



ELECTRONIC AND AVIONICS SYSTEMS

INSTALLATION MANUAL

BENDIX/KING[®]

KN 53

NAVIGATION RECEIVER

MANUAL NUMBER 006-00174-0004

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SECTION I

GENERAL INFORMATION

1.1 INTRODUCTION

This manual contains information relative to the physical, mechanical, and electrical characteristics and installation procedures of the BENDIX/KING Silver Crown KN 53 Navigation Receiver.

1.2 EQUIPMENT DESCRIPTION

The KN 53 is a TSO'D panel mounted 200 channel VHF VOR/LOC Receiver with a 40 channel Glideslope Receiver/Converter. The NAV receiver supplies VOR/LOC information to navigation converters and provides two out of five frequency selection for remote mounted Distance Measuring Equipment. Units that include Mod 10 exhibit increased immunity to interference from FM Broadcast Stations.

1.3 TECHNICAL CHARACTERISTICS

Minimum performance requirements under standard conditions (ambient room temperature and humidity):

1.3.1 KN 53 GENERAL INFORMATION

SPECIFICATION	CHARACTERISTIC
TSO CATEGORIES:	NAV C40a DO-153, Cat A
	LOC C36c, Class D, Cat II DO-131
	G/S C34c, Class D, Cat II DO-132
ENVIRONMENTAL CATEGORIES:	DO-160 /A1D1/A/KPS/XXXXXXABABA
ICAO ANNEX 10 FM INTERFERENCE IMMUNITY	ICAO modified (Mod 10) units meet the Intermodulation and Desense criteria of DO195/ED-46A (localizer) and DO-196/ED-22B (VOR).
REFERENCE:	
INTERMODULATION:	DESENSE:
DO-195 Section 2.2.2.4	DO-195 Section 2.2.6
DO-196 Section 2.2.2.3	DO-196 Section 2.2.8
ED-46A Section 3.2.3	ED-46A Section 3.15
ED-22B Section 3.2.2.6	ED-22B Section 3.8

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SPECIFICATION		CHARACTERISTIC
PHYSICAL DIMENSIONS:		
Width:		6.31 inches (16.0 cm)
Height:		1.30 inches (3.30 cm)
Depth:		9.50 inches (24.13 cm)
WEIGHT:	<u>Pre-Mod 10 Units</u>	<u>Post Mod 10 Units</u>
With G/S	2.6 lbs (1.18 kg)	2.4 lbs (1.09 kg)
Without G/S	2.3 lbs (1.04 kg)	2.1 lbs (0.95 kg)
With G/S, Rack and Con.	3.0 lbs (1.36 kg)	2.8 lbs (1.25 kg)
W/O G/S, with Rack & Con.	2.7 lbs (1.23 kg)	2.5 lbs (1.13 kg)
P/N 066-1067-04 with G/S	2.5 lbs (1.13 kg)	2.3 lbs (1.04 kg)
P/N 066-1067-05 w/o G/S	2.2 lbs (1.00 kg)	2.0 lbs (0.91 kg)
POWER REQUIREMENTS:		11 to 33 Vdc input
With G/S @ 13.75 Vdc		0.5 A Nominal; 0.7 A Maximum
With G/S @ 27.5 Vdc		0.3 A Nominal; 0.5 A Maximum
Without G/S @ 13.75 Vdc		0.4 A Nominal; 0.6 A Maximum
Without G/S @ 27.5 Vdc		0.25 A Nominal; 0.4 A Maximum
NOTE: Current drawn off P532, Pin 4 (switched +A) will directly add to the current drawn by the KN 53.		
DME CHANNELING:		5 wire 2 x 5 code MHz lines
		5 wire 2 x 5 code kHz lines
		1 wire 50 kHz line
		1 DME common line
ILS ENABLE OUTPUT:		Ground on ILS channels, open otherwise

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1.3.2 VOR/LOC CHARACTERISTICS

SPECIFICATION	CHARACTERISTIC
FREQUENCY DISPLAY:	Gas discharge display of one active and one stored frequency. The stored frequency is updated by the increment/decrement switch. The transfer button trades the active frequency with the stored frequency.
FREQUENCY MEMORY:	Frequency data stored with no standby power required.
FREQUENCY STABILITY:	$\pm 0.0015\%$
SENSITIVITY:	2.0 μV (hard) maximum will provide a half flag navigation indication.
SELECTIVITY:	Typical 6 dB at ± 17 kHz, minimum 60 dB at ± 42 kHz
SPURIOUS RESPONSES:	Down at least 60 dB
IDENT FILTERS:	15 dB minimum tone rejection
AGC CHARACTERISTICS:	From 5 μV to 20,000 μV (hard) audio output will not vary more than 3 dB. AGC active from half flag to +6dBm (hard).
NAV RECEIVER ACCURACY:	$\pm 1.5^\circ$ maximum error /95% probability
NAV OUTPUT:	Adjustable 0.35 Vrms LOC, 0.5 Vrms VOR output into 20,000 ohms or greater
AUDIO OUTPUT:	50 mW @ 500 ohms
NUMBER OF CHANNELS:	200 (50 kHz spacing)
FREQUENCY RANGE:	108.00 MHz to 117.95MHz

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1.3.3 GLIDESLOPE CHARACTERISTICS

SPECIFICATION	CHARACTERISTIC
NUMBER OF CHANNELS:	40 (150kHz spacing)
FREQUENCY RANGE:	329.15 MHz to 335.00 MHz
SELECTIVITY:	6 dB max at ± 21 kHz, Typically Greater Than 50 dB at ± 129 kHz
SENSITIVITY:	Typically 12 μ V (hard) for half flag 20 μ V (hard) maximum
INDICATOR OUTPUT:	No load resistors or wiring changes are necessary for any combination of deviation or alarm flag loads.
Deviation:	Three 1000 ohm loads max
Flag:	Three 1000 ohm loads max
COURSE DEVIATION RESPONSE:	0.6 seconds maximum
CENTERING ACCURACY:	Less than ± 10 μ A under all service conditions
DEFLECTION CHARACTERISTICS:	A difference in depth of modulation of 0.091 ddm or 2 dB tone ratio shall produce a deflection of ± 78 μ A (± 31 μ A typical).

1.4 UNITS AND ACCESSORIES

1.4.1 KN 53 Navigation Receiver

Prior to Mod 10 production, the KN 53 Navigation Receiver was available in the following versions with the options listed.

PART NUMBER	DISPLAY LENS	GLIDESLOPE REC/CONV	COMMENTS
066-1067-00	DIFFUSED	YES	
066-1067-01	DIFFUSED	NO	
066-1067-02	NON-DIFFUSED	YES	
066-1067-03	NON-DIFFUSED	NO	
066-1067-04	NONE	YES	SEE NOTE 1
0661067-05	NONE	NO	SEE NOTE 1

Table 1: AVAILABLE VERSIONS BEFORE MOD 10 PRODUCTION

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After Mod 10 has been incorporated, only the following versions are available from the factory.

PART NUMBER	LENS DISPLAY	GLIDESLOPE RECEIVER	MOD 10 INCORPORATED	COMMENTS
066-1067-00	DIFFUSED	YES	YES	
066-1067-04	NONE	YES	YES	SEE NOTE 1
066-1067-10	DIFFUSED	YES	YES	14/28V LIGHTING 5G BEZEL STYLING

Table 2: VERSIONS AVAILABLE FROM FACTORY AFTER MOD 10 INCORPORATION

NOTE: 1. The -04 and -05 versions of the KN 53 have 5 Volt lighting and the bezel has been removed. These versions of the KN 53 are used in a system with a common bezel such as the CNI 5000.

1.4.2 KN 53 INSTALLATION KIT

The KN 53 Installation kit P/N 050-01712-0000 is available in one version.

The kit and its contents are listed below.

PART NUMBER	DESCRIPTION	QTY	VENDOR NAME AND P/N	
030-00101-0002	PANEL MOUNT PLUG	2	Ted Manf Corp.	9-30-10
030-01094-0053	CONNECTOR	1	Bendix/King	N/A
030-01107-0030	CONNECTOR TERM 30T	1	Molex Inc.	08-05-0301
057-02193-0003	DECAL NAV 1	1	Bendix/King	N/A
057-02193-0004	DECAL NAV 2	1	Bendix/King	N/A
089-02051-0024	NUT SPEED U 6-32	4	Tinnerman Prod Inc.	C8095-632
089-02353-0001	NUT CLIP 6-32	4	Monadnock Co.	294667
089-05903-0007	SCR PHP 4-40 X 7/16	2	Bendix/King	N/A
089-06012-0008	SCR FHP 6-32 X 1/2	4	Bendix/King	N/A
089-08003-0034	WSHR SPLT LK #4	2	Bendix/King	N/A
089-08252-0030	WASHER	4	Bendix/King	N/A
090-00019-0007	RING RTNR .438	2	Bendix/King	N/A

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1.4.3 ANTENNA COUPLERS

In some KN 53 installations it may be desirable to allow the Glideslope Receiver to operate off the aircraft's navigation antenna. In other installations it may be desirable to operate two NAV/LOC receivers or two GS receivers off a common antenna. Low-loss couplers are available to allow such operation; an overall degradation in sensitivity will be realized due to the insertion loss of the coupler. The installer must verify that acceptable sensitivity and proper system performance is realized in a system that utilizes a coupler. A minimum of 20 dB of GS receiver-to-receiver isolation is required in dual installations employing a KN 53 GS receiver.

Examples of some common couplers are listed below. Contact the coupler manufacturer for specification or information on the TSO status of the couplers listed.

Coupler to allow one antenna to operate	Dayton-Granger (305) 463-3451	Dorne Margolin (516) 595-6000
One NAV and one GS	GSNC 20-05	H22-1
Two NAVs	DRC 20-04 or 14830	H21-1
Two Glideslopes	DSGC 20-02 or 16009	H24-1
Two NAVs and two GSs	DOC 20-06 or 16010	H69-1

1.5 ACCESSORIES REQUIRED BUT NOT SUPPLIED

- A. Navigation Antenna and Cables
- B. Glideslope Antenna and Cables KA 22 (P/N 071-1008-00) or equivalent
- C. 300 to 1000 ohm Headphones
- D. VOR/LOC Converter and Indicator, Glideslope Indicator. Various BENDIX/KING Options. See Section 1.7.4

1.6 LICENSE REQUIREMENTS

No special federal communications license is required to operate the KN 53.

1.7 REQUIREMENTS FOR TSO'D VOR/ILS GLIDESLOPE SYSTEMS

The additional units used in conjunction with the KN 53 must meet the specifications listed below to comprise a completely TSO'D navigation system.

1.7.1 GLIDESLOPE INDICATOR REQUIREMENTS

- A. The indicator shall meet all applicable requirements of TSO C34c.
- B. Centering current to be $0 \pm 6 \mu\text{A}$ with a 95% probability under all environmental conditions listed in RTCA Paper DO-132, Minimum Performance Standards - Airborne ILS Glideslope Receiving Equipment, Paragraph 2.1 sub-paragraph b, Centering Accuracy.

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- C. The course deviation pointer shall visibly deflect at least + 5/8 inch along its scale when the input current is changed from zero to $\pm 150 \mu\text{A}$.
- D. Deflection linearity over the deflection range from zero to $150 \mu\text{A}$ shall be within 10% of being proportional to the input current. Additionally, as the current is increased beyond that producing full scale deflection to a value of $\pm 685.7 \mu\text{A}$, the indicator deflection shall not decrease.
- E. When the input current is abruptly changed from any value from zero to $\pm 150 \mu\text{A}$, the pointer shall reach 67% of its ultimate deflection within 2 seconds and pointer overshoot shall not exceed 5%.
- F. The input impedance shall be $1 \text{ k}\Omega \pm 5\%$ for both the deviation indicator and warning signal.
- G. A warning signal input current of $150 \mu\text{A}$ or less shall produce a fully visible warning flag. A warning signal input current of $260 \mu\text{A}$ or greater shall produce a fully concealed warning flag.

1.7.2 LOCALIZER CONVERTER AND INDICATOR REQUIREMENTS

- A. The converter and indicator shall meet all applicable requirements of C36c.
- B. The localizer centering current to be $0 \pm 6 \mu\text{A}$ with a 95% probability under all environmental conditions listed in RTCA Paper DO-131, Minimum Performance Standards-Airborne ILS Localizer Receiving Equipment, Paragraph 2.1 sub-paragraph b, Centering Accuracy.
- C. The course deviation pointer shall visibly deflect at least $\pm 3/8$ inch along its scale when the input current is changed from zero to $\pm 90 \mu\text{A}$.
- D. Deflection linearity over the range from zero to $\pm 90 \mu\text{A}$ shall be within 10% of being proportional to the difference in depth of modulation of the 90 and 150 Hz signals, or the deflection shall be within 5% of standard deflection ($\pm 90 \mu\text{A}$) of being proportional to the difference in depth of modulation, whichever is greater.

Additionally, as the difference in depth of modulation is increased beyond that producing full scale deflection ($\pm 150 \mu\text{A}$) to a value of 0.5 ddm, the course deviation pointer deflection shall not decrease.

- E. When the input current is abruptly changed from zero to $\pm 150 \mu\text{A}$, the pointer shall reach 67% of its ultimate deflection within 2 seconds and pointer overshoot shall not exceed 5%.
- F. The input impedance of the indicator for both the deviation indicator and warning signal shall be $1 \text{ k}\Omega \pm 5\%$.

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- G. A warning signal input current of 125 μA or less shall produce a fully visible warning flag. A warning signal input current of 260 μA or greater shall produce a fully concealed warning flag.

1.7.3 VOR CONVERTER AND INDICATOR REQUIREMENTS

- A. The converter and indicator shall meet all applicable requirements of TSO C40a.
- B. The bearing error shall be less than 3° with a 95% probability under all environmental conditions listed in RTCA Paper DO-153, Minimum Performance Standards-Airborne VOR Receiving Equipment, Paragraph 2.1, sub-paragraph 2.1.2, Bearing Accuracy.

NOTE: For older equipment the Bearing Error shall be less than 2.7° with a 95% probability under all environmental conditions listed in RTCA PAPER DO-114, Minimum Performance Standards-Airborne VOR Receiving Equipment, Paragraph 2.1, Sub-Paragraph B, Bearing Accuracy.

- C. The course deviation pointer shall visibly deflect at least 1/2 inch (for DO-153) or 3/8 inch (for DO-114) along its scale when the input current is changed from zero to $\pm 150 \mu\text{A}$.
- D. Deflection Linearity
1. The deflection shall be proportional to the change in phase between the two components of the standard VOR test signal, within 20% of the deflection produced by a 10° ($\pm 150 \mu\text{A}$) change in phase. This requirement shall be met at all deflections produced when the phase difference is varied from $+10^\circ$ to -10° of that producing an "on course" indication.
 2. The pointer deflection shall not decrease as the phase difference is increased from that producing an "on course" indication to that producing an indication which is equivalent to $\pm 80^\circ$ from "on course".
- E. Deflection Response
1. When the difference in phase between the two components of an "on course" standard VOR test signal is abruptly changed, the pointer shall reach 70% of its ultimate position within 3 seconds and the pointer overshoot shall not exceed 20%.
- F. The input impedance of the indicator for both the bearing error and warning signal shall be $1 \text{ k}\Omega \pm 5\%$.
- G. A warning signal input current of 125 μA or less shall produce a fully visible warning flag. A warning signal input current of 266 μA or greater shall produce a fully concealed warning flag.
- H. The input impedance of the TO/FROM indicator shall be 200 ohms $\pm 200 \mu\text{A}$ sensitivity.

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1.7.4 BENDIX/KING TSO'D SYSTEMS

- A. The following systems when used in conjunction with the KN 53, P/N 066-1067-00/02/04/10 will meet all TSO system requirements.
 - 1. KI 204
 - 2. KN 72, KI 206
 - 3. KN 72, KI 525A
 - 4. KI 209

- B. The following systems when used in conjunction with the KN 53, P/N 066-1067-01/03/05, will meet all TSO system requirements.
 - 1. KI 203
 - 2. KI 208

1.8 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 information relative to the installation and wiring of the KN 53. A close adherence to methods and procedures discussed herein is required.

2.2 UNPACKING AND INSPECTING EQUIPMENT

Exercise extreme care when unpacking the equipment. Make a visual inspection of the unit for evidence of damage incurred during shipment. If a claim for damage is to be made, save the shipping container to substantiate the claim. The claim should be promptly filed with the transportation company. It would be advisable to retain the container and packaging material after all equipment has been removed in the event that equipment storage or re-shipment should become necessary.

2.3 EQUIPMENT INSTALLATION**2.3.1 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. While modern day individual circuit designs consume much less electrical energy, the watts per cubic inch dissipated within avionics units remains much the same due to high density packaging techniques utilized. Consequently, the importance of providing avionics stack cooling is still with us.

While an 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 Bendix/King Installation Bulletin #55 and 258. Failure to provide stack cooling will certainly lead to increased avionics maintenance costs and may void the Bendix/King warranty.

2.3.2 KN 53 INSTALLATION (Figures 2-1 through 2-9)

- A. Plan a location on the aircraft panel that is clearly visible and within easy access of the pilot.
- B. Avoid mounting the KN 53 close to heater vents or other high heat sources.
- C. Compass safe distance is 8 inches for worst case deflection of one degree.
- D. When installing two or more panel mounted units in a stack, the mounting trays shall be spaced .050 inches (.127 cm) apart. Newer style mounting trays have had .025 inch (.063 cm) dimples built in, top and bottom, both sides, so that two new style trays will automatically be spaced properly.

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- E. Install the mounting rack in the aircraft using 6-32 x 1/2 flat head phillips screws (P/N 089-06012-0008) and 6-32 clip nuts (P/N 089-02353-0001). The screws are inserted from the inside through the holes in the sides of the mounting rack.
- F. Connect the harness wires to the connector pins and insert the connector pins into the rear of the Molex connector. See Figure 2-1.
- G. Mount the Molex connector in the two holes at the rear of the mounting rack. Use two 4-40 x 7/16 pan head, phillips screws (P/N 089-05903-0007) and two #4 split lock washers (P/N 089-08003-0034). Orient the connector so the polarizer key is shown in Figure 2-5.
- H. Connect the antenna cables to the antenna connectors (Figure 2-2).
- I. Insert the antenna connector(s) through the hole in the rear of the mounting rack from the outside. Secure each antenna connector with a spacer (P/N 089-08252-0030) and retaining ring (P/N 090-00019-0007) installed from the inside of the rack.
- J. Install the KN 53 into the mounting rack and secure by turning the hold down adjustment screw (accessible through a hole in the front panel) clockwise with an Allen hex wrench until it is locked into place (Figure 2-4).

2.3.3 MOLEX CONNECTOR ASSEMBLY (Figure 2-1)

- A. Solderless Contact Terminal Assembly using Molex Crimper
Refer to instructions in Figure 2-1.
- B. Solderless Contact Terminal Assembly using Pliers
 1. Strip each wire 5/32" for contact terminal (Part Number 030-01107-0030). (The last two digits of the contact terminal part number indicate the number of terminals furnished).
 2. Tin the exposed conductor.
 3. Using needle nose 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.
 4. Repeat Step 3 for insulator tabs.
 5. Apply a small amount of solder (using minimum heat) to the conductor/tab connection to assure a good electromechanical joint.

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- 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 030-01094-0053). 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 into the stop.
 2. When the ejector is slid into place, the locking key 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 checked visually before reinstalling in connector, to be certain that retaining tab "A" extends as shown (See Figure 2-1) for retention in connector.

2.3.4 NAV AND GLIDESLOPE ANTENNA INSTALLATION

- A. Antenna should be installed as per Advisory Circular 43.13-2 Methods and Guidelines.
- B. When multiple receivers will share a common antenna, refer to Section 1.4.3 for information on antenna couplers.

2.4 POST INSTALLATION ADJUSTMENTS

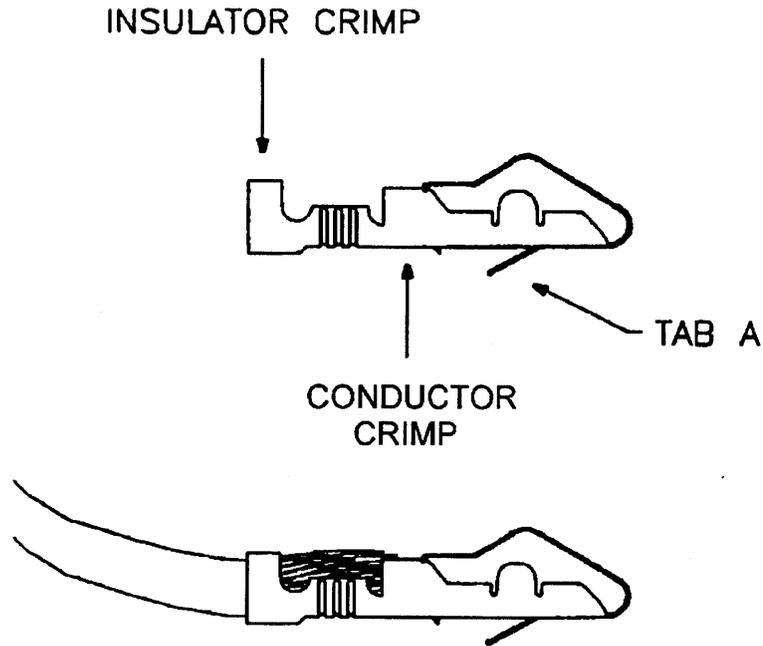
The KN 53 has been calibrated to operate with the standard Bendix/King systems noted in Section 1. Adjustments are accessible through the top and bottom covers to fine tune the navigation system if required. The physical location of the adjustments are noted in Figure 2-4 and their electrical functions are explained in Sections IV, V, and VI of the KN 53 Maintenance Manual (P/N 006-05174-OOXX). When adjustments are required, the self-stick covers should be replaced.

- A. Composite level set, R87 (R368 - post Mod 10), has been preset at the factory for standard 0.35 RMS LOC, 0.50 RMS VOR output.
- B. Display dimmer, R656 (R546 - post Mod 10), has been preset to the Bendix/King standard. R656 (R546 - post Mod 10) may be adjusted to light balance the aircraft panel. The adjustment potentiometer has its maximum effect on night light condition and minimal effect on daylight condition.
- C. Glideslope adjustments
 1. Glideslope course width, R425.
 2. Glideslope centering, R511.
 3. Glideslope flag, R510.

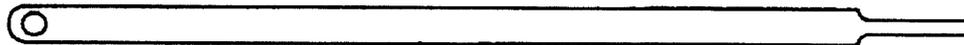
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SOLDERLESS CONTACT TERMINAL
P/N 030-01107-0030



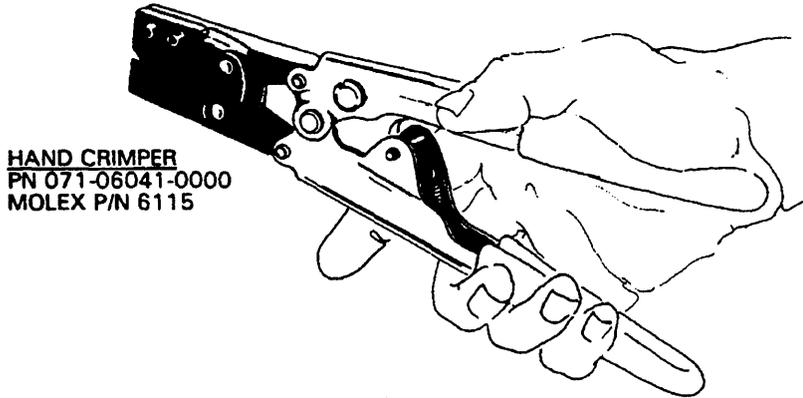
HAND EJECTOR
P/N 047-05099-0001
MOLEX P/N HT-1884

FIGURE 2-1 MOLEX INFORMATION
(Sheet 1 of 3)

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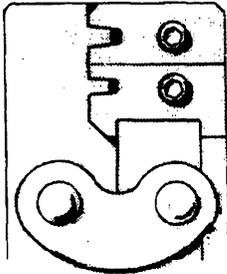
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Holding the hand crimpers as shown, release the crimper's ratchet pawl and open by squeezing tightly on the handles, and then releasing pressure.

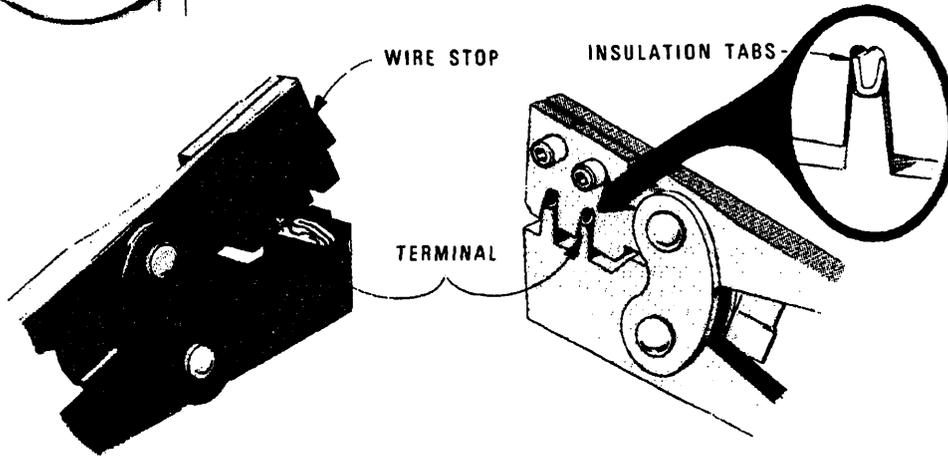


HAND CRIMPER
 PN 071-06041-0000
 MOLEX P/N 6115

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



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



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

FIGURE 2-1 MOLEX INFORMATION
 (Sheet 2 of 3)

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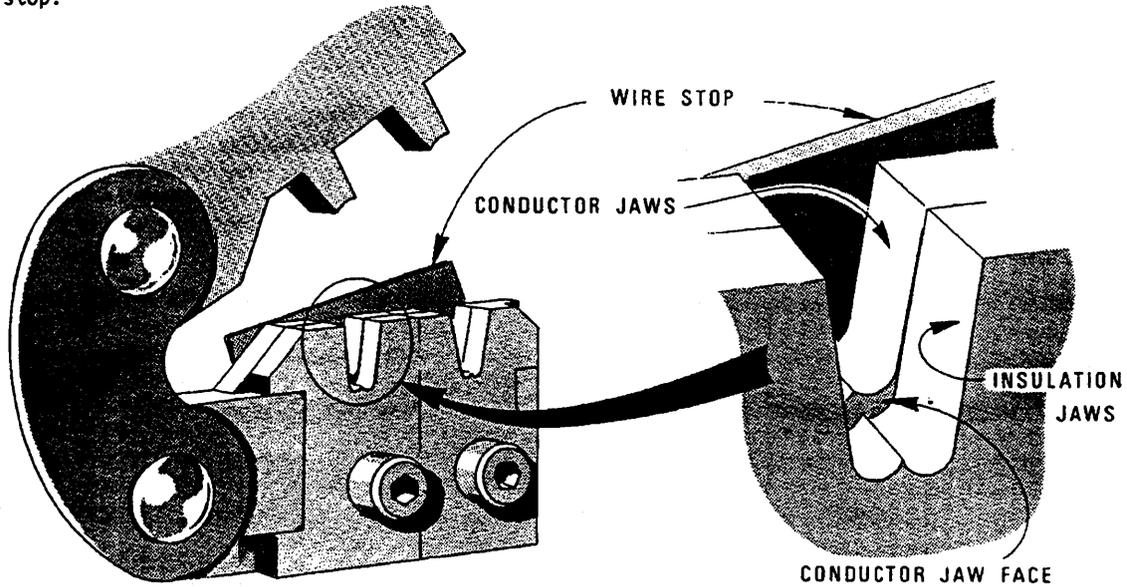
BENDIX/KING

KN 53

NAVIGATION RECEIVER

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

Strip the wire insulation back 1/8 inch 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.



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.

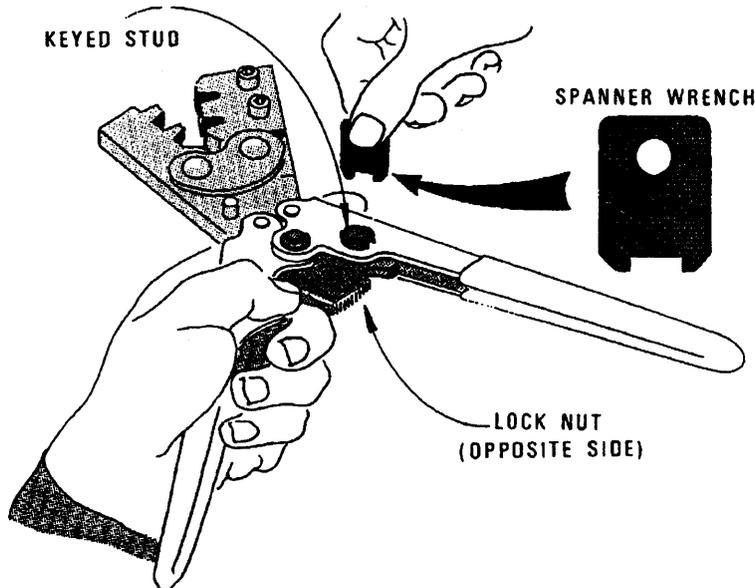


FIGURE 2-1 MOLEX INFORMATION
(Sheet 3 of 3)

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BENDIX/KING

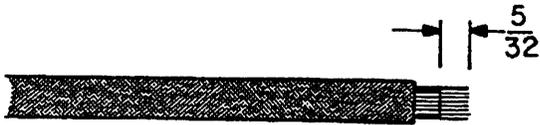
KN 53

NAVIGATION RECEIVER

1

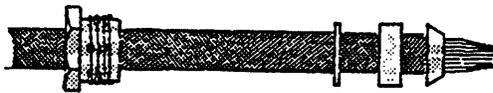


TRIM OUTER JACKET TO DIMENSION SHOWN.

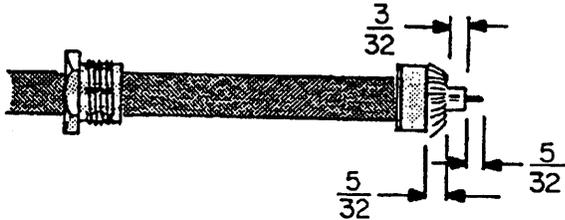


COMB OUT BRAID AND TRIM DIELECTRIC TO DIMENSION SHOWN.

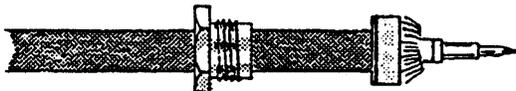
2



TAPER BRAID OVER DIELECTRIC AND SLIP CABLE NUT, WASHER (WHEN FURNISHED) AND V-GROOVE GASKET OVER CABLE. POSITION BRAID CLAMP WITH SHOULDER TIGHT AGAINST OUTER JACKET. FOLD BRAID BACK OVER BRAID CLAMP.

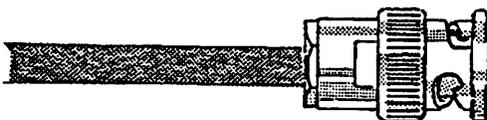


3



TRIM OFF EXCESS BRAID. POSITION WASHER AND GASKET AS SHOWN AND SOLDER PIN TO CENTER CONDUCTOR. PLACE INSULATOR OVER PIN, (IF FURNISHED).

4

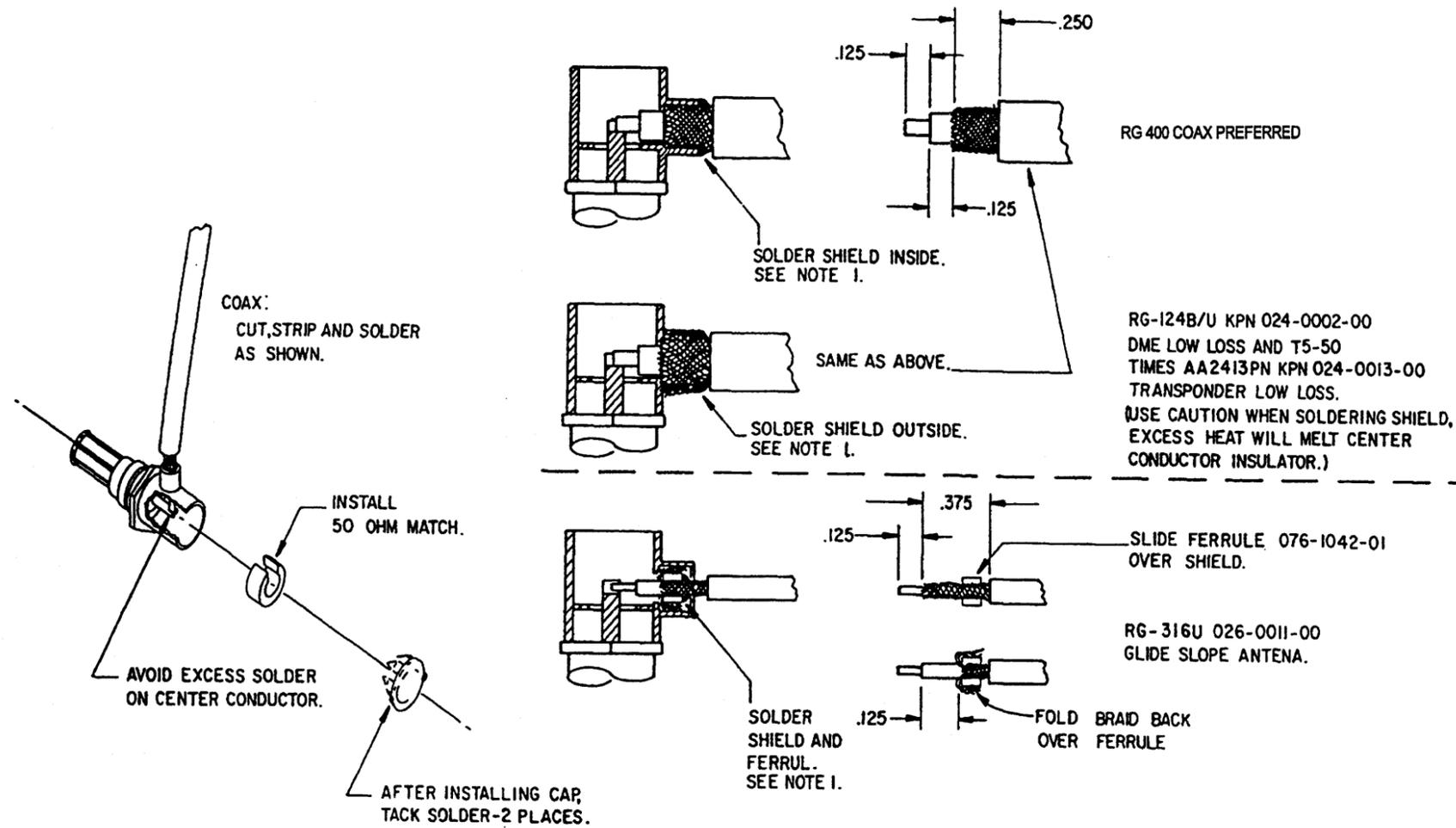


INSERT CABLE AND HARDWARE INTO CONNECTOR HOUSING AND TIGHTEN CABLE NUT.

FIGURE 2-2 030-00005-0000 CONNECTOR ASSEMBLY
(Dwg. No. 155-05267-0000 Rev 0)

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BENDIX/KING
 KN 53
 NAVIGATION RECEIVER



NOTES:

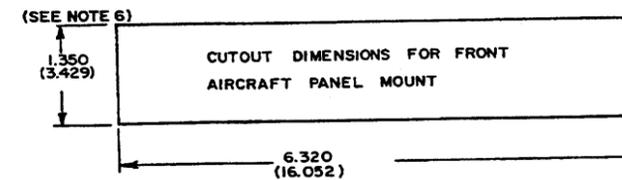
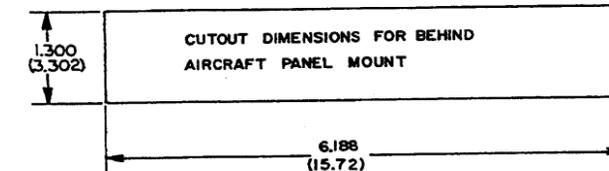
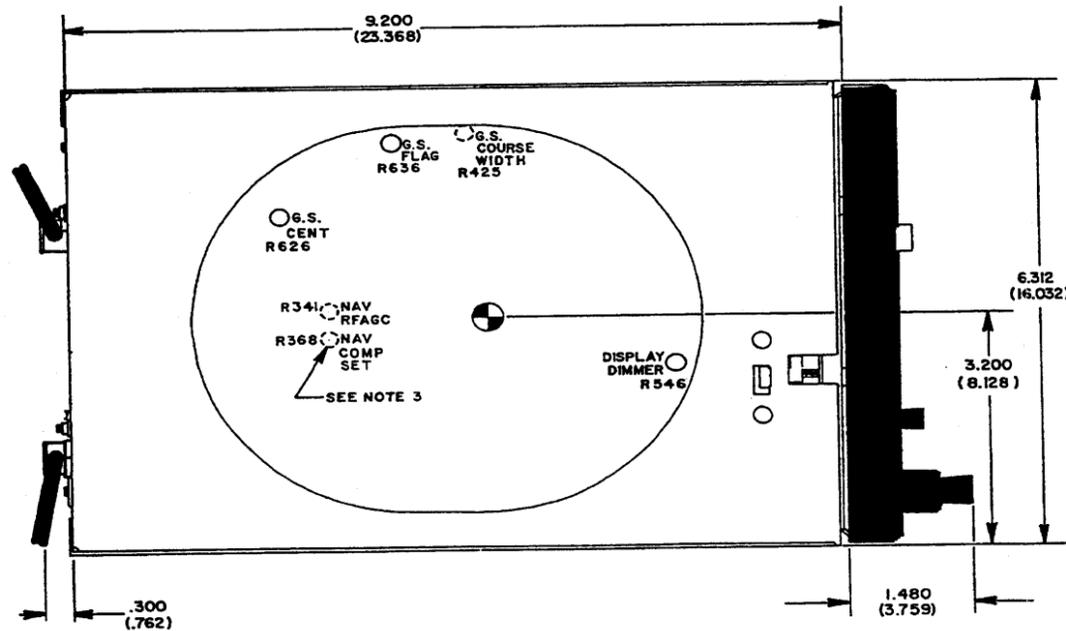
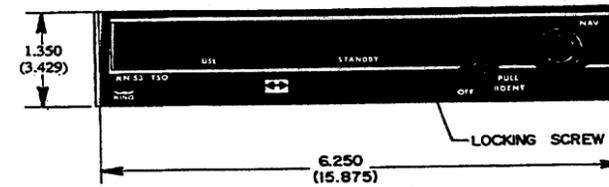
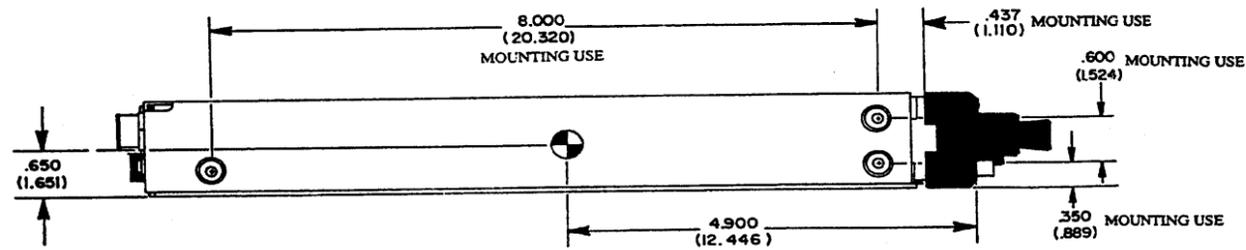
1. AVOID APPLYING EXCESSIVE HEAT TO CONNECTOR BODY. HEAT SINK SPRING CONTACTS DURING SOLDERING.

WARNING

CLOSE ADHERENCE TO THIS PROCEDURE IS NECESSARY FOR AN INTERFERENCE-FREE INSTALLATION.

FIGURE 2-3
ANTENNA CONNECTOR

BENDIX/KING
KN 53
NAVIGATION RECEIVER



7. INSTALLATION INFORMATION FOR KN 53 066-1067-04 & -05 IS CONTAINED IN CNI 5000 INSTALLATION MANUAL.

8. DIMENSIONS (EXCEPT PANEL CUTOUT OR MOUNTING USE) ARE REFERENCE ONLY. REFERENCE DIMENSIONS MAY BE SLIGHTLY OVERSIZE, TO ASSURE FIT OF UNIT.

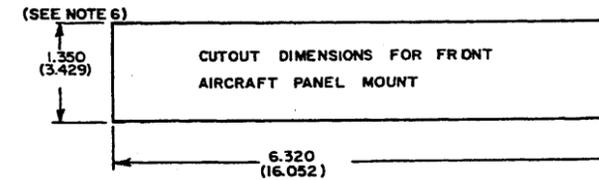
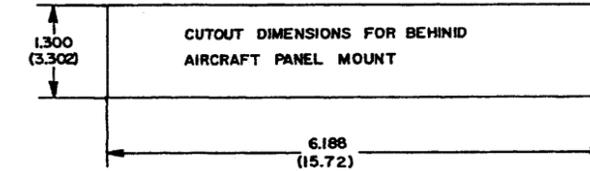
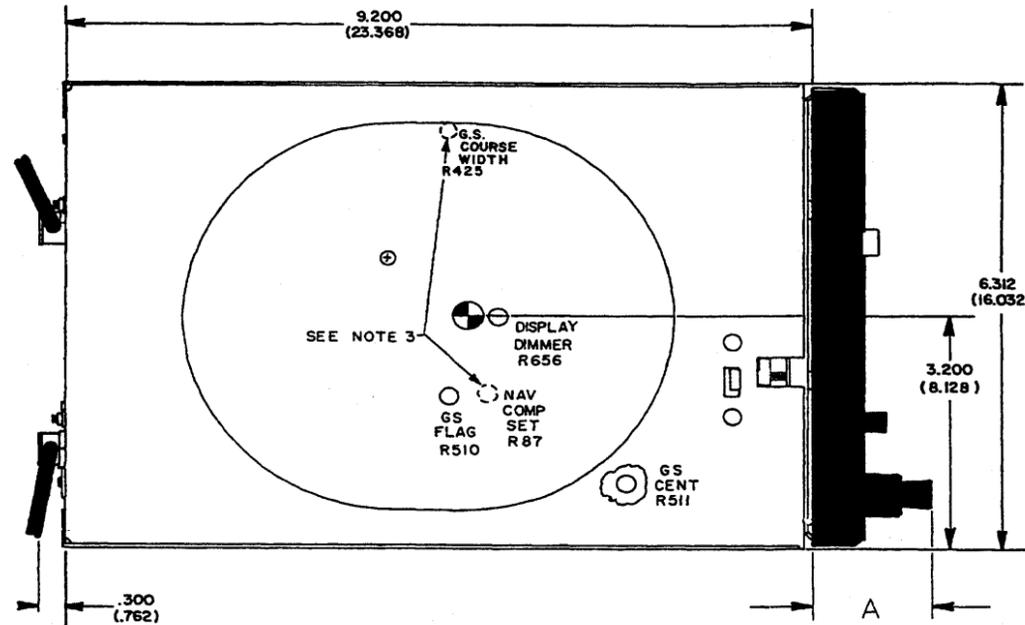
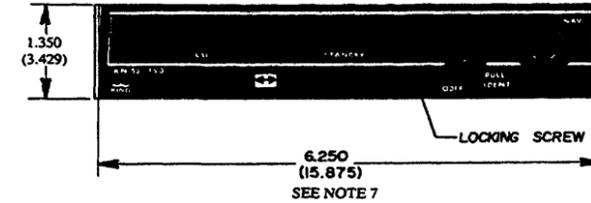
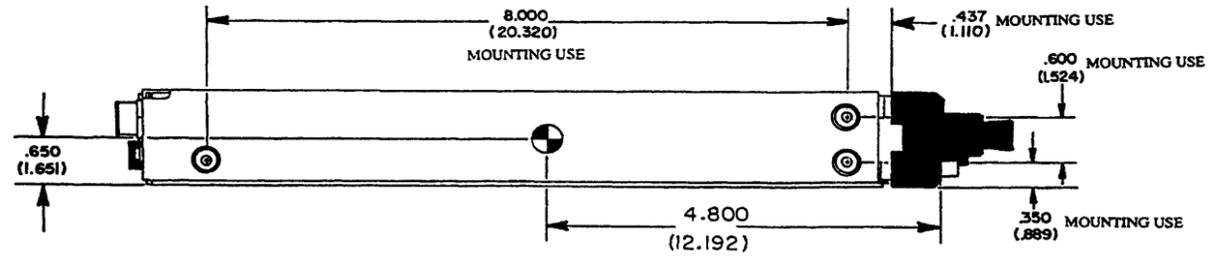
SHEET 1 (OF 2) APPLIES TO UNITS PRIOR TO MOD 10.

NOTES:

1. DIMENSIONS IN () ARE IN CENTIMETERS.
2. WEIGHT, WITH RACK AND CONNECTOR: 066-1067-00 & -02 = 3.0 LBS. (1.36Kg) ± 0.2 lbs (0.09Kg)
066-1067-01 & -03 = 2.7 LBS. (1.23Kg) ± 0.2 lbs (0.09Kg)
3. DASHED CIRCLES INDICATE TUNING ADJUSTMENT ACCESS HOLES LOCATED ON TOP OF KN 53.
4. TOLERANCES FOR PANEL CUTOUTS: ±.010 (+.025)
-.000 (-.000)
5. WHEN INSTALLING TWO OR MORE PANEL MOUNTED UNITS IN A STACK, THE MOUNTING TRAYS SHALL BE SPACED .050 INCHES (.127 cm) APART. NEWER STYLE MOUNTING TRAYS HAVE HAD .025 INCH (.635 cm) DIMPLES BUILT IN, TOP AND BOTTOM, BOTH SIDES, SO THAT TWO NEW STYLE TRAYS WILL AUTOMATICALLY BE SPACED PROPERLY.
6. TO DETERMINE STACK HEIGHT, USE THE HEIGHT DIMENSION FOR A FRONT AIRCRAFT PANEL MOUNT.

FIGURE 2-4
KN 53 OUTLINE AND MOUNTING DRAWING
Dwg. No. 155-05313-0000 Rev AA
Page 1 of 2

BENDIX/KING
KN 53
NAVIGATION RECEIVER



066-1067-XX	DIM. A
-00	1.480 (3.759)
-10	1.750 (4.445)

7. KN 53 (066-1067-00) ILLUSTRATED. ALL DIMENSIONS BETWEEN VARIOUS FLAVORS ARE IDENTICAL UNLESS OTHERWISE NOTED. ALL KNOB AND CONTROL LOCATIONS/FUNCTIONS ARE IDENTICAL BETWEEN VARIOUS FLAVORS.
8. INSTALLATION INFORMATION FOR KN 53 066-1067-04 IS CONTAINED IN CNI 5000 INSTALLATION MANUAL
9. DIMENSIONS (EXCEPT PANEL CUTOUT OR MOUNTING USE) ARE REFERENCE ONLY. REFERENCE DIMENSIONS MAY BE SLIGHTLY OVERSIZE, TO ASSURE FIT OF UNIT

SHEET 2/2 APPLIES TO MOD 10 AND ABOVE.

NOTES:

1. DIMENSIONS IN () ARE IN CENTIMETERS.
2. WEIGHT, WITH RACK AND CONNECTOR: 066-1067-00 AND -10 = 2.8 lbs. (1.25Kg) ± 0.2 lbs (0.09Kg)
3. DASHED CIRCLES INDICATE TUNING ADJUSTMENT ACCESS HOLES LOCATED ON TOP OF KN 53.
4. TOLERANCES FOR PANEL CUTOUTS: ± 0.010 (± 0.25) / -0.000 (-0.000)
5. WHEN INSTALLING TWO OR MORE PANEL MOUNTED UNITS IN A STACK, THE MOUNTING TRAYS SHALL BE SPACED .050 INCHES (.127cm) APART. NEWER STYLE MOUNTING TRAYS HAVE HAD .025 INCH (.635cm) DIMPLES BUILT IN, TOP AND BOTTOM, BOTH SIDES, SO THAT TWO NEW STYLE TRAYS WILL AUTOMATICALLY BE SPACED PROPERLY.
6. TO DETERMINE STACK HEIGHT, USE THE HEIGHT DIMENSION FOR A FRONT AIRCRAFT PANEL MOUNT.

FIGURE 2-4
KN 53 OUTLINE AND MOUNTING DRAWING
 Dwg. No. 155-05313-0000 Rev AA
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BENDIX/KING
KN 53
NAVIGATION RECEIVER

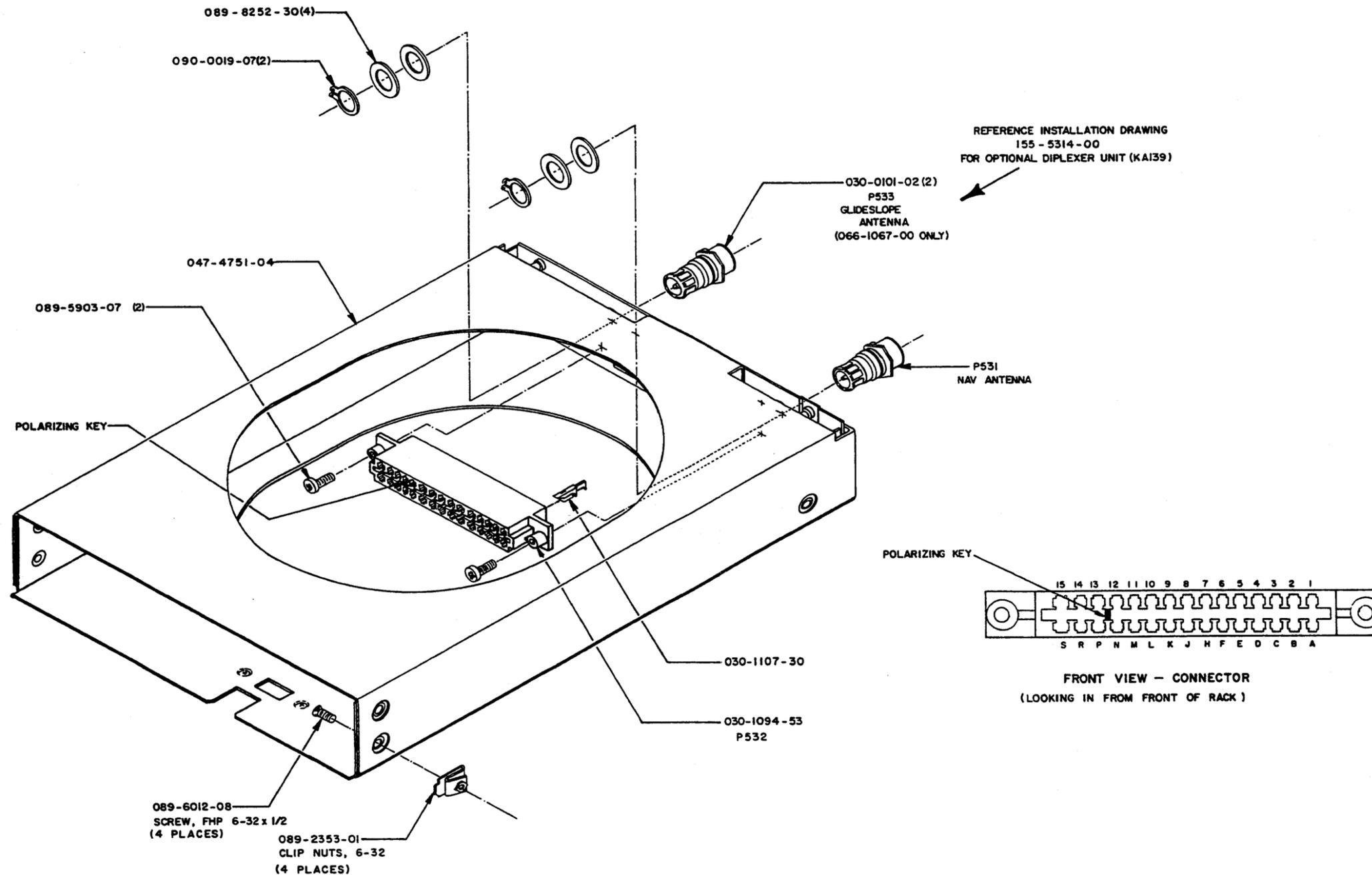


FIGURE 2-5
KN 53 INSTALLATION DRAWING
Dwg. No. 155-05312-0000 Rev 0

BENDIX/KING
KN 53
NAVIGATION RECEIVER

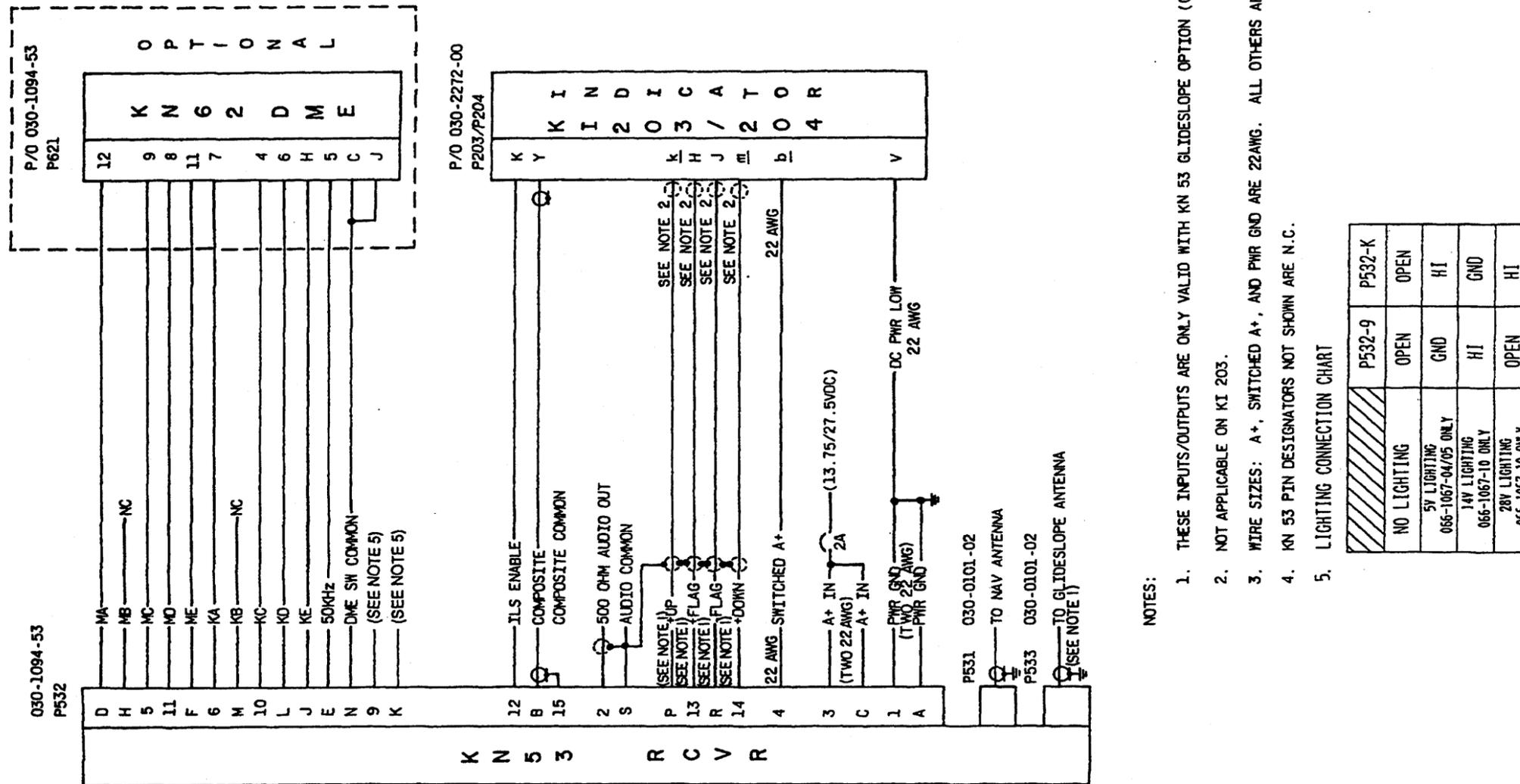


FIGURE 2-6
KN 53 TO KI 203/204 INTERCONNECT DRAWING
Dwg. No. 155-01328-0000 Rev AA

NOTES:

1. THESE INPUTS/OUTPUTS ARE ONLY VALID WITH KN 53 GLIDESLOPE OPTION (066-1067-00).
2. NOT APPLICABLE ON KI 203.
3. WIRE SIZES: A+, SWITCHED A+, AND PWR GND ARE 22AWG. ALL OTHERS ARE 24AWG.
4. KN 53 PIN DESIGNATORS NOT SHOWN ARE N.C.
5. LIGHTING CONNECTION CHART

	P532-9	P532-K
NO LIGHTING	OPEN	OPEN
5V LIGHTING 066-1067-04/05 ONLY	GND	HI
14V LIGHTING 066-1067-10 ONLY	HI	GND
28V LIGHTING 066-1067-10 ONLY	OPEN	HI

BENDIX/KING
KN 53
NAVIGATION RECEIVER

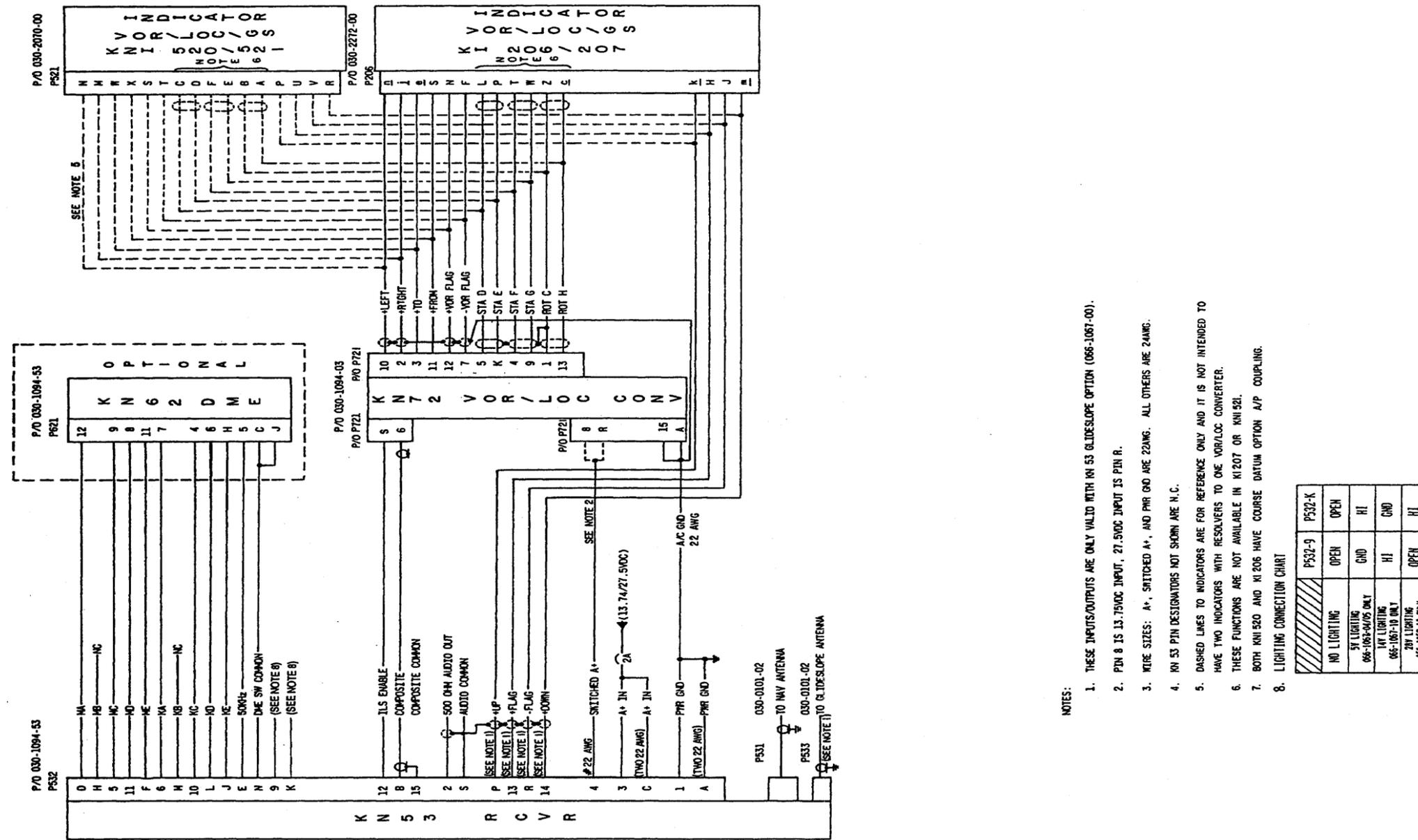


FIGURE 2-7
KN 53 TO KN 72/KI 206 INTERCONNECT DRAWING
Dwg. No. 155-01329-0000 Rev AA

- NOTES:
1. THESE INPUTS/OUTPUTS ARE ONLY VALID WITH KN 53 GLIDESCOPE OPTION (066-1067-00).
 2. PIN 8 IS 13.75VDC INPUT. 27.5VDC INPUT IS PIN R.
 3. WIRE SIZES: A*, SWITCHED A*, AND PRR GND ARE 22AWG. ALL OTHERS ARE 24AWG.
 4. KN 53 PIN DESIGNATORS NOT SHOWN ARE N.C.
 5. DASHED LINES TO INDICATORS ARE FOR REFERENCE ONLY AND IT IS NOT INTENDED TO HAVE TWO INDICATORS WITH RESOLVERS TO ONE VOR/LOC CONVERTER.
 6. THESE FUNCTIONS ARE NOT AVAILABLE IN KI207 OR KI152L.
 7. BOTH KN 520 AND KI 206 HAVE COURSE DATUM OPTION A/P COUPLING.
 8. LIGHTING CONNECTION CHART

BENDIX/KING
KN 53
NAVIGATION RECEIVER

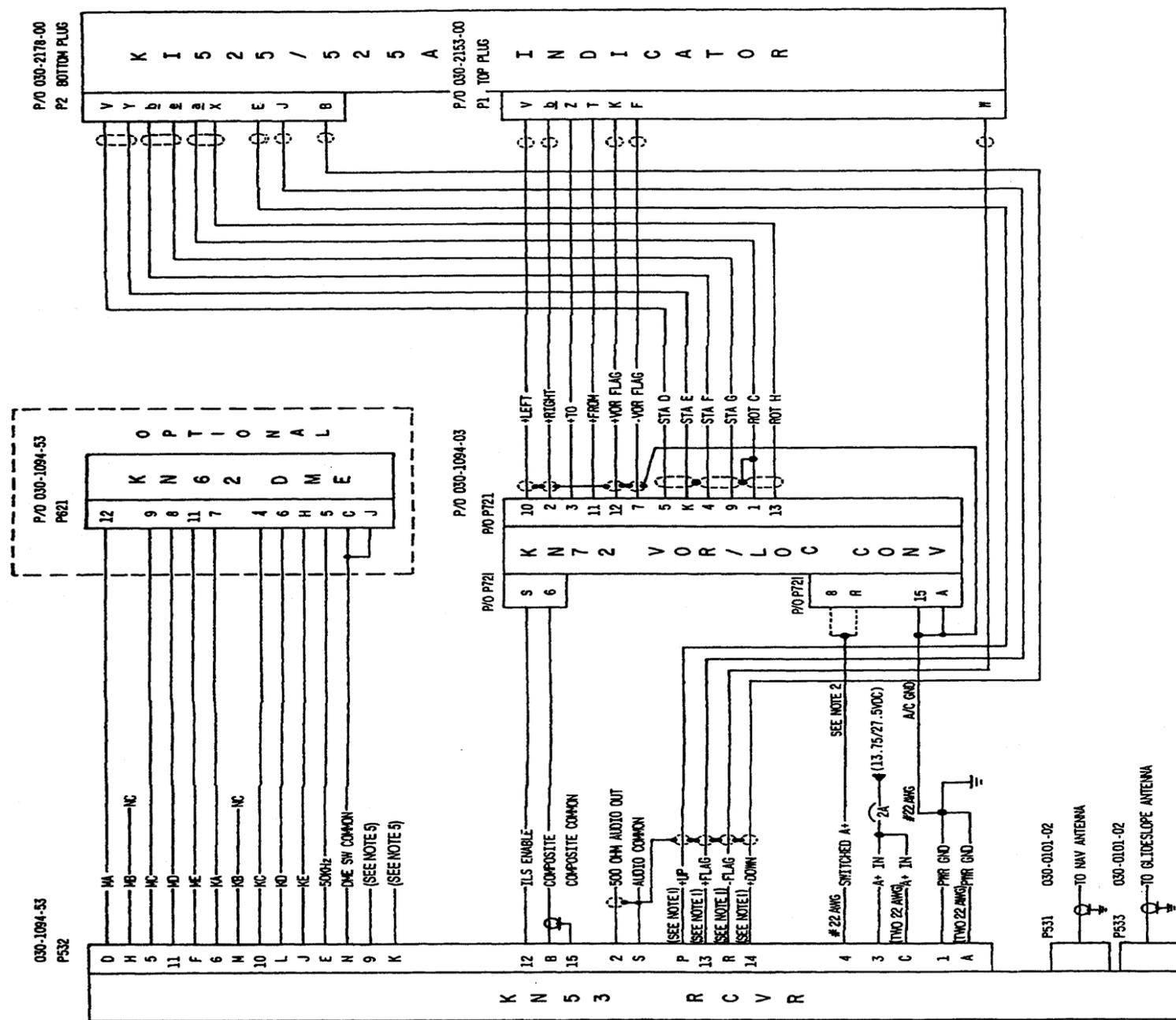


FIGURE 2-8
KN 53 TO KN 72/KI 525 OR KI 525A INTERCONNECT DRAWING
Dwg. No. 155-01330-0000 Rev AA

NOTES:

1. THESE INPUTS/OUTPUTS ARE ONLY VALID WITH KN 53 GLIDESLOPE OPTION (066-1067-00).
2. PIN 8 IS 13.75VDC INPUT, 27.5VDC INPUT IS PIN R.
3. WIRE SIZES: A+, SWITCHED A+, AND PRR GND ARE 22AWG. ALL OTHERS ARE 24AWG.
4. KN 53 PIN DESIGNATORS NOT SHOWN ARE N.C.
5. LIGHTING CONNECTION CHART

	P532-9	P532-K
NO LIGHTING	OPEN	OPEN
5Y LIGHTING 066-1067-0A/05 ONLY	GND	HI
14Y LIGHTING 066-1067-10 ONLY	HI	GND
28Y LIGHTING 066-1067-10 ONLY	OPEN	HI

BENDIX/KING

KN 53

NAVIGATION RECEIVER

**SECTION III
OPERATION****3.1 GENERAL**

It is recommended that power to the KN 53 be turned on only after engine start-up, as this procedure increases the reliability of the solid state circuitry.

The KN 53 front panel controls consist of the following. Reference Figure 3-1.

CONTROL	DESCRIPTION
A	OFF/VOL/IDENT
B	FREQUENCY SELECT
C	FREQUENCY TRANSFER

The unit is turned on by rotating Control A clockwise. The power off position is felt by counterclockwise rotation into a positive switch detent. The NAV volume output is increased by clockwise rotation of Control A. Voice NAV information only is heard when Control A is pushed in. When Control A is pulled out, the Ident signal plus voice information may be heard.

The outer knob of Control B is MHz select and moves CW (up) or CCW (down) in one MHz steps. The inner knob of Control B is the KHz select and moves CW (up) or CCW (down) in 50 KHz steps.

NOTE: To increase frequency, rotate knobs clockwise; to decrease frequency, rotate knobs counterclockwise. Moving either knob of Control B will only update the standby displayed frequency. Remote DME, Internal Glideslope, and ILS channeling are also performed by this control.

The STANDBY frequency can be moved to the USE (active) frequency by momentarily depressing the frequency transfer switch, Control C. (i.e. when the frequency transfer switch is energized the USE frequency and STANDBY frequency trade places).

The KN 53 gas discharge display brightness will automatically compensate for changes in ambient light level. The dimming is controlled by a photocell mounted behind the front panel lens to the left of the display.

The KN 53 has 2 x 5 DME channeling information outputs. DME's (like the Bendix/King KN 62A) can be channeled by the KN 53 outputs. (The KN 62A must be in the RMT mode). See Section II of this Installation Manual for interconnect information.

3.2 POST-INSTALLATION CHECKOUT

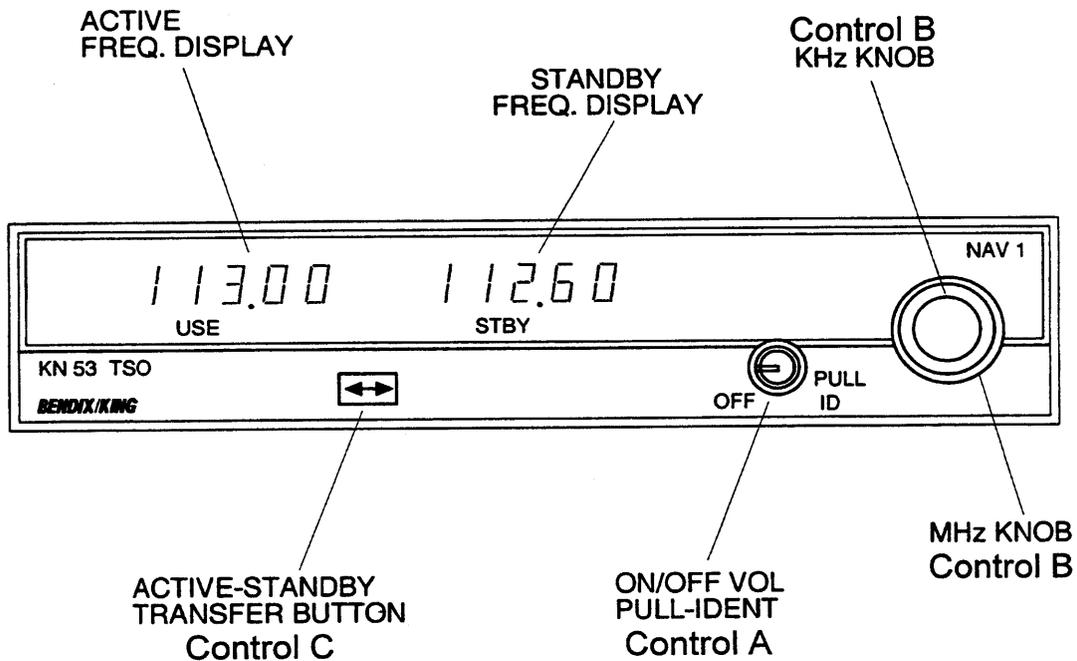
An operational performance flight test is recommended after the installation is completed to insure satisfactory performance of the equipment in its normal environment.

BENDIX/KING
 KN 53
 NAVIGATION RECEIVER

To check the VOR/ILS system, select a VOR frequency within a forty 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: At low altitudes VOR Ground Station Scalloping may be present.

Flight test the ILS operation by flying a simulated ILS approach. Check localizer LEFT-RIGHT deflection and, if applicable, glideslope deflection. Check the localizer accuracy in relation to the ILS runway. Check the glideslope accuracy in relation to the published ILS approach altitude.



NOTE: 066-1067-00 ILLUSTRATED. All control locations/functions are identical between various flavors.

FIGURE 3-1 KN 53 CONTROL FUNCTIONS

UP793797