot's AUDIO PRI and copilot's AUDIO SEC circuit breakers.
(40) Set SPKR/PHONE-PH-EMER Switches to EMER.
(41) Perform Functional Tests in step (38). Verify that in each test the aural warning will be heard in pilot's and copilot's headphones.
(42) Depress copilot's AUDIO SEC circuit breaker.
(43) Set both SPKR/PHONE-PH-EMER Switches to SPKR/PHONE.
(44) Perform Functional Tests in step (38). Verify that in each test the aural warning will be heard in copilot's headphones and cockpit speaker.

(45) Set both SPKR/PHONE-PH-EMER Switches to PH.
(46) Perform Functional Tests in step (38). Verify that in each test the aural warning will be heard in copilot's headphones and cockpit speaker.
(47) Pull copilot's AUDIO SEC circuit breaker. Depress pilot's AUDIO PRI circuit breaker.
(48) Set both SPKR/PHONE-PH-EMER Switches to SPKR/PHONE.
(49) Perform Functional Tests in step (38). Verify that in each test the aural warning will be heard in pilot's headphones and cockpit speaker.
(50) Set both SPKR/PHONE-PH-EMER Switches to PH.
(51) Perform Functional Tests in step (38). Verify that in each test the aural warning will be heard in pilot's headphones and cockpit speaker.
(52) Check that edge lighting of panels is clearly visible under subdued light conditions.
(53) Remove electrical power from aircraft.

B. Operational Check of Audio Control Panel (DB Audio System)
(1) Apply external electrical power to aircraft.
(2) Turn on all avionics associated with audio control panel. Set volume control on each avionic system control panel to full clockwise. Tune receivers to active audio channel where applicable.
(3) Set Speaker Switch to ON position.
(4) With all Audio Input Selector switches initially off, individually turn on each switch and monitor audio from applicable radio. Verify that audio is clear and intelligible. Listen for any unacceptable interference from other radios or from aircraft AC power system checking for any receiver bleed-thru when off.
(5) Monitor each channel individually while listening to speaker and then headphones. Verify Master Volume Control functions properly.
(6) Repeat steps (4) and (5) with Speaker Switch to OFF position. Verify there is no speaker audio output.
(7) Pull L. AUD circuit breaker and verify that system automatically goes to emergency mode. Depress circuit breaker.
(8) Pull R. AUD circuit breaker and verify that system automatically goes to emergency mode. Depress circuit breaker.
(9) Set Oxygen Microphone Switch to NORM.
(10) Rotate Transmit Select Switch to each radio position and contact a station. Verify proper operation.
(11) Rotate Transmit Select Switch to INPH position. Verify intelligible communications with pilot and copilot positions.
(12) Rotate Transmit Select Switch to PASS SPKR. Verify clear audio in cabin speakers.

NOTE: Passenger speakers will only work when mic is keyed.

(13) Set Oxygen Microphone Switch to HOT INPH.
(14) Rotate Transmit Select Switch to any position other than INPH. Verify intelligible communications between pilot and copilot without using PTT switch.
(15) Depress microphone switch on control wheel. Verify HOT INPH function disables and enables normal radio operation

NOTE: HOT INPH will not work with the hand microphone.

(16) Position Oxygen Microphone Switch to OXY MIC.
(17) Rotate Transmit Select Switch to any position other than INPH. Verify intelligible communications between pilot and copilot using the oxygen mask microphone.
(18) Depress microphone switch on the control wheel. Verify HOT INPH function disables and enables normal radio operation.

(19) Rotate NAV TEST switch on NAV 1 control to obtain MKR audio. Verify that MKR volume control works properly.
(20) Repeat step (19) using NAV 2 control if installed.

2. **Adjustment/Test**
   A. Adjustment (Avtech Audio System)
      (1) Sidetone levels and aural warning signal levels are adjusted by inserting a small screwdriver into applicable holes on the front of both audio control panels. (See figure 201.) Adjustment using VHF1 sidetone will simultaneously adjust sidetone for VHF2, HF, and INPH.
      (3) A headphone level adjustment is located on the top edge of the audio panel. This adjustment balances the audio levels of the headphones and cockpit speakers, with the MASTER-VOL control remaining at the same position, and does not apply to sidetone or aural warning. To gain access to the headphone adjustment screw, loosen attaching parts and pull audio control panel partially out of instrument panel.

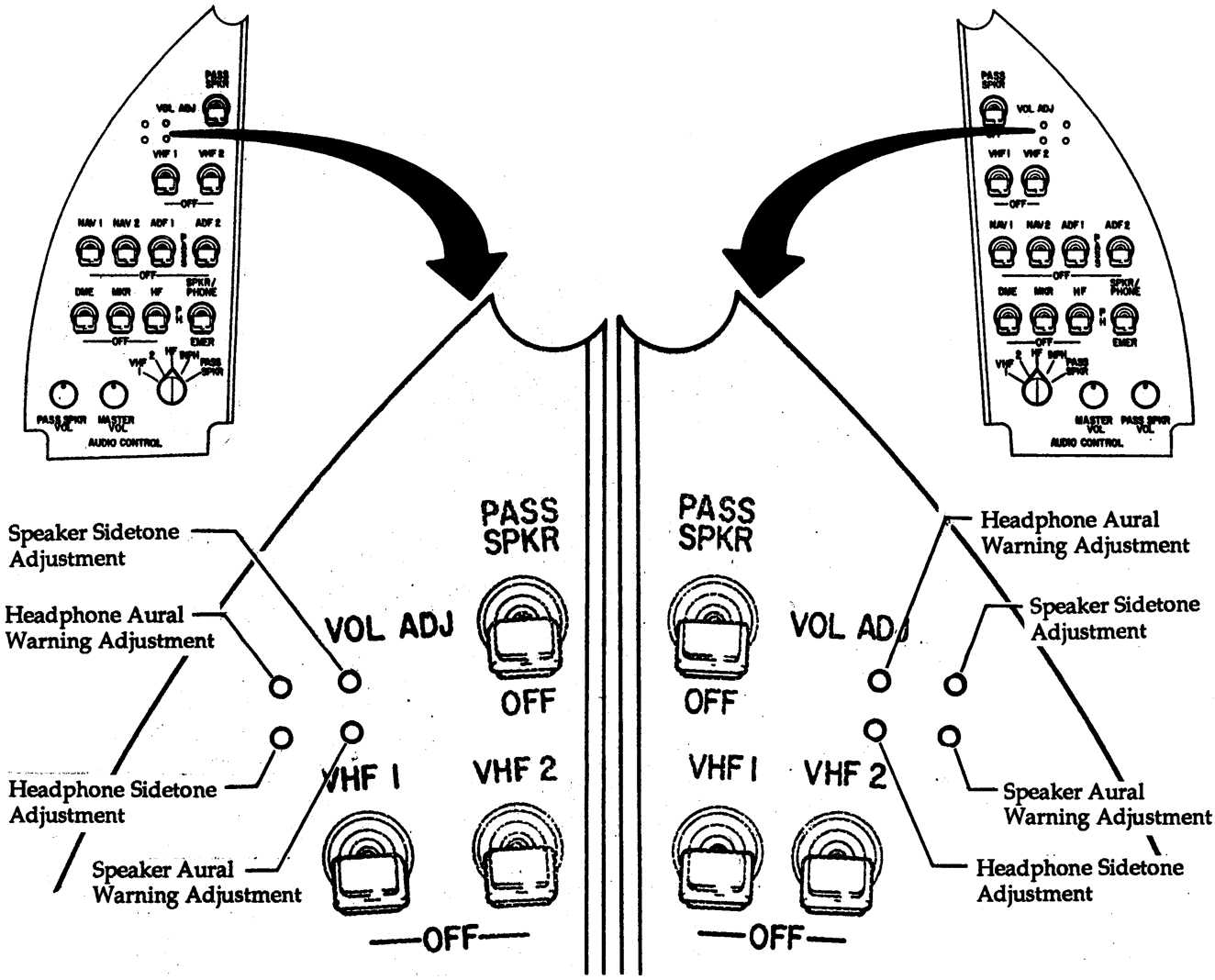
      NOTE: Adjustment of headphone audio level is valid only for headphones of the same type as used during adjustment. Use of a headset with a different sensitivity may require readjustment to obtain a balance between speakers and headphones. It is recommended that a Plantronics Headphone and Microphone Set, M550/T3-6, set for minus 10 db output level (controlled by means of a tap in the Plantronics Amplifier) be used for this adjustment. This level also provides for good reception during use of the emergency mode without panel power.

   B. Adjustment (DB Audio System)
      (1) Tools and Equipment

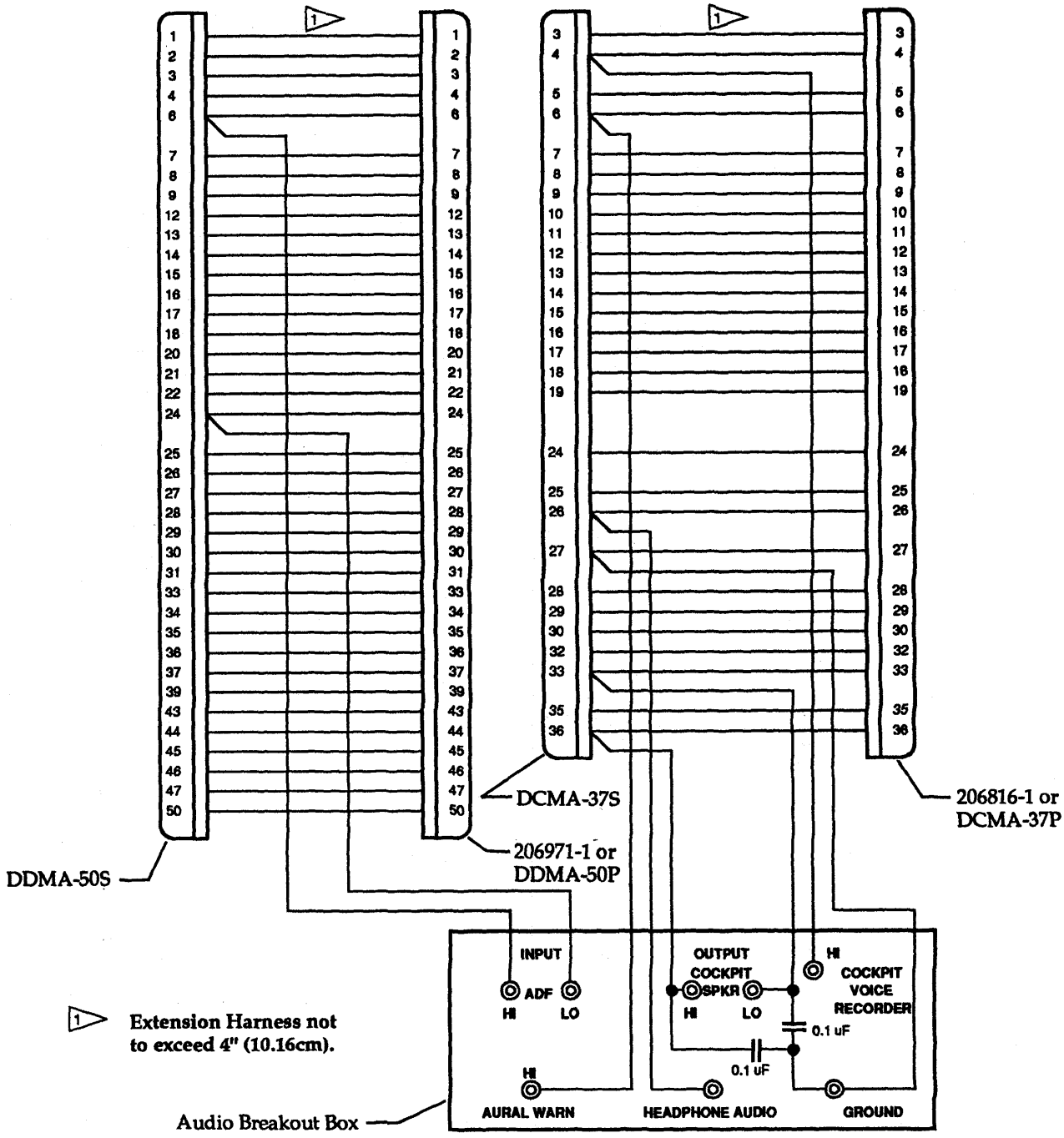
      NOTE: Equivalent substitutes may be used for the following items:

NAME	PART NUMBER	MANUFACTURER	USE
RMS Voltmeter	HP400H	Hewlett Packard	Measure audio output.
AudioSignal Generator (capable of 1000 Hz, 5.5 VAC RMS)		Commercially Available	Simulate audio signal.
Breakout Box		Fabricate locally	Audio control amplifier test.
Wire (10" twisted, shielded pair)		Fabricate locally	Voltmeter connection.

NOTE:
- Fabricate breakout box in accordance with figure 202.
- Ensure that all radios are turned off while making the following adjustments, with the exception of the radio under test as specified in the adjustment procedures.
- Do not adjust MUTE or FLTR potentiometers on audio control amplifiers. These potentiometers are preset at the factory.



Audio Control Panel Adjustments
Figure 201



Audio Amplifier Breakout Box
Figure 202

(1) Test Setup
  (a) Remove nose compartment access doors.
  (b) Connect breakout box to primary audio control amplifier.
  (c) Remove pilot's/copilot's audio control panel. (Refer to 23-50-01, Removal/Installation.)
  (d) Preset sidetone potentiometers on pilot's and copilot's audio control panels to full clockwise position.

    NOTE: Sidetone potentiometers are located on the bottom of the audio switch panels.

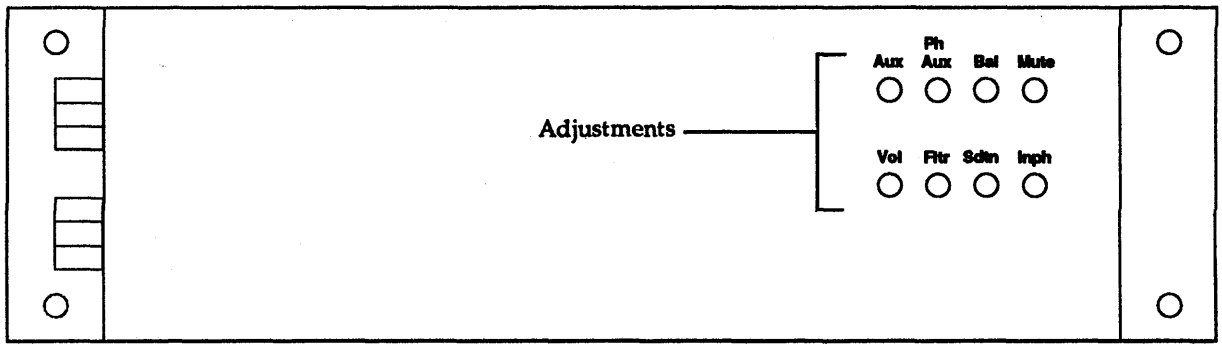
  (e) Install pilot's/copilot's audio control panel. (Refer to 23-50-01, Removal/Installation.)
  (f) Rotate Master Volume Control knobs on pilot's and copilot's audio control panels to mid-point position.
  (g) Set Speaker Switch to ON.

(2) Cockpit Adjustments and Tests
  (a) Set ADF control head switch to ADF and tune radio to local broadcast station.
  (b) Set ADF control head switch to TONE.
  (c) Set ADF 1 switch on located on pilot's and copilot's audio control panels.
  (d) Adjust volume knob on ADF control head until 5.50 (± 0.50) vac rms is measured across ADF input on breakout box.

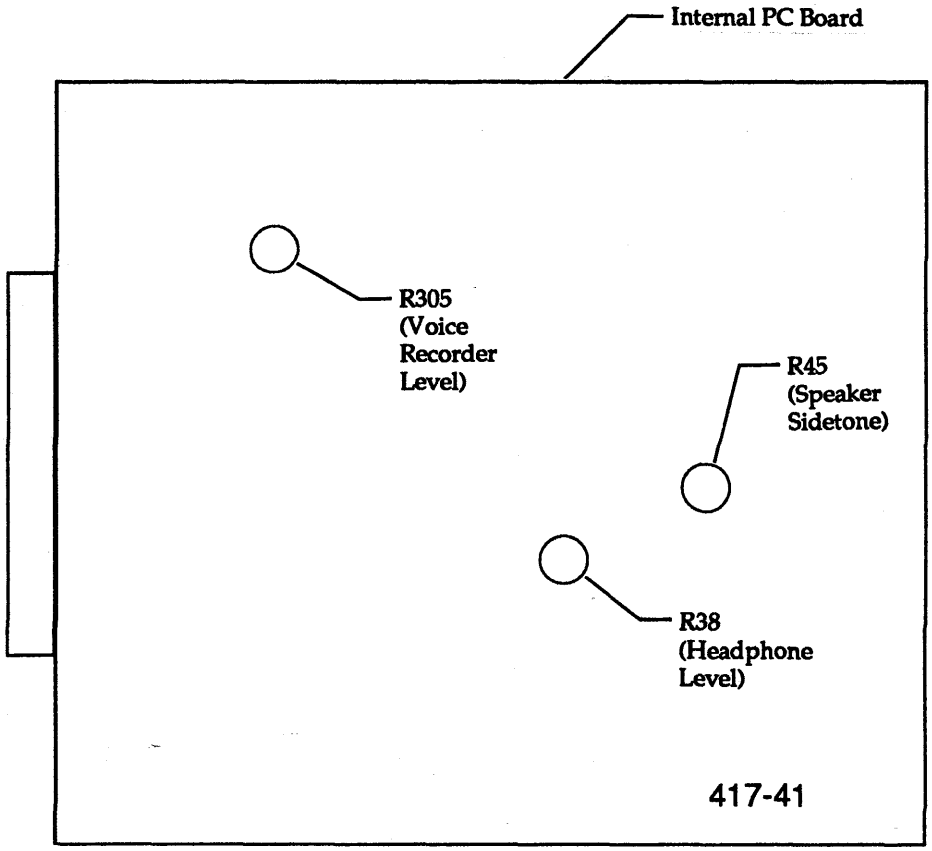
    NOTE:
    - This step presets ADF input to the audio control amplifier(s). The ADF control head volume knob should not be touched until all ADF adjustments and tests (cockpit and cabin) are complete.
    - *On aircraft with no ADF*, an audio signal generator may be used. Set the output frequency to 1000 Hz and amplitude to 5.50 (± 0.50) vac rms and applying the signal to the ADF input on the breakout box.

  (e) Adjust BAL potentiometer on audio amplifier until 0.49 (±0.05) vac is measured across COCKPIT SPKR OUTPUT on breakout box (primary audio control amplifier). (See figure 203.)
  (f) Repeat step (e) with breakout box connected to secondary audio control amplifier.
  (g) Connect breakout box to primary audio control amplifier and check for 0.44 (±0.02) vac between HEADPHONE AUDIO and GROUND on breakout box. If voltage is not within tolerance, perform the following:
    1) Remove cover to gain access to internal PC board in audio amplifier.
    2) Locate PC board 417-41 and adjust R38 to obtain 0.44 (±0.02) vac. (See figure 203.)
    3) Replace cover.
  (h) Repeat step (g) with breakout box connected to secondary audio control amplifier.

(3) Sidetone Adjustments and Tests
  (a) Set VHF 2 switch on, located on pilot's and copilot's audio control panels. Turn COMM 2 on and set volume knob fully clockwise. Tune COMM 2 to test frequency for test transmissions.
  (b) Rotate pilot's Transmit Select Switch to VHF 2. Rotate copilot's Transmit Select Switch to any position except VHF 2.
  (c) Plug audio signal generator into pilot's normal jack panel.
  (d) Set signal generator frequency to 1000 Hz, 0.15 (± 0.05) vac rms and key transmitter.
  (e) Connect twisted pair wire to voltmeter and wire shield to GROUND on breakout box.
  (f) Adjust SDTN potentiometer on secondary audio control amplifier until 0.80 (±0.03) vac is measured between HEADPHONE AUDIO and GROUND on breakout box.



(TOP VIEW OF AUDIO AMPLIFIER)



NOTE: PC board not shown fully populated.

(AUDIO AMPLIFIER INTERNAL PC BOARD)

Audio Level Adjustment
Figure 203

(g) Check for 0.40 (±0.01) vac across COCKPIT SPKR and GROUND on breakout box. If voltage is not within tolerance, perform the following.
  1) Remove cover to gain access to internal PC board in audio amplifier.
  2) Locate PC board 417-41 and adjust R45 to 0.40 (±0.01) vac.
  3) Replace cover.

(h) Repeat steps (d), (f), and (g) with the breakout box connected to the primary audio control amplifier, placing the signal generator in copilot's jack panel, rotating copilot's Transmit Select Switch to VHF 2, and setting pilot's VHF 2 switch to OFF.

(i) Remove twisted pair wire from voltmeter.

(4) Cockpit Aural Warning Adjustment

(a) Set left and right Stall Warning Switches on.

(b) Depress control wheel master switch to sound stall aural tone.

(c) Adjust AUX potentiometer on primary audio control amplifier to obtain 0.75 (± 0.05) vac measured across COCKPIT SPKR and GROUND on breakout box.

(d) Repeat steps (b) and (c) with breakout box connected to secondary audio control amplifier.

(e) Connect breakout box to primary audio control amplifier.

(f) Gain access to trim-in-motion detector box. (Refer to Chapter 27.)

(g) Rotate System Test Switch to CABIN ALT position and depress switch to sound aural tone.

(h) Adjust audio input adjusting screw on trim-in-motion detector box until 0.07 (±0.01) vac is measured across COCKPIT SPKR and GROUND on breakout box. (See figure 204.)

(i) Adjust PH AUX potentiometer on primary audio control amplifier until 0.32 (±0.01) vac is measured across HEADPHONE AUDIO and GROUND on breakout box.

(j) Repeat steps (e) thru (i) with breakout box connected to secondary audio control amplifier.

(5) Interphone Adjustments

NOTE: Oxygen Microphone Switch must be set to NORM. Speaker Switch must be set to ON.

(a) Turn all radios off.

(b) Connect breakout box to primary audio control amplifier.

(c) Rotate pilot's and copilot's Transmit Select Switches to INPH.

(d) Insert audio signal generator into pilot's jack panel. Set the output frequency to 1000 Hz and amplitude to 0.125 (± 0.005) vac rms.

(e) Adjust INPH potentiometer on primary audio control amplifier until 0.31 (±.01) vac is measured across HEADPHONE AUDIO and GROUND on breakout box.

(f) Repeat step (e) with the breakout box connected to secondary audio control amplifier and by inserting signal generator in copilot's jack panel.

(6) Voice Recorder Adjustments

(a) Connect breakout box to primary audio control amplifier.

(b) Rotate pilot's and copilot's Transmit Select Switches to INTERPHONE.

(c) Connect audio signal generator in pilot's jack panel. Set the output frequency to 1000 Hz and amplitude to 0.125 (± 0.005) vac rms.

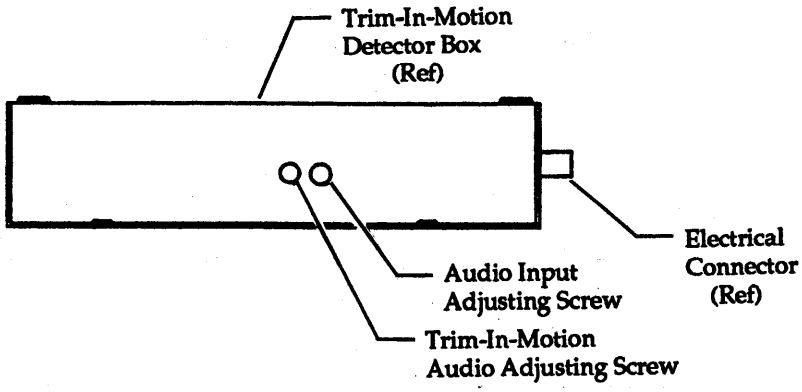
(d) Check for 0.10 (±0.01) vac between COCKPIT VOICE RECORDER and GROUND on breakout box. If voltage is not within tolerance, perform the following:
  1) Remove cover to gain access to internal PC board in audio amplifier.
  2) Locate PC board and adjust R305 to 0.10 (±0.01) vac.
  3) Replace cover.

(e) Repeat step (d) with breakout box connected to secondary audio control amplifier.

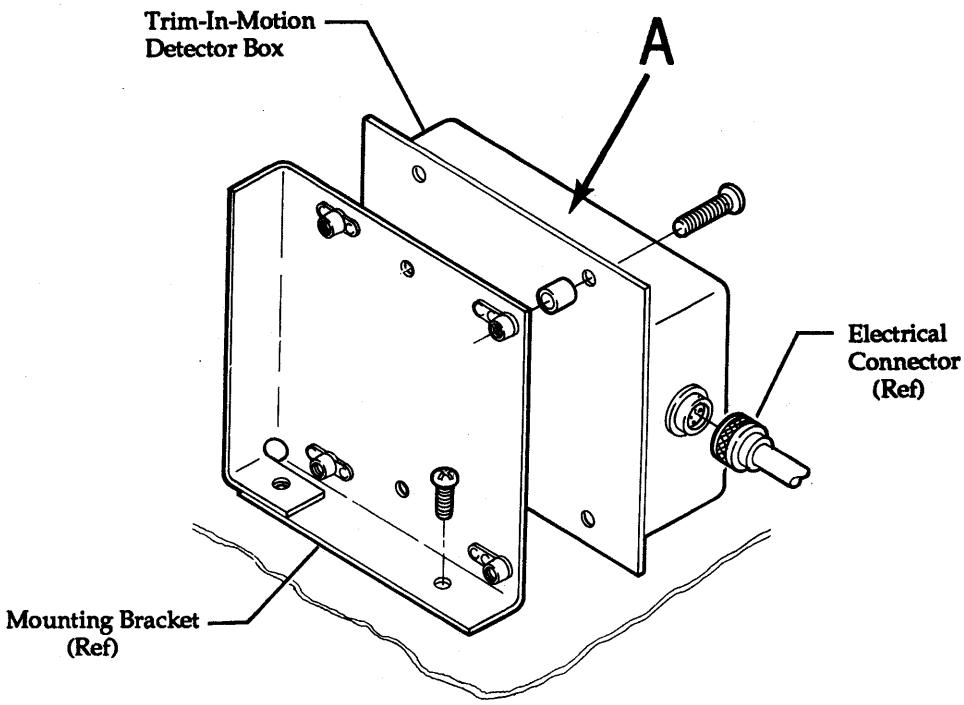
(f) Disconnect breakout box from secondary audio control panel and connect electrical connectors.

(g) Install nose compartment access doors.

(h) Restore aircraft to normal.



Detail A



(TRIM-IN-MOTION DETECTOR BOX INSTALLATION)

(TYPICAL)

8-96B-2

Trim-in-Motion Detector Box Adjustment
Figure 204

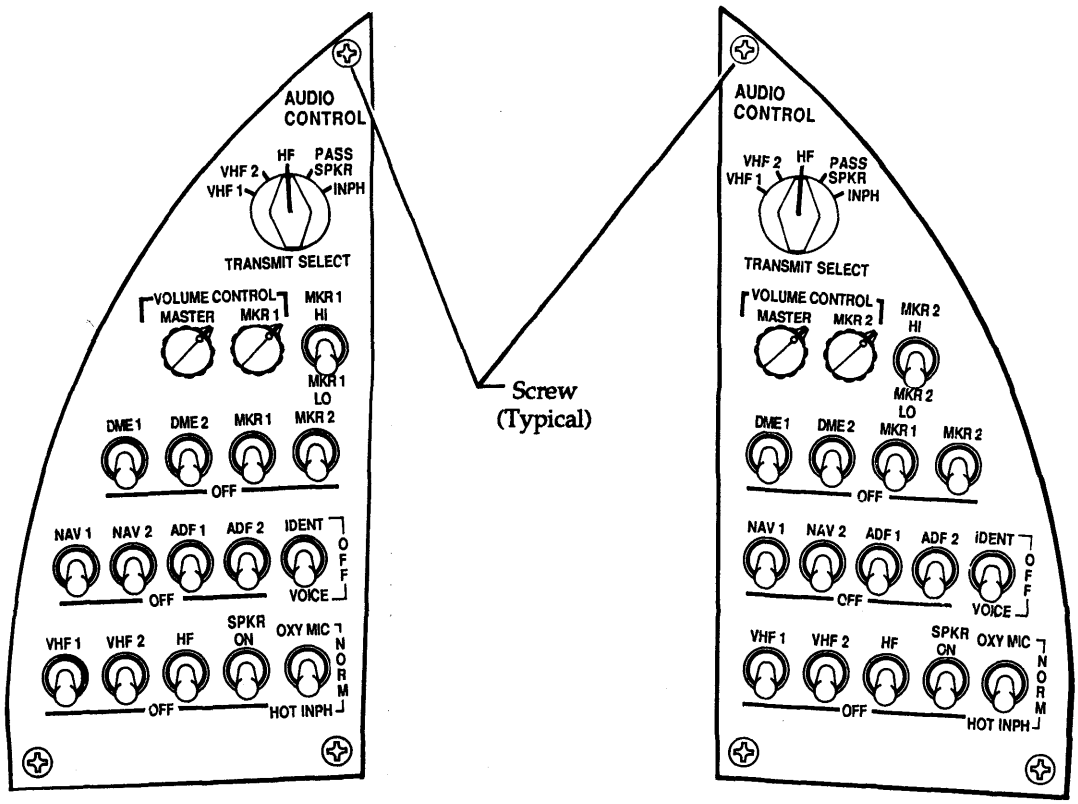
AUDIO CONTROL PANEL - MAINTENANCE PRACTICES

1. Removal/Installation

NOTE: Maintenance practices are identical for both audio control panels.

A. Remove Audio Control Panel (See figure 201.)
   (1) Set Battery Switches off and pull AUD 1 and AUD 2 circuit breakers.
   (2) Remove screws attaching panel and pull panel out to gain access to electrical connector.
   (3) Disconnect electrical connector from audio panel.
   (4) Remove panel from aircraft.

B. Install Audio Control Panel (See figure 201.)
   (1) Connect electrical connector to audio panel.
   (2) Install panel and secure with attaching parts.
   (3) Depress AUD1 and AUD2 circuit breakers.
   (4) Perform operational check of audio control panel. (Refer to 23-50-00, Inspection/Check.)



Audio Control Panel Installation
Figure 201

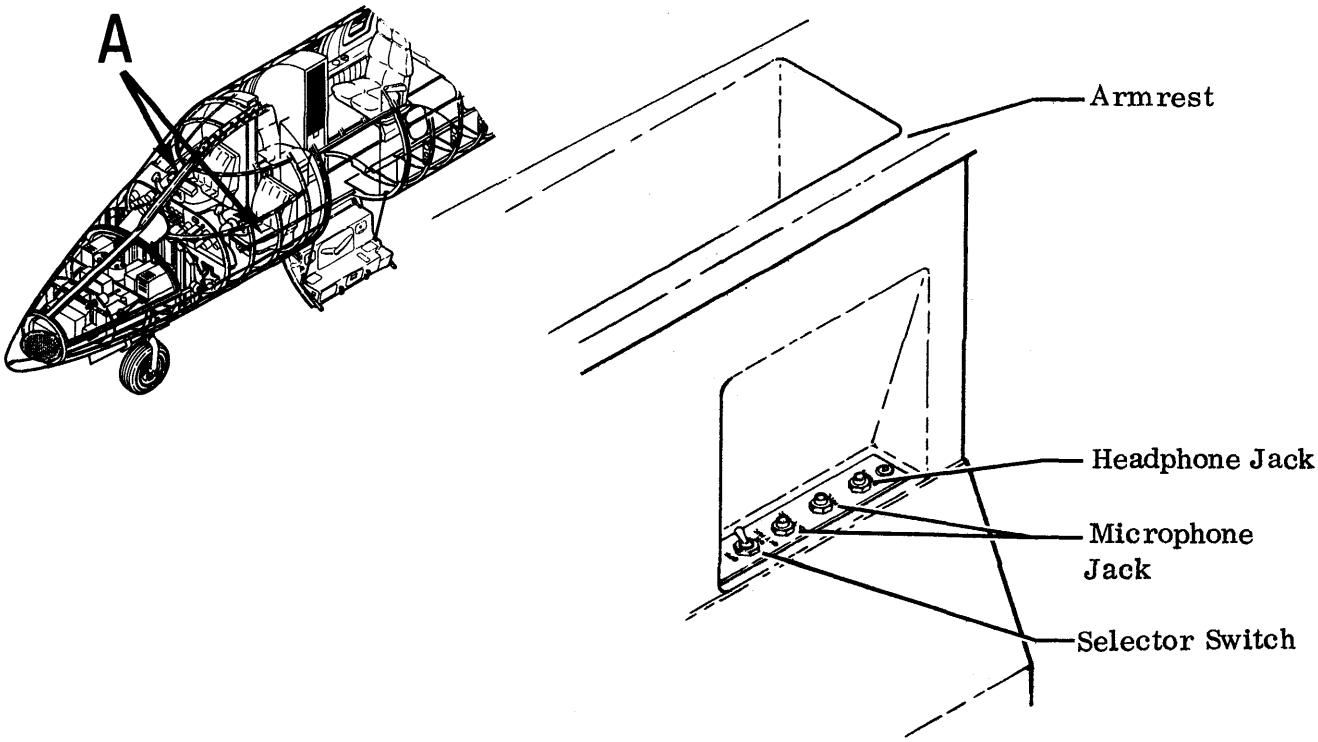
MICROPHONE CONTROL PANEL - MAINTENANCE PRACTICES

1. Removal/Installation

NOTE: Removal and installation procedures for pilot's and copilot's microphone control panels are identical.

A. Remove Microphone Control Panel (See figure 201.)
   (1) Remove electrical power from aircraft.
   (2) Remove attaching parts and remove panel sufficiently to gain access to jack and switch wiring.
   (3) Disconnect and tag wiring.
   (4) If jack or switch replacement is required, remove defective component.

B. Install Microphone Control Panel (See figure 201.)
   (1) Install and secure replacement component.
   (2) Connect wiring to jacks and switch.
   (3) Install panel and secure with attaching parts.
   (4) Restore electrical power to aircraft.



Detail A
LH HAND SIDE SHOWN

Microphone Control Panel Installation
Figure 201

9-318A

COCKPIT SPEAKER - MAINTENANCE PRACTICES

1. Removal/Installation

A. Remove Cockpit Speaker (Typical) (See figure 201.)

(1) Remove headliner to gain access to speaker installation.

(2) Remove attaching parts and remove speaker sufficiently to gain access to speaker wiring.

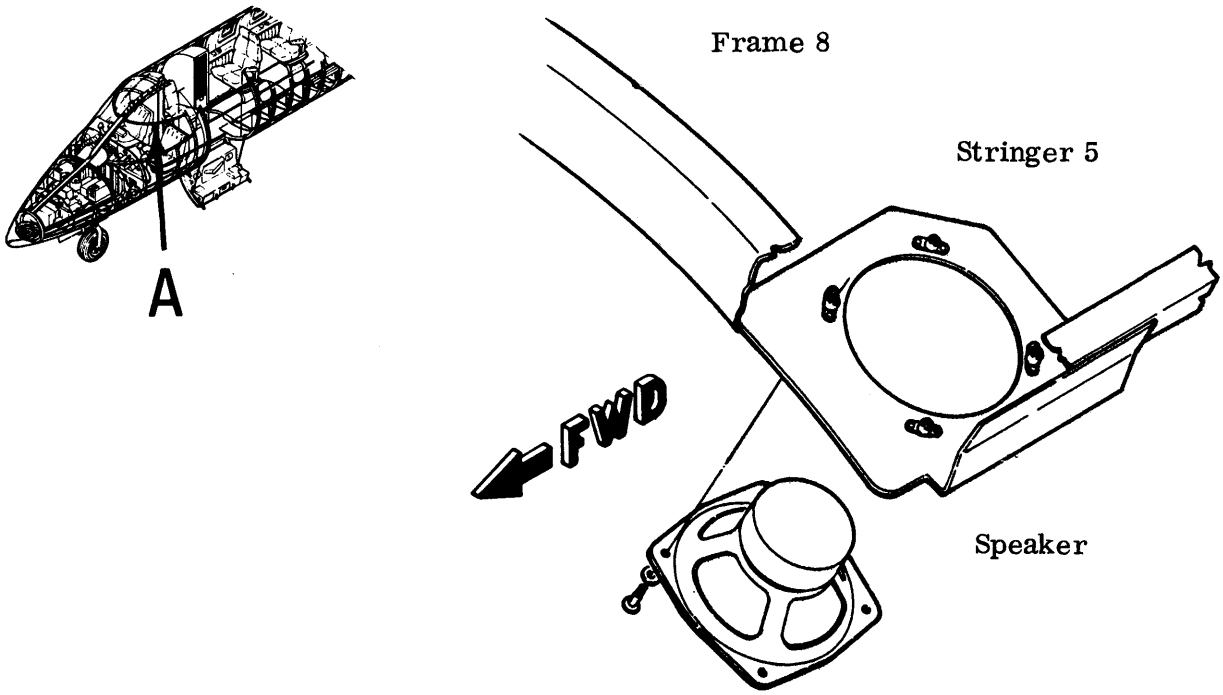
(3) Disconnect electrical wiring from speaker and remove speaker from aircraft.

B. Install Cockpit Speaker (Typical) (See figure 201.)

(1) Connect wiring to speaker.

(2) Install speaker and secure with attaching parts.

(3) Install headliner.



LH Speaker Shown, RH Typical

Detail A

Cockpit Speaker Installation
Figure 201

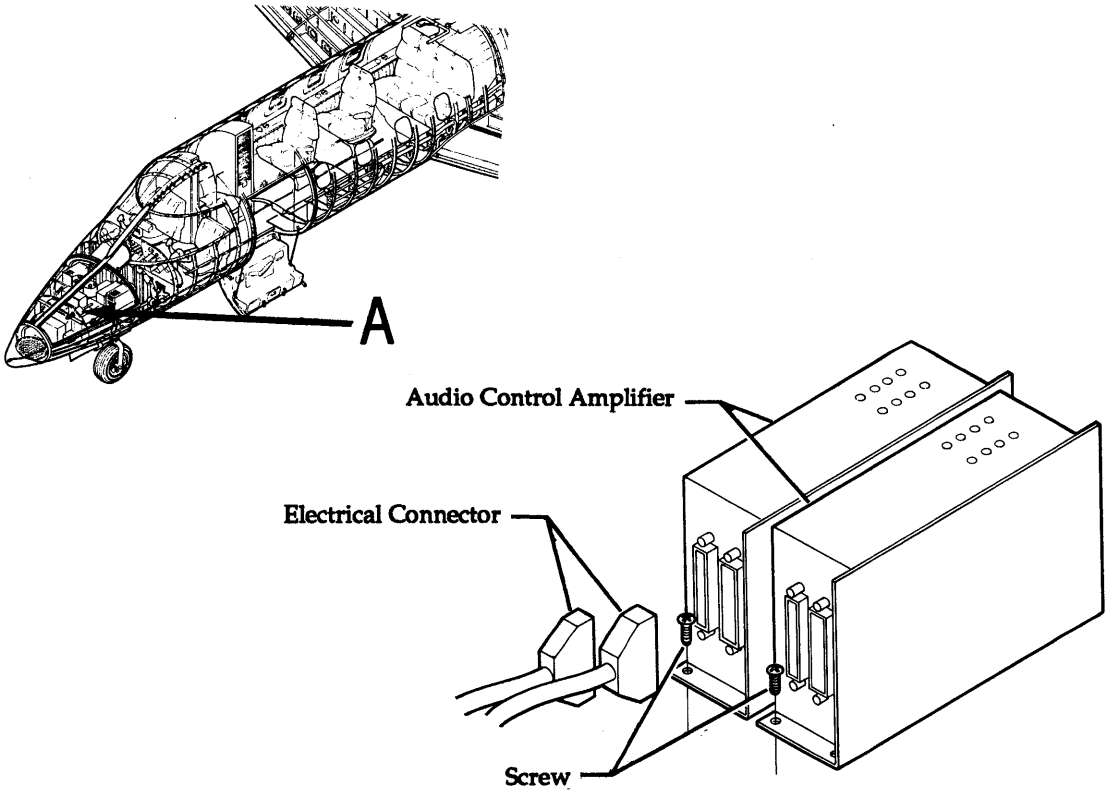
AUDIO CONTROL AMPLIFIER - MAINTENANCE PRACTICES

1. Removal/Installation

NOTE: Maintenance practices are identical for both audio control amplifiers.

A. Remove Audio Control Amplifier (See figure 201.)
   (1) Remove electrical power from aircraft.
   (2) Remove nose compartment access doors.
   (3) Disconnect electrical connectors from audio control amplifier.
   (4) Remove attaching parts and audio control amplifier from aircraft.

B. Install Audio Control Amplifier (See figure 201.)
   (1) Position audio control amplifier in aircraft and secure with attaching parts.
   (2) Connect electrical connectors to audio control amplifier.
   (3) Install nose compartment access doors.
   (4) Restore electrical power to aircraft.
   (5) Perform operational check of audio control panel. (Refer to 23-50-00, Inspection/Check.)



10-122A

Audio Control Amplifiers
Figure 201

EFFECTIVITY: AIRCRAFT EQUIPPED WITH DB AUDIO SYSTEM

STATIC DISCHARGING - DESCRIPTION AND OPERATION

1. Description
   A. Static dischargers are installed on the tip tank fin, tailcone stinger, navigation light fairing, and elevator trailing edge. The static discharger bases are attached with rivets. In addition to rivets, the tip tank fin and elevator trailing edge static discharger bases are bonded to the surface.

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

STATIC DISCHARGING - MAINTENANCE PRACTICES

1. **Removal/Installation - Static Discharger**
   A. Remove Static Discharger (See Figure 201.)
      (1) Using the wrenching flat on the metal retainer, unscrew the wick.

      NOTE: It is fairly common for the static dischargers to break off at the stud making the portion of the stud remaining in the discharger base difficult to remove. Application of heat with a high-watt soldering iron (never use flame near the aircraft) to the base of the stud will melt the retaining compound and ease removal of the broken stud.

      (2) Inspect discharger base to ensure there is no damage to base prior to installing new discharger.
   B. Install Static Discharger (See Figure 201.)
      (1) Apply one drop of Loctite to the threads near the end of the stud. (Refer to Chapter 20.)
      (2) Screw discharger onto the base and, using wrenching flat, secure discharger.

2. **Removal/Installation - Static Discharger Base**
   A. Tools and Equipment

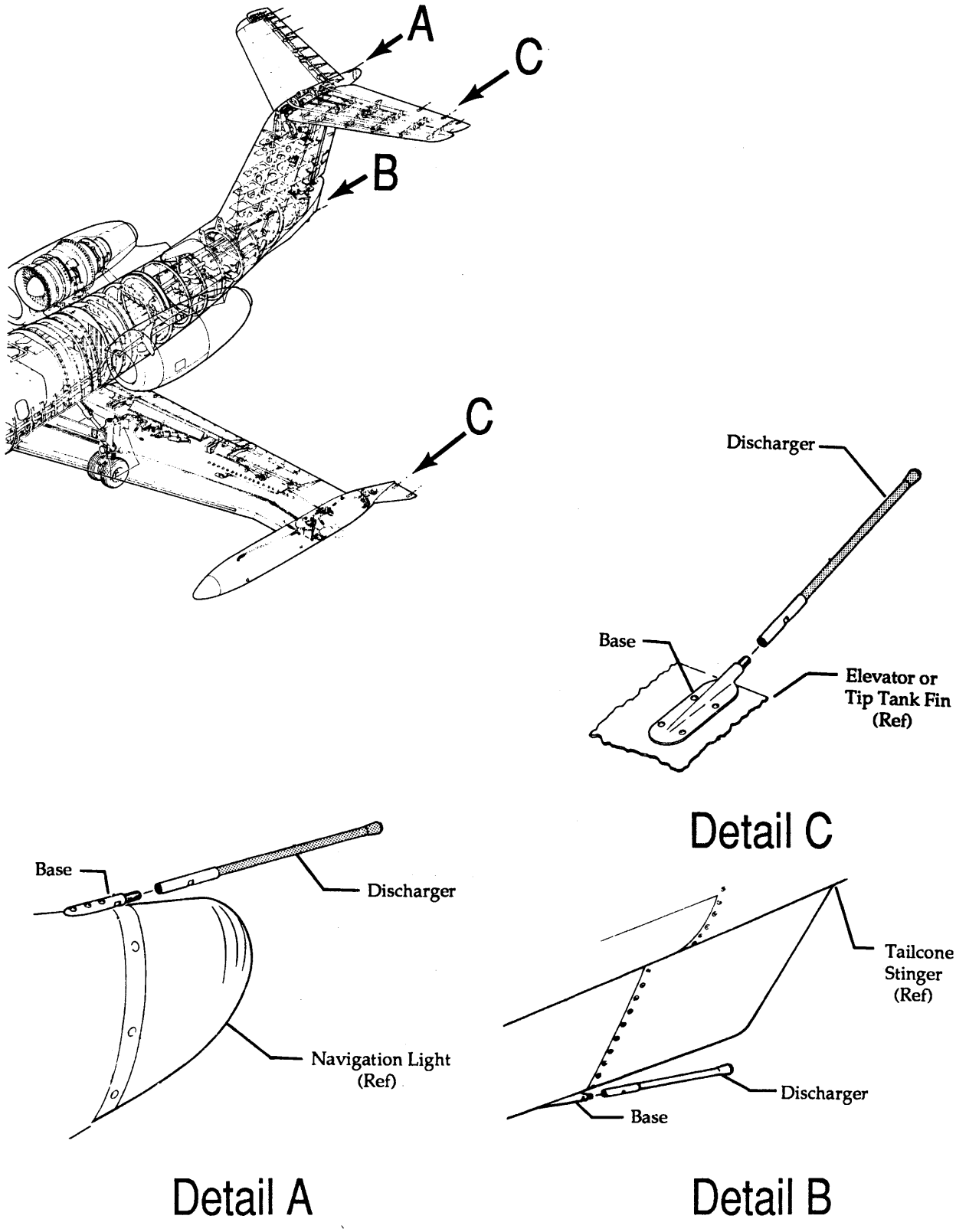
      NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Sealant, Class B	Refer to Chapter 20		Fillet seal.
Adhesive, Class II	Refer to Chapter 20		Base adhesive.

   B. Remove Navigation Light Fairing or Tailcone Stinger Static Discharger Base (See Figure 201.)
      (1) Drill out the three rivets attaching discharger base and remove base from aircraft.
   C. Install Navigation Light Fairing or Tailcone Stinger Static Discharger Base (See Figure 201.)
      (1) Position new discharger base on aircraft and align holes.
      (2) Secure discharger base using CR2248-3-1, CR2248-3-2 and CR2248-3-3 rivets (1 each).
      (3) Apply a bead of sealant around the base of the discharger. (Refer to Chapter 20.)
      (4) Repaint surface. (Refer to Chapter 20.)
   D. Remove Elevator Static Discharger Base (See Figure 201.)
      (1) Drill out the four rivets attaching the discharger base to the elevator.
      (2) Using extreme care not to damage elevator skin, pry off discharger base.
   E. Install Elevator Static Discharger Base (See Figure 201.)
      (1) Clean all traces of old adhesive from elevator skin and buff with sandpaper area where adhesive was removed.
      (2) Position new discharger base on elevator skin and align holes in base with holes in elevator skin. Mark a locating line around the discharger base on the elevator skin.

      NOTE: When installing either the center or inboard static discharger, two holes must be located and drilled in the discharger base to match the rivet holes in the elevator trailing edge. These holes may be located from the old discharger base or from the actual holes in the elevator trailing edge.

      (3) Mix epoxy adhesive. (Refer to Chapter 20.) Apply adhesive and position static discharger base on elevator.



Static Discharger Installations
Figure 201

(4) Secure discharger base to elevator. Use four CR2249AD4 rivets on the outboard discharger base. On the center and inboard dischargers use two CR2249AD4 rivets on the leading edge portion of the discharger and two MS20470B4 rivets on the trailing edge.
(5) Fill the two unused holes in the center and inboard discharger bases with adhesive and sand flush.
(6) Repaint the surface. (Refer to Chapter 20.)

F. Remove Tip Tank Fin Static Discharger Base (See figure 201.)
(1) Drill out the four rivets attaching the discharger base to the tip tank fin.
(2) Using extreme care not to damage tip tank fin skin, pry off discharger base.

G. Install Elevator Static Discharger Base (See figure 201.)
(1) Clean all traces of old adhesive from tip tank fin and buff with sandpaper area where adhesive was removed.
(2) Position new discharger base on tip tank fin and align holes in base with holes in tip tank fin. Mark a locating line around the discharger base on the elevator skin.
(3) Mix epoxy adhesive. (Refer to Chapter 20.) Apply adhesive and position static discharger base on tip tank fin.
(4) Secure discharger base to tip tank fin. Use four CR2249-4 rivets.
(5) Repaint the surface. (Refer to Chapter 20.)

3. Inspection/Check

A. Visually Inspect Static Dischargers

NOTE: The presence of dark deposits and/or discoloration may be an indication of a faulty discharger, however, the dark deposits and/or discoloration may also be dirt, oil or some other contaminant. If it cannot be determined that the discoloration is a contaminant, the applicable discharger shall be functionally tested to verify proper operation.

(1) Inspect to ensure that discharger is secure in the metal retainer. Replace discharger if loose.
(2) *On Aircraft with flexible dischargers*, inspect the lightning diverter strip (gray strip) for cracks or peeling. Replace discharger if strip is cracked or peeling.
(3) Inspect the junction of the metal retainer and the discharger for dark deposits and/or discolorations. Perform functional test if dark deposits and/or discoloration is found.
(4) *On Aircraft with flexible dischargers*, inspect the filaments of each discharger. Compare with dischargers having approximately equal in-service time. Dischargers with equal in-service time should be worn approximately equal. A worn discharger usually indicates that the discharger has been functioning properly. A discharger which has been in service for a time and shows no signs of wear, is to be suspected. Perform functional test of suspected dischargers.
(5) Inspect each discharger base to ensure that there is no relative movement between base and aircraft skin. Base must be reinstalled if movement is detected.
(6) Inspect the aircraft skin seams and joints on the underside of the horizontal stabilizer, around the elevator tabs and around the discharger bases for presence of dark deposits and/or discoloration. Perform functional test if dark deposits and/or discoloration are found.

4. Adjustment/Test

A. Tools and Equipment

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Digital Ohmmeter	Model 8020A	Fluke Inc.	Measure resistance
Megohmmeter	Model 1863	General Radio	Measure resistance

B. Perform Functional Test of Static Discharger

CAUTION: WHEN TESTING RESISTANCE BETWEEN AIRCRAFT SKIN AND METAL RETAINER, DO NOT USE A BONDING METER OR HIGH CURRENT TEST SET.

(1) Using a digital ohmmeter with pin tip test probes, touch one probe to the nearest bare metal on the aircraft skin and touch the other probe to the metal retainer of the discharger. Resistance shall be less than 0.2 ohm maximum for a newly installed base and 0.5 ohms maximum for an existing installation. If resistance is greater than either allowable maximum, proceed as follows:
   (a) Unscrew discharger from base and clean the threads inside the metal retainer.
   (b) Using a high wattage soldering iron, apply heat to stud to melt retaining compound and unscrew stud from base. Clean threads on stud.
   (c) Clean the threads inside of base.
   (d) Screw stud into base until stud bottoms out.
   (e) Back stud out approximately two threads. Apply a very small amount of Nylok VC3 or equivalent retaining compound to one or two threads of the stud adjacent to the base. Tighten stud into base.
   (f) Screw discharger onto stud.
   (g) Remeasure resistance. If resistance values exceed maximum allowable, remove base, clean, and reinstall base.

(2) Again connect probes to aircraft skin and metal retainer. Apply alternate side loads to the discharger base while observing ohmmeter. Resistance shall not vary while applying load.

(3) If resistance varies while performing step (2), the base must be removed and reinstalled.

(4) Set up megohmmeter to test discharger at 500 volts.

(5) *On Aircraft equipped with flexible dischargers*, measure resistance between discharger base and filaments at end of discharger. Resistance shall be 8 to 100 megohms.

NOTE: Use a large smooth probe to make connection to the filaments.

(6) *On Aircraft equipped with rigid dischargers*, measure resistance between discharger base and alligator clip with a wet sponge or fine steel wool in clip jaws attached to carbon tip. Resistance shall be 8 to 200 megohms.

(7) If resistance is not within limits, replace discharger.

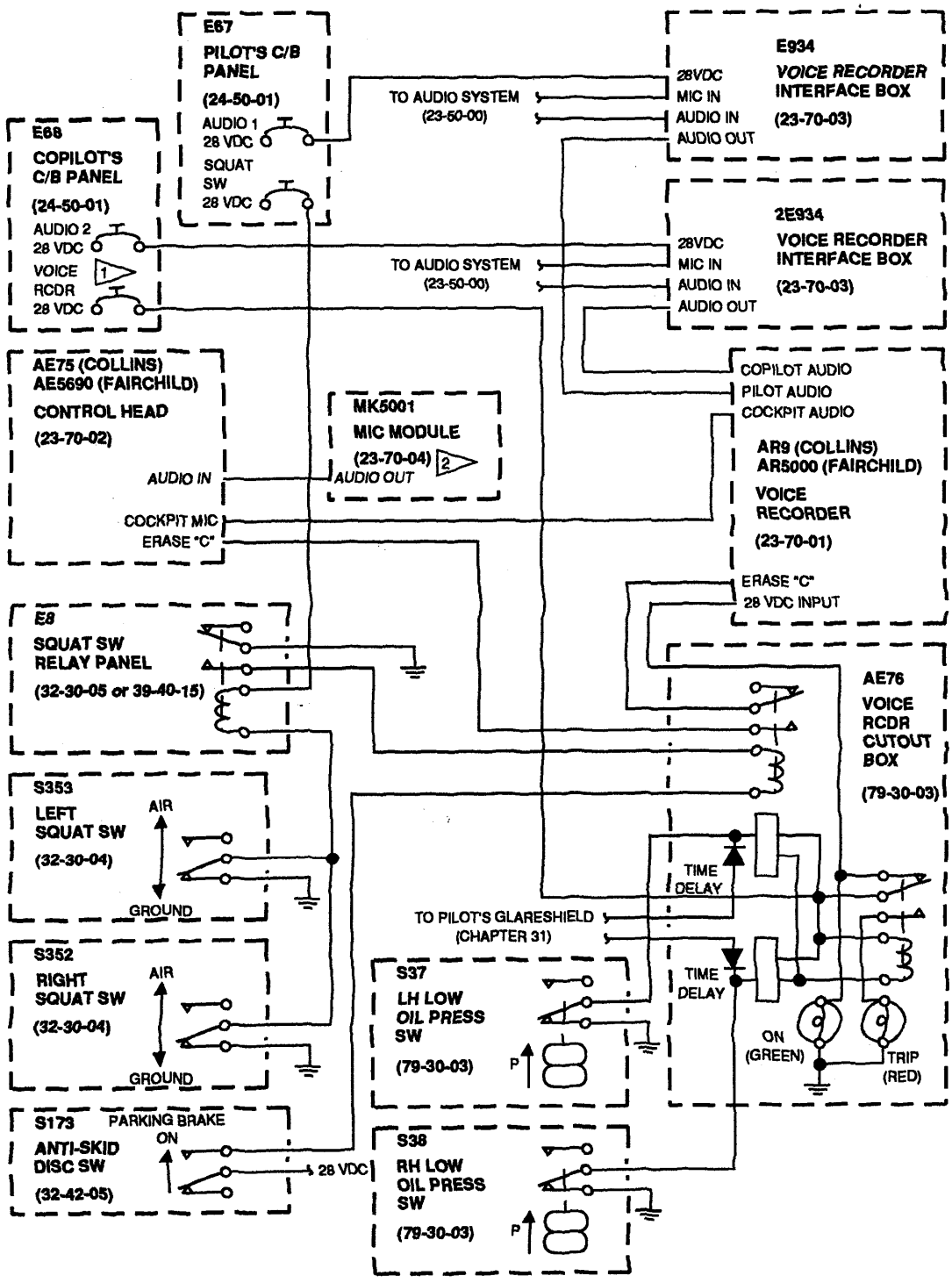
VOICE RECORDER SYSTEM - DESCRIPTION AND OPERATION

1. **Description**
   A. *On Aircraft 35-002 thru 35-664 and 36-002 thru 36-063*, the voice recorder system consists of a voice recorder, a control head, a cutout box, the LH and RH oil pressure switches, a squat switch relay, the anti-skid disconnect switch, and, on some aircraft, two voice recorder interface boxes. *On Aircraft 35-665 and Subsequent and 36-064 and Subsequent*, the voice recorder system consists of a voice recorder, a control head, an inertia switch, two voice recorder interface boxes, a junction box, and the anti-skid disconnect switch. The system provides continuous recording of the final 30 minutes of flight crew conversations. The system operates in the record mode whenever the aircraft is airborne.
   B. Component Description
      (1) The voice recorder is located on the RH side of the tailcone. Crew conversation recordings are retained in the voice recorder.
      (2) *On Aircraft 35-002 thru 35-664 and 36-002 thru 36-063*, a cutout box is located in close proximity of the voice recorder. The cutout box incorporates indicator lights which illuminate when the system is operating.
      (3) *On Aircraft 35-665 and Subsequent and 36-064 and Subsequent*, an inertia switch is located below the baggage compartment floorboards. The inertia switch incorporates a reset button to be used after switch activation.
      (4) The voice recorder interface boxes are located on each side of the aircraft between frames 6 and 7 and stringers 10 and 11. The boxes receive audio signals from the pilot's and copilot's audio control panel and transmit them to the voice recorder.
      (4) The VOICE RCDR circuit breaker, located on the circuit breaker panel, supplies 28 vdc to the cutout box (*Aircraft 35-002 thru 35-664 and 36-002 thru 36-063*) or inertia switch (*Aircraft 35-665 and Subsequent and 36-064 and Subsequent*).
      (5) The control head, installed on the pedestal, includes controls which operate the voice recorder system. The control head includes a microphone, or a remote microphone is mounted on the cockpit instrument panel and connected to the control head.

2. **Operation** (See figure 1.)
   A. With the Battery Switches on and the circuit breaker depressed, the voice recorder is in operation. However, with the aircraft on the ground and the anti-skid disconnect switch closed (parking brake set), the bulk erase mode is also operative. *On Aircraft 35-002 thru 35-664 and 36-002 thru 36-063*, the anti-skid disconnect switch completes a 28 vdc circuit to the erase mode control relay within the voice recorder cutout box while the squat switches complete a ground circuit to the other side of the control relay. *On Aircraft 35-665 and Subsequent and 36-064 and Subsequent*, the anti-skid disconnect switch completes a 28 vdc circuit to the erase mode control relay within a junction box, while the squat switch provides a ground circuit to the other side of the control relay.
   B. *On Aircraft 35-002 thru 35-664 and 36-002 thru 36-063*, the RH and LH engine low oil pressure switches are electrically connected to a safety shutdown circuit within the voice recorder cutout box. If a crash occurs wherein power should remain on the voice recorder, the voice recorder will continue to run. The oil pressure switches apply a ground to this safety shutdown circuit. The ground triggers a programmed unijunction transistor which shuts down the recorder approximately 6 to 10 minutes after the ground is applied. Conversation 30 minutes prior to recorder shutdown is retained on record.
   C. *On Aircraft 35-665 and Subsequent and 36-064 and Subsequent*, an inertia switch is installed to remove electrical power from the voice recorder when an 8G impact is detected. The inertia switch may be reset with the reset button located on the forward side of the switch.

D. Operation of the voice recorder system can be divided into four modes: the record mode, the monitor mode, the erase mode, and the self-test mode.
   (1) The record mode provides record capabilities from four separate flight stations; however, only three are used.
   (2) The monitor mode provides monitoring of recorded conversations from each channel/track to ensure proper operation.
   (3) The erase mode enables the pilot to completely erase the last 30 minutes of conversation on the tape. The erase can only be accomplished after the aircraft has landed and the parking brake has been set (anti-skid disconnect switch closed).
   (4) The self-test mode provides for the generation of an internal 800 Hz test signal which is applied to the record heads, and monitored aurally or visually for each channel/track, either individually or simultaneously.

E. *On Aircraft with voice recorder interface boxes installed*, all communications received and transmitted by the audio control panels are routed to the voice recorder by the voice recorder interface boxes.



1 Refer to Avionics and Optional Electrical Customization Wiring Manual for circuit breaker location.

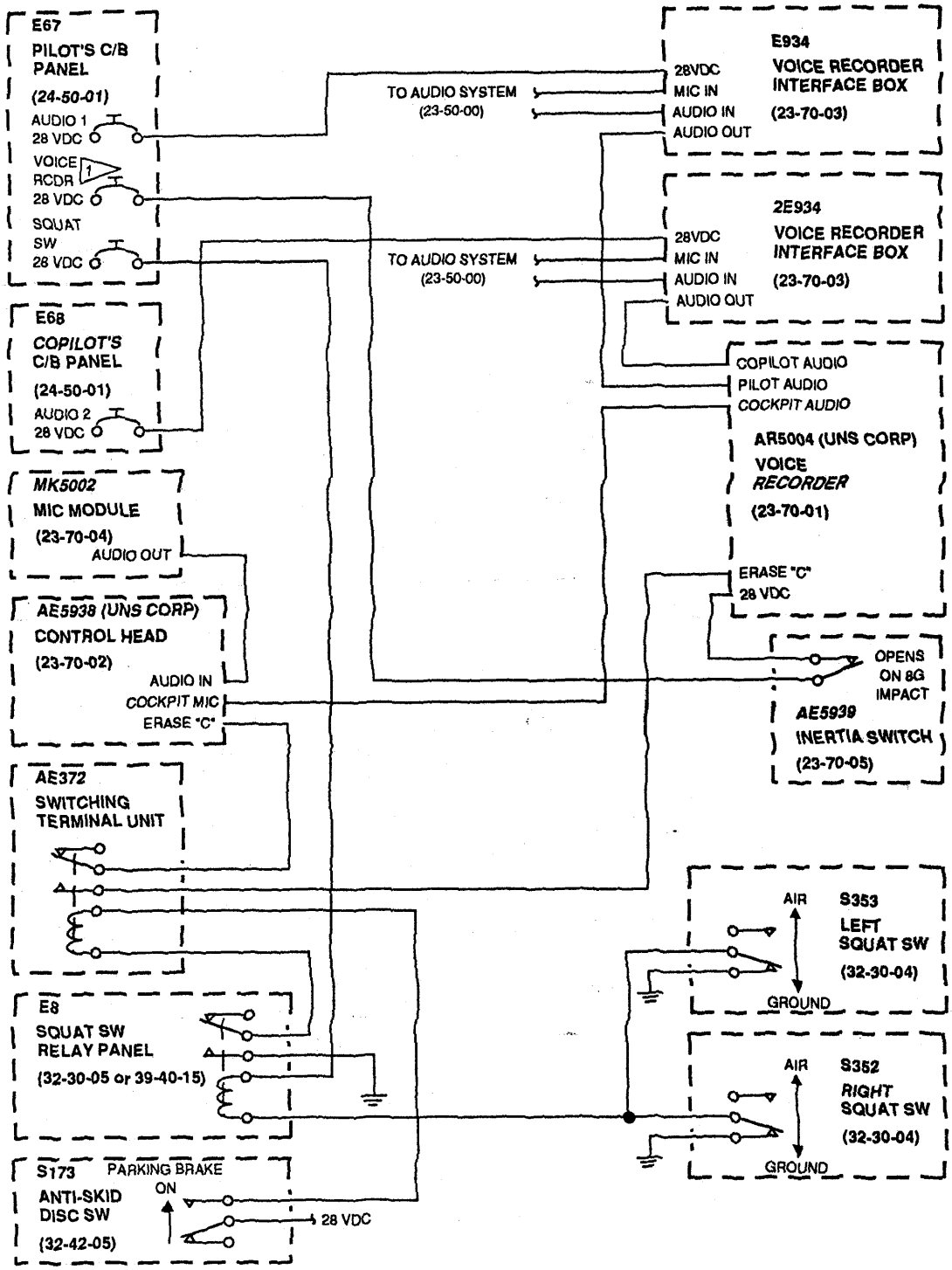
2 Applicable to Fairchild Voice Recorder only.

(AIRCRAFT WITH VOICE RECORDER CUTOUT BOX)

Voice Recorder System Electrical Control Schematic
Figure 1 (Sheet 1 of 2)

3188500 RZ 1.04
2608001 RZ 2.03
2408247

EFFECTIVITY: OPTIONAL



1 Refer to Avionics and Optional Electrical Customization Wiring Manual for circuit breaker location.

(AIRCRAFT WITH INERTIA SWITCH)

3188500 RZ 46.0

Voice Recorder System Electrical Control Schematic
Figure 1 (Sheet 2 of 2)

1. Adjustment/Test

A. Functional Test of Collins AVR-101 Voice Recorder System.

(1) Tools and Equipment

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Headphones, 600 ohm	Type P-23	William J. Murdock	To test voice recorder

(2) Connect external power source to aircraft.
(3) Set Battery Switches on and monitor DC voltmeter for 28 vdc.
(4) Gain access to voice recorder and cutout box.
(5) Monitor green and red indicator lights on cutout box.
(6) Within 10 minutes after Battery Switches are set on, green light shall extinguish red light shall illuminate, indicating that voice recorder is operating in accordance with FAA rules.
(7) Set Battery Switches off and wait approximately 10 seconds; then set Battery Switches on.

NOTE: The following procedures must be accomplished within 6 minutes. If all procedures are not accomplished, repeat step (7) then continue test from point of interruption.

(8) Connect headphones to voice recorder and connect copilot's microphone to copilot's microphone jack.
(9) Depress "channel 2" test button on voice recorder.
(10) Speak into microphone. Playback shall occur approximately one second following aural input.
(11) Depress test button on control head for approximately one second and note 800 Hz tone.
(12) Disconnect microphone from copilot's microphone jack and connect pilot's microphone to pilot's microphone jack.
(13) Depress "channel 3" test button.
(14) Depress test button on control head and speak into microphone.
(15) Playback shall occur approximately one second following aural input.
(16) Disconnect headphones from recorder and disconnect microphone from pilot's microphone jack.
(17) Connect headphones to control head and depress ALL test button on voice recorder.
(18) Speak into area microphone located on control head.
(19) Playback shall occur approximately one second following aural input.
(20) Playback shall be loud and clear on all channels with very little background noise.

NOTE: Channel 1 is not utilized.

(21) Ensure that parking brake is set.
(22) Depress and hold ERASE pushbutton a minimum of seven seconds to ensure complete tape erasure.
(23) Close tailcone access door and disconnect external power source from aircraft.

B. Functional Test of Fairchild A100 Voice Recorder System.
(1) Tools and Equipment

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Headphones, 600 ohm	Type P-23	William J. Murdock	To test voice recorder

(2) Connect external power source to aircraft.
(3) Set Battery Switches on and monitor DC voltmeter for 28 vdc.
(4) *On Aircraft with voice recorder cutout box installed:*
(a) Gain access to voice recorder and cutout box.
(b) Monitor green and red indicator lights on cutout box.
(c) Within 10 minutes after Battery Switches are set to on, green light shall extinguish red light shall illuminate, indicating that voice recorder is operating in accordance with FAA rules.
(d) Set Battery Switches off and wait approximately 10 seconds; then set Battery Switches on.

CAUTION: THE FOLLOWING PROCEDURES MUST BE ACCOMPLISHED WITHIN 6 MINUTES. IF ALL PROCEDURES ARE NOT ACCOMPLISHED, REPEAT STEP (4)(d) THEN CONTINUE TEST FROM POINT OF INTERRUPTION.

(5) Connect headphones to headset jack at control head.
(6) Depress and hold test button on control head. A 600 Hz tone shall be heard and test meter needle shall move into green band. Tone and needle shall fluctuate four times. Release test button.
(7) Speak toward area microphone. Playback shall occur one second following aural input.
(8) Connect pilot's microphone to pilot's microphone jack. Speak into microphone. Playback shall occur one second following aural input. Repeat procedure using copilot's microphone and copilot's microphone jack. Disconnect microphone.
(9) *On Aircraft with voice recorder interface boxes installed:*
(a) Tune in a local ADF station through pilot's and copilot's audio panels. Set pilot's and copilot's SPR/PHONE Switch to PH. Set pilot's ADF switch to ADF 1.
(b) Set all copilot's mixer switches to OFF. ADF station shall be heard one second following input. Set pilot's ADF Switch to OFF. Playback shall be loud and clear with minimal background noise.
(c) Set all pilot's mixer switches to OFF. Set copilot's ADF Switch to ADF 2. ADF station shall be heard one second after ADF input. Playback shall be loud and clear with minimal background noise.
(d) Set ADF Switch to OFF.
(10) Remove headphones from control head.
(11) Ensure that parking brake is set.

CAUTION: DO NOT REPEATEDLY DEPRESS THE ERASE BUTTON. DAMAGE TO VOICE RECORDER MAY RESULT.

(12) Depress and hold ERASE pushbutton approximately six seconds to ensure complete tape erasure.
(13) Set Battery Switches off and disconnect external power source from aircraft.

C. Functional Test of Universal CVR-80 Voice Recorder System.
(1) Tools and Equipment

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Headphones, 600 ohm	Type P-23	William J. Murdock	To test voice recorder

(2) Connect external power source to aircraft.
(3) Set Battery Switches on and monitor DC voltmeter for 28 vdc.
(3) Connect headphones to headset jack at control head.
(4) Depress and hold TEST button on control head for two seconds. The PASS and FAIL annunciators shall illuminate alternately for 30 to 35 seconds and the signal level indicator shall modulate with cockpit noise levels. At the end of the test, the FAIL annunciator shall extinguish and the PASS annunciator shall illuminate steady for approximately 5 seconds.
(5) Ensure all microphones are disconnected from audio panels.
(6) Speak toward area microphone. Playback shall occur immediately following aural input.
(7) Tune in a local ADF station through pilot's and copilot's audio panels. Set pilot's and copilot's Speaker Switches on.
(8) Set pilot's ADF 1 switch on. ADF signal shall be clear and audible through cockpit speakers.
(9) Set all pilot's mixer switches to OFF.
(10) Set pilot's ADF 1 switch on. ADF signal shall be audible in the headphones.
(11) Set pilot's ADF 1 switch to OFF. ADF signal shall extinguish.
(12) Set copilot's ADF 1 switch on. ADF signal shall be clear and audible through cockpit speakers.
(13) Set all copilot's mixer switches to OFF.
(14) Set copilot's ADF 1 switch on. ADF signal shall be audible in the headphones.
(15) Set copilot's ADF 1 switch to OFF. ADF signal shall extinguish.
(16) Connect pilot's microphone to pilot's microphone jack.
(17) Ensure Oxygen Microphone Switch is off.
(18) Speak into microphone. Playback shall occur in headphones.
(19) Disconnect microphone and connect pilot's headset to pilot's microphone jack.
(20) Speak into headset microphone. Playback shall occur in headphones.
(21) Speak into headset microphone with MIC switch on control wheel depressed. Playback shall occur in headphones.
(22) Connect pilot's oxygen mask to pilot's oxygen microphone jack.
(23) Set Oxygen Microphone Switch on.
(24) Speak into oxygen mask microphone. Playback shall occur in headphones.
(25) Speak into oxygen mask microphone with MIC switch on control wheel depressed. Playback shall occur in headphones.
(26) Repeat steps (16) thru (25) using copilot's microphones.
(27) Remove headphones from control head.
(28) Ensure that parking brake is set and Anti-skid Switch is on.
(29) Depress and hold ERASE pushbutton approximately two seconds. The PASS and FAIL annunciators shall flash simultaneously for 5 to 12 seconds and the signal level indicator shall modulate with cockpit noise levels.
(30) Set Battery Switches off.
(31) Disconnect external power source from aircraft.

VOICE RECORDER - MAINTENANCE PRACTICES

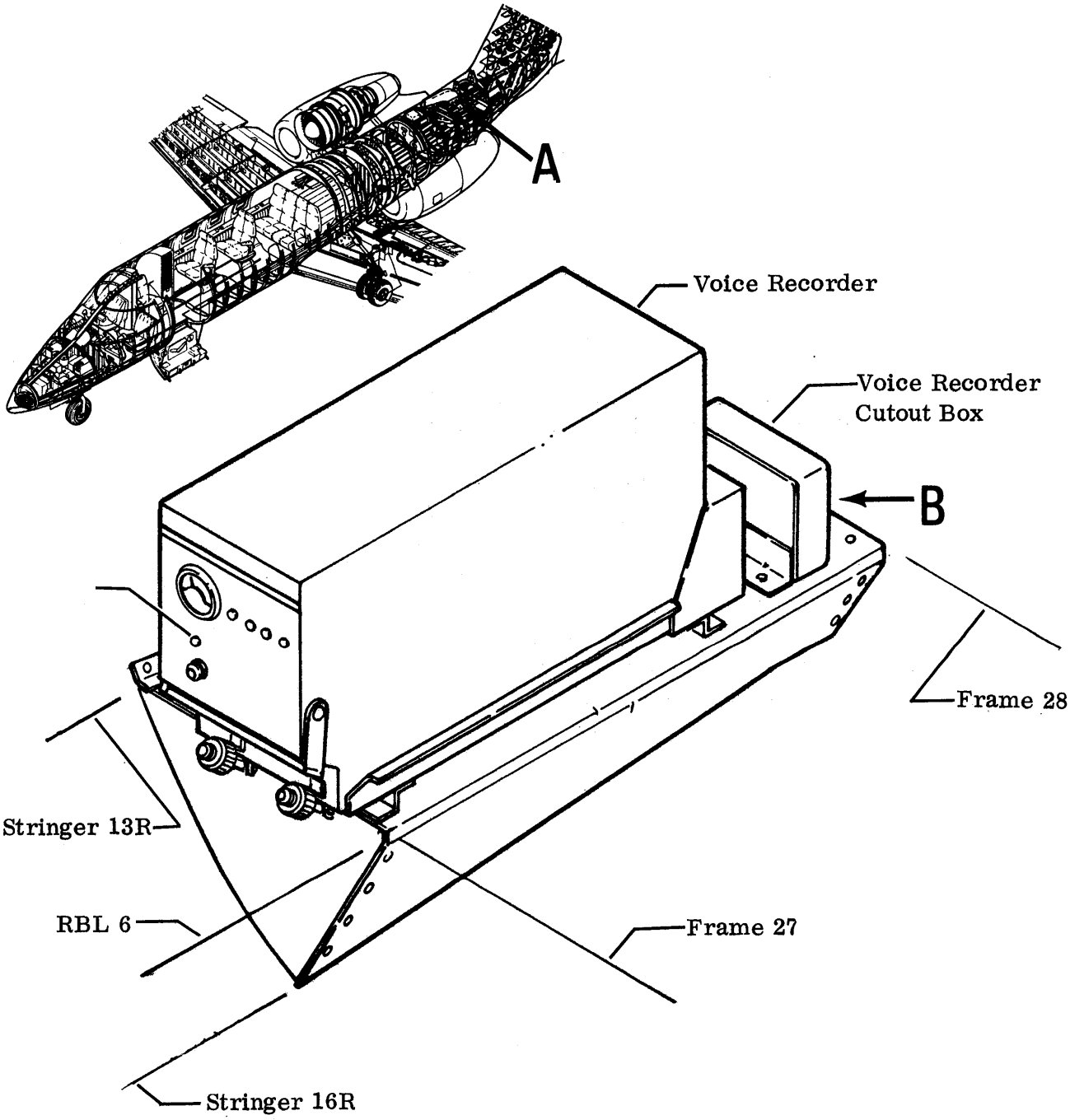
1. Removal/Installation

A. Remove Voice Recorder (See figure 201.)
   (1) Remove electrical power from aircraft.
   (2) Disconnect electrical connector from voice recorder.
   (3) Loosen and release voice recorder hold-down clamps.
   (4) Remove voice recorder from aircraft.

B. Install Voice Recorder (See figure 201.)
   (1) Install voice recorder in mounting rack by sliding voice recorder into rack until rear-mounted receptacles are engaged.
   (2) Engage and secure hold-down clamps.
   (3) Connect electrical connector to voice recorder.
   (4) Restore electrical power to aircraft.
   (5) Perform functional test of voice recorder system.

C. Remove Voice Recorder Cutout Box (See figure 201.)
   (1) Remove electrical power from aircraft.
   (2) Disconnect electrical connector from voice recorder cutout box.
   (3) Remove attaching parts and cutout box from mounting rack.

D. Install Voice Recorder Cutout Box (See figure 201.)
   (1) Install cutout box on mounting rack and secure with attaching parts.
   (2) Connect electrical connector to cutout box.
   (3) Restore electrical power to aircraft.
   (4) Perform functional test of voice recorder system.



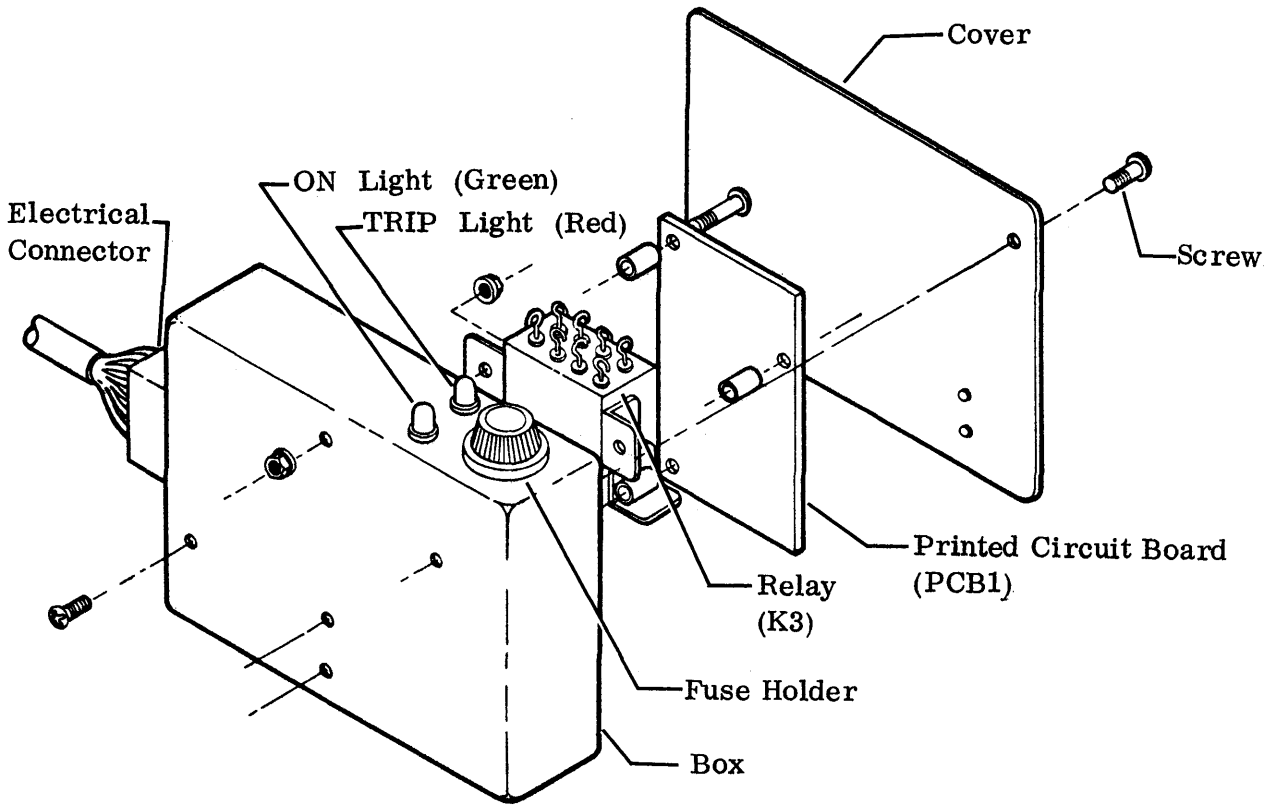
Detail A

Voice Recorder/Cutout Box Installation
Figure 201 (Sheet 1 of 2)

10-54B-2

EFFECTIVITY: OPTIONAL

MM-99



Voice Recorder Cutout Box

Detail B

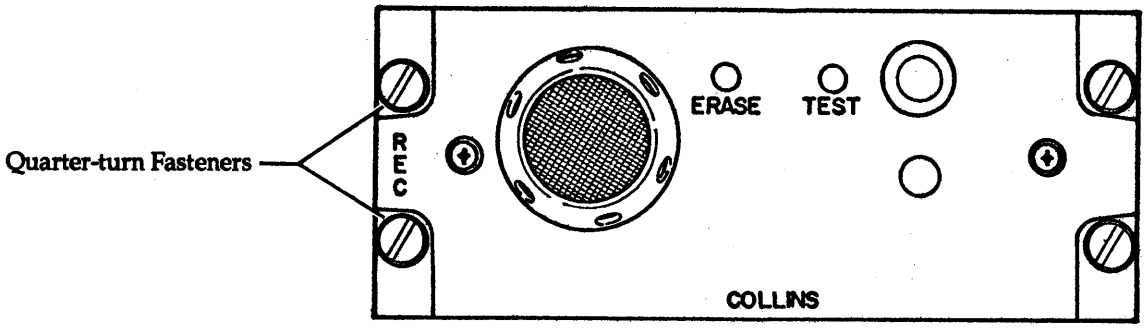
Voice Recorder/Cutout Box Installation
Figure 201 (Sheet 2 of 2)

VOICE RECORDER CONTROL PANEL - MAINTENANCE PRACTICES

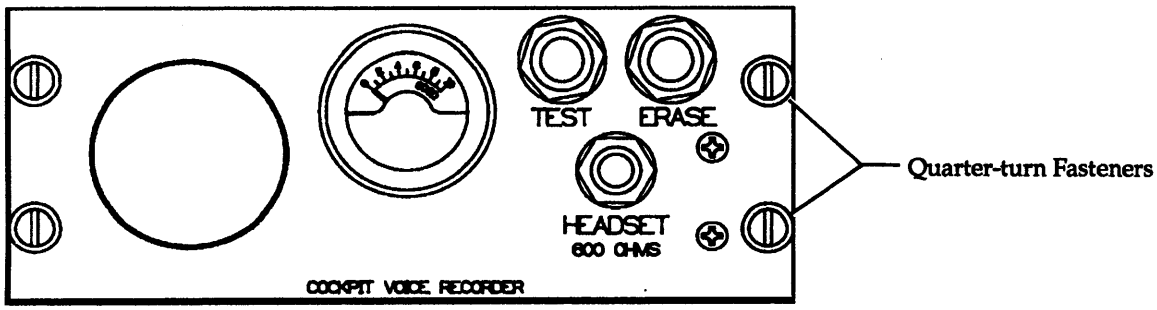
1. REMOVAL/INSTALLATION

A. Remove Voice Recorder Control Panel. (See figure 201.)
   (1) Remove electrical power from aircraft.
   (2) Release quarter-turn fasteners and withdraw control panel from pedestal.
   (3) Disconnect electrical connector from control panel.

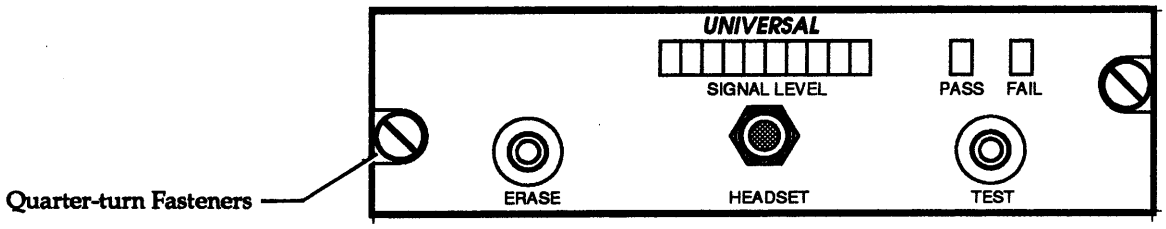
B. Install Voice Recorder Control Panel. (See figure 201.)
   (1) Connect electrical connector to control panel.
   (2) Install control panel in pedestal and secure with quarter-turn fasteners.
   (3) Restore electrical power to aircraft.
   (4) Perform functional test of voice recorder system. (Refer to 23-70-00, Adjustment/Test.)



(COLLINS CONTROL PANEL)



(FAIRCHILD CONTROL PANEL)



(UNIVERSAL CONTROL PANEL)

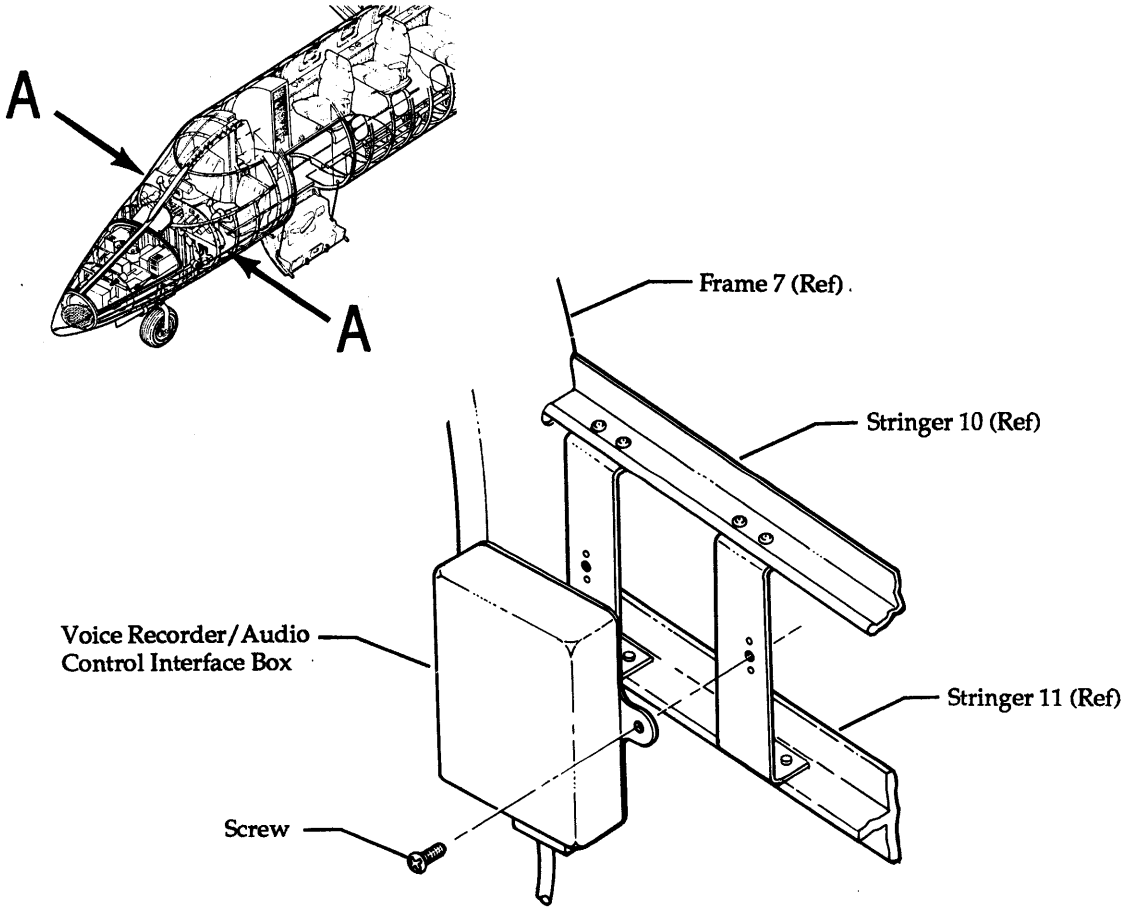
10-54B-2

Voice Recorder Control Panel Installation
Figure 201

EFFECTIVITY: OPTIONAL

VOICE RECORDER/AUDIO CONTROL INTERFACE BOX - MAINTENANCE PRACTICES

1. **Removal/Installation**
   - A. Remove Voice Recorder/Audio Control Panel Interface Box (See figure 201.)
     - (1) Remove electrical power from the aircraft.
     - (2) Remove cockpit side panel. (Refer to Chapter 25.)
     - (3) Disconnect electrical connector from interface box.
     - (4) Remove attaching parts and interface box from aircraft.
   - B. Install Voice Recorder/Audio Control Panel Interface Box (See figure 201.)
     - (1) Position interface box and secure with attaching parts.
     - (2) Connect electrical connector to interface box.
     - (3) Restore electrical power to aircraft and perform Functional Test of Voice Recorder System. (Refer to 23-70-00, Adjustment/Test.)
     - (4) Install cockpit side panel. (Refer to Chapter 25.)



(LH SHOWN, RH TYPICAL)

Detail A

10-202A

Voice Recorder/Audio Control Panel Interface Box Installation
Figure 201

VOICE RECORDER MICROPHONE MODULE - MAINTENANCE PRACTICES

1. Removal/Installation

A. Remove Voice Recorder Microphone Module (See figure 201.)

(1) Remove screws attaching glareshield to autopilot controller.
(2) Remove autopilot controller. (Refer to Chapter 22.)
(3) Remove screws attaching microphone module to glareshield.
(4) Disconnect electrical connector from microphone module.
(5) Remove microphone module from aircraft.

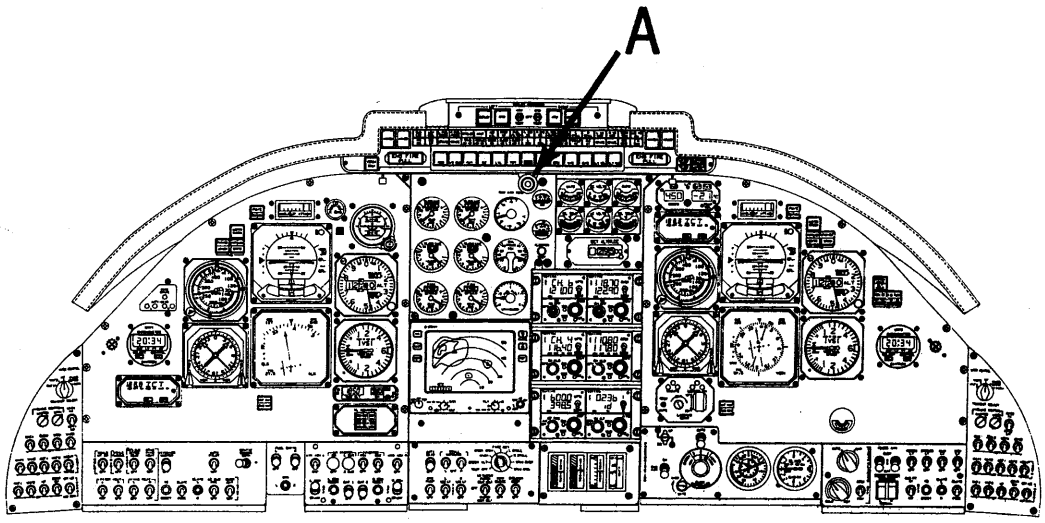
NOTE: Access to microphone module connector may require slipping wire bundle from wire clips.

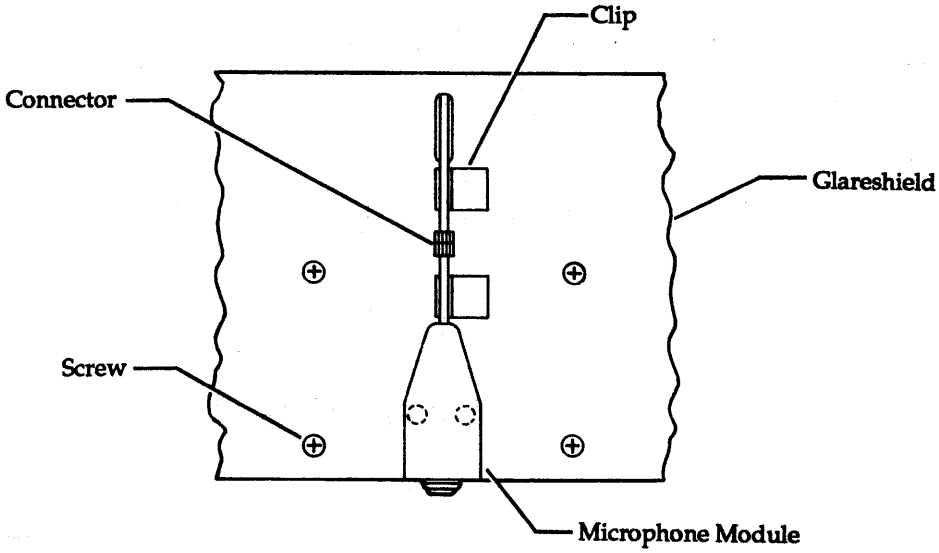
B. Install Voice Recorder Microphone Module (See figure 201.)

(1) Connect electrical connector to microphone module.

NOTE: If the wire bundle was removed from the plastic clip(s), snap wire bundle into plastic clip(s).

(3) Install screws thru glareshield and into microphone module attaching microphone module to glareshield.
(4) Install autopilot controller. (Refer to Chapter 22.)
(5) Install screws attaching glareshield to autopilot controller.
(6) Restore electrical power to aircraft and perform Functional Test of Voice Recorder System. (Refer to 23-70-00, Adjustment/Test.)





(VIEW LOOKING UP AT GLARESHIELD)

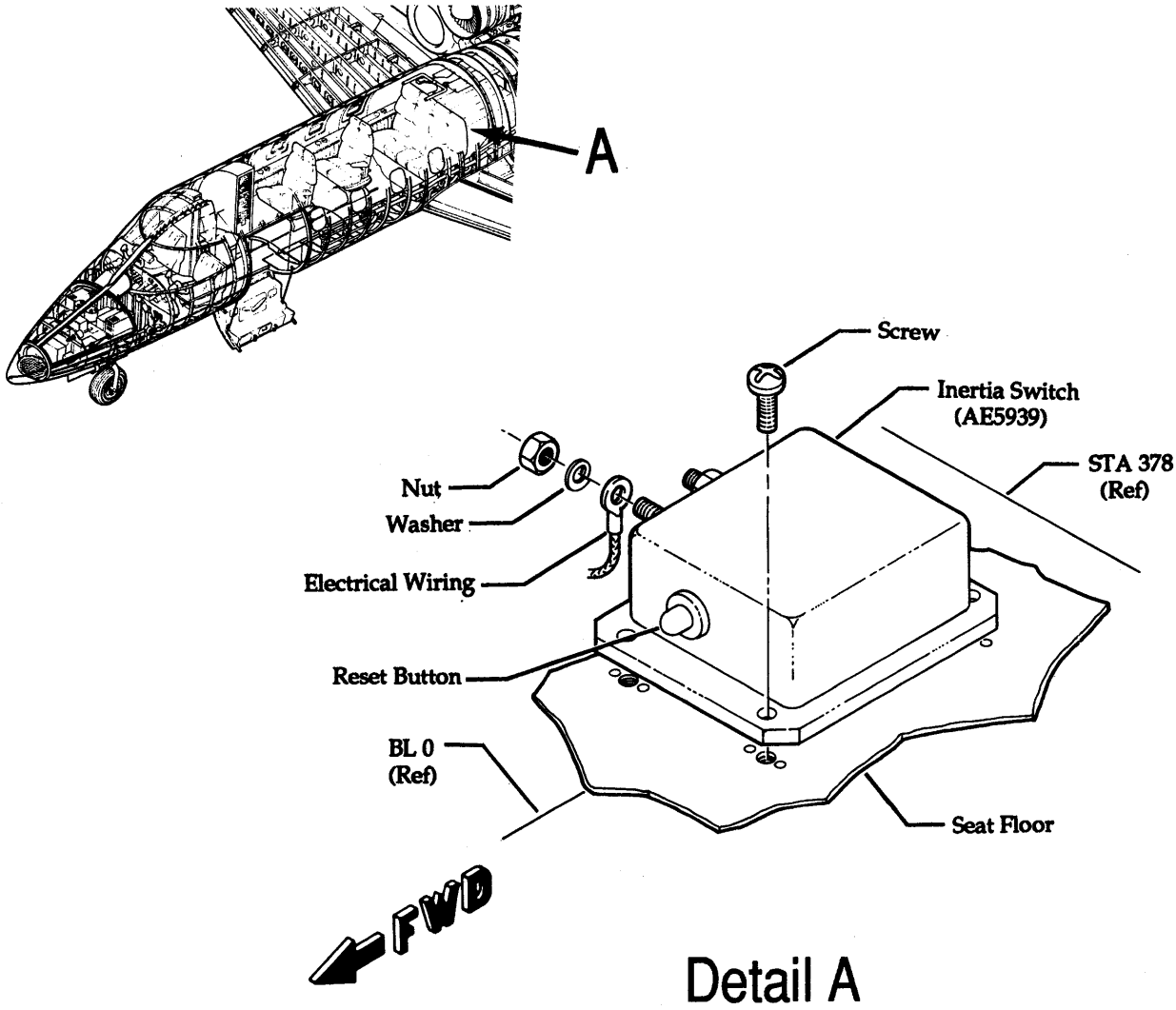
Detail A

10-115A

Voice Recorder Microphone Module Installation
Figure 201

INERTIA SWITCH - MAINTENANCE PRACTICES

1. **Removal/Installation**
   - A. Remove Inertia Switch (AE5939)
     - (1) Remove electrical power from aircraft.
     - (2) Remove interior furnishings as needed to gain access to inertia switch under baggage compartment floorboard on seat floor. (Refer to Chapter 25.)
     - (3) Disconnect and identify electrical wiring from inertia switch.
     - (4) Remove attaching parts and switch from aircraft.
   - B. Install Inertia Switch (AE5939)
     - (1) Position inertia switch on seat floor and secure with attaching parts.
     - (2) Identify and connect electrical wiring to switch. (Refer to appropriate Wiring Manual.)
     - (3) Depress reset button on forward side of switch to ensure switch circuit is closed.
     - (4) Install interior furnishings. (Refer to Chapter 25.)
     - (5) Perform functional test of voice recorder system. (Refer to 23-70-00, Adjustment /Test.)



A10-206A

Inertia Switch Installation
Figure 201