

WORLDWIDE FLEET MANAGEMENT

Eagle Copters USA, Inc. 190 S Danebo Ave Eugene, OR 97402

# **INSTRUCTIONS FOR CONTINUED AIRWORTHINESS**

# FOR

# P139-HD DIGITAL AUDIO SYSTEM MDL GA212 FOR EUROCOPTER BK117 (EC145) SERIES HELICOPTERS

Report No.: ICA212-3

STC No.: SR02270SE

APPROVED BY: G. Andrews

Rev. B DATE: 11/7/17

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# **DETAILS OF REVISIONS**

REV.	DATE	PAGE	DESCRIPTION	APPROVED
N/C	03/25/13	All	Initial Release	C. Bonar
A	5/12/14	All	Updated to add G13160 3-Board Router and wiring; Added Audio Mixer G13120	C. Bonar
В	11/7/17	7 9 31-56 58 ALL	Removed EC135 from RFMS reference Added note on 'NS' panels Updated wiring diagrams Updated Audio System Functional Check Updated Geneva Aviation to Eagle Copters	G. Andrews



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# **RECORD OF SERVICE BULLETINS (S/B'S)**

S/B NO. DATE DESCRIPTION

There are no Service Bulletins applicable to this STC.



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SEE NON-DISCLOSURE NOTICE ON THE COVER PAGE

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# LIST OF APPLICABLE DOCUMENTS

Document Number	r Description
GA212-2	Rotorcraft Flight Manual Supplement (EC145)



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### Section 1.0 Introduction

### 1.1 Scope

This manual provides description, operation, disassembly, inspection, repair and testing instructions and an Illustrated Parts List for the P139-HD Digital Audio System.

### 1.2 Purpose

The purpose of this manual is to maintain the P139-HD Digital Audio System in peak operating efficiency with the greatest service life.

### **1.3 Revision Control Procedure**

All revisions to this document shall be identified in the Details of Revisions. All pages will be summarized on page 4, "List of Effective Pages."

### **1.4 Service Difficulty Reporting**

A record of sales shall be maintained by Eagle Copters. Any changes to these instructions resulting from service difficulties shall be distributed to all previous recipients.

### 1.5 Applicability

This manual shall be used to maintain the P139-HD Digital Audio System for Eurocopter BK117 (EC145) Series Helicopters.

### **1.6** Abbreviations and Units of Measure

in	=	inches
lbs	=	pounds
P/N	=	part number
I/N	=	item number
LH	=	left hand
RH	=	right hand



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### 1.7 Precautions

The following precaution definitions will be used to indicate the seriousness of the hazard or condition.

- WARNING: May be a maintenance procedure, practice, condition, etc., which could result in personal injury or loss of life.
- CAUTION: May be a maintenance procedure, practice, condition, etc., which could result in damage or destruction of equipment.
- NOTE: May be a maintenance procedure, practice, condition, etc., or a statement that needs to be highlighted

### 1.8 Distribution

This manual will be distributed to end users (or their mechanics or maintenance departments). A copy of this ICA shall be provided by Eagle Copters with each kit sold.

### 1.9 Description

The Eagle Copters P139-HD Digital Audio System provides a communication system for aircraft crew members and passengers.

### 1.9.1 The P139-HD Digital Audio System Includes the Following:

- a. There are 3 Digital Router Systems to choose from, the first is P139-HD (D) which uses Router G13000 in a "Dual-board" configuration. The second is P139-HD (S) which uses Router G13000 in a "Single-board" configuration. The third is P139-HD (T) which uses Router G13160 and is a "Three board" router.
- b. A minimum of 2 Audio Control Panels for the pilot and co-pilot. A typical installation will include 3 or more Audio Control panels for the pilot, co-pilot, crew members, and/or passengers. The Control Panels come in 4 different configurations P/Ns G13115, G13115NS, G13116, and G13116NS as shown in Figure 4 and Figure 5. The Audio Control Panels can be used interchangeably, depending on the control functions desired although G13115NS and G13116NS panels must not be used as primary control panels for Pilot or Copilot.
- **c.** Sheet metal support tray G13009 and required hardware for mounting the G13000 Digital Audio Router; or sheet metal support tray G13161 and required hardware for mounting the G13160 3-Board Router.



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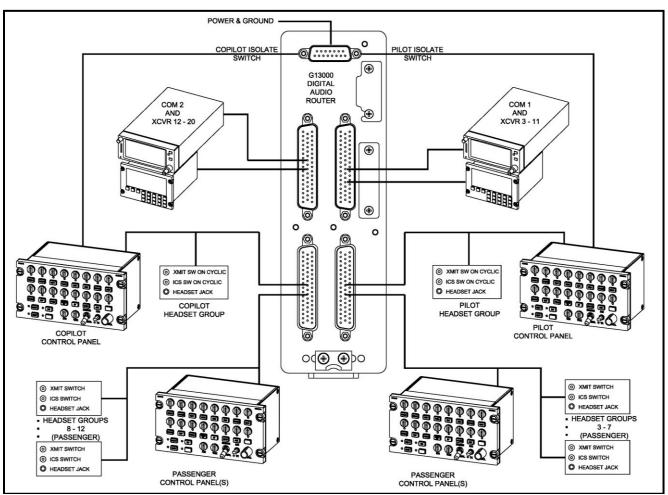


Figure 1: Digital Audio System Overview



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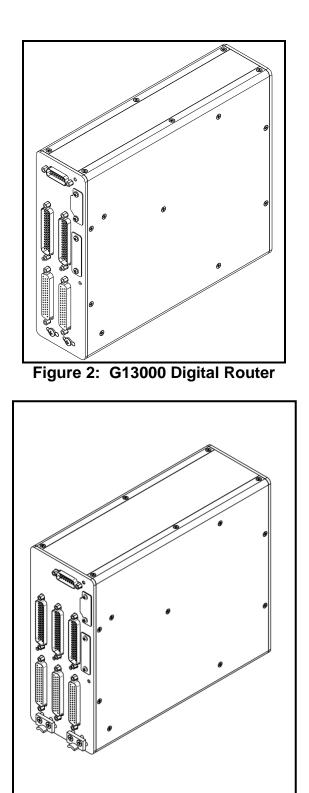


Figure 3: G13160 3-Board Router



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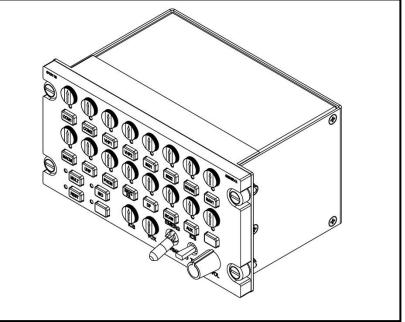


Figure 4: G13115 and G13115NS Control Panel

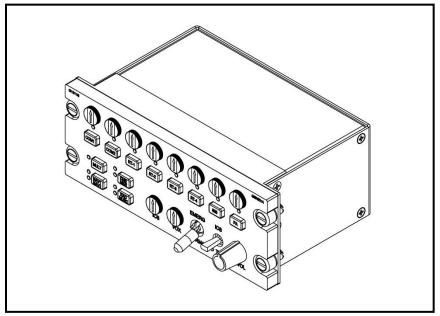


Figure 5: G13116 and G13116NS Control Panel



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# Section 2.0 Airworthiness Limitations

There no airworthiness limitations associated with this STC.

The Airworthiness Limitation section is FAA approved and specifies maintenance required under Part 43.16 and 91.403 of Federal Regulations unless an alternate program has been FAA approved.



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### Section 3.0 Inspection Requirements and Overhaul Schedule

### 3.1 Inspection Requirements

### 3.1.1 2 Year/2000 Hour Inspection

- **a.** Make sure the individual modules are properly secured and the restraining hardware is not damaged or deformed.
- **b.** Remove the Router from the mounting tray. See Section 4.0.
- **c.** Inspect all sheet metal components for damage and corrosion. If damage or excessive corrosion is found replace parts per Section 4.0. Corrosion that has penetrated more than .02" is cause for replacement in machined aluminum components. Corrosion that has penetrated more than .02" is cause for replacement on sheet metal components.
- **d.** Inspect all wiring for damage and proper security. Any wires that are damaged need to be repaired or completely replaced.
- e. Reinstall any removed or replaced parts per applicable portions of Section 4.0 and return aircraft to operational condition.

### 3.1.2 Special Inspections

- **a.** In the event that the aircraft experiences a "Hard Landing", then conduct the inspection requirements called out in Section 3.1.1.
- **b.** In the event that the aircraft experiences a "Lightning Strike", then conduct the inspection requirements called out in Section 3.1.1.

### 3.2 Overhaul Schedule

There is no overhaul schedule for this kit.



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### Section 4.0 Digital Audio Router Removal, Inspection and Re-Installation

### 4.1 Digital Router Removal – Avionics Shelf Installation

- **a.** Gain access to the router in the Aft Avionics Bay Shelf.
- **b.** Disconnect all cables from the Digital Router.
- **c.** Loosen the thumb screw securing the router into the tray and slide the router out of the tray shown in Figure 6.

# NOTE

The Tray does not need to be removed on a regular basis for inspection or overhaul. The Tray should only be removed if cracked or excessively corroded and needs to be replaced.

- **d.** Remove the (4) MS24693S276 Screws and (2) Shims connecting the Tray to the avionics bay shelf as shown in Figure 6.
- e. The #10 inserts in avionics bay shelf (I/N 4) are replaced only if damaged. This is done in accordance with the Eurocopter Maintenance Manual.



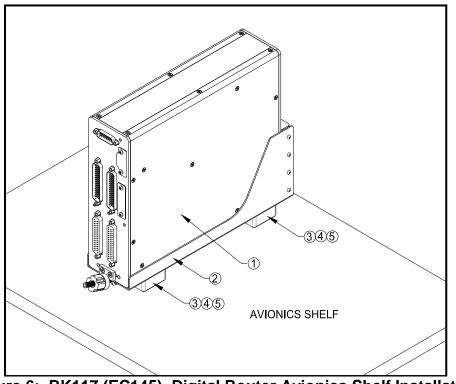
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Figur	e 6:	BK117	(EC145)	<b>Digital Router</b>	Avionics	Shelf Installa	ation
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Parts List for Figure 6: For Router G13000 Installation
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I/N	QTY	PART NUMBER	DESCRIPTION
1	1	G13000	P139-HD Router
2	1	G13009-1	Tray
3	2	G13009-3	Shim
4	4	80-004-2-12 or	Insert, #10-32
		80-005-2-12	
5	4	MS24693S276	Screw, #10-32 x 1.0 Flat Head

### Parts List for Figure 6: For Router G13160 Installation

I/N	QTY	PART NUMBER	DESCRIPTION
1	1	G13160	P139-HD Router
2	1	G13161	Tray
3	2	G13161-3	Shim
4	4	80-004-2-12 or	Insert, #10-32
		80-005-2-12	
5	4	MS24693S276	Screw, #10-32 x 1.0 Flat Head



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### 4.2 Digital Router and hardware Inspection

- **a.** The Digital Router contains no user serviceable internal components. Do not disassemble router or the factory warranty will be voided. Return the unit to Eagle Copters for service.
- **b.** Inspect all sheet metal for cracks or excessive corrosion. If any of the parts are cracked or excessively corroded (refer to Section 3.1.1 for corrosion limits) they must be removed from the aircraft and replaced.

### 4.3 Digital Router Re-Installation Avionics Shelf Installation

This installation provides mounting provisions for the Digital Audio Router in the Aft avionics bay shelf area for the BK117 (EC145) as shown in Figure 6. The location is shown for reference only. The exact placement of the Router is dependent on the other pre-existing installed equipment. Orientation of the tray is at the installer's discretion. Maintain 2 e/d edge margin for all mounting holes.

# NOTE

If the Tray (P/N G13009) has not been removed skip to step (d) and connect the Router to the existing Tray. If Tray has been replaced continue to step (a).

- **a.** Locate Tray to avoid existing structures and devices installed. Orientation of the tray is at the installer's discretion.
- **b.** Locate and install (4) #10-32 inserts (I/N 4) in accordance with Eurocopter Repair Manual.
- c. Mount Tray to shelf using (2) Shims and (4) MS24693S276 Screws.
- **d.** Slide router into tray so that clip on base of router engages slot on rear of tray. Be sure router is seated fully down. Secure router to tray using attached thumb screw.
- e. Reconnect all applicable cables to the Digital Router. Reference Figure 7 and Figure 8 for all Digital Router Connection Ports.



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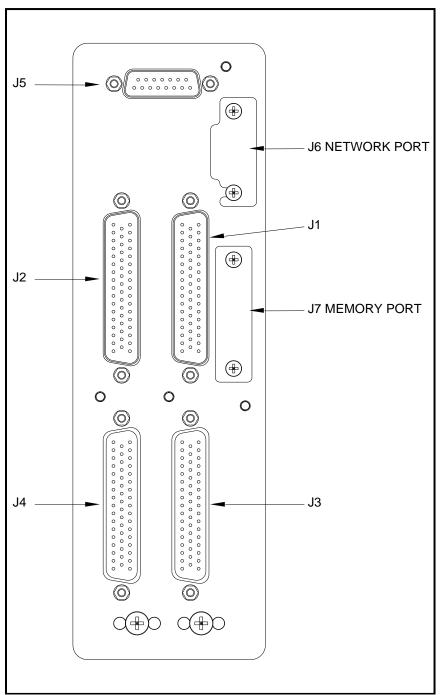


Figure 7: G13000 Digital Router Connector Layout



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- f. G13000 Digital Router Connections
  - **1.** J1 is used to connect COM1 and radios XCVR3 XCVR11.
  - **2.** J2 is used to connect COM2 and radios XCVR12 XCVR20.
  - **3.** J3 is used to connect the Pilot's control panel, Pilot's headset group, headset groups 3 7 and passenger control panels.
  - J4 is used to connect the Copilot's control panel, Copilot's headset group, headset groups 8 – 12 and additional passenger control panels.
  - **5.** J5 is used to connect power, ground, Pilot's COM1 Isolate, and Copilot's COM2 Isolate.
  - **6.** J6 is a network port used for system configuration adjustment.
  - **7.** J7 is a memory card slot used for storing system configuration data onto removable media.

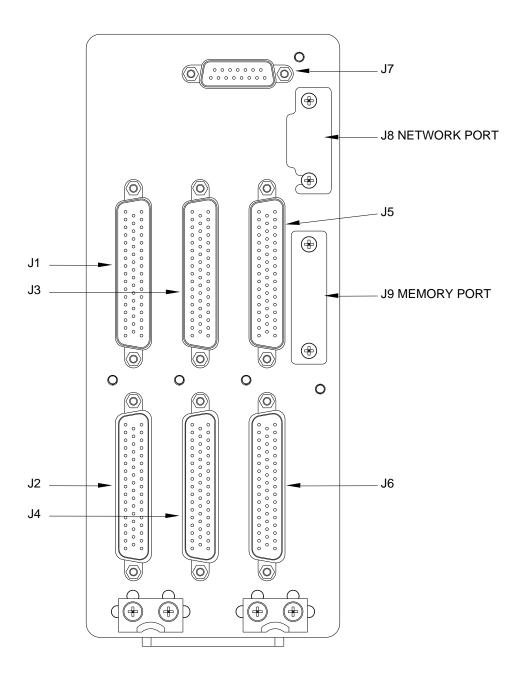


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- g. G13160 Digital Router Connections
  - **1.** J1 is used to connect COM1 and radios XCVR3 XCVR11.

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- **2.** J2 is used to connect the Pilot's control panel, Pilot's headset group, headset groups 3 7 and passenger control panels.
- **3.** J3 is used to connect COM2 and radios XCVR12 XCVR20.
- J4 is used to connect the Copilot's control panel, Copilot's headset group, headset groups 8 – 12 and additional passenger control panels.
- 5. J5 is used to connect radios XCVR21 XCVR30.
- **6.** J6 is used to connect headset groups 13 18 and additional passenger control panels.
- **7.** J7 is used to connect power, ground, Pilot's COM1 Isolate, and Copilot's COM2 Isolate.
- **8.** J8 is a network port used for system configuration adjustment.
- **9.** J9 is a memory card slot used for storing system configuration data onto removable media.



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# 2D OUTPUT 99 ©∞ $\square$ 00 5 ď c) () • m ۲ O AW9 O JIA3 G 3.040 ۲ 5.750 5.250 5 ۲ ١ 750 Figure 9: G13120 Audio Mixer

# Section 5.0 G13120 Audio Mixer Removal, Inspection and Re-Installation



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### 5.1 G13120 Audio Mixer Removal

- a. Disconnect cable connector from the Audio Mixer.
- **b.** Disconnect (4) #8-32 screws securing the Audio Mixer to the mounting structure.

### 5.2 G13120 Audio Mixer Inspection

- **a.** The Audio Mixer contains no user serviceable internal components. Do not disassemble router or the factory warranty will be voided. Return the unit to Eagle Copters for service.
- **b.** Inspect all sheet metal for cracks or excessive corrosion. If any of the parts are cracked or excessively corroded (refer to Section 3.1.1 for corrosion limits) they must be removed from the aircraft and replaced.

### 5.3 G13120 Audio Mixer Installation

- **a.** The Audio Mixer is designed to be mounted in a variety of locations within the airframe, provided it is protected from the environment. It may be mounted to a deck, bulkhead, tray, avionics shelf or other structure rated to carry a 8 oz. load.
- **b.** The exact mounting location is left to the installer's discretion provided that the installation of the Audio Mixer does not interfere with other equipment installed. Refer to Figure 9 for laying out mounting holes.
- **c.** Mount the Audio Mixer using (4) #8-32 screws, washers and locknuts or nutplates. When mounting into composite structure, #8-32 potted inserts should be used.
- **d.** Unless otherwise specified, follow aircraft manufacturer's standard practices and maintenance manuals for installation of all hardware.
- e. Maintain a minimum 2 e/d edge margin for all installed fasteners.



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### 5.4 G13120 Audio Mixer Cable Maintenance

- **a.** Refer to Figure 10 and Figure 11 for cable harness fabrication instructions.
- **b.** Unless otherwise specified, follow the aircraft manufacturer's electrical wiring practices and maintenance manuals for installation of all system wiring.
- **c.** Unless otherwise noted, all shielded wire is M27500-(ga)TG(n)T14 and all unshielded wire is M22759/16-(ga)-9, where (ga) is the wire gauge and (n) is the number of wires inside the shield.
- d. Unless otherwise noted, all wire is 22 GA.
- e. All Bonding and Grounding will be In Accordance With AC 43.13-1B, Chapter 11, Section 15.
- f. Route all system cabling through existing cable runs.
- **g.** Secure all cabling using nylon cable ties and/or cable clamps using standard practices.

### 5.5 G13120 Audio Mixer Operation

- **a.** The G13120 Audio Mixer is designed to mix audio from up to 8 sources into 3 outputs.
- **b.** The first two inputs and outputs (1D and 2D) are considered Essential, and will remain functional even when the mixer is not powered or detects an internal fault due to the failsafe relays and detection internal to the mixer.
- **c.** If the mixer is not powered or is in fault mode (Essential), Input 1 will be connected directly via relay closure to Output 1D, and Input 2 will be connected directly to Output 2D.
- d. The direct inputs in essential mode are non-adjustable.
- e. The level that is present at Inputs 1 and 2 will be present at 1D and 2D respectively.
- **f.** Output 3 is not relay direct protected and will therefore drop off line in unpowered or fail mode. This output is designed to be a monitor port to a non-critical device.
- **g.** It is important to follow the setup instructions exactly in order for the mixer to work properly in the Essential Mode.



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EXTERNAL CONNECTOR PIN ASSIGNMENT					
		$\supset$			
GND	140	01	+28V IN		
IN 1 LO	150	02	IN 1 HI		
IN 2 LO	160	03	IN 2 HI		
IN 3 LO	170	04	IN 3 HI		
IN 4 LO	180	05	IN 4 HI		
IN 5 LO	190	06	IN 5 HI		
IN 6 LO	200	07	IN 6 HI		
IN 7 LO		08	IN 7 HI		
	210	09	IN 8 HI		
	220	010	IND		
	-	011	OUT 1D HI		
OUT 2D L	-	012	OUT 2D HI		
OUT 3 LO	250	013	OUT 3 HI		
	$\subseteq$	$\supset$			
		21 25F			
Connector: TE p/n 205165-1 Contacts: TE p/n 205090-1 Backshell: CONEC p/n 165X10159XE					
Optional Connector Kit: Mil: M24308/2-8F Kit					
ST	NOTE: QUICK CONNECT / RELEASE STYLE BACKSHELLS ARE NOT TO BE USED IN THIS INSTALLATION.				
Figure 10: G13120 Audio Mixer Wiring					



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P1			
+28 VDC IN	1	20 GA	- 1
GROUND	14	20 GA	
INDICATOR	10	=	- 2
INPUT 1 HI INPUT 1 LO	2 15	W         ✓           U         W/B         U	AUDIO SOURCE 1D
INPUT 2 HI INPUT 2 LO	3 16	W         ✓           U         W/B         U	AUDIO SOURCE 2D
INPUT 3 HI INPUT 3 LO	4 17	W         €           U         W/B         U	AUDIO SOURCE 3
INPUT 4 HI INPUT 4 LO	5 18	W         ✓           U         W/B         U	AUDIO SOURCE 4
INPUT 5 HI INPUT 5 LO	6 19	W         €           U         W/B         U	AUDIO SOURCE 5
INPUT 6 HI INPUT 6 LO	7 20	₩ ₩/B	AUDIO SOURCE 6
INPUT 7 HI INPUT 7 LO	8 21	₩ U W/B	AUDIO SOURCE 7
INPUT 8 HI INPUT 8 LO	9 22	₩ ₩/B	AUDIO SOURCE 8
OUTPUT 1D HI OUTPUT 1D LO	11 23	₩ U W/B	
OUTPUT 2D HI OUTPUT 2D LO	12 24	₩ ₩/B	AUDIO OUTPUT 2 DIRECT
OUPUT 3 HI OUTPUT 3 LO	13 25	W         ✓           U         W/B         U	AUDIO OUTPUT 3
	I	Ground Audio Shields at ONE end only.	

Figure 11: G13120 Audio Mixer Wiring



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# 5.6 G13120 Audio Mixer Setup and Adjustment

a. Notes listed below apply to Figure 10 and Figure 11.

### NOTES:



Power to be supplied by either Avionics or Essential Bus 1 if equipped. Circuit Breaker to be 1 Amp with the appropriate part number for the bus the mixer is being connected to.



This pin may optionally be used as a pull low for a remote fail indicator for the mixer. Power would be supplied to the desired indicator and this pin would supply a ground to the indicator if a fault occured. This is optional and not a requirement for installation.



Audio Source 1D and 2D are the relay protected inputs. When connected to a Master Caution System with a single Output the two Inputs may be connected in parallel. If two Outputs are available from the Device use both independently for redundancy. The Setup Instructions on this document must be followed exactly to ensure proper operation.



Audio Output 1 Direct and 2 Direct are Relay Protected Outputs from Audio Sources 1D and 2D. Connect these Ouputs to the Pilot's and Co-Pilot's Unswitched or Alert Tone Inputs of the installed audio system. Do Not connect Outputs 1 and 2 Direct in parallel. The Setup Instructions on this document must be followed exactly to ensure proper operation.



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- **a.** Setup Notes: Failure to follow these instructions will result in improper operation of the Audio Mixer.
  - With the circuit breaker to the mixer pulled (Off) and the audio system on, Adjust the source to Audio Source 1D and 2D so that proper level is heard at both the Pilot and Co-Pilots Headsets when the source is triggered, i.e. Master Caution. DO NOT adjust the 1D or 2D outputs of the mixer. Adjust the source to the mixer.
  - 2. With all other avionics off. Push the mixer's circuit breaker In (On). Verify visually that the Power Indicator on the mixer is on, and the Fail Indicator is off. The mixer is now in powered mode. Trigger the source for Inputs 1D and 2D. Adjust the mixer Output Adjustments 1D and 2D so that the proper level is heard in the Pilot and Co-Pilot Headsets. It should be the same as in the unpowered mode. Pull the circuit breaker to the mixer in order to verify this operation.
  - 3. Once steps 1 and 2 are completed, turn on all avionics or other sources connected to Audio Sources 3 through 8. Adjust the levels as required at Output 3 through 8 on the mixer. DO NOT change the adjustments on Outputs 1D, 2D or 3.
  - 4. After Completion of Steps 1 through 3, adjust Output 3 to the desired level required by the device connected to Output 3.



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### Section 6.0 Cable Maintenance

### 6.1 General Notes

- **a.** The installation of the Eagle Copters P139-HD Digital Audio System requires the application of accepted aircraft equipment practices, according to FAA publication, AC43.13-1B, ACCEPTABLE METHODS, TECHNIQUES AND PRACTICES, AIRCRAFT INSPECTION AND REPAIR, and the installer shall strictly comply with paragraph 428.a of that Advisory Circular.
- **b.** The requirement regarding the securing of wire bundles using nonmetallic clamps is addressed by the use of nylon cable ties. The part numbers and description of these ties is as follows:

Cat. No.	UPC	Bod Width in.	Length in.	Max. Wire Bundle Dia. in.	Military Standard Part No.	Tensile Strength lbs.
TY23M	82436	.091	3.62	.625	MS3367-4	18
TY24M	82447	.140	5.50	1.125	MS3367-5	40
TY25M	82457	.184	7.31	1.750	MS3367-1	50

### Cable Tie Selection Chart Thomas & Betts Brand

- **c.** Following the guidelines in AC43.13-1B, cable ties are attached at a maximum of 4" spacing and ties are attached to nylon cable tie anchors, as necessary.
- **d.** The configuration of the wiring and cabling will vary from aircraft to aircraft. The installation of the Eagle Copters P139-HD Digital Audio System will not change the existing wiring or cabling, but rather will utilize existing wire and cable runs and will not interfere with the existing aircraft equipment installations.



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### 6.2 Cable Maintenance

**a.** For the installation of a Digital Audio System using a G13000 Digital Router, refer to Figure 12 thru Figure 24 for detailed wiring schematic drawings G13004 (Sheets 1 -13).

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- **b.** For the installation of a Digital Audio System using a G13160 3-board Router, refer to Figure 25 thru Figure 37 for detailed wiring schematic drawings G13162 (Sheets 1-13).
- **c.** Each cable configuration and location will vary from installation to installation. Refer to notes made during installation to determine exactly where each cable is installed. Be sure to carefully document the Radios and Control panels installed and their related connections for future maintenance and troubleshooting purposes.
- **d.** If a cable needs to be repaired or replaced due to damage, refer to the appropriate cable drawing in Section 6.0. All cables should be built utilizing proper aviation practices.



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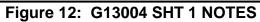
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### 6.3 Cable Construction

This draw	OARD OPTIONS: ing set applies to the G13000 Audio Router. mpatible with the G13160 3-board Audio Router.		
Dual A	000 Audio Router can be set up in one of two configurations: Audio Board system with 4 audio connectors J1, J2, J3, J4 Audio Board with 2 audio connectors J2 and J4		
Wiring dia	11 and 12 are common to all installations. Igrams for the Dual Audio Board system are found on pages 2 throug Igrams for the Single Audio Board system are found on pages 8 thro		
Wiring Dia NOTES	agram for using physical switches on G13115/G13116 control panels	are on pa	ge 13.
	Inless otherwise noted: All wires are 22 awg; all shielded wire is MIL-DTL-27500; all unshielded wire is MIL-W-22759/16.	$\Delta$	D15F connector preferred assembly consists of: Connector M24308/2-2F; Cinch backshell DA-24658-31; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conec P/N: 165X10149X. Splices on 20 AWG wire shall also be
<b>2</b> . A	All Grounding and Bonding will be I/A/W AC 43.13-1B, Chapter 1, Section 15.		20 AWG, length 3 inches maximum. Alternate assembly consists of: Kobiconn Solder-Cup Connector 156-1315T-E and Cinch backshell
	Sround the shield return to the metal connector backshell if used, or therwise to the metal connector housing.		DA-24658-31; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conec P/N: 165X10149X. Conductors shown with splices may be implemented by soldering the supply wire to both pins after soldering and impletion of the soldering the supply wire to both pins after soldering and
	SPARE KEY line function and connections are installer defined and depend on the specific system configuration.	Δ	insulating the adjacent connections. D9M connector assembly consists of: Connector M24308/4-1F; Cinch
	050M connector assembly consists of: Connector M24308/4-5F; Cinch ackshell DD-24661-34; 2ea. Cinch Screwlocks D20420-42. Alternate	<u> </u>	Demicrofine assembly consists of . Connector m24306/4-1F, Cirich backshell DE-24657-30; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conec. 165X10139X.
	Jackshell: Conec 165X10179X. 50F connector assembly consists of: Connector M24308/2-5F; Cinch ackshell: DD-24661-34; Zea. Cinch Sorewlocks D20420-42. Alternate Jackshell: Conec 165X10179X.	<u>/3</u>	The COMIDIR pin MUST be wired to an appropriate switch to control Emergency Mode for the pilot headset. Emergency Mode is mandatory when the G13000 Audio Router is used as the primary audio system. See notes on sheet 13.
└── b	99F connector assembly consists of: Connector M24308/2-1F; Cinch ackshell DE:24657-30; 2ea. Cinch Screwlocks D20419-46. Alternate lackshell: Conec 165X10139X.	<u>/</u> ]	For EC135 connect alert tone ports to TB9 of factory wiring. See Eurocopter Maint. Manual WDM for detail. For EC145 connect alert tone ports to TB55028 of factory wiring. See Eurocopter Maint. Manual WDM for detail.
	When COM1DIR (P5, Pin 10) is not grounded, the Pilot headset is in IMERGENICY mode and the following lines are diverted: HEADSET 1 connects directly to RX1, RX11 (Unswitched Alert Tones) and the emergency intercom. MIC 1 connects directly to TX 1 and the emergency Intercom. XMIT KEY 1 and PLT COW1 KEY connect to TX KEY 1. ICS KEY 1 keys the emergency intercom, if at least one Power Input Circuit Breaker to the G13000 Audio Router has power. TX11 (CXR) transmits HEADSET1, MICT and Emergency Intercom if at least one Power Input Circuit Breaker to the G13000 Audio Router has power.	A	For Bell 204, 205, 214 and 412 connect alert tone ports to 8Z1P3. See Bell Maint. Manual BHT-xx-MM for detail. SHIELDING: For shielded wire, the shield must be connected to airfame ground or connector ground as follows: For wire carrying audio signals, the shield must be grounded at one end ONLY. Grounding both ends may lead to audio noise. Audio shield ground connections should be made at the G13000 connectors but may be made at the other end at the insallers discretion. For all other shielded wire, e.g. Gnet and power, the shield must be grounded at both ends.
E	When COM2DIR (P5, Pin 11) is not grounded, the Copilot headset is in MERGENCY mode and the following lines are diverted: HEADSET 2 connects directly to RX2, RX20 (Unswitched Alert Tones) and	A	BUS CONNECTIONS: Breakers should be connected to two separate busses for redundancy. Consult installation instructions to determine appropriate bus assignments.
	the emergency intercom. MIC 2 connects directly to TX 2, and the emergency Intercom. XMIT KEY 2 and CPLT COM2 KEY connect to TX KEY 2.	A	CONTROL PANEL CONNECTIONS: Control panel J1 is the default Gnet connection, J2 is used for expansion in specific configurations only.
	ICS KEY 2 keys the emergency intercom, if at least one Power Input Circuit Breaker to the G13000 Audio Router has power. TX20 (CVR) transmits HEADSET2, MIC2 and Emergency Intercom if at least one Power Input Circuit Breaker to the G13000 Audio Router has power.	∕₳	HEADSET LO is NOT a power ground and MUST NOT be used as a ground for powered devices. MICLO may be used as a ground for low-powered devices or use an external ground connection.
ے <u>دے</u> t	ERMINAL BLOCK assembly consists of: Deutsch block CTJ122E05E; beutsch socket contacts CTS-S22/22 or M39029/22-191. A Gnet channel hat is connected to only one control panel or other device may be wired lirectly without using a terminal block.		
DEFINITIO	DNS:		
N/C:	MAKE NO CONNECTION. The pin is not connected to anything i	nternally a	nd therefore shall have no connection externally
RESERVED:	MAKE NO CONNECTION. Internal circuitry may be added in the relevant to operation for flight.	future, or i	may be present and relevant for testing but not





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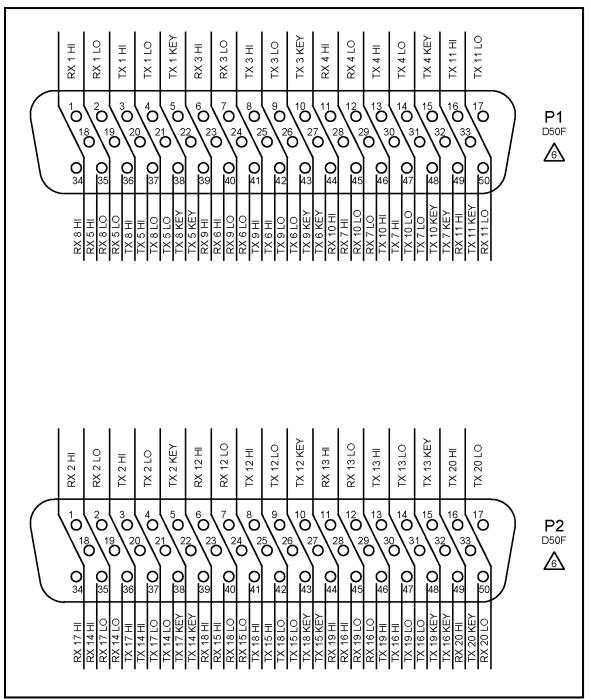


Figure 13: G13004 SHT 2 Map for P1, P2



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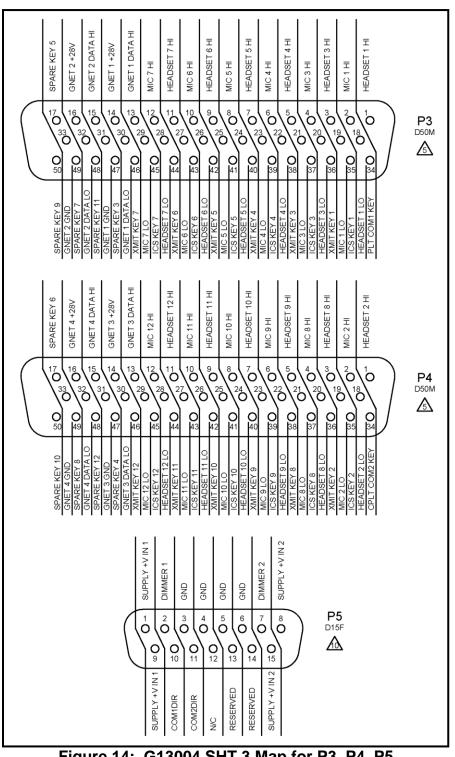


Figure 14: G13004 SHT 3 Map for P3, P4, P5



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J1		_
RX 1 HI 1 RX 1 LO 2 TX 1 HI 3 TX 1 LO 4 TX 1 KEY 5	RX HI RX LO TX HI COM1 TX LO TX KEY	
RX 3 HI 6 RX 3 LO 7 TX 3 HI 8 TX 3 LO 9 TX 3 KEY 10	RX HI RX LO TX HI XCVR3 TX LO TX KEY	
RX 4 HI 11 RX 4 LO 12 TX 4 HI 13 TX 4 LO 14 TX 4 LO 14 TX 4 KEY 15	RX HI RX LO TX HI XCVR4 TX LO TX KEY	
RX 5 HI 18 RX 5 LO 19 TX 5 HI 20 TX 5 LO 21 TX 5 KEY 22	RX HI RX LO TX HI XCVR5 TX LO TX KEY	
RX 6 HI 23 RX 6 LO 24 TX 6 HI 25 TX 6 LO 26 TX 6 LO 26 TX 6 KEY 27	RX HI RX LO TX HI XCVR6 TX LO TX KEY	
RX 7 HI 28 RX 7 LO 29 TX 7 HI 30 TX 7 LO 31 TX 7 KEY 32	RX HI RX LO TX HI XCVR7 TX LO TX KEY	
RX 8 HI 34 RX 8 LO 35 TX 8 HI 36 TX 8 LO 37 TX 8 KEY 38	RX HI RX LO TX HI XCVR8 TX LO TX KEY	
RX 9 HI 39 RX 9 LO 40 TX 9 HI 41 TX 9 LO 42 TX 9 KEY 43	RX HI RX LO TX HI XCVR9 TX LO TX KEY	
RX 10 HI 44 RX 10 LO 45 TX 10 HI 46 TX 10 LO 47 TX 10 KEY 48	RX HI RX LO TX HI XCVR10 TX LO TX KEY	
RX 11 HI 49 RX 11 LO 50 TX 11 HI 16 TX 11 LO 17 TX 11 KEY 33	RX HI Pilot's RX LO Alert Audio TX HI Pilot's TX LO CVR Out TX KEY TX KEY11	

Figure 15: G13004 SHT 4 J1 Connections



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J2	P2 D50F		
RX 2 HI 1 RX 2 LO 2 TX 2 HI 3 TX 2 LO 4 TX 2 KEY 5		RX HI RX LO TX HI COM2 TX LO TX KEY	▲
RX 12 HI 6 RX 12 LO 7 TX 12 HI 8 TX 12 LO 9 TX 12 KEY 10		RX HI RX LO TX HI XCVR12 TX LO TX KEY	
RX 13 HI 11 RX 13 LO 12 TX 13 HI 13 TX 13 LO 14 TX 13 KEY 15		RX HI RX LO TX HI XCVR13 TX LO TX KEY	
RX 14 HI 18 RX 14 LO 19 TX 14 HI 20 TX 14 LO 21 TX 14 KEY 22		RX HI RX LO TX HI XCVR14 TX LO TX KEY	
RX 15 HI 23 RX 15 LO 24 TX 15 HI 25 TX 15 LO 26 TX 15 KEY 27		RX HI RX LO TX HI XCVR15 TX LO TX KEY	
RX 16 HI 28 RX 16 LO 29 TX 16 HI 30 TX 16 LO 31 TX 16 KEY 32		RX HI RX LO TX HI XCVR16 TX LO TX KEY	
RX 17 HI 34 RX 17 LO 35 TX 17 HI 36 TX 17 LO 37 TX 17 KEY 38		RX HI RX LO TX HI XCVR17 TX LO TX KEY	
RX 18 HI 39 RX 18 LO 40 TX 18 HI 41 TX 18 LO 42 TX 18 KEY 43		RX HI RX LO TX HI XCVR18 TX LO TX KEY	
RX 19 HI 44 RX 19 LO 45 TX 19 HI 46 TX 19 LO 47 TX 19 KEY 48		RX HI RX LO TX HI XCVR19 TX LO TX KEY	
RX 20 HI 49 RX 20 LO 50 TX 20 HI 16 TX 20 LO 17 TX 20 KEY 33		RX HI     Co-Pilot's Unswitched       RX LO     Alert Audio       TX HI     Co-Pilot's CO-Pilot's       TX LO     CVR Out       TX KEY     TX KEY20	▲ 🏝

### Figure 16: G13004 SHT 5 J2 Connections



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	1 <sub>13</sub>	P3 D50M	
PLT COM1 KEY		L	A
			<u>/</u> 25
SPARE KEY 3 SPARE KEY 5			
SPARE KEY 7			
SPARE KEY 9			
SPARE KEY 11			<u>A</u>
HEADSET 1 HI HEADSET 1 LO MIC 1 HI MIC 1 LO ICS KEY 1 XMIT KEY 1	18 2 19 35		HEADSET HI HEADSET LO MIC HI MIC LO ICS KEY XMIT KEY
	20 4 21 37		HEADSET HI HEADSET LO MIC HI MIC LO ICS KEY XMIT KEY
HEADSET 4 HI HEADSET 4 LO MIC 4 HI MIC 4 LO ICS KEY 4 XMIT KEY 4	22 6 23 39		HEADSET HI HEADSET LO MIC HI MIC LO ICS KEY XMIT KEY
HEADSET 5 HI HEADSET 5 LO MIC 5 HI MIC 5 LO ICS KEY 5 XMIT KEY 5	24 8 25 41		HEADSET HI HEADSET LO MIC HI MIC LO HVS 5
	26 10 27 43		HEADSET HI HEADSET LO MIC HI MIC LO HVS 6 ICS KEY XMIT KEY
MIC 7 HI MIC 7 LO	28 12 29 45		HEADSET HI HEADSET LO MIC HI MIC LO ICS KEY XMIT KEY
			SEE GNET BRANCH INTERCONNECT DRAWING ON SHEET 12
GNET 2 DATA LO GNET 2 DATA HI GNET 2 GND GNET 2 +28V	32 15 33 16		SEE GNET BRANCH INTERCONNECT DRAWING ON SHEET 12

Figure 17: G13004 SHT 6 J3 Connections



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	J <sup>4</sup>	P4 D50M 5	
CPLT COM2 KEY	34	]	
SPARE KEY 4	47		$\overline{\mathbb{A}}$
SPARE KEY 6	17		$\overline{\mathbb{A}}$
SPARE KEY 8	49		
SPARE KEY 10	50		
SPARE KEY 12	48		$\Delta$
HEADSET 2 HI HEADSET 2 LO MIC 2 HI MIC 2 LO ICS KEY 2	18 2 19 35		HEADSET HI HEADSET LO MIC HI COPILOT MIC LO ICS KEY
XMIT KEY 2 HEADSET 8 HI HEADSET 8 LO MIC 8 HI MIC 8 LO ICS KEY 8 XMIT KEY 8	3 20 4 21 37		XMIT KEY HEADSET HI HEADSET LO MIC HI MIC LO ICS KEY XMIT KEY
HEADSET 9 HI HEADSET 9 LO MIC 9 HI MIC 9 LO ICS KEY 9 XMIT KEY 9	22 6 23 39		HEADSET HI HEADSET LO MIC HI MIC LO H/S 9 ICS KEY XMIT KEY
HEADSET 10 HI HEADSET 10 LO MIC 10 HI MIC 10 LO ICS KEY 10 XMIT KEY 10	24 8 25 41		HEADSET HI HEADSET LO MIC HI MIC LO ICS KEY XMIT KEY
HEADSET 11 HI HEADSET 11 LO MIC 11 HI MIC 11 LO ICS KEY 11 XMIT KEY 11	26 10 27 43		HEADSET HI HEADSET LO MIC HI MIC LO ICS KEY XMIT KEY
HEADSET 12 HI HEADSET 12 LO MIC 12 HI MIC 12 LO ICS KEY 12 XMIT KEY 12	28 12 29 45		HEADSET HI HEADSET LO MIC HI MIC LO ICS KEY XMIT KEY
GNET 3 DATA LO GNET 3 DATA HI GNET 3 GND GNET 3 +28V	13 31	WO WG WB WB W	SEE GNET BRANCH INTERCONNECT DRAWING ON SHEET 12
GNET 4 DATA LO GNET 4 DATA HI GNET 4 GND GNET 4 +28V	15 33		SEE GNET BRANCH INTERCONNECT DRAWING ON SHEET 12
	⊢		

Figure 18: G13004 SHT 7 J4 Connections

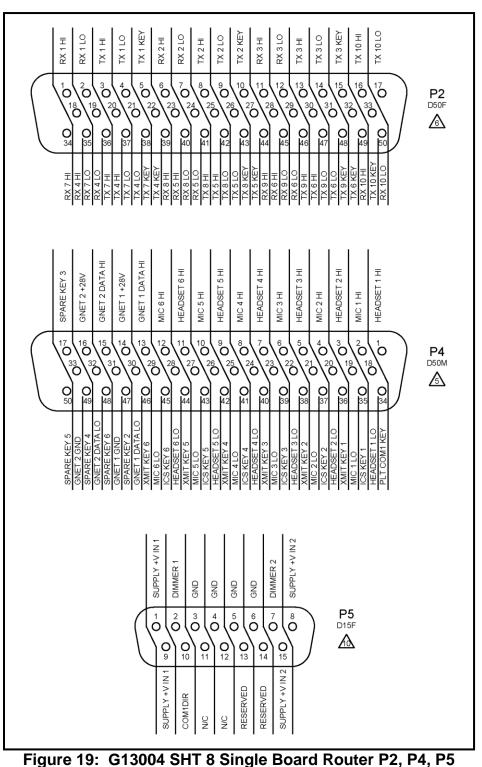


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RX 1 HI 1 RX 1 LO 2 TX 1 HI 3 TX 1 LO 4 TX 1 KEY 5	Û	RX HI RX LO TX HI COM1 TX LO TX KEY	
RX 2 HI 6 RX 2 LO 7 TX 2 HI 8 TX 2 LO 9 TX 2 KEY 10	Û	RX HI RX LO TX HI COM2 TX LO TX KEY	
RX 3 HI 11 RX 3 LO 12 TX 3 HI 13 TX 3 LO 14 TX 3 KEY 15	Û	RX HI RX LO TX HI XCVR3 TX LO TX KEY	
RX 4 HI 18 RX 4 LO 19 TX 4 HI 20 TX 4 LO 21 TX 4 KEY 22	<u> </u>	RX HI RX LO TX HI XCVR4 TX LO TX KEY	
RX 5 HI 23 RX 5 LO 24 TX 5 HI 25 TX 5 LO 26 TX 5 KEY 27	<u> </u>	RX HI RX LO TX HI XCVR5 TX LO TX KEY	
RX 6 HI 28 RX 6 LO 29 TX 6 HI 30 TX 6 LO 31 TX 6 KEY 32	<u> </u>	RX HI RX LO TX HI XCVR6 TX LO TX KEY	
RX 7 HI 34 RX 7 LO 35 TX 7 HI 36 TX 7 LO 37 TX 7 KEY 38	<u> </u>	RX HI RX LO TX HI XCVR7 TX LO TX KEY	
RX 8 HI 39 RX 8 LO 40 TX 8 HI 41 TX 8 LO 42 TX 8 KEY 43	Û	RX HI RX LO TX HI XCVR8 TX LO TX KEY	
RX 9 HI 44 RX 9 LO 45 TX 9 HI 46 TX 9 LO 47 TX 9 KEY 48		RX HI RX LO TX HI XCVR9 TX LO TX KEY	
RX 10 HI 49 RX 10 LO 50 TX 10 HI 16 TX 10 LO 17 TX 10 KEY 33	<u> </u>	RX HI RX LO TX HI TX LO TX KEY RX LO TX KEY RX KEY10	

Figure 20: G13004 SHT 9 Single Board Router J2 Connections



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	- 14	P4 D50M	
	Ť		
PLT COM1 KEY	34		- 🔊
SPARE KEY 2	47		- 🛆
SPARE KEY 3	17		- 🐴
SPARE KEY 4	49		- 4
SPARE KEY 5	50		- 4
SPARE KEY 6	48		- 🔼
HEADSET 1 HI HEADSET 1 LO MIC 1 HI MIC 1 LO ICS KEY 1 XMIT KEY 1	18 2 19 35		HEADSET HI HEADSET LO MIC HI INCS KEY XMIT KEY
HEADSET 2 HI HEADSET 2 LO MIC 2 HI MIC 2 LO ICS KEY 2 XMIT KEY 2	20 4 21 37		HEADSET HI HEADSET LO MIC LO MIC LO ICS KEY XMIT KEY
HEADSET 3 HI HEADSET 3 LO MIC 3 HI MIC 3 LO ICS KEY 3 XMIT KEY 3	22 6 23 39		HEADSET HI HEADSET LO MIC HI MIC LO H/S 2 KEY XMIT KEY
HEADSET 4 HI HEADSET 4 LO MIC 4 HI MIC 4 LO ICS KEY 4 XMIT KEY 4	24 8 25 41		HEADSET HI HEADSET LO MIC HI MIC LO ICS KEY XMIT KEY
HEADSET 5 HI HEADSET 5 LO MIC 5 HI MIC 5 LO ICS KEY 5 XMIT KEY 5	26 10 27 43		HEADSET HI HEADSET LO MIC HI MIC LO H/S 4 ICS KEY XMIT KEY
HEADSET 6 HI HEADSET 6 LO MIC 6 HI MIC 6 LO ICS KEY 6 XMIT KEY 6	28 12 29 45		HEADSET HI HEADSET LO MIC HI MIC LO HIS 5 ICS KEY XMIT KEY
GNET 1 DATA LO GNET 1 DATA HI GNET 1 GND GNET 1 GND GNET 1 +28V	13 31	V00 V05 V05 V05 V05	SEE GNET BRANCH INTERCONNECT DRAWING ON SHEET 12
GNET 2 DATA LO GNET 2 DATA HI GNET 2 GND GNET 2 +28V	15 33		SEE GNET BRANCH INTERCONNECT DRAWING ON SHEET 12

Figure 21: G13004 SHT 10 Single Board Router J4 Connections

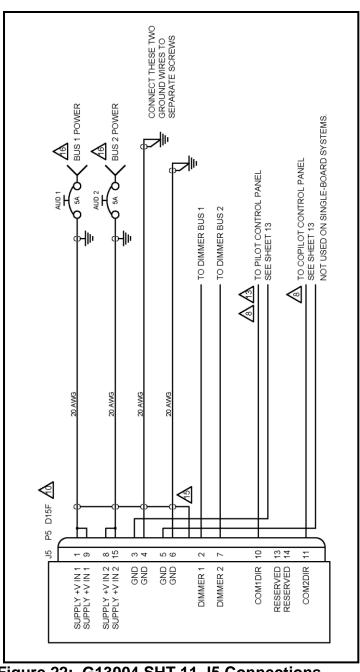


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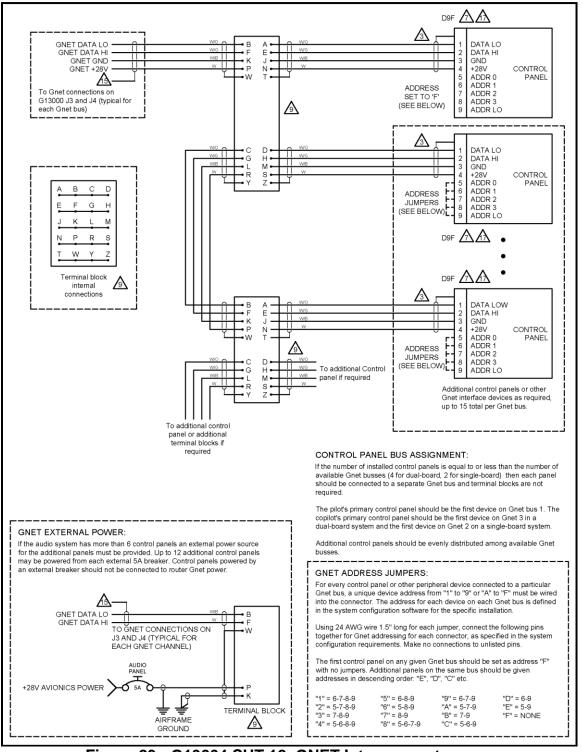
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## Figure 23: G13004 SHT 12 GNET Interconnects

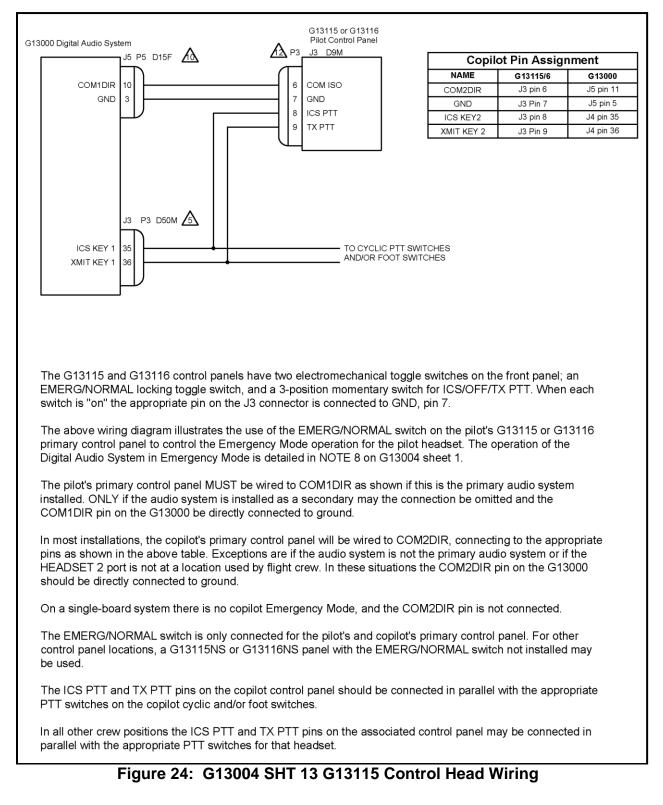


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	rawing set applies to the G13160 3-board Audio Router. t compatible with the G13000 Dual-Board or Single-Board Audio Routers.		
NOT	ES:		
1.	Unless otherwise noted: All wires are 22 awg; all shielded wire is MIL-DTL-27500; all unshielded wire is MIL-W-22759/16.	ふ	D15F connector preferred assembly consists of: Connector M24308/2-2F Cinch backshell DA-24658-31; 2ea. Cinch Screwlocks D20419-46. Altern
2.	All Grounding and Bonding will be I/A/WAC 43.13-1B, Chapter 11, Section 15.		Backshell: Conec P/N: 165X10149X. Splices on 20 AVVG wire shall also to 20 AVVG, length 3 inches maximum. Alternate assembly consists of: Kobiconn Solder-Cup Connector 156-1315T-E and Cinch backshell
∕3	Ground the shield return to the metal connector backshell if used, or otherwise to the metal connector housing.		DA-24658-31; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conce P/N: 165X10149X. Conductors shown with splices may be implemented by soldering the supply wire to both pins after soldering and
$\Delta$	SPARE KEY line function and connections are installer defined and depend on the specific system configuration.	А	insulating the adjacent connections. D9M connector assembly consists of: Connector M24308/4-1F; Cinch
∕₅∖	D50M connector assembly consists of: Connector M24308/4-5F; Cinch backshell DD-24661-34; 2ea. Cinch Screwlocks D20420-42. Alternate Backshell: Conec 165X10179X.	<u> </u>	backshell DE-24657-30; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conec 165X10139X.
∕₼	D50F connector assembly consists of: Connector M24308/2-5F; Cinch backshell DD-24661-34; 2ea. Cinch Screwlocks D20420-42. Alternate Backshell: Conec 165X10179X.	<u>/3</u>	The COM1DIR pin MUST be wired to an appropriate switch to control Emergency Mode for the pilot headset. Emergency Mode is mandatory wi the G13160 Audio Router is used as the primary audio system. See notes sheet 13.
A	D9F connector assembly consists of: Connector M24308/2-1F; Cinch backshell DE-24657-30; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conec 165X10139X.		For EC135 connect alert tone ports to TB9 of factory wiring. See Eurocop Maint Manual WDM for detail. For EC145 connect alert tone ports to TB55028 of factory wiring. See Eurocopter Maint. Manual WDM for detail.
8	<ul> <li>When COM1DIR (P7, Pin 10) is not grounded, the Pilot headset is in EMERGENCY mode and the following lines are diverted:</li> <li>HEADSET 1 connects directly to RX 1, RX 11 (Unswitched Alert Tones) and the emergency intercom.</li> <li>MIC 1 connects directly to TX 1 and the emergency Intercom.</li> <li>XMIT KEY 1 and PLT COM1 KEY connect to TX KEY 1.</li> <li>ICS KEY 1 keys the emergency intercom, if a least one Power Input Circuit Breaker to the G13160 Audio Router has power.</li> <li>TX 11 (CVR) transmits HEADSET 1, MIC 1 and Emergency Intercom if at least one Power Input Circuit Breaker to the G13160 Audio Router has power.</li> </ul>	ѧ	<ul> <li>For Bell 204, 205, 214 and 412 connect alert tone ports to 8Z1P3. See Be Maint. Manual BHT-xx-MM for detail.</li> <li>SHIELDING: For shielded wire, the shield must be connected to airframe ground or connector ground as follows:</li> <li>For wire carrying audio signals, the shield must be grounded at one en ONLY. Grounding both ends may lead to audio noise.</li> <li>Audio shield ground connections should be made at the G13160 connectors but may be made at the other end at the installers discretio</li> <li>For all other shielded wire, e.g. Gnet and power, the shield must be grounded at both ends.</li> </ul>
	<ul> <li>When COM2DIR (P7, Pin 11) is not grounded, the Copilot headset and Headset 13 are in EMERGENCY mode and the following lines are diverted:</li> <li>HEADSET 2 connects directly to RX 2, RX 20 (Unswitched Alert Tones) and the emergency intercom.</li> <li>MIC 2 connects directly to TX 2 and the emergency Intercom.</li> </ul>	∕₼	BUS CONNECTIONS: Breakers should be connected to two separate busses for redundancy. Consult installation instructions to determine appropriate bus assignments.
	XMIT KEY 2 and CPLT COM2 KEY connect to TX KEY 2.     ICS KEY 2 keys the emergency intercom, if at least one Power Input Circuit Breaker to the G13160 Audio Router has power.	₼	CONTROL PANEL CONNECTIONS: Control panel J1 is the default Gnet connection. J2 is used for expansion in specific configurations only.
	<ul> <li>TX 20 (CVR) transmits HEADSET 2, MIC 2 and Emergency Intercom if at least one Power Input Circuit Breaker to the G13160 Audio Router has power.</li> </ul>	<u>/a</u>	HEADSET LO is NOT a power ground and MUST NOT be used as a groun for powered devices. MIC LO may be used as a ground for low-powered devices or use an external ground connection.
	<ul> <li>HEADSET 13 connects directly to RX21, RX30 and the emergency intercom.</li> <li>MIC 13 connects directly to TX21 and the emergency Intercom.</li> <li>XMIT KEY 13 and HS13 TX21 KEY connect to TX KEY 21.</li> <li>ICS KEY 13 keys the emergency intercom, if at least one Power Input Circuit Breaker to the G13160 Audio Router has power.</li> <li>TX30 transmits HEADSET 13, MIC 13 and Emergency Intercom if at least one Power Input Circuit Breaker to the G13160 Audio Router has power.</li> </ul>		
♪	TERMINAL BLOCK assembly consists of: Deutsch block CTJ122E05E; Deutsch socket contacts CTS-S22/22 or M39029/22-191. A Gnet bus that is connected to only one control panel or other device may be wired directly without using a terminal block.		

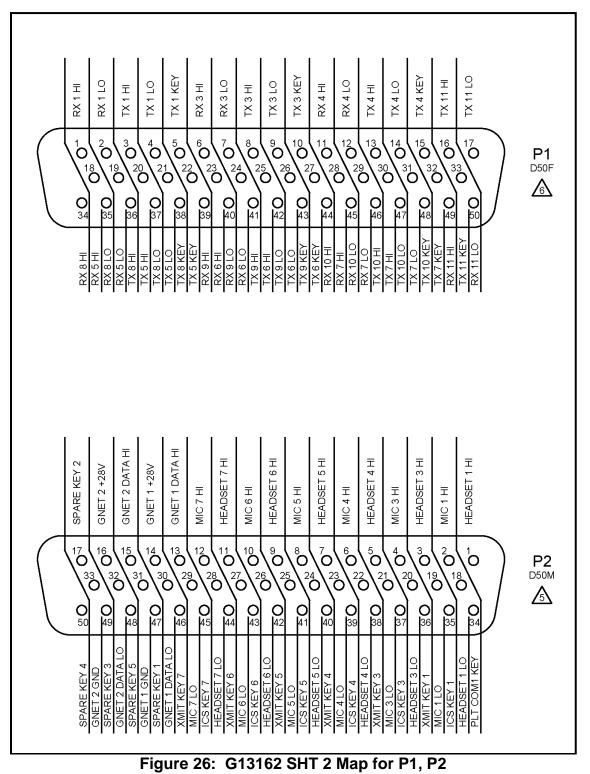


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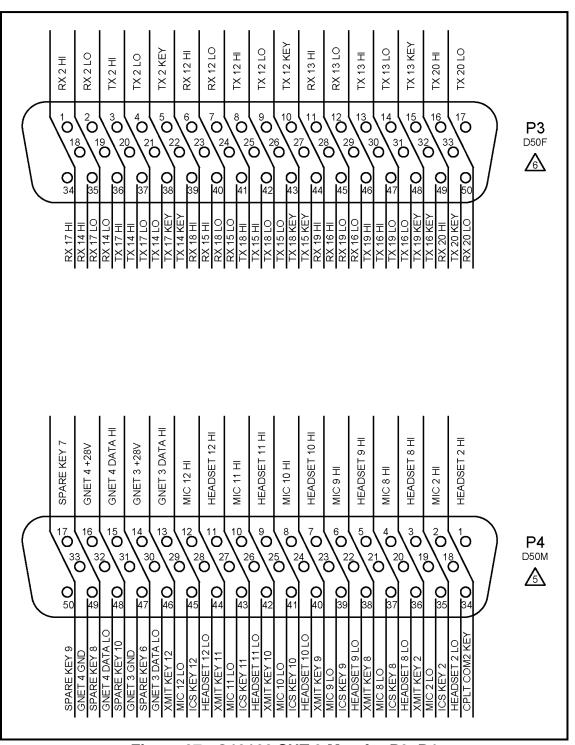


Figure 27: G13162 SHT 3 Map for P3, P4



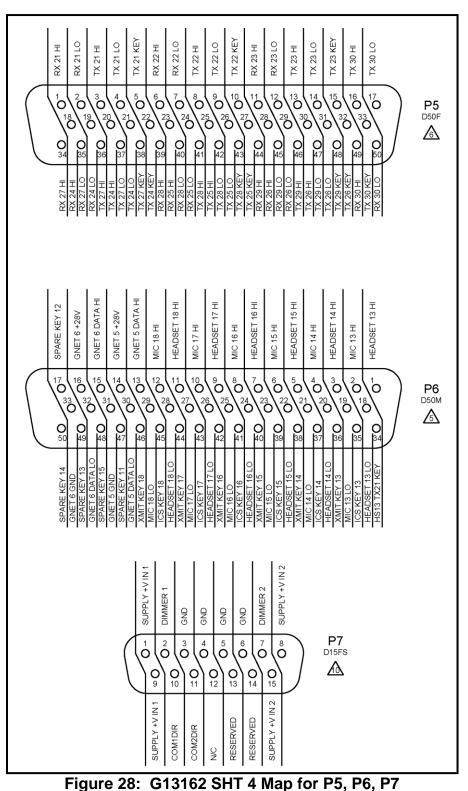
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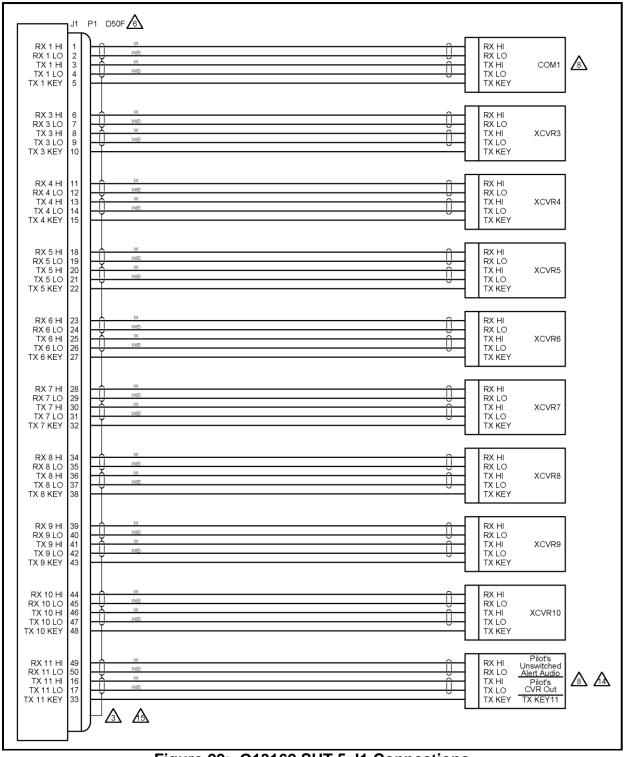


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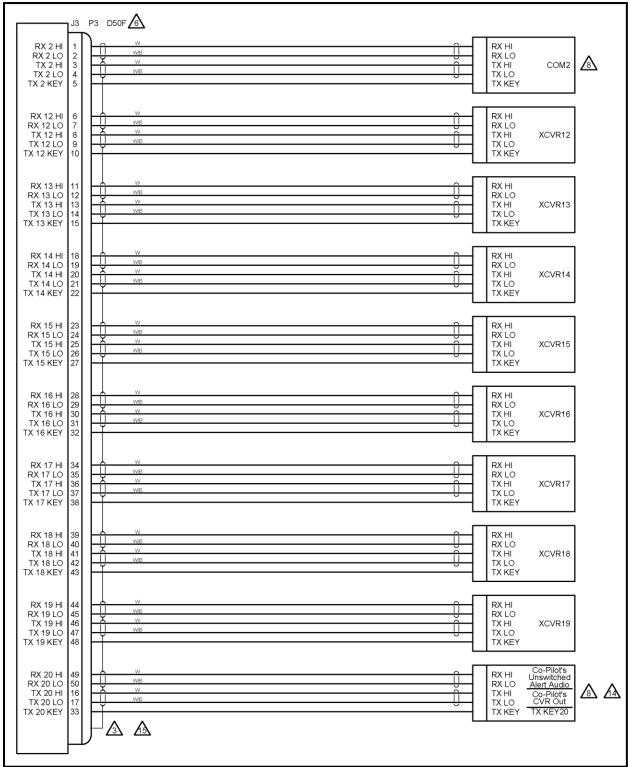
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## Figure 30: G13162 SHT 6 J3 Connections



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J5	P5 D50F	
RX 21 HI 1 RX 21 LO 2 TX 21 HI 3 TX 21 LO 4 TX 21 KEY 5		RX HI RX LO TX HI XCVR21 TX LO TX KEY
RX 22 HI 6 RX 22 LO 7 TX 22 HI 8 TX 22 LO 9 TX 22 KEY 10		RX HI RX LO TX HI XCVR22 TX LO TX KEY
RX 23 HI 11 RX 23 LO 12 TX 23 HI 13 TX 23 LO 14 TX 23 KEY 15		RX HI RX LO TX HI XCVR23 TX LO TX KEY
RX 24 HI 18 RX 24 LO 19 TX 24 HI 20 TX 24 LO 21 TX 24 KEY 22		RX HI RX LO TX HI XCVR24 TX LO TX KEY
RX 25 HI 23 RX 25 LO 24 TX 25 HI 25 TX 25 LO 26 TX 25 KEY 27		RX HI RX LO TX HI XCVR25 TX LO TX KEY
RX 26 HI 28 RX 26 LO 29 TX 26 HI 30 TX 26 LO 31 TX 26 KEY 32		RX HI RX LO TX HI XCVR26 TX LO TX KEY
RX 27 HI 34 RX 27 LO 35 TX 27 HI 36 TX 27 LO 37 TX 27 KEY 38		RX HI RX LO TX HI XCVR27 TX LO TX KEY
RX 28 HI 39 RX 28 LO 40 TX 28 HI 41 TX 28 LO 42 TX 28 KEY 43		RX HI RX LO TX HI XCVR28 TX LO TX KEY
RX 29 HI 44 RX 29 LO 45 TX 29 HI 46 TX 29 LO 47 TX 29 KEY 48		RX HI RX LO TX HI XCVR29 TX LO TX KEY
RX 30 HI 49 RX 30 LO 50 TX 30 HI 16 TX 30 LO 17 TX 30 KEY 33		RX HI Headset 13 Unswitched RX LO <u>Alert Audio</u> TX HI Headset 13 TX LO CVR Out TX KEY TX KEY30

## Figure 31: G13162 SHT 7 J5 Connections



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	- 12	RO DEAM		
		P2 D50M <u>6</u>		
PLT COM1 KEY	34			
SPARE KEY 1	47		$\Delta$	
SPARE KEY 2	17			
SPARE KEY 3	49			
SPARE KEY 4	50			
SPARE KEY 5	48		$\Delta$	
HEADSET 1 HI	1		HEADSET HI	
HEADSET 1 LO MIC 1 HI	2		HEADSET LO MIC HI MIC LO PILOT	A A
MIC 1 LO ICS KEY 1				0 10
XMIT KEY 1			XMIT KEY	
			HEADSET HI	
HEADSET 3 HI HEADSET 3 LO	20		HEADSET LO	•
MIC 3 HI MIC 3 LO			MIC HI MIC LO H/S 3	13
ICS KEY 3 XMIT KEY 3	37		ICS KEY XMIT KEY	
HEADSET 4 HI HEADSET 4 LO			HEADSET HI HEADSET LO	
MIC 4 HI	6		MICHI UISA	1
MIC 4 LO ICS KEY 4			MIC LO	
XMIT KEY 4	40	1	XMIT KEY	
HEADSET 5 HI			HEADSET HI	
HEADSET 5 LO MIC 5 HI			HEADSET LO MIC HI	Δ
MIC 5 LO ICS KEY 5	25			18
XMIT KEY 5			XMIT KEY	
HEADSET 6 HI HEADSET 6 LO	26		HEADSET HI HEADSET LO	
MIC 6 HI MIC 6 LO				13
ICS KEY 6 XMIT KEY 6	43		ICS KEY XMIT KEY	
Aun Ref 0				
HEADSET 7 HI			HEADSET HI	
HEADSET 7 LO MIC 7 HI	12		HEADSET LO MIC HI MIC LO H/S 7	12
MIC 7 LO ICS KEY 7				10
XMIT KEY 7		1	XMIT KEY	
GNET 1 DATA LO	30	wio	SEE GNET BRANCH	
GNET 1 DATA HI GNET 1 GND	13	W/G W/B	INTERCONNECT	
GNET 1 +28V		V w	DRAWING ON SHEET	12
		WED		
GNET 2 DATA LO GNET 2 DATA HI	15	W/G	SEE GNET BRANCH	
GNET 2 GND GNET 2 +28V			DRAWING ON SHEET	12
	Ш	ГA A		
L	J			

# Figure 32: G13162 SHT 8 J2 Connections



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<b></b>	1 <sup>J4</sup>	P4 D50M				
	Π	)			٨	
CPLT COM2 KEY						
SPARE KEY 6	47					
SPARE KEY 7	17					
SPARE KEY 8	49					
SPARE KEY 9	50					
SPARE KEY 10	48				4	
HEADSET 2 HI	1	W WR			HEADSET HI	1
HEADSET 2 LO MIC 2 HI	18 2	Xw		<u> </u>	HEADSET LO MIC HI	
MIC 2 LO	19	Y WB		Ū	MICLO COPILOT	<u> 787 48</u>
ICS KEY 2 XMIT KEY 2					ICS KEY XMIT KEY	
						1
HEADSET 8 HI HEADSET 8 LO		WB WB		- î	HEADSET HI HEADSET LO	
MIC 8 HI	4	W W/B			MIC HI LICE O	A
MIC 8 LO ICS KEY 8				0	MIC LO ICS KEY	
XMIT KEY 8	38			[	XMIT KEY	
HEADSET 9 HI	5	w w			HEADSET HI	1
HEADSET 9 LO	22	X WB			HEADSET LO	•
MIC 9 HI MIC 9 LO	23	W/B		Û	MIC HI H/S 9	<u>/à</u>
ICS KEY 9 XMIT KEY 9					ICS KEY XMIT KEY	
				L		1
HEADSET 10 HI	7	WB WB			HEADSET HI	
HEADSET 10 LO MIC 10 HI	24 8	X w			HEADSET LO MIC HI	Δ
MIC 10 LO ICS KEY 10	25 41	₩B Y		U	MIC LO H/S 10 ICS KEY	<u>18</u>
XMIT KEY 10					XMIT KEY	
				. r		1
HEADSET 11 HI HEADSET 11 LO		W/B		Û	HEADSET HI HEADSET LO	
MIC 11 HI MIC 11 LO				Û	MIC HI MIC LO H/S 11	
	43				ICS KEY XMIT KEY	
AWIT KET TI	44				AMIT KET	J
HEADSET 12 HI	11	w			HEADSET HI	1
HEADSET 12 LO MIC 12 HI	28	X w		U	HEADSET LO	
MIC 12 LO	29	W/B			MICLO H/S 12	<u>18</u>
ICS KEY 12 XMIT KEY 12					ICS KEY XMIT KEY	
					I	,
GNET 3 DATA LO GNET 3 DATA HI		W/O W/G			SEE GNET BRANCH	
GNET 3 GND	31	W/B				T 40
GNET 3 +28V	14	ΓΫ́			DRAWING ON SHEE	1 12
GNET 4 DATA LO	32	W/O				
GNET 4 DATA HI GNET 4 GND	15	W/G W/B			SEE GNET BRANCH INTERCONNECT	
GNET 4 GND GNET 4 +28V	33 16	Ц w Y			DRAWING ON SHEE	T 12
	$\vdash$					
	-					

# Figure 33: G13162 SHT 9 J4 Connections



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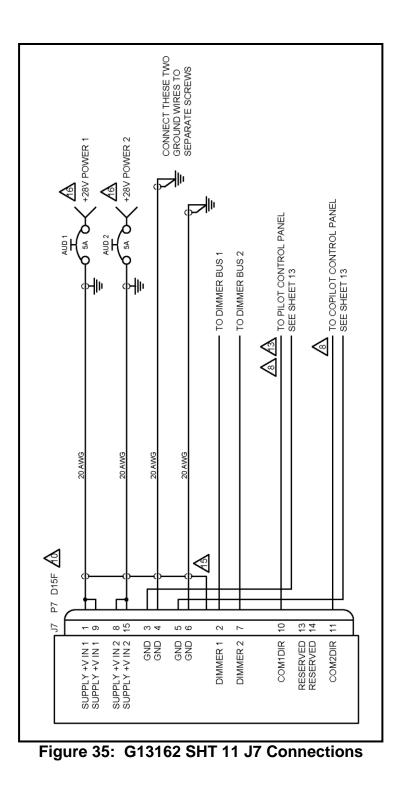
	J6	P6 D50M		
	$\square$			
HS13 TX21 KEY	34			· 🔊
SPARE KEY 11	47			
SPARE KEY 12	17			$\cdot \Delta$
SPARE KEY 13	49			· <u>A</u>
SPARE KEY 14	50			· <u>A</u>
SPARE KEY 15	48			· 🛆
			~	HEADSET HI
HEADSET 13 HI HEADSET 13 LO	1 18		) d=	HEADSET LO
MIC 13 HI MIC 13 LO	2 19	U WB	-U	
ICS KEY 13 XMIT KEY 13				ICS KEY XMIT KEY
XIIII KET IS	00		I	
HEADSET 14 HI	3		n	HEADSET HI
HEADSET 14 LO MIC 14 HI	20 4	X w	č	
MIC 14 LO ICS KEY 14	21	T with	Û	MIC LO H/S 14
XMIT KEY 14				XMIT KEY
HEADSET 15 HI HEADSET 15 LO	5 22	W/B	Û	HEADSET HI HEADSET LO
MIC 15 HI MIC 15 LO	6 23		- Î	
ICS KEY 15	39		0	ICS KEY
XMIT KEY 15	40			XMIT KEY
HEADSET 16 HI	7			HEADSET HI
	24		Ŭ	
MIC 16 LO	25	W/B W/B	<u>U</u>	MICLO H/S 16 ZIS
ICS KEY 16 XMIT KEY 16	41 42			ICS KEY XMIT KEY
HEADSET 17 HI HEADSET 17 LO			Î	HEADSET HI HEADSET LO
MIC 17 HI	10		ñ	
MIC 17 LO ICS KEY 17	43		0	
XMIT KEY 17	44			XMIT KEY
HEADSET 18 HI			~	HEADSET HI
HEADSET 18 LO	28			HEADSET LO
MIC 18 HI MIC 18 LO		Ū we	Û	MIC HI H/S 18
ICS KEY 18 XMIT KEY 18				ICS KEY XMIT KEY
			I	
GNET 5 DATA LO				SEE GNET BRANCH
GNET 5 DATA HI GNET 5 GND	13 31	WB		INTERCONNECT
GNET 5 +28V				DRAWING ON SHEET 12
		wo		
GNET 6 DATA LO GNET 6 DATA HI		W/G		SEE GNET BRANCH
GNET 6 GND GNET 6 +28V	33 16			DRAWING ON SHEET 12
	Ш	$f \Delta \Delta$		
L	1			

# Figure 34: G13162 SHT 10 J6 Connections



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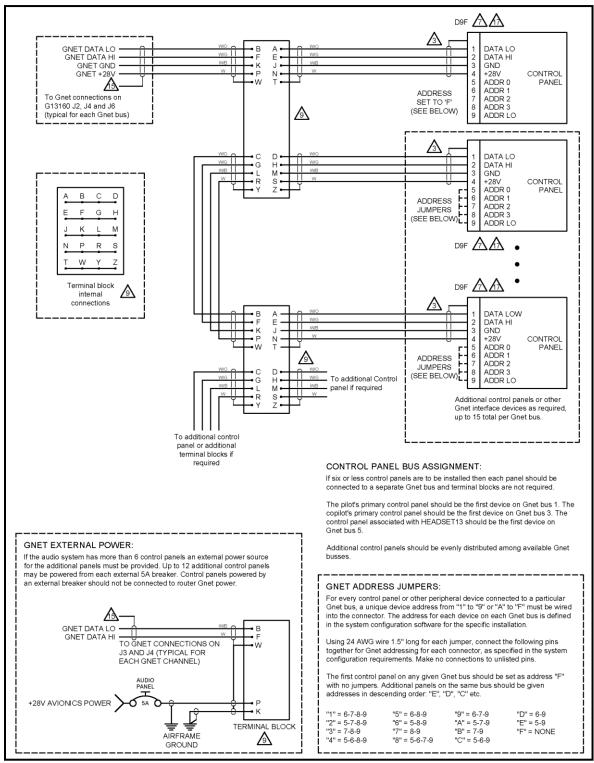


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## Figure 36: G13162 SHT 12 GNET Interconnects



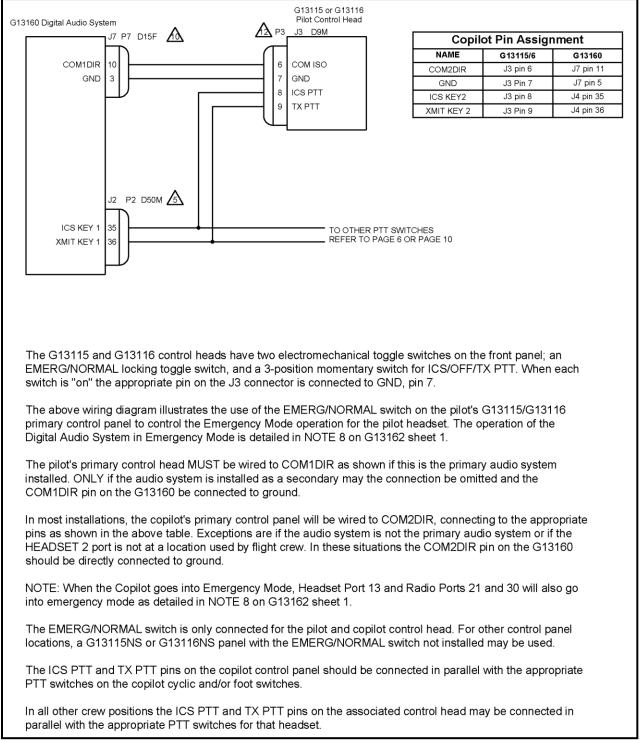
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## Figure 37: G13162 SHT 13 G13115 Control Head Wiring



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## Section 7.0 <u>Audio System Testing</u>

NOTE

Anytime a Router or Control Panel has been replaced complete a full Audio System Load Analysis, Audio System Functional Check and a Final Inspection as described in Section 7.0.

## 7.1 Audio System Load Analysis

- **a.** At the completion of the installation of the audio system, the installer shall perform a load analysis test of the electrical branch circuit (buss) that powers the audio system, and also the entire aircraft electrical load, to confirm that the addition of the audio system will not cause an overload to the electrical branch circuit or the aircraft generator.
- **b.** The current shall be measured using a properly calibrated clamp on ammeter, Amprobe Instrument model number ACDC-600A, or equivalent.
- **c.** Perform the branch circuit load analysis test by powering up all equipment that is intended to be operated at the same time on the branch circuit that the audio system is connected to. Additionally, key the three highest power communication transmitters at the same time, if possible, while the current measurements are being taken.
- **d.** Measure the current of the branch circuit powering the audio system, by clamping the meter around the branch circuit wire near its origin at the aircraft master electrical distribution box. Confirm that the current draw during the above described test conditions is less than the current limiter (fuse or circuit breaker) rating for that branch circuit.
- e. If the current draw is greater than the current limiter rating, it becomes the installer's responsibility to re-distribute enough of the other equipment powered by this branch circuit to another suitable branch circuit, in order to reduce the load on the audio system's branch circuit to less than the current limiter rating.



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f. Once the branch circuit loads are within limits, test the current load for the entire aircraft while all power for the aircraft is being supplied by the aircraft generator. Perform this load analysis test by powering up all equipment on the aircraft that is intended to be operated at the same time as the audio system. Additionally, key the three highest power communication transmitters at the same time, if possible, while the current measurements are being taken. Clamp the ammeter around the generator output wire near the point that it enters the aircraft master electrical distribution box. Confirm that the current draw during the above described test is less than the generator system rating.

## 7.2 Audio System Functional Check

- **a.** Perform a check of all power and ground leads to confirm they are connected properly before applying power to the system. Incorrect wiring may cause damage to the units.
- b. Connect headset adapter cables, headsets and switches. Apply power to audio system, radios and related accessories. Activate ICS and confirm proper operation. Place the Pilot 'EMERG/NORMAL' switch in the 'EMERG' position.
  - **1.** Confirm clear reception of COM1 audio in pilot headset.
  - 2. Key transmit switch and confirm proper operation of COM1.
  - **3.** If installed, key COM1 direct transmit switch and confirm proper operation of COM1.
  - 4. Confirm aircraft native alert tones are heard in the pilot headset.
  - 5. Confirm Pilot mic audio to the CVR or other always-on output (if installed).
- **c.** Place Co-Pilot 'EMERG/NORMAL' switch in the 'EMERG' position, repeat step b. for the Co-Pilots installation with COM2.
- d. If testing the three-board Digital Audio System, repeat step b. for Headset Port #13 with the Co-Pilot 'EMERG/NORMAL' switch in the 'EMERG' position. The connections to Headset Port #13 are not standardized, so check system configuration documents for connection information.



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- e. Place both Pilot and Co-Pilot 'EMERG/NORMAL' switches in the 'EMERG' position and confirm the emergency mode intercom is operational between pilot, copilot and Headset Port #13 (if installed).
- f. Place the Pilot 'EMERG/NORMAL' switch in 'NORMAL' position and check all transceivers, receivers and audio devices. Repeat this process for the Co-Pilots 'EMERG/NORMAL' switch.
- **g.** Check all pilot, copilot and passenger audio control panels for proper operation
- h. Perform run-up of aircraft to verify proper operation of all control heads, radios, and headset locations. Perform test of aircraft alert tones and verify their presence, proper threshold, and proper audio level. Do not test fly aircraft if any aircraft native alert tone is not performing properly. Correct any defects noted and re-test prior to any test flight.

## 7.3 Final Inspection

Perform final inspection of installation confirming:

- **a.** There are no chafing issues.
- **b.** There are no mechanical interference issues.
- c. Security of fasteners.
- d. Removal of all tools.
- e. Chips, shavings and other debris are removed.
- f. Proper reassembly of aircraft.
- g. Aircraft is airworthy prior to returning to service



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## Section 8.0 Weight and Balance

Router G13000 = 5.0 lbs @ STA 5670. Router G13160 = 6.0 lbs @ STA 5670. Mounting Tray G13009 and Hardware = 0.5 lbs @ STA 5670 Mounting Tray G13161 and Hardware = 0.5 lbs @ STA 5670 Control Panel G13115 = 1.5 lbs @ STA 2125 Control Panel G13115NS = 1.5 lbs @ STA 2125 Control Panel G13116 = 1.3 lbs @ STA 2125 Control Panel G13116NS = 1.3 lbs @ STA 2125

Refer to the helicopter's installed equipment list for the recorded location.