

Honeywell

INSTALLATION MANUAL

BENDIX/KING[®]

KI 208, KI 209

NAVIGATION INDICATORS

MANUAL NUMBER 006-00140-0004

Revision 4, August 2002

WARNING

PRIOR TO EXPORT OF THIS DOCUMENT, REVIEW FOR EXPORT LICENSE REQUIREMENT IS NEEDED.

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BENDIX/KING**KI 208, KI 209****REVISION HISTORY**

INSTALLATION MANUAL

BENDIX/KING

KI 208, KI 209

Navigation Indicators

PART NUMBER	REV	DATE	DESCRIPTION
006-00140-0004	4	Aug/2002	Replaces P/N 006-00140-0003.
006-00140-0003	3	Oct/1996	Replaces P/N 006-00140-0002.
006-00140-0002	2	Mar/1988	Replaces P/N 006-00140-0001.

BENDIX/KING

KI 208, KI 209

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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 KI 208 and KI 209.

1.2 EQUIPMENT DESCRIPTION

The Bendix/King KI 208 VOR Indicator is designed to operate with VHF navigational equipment (such as the KX 155, KX 155A, KX 165A) to provide OMNI (VOR) or LOCALIZER (LOC) information. The VHF navigational receiver receives and detects the omni or localizer information. The KI 208 converts this information to DC signals which drive the LEFT-RIGHT needle and the TO-OFF-FROM flag of the visual indicator.

The KI 209 ILS Indicator performs the same functions as the KI 208. In addition, it contains an UP-DOWN glideslope needle with an OFF warning flag.

An anti reflective lens coating is also available on some models of the KI 208 and KI 209.

1.3 TECHNICAL CHARACTERISTICS

TABLE 1-1 Technical Characteristics KI 208, KI 209

SPECIFICATION	CHARACTERISTIC
KI208, KI209 TSO COMPLIANCE:	C40a, C36c Class C Cat 2. DO-138 Environmental Cat. DAPAAAXXXXXX.
ADDITIONAL TSO COMPLIANCE FOR KI 209 ONLY:	C34c Class D Cat 2.
SIZE:	See Figure 2-5 (P/N 155-05235-0000).
WEIGHT:	See Figure 2-5 (P/N 155-05235-0000).
POWER REQUIREMENTS:	
KI 208, KI 209 Indicator	14 Vdc at 50 mA, 28 Vdc at 50 mA.
KI 208 Lighting	14 Vdc at 80 ±20 mA.
KI 209 Lighting	14 Vdc at 160 ±45 mA.
KI 208, KI 209 Lighting	28 Vdc at 80 ±20 mA.

BENDIX/KING**KI 208, KI 209**

TABLE 1-1 Technical Characteristics KI 208, KI 209

SPECIFICATION	CHARACTERISTIC
VOR/LOC:	
Input Impedance:	50 k ohms, nominal.
Nominal Composite Input Level:	LOC: 0.33 \pm 10% Vrms. VOR: 0.50 \pm 10% Vrms ARINC phased.
Localizer Sensitivity:	4 dB tone ratio will give 3 dot scale deflection.
OMNI Accuracy:	\pm 2° max error, \pm 1° typical.
OMNI Sensitivity:	\pm 10° off course gives full scale deflection.
External Load:	ARINC autopilot deviation (two 1 k loads).
GLIDESLOPE DEVIATION METER:	
Input Impedance:	1 k \pm 5% ohms.
Deflection Sensitivity:	150 \pm 5% uA for full scale deflection.
GLIDESLOPE FLAG:	
Input Impedance:	1 k \pm 5% ohms minimum.
Deflection Sensitivity:	125 uA for flag to leave stop. 260 uA maximum for fully concealed flag.

1.4 UNITS AND ACCESSORIES SUPPLIED

1.4.1 KI 208 VOR Indicator

066-3056-00

066-3056-02 Antireflective lens

1.4.2 KI 209 ILS Indicator

066-3056-01

066-3056-03 Antireflective lens

1.4.3 Bendix/King Equipment Installation Kit (P/N 050-01550-0000) which includes mating connectors, mounting hardware, etc., is as follows:

BENDIX/KING**KI 208, KI 209**

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>VENDOR PART NUMBER</u>
030-02227-0005	Shell, Connector Plug	1	Burndy SMS12P-1
030-02227-0009	Hood, Conn (2 pieces)	1	Burndy SMS12H1
030-02227-0023	Pin, Female Crimp	12	Burndy SC20M-6TK6
088-00706-0000	Tool, Adjustment	1	

1.5 ACCESSORIES REQUIRED, BUT NOT SUPPLIED

1.5.1 Antenna.

1.5.2 Interconnecting Cables.

1.5.3 Receiver.

1.5.4 Mooring Plate P/N 073-00044-0001.

1.5.5 Adapter Plate P/N 073-00045-0000 (Front mounting only).

1.5.6 Punch [Refer to Figure 2-5](#) (P/N 155-05235-0000) or other appropriate drawing.1.5.7 Filing Template [Refer to Figure 2-5](#) (P/N 155-05235-0000) or other appropriate drawing.

1.5.8 Crimp Tool Burndy Hytool M8ND

1.5.9 Extraction Tool Handle P/N 005-02012-0012, Burndy RXT20-4P3

1.5.10 Extraction Tool Tip P/N 005-02012-0013, Burndy RXK20-25

1.6 LICENSE REQUIREMENTS

None.

1.7 REQUIREMENTS FOR TSO'D VOR/ILS/GLIDESLOPE SYSTEM

Units used in conjunction with the KI 208, KI 209 must meet the specifications listed below to comprise a completely TSO'd navigation system.

1.7.1 Navigation Receiver Requirements For Use with KI 208, KI 209.

1.7.1.1 The navigation receiver shall be authorized to the standards of TSO C40a, C40b, C40c, and/or TSO C36c, C36d, C36e.

1.7.1.2 VOR phase error shall not exceed 1.5°.

1.7.1.3 Variation in VOR composite output to not exceed ± 3 dB from 0.500 V_{rms} as the RF input level of a Standard VOR Test Signal to the receiver is varied from 10 μ V to 10,000 μ V.

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- 1.7.1.4 Variation in the LOC composite output shall not exceed ± 2 dB from 0.333 Vrms as the RF input level of a Standard Localizer Centering Signal is varied from 50 μ V to 10,000 μ V.
- 1.7.1.5 A control line (ILS Energize) must be provided as a low impedance to ground when an ILS frequency is selected.
- 1.7.2 Glideslope Receiver/Converter Requirements For Use with KI 209.
- 1.7.2.1 The glideslope receiver/converter shall be authorized to the standards of TSO C34c, C34d, C34e.
- 1.7.2.2 Centering current to be 0 ± 7 μ A into a 1000 ohm load with a 95% probability under all combinations of the service conditions listed in RTCA Paper DO-132, Minimum Performance Standards - Airborne ILS Glideslope Receiving Equipment paragraph 2.1 sub-paragraph b, Centering Accuracy.
- 1.7.2.3 Deviation current with a 700 μ V Standard Glideslope Deviation Signal (0.091 ± 0.001 ddm tone ratio) applied to the receiver input shall be $78 \pm 10\%$ μ A into a 1000 ohm load. Deviation current shall not change more than 15% as the RF input level of a Standard Glideslope Deviation Signal is varied from 100 to 10,000 μ V. Deviation current shall be proportional within 5% to the difference in depth of modulation of the 90 Hz and 150 Hz tones.
- 1.7.2.4 Warning signal output shall be a DC current less than 125 μ A into a 1000 ohm load for a warning flag to be fully visible. Warning signal for a fully concealed warning flag shall be a DC current of 260 μ A minimum into a 1000 ohm load.
- 1.7.3 Fully TSO'D Systems

The following navigation systems will meet all TSO system requirements when used in conjunction with the KI 208, KI 209:

KX 155
KX 155A
KX 165A

SECTION II INSTALLATION

2.1 GENERAL

This section contains suggestions and factors to consider before installing the KI 208, KI 209 Indicator. Close adherence to these suggestions will assure a more satisfactory performance from the equipment.

2.2 UNPACKING AND INSPECTING EQUIPMENT

Exercise extreme care when unpacking each unit. Make a visual inspection of each 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. When all equipment is removed, place in the shipping container all packing materials for use in unit storage or reshipment. The KI 208, KI 209 installation will conform to standards designated by the customer, installing agency and existing conditions as to unit location and type of installation.

NOTE

This equipment has plastic lenses. Use extreme caution when cleaning.

2.3 INSTALLATION KI 208, KI 209

2.3.1 Installation Procedure

- 2.3.1.1 Carefully select the KI 208, KI 209 panel location for unobstructed vision, minimum parallax, and adequate clearance for the instrument case and installation of cables and connectors.
- 2.3.1.2 Refer to [Figure 2-5](#) (P/N 155-05235-0000), or other appropriate drawing, for the KI 208 and KI 209 mounting dimensions.
- 2.3.1.3 A standard 3 1/8 inch instrument hole is required. Refer to [Figure 2-5](#) (P/N 155-05235-0000), or other appropriate drawing, for hole punch or filing templates.
- 2.3.1.4 Secure the KI 208, KI 209 firmly in place using the mounting screws supplied. If the mounting screw supplied are not used, #6-32 mounting screws that do not extend more than 0.625 inches (1.59 cm) into the unit may be used.
- 2.3.1.5 The installing agency will supply and fabricate the external cable. The plugs required are supplied by Bendix/King.
- 2.3.1.6 The KI 208, KI 209 will drive two external deflection indicator loads of 1000 ohms or greater impedance.
- 2.3.1.7 An omni phase adjust potentiometer, R233 is accessible from the front of the indicator by removing the upper left mounting screw. The 2 1/2 inch long adjustment tool (P/N 088-00706-0000) is required to adjust the omni phase ad-

just potentiometer. This is for final calibration of the omni system after installing in aircraft. The range of the error potentiometer is approximately $\pm 25^\circ$. It should be noted that this potentiometer does not affect localizer centering. The localizer centering potentiometer R227 is accessible from the front of the indicator by removing the upper right mounting screw. Again the 2 1/2 inch long adjustment tool is required.

2.3.2 CABLING

- 2.3.2.1 The length and routing of the external cables must be carefully studied and planned prior to the installation. Avoid sharp bends and placing cables too near the aircraft control cables.
- 2.3.2.2 Fabricate the external cables in accordance with the installation drawing that fulfills the system requirement.
- 2.3.2.3 Avoid running the interconnect harness between the KI 208 and navigation receiver too close to any transmitter antenna coax cable.
- 2.3.2.4 Considerable savings of installation time can be realized by using the Burndy crimping tool shown in [Figure 2-3](#).

2.4 POST INSTALLATION CHECKOUT

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

2.4.1 RAMP TEST

- 2.4.1.1 Use VOR/ILS ramp generator IFR 401L or equivalent.
- 2.4.1.2 Set ramp generator to VOR, 90° TO. Set NAV receiver to VOR frequency. Rotate OBS until the D-bar centers, with the To/From indicator reading TO. The OBS should read 90° TO $\pm 2^\circ$. Change the generator to 0° TO, center the D-bar, and check the OBS reading for 0° TO $\pm 2^\circ$.
- 2.4.1.3 If the error is greater than $\pm 2^\circ$, VOR centering may be readjusted by R233 (behind top left mounting screw) using adjustment tool P/N 088-00706-0000.
- 2.4.1.4 To adjust VOR centering, change the generator to 90° TO, center the D-bar, and adjust R233 for 0° TO $\pm 2^\circ$. Change the generator to 90° FROM, center the D-bar, and adjust R233 for half the reading at 90° TO. Repeat adjustments at 90° TO and 90° FROM until both are within $\pm 2^\circ$. If large corrections are required to center the needle the source of error may exist in another part of the VOR/LOC navigation system.
- 2.4.1.5 Change the generator to 0° TO, center the D-bar for 0° TO. Set OBS to 8° and check for $4 \pm 1/2$ dots deflection to the Left. Set OBS to 352° and check for $4 \pm 1/2$ dots deflection to the Right.
- 2.4.1.6 Rotate the OBS 360° and verify that the To/From flag changes state only at $270^\circ \pm 30^\circ$ and at $90^\circ \pm 30^\circ$ OBS position.

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- 2.4.1.7 Remove VOR RF signal and verify that NAV warning flag appears.
- 2.4.1.8 Set ramp generator to ILS mode. Set NAV receiver to ILS frequency. Check the levels in Table 2-1 for ILS deflection and Table 2-2 for Glideslope deflection within $\pm 1/2$ dot.

TABLE 2-1 ILS Deflection

SIGNAL	LEVEL	PREDOMINATE MODULATION	DIRECTION	DEFLECTION ($\pm 1/2$ dot)
LOC	+4 dB (+.093 ddm)	150 Hz	LEFT	3 dots
LOC	+0 dB (0 ddm)		CENTERED	$\pm 1/2$ dot
LOC	-4 dB (-.093 ddm)	90 Hz	RIGHT	3 dots

TABLE 2-2 Glideslope Deflection

SIGNAL	LEVEL	PREDOMINATE MODULATION	DIRECTION	DEFLECTION ($\pm 1/2$ dot)
GS	+2 dB (>.091 ddm)	150 Hz	UP	2 1/2 dots
GS	+0 dB (0 ddm)		CENTERED	$\pm 1/2$ dot
GS	-2 dB (.091 ddm)	90 Hz	DOWN	2 1/2 dots

- 2.4.1.9 If the error is greater than $\pm 1/2$ dot, LOC centering may be readjusted by R227 (behind top right mounting screw) using adjustment tool P/N 088-00706-0000 at 0 dB (0 ddm).
- 2.4.1.10 Remove ILS RF signal and verify that NAV/GS warning flag(s) appear.

2.4.2 FLIGHT TEST

- 2.4.2.1 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 operation. Fly inbound or outbound on a selected VOR radial and check for proper LEFT-RIGHT and TO-FROM indications. Check VOR accuracy for $\pm 5^\circ$ of a known heading.

NOTE

VOR ground station scalloping may occur under weak signal conditions.

Channel off VOR NAV receiver and verify that the NAV warning flag appears.

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2.4.2.2 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.

Channel off ILS NAV receiver and verify that NAV/GS warning flag(s) appear.

KI 208 PINOUT LIST

P2081		DESCRIPTION
1	← -----	AIRCRAFT GROUND
2	← -----	VOR/LOC COMPOSITE
3	-----	NO CONNECTION
4	← -----	LOC ENGAGE IN
5	-----	LIGHTING 28 VOLT LO
6	-----	NO CONNECTION
7	← -----	LIGHTING 14 VOLT
8	← -----	11-33 VDC AIRCRAFT POWER
9	-----	NO CONNECTION
10	----- →	LATERAL DEVIATION +LEFT OUT
11	----- →	LATERAL DEVIATION +RIGHT OUT
12	-----	NO CONNECTION

← **INPUT** **OUTPUT** →

Figure 2-1 KI 208 Pinout List

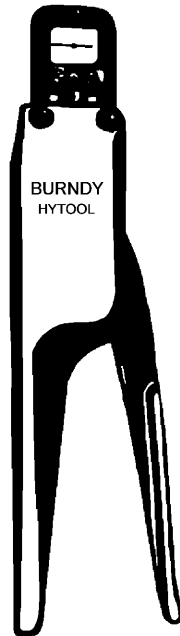
KI 209 PINOUT LIST

P2091	DESCRIPTION
1 ← -----	AIRCRAFT GROUND
2 ← -----	VOR/LOC COMPOSITE
3 ← -----	VERTICAL DEVIATION + UP IN
4 ← -----	LOC ENGAGE
5 -----	LIGHTING 28 VOLT LO
6 ← -----	VERTICAL DEVIATION + DOWN IN
7 ← -----	LIGHTING 14 VOLT
8 ← -----	11-33 VDC AIRCRAFT POWER
9 ← -----	VERTICAL +FLAG IN
10 ----- →	LATERAL DEVIATION +LEFT OUT
11 ----- →	LATERAL DEVIATION +RIGHT OUT
12 ← -----	VERTICAL -FLAG IN

← **INPUT** **OUTPUT** →

Figure 2-2 KI 209 Pinout List

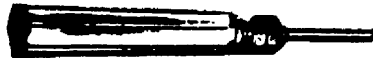
UP536434



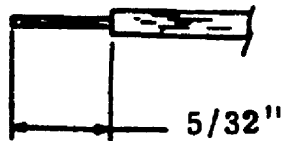
**BURNDY HYTOOL M8ND
(ratchet controlled)**

RXK20-25 Extraction Tool Tip (P/N 005-02012-0013)

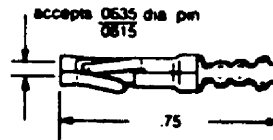
RXT 20-4P3 Extraction Tool Handle (P/N 005-02012-0012)



Fixed outer sleeve depresses contact locking spring. With tool still in contact hole, use hand to pull out contact.



Suggested Wire Strip Length



**Burndy Socket SC20M-6TK6
(P/N 030-02227-0023)**

Figure 2-3 Crimping Tool

UP536434

030-02227-0009
STRAIN RELIEF HOOD CONSISTS
OF TWO IDENTICAL MOLDED HALVES.

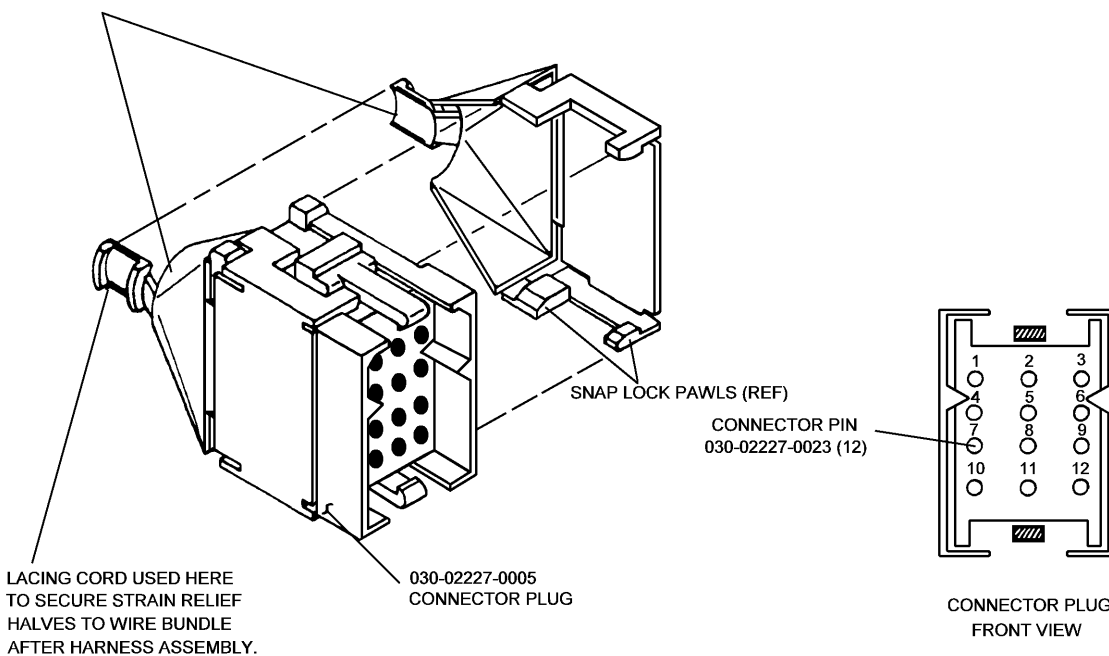


Figure 2-4 KI 208, KI 209 Connector Assembly

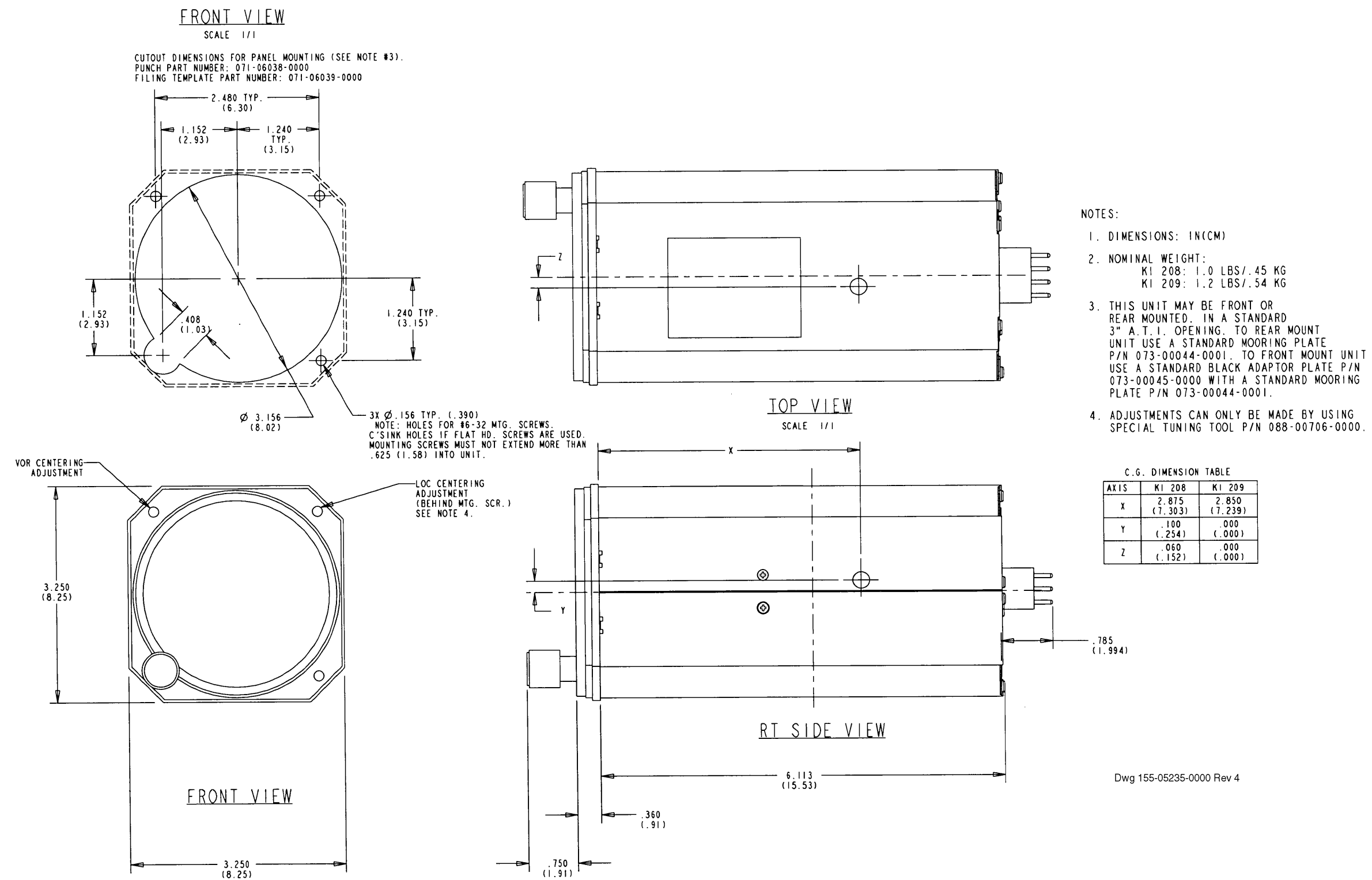
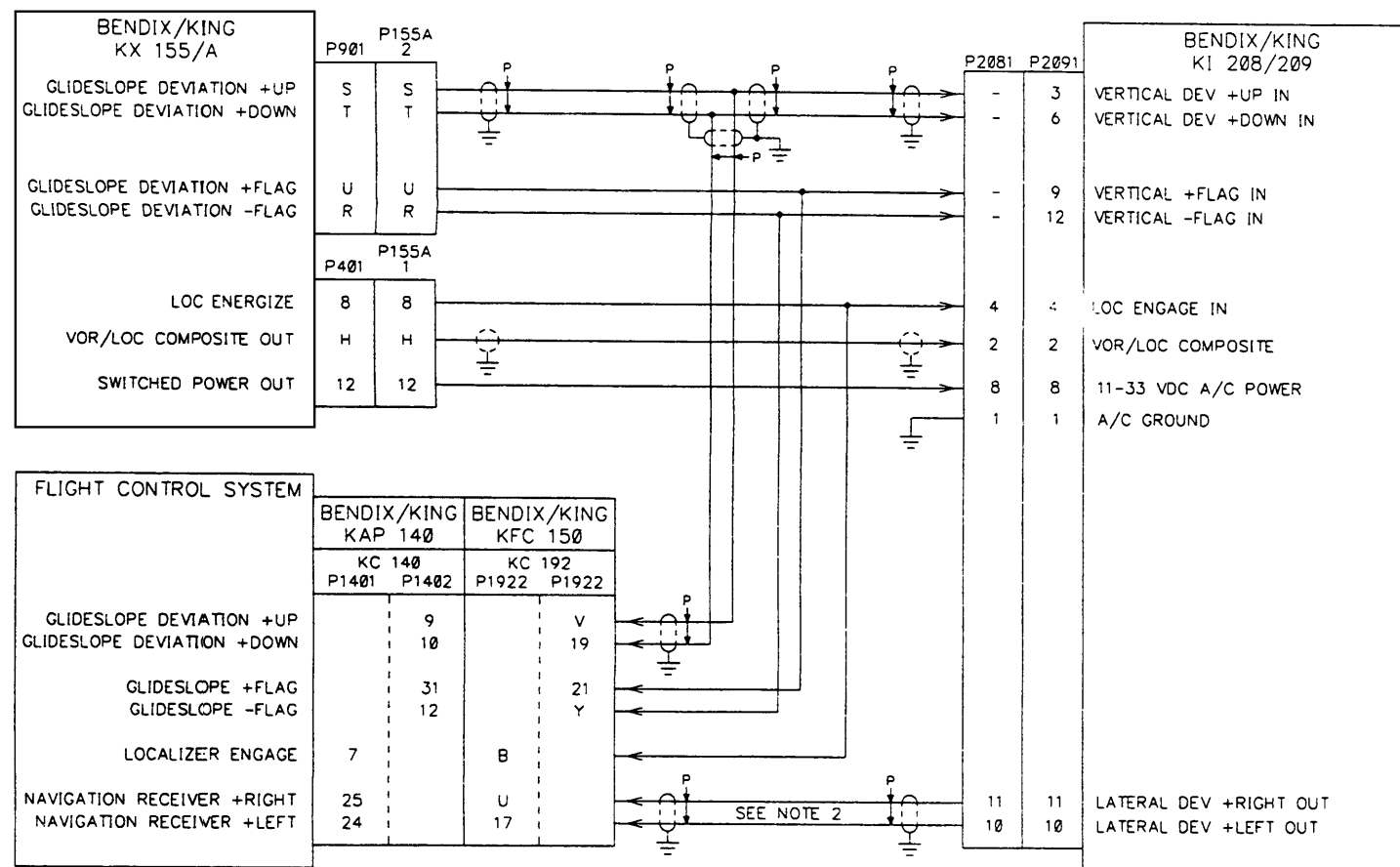


FIGURE 2-5 KI 208, KI 209 Outline and Mounting Drawing (Dwg No 155-05235-0000, Rev 4)



- NOTES:
1. ALL WIRES ARE 24 AWG MINIMUM UNLESS OTHERWISE NOTED.
 2. IF THE KAP 140 IS INTERFACED TO THE KI 208/209, THE KC 140 SHOULD BE CONFIGURED FOR "NAV FORCE VALID: TRUE", SO THE KC 140 WILL NOT EXPECT A LATERAL FLAG INPUT.
 3. CONNECT THESE SHIELD GROUNDS TO AIRCRAFT CHASSIS WITH AS SHORT A CONDUCTOR AS PRACTICAL.

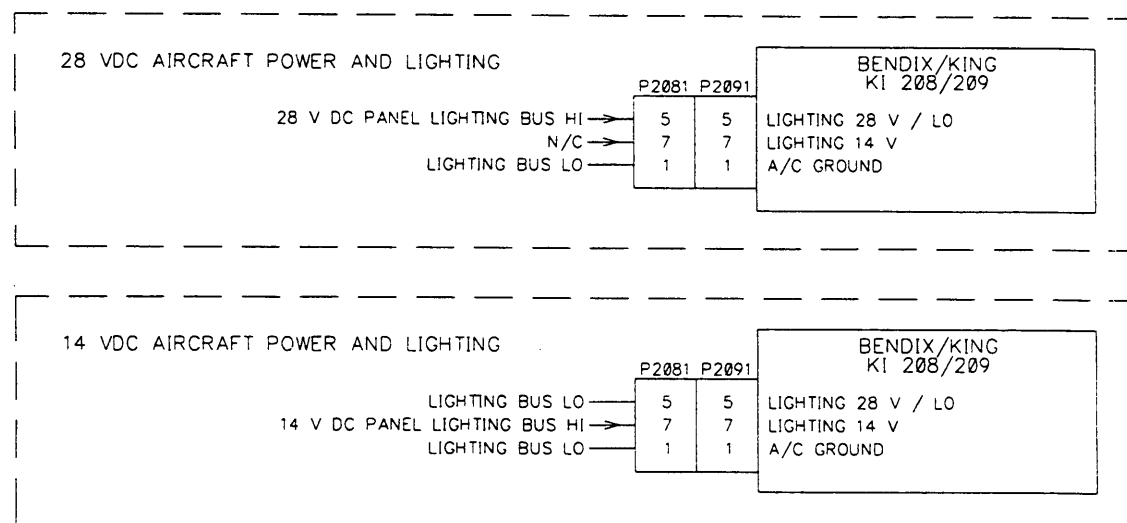


FIGURE 2-6 KI 208, KI 209 Typical Interconnect

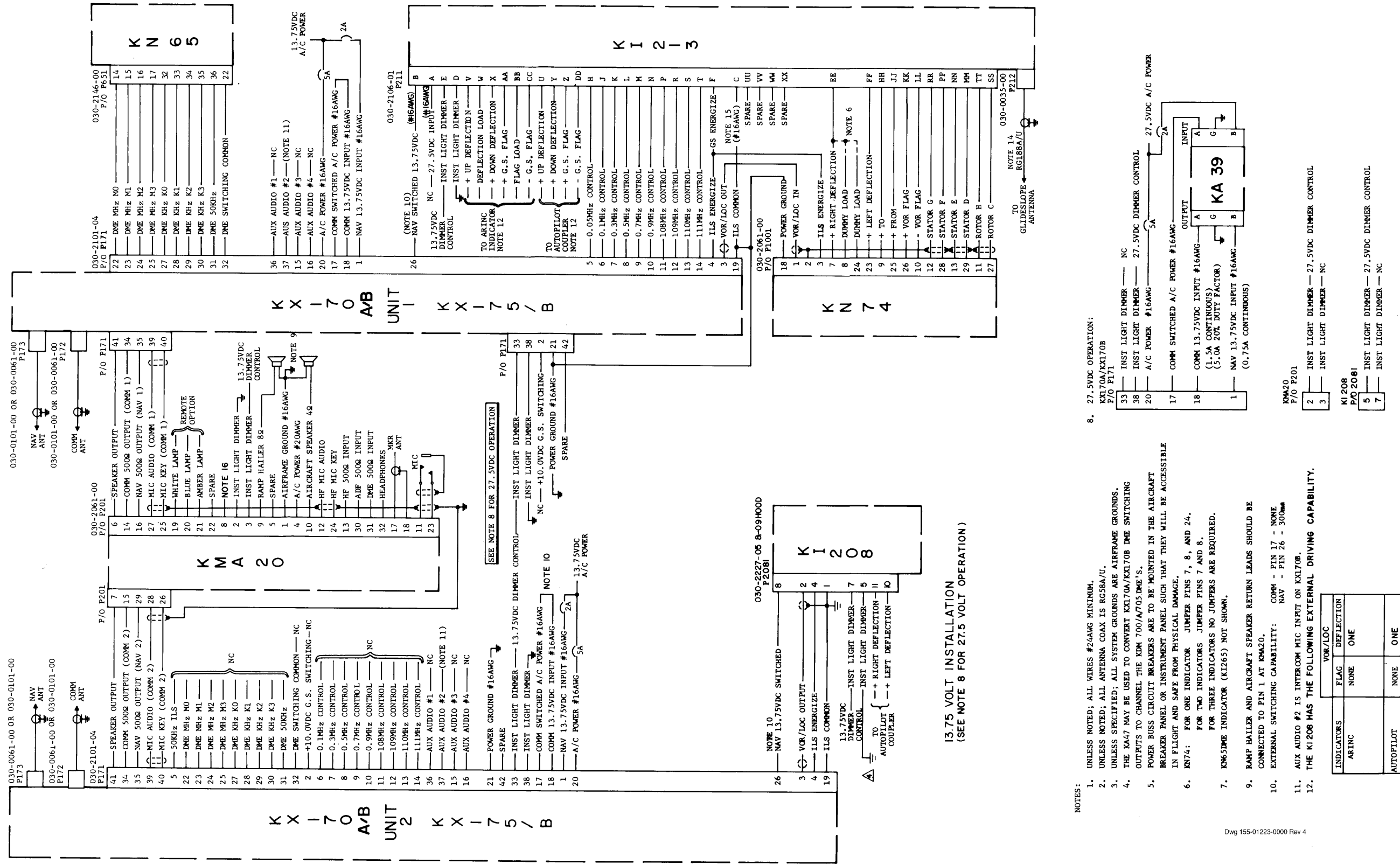


FIGURE 2-7 KI 208 Non-TSO'd Silver Crown System Interconnect (Dwg No 155-01223-0000, Rev 4)

NOTES:

- UNLESS NOTED; ALL WIRES #24AWG MINIMUM.
- UNLESS NOTED; ALL ANTENNA COAX IS RG58A/U.
- UNLESS SPECIFIED; ALL SYSTEM GROUNDS ARE AIRFRAME GROUNDS.
- THE KX47 MAY BE USED TO CONVERT KX170A/KX170B DME SWITCHING OUTPUTS TO CHANNEL THE KX47 700A/705 DME'S.
- POWER BUSS CIRCUIT BREAKERS ARE TO BE MOUNTED IN THE AIRCRAFT BREAKER PANEL OR INSTRUMENT PANEL SUCH THAT THEY WILL BE ACCESSIBLE IN FLIGHT AND SAFE FROM PHYSICAL DAMAGE.
- KN74: FOR ONE INDICATOR JUMPER PINS 7, 8, AND 24. FOR TWO INDICATORS JUMPER PINS 7 AND 8. FOR THREE INDICATORS NO JUMPERS ARE REQUIRED.
- KN65 DME INDICATOR (KI265) NOT SHOWN.
- RAMP HALLER AND AIRCRAFT SPEAKER RETURN LEADS SHOULD BE CONNECTED TO PIN 1 AT KX20.
- EXTERNAL SWITCHING CAPABILITY: COMM - PIN 17 - NONE NAV - PIN 26 - 300ma
- AUX AUDIO #2 IS INTERCOM MIC INPUT ON KX170B.
- THE KI208 HAS THE FOLLOWING EXTERNAL DRIVING CAPABILITY.

- COMPLETE INTERCONNECT INFORMATION FOR KN65 AND KN74 MAY BE FOUND IN THE RESPECTIVE INSTALLATION MANUALS.
- GLIDESLOPE ANTENNA (KA 22 OR EQUIVALENT) MUST HAVE AIRFRAME GROUND.
- ROUTE ILS COMMON AND POWER GROUND AWAY FROM COMM TRANSMITTER COAXIAL CABLES AND MAKE AIRFRAME GROUND NEAREST KX 170A/175/170B/175B. IF KA 39 IS USED, ROUTE OUTPUT PIN G WITH ILS COMMON AND POWER GROUND.
- PIN 8 OF KMA 20 IS SPK LOAD GROUND AND SHOULD BE CONNECTED TO PWR GRD OF THE KX 170A/B/175.

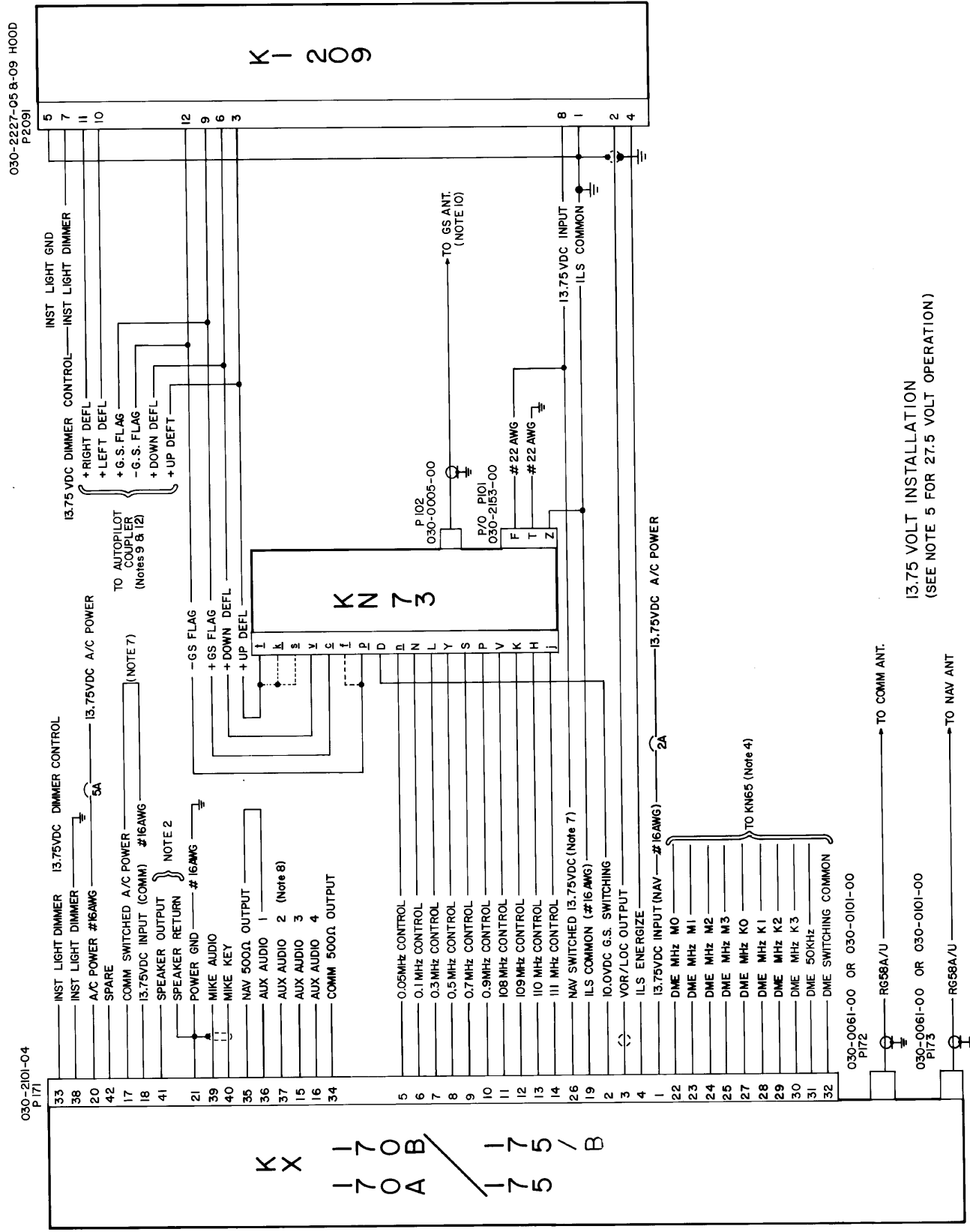
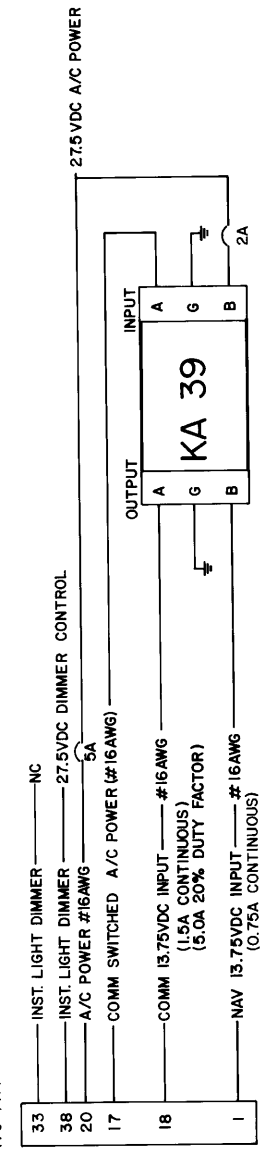


FIGURE 2-8 KI 209 System Interconnect (Dwg No 155-01241-0000, Rev 4)

13.75 VOLT INSTALLATION (SEE NOTE 5 FOR 27.5 VOLT OPERATION)

- NOTES:
- UNLESS NOTED, ALL WIRES TO BE #24AWG MINIMUM.
 - IF SPEAKER IS NOT USED, INSTALL A 4Ω 10W RESISTOR TO SIMULATE A SPEAKER LOAD BETWEEN PINS 41 AND 21 OF P171.
 - ALL GROUNDS ARE AIRFRAME GROUNDS UNLESS OTHERWISE SPECIFIED.
 - THE KA 47 MAY BE USED TO CONVERT KX 170A/KX175/KX175B DME SWITCHING OUTPUT TO CHANNEL THE KDM 700A/705 DME.
 - 27.5VDC OPERATION:
 KX170A/KX175/KX170B/KX175B P/O P171



- KI 209 P2091
- INST. LIGHT DIMMER — NC
 - INST. LIGHT DIMMER — 27.5VDC DIMMER CONTROL
 - INST. LIGHT DIMMER — 27.5VDC DIMMER CONTROL
 - COMM SWITCHED A/C POWER (#16AWG)
 - COMM 13.75VDC INPUT (#16AWG) (11.5A CONTINUOUS) (5.0A 20% DUTY FACTOR)
 - NAV 13.75VDC INPUT (#16AWG) (0.75A CONTINUOUS)
6. POWER BUSS CIRCUIT BREAKERS ARE TO BE MOUNTED IN AIRCRAFT BREAKER PANEL OR INSTRUMENT PANEL SUCH THAT THEY WILL BE ACCESSIBLE IN FLIGHT AND SAFE FROM PHYSICAL DAMAGE.
7. EXTERNAL SWITCHING CAPABILITY: COMM (PIN 17 OF P171) NONE, NAV (PIN 26 OF P171) -300mA.
8. AUX AUDIO #2 IS INTERCOM MIC INPUT ON KX170B/KX175B.
9. THE KI 209 HAS THE FOLLOWING EXTERNAL INDICATOR DRIVING CAPABILITY.

INDICATORS	VOR/LOC	
	FLAG	DEFLECTION
ARINC	NONE	ONE
AUTOPILOT	NONE	ONE

- GLIDESLOPE ANTENNA (KA 22 OR EQUIVALENT) MUST HAVE AIRFRAME GND.
- ROUTE ILS COMMON AND POWER GND AWAY FROM COMM TRANSMITTER COAXIAL CABLES AND MAKE AIRFRAME GND NEAREST KX 170A/175/170B/175B. IF KA39 IS USED, ROUTE OUTPUT PIN G WITH ILS COMMON AND POWER GND.

12. JUMPER KN 73 PINS AS INDICATED FOR REQUIRED NUMBER OF EXTERNAL LOADS.

Number of external loads	Glideslope Flag	
	ILK	ILP
1	ILK	ILP
2	ILK	none
3	none	none

SECTION III OPERATION

3.1 EQUIPMENT OPERATION

All controls required to operate the KI 208, KI 209 are located on the unit's front panel and on the front panel of the related NAV/COMM transceivers.

3.1.1 VOR OPERATION (KI 208, KI 209)

Select the desired VOR station frequency with the NAV frequency controls. The NAV receiver volume control can then be adjusted to positively identify the station or listen to FSS reports.

To intercept a selected VOR radial (from the station) and fly outbound, turn the OBS control to set the desired radial under the top indicator index. Maneuver the aircraft to fly the selected radial magnetic heading plus a 45° intercept angle which will provide a sufficient intercept angle. The intercept angle should be reduced as the deviation needle approaches an on-course condition (center) to prevent excessive course bracketing.

To determine the bearing and fly "To" a selected VOR station, turn the OBS control until the "To-From" flag resembles a white arrow pointing up and the deviation needle is centered. Read the "To" bearing under the top indicator index and maneuver the aircraft to approximately fly the magnetic course "To" the station. If the deviation needle moves to the right, the aircraft course must be adjusted 5 or 10 degrees to the right. Similarly, if the deviation needle goes to the left, the aircraft course must be adjusted to the left. Maintaining a centered deviation needle will provide automatic course compensation for wind drift.

3.1.2 LOCALIZER OPERATION (KI 208, KI 209)

Localizer circuits are automatically energized when an ILS frequency is selected on the KX 155, KX 155A. By adjusting the NAV volume level, the localizer station can be identified and in some cases, ATIS information received. The localizer flag should disappear from view into the "To" condition indicating the signal is reliable.

Maneuver the aircraft to fly an on-course centered needle. While flying a front course approach or outbound on the back course approach, magnetic heading corrections are made toward the needle deflection. Similarly, while flying the back course approach or outbound on the front course approach, corrections are made away from the needle deflection.

The localizer course width is narrow compared to VOR course width and requires much smaller course corrections to center the deviation needle. When intercepting the localizer course, the aircraft turn into localizer course should be started when the needle moves off the meter stop.

A helpful quick reference reminder of the localizer course is to set the course on the omni-bearing readout.

3.1.3 GLIDESLOPE OPERATION (KI 209)

The glideslope (horizontal) needle provides the pilot with vertical steering information during ILS approaches. The glideslope circuitry may be energized independently or when the associated localizer frequency is selected on the navigation receiver. Observe that the glideslope warning flag is concealed. The glideslope needle deflects toward the direction the pilot must fly to remain on the glideslope path. If the glideslope needle deflects upward, the aircraft is below the glideslope and must climb to center the needle. If the needle deflects downward, the aircraft is above the glide path and must descend to remain on the glide path. When the needle is centered the aircraft is on the glide path.

3.2 INDICATOR CONTROL FUNCTIONS KI 208, KI 209

Figure 3-1 displays the control functions of the KI 208. **Figure 3-2** displays the control functions of the KI 209.

3.2.1 OMNI-BEARING SELECTOR (OBS)

The OMNI Bearing Selector knob rotates the azimuth card on which the desired course is selected. The course selected serves as a reference for all VOR indications. The reciprocal course is identified under the bottom course index.

3.2.2 VOR/LOC DEVIATION INDICATOR

The VOR/LOC needle deflection indicates the amount of deviation from the selected VOR course or localizer path. The indicated angular deviation is toward the proper flight path in normal operation.

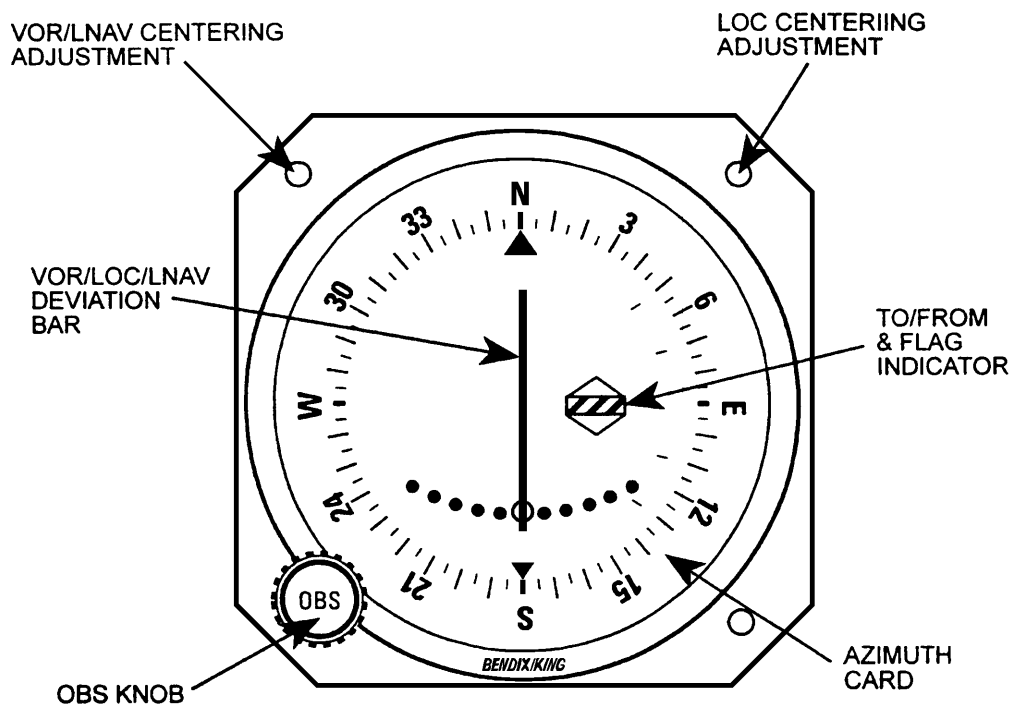
The VOR/LOC warning flag is fully visible when the VOR or LOC signal is unreliable. The VOR TO-FROM flag indicates the direction "TO" or "FROM" the VOR station.

3.2.3 GLIDESLOPE DEVIATION INDICATOR (KI 209 Only)

The glideslope deviation needle deflection indicates the amount of deviation from the glide path. The deflection is toward the direction of flight required to maintain the proper descent path. The glideslope warning flag is visible when the glideslope signal is unreliable or the receiver has malfunctioned.

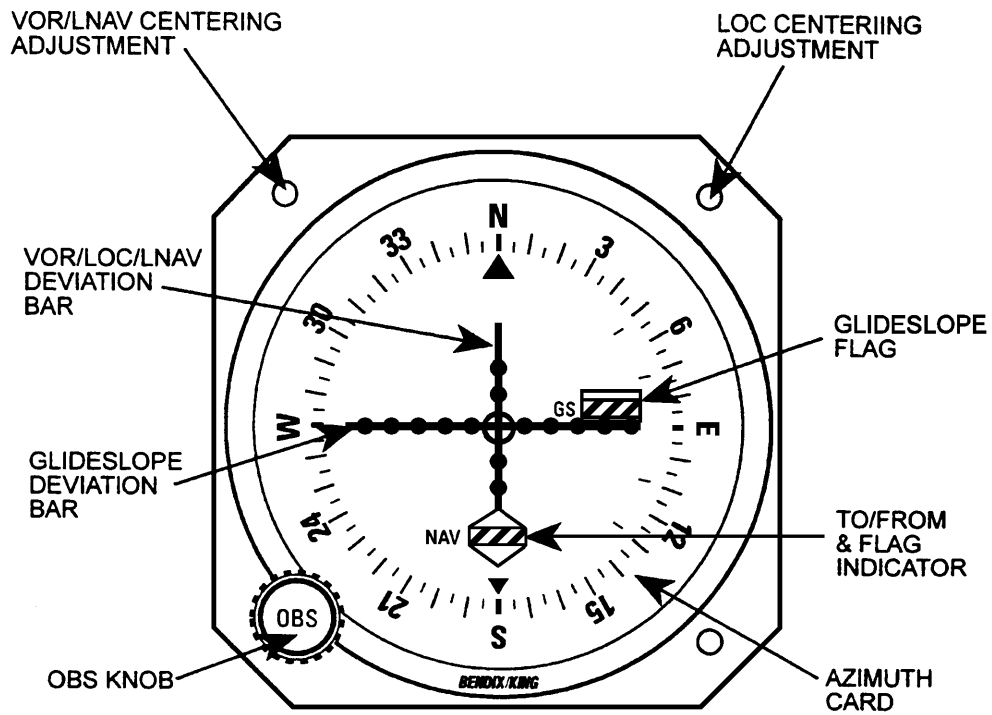
BENDIX/KING

KI 208, KI 209



KI 208 CONTROL FUNCTIONS

Figure 3-1 KI 208 Control Functions



KI 209 CONTROL FUNCTIONS

Figure 3-2 KI 209 Control Functions