



ELECTRONIC AND AVIONICS SYSTEMS

INSTALLATION MANUAL

BENDIX/KING[®]

KY 196A/197A

***VHF COMMUNICATIONS
TRANSCEIVERS***

MANUAL NUMBER 006-00695-0003

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SECTION I
GENERAL INFORMATION

1.1 INTRODUCTION

This manual contains information relative to the physical, mechanical, and electrical characteristics of the BENDIX/KING Silver Crown KY 196A and KY 197A VHF Communications Transceivers. Installation and operating procedures are also included. Information relative to the maintenance, alignment, and procurement of replacement parts may be found in the KY 196A/197A Maintenance/Overhaul Manual.

1.2 DESCRIPTION OF EQUIPMENT

The KY 196A and KY 197A VHF Comm Transceivers consist electrically of five sections: receiver, transmitter, synthesizer, display circuitry, and the microprocessor board. The transceivers are identical except that the KY 196A operates at 28VDC and features 16 Watts of transmitter power while the KY 197A operates at 14VDC and features a 10 Watt transmitter.

The KY 196A/197A is available with 25KHz or 50KHz receiver selectivity, diffused or non-diffused display lenses, backlit bezel nomenclature, and operating ranges of 118.000 to 139.975MHz depending on flavor. See Paragraph 1.4 below for descriptions of specific flavors.

The KY 196A/197A has the capability of programming up to nine memory channel frequencies for later recall. Channel frequency information is stored in non-volatile memory so the when the radio is turned off and then back on, channel information is retained. Both units also have the capability of remote transfer of Use and Standby frequencies, and remote recall of channel frequency information.

1.3 TECHNICAL CHARACTERISTICS

SPECIFICATION	CHARACTERISTIC
TSO COMPLIANCE:	
Transmitter:	
KY 196A (flavors -30,-31,-32,-50,-60)	TSO C37c, DO-186 Class 3
KY 197A	TSO C37c, DO-186 Class 4
Receiver:	
KY 196A (flavors -30, -32,-50,-60)	TSO C38c, DO-186 Classes C & D
KY 196A (flavor -31)	TSO C38c, DO-186 Classes A & B
KY 197A (flavors -30, -32,-60)	TSO C38c, DO-186 Classes C & D
KY 197A (flavor -31)	TSO C38c, DO-186 Classes A & B
ENVIRONMENTAL DATA:	See TSO Appendix
PHYSICAL DIMENSIONS:	
Height:	1.35 in (3.43 cm)
Width:	6.312 in (16.032 cm)
Depth (behind aircraft panel):	10.776 in (25.847 cm)

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WEIGHT:	
With rack	2.8 lbs (1.27 Kg), ±0.2 lbs (0.09 Kg.)
Without rack	2.5 lbs (1.14 Kg), ±0.2 lbs (0.09 Kg.)
MOUNTING:	Panel mounted, no shock mounting required
TEMPERATURE RANGE:	-20°C to +55°C with short time operation at +70°C
POWER REQUIREMENTS:	
KY 196A:	28VDC at 1.0A (Receive) 5.0A (Transmit)
KY 197A:	14VDC at 1.0A (Receive) 6.0A (Transmit)
FREQUENCY RANGE:	118.000 MHz to 135.975, 136.975, or 139.975 MHz in 25 KHz or 50 KHz increments, dependent on flavor.
FREQUENCY STABILITY:	.0015% from -20°C to +55°C
DESIGN:	All solid state, Printed circuit board and point to point wiring.
FCC FORM 404 DATA	
1) BAND WIDTH	25 KHZ or 50 KHZ (Dependent on flavor)
2) FREQ. RANGE	118.000 to 135.975, 136.975 or 139.975 MHZ (Dependent on flavor)
3) TYPE ACCEPTANCE NUMBER	KY 196A or KY 197A
4) EMISSION	6K00A3E 13K0A9W

TRANSMITTER

POWER OUTPUT:	
KY 196A:	16 Watts minimum
KY 197A:	10 Watts minimum
MODULATION:	70% modulation capability with 98% limiting. Less than 15% distortion at 70% modulation.
SIDETONE OUTPUT:	Adjustable up to 100mW into 500Ω headphones
MICROPHONE:	Standard carbon dynamic mic containing transistorized preamp. Must provide 100mVRMS into 100Ω load.
HARMONIC CONTENT:	Greater than 60dB down from carrier.
HIGH TEMPERATURE PROTECTION:	If the transmitter or modulator circuits become hot enough to potentially hurt any components in the

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transceiver, a protection circuit will automatically turn down the transmitter power consumption and output power (KY 196A 4 Watts minimum/KY 197A 2.5 Watts minimum).

DUTY CYCLE: 1 minute on, 4 minutes off

RECEIVER

RECEIVER SENSITIVITY: 2 μ V (hard) shall produce not less than 6dB S+N/N with 1KHz tone modulated 30% (with compressor disabled).

RECEIVER SELECTIVITY: -6dB at \pm 8KHz minimum. 40dB at \pm 17KHz. 60dB at \pm 22KHz.

Class A (flavors -31) 6dB bandwidth at not less than 30.0 KHz with no less than 15.0KHz on each side. 60dB bandwidth no more than 40.0 KHz on each side.

Class C (flavors -30,-32,-50,-60) 6dB bandwidth at not less than 20.6 KHz with no less than 10.0 KHz on each side. 60dB bandwidth with no more than 39.2 KHz with no more than 20.0 KHz on each side.

RECEIVER OUTPUT: 100mW minimum into 500 Ω minimum.

AGC CHARACTERISTIC: From 5 μ V to 10,000 μ V audio output will not vary more than 3dB.

SQUELCH: Automatic squelch (internally adjustable carrier-to-noise setting) with manual disable.

SPURIOUS RESPONSES AND CROSS MODULATION PRODUCTS: At least 80dB down.

INTERCOM INPUT: The mic is connected to the intercom input. The receiver is operational and mic audio appears at the audio output along with receive audio. 100mVRMS of mic audio into 100 Ω is required for 100mW output.

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1.4 UNITS AND ACCESSORIES SUPPLIED

A. KY 196A VHF Comm Transceiver, PN 064-1054-XX, which is available in the following flavors:

PN	Receiver Selectivity	LENS	FREQUENCY RANGE
064-1054-30	25 KHz	Diffused	118.000 to 136.975MHz
064-1054-31	50 KHz	Diffused	118.000 to 136.975MHz
064-1054-32	25 KHz	Non-Diffused	118.000 to 136.975MHz
064-1054-50	25 KHz	N/A	118.000 to 136.975MHz
064-1054-60	25 KHz	Diffused	118.000 to 136.975MHz

NOTE

The 064-1054-50 version has 5V lighting. Also, the bezel will be removed since this version is used in common bezel applications such as the CNI 5000.

B. KY 197A VHF Comm Transceiver, PN 064-1053-XX, which is available in the following flavors:

PN	Receiver Selectivity	LENS	FREQUENCY RANGE
064-1053-30	25KHz	Diffused	118.000 to 136.975MHz
064-1053-31	50KHz	Diffused	118.000 to 136.975MHz
064-1053-32	25KHz	Non-Diffused	118.000 to 136.975MHz
064-1053-60	25 KHz	Diffused	118.000 to 136.975MHz

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C. KY 196A/197A Installation Kit, PN 050-02600-0000, which contains the following components:

PN	DESCRIPTION	QTY
030-00101-0002	PANEL MOUNT PLUG	1.00
030-01094-0080	CONNECTOR KEYED	1.00
030-01107-0031	CONNECTOR TERM 31T	1.00
057-02193-0001	DECAL COMM 1	1.00
057-02193-0002	DECAL COMM 2	1.00
089-02013-0037	NUT HEX 6-32	1.00
089-02051-0024	NUT SPEED U 6-32	4.00
089-02191-0022	NUT HEX ESNA 6-32	1.00
089-02353-0001	NUT CLIP 6-32	6.00
089-05903-0007	SCR PHP 4-40X7/16	2.00
089-05907-0008	SCR PHP 6-32X1/2	1.00
089-06012-0008	SCR FHP 6-32X1/2	6.00
089-08094-0030	WSHR FLT STD .446	1.00
089-08168-0002	WASHER WAVE	1.00
090-00019-0007	RING RTNR .438	1.00
091-00072-0002	CABLE CLAMP 2	1.00

1.5 ACCESSORIES REQUIRED, BUT NOT SUPPLIED

- A. Communications antenna and cables.
- B. Headphones: 500Ω nominal impedance.
- C. Microphone: Low impedance carbon or dynamic with transistorized preamp.
- D. For 13.75V operation of the KY 196A a 14-to-28V converter such as the KGS Electronics Model RB-125 or equivalent may be used. The RB-125 is available from BENDIX/KING under PN 068-01016-0003.

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1.6 LICENSE REQUIREMENTS

The transmitter, as installed in the aircraft, requires an Aircraft Radio Station License. This license is obtained by filing FCC Form 404, Aircraft Radio Station License Application, which may be obtained from your local FCC Field Office. The KY 196A/197A may be operated for up to 30 days without a station license after filing Form 404 while awaiting the receipt of the radio license if a copy of FCC Form 404 is kept in the aircraft.

This equipment has been type accepted by the FCC and entered on their list of type accepted equipment as King KY 196A/197A, and must be identified as King KY 196A/197A on FCC Form 404.

CAUTION

THE VHF TRANSMITTER IN THIS EQUIPMENT IS GUARANTEED TO MEET FEDERAL COMMUNICATIONS COMMISSION ACCEPTANCE OVER THE OPERATING TEMPERATURE RANGE ONLY WHEN AN ALLIEDSIGNAL CRYSTAL IS USED IN THE STABILIZED MASTER OSCILLATOR.

USE OF OTHER THAN AN ALLIEDSIGNAL CRYSTAL IS CONSIDERED AN UNAUTHORIZED MODIFICATION AND MAY VOID THE WARRANTY.

The Federal Communications Commission requires that the operator of the transmitter of this equipment hold a Restricted Radio Telephone Operator Permit (FCC Form 753) or higher class license. A permit may be obtained by a US citizen from the nearest field office of the FCC; no examination is required.

1.7 INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

The instructions for continued airworthiness given in the TC or STC approvals for this product supplements or supercedes the instructions for continued airworthiness in this manual.

Most AlliedSignal products are designed and manufactured to allow "on condition maintenance." On condition maintenance is described as follows; There are no periodic service requirements necessary to maintain continued airworthiness. No maintenance is required until the equipment does not properly perform it's intended function. When service is required, a complete performance test should be accomplished following any repair action. Consult the appropriate unit Maintenance/Overhaul Manual for complete performance test information.

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SECTION II
INSTALLATION

2.1 GENERAL INFORMATION

This section contains suggestions and factors to consider before installing the KY 196A/197A. Close adherence to these suggestions will assure more satisfactory performance from the equipment.

2.2 UNPACKING AND INSPECTING EQUIPMENT

Unpack the equipment carefully and inspect each item for evidence of damage incurred during shipment. If a damage claim must be filed, save the shipping container and all packing materials to substantiate your claim. The claim should be filed with the transportation company as soon as possible. The shipping container and packing material should be saved in any case in the event that storage or reshipment of the equipment is necessary.

2.3 EQUIPMENT INSTALLATION

The KY 196A/197A installation will conform to standards designated by the customer, installing agency, and existing conditions as to the unit location and type of installation. However, the following suggestions should be considered before installing the KY 196A/197A. The installing agency will supply and fabricate all external cables. The connectors required are supplied by BENDIX/KING. Interconnect diagrams are included in this manual as Figures 2-5 through 2-10. Refer to table below for compatible installations.

Current installation ->	KY96A	KY97A	KY196	KY197
KY196A	YES *1 *3	NO	YES *2	NO
KY197A	NO	YES *3	NO	YES *2

*1 Display brightness controlled by dimmer bus not photocell.

*2 Button/Bezel backlighting not operative.

*3 If installation utilizes external audio amplifier.

NOTE: 064-1054-50 is not compatible with other KY 96A/97A/196A/197A installations.

NOTE

Use good quality stranded wire with at least 600V insulation that will not support a flame.

2.3.1 AVIONICS COOLING REQUIREMENTS FOR PANEL MOUNTED EQUIPMENT

The most important contribution to improved reliability of avionics equipment is to limit the maximum operating temperature of each unit. While modern designs consume less total energy, the heat dissipated per unit volume (Watts/cubic inch) remains much the same due to contemporary high density packaging techniques. While each individual unit may or may not require forced air cooling, the combined heat generated by several units operating in a typical panel or rack can significantly degrade the reliability of the equipment if provisions for adequate cooling are not incorporated in the initial installation.

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2.3.2 MOUNTING RACK INSTALLATION

- A. The KY 196A/197A is mounted rigidly in the aircraft panel. Select a position in the panel that is not too close to any high external heat source. Remember to allow adequate space for installation of cables and connectors. Avoid sharp bends and placing the cables too near the aircraft control cables.
- B. When installing two or more panel mounted units in a stack, the mounting trays shall be spaced 0.050 inches (0.127 cm) apart. Current production mounting trays have 0.025 inch (0.064 cm) dimples built in to top and bottom and both sides so that the trays will automatically be spaced properly.
- C. Refer to Figure 2-3 for the KY 196A/197A mounting dimensions. Mark and cut the mounting holes.
- D. Secure the mounting rack to the instrument panel per Figure 2-3. The rear mounting bosses should be attached to the airframe by means of support brackets.

2.3.3 ANTENNA INSTALLATION

A conventional 50Ω vertically polarized comm antenna is required with the KY 196A/197A. Vertical bent whip antennas are not recommended. Wideband comm antennas provide efficient operation over the comm band. Antennas should be installed per manufacturer's recommendations. Additional recommendations are as follows:

- A. Mount antenna on a flat metal surface or install a ground plane at least 18 inches square.
- B. The antenna should be well removed from any projections and the engine(s) and propeller(s). Also, for satisfactory operation, the antenna isolation between a communications transmitter antenna and a nav receiver antenna, as well as between dual comm antennas, should be a minimum of 30dB. VHF antennas mounted on top and bottom have approximately 30dB isolation. A horizontally polarized nav antenna and a vertically polarized comm antenna will have practical values from 10 to 30dB.
- C. If both comm antennas must be top mounted or both bottom mounted, antenna isolation between comms may not be adequate to prevent reradiation. In single audio panel installations, reradiation can be prevented by use of the XMIT-REC interlock. In dual audio panel installations where simultaneous operation of both comms is desired, the XMIT-REC interlock is not recommended.

2.3.4 CABLE HARNESS AND CONNECTOR ASSEMBLY

The KY 196A/197A uses a special connector that mates directly with the printed circuit board inside the unit. Assembly of the connector is as follows:

- A. Contact Terminal Assembly using Molex Crimper (See Figure 2-1)
 1. Strip each wire 5/32" for contact terminal, PN 030-01107-00XX. Note: The last two digits of the part number indicates the number of terminals required.
 2. Place the conductor tab section of a contact terminal on the appropriate anvil of the hand crimping tool. Close the crimper until the terminal is held lightly in place.
 3. Insert the stripped conductor into the contact until the insulation is even with the side of the crimper facing the operator, the conductor hits the crimper's wire stop, or the insulation contacts the crimpers step-jaw, depending on the type of crimp tool being used.
 4. Squeeze the crimping tool's handles until the crimp jaws are fully closed or until a sufficient crimp is obtained. With a step-jaw type crimper, the contact terminal will have been crimped to both the insulated and bare sections of the conductor.

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If single-jaw crimpers are being used, move the contact terminal/conductor assembly to locate the terminal's insulation tabs on the anvil of the crimp tool. Crimp again until the jaws are fully closed or a sufficient crimp is obtained to the insulation.

B. Contact Insertion into Molex Connector Housing

After the contact terminals have been installed on the wiring harness, the contact terminals can be inserted into the proper location in the connector housing (PN 030-01094-0080). The terminal cannot be inserted upside down. Be sure to push the terminal all the way in until a click can be felt or heard. The self-locking feature can be tested by gently pulling on the wire.

C. Location of Polarizing Key in Housing

Prior to insertion of connector into rear of unit, check polarizing key position between contacts 8 and 9. Refer to Figure 2-4 to check correct position of polarizing key.

D. Extraction of Contact from Molex Connector

1. Slip the flat narrow blade of a Molex HT-1884 contact ejector tool, PN 047-05099-0001, under the contact on the mating side of the connector. By turning the connector upside down one can see the blade slide into the stop.
2. When the ejector is slid into place, the retaining tab of the contact is raised, allowing the contact to be removed by pulling moderately on the lead.
3. Neither the contact or position is damaged by removing a contact; however, the contact should be visually checked before reinstalling to be certain that retaining tab "A" extends as shown in Figure 2-1 for retention in connector.

E. Coax Connector

Refer to Figure 2-2 for instructions for mounting the right angle coaxial BNC connector to the coax cable. Install the connector into the mounting rack.

2.3.5 KY 196A/197A INSTALLATION

- A. Looking at the top of the unit, make sure the front lobe of the hold-down device is in a vertical position.
- B. Slide the unit into the mounting rack until the front lobe touches the mounting rack.
- C. Insert a 3/32" Allen wrench through the hole in the front panel to engage the locking screw. Turn clockwise until the rear lobe engages the mounting rack. Continue turning until the unit is secure in the mounting rack. **DO NOT OVERTIGHTEN.**
- D. To remove the unit turn the locking screw counterclockwise, using a 3/32" Allen wrench, until the unit disengages from the mounting rack. Pull the unit out of the mounting rack by pulling on the indentations on each side of the unit's bezel.

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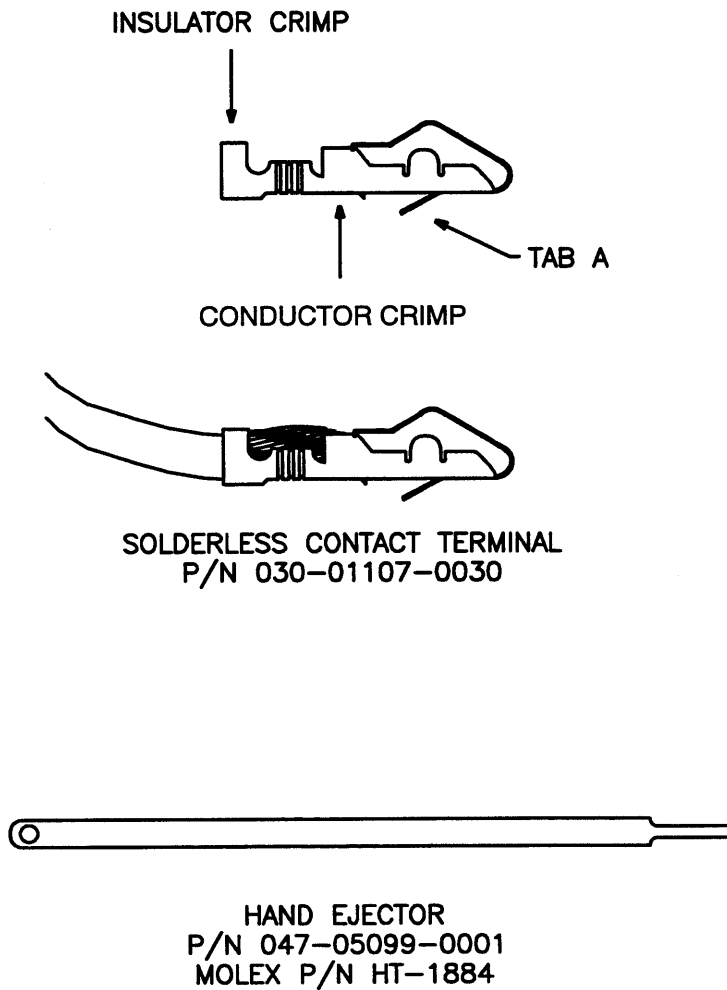


Figure 2-1 Molex Terminals and Tools

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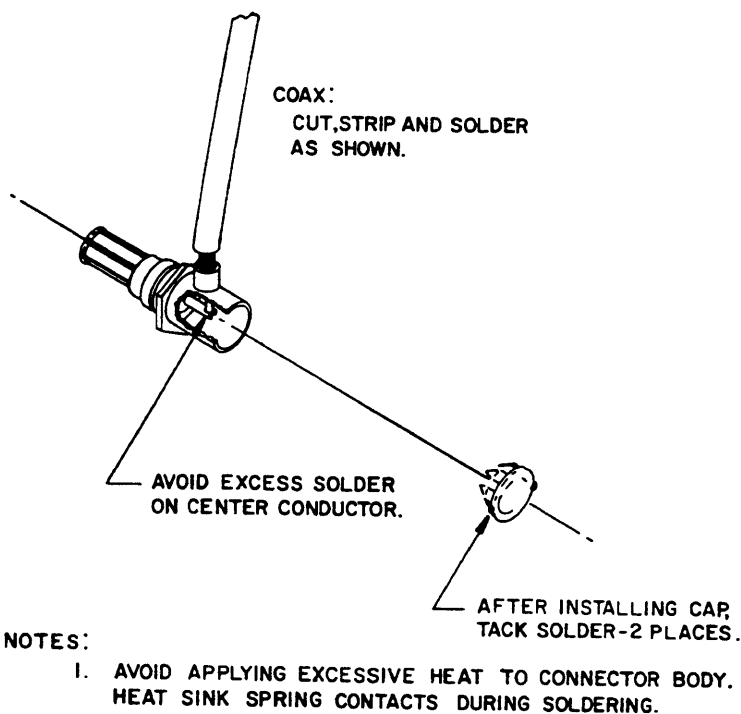
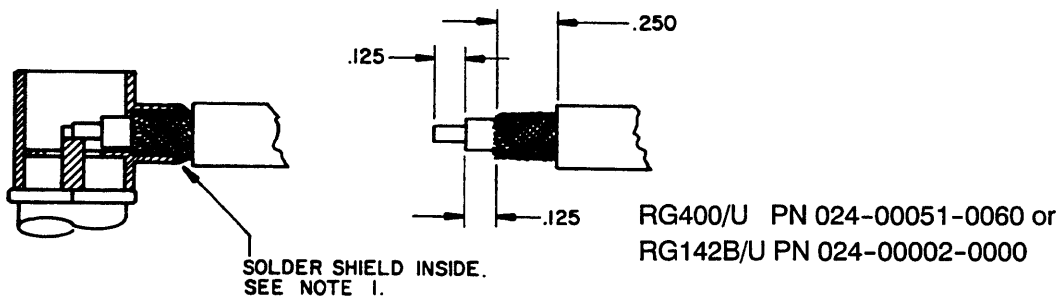


Figure 2-2 CONNECTOR (P/N 030-00101-0002) ASSEMBLY
 (Dwg No 696-06328-0000 R0)

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2.4 POST INSTALLATION CHECKS

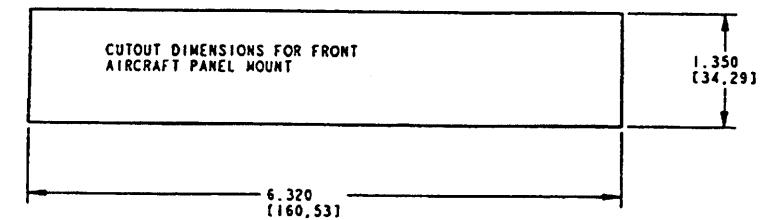
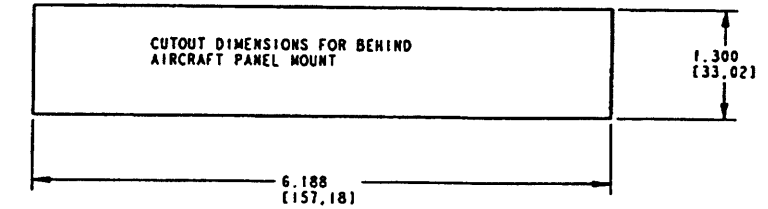
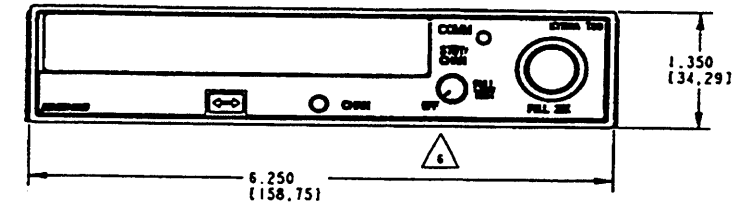
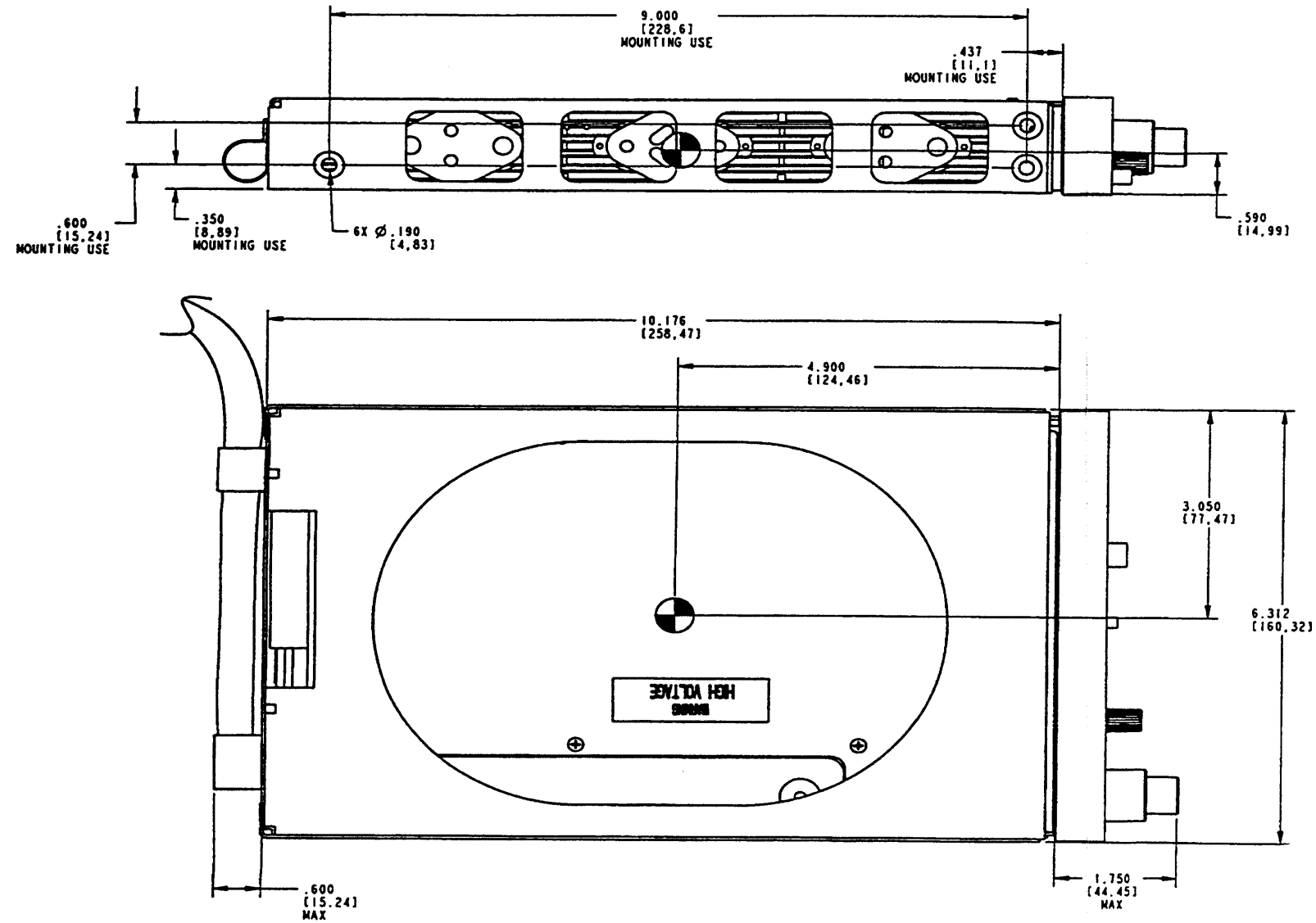
An operational performance flight test is recommended after the installation is completed to insure satisfactory performance of the equipment in its normal environment. Check all aircraft control movements to be sure no electrical cables interfere with their operation. To check the communications transceiver, maintain an appropriate altitude and contact a ground station facility at a range of at least 50 nautical miles. Then contact a ground station close in. Pull the volume control out to defeat the automatic squelch feature and listen for any unusual electrical noise which would reduce the comm receiver sensitivity by increasing the squelch threshold. If possible, verify the communications capability on both the high and low end of the VHF comm band.

NOTE

As an added precaution before the flight, check the antenna. VSWR should be checked with an in-line type wattmeter inserted in the coaxial transmission line between the transceiver and the antenna. Any problem with the antenna installation will most likely be seen as a high reflected power. A VSWR of 3:1 will result in a 25% loss of power.

The brightness of the display can be set for the most pleasing intensity by placing the unit in Dimmer Adjust mode during low light level conditions. See Paragraph 3.1 of this manual for Dimmer Adjust mode operating instructions.

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- NOTES:
1. DIMENSIONS ARE IN INCHES [MM]
 2. WEIGHT: WITH RACK 2.8LBS [1.27KG] ± 0.2LBS [0.09KG]
 WITHOUT RACK 2.5LBS [1.14KG] ± 0.2LBS [0.09KG]
 3. TOLERANCES FOR PANEL CUTOUTS: $+.010/-0.000$ [$+2.5/-0$]
 4. WHEN INSTALLING TWO OR MORE PANEL MOUNTED UNITS IN A STACK, THE MOUNTING TRAYS SHALL BE SPACED .050 INCHES [1.27MM] APART. NEWER STYLE MOUNTING TRAYS HAVE .025 DIMPLES BUILT IN, TOP AND BOTTOM, BOTH SIDES, TO ENSURE PROPER SPACING.
 5. TO DETERMINE STACK HEIGHT, USE THE HEIGHT DIMENSION FOR A FRONT AIRCRAFT PANEL MOUNT.
 6. KY196A (064-1054-60) ILLUSTRATED. ALL DIMENSIONS BETWEEN VARIOUS FLAVORS ARE IDENTICAL UNLESS OTHERWISE NOTED. ALL KNOB AND CONTROL LOCATIONS/FUNCTIONS ARE IDENTICAL BETWEEN VARIOUS FLAVORS.
 7. INSTALLATION INFORMATION FOR KY196A 064-1054-50 IS CONTAINED IN CN15000 INSTALLATION MANUAL.
 8. DIMENSIONS (EXCEPT PANEL CUTOUT OR MOUNTING USE DIMENSIONS) ARE REFERENCE ONLY. REFERENCE DIMENSIONS MAY BE SLIGHTLY OVERSIZE, TO ASSURE FIT OF UNIT.

FIGURE 2-3 OUTLINE AND MOUNTING DRAWING
DWG. NO. 155-05666-0000, REV. AC

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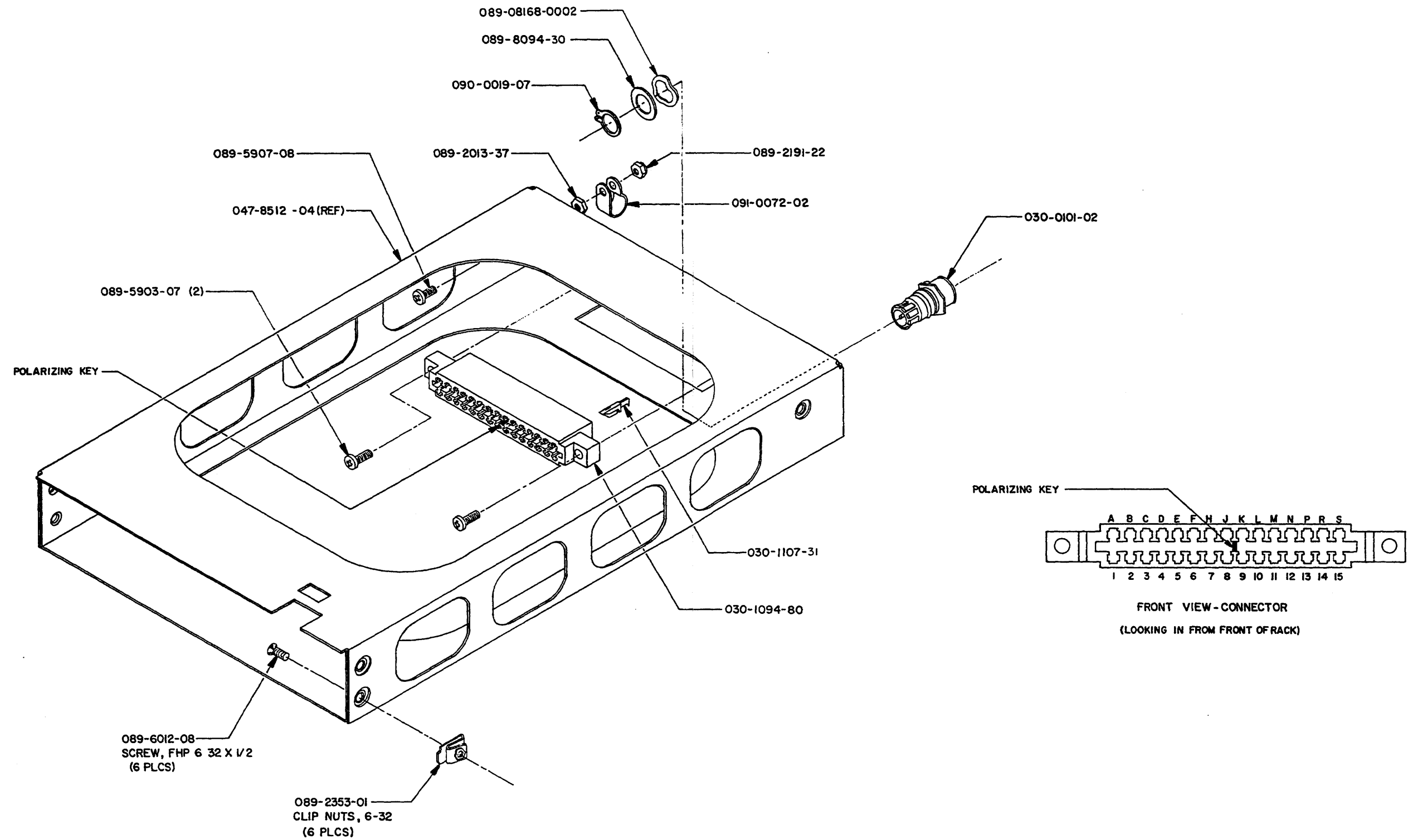


FIGURE 2-4 INSTALLATION ASSEMBLY DRAWING
DWG. NO. 155-05690-0000, REV. 4

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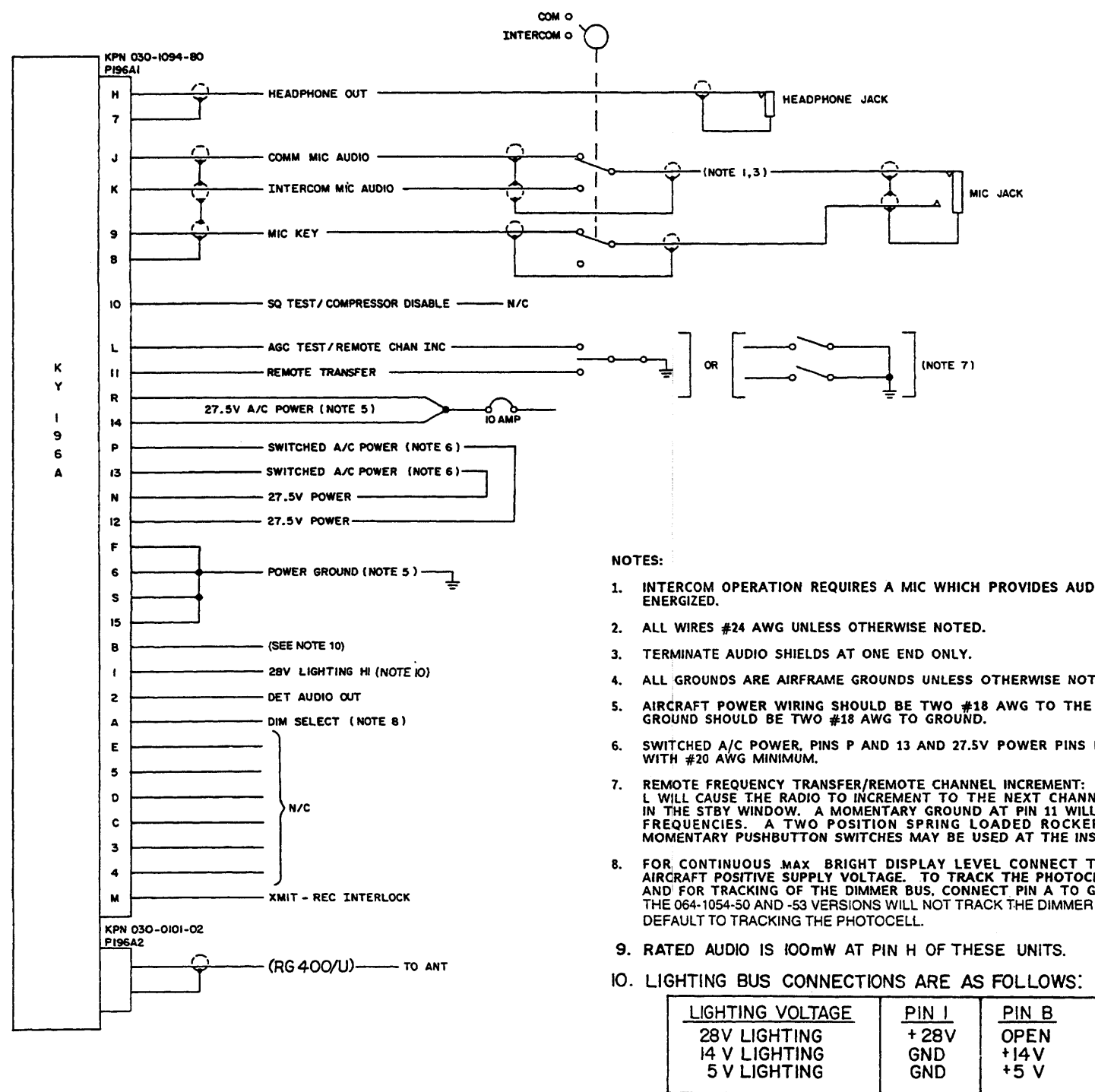
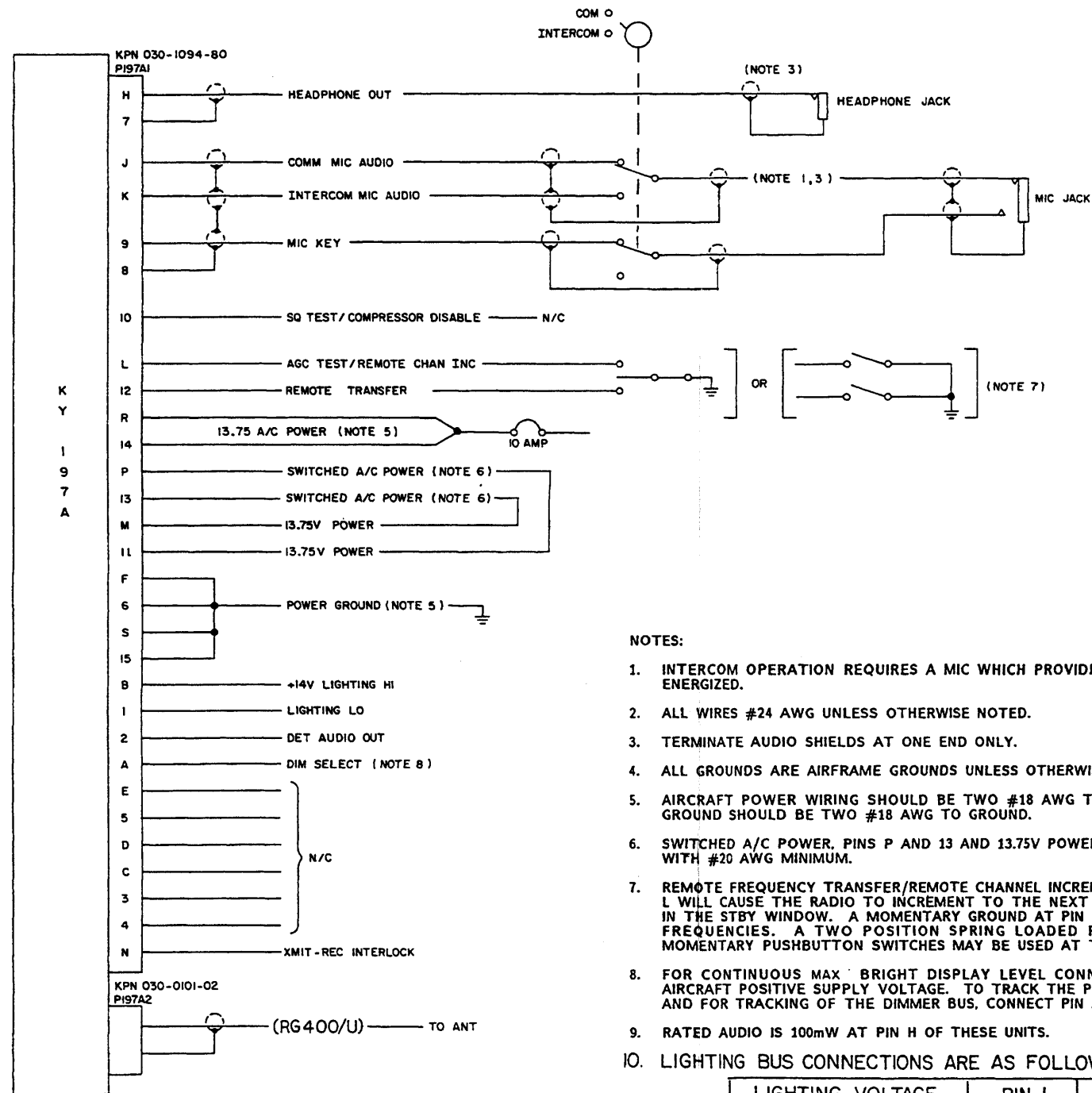


FIGURE 2-5 KY 196A INTERCONNECT
DWG. NO. 155-01572-0000, REV. AB

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NOTES:

1. INTERCOM OPERATION REQUIRES A MIC WHICH PROVIDES AUDIO OUT WITH THE MIC KEY DE-ENERGIZED.
2. ALL WIRES #24 AWG UNLESS OTHERWISE NOTED.
3. TERMINATE AUDIO SHIELDS AT ONE END ONLY.
4. ALL GROUNDS ARE AIRFRAME GROUNDS UNLESS OTHERWISE NOTED.
5. AIRCRAFT POWER WIRING SHOULD BE TWO #18 AWG TO THE CIRCUIT BREAKER AND POWER GROUND SHOULD BE TWO #18 AWG TO GROUND.
6. SWITCHED A/C POWER, PINS P AND 13 AND 13.75V POWER PINS M AND 11 MUST BE CONNECTED WITH #20 AWG MINIMUM.
7. REMOTE FREQUENCY TRANSFER/REMOTE CHANNEL INCREMENT: A MOMENTARY GROUND AT PIN L WILL CAUSE THE RADIO TO INCREMENT TO THE NEXT CHANNEL IN MEMORY AND DISPLAY IT IN THE STBY WINDOW. A MOMENTARY GROUND AT PIN 12 WILL TRANSFER THE USE AND STBY FREQUENCIES. A TWO POSITION SPRING LOADED ROCKER SWITCH OR TWO SEPARATE MOMENTARY PUSHBUTTON SWITCHES MAY BE USED AT THE INSTALLER'S OPTION.
8. FOR CONTINUOUS MAX BRIGHT DISPLAY LEVEL CONNECT THE DIM SELECT PIN A TO THE AIRCRAFT POSITIVE SUPPLY VOLTAGE. TO TRACK THE PHOTOCELL LEAVE PIN A UNCONNECTED AND FOR TRACKING OF THE DIMMER BUS, CONNECT PIN A TO GROUND.
9. RATED AUDIO IS 100mW AT PIN H OF THESE UNITS.
10. LIGHTING BUS CONNECTIONS ARE AS FOLLOWS:

LIGHTING VOLTAGE	PIN I	PIN B
28V LIGHTING	+28V	OPEN
14 V LIGHTING	GND	+14V
5V LIGHTING	GND	+5V

FIGURE 2-6 KY 197A INTERCONNECT
DWG. NO. 155-01572-0001, REV. AA

BENDIX/KING
KY 196A/197A
VHF COMMUNICATIONS TRANSCEIVER

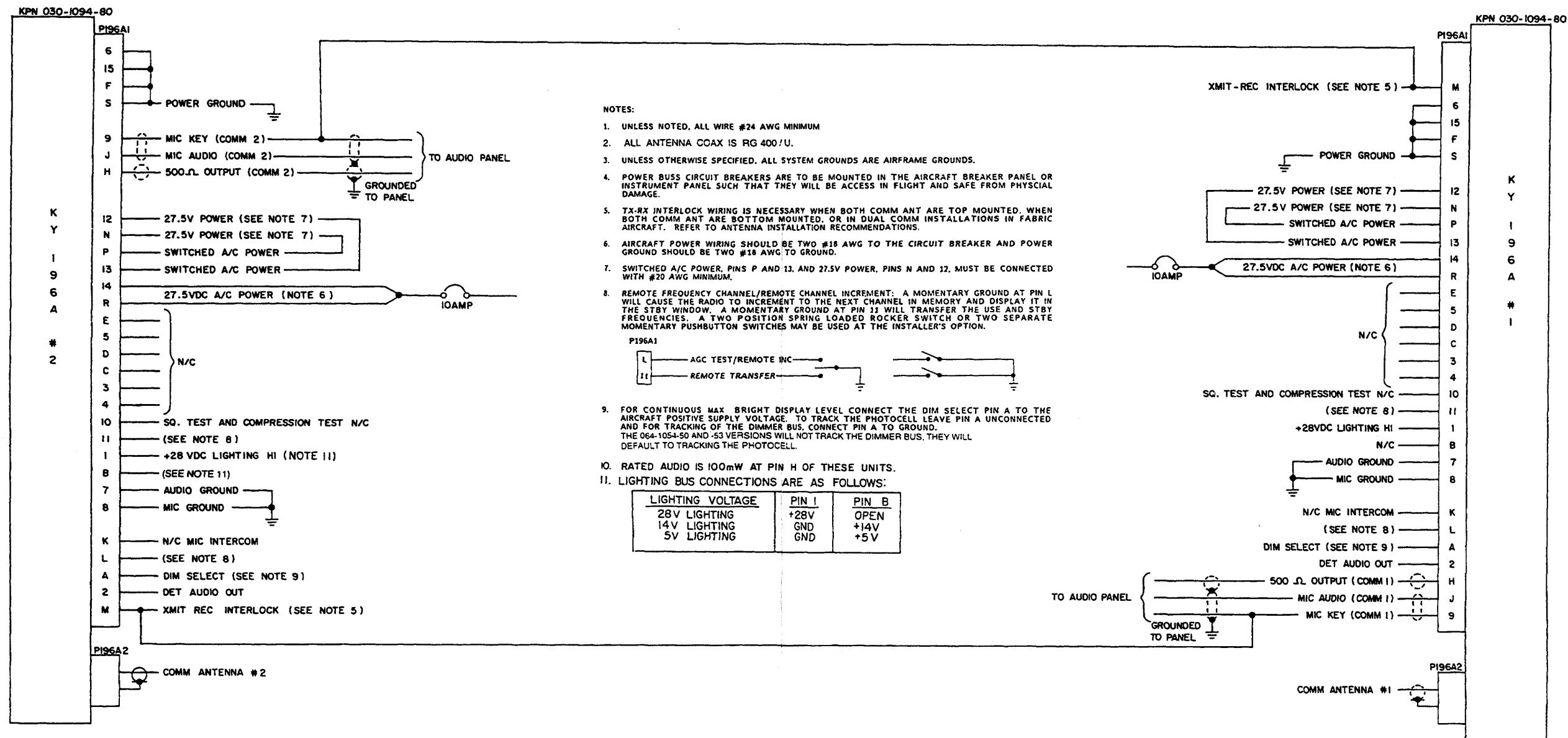


FIGURE 2-7 DUAL KY 196A INTERCONNECT DIAGRAM
DWG. NO. 155-01573-0000 REV. AB

BENDIX/KING
KY 196A/197A
VHF COMMUNICATIONS TRANSCEIVER

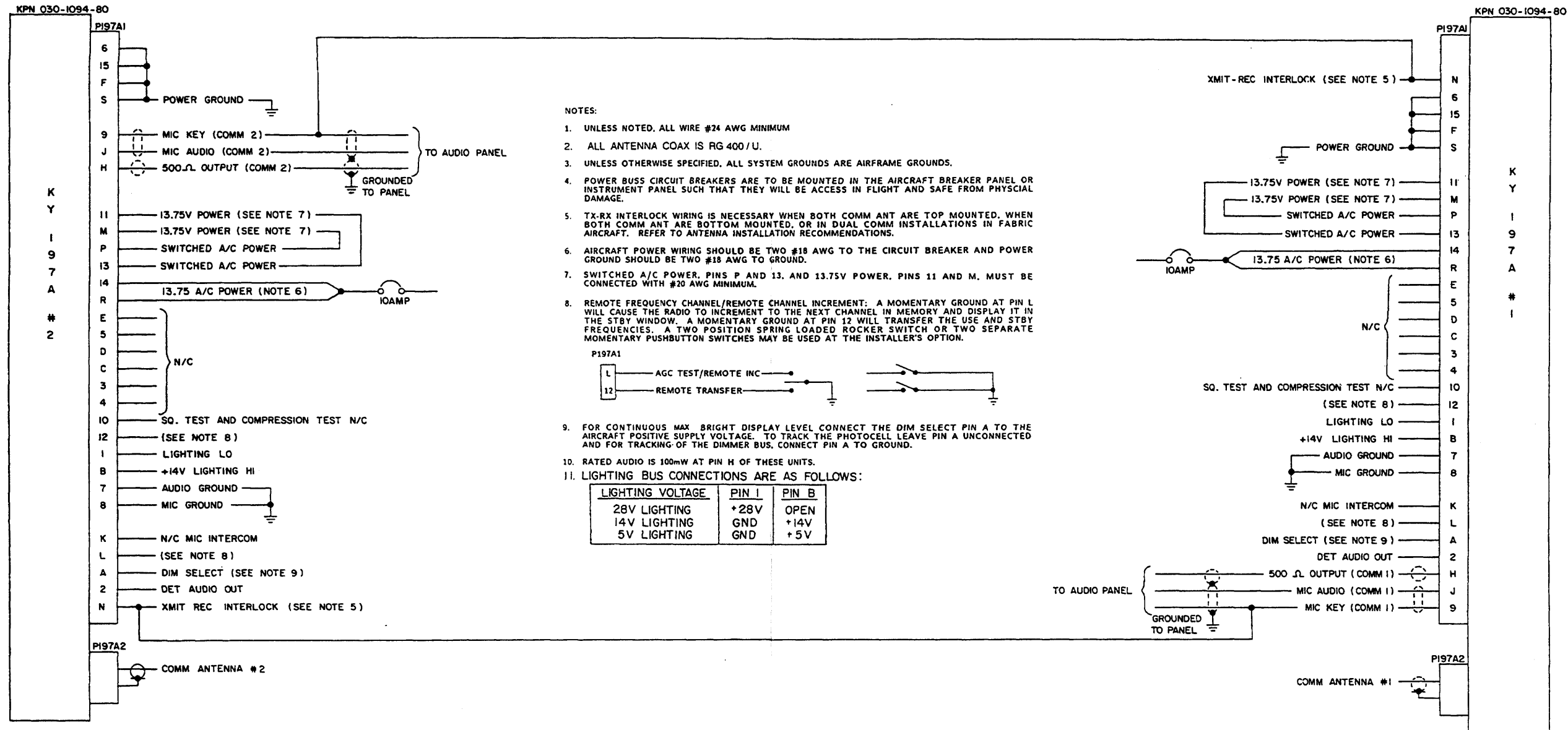


FIGURE 2-8 DUAL KY 197A INTERCONNECT DIAGRAM
DWG. NO. 155-01573-0001, REV. AA

BENDIX/KING
KY 196A/197A
VHF COMMUNICATIONS TRANSCEIVER

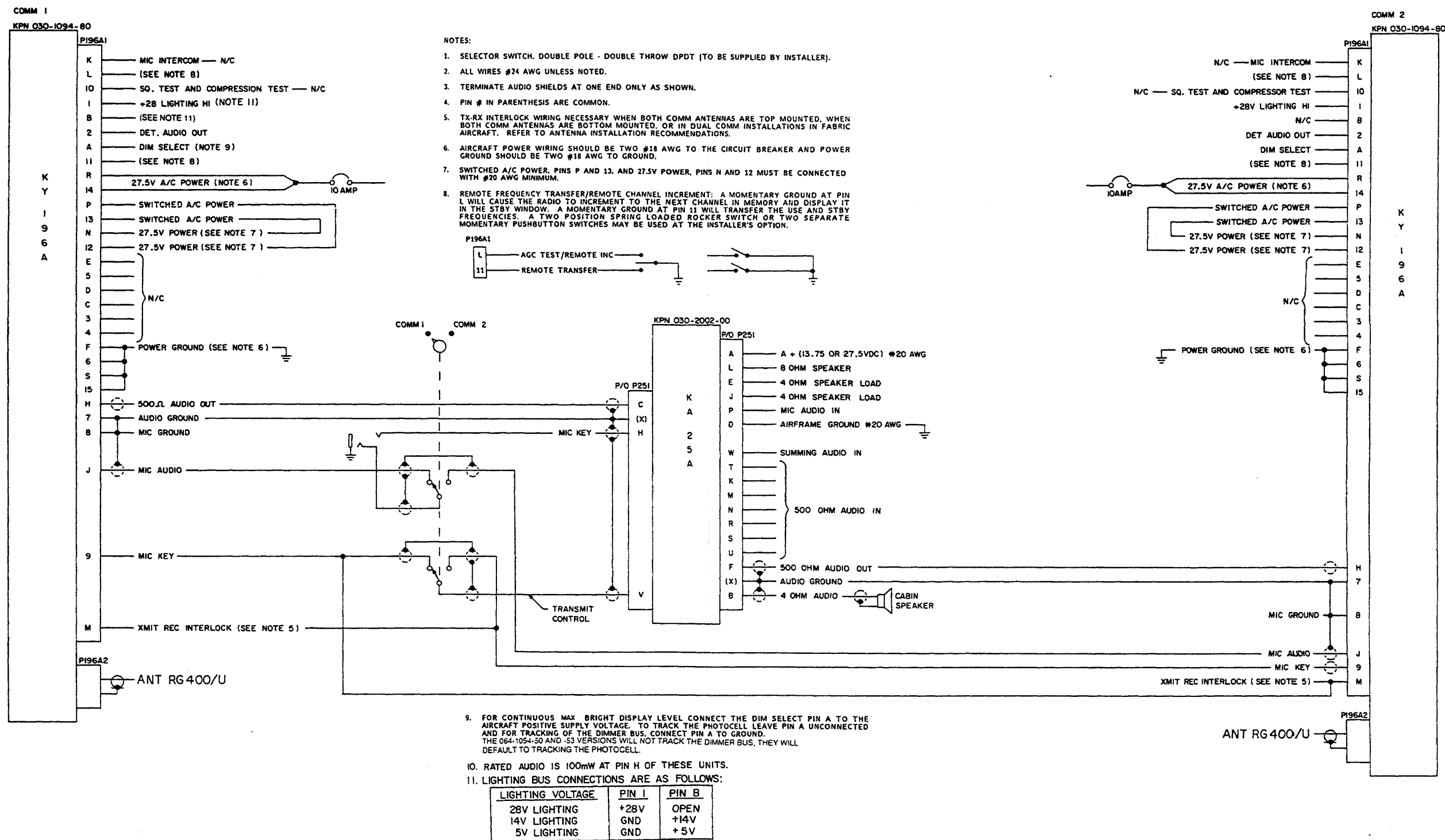


FIGURE 2-9 KY 196A INTERCONNECT WITH KA 25A
DWG. NO. 155-01574-0000, REV. AB

BENDIX/KING
KY 196A/197A
VHF COMMUNICATIONS TRANSCEIVER

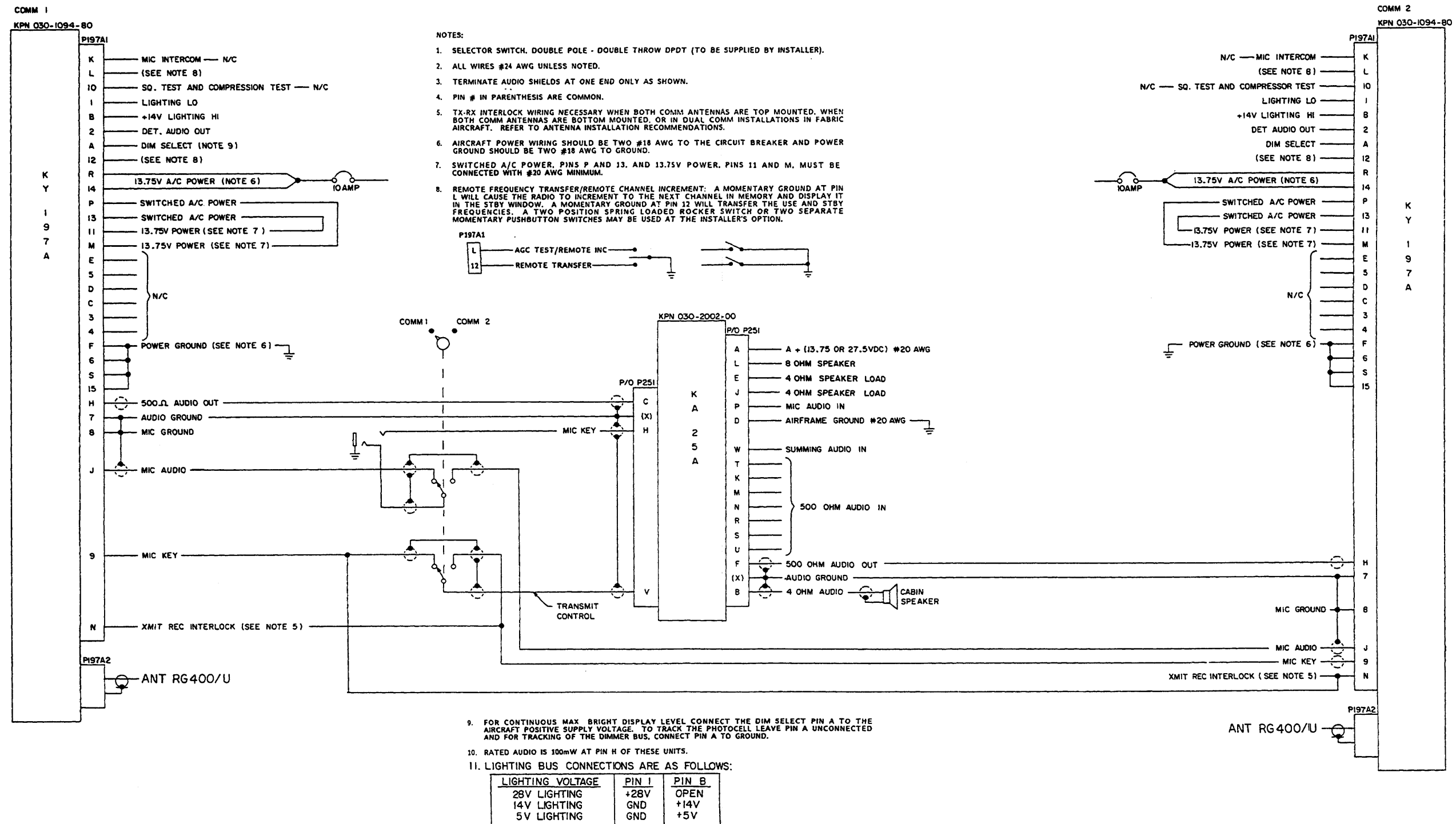
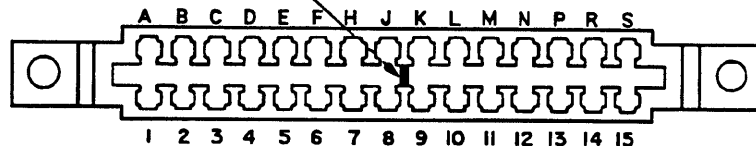


FIGURE 2-10 DUAL KY 197A WITH KA 25A INTERCONNECT
DWG. NO. 155-01574-0001, REV. AA

BENDIX/KING
KY 196A/197A
VHF COMMUNICATIONS TRANSCEIVER

J196A

POLARIZING KEY
 030-01096-0000

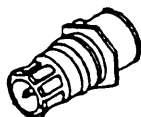


FRONT VIEW

(LOOKING IN FROM THE FRONT OF THE RACK)

H	----->	500 Ω AUDIO HI
7	----->	500 Ω AUDIO LO
J	-----<	MIC AUDIO HI
K	-----<	MIC INTERCOM
9	-----<	MIC KEY
8	-----<	MIC AUDIO LO
10	-----<	SQUELCH AND COMPRESSOR DISABLE
L	-----<	AGC TEST/REMOTE CHANNEL INC
11	-----<	REMOTE TRANSFER
R	-----<	AIRCRAFT POWER + 27.5 VDC
14	-----<	AIRCRAFT POWER + 27.5 VDC
P	----->	SWITCHED + 27.5 VDC
13	----->	SWITCHED + 27.5 VDC
N	-----<	+ 27.5 VDC
12	-----<	+ 27.5 VDC
F	-----<	AIRCRAFT GROUND
6	-----<	AIRCRAFT GROUND
S	-----<	AIRCRAFT GROUND
15	-----<	AIRCRAFT GROUND
B	-----<	N/C
1	-----<	+ 28 VDC LIGHTING HI *
2	----->	DETECTED AUDIO OUT
A	----->	DIM SELECT
E	-----<	N/C
5	-----<	N/C
D	-----<	N/C
C	-----<	N/C
3	-----<	N/C
4	-----<	N/C
M	-----<	XMIT REC INTERLOCK

J196A2



E401 -----> **ANTENNA**

* PIN 1 IS 5VDC LIGHTING HI ON 064-1054-50

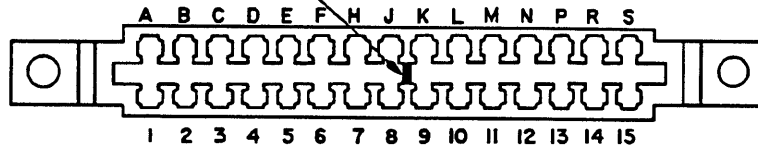
FIGURE 2-11 KY 196A PIN FUNCTION AND LOCATION DIAGRAM



BENDIX/KING
KY 196A/197A
VHF COMMUNICATIONS TRANSCEIVER

J197A

POLARIZING KEY
 030-01096-0000

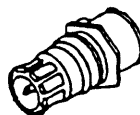


FRONT VIEW

(LOOKING IN FROM THE FRONT OF THE RACK)

H	----->	500 Ω AUDIO HI
7	----->	500 Ω AUDIO LO
J	-----<	MIC AUDIO HI
K	-----<	MIC INTERCOM
9	-----<	MIC KEY
8	-----<	MIC AUDIO LO
10	-----<	SQUELCH AND COMPRESSOR DISABLE
L	-----<	AGC TEST/REMOTE CHANNEL INC
M	-----<	+ 13.75 VDC POWER
11	-----<	+ 13.75 VDC POWER
R	-----<	AIRCRAFT POWER + 13.75 VDC
14	-----<	AIRCRAFT POWER + 13.75 VDC
P	----->	SWITCHED AIRCRAFT POWER
13	----->	SWITCHED AIRCRAFT POWER
N	-----<	XMIT REC INTERLOCK
12	-----<	REMOTE TRANSFER
F	-----<	AIRCRAFT GROUND
6	-----<	AIRCRAFT GROUND
S	-----<	AIRCRAFT GROUND
15	-----<	AIRCRAFT GROUND
B	-----<	+ 14VDC LIGHTING HI
1	-----<	LIGHTING LO
2	----->	DETECTED AUDIO OUT
A	----->	DIM SELECT
E	----->	4Ω AUDIO OUT
5	----->	4Ω AUDIO LO
D	-----<	N/C
C	-----<	N/C
3	-----<	N/C
4	-----<	N/C

J197A2



E401 -----> **ANTENNA**

FIGURE 2-12 KY 197A PIN FUNCTION AND LOCATION DIAGRAM



BENDIX/KING
KY 196A/197A
VHF COMMUNICATIONS TRANSCEIVER

SECTION III
OPERATION

3.1 GENERAL INFORMATION

For a detailed description of the operating controls of the KY 196A/197A refer to the pilots guide (P/N 006-08438-0000) or the aircraft's flight manual supplement.

Control layout is shown in Figure 3-1.

3.1.1 TURN ON

To turn on the radio rotate the Volume (VOL) knob clockwise from the OFF position. When power is activated the Use and Standby (STBY) windows will display the frequencies and/or mode stored in the non-volatile memory before power down.

After activating power, pull the VOL knob out to override the automatic squelch and rotate the VOL knob to the desired audio level. Push the VOL knob back in to activate the automatic squelch.

CAUTION

THE KY 196A/197A SHOULD BE TURNED ON ONLY AFTER
ENGINE STARTUP. THIS IS A SIMPLE PRECAUTION
WHICH HELPS PROTECT THE SOLID STATE CIRCUITRY
AND EXTENDS THE OPERATING LIFE OF YOUR AVIONICS
EQUIPMENT.

3.1.2 TRANSMIT INDICATOR

During Comm transmissions, a T will appear between the USE and STBY windows to indicate that the transceiver is in the Transmit mode of operation.

3.1.3 MODES OF OPERATION

A. Frequency Mode

Frequency selection is accomplished in the Standby Entry mode by changing the frequency display in the STBY window of the display with the tuning knobs, and then transferring the selected frequency into the USE window by pressing the Transfer button. The larger tuning knob will increment or decrement the MHz portion of the display in 1MHz steps with rollover at each band edge (118.000MHz or 135.975MHz). The smaller tuning knob will increment or decrement the KHz portion of the display in 50KHz steps with the knob pushed in or in 25KHz steps with the knob pulled out. While in the Standby Entry mode, the transceiver remains tuned to the frequency displayed in the USE window at all times.

NOTE

Extended Frequency units will rollover at 118.000 and 136.975 or
139.975MHz.

B. Channel Mode

Momentarily pressing the Channel (CHAN) button while in the Frequency mode puts the radio in the Channel mode. The last active frequency remains tuned and displayed in the USE window. The last used channel number is displayed in the channel digit unless no channels have been programmed, in which case the radio defaults to Channel 1 and dashes are displayed in the STBY window. Turning either tuning knob changes the channel number and corresponding frequency in the STBY window.

BENDIX/KING
KY 196A/197A
VHF COMMUNICATIONS TRANSCEIVER

The channels will only increment and decrement to channels that have been programmed. If there has been no activity for five seconds the radio will return to Frequency mode and the channel frequency is placed in the STBY window. Pressing the CHAN button before the five second delay is completed will return the radio to the Frequency mode and the status of the Frequency mode prior to entering Channel mode remains the same.

When in Channel mode, pressing the Transfer button will return the radio to Frequency mode. The channel frequency will become the new USE frequency and the last USE frequency will become the new STBY frequency. If the radio was in Direct Tune mode (See Paragraph 3.1.3.E below) prior to entering Channel mode, pressing the Transfer button or allowing the radio to time out will bring it back to Standby Entry.

C. Program Mode

The Program mode is entered by pressing and holding the CHAN button for longer than two seconds. The last active frequency remains tuned and displayed in the USE window. The last used channel number is displayed when Program mode is entered. The channel number flashes and turning either tuning knob changes the channel number. Pressing the Transfer button will cause the frequency associated with that channel to flash. The tuning knobs then work as in the Frequency mode, except that between the rollover points (118.XX and 135.XX/136.XX/139.XX) dashes are displayed. These dashes are used to de-program channels, and to display a channel that is unprogrammed. When the channel frequency is flashing, pressing the Transfer button will cause the frequency to stop flashing and the channel number to start flashing at which time a new channel may be selected for programming.

D. Program Secure Mode

Program Secure mode is used to secure or lock the frequency that is assigned to a channel so that the frequency assigned to that channel cannot be changed. All channels or individual channels can be Program Secured. The following list of operations is given to Program Secure or Un-Program Secure a channel:

To Program Secure a Channel:

1. Hold the CHAN button in for more than 2 seconds (Program mode).
2. Momentarily press the Transfer button (flashing frequency).
3. Change channel frequency to desired Program Secured frequency.
4. Ground the Program Secure pin (TP 501).
5. Momentarily press the Transfer button (Flashing channel number).
6. Unground the Program Secure pin.

To Un-Program Secure a Channel:

1. Hold the CHAN button in for more than 2 seconds (Program mode).
2. Ground the Program Secure pin (TP 501).
3. Momentarily press the Transfer button (flashing frequency).
4. Unground the Program Secure pin.
5. Momentarily press the Transfer button (Flashing channel number)

E. Direct Tune Mode

The Direct Tune mode is entered from the Standby Frequency Entry mode or Channel mode by pushing the Transfer button for longer than 2 seconds. The tuning knobs operate as in

BENDIX/KING
KY 196A/197A
VHF COMMUNICATIONS TRANSCEIVER

Standby Frequency Entry, but will change the USE frequency, rather than the STBY frequency. The radio will be tuned to the Active frequency.

Momentarily pushing the Transfer button returns the radio to Standby Frequency Entry. The Standby frequency prior to Active Entry mode remains unchanged.

3.1.4 REMOTE FREQUENCY TRANSFER

The Remote Frequency Transfer button operates identically to the front panel Transfer button with the exception that holding the Remote Transfer button for two seconds does not place the radio in the Active Entry mode.

3.1.5 REMOTE CHANNEL INCREMENT

Pressing the Remote Channel button will cause the system to enter the Channel mode of operation and will increment the channel from the previous channel number used.

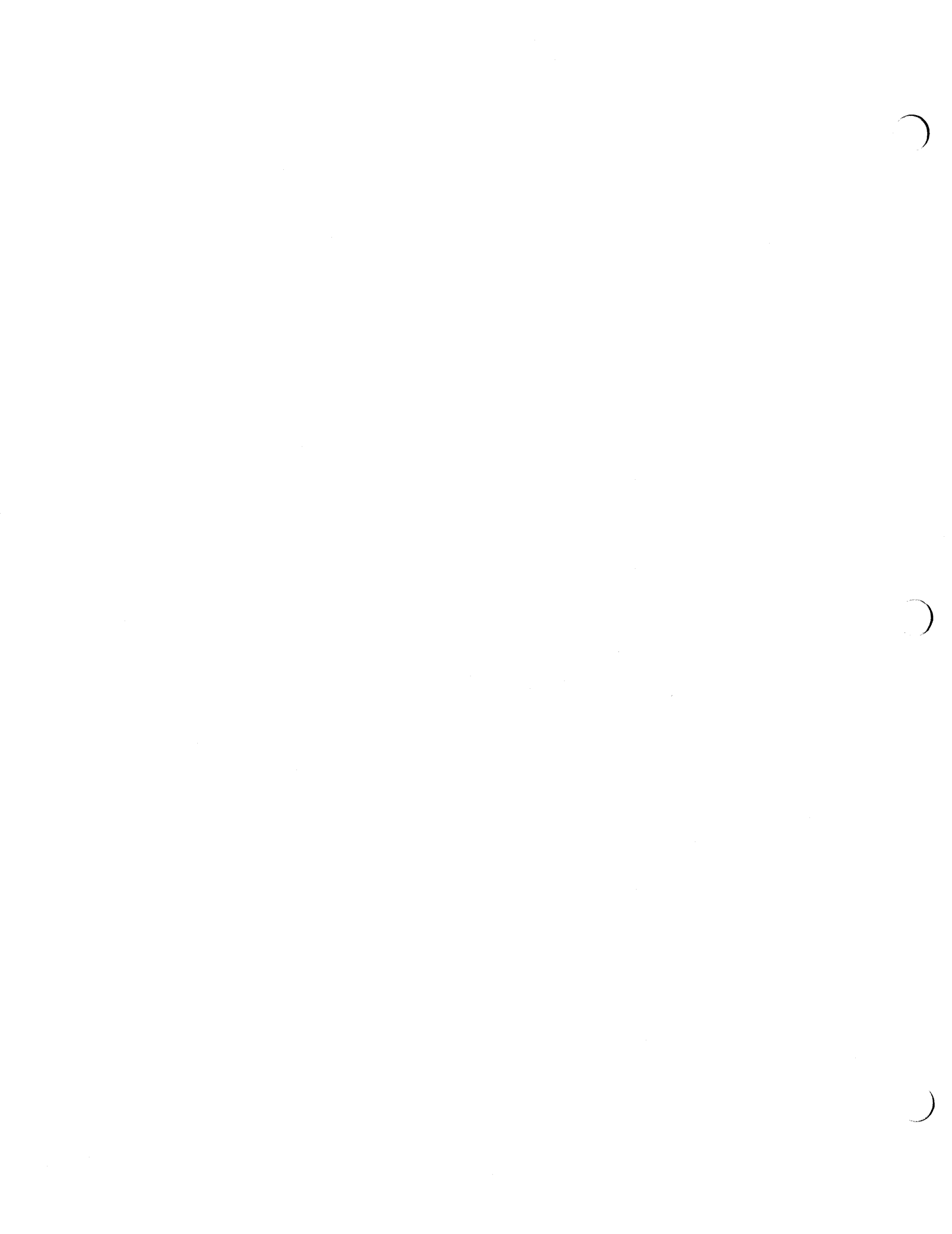
3.1.6 DIM SELECT

DIM SELECT LINE STATUS		DISPLAY STATUS
KY 196A	KY 197A	MAX BRIGHT FOLLOW PHOTOCCELL DIMMER BUS
+28VDC	+14VDC	
OPEN	OPEN	
GND	GND	

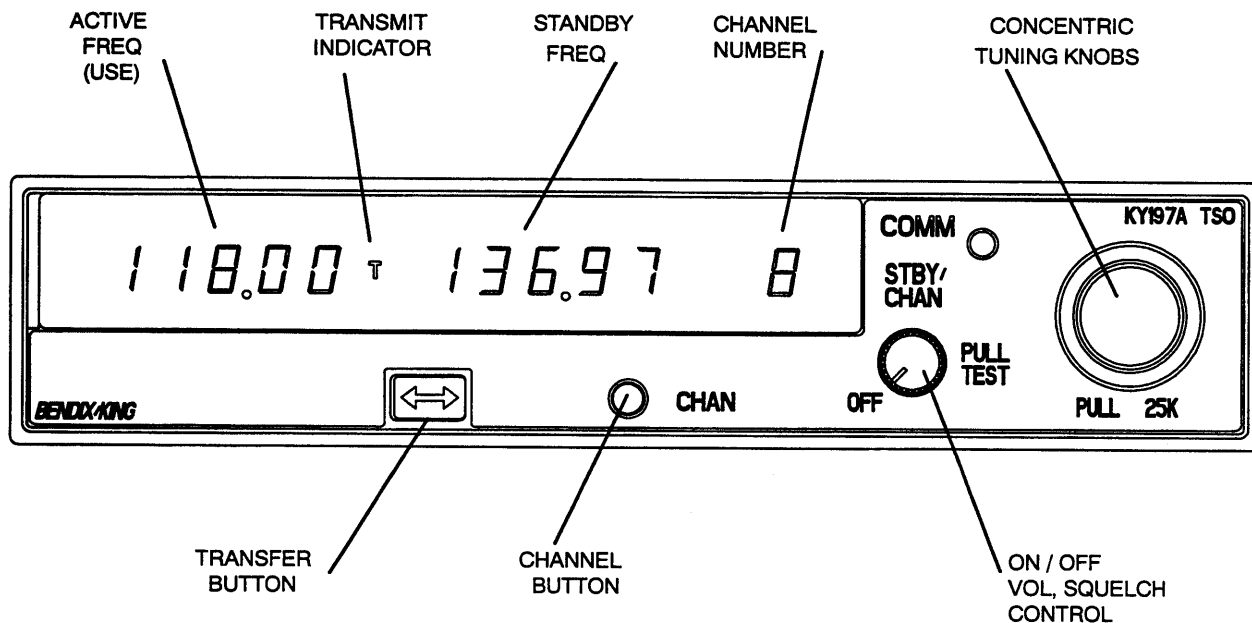
3.1.7 DISPLAY ADJUST MODE

Press and hold the Channel button, when the unit enters program mode, press and hold the transfer button for more than 2 seconds so that DA 1 replaces the frequency in the USE window. The unit is now in display adjust mode, refer to the table below for a description of the 3 DA modes and ranges of operation. The increment and decrement knobs are used to set the proper value in the STANDBY window. Momentarily pressing the CHAN button increments the unit thru the 3 display adjust modes (DA 1 Thru DA 3). Press the transfer button to exit display adjust mode.

MODE	RANGE	DESCRIPTION
DA 1	1 to 8	Display brightness (1=fast, 8=slow)
DA 2	0 to 64	Response to dimmer photocell (0=dim, 64=bright)
DA 3	0 to 255	Display age compensation for brightness (0=dim, 255=bright)



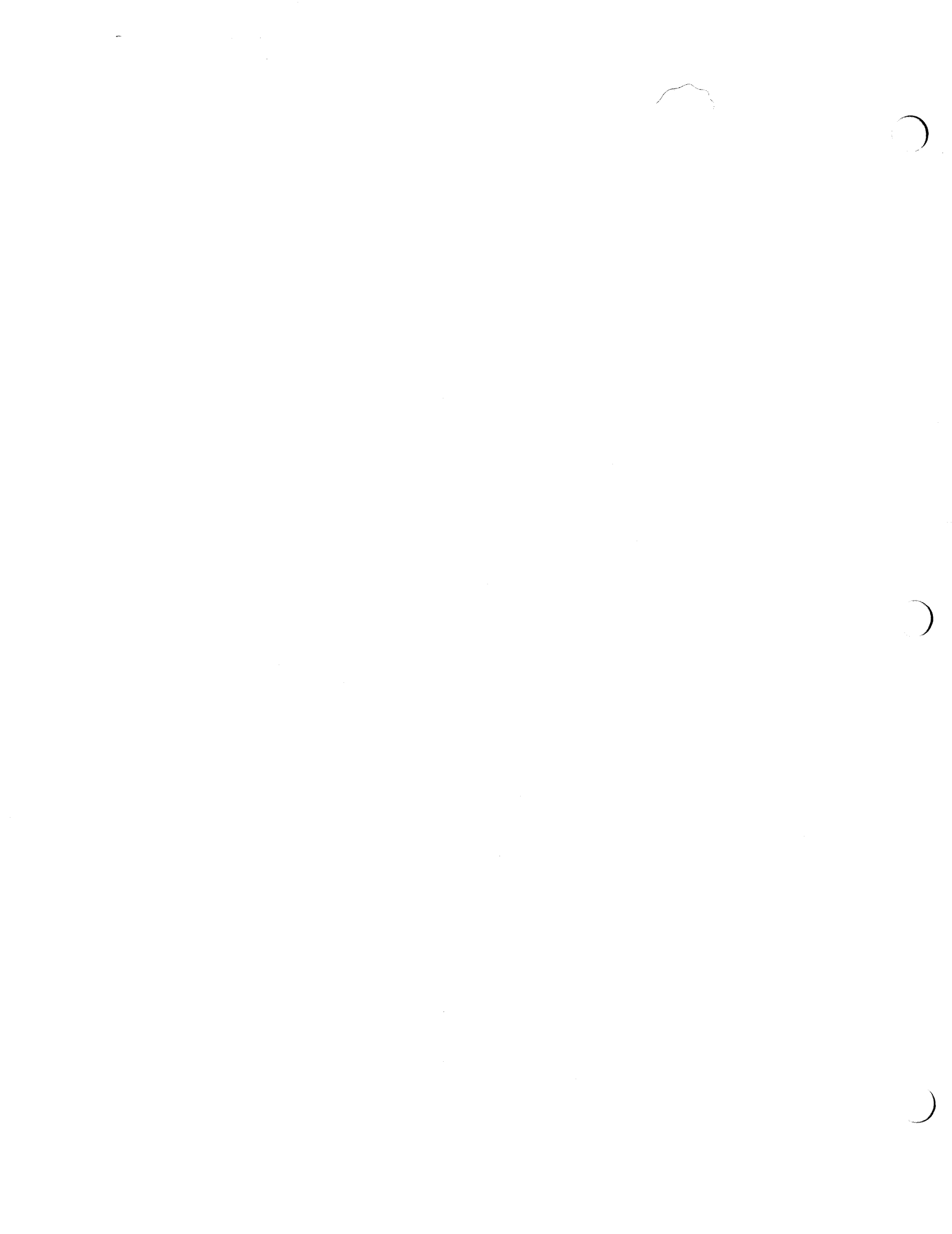
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KY 196A/197A
VHF COMMUNICATIONS TRANSCEIVER



064-1053-60

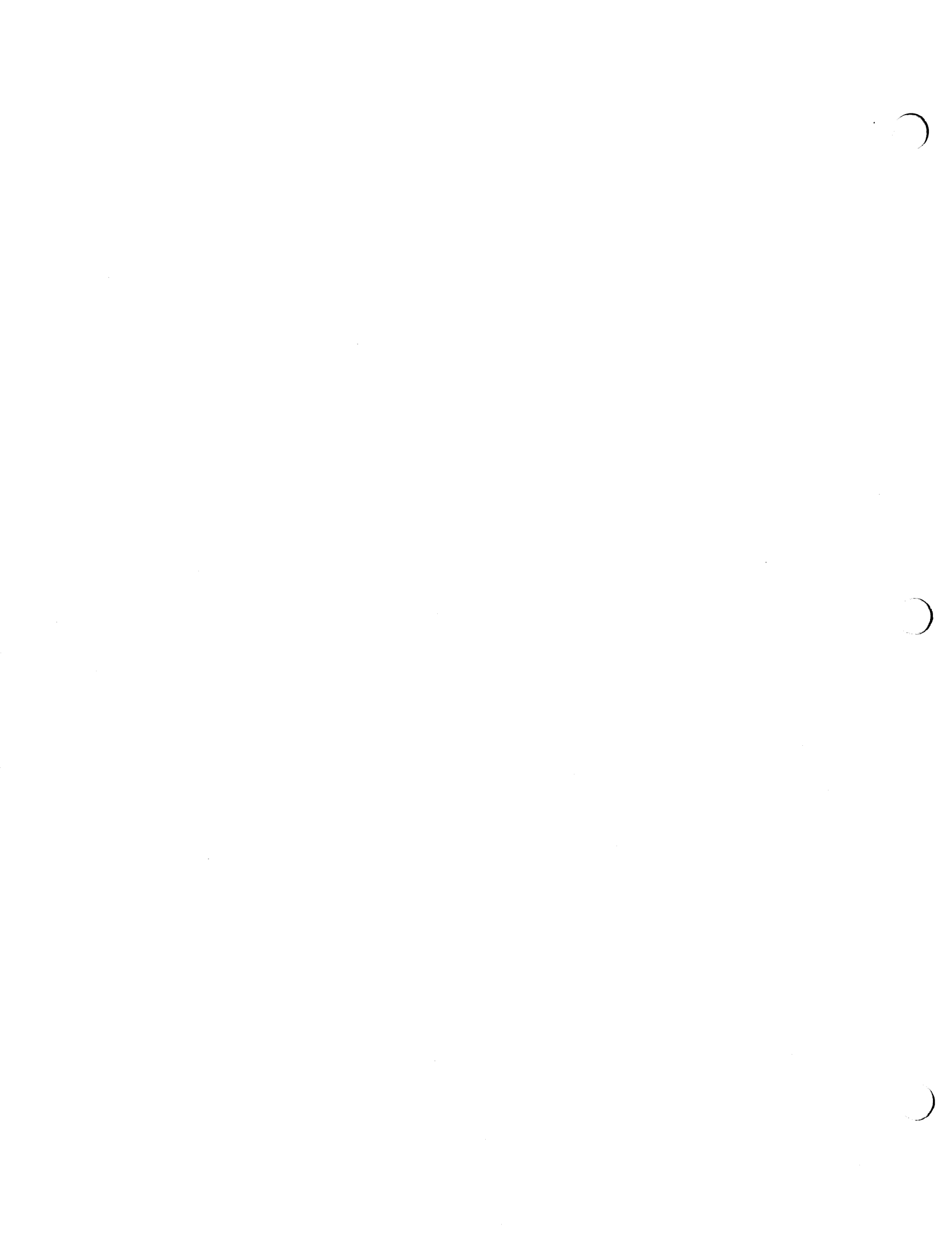
NOTE: All knob and control locations/functions are identical between various flavors.

FIGURE 3-1 KY 196/197A VHF COMMUNICATIONS TRANSCEIVERS



TSO APPENDIX

**RTCA DO-160B
ENVIRONMENTAL QUALIFICATION
FORMS**



RTCA DO-160B

ENVIRONMENTAL QUALIFICATION FORM

NOMENCLATURE: KY 196A VHF COMMUNICATIONS
TRANSCEIVER

PART NUMBER: 064-1054-10/ -11/ -12/ -30/ -31/ -32/
-40/ -41/ -42/ -50/ -60

TSO NUMBER: C37c, C38c

MANUFACTURER'S SPECIFICATION: MPS 004-00688-0000

MANUFACTURER: AlliedSignal Inc.

ADDRESS: 400 N. Rogers Road
Olathe, Kansas 66062-1212, USA

CONDITIONS	PARA.	CONDUCTED TESTS
TEMPERATURE AND ALTITUDE	4.0	Category A1 and D1
TEMPERATURE VARIATION	5.0	Category C
HUMIDITY	6.0	Category B, Level 1
SHOCK	7.0	Tested per DO-160B Para. 7.2.1, 7.3.1 and 7.3.2
VIBRATION	8.0	Categories K, P and S
EXPLOSION	9.0	Category X (Not Tested)
WATERPROOFNESS	10.0	Category X (Not Tested)
FLUIDS SUSCEPTIBILITY	11.0	Category X (Not Tested)
SAND AND DUST	12.0	Category X (Not Tested)
FUNGUS	13.0	Category X (Not Tested)
SALT SPRAY	14.0	Category X (Not Tested)
MAGNETIC EFFECT	15.0	Category Z
POWER INPUT	16.0	Category B
VOLTAGE SPIKE CONDUCTED	17.0	Category AB
AUDIO FREQUENCY CONDUCTED SUSCEPTIBILITY	18.0	Category BZ
INDUCED SIGNAL SUSCEPTIBILITY	19.0	Category Z

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Revision C
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RTCA DO-160B

ENVIRONMENTAL QUALIFICATION FORM

(Continued)

CONDITIONS	PARA.	CONDUCTED TESTS
RADIO FREQUENCY SUSCEPTIBILITY	20.0	Category A
RADIO FREQUENCY EMISSION	21.0	Category B
LIGHTNING INDUCED TRANSIENT SUSCEPTIBILITY	22.0	Category X (Not Tested)

REVISION HISTORY

REVISION NUMBER	ECO NUMBER	DATE
-	PRN 139846 (ORIG. ISSUE)	3/98
A	140137	4/98
B	141033	5/98
C	141352	5/98

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Revision C
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**RTCA DO-160B
ENVIRONMENTAL QUALIFICATION FORM**

NOMENCLATURE: KY 197A VHF COMMUNICATIONS
TRANSCEIVER

PART NUMBER: 064-1053-10/ -11/ -12/ -30/ -31/ -32/
-60

TSO NUMBER: C37c, C38c

MANUFACTURER'S SPECIFICATION: MPS 004-00688-0000

MANUFACTURER: AlliedSignal Inc.

ADDRESS: 400 N. Rogers Road
Olathe, Kansas 66062-1212, USA

CONDITIONS	PARA.	CONDUCTED TESTS
TEMPERATURE AND ALTITUDE	4.0	Category A1 and D1
TEMPERATURE VARIATION	5.0	Category C
HUMIDITY	6.0	Category B, Level 1
SHOCK	7.0	Tested per DO-160B Para 7.2.1, 7.3.1 and 7.3.2
VIBRATION	8.0	Categories K, P and S
EXPLOSION	9.0	Category X (Not Tested)
WATERPROOFNESS	10.0	Category X (Not Tested)
FLUIDS SUSCEPTIBILITY	11.0	Category X (Not Tested)
SAND AND DUST	12.0	Category X (Not Tested)
FUNGUS	13.0	Category X (Not Tested)
SALT SPRAY	14.0	Category X (Not Tested)
MAGNETIC EFFECT	15.0	Category Z
POWER INPUT	16.0	Category B
VOLTAGE SPIKE CONDUCTED	17.0	Category AB
AUDIO FREQUENCY CONDUCTED SUSCEPTIBILITY	18.0	Category BZ
INDUCED SIGNAL SUSCEPTIBILITY	19.0	Category Z

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**RTCA DO-160B
ENVIRONMENTAL QUALIFICATION FORM**

(Continued)

CONDITIONS	PARA.	CONDUCTED TESTS
RADIO FREQUENCY SUSCEPTIBILITY	20.0	Category A
RADIO FREQUENCY EMISSION	21.0	Category B
LIGHTNING INDUCED TRANSIENT SUSCEPTIBILITY	22.0	Category X (Not Tested)

REVISION HISTORY

REVISION NUMBER	ECO NUMBER	DATE
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B	141033	5/98

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Revision B
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