



ELECTRONIC AND AVIONICS SYSTEMS

INSTALLATION MANUAL

BENDIX/KING[®]

KX 125

*COMMUNICATION TRANSCEIVER
NAVIGATION RECEIVER*

*MANUAL NUMBER 006-00655-0001
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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 KX 125 VHF communication transceiver/navigation receiver. Installation and operating procedures are also included. Information relative to the maintenance, alignment, and procurement of the replacement parts may be found in the KX 125 Maintenance/Overhaul Manual, P/N 006-05335-0000.

1.2 EQUIPMENT DESCRIPTION

The KX 125, P/N 069-01028-0101, is a 13.75 volt panel mounted, TSO'd, Communication Transceiver/Navigation Receiver designed to provide the following functions:

- A. Two-way voice communication within the frequency range of 118.000 MHz to 136.975 MHz (760 channels) in 25 kHz or 50 kHz increments and 25kHz selectivity.
- B. Reception of navigation signals within the frequency range of 108.000 MHz to 117.95 MHz in 50 kHz increments (200 channels).
- C. VOR/LOC signal converter.

A liquid crystal display (LCD) is used to display frequencies and navigation information. Connections to the unit are made through one 44 pin and one 36 pin Molex printed circuit board edge connector and two BNC coax connectors at the rear of the unit.

The KX 125 provides the following:

- A. DME Channeling - Bendix/King serial
- B. GS Channeling - Bendix/King 4 X 5 code
- C. VOR/LOC Composite Output
- D. Two hundred NAV Channels
- E. Seven hundred and sixty COMM Channels
- F. Built-In CDI with TO/FROM Annunciation
- G. Auto TO
- H. OBS Select
- I. RAD and BRG Display
- J. COMM Mic Hang-up Protection
- K. Non-volatile Memory of last used frequencies
- L. Remote Transfer of use and standby frequencies

1.3 TECHNICAL CHARACTERISTICS

KX 125 GENERAL SPECIFICATIONS

TSO Compliance: See Appendix E

Physical Dimensions:

Height:	2.052 in. 52.12 mm.
Width:	6.352 in. 161.345 mm.
Length:	10.380 in. 263.65 mm.
Weight:	3.88 lbs. 1.76 kg w/o mounting rack; 4.36 lbs. 1.89 kg with mounting rack and connectors.

Applicable Documents:

NAV LOC Converter:	TSO-C36e RTCA DO-160B RTCA DO-178A RTCA DO-195
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1.3

KX 125 GENERAL SPECIFICATIONS

Applicable Documents: (continued)

COMM Transmitter:	TSO-C37c RTCA DO-160B RTCA DO-186
COMM Receiver:	TSO-C38c RTCA DO-160B RTCA DO-186
NAV VOR:	TSO-C40c RTCA DO-160B RTCA DO-178A RTCA DO-196
Mounting:	Panel
Temperature:	A1 -15 °C to +55 °C D1 -20 °C to +55 °C
Altitude Range:	A1 15,000 ft. D1 50,000 ft.
Cooling:	Forced-air cooling not required, but recommended. (See Section 2.3.2)
Vibration:	Constant total excursion of .02 in. from 5 to 50 Hz with a maximum acceleration of 1.5 G. Constant acceleration of 0.5 G from 50 to 200 Hz.
Shock:	Panel mount, no shock mounting required.
Power Consumption: Receive:	
+ 13.75 V dc	1 A (max) audio squelched 1.1 A (max) audio @ 100 mW into 500 Ω 3 A (max) audio @ 8 W into 4 Ω
Transmit:	
+ 13.75 V dc	6 A maximum
Lighting Bus:	
+ 13.75 V dc	0.4 A maximum
Frequency Specification:	
COMM -0101/-0201	118.000 MHz to 136.975 MHz in 25 kHz increments.
-0302/-0402	118.000 MHz to 139.975 MHz in 25 kHz increments.
NAV	108.000 MHz to 117.950 MHz in 50 kHz increments.

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1.3

COMM TRANSMITTER

Power Output:	5 W minimum
Frequency Tolerance:	Within 0.002% of assigned channel frequency
Modulation:	70% modulation capability with 98% limiting. Less than 15% distortion at 70% modulation.
Sidetone Output:	Adjustable up to 100 mW into 500 Ω headphones
Microphone:	Standard carbon or dynamic mike containing transistorized pre-amp. (Must provide 100 mV RMS into 100 Ω load.)
Harmonic Content:	Greater than 60 dB down from carrier
High Temperature Protection:	If the transmitter and modulator circuits become hot enough to potentially damage any components in the transceiver, a protection circuit will automatically reduce the transmitter power consumption and output power.
Duty Cycle:	10% (0.5 minute on, 4.5 minutes off)

COMM RECEIVER

Receiver Sensitivity:	Two (2) μ V (hard) or less for 6 dB (S+N)/N with 1 kHz tone modulated 30%.
Receiver Selectivity:	Class A - 50 kHz SEL: Six (6) dB bandwidth at not less than 30.5 kHz with no less than 15.0 kHz on each side. Sixty (60) dB bandwidth with no more than 40 kHz on each side. Class C - 25 kHz SEL: Six (6) dB bandwidth at not less than 18.0 kHz with no less than 8.1 kHz on each side. Sixty (60) dB bandwidth with no more than 20.0 kHz on each side.
Audio Output:	100 mW into 500 Ω minimum with a 1 kHz tone modulated 30%.
Audio Response:	Less than 6 dB variation from 350 Hz to 2500 Hz.
AGC Characteristics:	From 5 μ V to 20,000 μ V audio output will not vary more than 3 dB.
Squelch:	Automatic squelch (internally adjustable carrier to noise setting) with manual disable.
Spurious Response and Cross Modulation Products:	At least 80 dB down
Intercom Input:	When the mic is connected to the intercom input, both the receiver and mic audio appears at the audio output. 100 mV RMS of mic audio into 500 Ω is required for 100 mW output.

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1.3

NAV RECEIVER

Frequency Range:	108.00 MHz to 117.95 MHz in 50 kHz increments
Frequency Tolerance:	$\pm 0.002\%$ of assigned channel frequency and still meets bearing accuracy
VOR/LOC Sensitivity:	Flag sensitivity 2 μV (hard) or less on all channels
Receiver Selectivity:	Six (6) dB at 34.0 kHz minimum 60 dB at 63.0 kHz maximum
Spurious Responses and Cross Modulation Products:	At least 70 dB down
VOR Course Accuracy:	Two sigma limit 3° as specified in RTCA DO-196
LOC Centering Error:	Two sigma limit $\pm 9.9 \mu\text{A}$ as specified in RTCA DO-195
VOR/AGC Characteristics:	Less than 1° change with 10 μV to 20,000 μV standard OMNI test signals. Active from half flag to +6 dBm hard.
Audio Output:	100 mW into 500 Ω minimum a 1 kHz tone modulated 30%.
IDENT/Voice:	With 100 μV input, 30% modulation at 1020 Hz, the ident/voice tone ratio shall not be less than 20 dB.
Audio Response:	Less than 6 dB variation from 350 Hz to 2500 Hz.
DME Channeling:	SERIAL DME channeling provided for KN 62/62A/63/64. Slip code and 2 X 5 DME channeling available using a KA 120 adapter.
G.S. Channeling:	Bendix/King 4 X 5 code provided for KN 73/75, KI 211/212/213/214, other G.S. channeling available using a KA 120 adapter.
VOR/LOC Composite Output:	Adjustable 0.35 V rms LOC, 0.5 V rms VOR zero degree phased.

VOR/LOC CONVERTER

Accuracy:	VOR: Typical bearing error of less than 0.8° (3° max. error). LOC: Typical centering error of less than 3 μA (9.9 μA max. error).
Course Width:	VOR: 10° \pm 1° LOC: 90 μA \pm 5 μA for ddm of 0.093 ddm or 4 dB
Input Impedance:	100 k Ω for 0.5 V RMS input (VOR mode)
Loads:	Five 1000 Ω deviation loads, three 1000 Ω flag loads and three 200 Ω TO-FROM loads

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1.3

AUDIO AMP

500 Ω Output:	100 mW minimum
4 Ω Output:	8 W minimum
Input:	Three 500 Ω Auxiliary Inputs MIC Intercom Input
Audio Response:	Less than 6 dB variation from 350 Hz to 2500 Hz.

1.4 CONFIGURATIONS AVAILABLE

Figure 1-1 lists the available configurations of the KX 125 (with mounting rack P/N 047-06865-0001) and the features of each configuration.

ASGAA PART NUMBER 069-01028	FEATURES			
	INPUT VOLTAGE	PANEL LIGHTING	SELECTIVITY	FREQUENCY RANGE
-0101	14 V dc	14/28 V dc	25 kHz	118 - 136.975 MHz
-0201*	14 V dc	14/28 V dc	50 kHz	118 - 136.975 MHz
-0302*	14 V dc	14/28 V dc	25 kHz	118 - 139.975 MHz
-0402*	14 V dc	14/28 V dc	50 kHz	118 - 139.975 MHz
-1101**	14 V dc	14/28 V dc	25 kHz	118 - 136.975 MHz
-1302**	14 V dc	14/28 V dc	50 kHz	118 - 139.975 MHz

* At the time of publication, these versions are not available.

** Crown Series styling.

FIGURE 1-1 KX 125 CONFIGURATIONS AVAILABLE

1.5 UNITS AND ACCESSORIES SUPPLIED

1.5.1 KX 125 INSTALL KIT

The KX 125 NAV/COMM Transceiver installation kit P/N 050-02215-0000 contains the following parts:

PART NUMBER	DESCRIPTION	UM	QTY	VENDOR NAME & PART NUMBER
030-00101-0002	RF CONN P401/P503	EA	2	AlliedSignal General Aviation Avionics
030-01094-0086	CONN W/KEY P100	EA	1	AlliedSignal General Aviation Avionics
030-01094-0087	CONN W/KEY P501	EA	1	AlliedSignal General Aviation Avionics
030-01107-0037	CONN TERMINALS	EA	1	AlliedSignal General Aviation Avionics
030-01107-0045	CONN TERMINALS	EA	1	AlliedSignal General Aviation Avionics
073-00623-0002	CONN MOUNTING PLATE	EA	1	AlliedSignal General Aviation Avionics
089-02353-0001	NUT CLIP 6-32	EA	6	AlliedSignal General Aviation Avionics
089-05903-0008	SCR PHP 4-40 X 1/2	EA	4	AlliedSignal General Aviation Avionics
089-05907-0004	SCR PHP 6-32 X 1/4	EA	4	AlliedSignal General Aviation Avionics
089-06012-0004	SCR PHP 6-32 X 1/4	EA	6	AlliedSignal General Aviation Avionics
090-00019-0007	CONN RETAINING RING	EA	2	AlliedSignal General Aviation Avionics

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1.6 ACCESSORIES REQUIRED, BUT NOT SUPPLIED

The following parts are recommended for a typical installation of the KX 125 unit.

- A. Broad band 50 Ω vertically polarized Communications antenna with coaxial cable.
- B. Headphones: 500 Ω nominal impedance.
- C. Microphone: Low impedance carbon or dynamic with transistorized pre-amp.
- D. Broad band 50 Ω horizontally polarized Navigation antenna with coaxial cable.

Note

For optimum performance, a balanced loop navigation antenna is recommended.

1.7 LICENSE REQUIREMENTS

The transmitter, as installed in the aircraft, requires an Aircraft Radio Station License. This license is obtained by filing the FCC Form 404. While awaiting the receipt of the station license, a copy of FCC Form 404 is kept in the aircraft.

This equipment has been type accepted by the FCC and entered on the type accepted equipment list, as "Bendix/King KX 125" and must be identified as Bendix/King KX 125, FCC ID# ASYKX125, on your Form 404, Aircraft Radio Station License application.

CAUTION

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

USE OF OTHER THAN AN ALLIEDSIGNAL GENERAL AVIATION AVIONICS CRYSTAL IS CONSIDERED AN UNAUTHORIZED MODIFICATION, AND WILL VOID THE WARRANTY.

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SECTION II
INSTALLATION

2.1 GENERAL INFORMATION

This section contains suggestions and factors to consider before installing the KX 125 Communication Transceiver/Navigation Receiver. Close adherence to these suggestions will assure a more satisfactory performance from the equipment.

2.2 UNPACKING AND INSPECTING EQUIPMENT

Exercise extreme caution when unpacking the unit. Make a visual inspection of the unit for evidence of damage incurred during shipment. If a claim for a damage is to be made, save the shipping container to substantiate the claim. When all equipment is removed, place in the shipping container, all packing materials for use in unit storage or reshipment.

2.3 EQUIPMENT INSTALLATION

2.3.1 GENERAL

The following paragraphs contain information pertaining to the initial installation of the KX 125 Communication Transceiver/Navigation Receiver, including instructions concerning the location and mounting of the supporting antenna.

The equipment should be installed in the aircraft in a manner consistent with acceptable workmanship and engineering practices and in accordance with the instructions set forth in this publication. To ensure that the system has been properly and safely installed in the aircraft, the installer should make a through visual inspection and conduct an overall operational check of the system on the ground prior to flight.

CAUTION

AFTER INSTALLATION OF THE CABLING AND BEFORE INSTALLATION OF THE EQUIPMENT, A CHECK SHOULD BE MADE WITH THE AIRCRAFT PRIMARY POWER SUPPLIED TO THE MOUNTING CONNECTOR TO ENSURE THAT POWER IS APPLIED ONLY TO THE PINS SPECIFIED IN THE INTERWIRING DIAGRAM, FIGURE 2-1.

The KX 125 system 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 your KX 125 system.

2.3.2 AVIONICS COOLING REQUIREMENTS FOR PANEL MOUNTED EQUIPMENT

The greatest single contributor to increased reliability of all modern day avionics is to limit the maximum operating temperature of the individual units whether panel or remote mounted. While modern day individual circuit designs consume much less electrical energy, the watts per cubic inch dissipated within avionics units remains much the same because of high density packaging techniques utilized. Consequently, the importance of providing avionics stack cooling is essential to the life span of the equipment.

While each individual unit may not require forced air cooling, the combined heat load of several units operating in a typical avionics stack will significantly degrade the reliability of the avionics if provisions for stack cooling are not incorporated in the initial installation. Recommendations on stack cooling are contained in Installation Bulletin #55. Failure to provide stack cooling will certainly lead to increased avionics maintenance costs and may void the warranty.

2.3.3 KX 125 INTERWIRING AND CABLE HARNESS FABRICATION

A. General

The KX 125 Communication Transceiver/Navigation Receiver receives primary power from the aircraft power source. Power connections, voltage requirements, circuit breaker requirements are shown on the interconnect diagram Figure 2-1).

The length of the wires to parallel pins should be approximately the same length, so that the best distribution of current can be effected. AlliedSignal General Aviation Avionics recommends that all wires, including spares as shown on the interconnect diagram be included in the fabrication of the wiring harness. However, if full wiring is not desired, the installer should ensure that the minimum wiring requirements for the features and functions to be used be incorporated.

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2.3.3 A.

When cables are installed in the aircraft, they must be supported firmly enough to prevent movement and should be carefully protected against chaffing. Additional protection should also be provided in all location where the cable may be subjected to abuse.

In wire bundles, the cabling should not be tied tightly together as this tends to increase the possibility of noise pickup and similar interference. When routing cables through the aircraft the cables should cross high level rf lines at right angles.

The following guidelines are recommended:

- (1) The installing facility will supply and fabricate all external cables. (See Figures 2-1 through 2-6). The required connectors are supplied as part of the installation kit (P/N 050-02215-00XX).
- (2) The KX 125 and the associated wiring harness must be kept a minimum of three feet from the transceiver/receiver antenna coax and the termination connector of the antenna to prevent rf interference from the antenna.
- (3) Do not route the transceiver/receiver antenna coax near ADF sense or loop antenna cables.

B. Primary Power and Circuit Breaker Requirements and Wiring

The KX 125 transceiver/receiver receives primary power from an aircraft by aircraft power circuit breakers. The KX 125 is designed to operate receiving either +14 V dc or +28 V dc supply. Power connections, and circuit breaker requirements are shown on the interconnection diagram Figure 2-1.

2.3.4 EQUIPMENT LOCATION

Care should be exercised to avoid mounting components near equipment operating with high pulse current or high power outputs such as radar and satellite communications equipment. In general, the equipment should be installed in a location convenient for operation, inspection, and maintenance, and in an area free from excessive vibration, heat, and noise generating sources.

All mechanical installation drawings, connector assembly diagrams, interwiring diagrams, and connector pin assignments tables referenced in this section are located at the end of this section of the manual. Determine the mounting location for system components following the guidelines below.

Prior to installing any equipment, make a continuity check of all wires and cables associated with the system. Then apply power and check for proper voltages at system connectors, and then remove power before completing the installation.

A. KX 125 Communication Transceiver/Navigation Receiver Locations

Note

- 9 Care should be taken in selecting the optimum location for the KX 125.
- 9 The LCD, Liquid Crystal Display, has viewing angle limitations. The display is readable at angles up to 40 degrees to the right or left, 30 degrees up and 10 degrees down.
- 9 In some potential mounting locations, glare and reflection from the display may cause the display to be unreadable. Therefore, careful considerations of these effects should be made before choosing the final mounting location. Refer to Figure 2-8.

The panel-mounted KX 125 can be installed in any convenient location on the panel that is free from excessive heat and vibration and which provides reasonable access for inspection and maintenance. To achieve maximum performance, the KX 125 should be installed adjacent to other receivers with similar functions.

To allow for inspection or repair of the wiring of the connector assembly itself, sufficient lead length should be left so that when the mounting hardware for the rear connectors and antenna coaxial cable is removed the assembly may be pulled forward several inches. Also, a bend should be made in the harness (at the rear connectors) to allow water droplets that might form on the harness due to condensation, to drip off at the bend and not collect in the connection.

The length of cables from the KX 125 connector to other system units is not critical because unit interfaces are designed with high impedance inputs, low impedance outputs, and low noise susceptibility characteristics.

Forced air cooling is recommended but is not a requirement. Outline drawings Figures 2-6 and 2-7 shows KX 125 Communication Transceiver/Navigation Receiver dimensions.

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2.3.4 A.

B. Antenna

The antenna should be well removed from any projections, the engine(s), and propeller(s). The (NAV) antenna should be mounted symmetrically with the centerline of the aircraft. It should also be well removed from landing gear doors, access doors, or other openings which will break the ground plane for the antenna. The ground plane surface directly beneath the COMM antenna should be a flat plane over as large area (18 inches square, minimum) as possible.

Conventional 50 Ω horizontally polarized NAV and vertically polarized COMM antennas are required with the KX 125. Vertically bent whip communication antennas are not recommended. Wideband COMM antennas provide efficient operation over the COMM band. For optimum performance, a balanced loop navigation antenna is recommended. Antennas should be installed according to the manufacture's recommendations.

A back-up plate should be used for added strength on thin-skinned aircraft.

To prevent rf interference, the antenna must be physically mounted a minimum distance of three feet from the KX 125 and the wiring harness.

The antenna should be mounted a minimum of six feet away from the DME antenna and four feet from the ADF sense antenna.

Where practical, plan the antenna location to keep cable lengths as short as possible and avoid sharp bends in the cable to minimize the VSWR.

Avoid running other cables or wires near the antenna cable.

On pressurized aircraft, the antenna should be sealed using RTV No. 3145 (P/N 016-01082-0000) or equivalent around the connector and mounting hardware.

All antenna mount should be sealed around from the outside for moisture protection using RTV or equivalent.

Mount the antenna in as clean an environment as possible, away from exhaust gases and oils. The antenna should be kept clean. If left dirty (oil covered), the range of the transceiver/receiver may be affected.

The antenna connectors on the KX 125 are identified on the rear die casting.

Note

Viewing the KX 125 from the rear, the NAV antenna connector is on the right and the Comm antenna connector is on the left. This means that the NAV frequency selector/and NAV antenna connector are on opposite sides of the radio. The comm frequency selector and Comm antenna connector are also on opposite sides of the radio.

2.3.5 KX 125 INSTALLATION

The transceiver/receiver should be mounted using the dimensions specified in the outline and mounting drawings, Figures 2-6 and 2-7. The transceiver/receiver should be wired according to the interconnect diagram, Figure 2-1.

A. Cable Harness and Connector Assembly

The KX 125 uses a special connector that mates directly with the printed circuit board inside the unit (see Figures 2-6 and 2-7). Assemble the connector using the procedure described in paragraph 2.3.6.

B. Coax Connector

Refer to Figures 2-6 and 2-7 for the details for mounting the right angle coaxial BNC connector to the coax cable. Install the connector into the mounting rack.

C. Mounting Rack

- (1) Rear connector wiring must be completed before permanently fastening the transceiver/receiver to the panel.
- (2) Remove the area specified on the outline and mounting drawing (see Figures 2-6 and 2-7) for front and rear dimensions. Care must be taken to avoid damage to the adjacent equipment and cables.

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2.3.5 C.

- (3) Secure the rack to the panel. The transceiver/receiver must be secured in the rear by attaching the unit to a structural member of the airframe.

D. Antenna

For antenna outline drawing, installation procedures, and mounting dimensions, refer to the manufacture's instructions. In lieu of specific instruction the following general guidelines may be used.

- (1) Peel backing off the antenna template and apply the template to the aircraft at the desired mounting location.
- (2) Drill or cut the proper size holes for mounting the antenna, then remove the template.
- (3) Using the antenna as a stencil, draw a line around the base of the antenna where it comes into contact with the aircraft. Then carefully scrape off the paint within the stenciled area. Lightly sand the bare metal with fine sandpaper to insure the removal of all paint and protective coatings.
- (4) Sand the inside area of the aircraft where the backing plate will be located to remove chromate or other protective finish.
- (5) Apply Alumiprep No.33, or equivalent, following the manufacture's directions to cleanse the metal of any residue.
- (6) Apply Alodine no. 1001, or equivalent, following the directions on the container.
- (7) Align the backing plate with the holes drilled in step (b). Fasten the backing plate securely in place, if required for reinforcement.
- (8) Mount the antenna using the fasteners called out or those included with the antenna.
- (9) Coaxial cable RG-400U, or equivalent, is normally used.
- (10) Inspect coaxial cable connector for proper contact, then fasten the connector securely to the antenna.

E. KX 125 Unit

- (1) Looking at the top of the unit, make sure the front lobe of the holddown device is in a vertical position.
- (2) Slide the unit into the mounting rack until the front lobe touches the mounting rack.
- (3) 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.
- (4) For removal, turn the locking screw counterclockwise using a 3/32" Allen wrench until the unit disengages from the mounting rack.

2.3.5 E.

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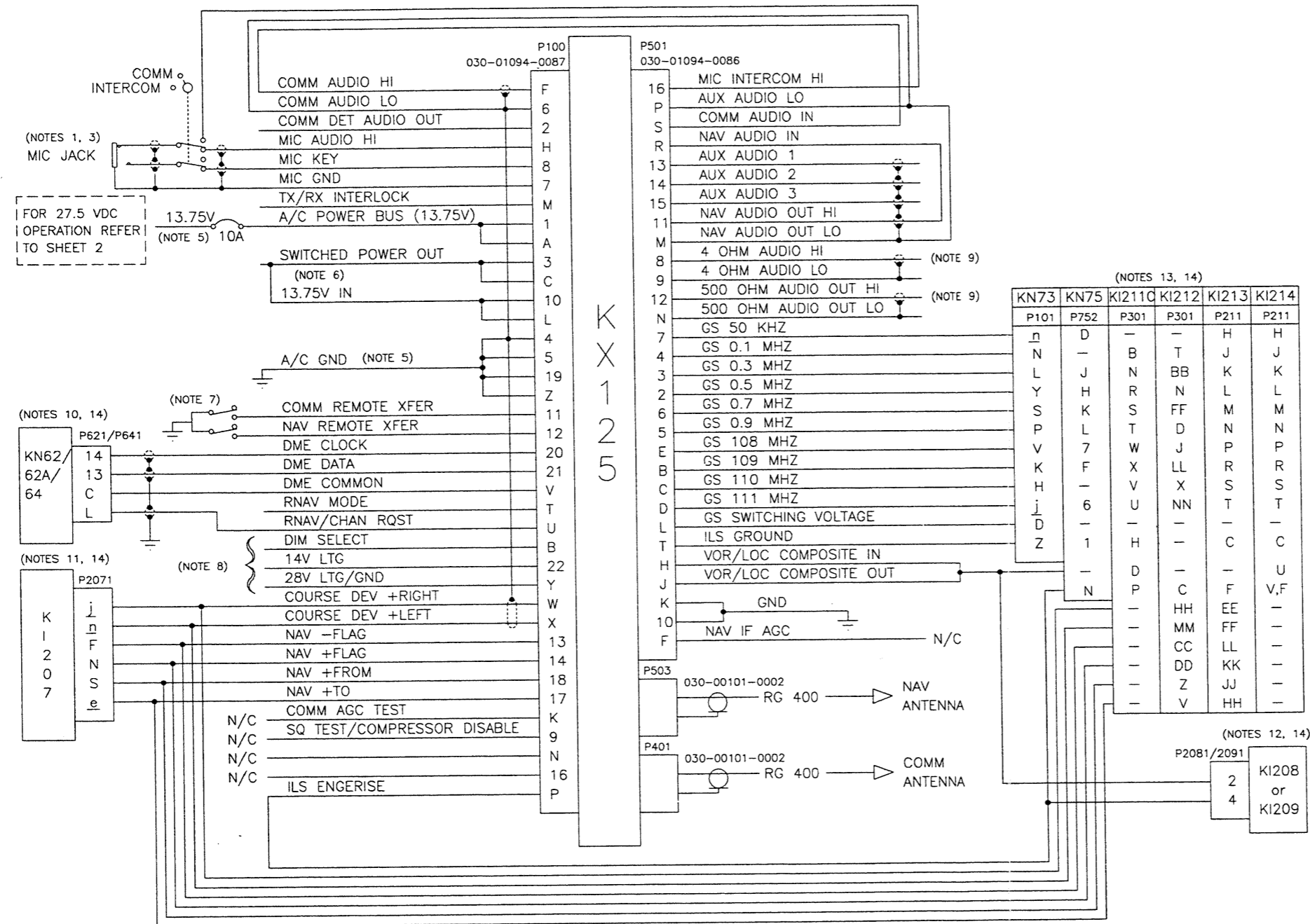


FIGURE 2-1 KX 125 (+ 14 V DC) INTERCONNECT DIAGRAM
 (Dwg No 155-05675-0000 R-2)
 (Sheet 1 of 2)

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2.3.5 E.

NOTES:

1. INTERCOM OPERATION:
 - a) THE MIC AUDIO MUST BE SWITCHED FROM P100-H, MIC AUDIO HI TO P501-16, MIC INTERCOM HI AND P100-8 MIC KEY MUST BE OPEN TO PREVENT COM TRANSMISSION.
 - b) CONNECTING TWO MICROPHONES TO THE MIC AUDIO IN OR MIC INTERCOM IN AT THE SAME TIME MAY LOAD DOWN THE MIC BIAS AND RESULT IN WEAK OR DISTORTED AUDIO. MIC ISOLATION RELAYS ARE RECOMMENDED SO THAT ONLY ONE MIC IS HOT AT A TIME.
2. ALL WIRES #24 AWG UNLESS OTHERWISE NOTED.
3. TERMINATE AUDIO SHIELDS AT ONE END ONLY, PREFERRABLY AT THE AUDIO PANEL IF ONE IS USED.
4. ALL GROUNDS ARE AIRFRAME GROUNDS UNLESS OTHERWISE NOTED.
5. AIRCRAFT POWER WIRING SHOULD BE TWO #18 AWG WIRES TO THE CIRCUIT BREAKER AND AIRCRAFT GROUND SHOULD BE TWO #18 WIRES TO GROUND.
6. SWITCHED POWER OUT (P100-3 AND -C) AND 13.75V (P100-10 AND -L) MUST BE JUMPED TOGETHER WITH #20 AWG MINIMUM.
7. REMOTE FREQUENCY TRANSFER. A MOMENTARY GROUND AT P100-11 WILL TRANSFER THE USE AND STBY COMM FREQUENCY. A MOMENTARY GROUND AT P100-12 WILL TRANSFER THE USE AND STBY NAV FREQUENCY.
8. FOR TRACKING OF A 28V LIGHTING BUS, CONNECT DIM SELECT (P100-B) TO GROUND, 28V LTG/GND (P100-Y) TO 28V DIMMER BUS, AND 14V LTG (P100-22) IS NOT CONNECTED. FOR TRACKING OF A 14V LIGHTING BUS, CONNECT 14V LTG (P100-22) TO 14V DIMMER BUS, 28V LTG/GND (P100-Y) TO GROUND, AND DIM SELECT (P100-B) IS NOT CONNECTED.
9. 8W AUDIO AVAILABLE TO DRIVE EXTERNAL SPEAKERS AT P501-8. 100mW AUDIO AVAILABLE TO DRIVE EXTERNAL KEADPHONES AT P501-12.
10. DME TUNING TO KN62/62A/64 IS ACHIEVED SERIALLY. PARALLEL 2X5 OR SLIP CODE DME CHANNELLING CAN BE ACHIEVED BY USE OF A KA120 SERIAL TO PARALLEL CHANNEL ADAPTER. THE KA120 MAY ALSO PROVIDE PARALLEL CHANNELLING FOR OTHER BENDIX/KING GLIDESLOPE RECEIVERS.
11. CONVERTED VOR/LOC OUTPUTS THAT MAY DRIVE REMOTE INDICATORS OR AUTOPILOT COUPLER. SHOWN HERE AS AN EXAMPLE, KI207 REMOTE INDICATOR.
12. VOR/LOC COMPOSITE OUTPUT AVAILABLE TO DRIVE REMOTE INDICATORS SUCH AS THE KI208 OR KI209.
13. GS CHANNELLING MATRIX AVAILABLE TO DRIVE ANY OF THE GS RECEIVERS SHOWN IN TABLE.
14. PARTIAL INTERCONNECTS SHOWN. FOR COMPLETE INTERCONNECTS SEE THE RESPECTIVE INSTALLATION MANUALS.

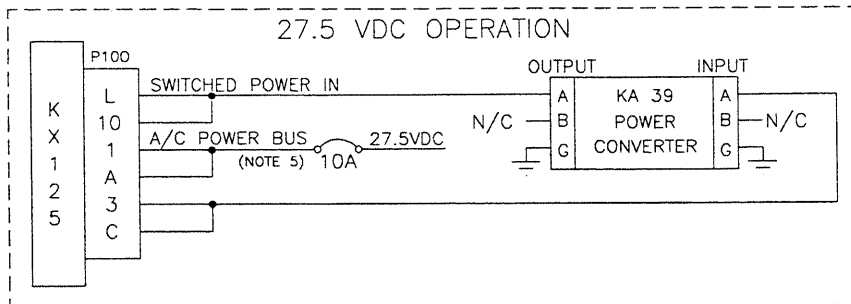


FIGURE 2-1 KX 125 (+ 14 V DC) INTERCONNECT DIAGRAM
 (Dwg No 155-05675-0000 R-2)
 (Sheet 2 of 2)

BENDIX/KING
 KX 125
 COMMUNICATION TRANSCEIVER/
 NAVIGATION RECEIVER

2.3.5 E.

P 100

A	←	.....	AIRCRAFT POWER BUS (13.75 V dc)
B		.....	DIM SELECT
C		.....	→ SWITCHED POWER OUT
E		.....	NO CONNECTION
F		.....	→ COMM AUDIO HI
G		.....	NO CONNECTION
H	←	.....	MICROPHONE AUDIO HI
I		.....	NO CONNECTION
J		.....	NO CONNECTION
K		.....	→ COMM AGC TEST (MAINTENANCE ONLY)
L	←	.....	13.75 V dc IN
M	←	.....	TX/RX INTERLOCK
N	←	.....	RS232 IN (MAINTENANCE ONLY)
O		.....	NO CONNECTION
P		.....	→ ILS ENERGIZE
Q		.....	NO CONNECTION
R		.....	NO CONNECTION
S		.....	NO CONNECTION
T	←	.....	RNAV MODE
U	←	.....	RNAV CHANNEL REQUEST
V		.....	DME COMMON
W		.....	→ COURSE DEVIATION + RIGHT
X		.....	→ COURSE DEVIATION + LEFT
Y		.....	28 V dc LIGHTING GROUND
Z		.....	AIRCRAFT GROUND

← Input

Output →

FIGURE 2-2 KX 125 MAIN CONNECTOR PINOUT DIAGRAM

Sheet 2 of 2

BENDIX/KING
KX 125
COMMUNICATION TRANSCEIVER/
NAVIGATION RECEIVER

2.3.5 E.

2.3.6 MOLEX CONNECTOR ASSEMBLY PROCEDURE

The installer has two options of fabricating the wiring harness for the KX 125. The option includes soldering the connectors or crimping the connectors onto the wires. Refer to instructions in Figure 2-4.

A. Solderless Contact Terminal Assembly using Pliers

- (1) Strip each wire 5/32 inches for contact terminal (P/N 030-01107-0024). The last two digits of the contact terminal part number indicates the number of terminals furnished.
- (2) Tin the exposed conductor.
- (3) Using needle nosed pliers, fold over each conductor tab, in turn, onto the exposed conductor. when both tabs have been folded, firmly press the tabs against the conductor.

B. Solderless Contact Terminal Assembly using Molex Crimper (Figure 2-4)

- (1) Strip each wire 5/32" for contact terminal (KPN 030-01107-00XX). (The last two digits of the contact terminal part number indicates the number of terminals required).
- (2) Open the Molex hand crimper HTR-6115 with the engraved side toward the operator. Place the conductor tab section of a contact terminal on Anvil B with the contact portion facing away from the operator. Close the crimper slightly until the contact tabs touch the female jaw.
- (3) Insert the stripped conductor until the insulation is even with the side of the crimper facing the operator. Crimp the conductor tabs by squeezing the handles together until the jaws are fully closed or a sufficient crimp is obtained.
- (4) Move the lead to Anvil A. Place the insulating tab section on Anvil A. Crimp again until the jaws are fully closed or a sufficient crimp is obtained.

C. Contact Insertion into Molex Connector Housing

- (1) 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 (P/N 030-01094-00XX). 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.
- (2) The self locking feature can be tested by gently pulling on the wire.

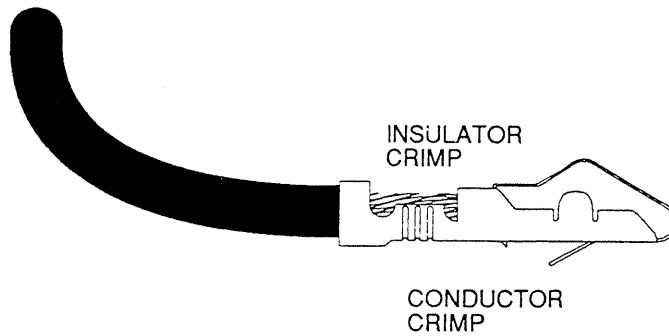
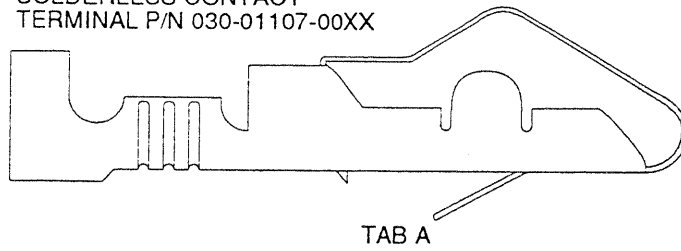
D. Extraction of Contact from Molex Connector

- (1) Slip the flat narrow blade of a Molex contact ejector tool, HT-1884 (P/N 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 to the stop.
- (2) When the ejector is positioned against the stop the locking key of the contact is raised, allowing the 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 checked visually before reinstalling in connector, to be certain that retaining tab "A" extends as shown (see Figure 2-4) for retention in connector.

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2.3.6 B.

SOLDERLESS CONTACT
TERMINAL P/N 030-01107-00XX



TERMINAL EXTRACTION
TOOL P/N 047-05099-0001
MOLEX P/N HT-1884

Holding the hand crimpers as shown, release the crimper's ratchet pawl and open by squeezing tightly on the handles, and then releasing pressure.

HAND CRIMPER
P/N 071-06041-0000
MOLEX P/N 6115

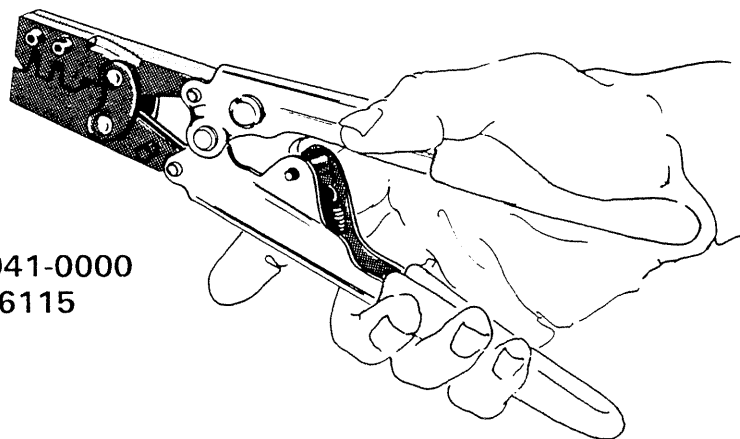
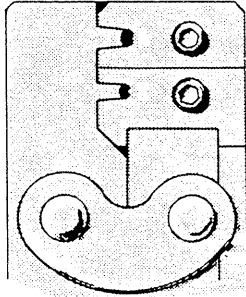


FIGURE 2-4 CRIMPING TOOLS AND CONNECTORS
(Dwg No 696-06333-0000 R-1)
(Sheet 1 of 3)

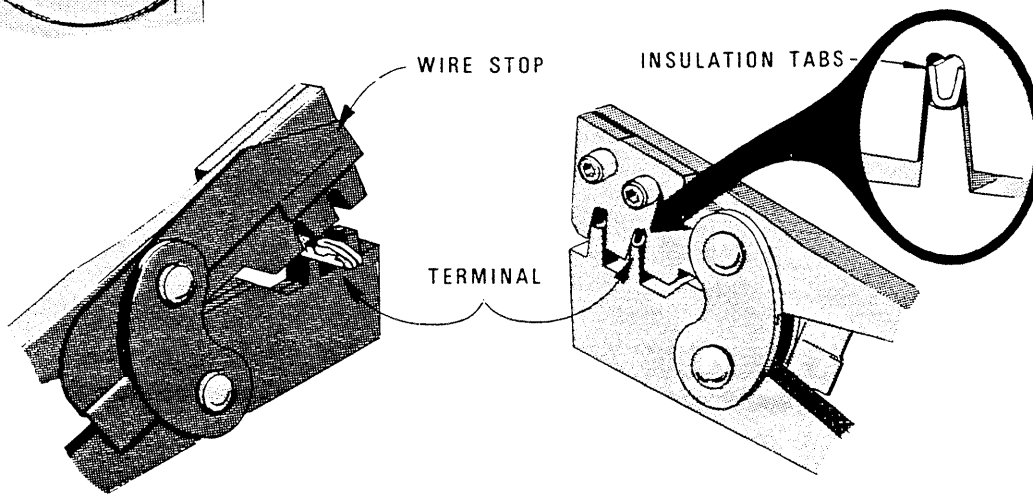
BENDIX/KING
 KX 125
 COMMUNICATION TRANSCEIVER/
 NAVIGATION RECEIVER

2.3.6 D.(3)

Close crimpers until ratchet begins to engage. Then insert terminal into jaws from the back side. (See below). For 24 to 30AWG wire, it will be necessary to start the crimp in jaw A and then complete in jaw B.



JAW	TERMINAL	WIRE SIZE	INSULATION RANGE
A	030-01107-0030	18 to 24AWG	.110 TO .055
B	030-01107-0030	24 to 30AWG	.055 to .030



Terminal is in the correct position when insulation tabs are flush with outside face of crimp jaws.

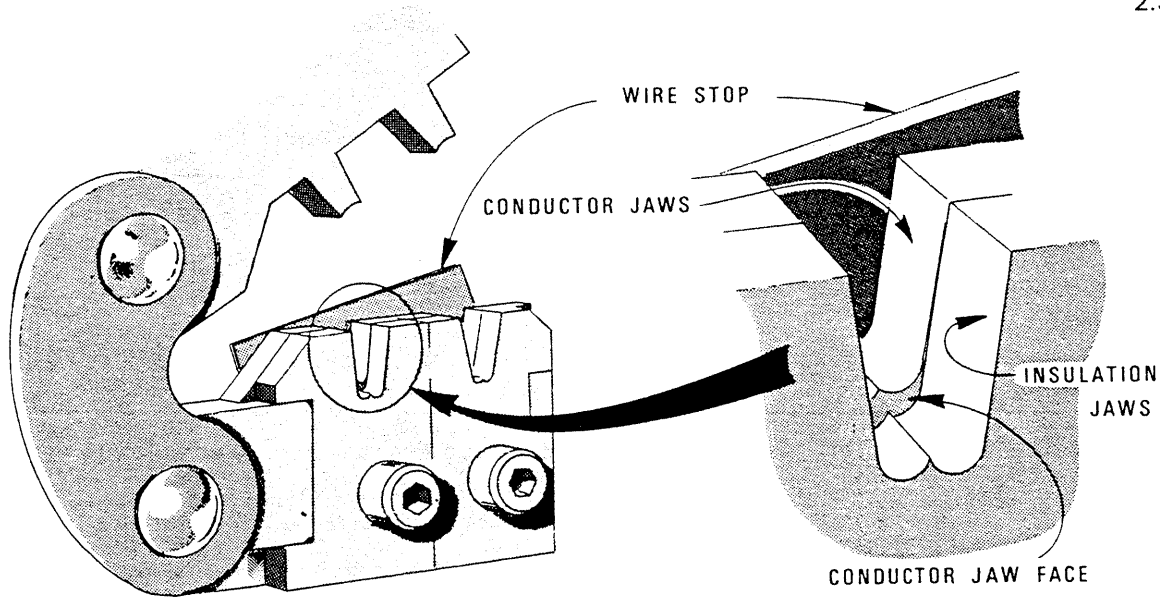
Once the terminal is in the correct position, close the jaws gently until the terminal is held loosely in place. Push the wire stop down so that it rests snugly behind the contact portion of the terminal.

Strip off 1/8 inch of the wire insulation and insert the wire through the insulation tabs into the conductor tabs until the insulation hits the conductor jaw face or until the conductor touches the wire stop.

FIGURE 2-4 CRIMPING TOOLS AND CONNECTORS
 (Dwg No 696-06333-0000 R-1)
 (Sheet 2 of 3)

BENDIX/KING
KX 125
COMMUNICATION TRANSCEIVER/
NAVIGATION RECEIVER

2.3.6 D.(3)



Squeeze the handles until the crimp jaws close and the ratchet releases.

Straighten the terminal if necessary, then release the plier grips and remove the crimped terminal.

CRIMPING PRESSURE ADJUSTMENT

If too much or too little pressure is needed to release the crimper's ratchet pawl at the end of the crimp stroke, the ratchet can be easily adjusted. A spanner wrench provided with the tool can be used to loosen the lock nut, and rotate the keyed stud clockwise for increased pressure and counter-clockwise for decreased pressure. Once the desired pressure has been set, the lock nut must be tightened again. Newer models may have a screwdriver adjustment.

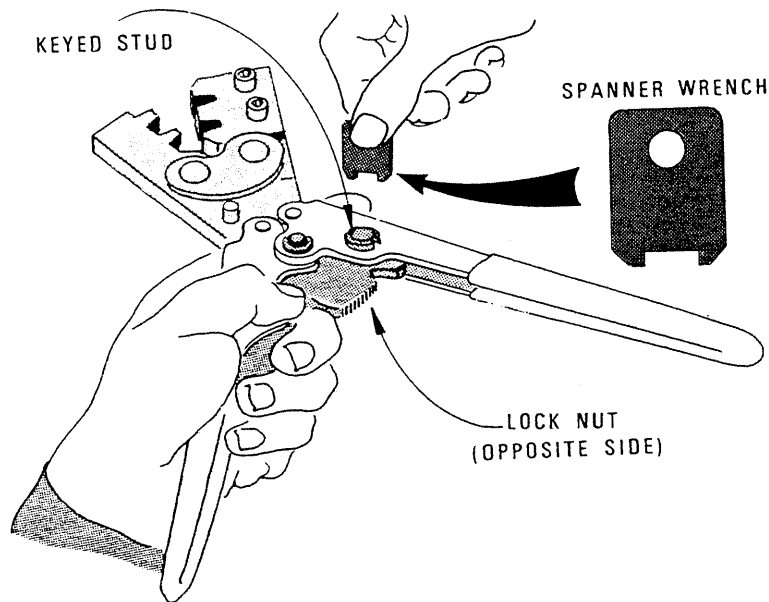


FIGURE 2-4 CRIMPING TOOLS AND CONNECTORS
(Dwg No 696-06333-0000 R-1)
(Sheet 3 of 3)

BENDIX/KING
 KX 125
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 NAVIGATION RECEIVER

2.4 POST INSTALLATION TEST PROCEDURE

2.4.1 TRANSCEIVER/RECEIVER SYSTEM CHECKOUT

The post-installation test is used to apply power and functionally checkout the system. Successful completion of the post-installation test verifies the proper operation of the KX 125 Communication Transceiver/Navigation Receiver System.

Figure 2-5 is a visual inspection/check procedure that should be performed after system installation as part of a system checkout. A post-installation test per paragraph 2.4.1 B. should be performed. In addition, the procedure should be used as a periodic maintenance inspection check.

EQUIPMENT	INSPECTION/CHECK PROCEDURE
KX 125 Transceiver /Receiver	A. Inspect external surface for damage. B. Check that the unit is securely installed and that retaining mechanism is securely tightened. C. Ensure that all connections in the transceiver/receiver are properly mounted and secure.
Antennas	A. Inspect external surfaces for damage. B. Check that antenna is properly mounted and mounting screws are tight. C. Ensure that antenna coaxial cable connectors are properly mated and secure.

FIGURE 2-5 INSPECTION/CHECK PROCEDURE

A. Inspection

Perform the following inspection on the overall system:

- (1) Check that cables do not interfere with aircraft controls or other equipment.
- (2) Check cabling for proper routing and check security of tie-down points. Inspect and adjust cable runs to ensure that cables are not strained, kinked, or severely twisted and are not exposed to rough or sharp surfaces.

B. Post-Installation Test/Operation

(1) General

Installation of the transceiver/receiver system requires three stages of testing to ensure the proper operation of the transceiver/receiver. Initially, prior to the installation of the transceiver/receiver and antenna, a system interwiring check should be performed. This check verifies that the aircraft and all transceiver/receiver interconnections are correct, before power is applied. After the units are installed a visual inspection of the equipment and connections is made.

(2) System Interwiring Check

To check the aircraft and transceiver/receiver system interconnections proceed as follows:

- (a) Check that all cables and interwiring are installed in accordance with the Interwiring and Cable Harness Fabrication instructions (paragraph 2.3.3).
- (b) Using the interconnect diagram (see Figure 2-1), check wiring for proper destination, opens, and shorts.
- (c) Check rf cables for insertion loss and VSWR.

BENDIX/KING
KX 125
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2.4.1 B.

(3) Visual Inspection

In conjunction with system installation, perform the inspection/check procedure (Figure 2-5 in this section).

(4) Post-Installation Test

The Post-Installation Test verifies the proper operation of the KX 125 Transceiver/Receiver System. This procedure is used after the system units have been installed and thereafter as an operational check. This procedure is comprised of a pretest setup, a pre-flight turn on and a visual inspection. The following tests and check are performed on the ground.

(a) Pretest Setup

1) Check KX 125 system source power as follows:

- a) Confirm that aircraft 14 V dc is operational.
- b) Confirm that the aircraft panel background lighting power source is operational by adjusting the cockpit dimmer switch for proper cockpit panel illumination.

2) Operate appropriate aircraft circuit breakers and switches to apply power to the system as follows:

- a) Apply 14 V dc to transceiver/receiver.
- b) Apply primary power inputs to all that interfaces with the transceiver/receiver(s) per the system configuration.

3) Verify that all KX 125 circuit breakers are closed.

4) Allow one minute for warmup.

(b) Pre-Flight Turn On Test

1) Rotate the COMM Volume (VOL) knob clockwise from the OFF position.

2) Verify that the COMM FREQ and NAV FREQ window displays the frequencies stored in the non-volatile memory.

3) Verify that the active NAV USE frequency is a VOR frequency, the NAV INFO window will display the CDI deviation bars, "OBS" annunciator, three digit OBS setting stored in non-volatile memory prior to power down and "TO" or "FR" annunciator. A "FLAG" annunciator will also be displayed if no valid navigation signal is received and the "TO"/"FR" annunciators will be turned off. Note that if the "OBS" annunciator is flashing, the inner NAV FREQ selector knob is in the out position. If on power up, the active NAV USE frequency is a localizer frequency, the NAV INFO window will display the CDI bars and "LOC" annunciator. The "FLAG" annunciator will also be turned on if no valid navigation signal is received.

(d) Conformity Inspection

Visually inspect the installed equipment to determine the use of acceptable workmanship and engineering practices. Verify that all mechanical and electrical connections have been made properly.

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2.4.2 POST INSTALLATION CHECK

An operation 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. Contact a ground station close in. Pull the volume control knob 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 in power.

Note

The LCD back lighting can be set for the most pleasing intensity by adjusting the panel lighting. See paragraph 3.3.1 of this manual for dim select operation. The viewing contrast of the LCD can be adjusted by R908 which is accessible through a small hole on the front panel located between the NAV volume control and NAV frequency selector.

To check the VOR/ILS system, select a VOR frequency within a 40 nautical mile range. Listen to the VOR audio and insure that no electrical interference such as magneto noise is present. Check the tone identifier filter operation. Fly inbound or outbound on a selected VOR radial and check for proper LEFT-RIGHT and TO-FROM indications. Check the VOR accuracy.

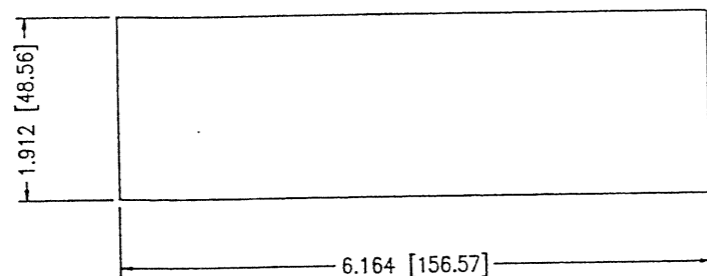
Note

VOR ground station scalloping may be present

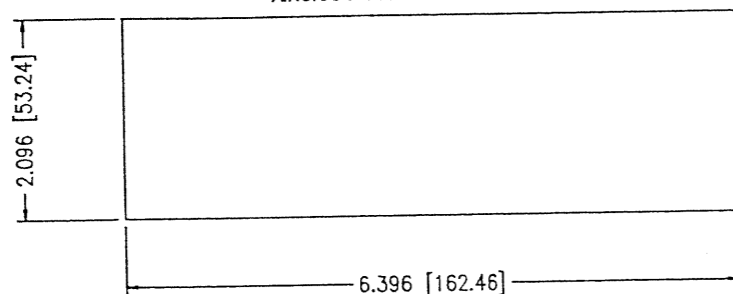
BENDIX/KING
 KX 125
 COMMUNICATION TRANSCIVER/
 NAVIGATION RECEIVER

2.4.2

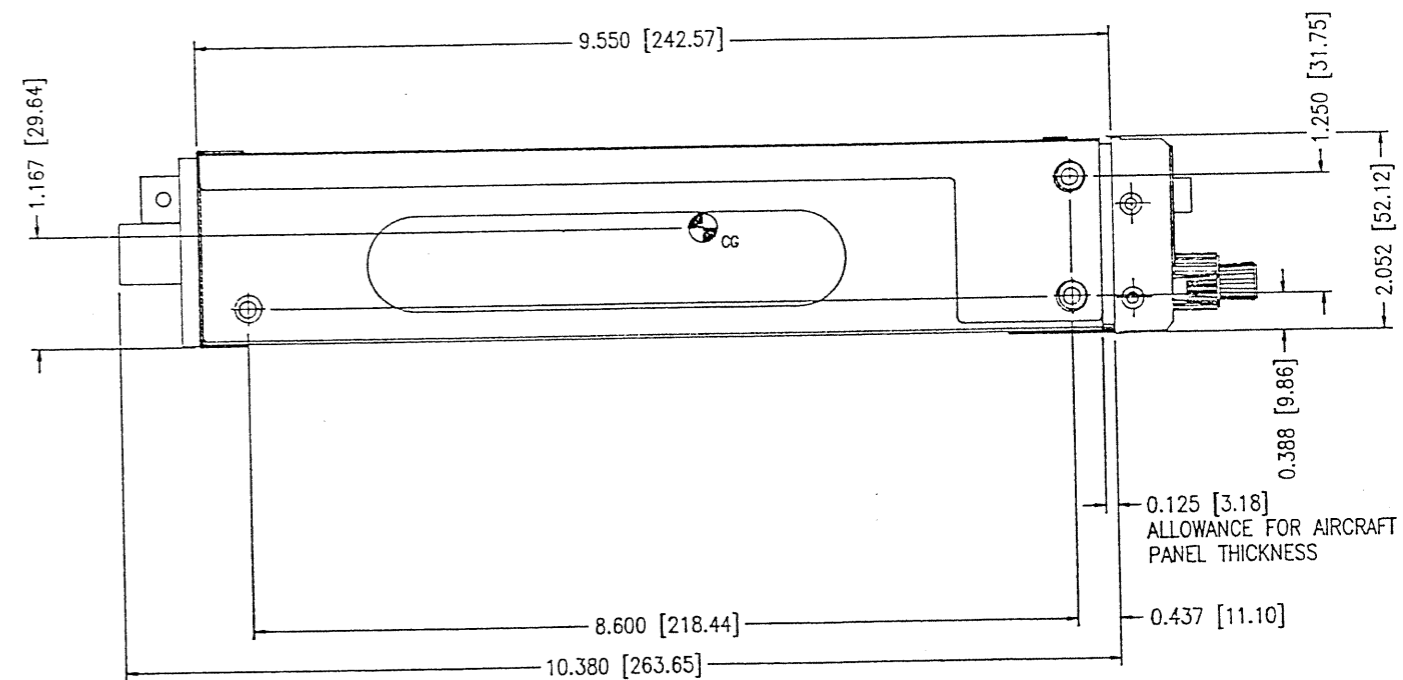
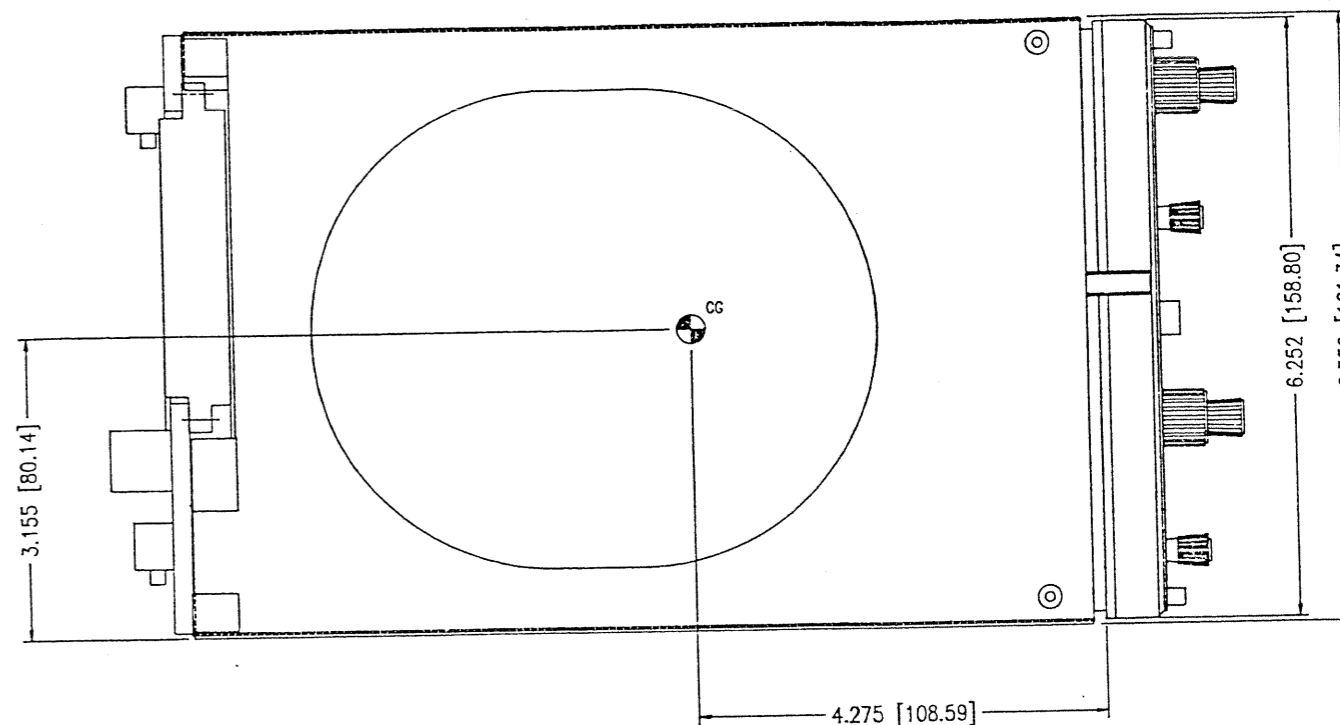
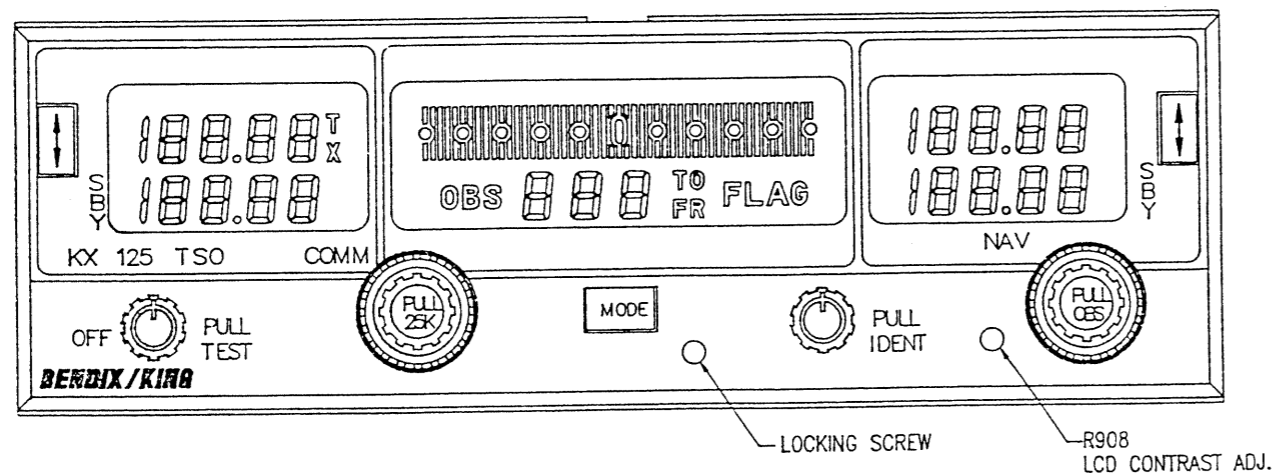
CUTOUT DIMENSIONS FOR BEHIND
 AIRCRAFT PANEL MOUNT



CUTOUT DIMENSIONS FOR FRONT
 AIRCRAFT PANEL MOUNT



KX125
 (069-01028-0X0X)
 SCALE 1:1

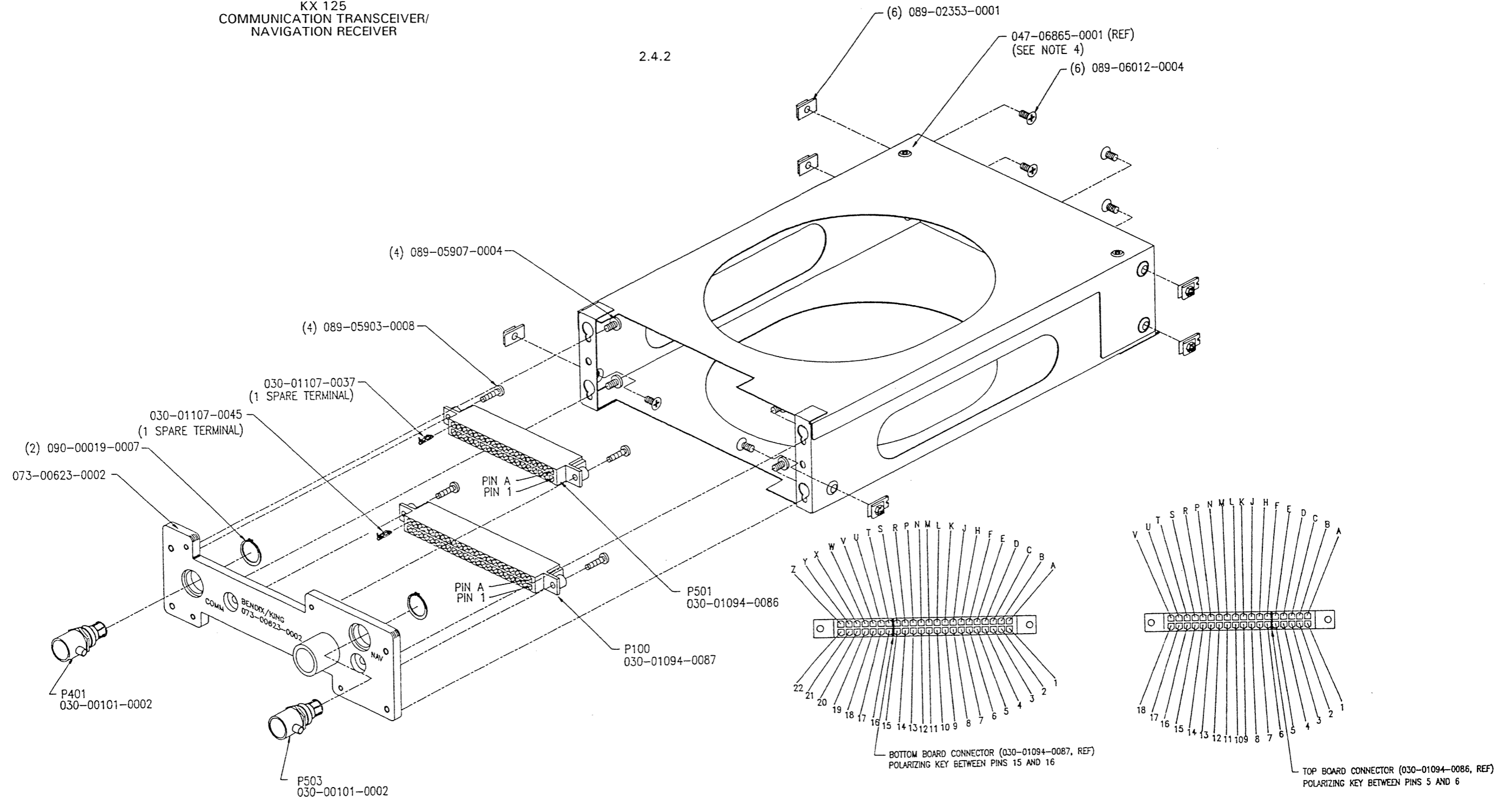


- NOTES:
1. ALL DIMENSIONS IN INCHES. () ARE IN MM.
 2. WEIGHT: 3.88 lbs (1.76kg) WITHOUT MTG. RACK AND CONNECTORS.
 4.36 lbs (1.98kg) WITH MTG. RACK AND CONNECTORS.
 3. INSTALLATION KIT IS P/N 050-02215-0000.
 4. THIS RACK IS PART OF 069-01028-9900 FINAL ASSEMBLY BOM.
 5. WHEN INSTALLING TWO OR MORE PANEL MOUNTED UNITS IN A STACK,
 THE MOUNTING TRAYS SHALL BE 0.050 INCHES (1.27mm) APART, MINIMUM.

FIGURE 2-6 KX 125 TRANSCIVER/RECEIVER OUTLINE AND MOUNTING DRAWING
 (Dwg No 155-05673-0000 R-2)
 (Sheet 1 of 2)

BENDIX/KING
 KX 125
 COMMUNICATION TRANSCIVER/
 NAVIGATION RECEIVER

2.4.2



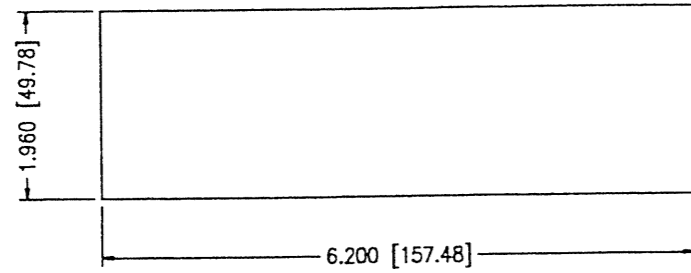
CONNECTORS VIEWED FROM REAR
 OF KX125

FIGURE 2-6 KX 125 TRANSCIVER/RECEIVER OUTLINE AND MOUNTING DRAWING
 (Dwg No 155-05673-0000 R-2)
 (Sheet 2 of 2)

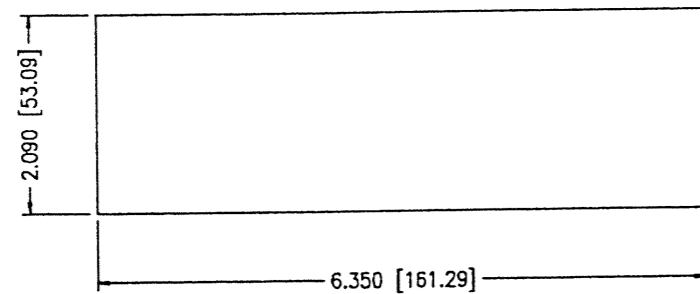
BENDIX/KING
KX 125
COMMUNICATION TRANSCEIVER/
NAVIGATION RECEIVER

2.4.2

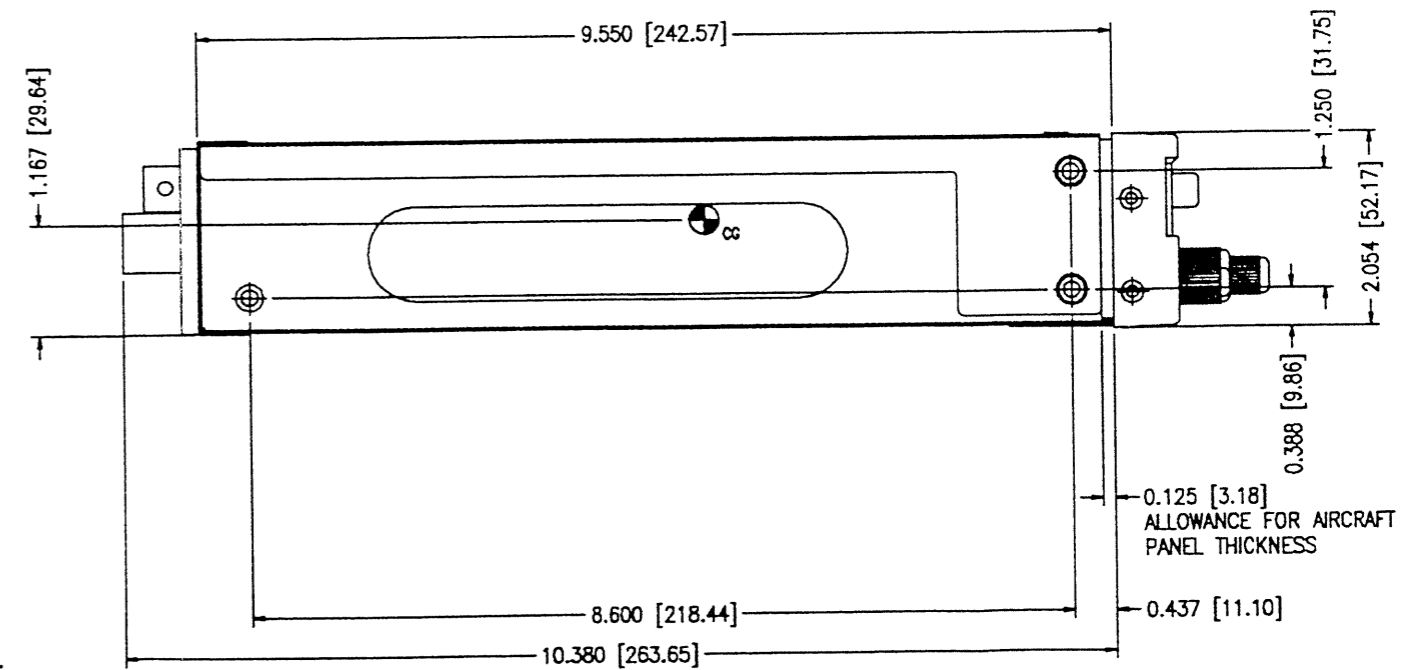
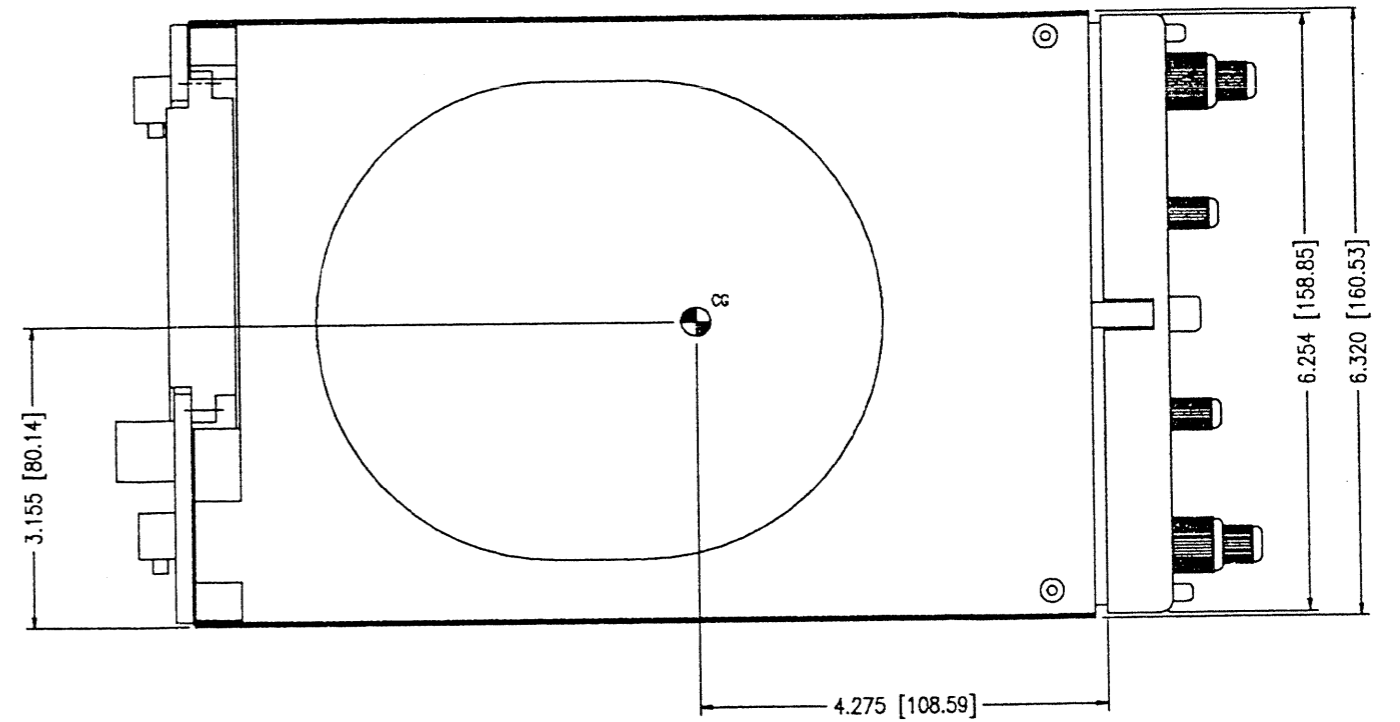
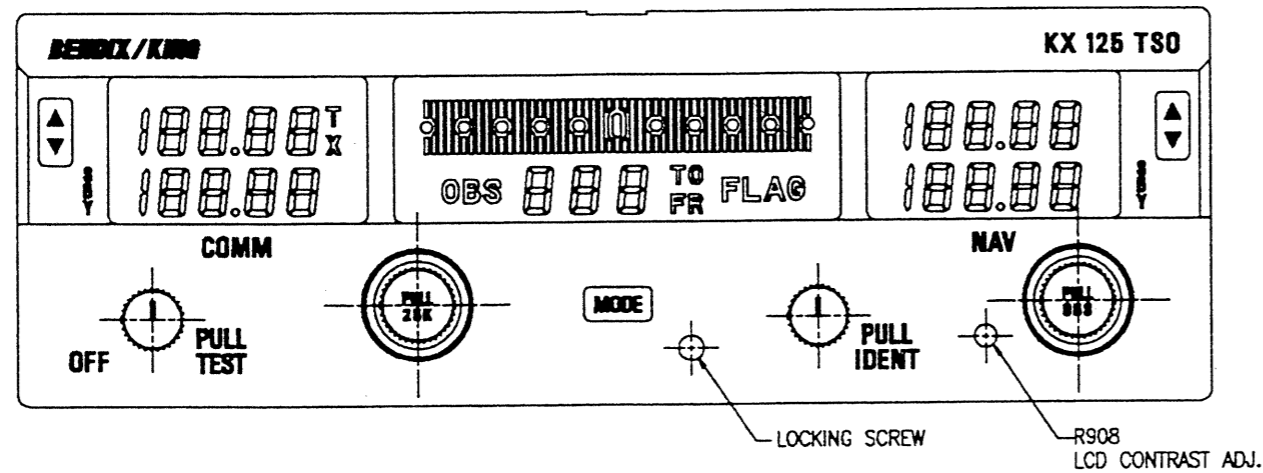
CUTOUT DIMENSIONS FOR BEHIND
AIRCRAFT PANEL MOUNT



CUTOUT DIMENSIONS FOR FRONT
AIRCRAFT PANEL MOUNT



KX125 SPORTLINE
(069-01028-1101 OR 069-01028-1302)
SCALE 1:1

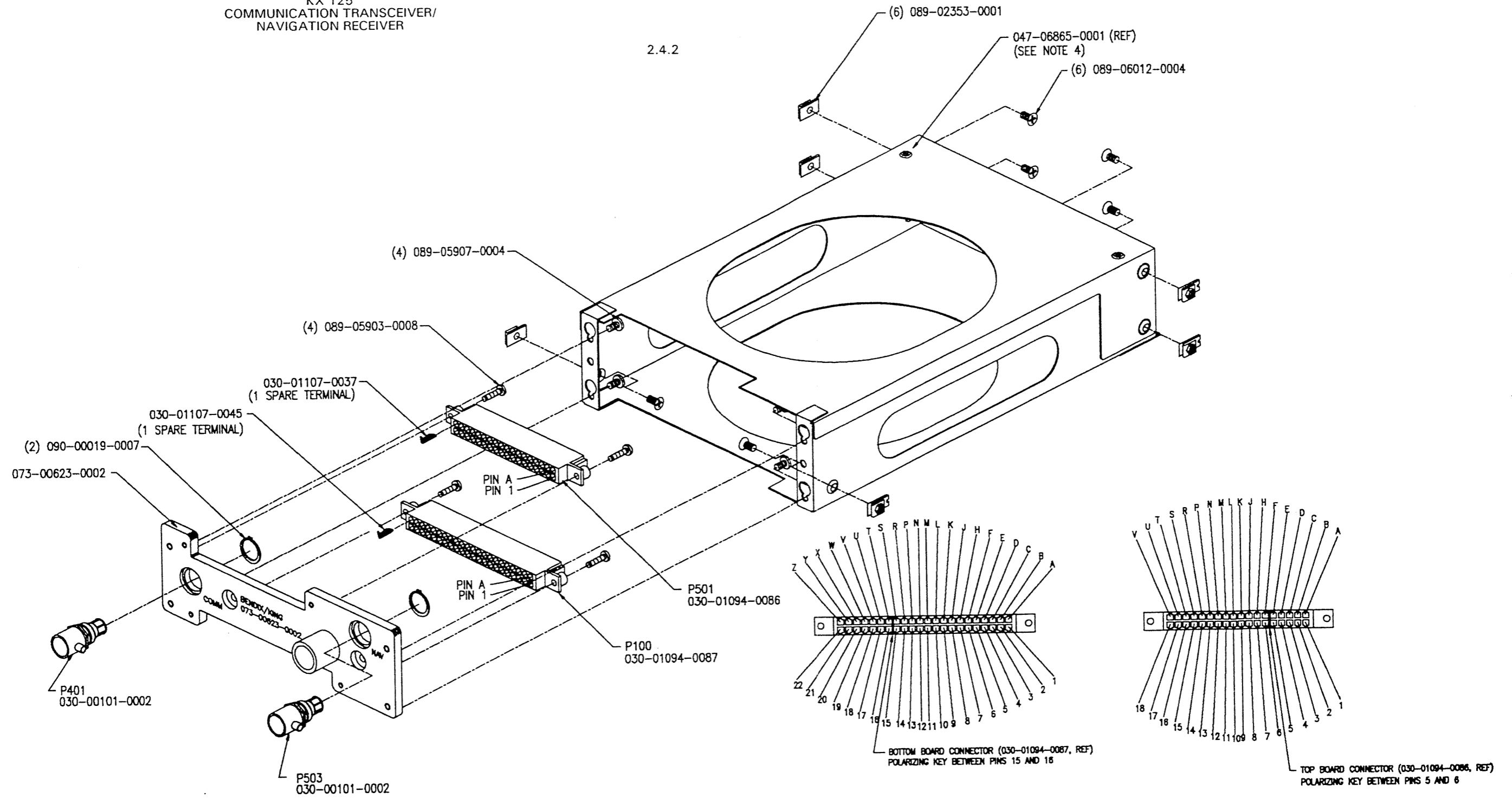


- NOTES:
1. ALL DIMENSIONS IN INCHES. () ARE IN MM.
 2. WEIGHT: 3.88 lbs (1.76kg) WITHOUT MTG. RACK AND CONNECTORS.
4.36 lbs (1.98kg) WITH MTG. RACK AND CONNECTORS.
 3. INSTALLATION KIT IS P/N 050-02215-0000.
 4. THIS RACK IS PART OF 069-01028-9800 FINAL ASSEMBLY BOM.
 5. WHEN INSTALLING TWO OR MORE PANEL MOUNTED UNITS IN A STACK,
THE MOUNTING TRAYS SHALL BE 0.050 INCHES (1.27mm) APART, MINIMUM.

FIGURE 2-7 KX 125 TRANSCEIVER/RECEIVER OUTLINE AND MOUNTING DRAWING (CROWN SERIES)
(Dwg No 155-05677-0000 R-0)
(Sheet 1 of 2)

BENDIX/KING
 KX 125
 COMMUNICATION TRANSCIVER/
 NAVIGATION RECEIVER

2.4.2



CONNECTORS VIEWED FROM REAR
 OF KX125

FIGURE 2-7 KX 125 TRANSCIVER/RECEIVER OUTLINE AND MOUNTING DRAWING (CROWN SERIES)
 (Dwg No 155-05677-0000 R-0)
 (Sheet 2 of 2)

BENDIX/KING
KX 125
COMMUNICATION TRANSCEIVER/
NAVIGATION RECEIVER

2.4.2

VIEWING ANGLE SPECIFICATIONS

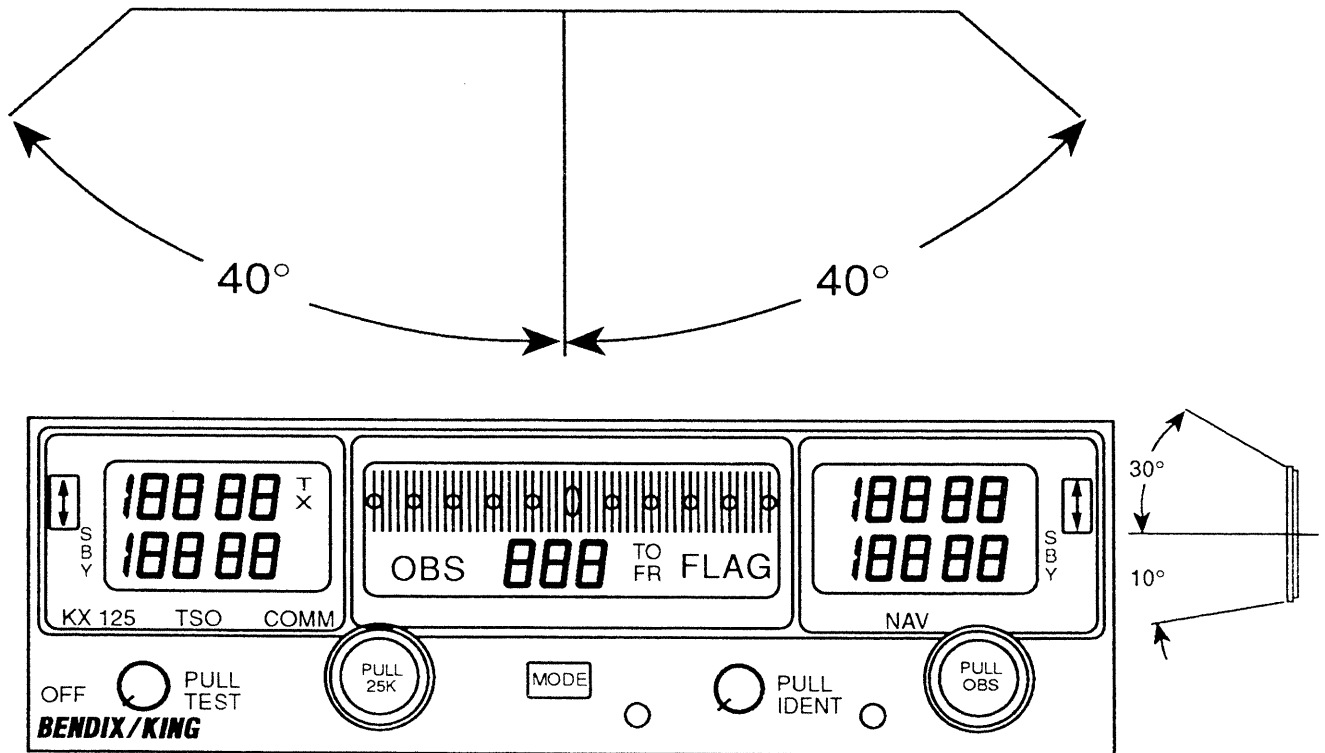


FIGURE 2-8 KX 125 TRANSCEIVER/RECEIVER VIEWING ANGLE

BENDIX/KING
KX 125
COMMUNICATION TRANSCEIVER/
NAVIGATION RECEIVER

SECTION III
OPERATION

3.1 GENERAL

All controls required to operate the KX 125 are located on the unit front panel. (See Figure 3-1)

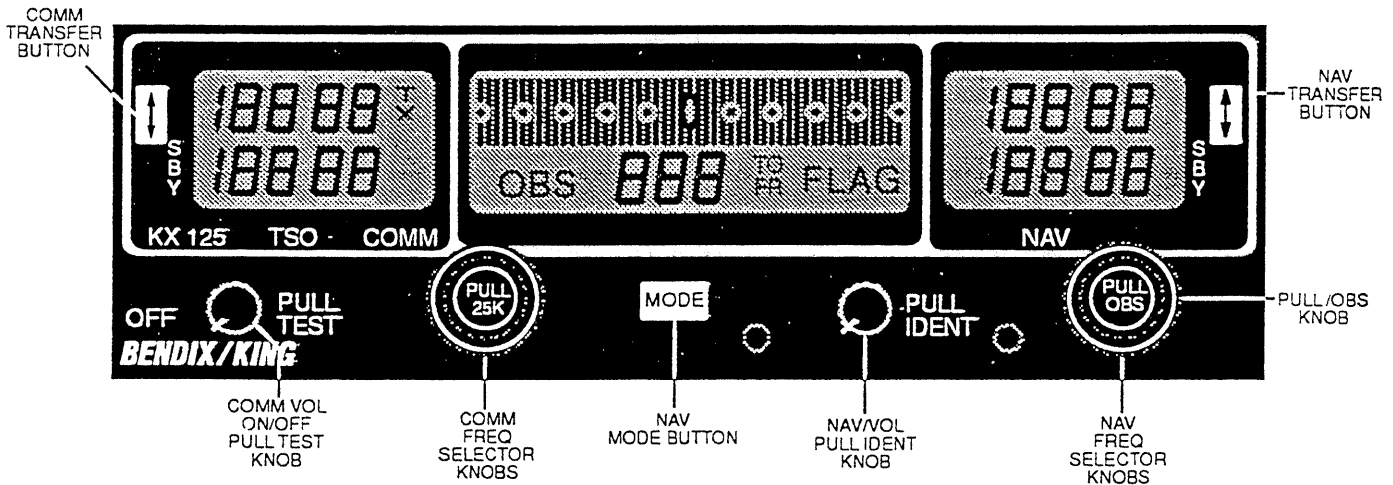


FIGURE 3-1 FRONT PANEL DISPLAY/CONTROLS

3.2 DETAILED OPERATING MODES

3.3 TURN ON

To turn on the radio, rotate the COMM Volume (VOL) knob clockwise from the OFF position. When power is activated, the COMM FREQ and NAV FREQ windows will display the frequencies stored in the non-volatile memory before power down. If on power up, the active NAV USE frequency is a VOR frequency, the NAV INFO window will display the CDI deviation bars, "OBS" annunciator, three digit OBS setting stored in non-volatile memory prior to power down and "TO" or "FR" annunciator. A "FLAG" annunciator will also be displayed if no valid or an invalid navigation signal is received and the "TO"/"FR" annunciators will be turned off. Note that if the "OBS" annunciator is flashing, the inner NAV FREQ selector knob is in the out position. If on power up, the active NAV USE frequency is a localizer frequency, the NAV INFO window will display the CDI bars and "LOC" annunciator. The "FLAG" annunciator will also be turned on if no valid or an invalid navigation signal is received. A more detailed description of all the operational modes of the KX 125 will be given below.

CAUTION

THE KX 125 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.

3.3.1 DIM SELECT

The KX 125 panel lighting may be powered up from either a 14VDC or 28VDC lighting bus supply. To enable the KX 125 panel lighting to track a 14VDC lighting bus, leave DIM SELECT (P100 pin B) open. To track a 28VDC lighting bus, tie DIM SELECT to ground.

3.4 COMM TRANSCEIVER

Pull the COMM VOL knob out and adjust for a desired listening level. Push the COMM VOL knob back in to actuate the automatic squelch.

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COMMUNICATION TRANSCIVER/
NAVIGATION RECEIVER

3.4

The top frequency displayed in the COMM FREQ window is the active COMM USE frequency and the COMM standby (SBY) frequency is displayed below it. A "TX" annunciator will come on next to the COMM USE frequency to indicate the TRANSMIT mode of operation. Select the desired operating frequency in the COMM SBY display by rotating the increment/decrement knobs of the COM FREQ selector either clockwise or counter-clockwise. A clockwise rotation will increment the previous frequency while a counter-clockwise rotation will decrement the previous frequency. The outer (larger) knob will change the MHz portion of the standby display. At one band-edge (118 or 136 MHz for -0101/-0201 or 139 MHz for -0302/-0402) the following 1 MHz change will wrap around to the other band-edge. The inner (smaller) knob will change the kHz portion of the standby display. It will change in steps of 50kHz when the knob is pushed in, and 25kHz when the knob is pulled out. The wrap around at band-edge is also utilized when incrementing or decrementing the kHz portion of the standby display.

To tune the radio to the desired COMM operating frequency, the desired COMM frequency must be entered into the COMM SBY display and then the COMM TRANSFER button must be pushed momentarily. This will trade the contents of the COMM USE and COMM SBY display. The COMM transceiver is always tuned to the frequency appearing in the COMM USE display. It is therefore possible to have two different frequencies stored in the COMM USE and COMM SBY displays and to change back and forth between them at the simple push of the COMM TRANSFER button. During the TRANSMIT mode of operation, a "TX" annunciator will appear next to the COMM USE frequency display, signifying that the transceiver is in the transmit mode of operation. The KX 125 is designed to allow a continuous TRANSMIT duration of 1/2 minute. If the transceiver is keyed for more than 1/2 minute, the KX 125 will automatically stop transmitting and the COMM FREQ window display will be flashing. On release of the mic key, the flashing will stop and operation will return to normal. This feature is designed to detect a "stuck" mic key and prevent it from over-stressing the transmitter which may reduce the reliability of the transceiver.

There is a COMM active entry mode whereby, the COMM USE frequency can be changed directly by the COMM FREQ selector knobs. To activate the COMM active entry mode, press and hold the COMM TRANSFER button for 2 seconds or more. The COMM STBY frequency will blank and the last COMM USE frequency displayed can be changed directly by the COMM FREQ selector knobs. In the COMM active entry mode, the COMM transceiver is also always tuned to the frequency appearing in the COMM USE display. To exit the COMM active entry mode, momentarily press the COMM TRANSFER button. The previous COMM SBY frequency will be re-displayed.

A non-volatile memory stores the COMM USE and COMM SBY frequencies on power down. When the unit is turned on again, the COMM USE and SBY windows will display the same COMM USE and SBY frequencies that were displayed before power down. If the KX 125 is in the COMM active entry mode during power down, it will power up back in the COMM active entry mode.

3.4.1 COMM REMOTE TRANSFER

The COMM REMOTE TRANSFER button operates identical to the front panel COMM TRANSFER button with the exception that holding the COMM REMOTE TRANSFER button for 2 seconds or more will not place the KX 125 into the COMM active entry mode.

3.5 NAV RECEIVER

The top frequency displayed in the NAV FREQ window is the active NAV USE frequency and the standby (SBY) frequency is displayed below it. The NAV receiver frequency channeling is the same as the COMM transceiver. The NAV FREQ increment/decrement knobs are located on the right hand side of the front panel. Note that the smaller knob must be pushed in to allow NAV frequency channelling. The larger knob operates in 1 MHz steps and increments/decrements the NAV STBY frequency display. The smaller knob operates in 50kHz steps. The NAV receiver lower and upper frequency limits are 108.00 MHz and 117.95 MHz. Exceeding the upper limit of frequency band would automatically return to the lower limit and vice versa. Flipping of the NAV USE and SBY frequencies is achieved by momentarily pressing the NAV TRANSFER button. There is also a NAV active entry mode whereby, the NAV USE frequency can be changed directly by the NAV FREQ selector knobs. To activate the NAV active entry mode, press and hold the NAV TRANSFER button for 2 seconds or more. The NAV SBY frequency will blank and the last NAV USE frequency displayed can be changed directly by the NAV FREQ selector knobs. The NAV receiver is always tuned to the NAV USE frequency displayed. To exit the NAV active entry mode, momentarily press the NAV TRANSFER button. The previous NAV SBY frequency will be re-displayed.

The NAV audio volume can be adjusted with the NAV VOL knob. Pulling the NAV VOL knob out will allow both voice and morse code identification (IDENT) of the tuned NAV station to be heard. When the NAV VOL knob is pushed in, the IDENT tone is attenuated.

3.5.1 NAV REMOTE TRANSFER

The NAV REMOTE TRANSFER button operates identical to the front panel NAV TRANSFER button with the exception that holding the NAV REMOTE TRANSFER button for 2 seconds or more will not place the KX 125 into the COMM active entry mode.

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3.5.2 NAV MODES

There are 3 NAV modes available with the KX 125: CDI, Bearing and Radial. The CDI mode works on both VOR and localizer frequencies. The remaining modes work only with VOR frequencies. On power up, the KX 125 will go into the default CDI mode. Momentarily pressing the NAV MODE button will step switch the KX 125 NAV modes in the following sequence: Bearing, Radial, back to CDI and so on. A description of each of the 3 NAV modes is given below.

3.5.2.1 NAV CDI MODE - VOR OPERATION

Tune the KX 125 NAV USE frequency to a desired VOR frequency. Bring the KX 125 into the CDI (Course Deviation Indicator) mode by depressing the NAV MODE button several times as necessary. The NAV INFO window will display an "OBS" annunciator, a previous three digit OBS bearing, an appropriate "TO" or "FR" (from) annunciator and the deviation signal. Refer to Figure 3-2 for an example of a NAV INFO window display showing reception of a valid VOR signal.

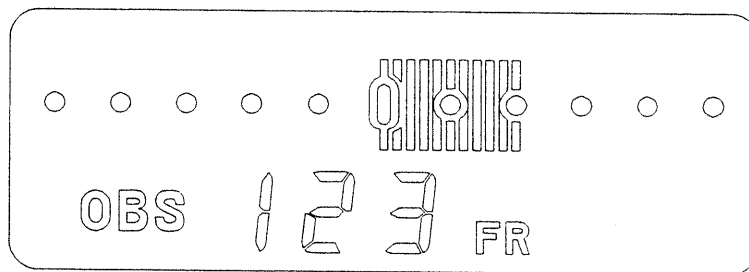


FIGURE 3-2 KX 125 NAV INFO WINDOW DISPLAY IN CDI MODE WITH A VALID VOR SIGNAL

In this example, the previous OBS setting is 123 degrees and the received VOR signal is 119 degrees FROM the VOR station. Thus the selected OBS of 123 degrees is + 4 degrees off the received 119 degrees FROM. The course deviation is indicated by the lighting up of the deviation bars as shown. Each deviation bar represents 0.4 degree and each reference dot represents 2 degrees. The KX 125 CDI display limit is ± 10 degrees of course deviation. If an invalid VOR signal is received, a "FLAG" annunciator and all the deviation bars will be displayed and the "TO" or "FR" annunciator will be turned off. Refer to Figure 3-3.

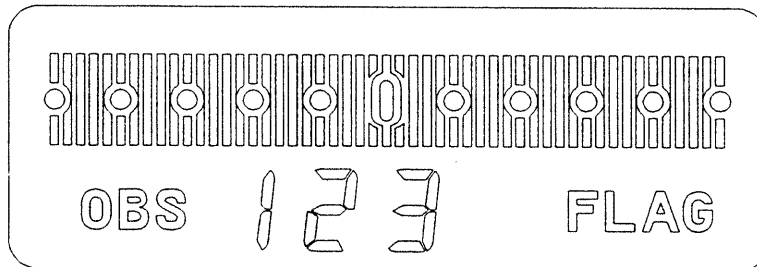


FIGURE 3-3 KX 125 NAV INFO WINDOW DISPLAY IN CDI MODE WITH AN INVALID VOR SIGNAL

The OBS setting can be changed by pulling out and rotating the inner NAV FREQ selector knob. When the inner NAV FREQ selector knob is pulled out, the "OBS" annunciator will be flashing and changing of the NAV frequency will be disabled, allowing only the OBS setting to be changed.

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3.5.2.2 NAV CDI MODE - LOCALIZER OPERATION

Tune the KX 125 NAV USE frequency to a desired localizer frequency. The NAV INFO window will display "LOC" and the CDI display will be activated. If a valid localizer signal is received at 5 degrees to the right of the centerline, 13 deviation bars in the CDI will be turned on. Refer to Figure 3-4. If the valid localizer signal is received along the centerline, the CDI display will be centered with only the reference dots turned on.

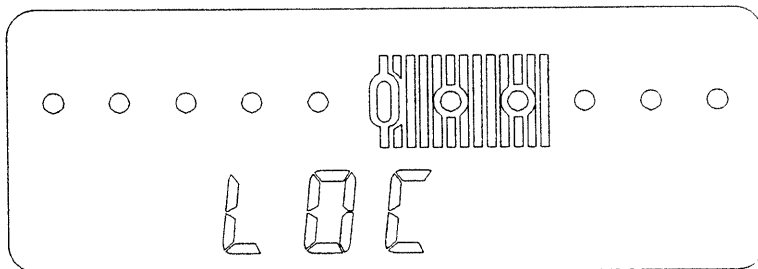


FIGURE 3-4 KX 125 NAV INFO WINDOW DISPLAY IN CDI MODE WITH A VALID LOCALIZER SIGNAL

If an invalid localizer signal is received, the KX 125 will show flag status by turning on the "FLAG" annunciator and displaying all the CDI deviation bars in the NAV INFO window. Refer to Figure 3-5.

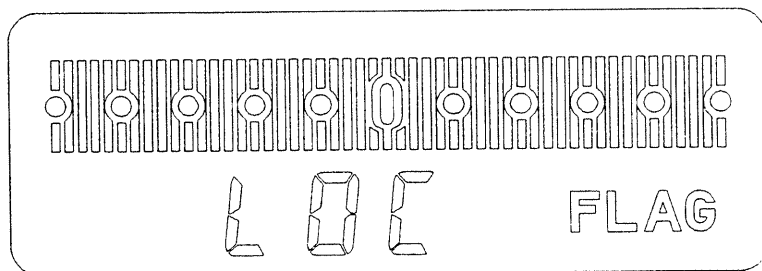


FIGURE 3-5 KX 125 NAV INFO WINDOW DISPLAY IN CDI MODE WITH AN INVALID LOCALIZER SIGNAL

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KX 125
COMMUNICATION TRANSCEIVER/
NAVIGATION RECEIVER

3.5.2.3 NAV BEARING MODE

Tune the KX 125 to a desired VOR station. Bring the KX 125 into the Bearing mode by depressing the NAV MODE button several times as needed until the NAV INFO window shows only a three digit display with a "TO" annunciator. In the Bearing mode, the KX 125 will always display the received VOR signal in TO format. Refer to Figure 3-6 for an example where the received VOR signal is actually 119 degrees FROM but is being displayed as 299 degrees TO by the KX 125 in the Bearing mode.

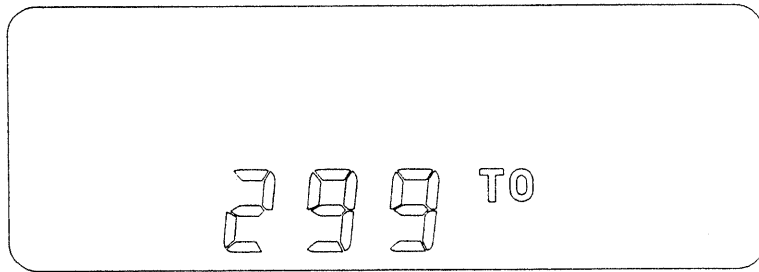


FIGURE 3-6 KX 125 NAV INFO WINDOW DISPLAY IN BEARING MODE WITH A VALID VOR SIGNAL

If an invalid VOR signal is received while the KX 125 is in the Bearing mode, the NAV INFO window will display the "FLAG" annunciator and three horizontal dashes. Refer to Figure 3-7 for an example.

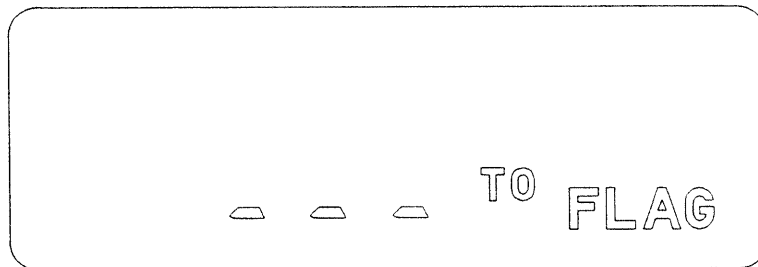


FIGURE 3-7 KX 125 NAV INFO WINDOW DISPLAY IN BEARING MODE WITH AN INVALID VOR SIGNAL

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NAVIGATION RECEIVER

3.5.2.4 NAV RADIAL MODE

Tune the KX 125 to a desired VOR station. Bring the KX 125 into the Radial mode by depressing the NAV MODE button several times as needed until the NAV INFO window shows only a three digit display with a "FR" annunciator. In the Radial mode, the KX 125 will always display the received VOR signal in FROM format. Refer to Figure 3-8 for an example where the received VOR signal is 119 degrees FROM as displayed by the KX 125 in Radial mode.

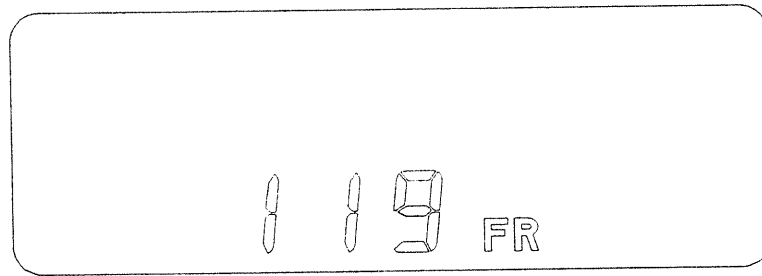


FIGURE 3-8 KX 125 NAV INFO WINDOW DISPLAY IN RADIAL MODE WITH A VALID VOR SIGNAL

If an invalid VOR signal is received, the KX 125 in Radial mode will show flag status similar to Figure 3-7 except that "FR" will be displayed instead of "TO".

3.5.3 NAV AUTO-TO FUNCTION

There is a NAV AUTO-TO function (VOR operation only) which when activated will automatically bring the KX 125 into the CDI mode, center the CDI display and replace the OBS setting with the received VOR signal bearing in TO format at that instant. To activate the AUTO-TO function, regardless of what mode the KX 125 is in, press and hold the NAV MODE button for 2 seconds or more. Refer to Figure 3-9 for an example of NAV INFO display immediately after the Auto-To function has been activated when the received VOR signal is 119 degrees FROM (same as 299 degrees TO).

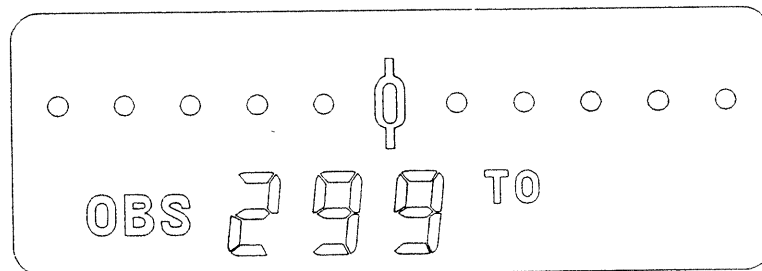


FIGURE 3-9 KX 125 NAV INFO WINDOW DISPLAY AFTER AUTO-TO FUNCTION HAS BEEN ACTIVATED

After the AUTO-TO function has been selected, any change in received VOR signal bearing will be displayed by the appropriate number of deviation bars been turned on.

3.6 DEFAULT POWER UP STATE

If the KX 125 is powered up with either the COMM TRANSFER or NAV TRANSFER button depressed, it will default into the COMM active entry mode and the NAV active entry mode. Both the COMM USE and SBY frequency will be set to 120.00 MHz and both the NAV USE and SBY frequency will be set to 110.00 MHz.

APPENDIX E
ENVIRONMENTAL QUALIFICATION FORM

RTCA/DO-160B
ENVIRONMENTAL QUALIFICATION FORM

NOMENCLATURE: KX125 VHF NAV/COMM
 PART NUMBER: KPN 069-01028-XXXX
 (SEE PAGE 2)
 TSO NUMBER: C36e, C37c, C40c
 MANUFACTURER'S SPECIFICATION: MPS 004-00936-4000
 MANUFACTURER: KING RADIO CORPORATION
 ADDRESS: 400 N. ROGERS
 OLATHE, KS 66062
 USA

CONDITIONS	PARA	CONDUCTED TESTS
TEMPERATURE AND ALTITUDE	4.0	CATEGORY A1/D1
TEMPERATURE VARIATION	5.0	CATEGORY B
HUMIDITY	6.0	CATEGORY B
SHOCK	7.0	TESTED PER DO-160B PARAGRAPHS 7.2 AND 7.3
VIBRATION	8.0	EQUIPMENT TESTED WITHOUT SHOCK MOUNTS TO CATEGORY K/P/S
EXPLOSION	9.0	CATEGORY X NOT REQUIRED
WATERPROOFNESS	10.0	CATEGORY X NOT REQUIRED
FLUIDS SUSCEPTIBILITY	11.0	CATEGORY X NOT REQUIRED
SAND AND DUST	12.0	CATEGORY X NOT REQUIRED
FUNGUS	13.0	CATEGORY X NOT REQUIRED
SALT SPRAY	14.0	CATEGORY X NOT REQUIRED
MAGNETIC EFFECT	15.0	CATEGORY Z
POWER INPUT	16.0	CATEGORY B
VOLTAGE SPIKE CONDUCTED	17.0	CATEGORY A/B
AUDIO FREQUENCY CONDUCTED SUSCEPTIBILITY	18.0	CATEGORY B/Z
INDUCED SIGNAL SUSCEPTIBILITY	19.0	CATEGORY Z
RADIO FREQUENCY SUSCEPTIBILITY	20.0	CATEGORY A
EMISSION OF RADIO FREQUENCY ENERGY	21.0	CATEGORY Z
LIGHTNING INDUCED TRANSIENT SUSCEPTIBILITY	22.0	CATEGORY L/M

KX 125 FLAVOR BREAKDOWN

KPN 069-01026-		0101	0302	1101	1302
COMM SELECTIVITY	25 kHz	X	X	X	X
	50 kHz				
COMM FREQUENCY RANGE	118 TO 136.975 MHz	X		X	
	118 TO 139.975 MHz		X		X

RTCA DO-160B
ENVIRONMENTAL QUALIFICATION FORM
REVISION HISTORY

REVISION	CHANGE ORDER NO.	DATE
1	ECO 94482	FEBRUARY 1992
2	ECO 98898	OCTOBER 1993

