

## AUDIO BOARD OPTIONS:

This drawing set applies to the G13160 3-board Audio Router.  
It is not compatible with the G13000 Dual-Board or Single-Board Audio Routers.

### NOTES:

1. Unless otherwise noted: All wires are 22 awg; all shielded wire is MIL-DTL-27500; all unshielded wire is MIL-W-22759/16.
  2. All Grounding and Bonding will be I/A/W AC 43.13-1B, Chapter 11, Section 15.
3. Ground the shield return to the metal connector backshell if used, or otherwise to the metal connector housing.
4. SPARE KEY line function and connections are installer defined and depend on the specific system configuration.
5. D50M connector assembly consists of: Connector M24308/4-5F; Cinch backshell DD-24661-34; 2ea. Cinch Screwlocks D20420-42. Alternate Backshell: Conec 165X10179X.
6. D50F connector assembly consists of: Connector M24308/2-5F; Cinch backshell DD-24661-34; 2ea. Cinch Screwlocks D20420-42. Alternate Backshell: Conec 165X10179X.
7. D9F connector assembly consists of: Connector M24308/2-1F; Cinch backshell DE-24657-30; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conec 165X10139X.
8. When COM1DIR (P7, Pin 10) is not grounded, the Pilot headset is in EMERGENCY mode and the following lines are diverted:
  - HEADSET 1 connects directly to RX 1, RX 11 (Unswitched Alert Tones) and the emergency intercom.
  - MIC 1 connects directly to TX 1 and the emergency Intercom.
  - XMIT KEY 1 and PLT COM1 KEY connect to TX KEY 1.
  - ICS KEY 1 keys the emergency intercom, if at least one Power Input Circuit Breaker to the G13160 Audio Router has power.
  - 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.
- When COM2DIR (P7, Pin 11) is not grounded, the Copilot headset and Headset 13 are in EMERGENCY mode and the following lines are diverted:
  - HEADSET 2 connects directly to RX 2, RX 20 (Unswitched Alert Tones) and 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.
  - ICS KEY 2 keys the emergency intercom, if at least one Power Input Circuit Breaker to the G13160 Audio Router has power.
  - 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.
- HEADSET 13 connects directly to RX21, RX30 and the emergency intercom.
  - MIC 13 connects directly to TX21 and the emergency Intercom.
  - XMIT KEY 13 and HS13 TX21 KEY connect to TX KEY 21.
  - ICS KEY 13 keys the emergency intercom, if at least one Power Input Circuit Breaker to the G13160 Audio Router has power.
  - TX30 transmits HEADSET 13, MIC 13 and Emergency Intercom if at least one Power Input Circuit Breaker to the G13160 Audio Router has power.
9. 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.



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 20 AWG, length 3 inches maximum. Alternate assembly consists of: Kobiconn Solder-Cup Connector 156-1315T-E and Cinch backshell 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 insulating the adjacent connections.



D9M connector assembly consists of: Connector M24308/4-1F; Cinch backshell DE-24657-30; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conec 165X10139X.



The COM1DIR pin MUST be wired to an appropriate switch to control Emergency Mode for the pilot headset. Emergency Mode is mandatory when the G13160 Audio Router is used as the primary audio system. See notes on sheet 13.



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.  
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 airframe 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 G13160 connectors but may be made at the other end at the installers discretion.
- For all other shielded wire, e.g. Gnet and power, the shield must be grounded at both ends.



BUS CONNECTIONS: Breakers should be connected to two separate busses for redundancy. Consult installation instructions to determine appropriate bus assignments.



CONTROL PANEL CONNECTIONS: Control panel J1 is the default Gnet connection. J2 is used for expansion in specific configurations only.




HEADSET LO is NOT a power ground and MUST NOT be used as a ground for powered devices. MIC LO may be used as a ground for low-powered devices or use an external ground connection.

REVISION			
REV	DESCRIPTION	DATE	APPROVAL
A	Added new Spare Keylines. Added note on shield grounding. Clarified notes and instructions.	4/10/15	SJC
B	Fixed P6 pin names. Changed P7 Power Supply pin names. Fixed typos on Sheet 13. Removed Flag Note 11. Added Flag Notes 16, 17 & 18. Changed breaker labels to match RFMS. Changed Gnet External Power note.	11/06/17	GA

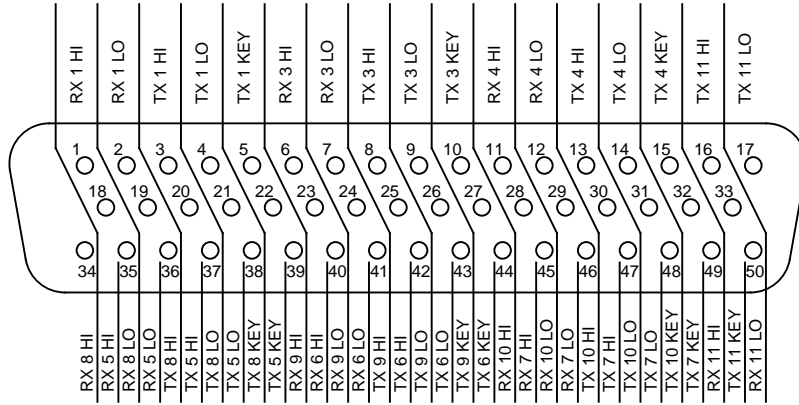
## DEFINITIONS:

N/C: MAKE NO CONNECTION. The pin is not connected to anything internally and therefore shall have no connection externally

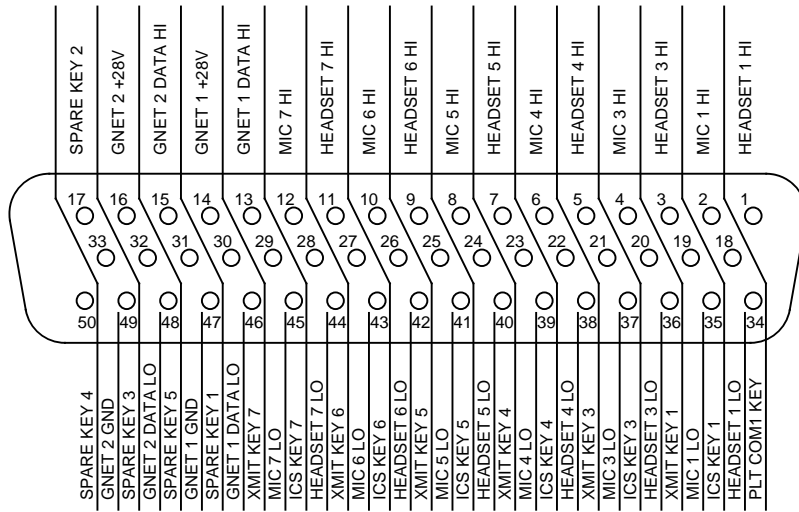
RESERVED: MAKE NO CONNECTION. Internal circuitry may be added in the future, or may be present and relevant for testing but not relevant to operation for flight.

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P1  
D50F  
△  
6

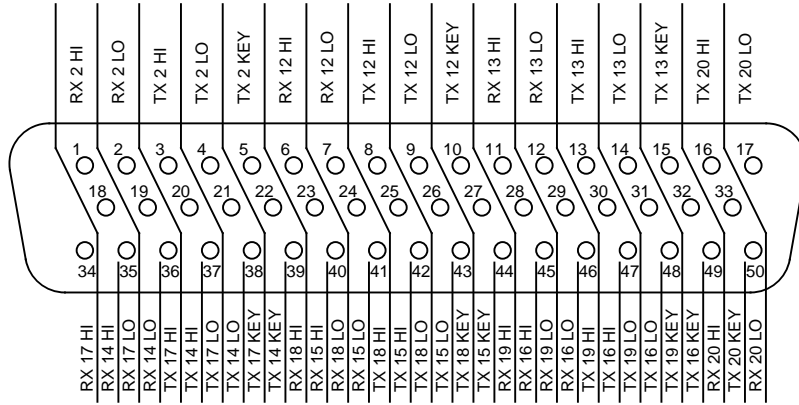


P2  
D50M  
△  
5

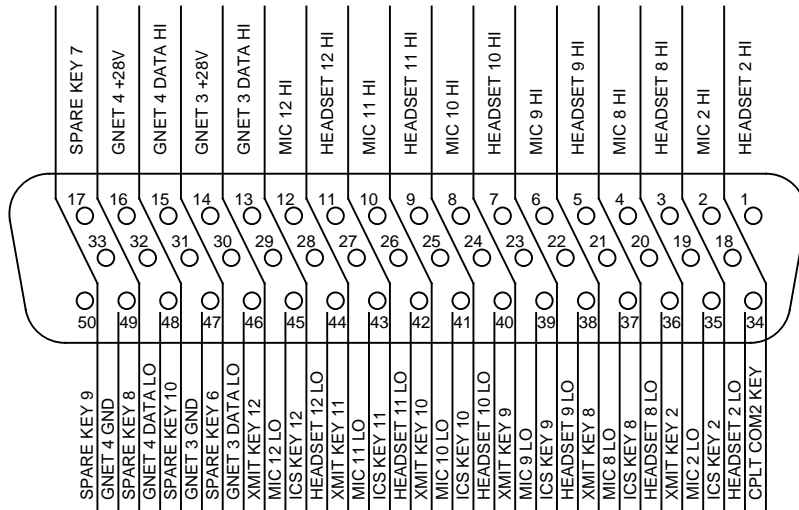
NOTE: VIEW IS FROM REAR OF AIRFRAME CONNECTOR

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	APPROVAL	CLB	DATE	3/27/14		
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P3  
D50F  
△  
6

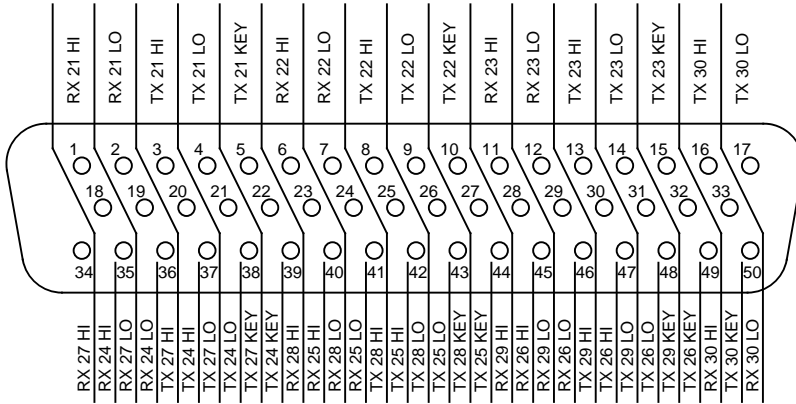


P4  
D50M  
△  
5

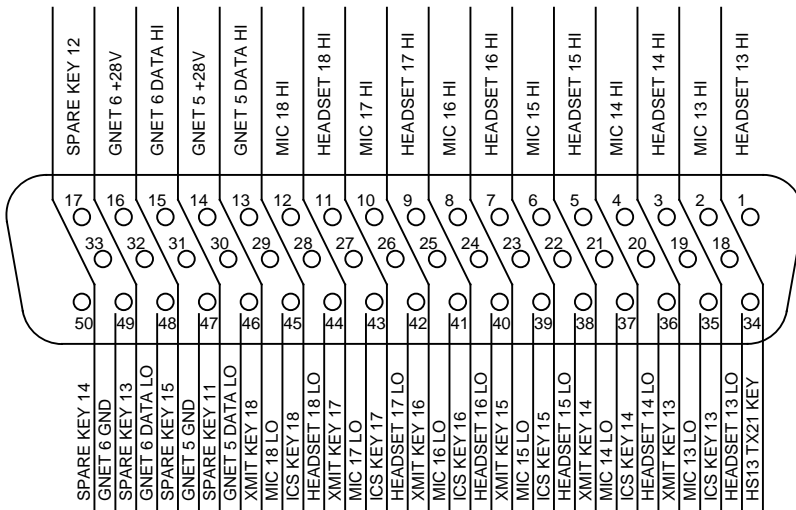
NOTE: VIEW IS FROM REAR OF AIRFRAME CONNECTOR

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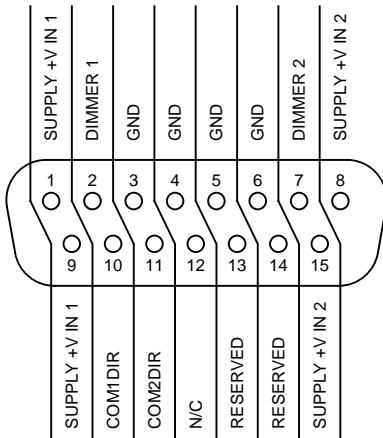
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P5  
D50F  
6




P6  
D50M  
5

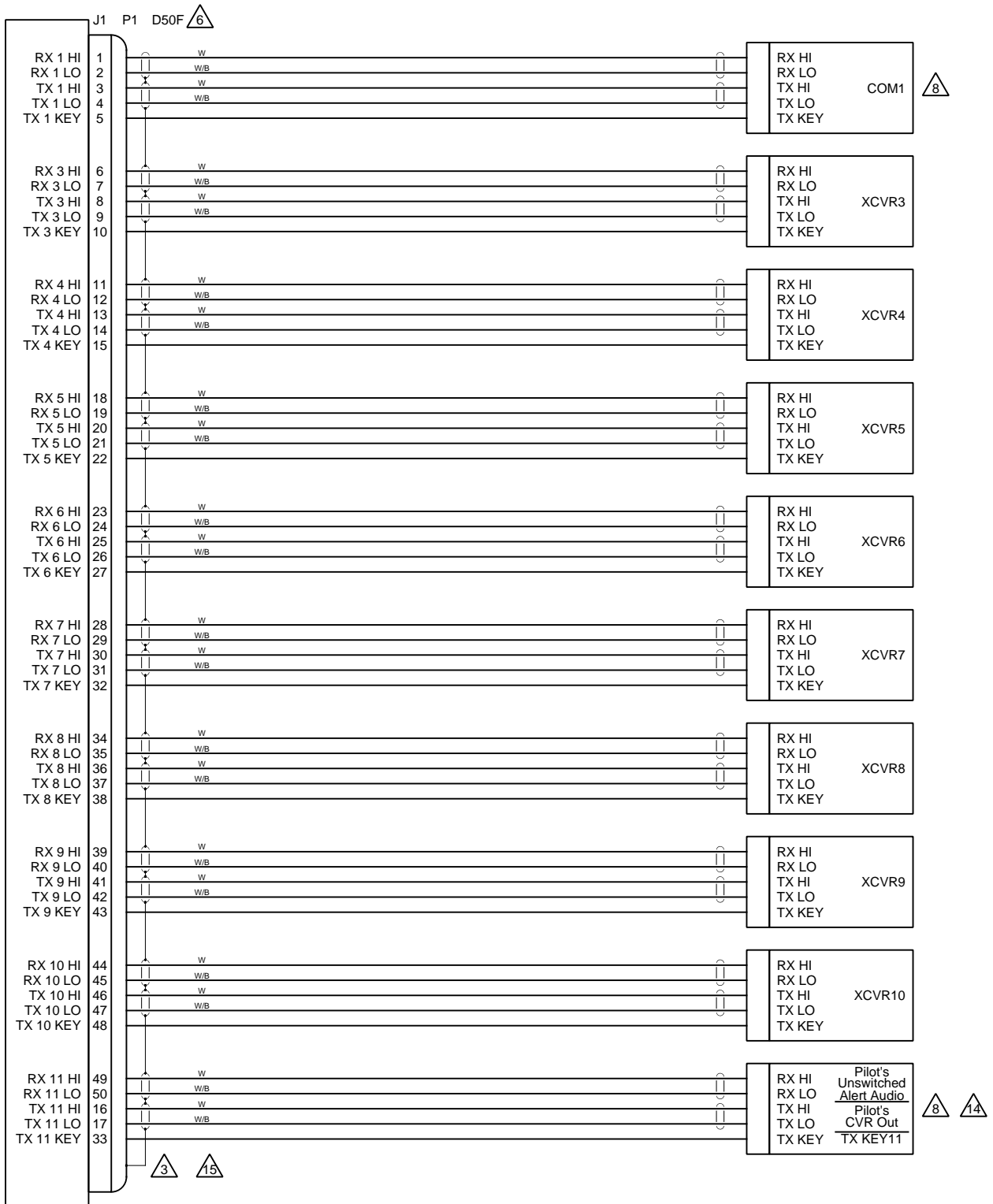


P7  
D15FS  
10

NOTE: VIEW IS FROM REAR OF AIRFRAME CONNECTOR

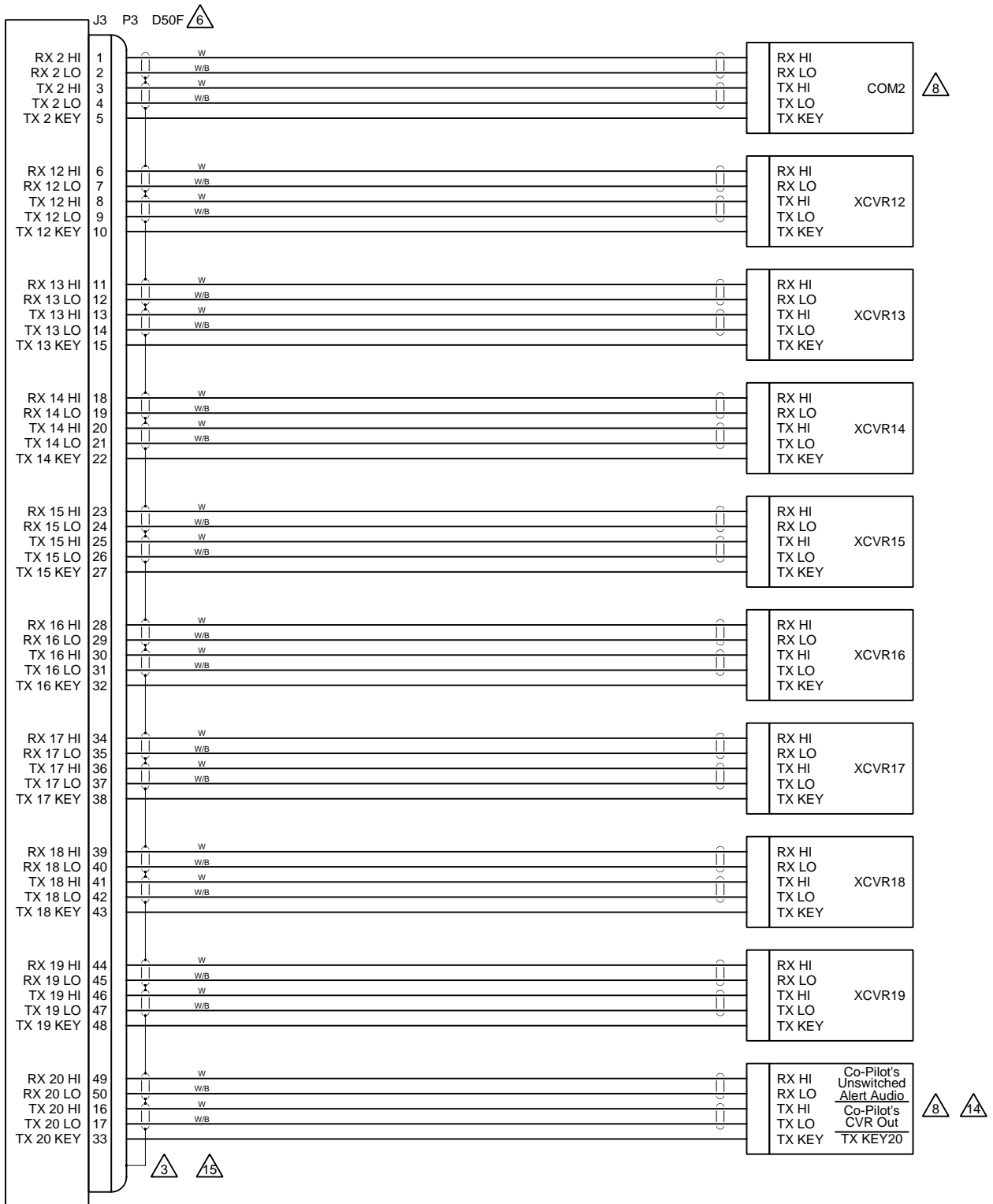
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	APPROVAL	CLB	DATE	3/27/14			
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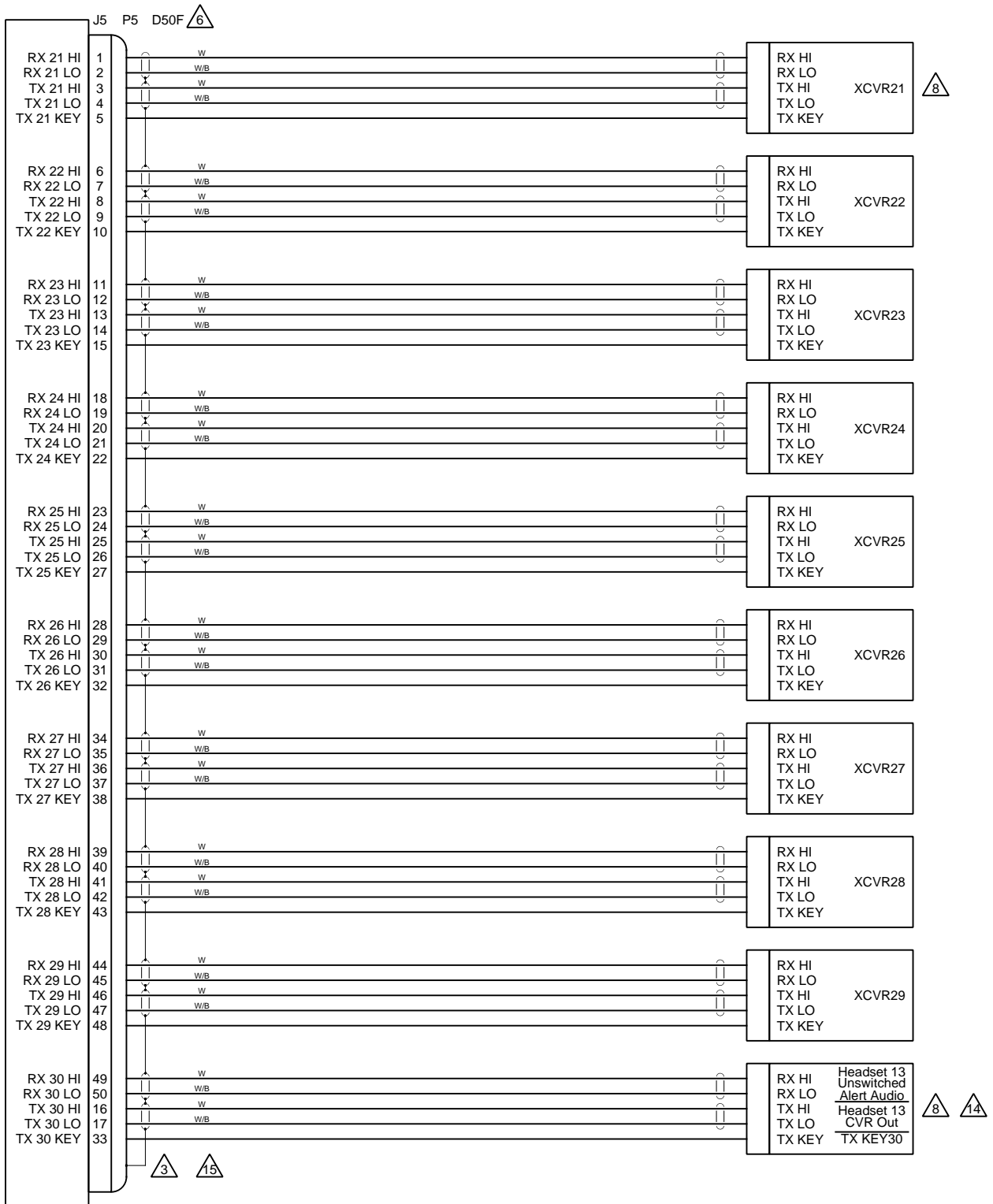
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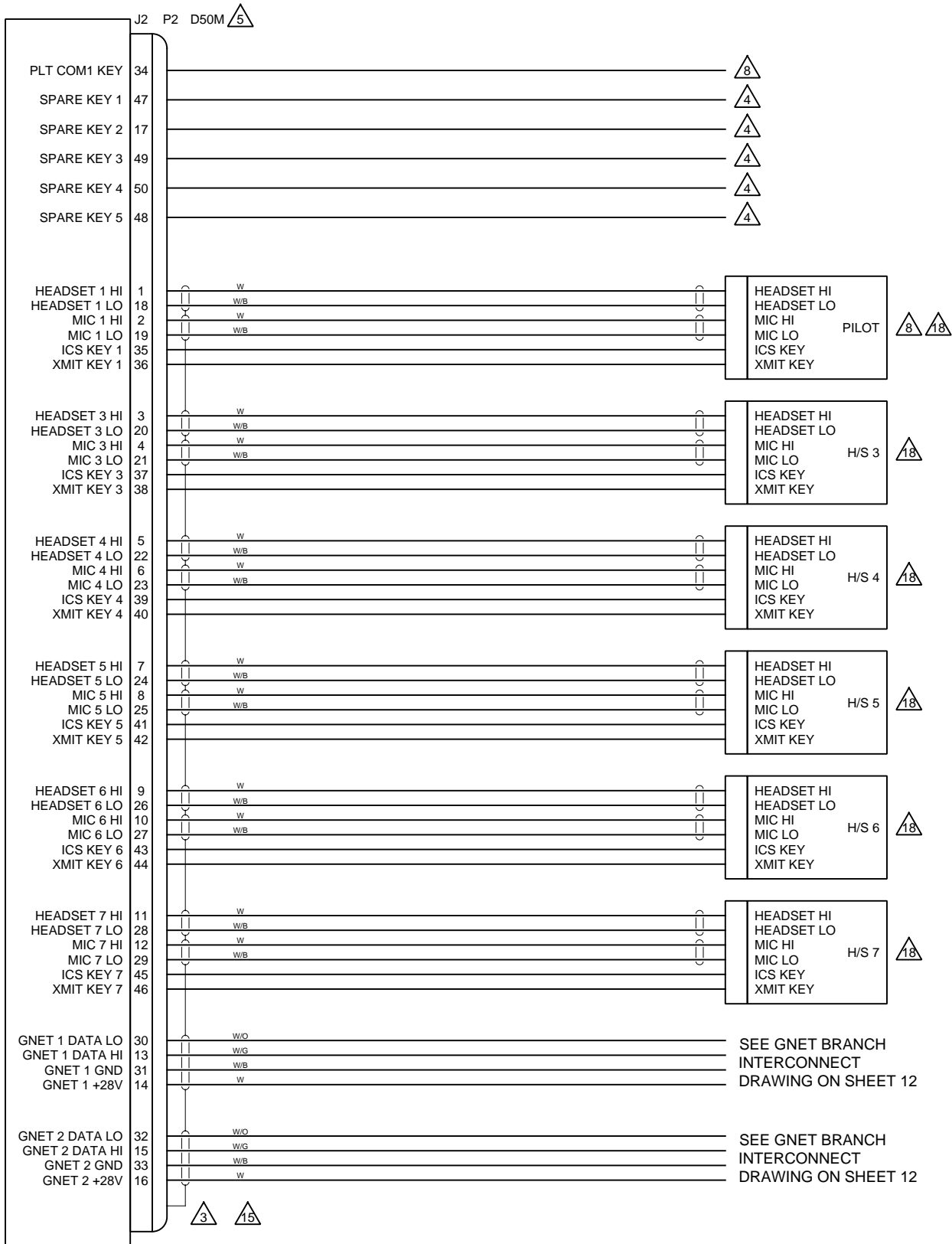
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	APPROVAL	CLB	DATE	3/27/14		
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	CHECKED	SJC	DATE	3/27/14		
	APPROVAL	CLB	DATE	3/27/14		
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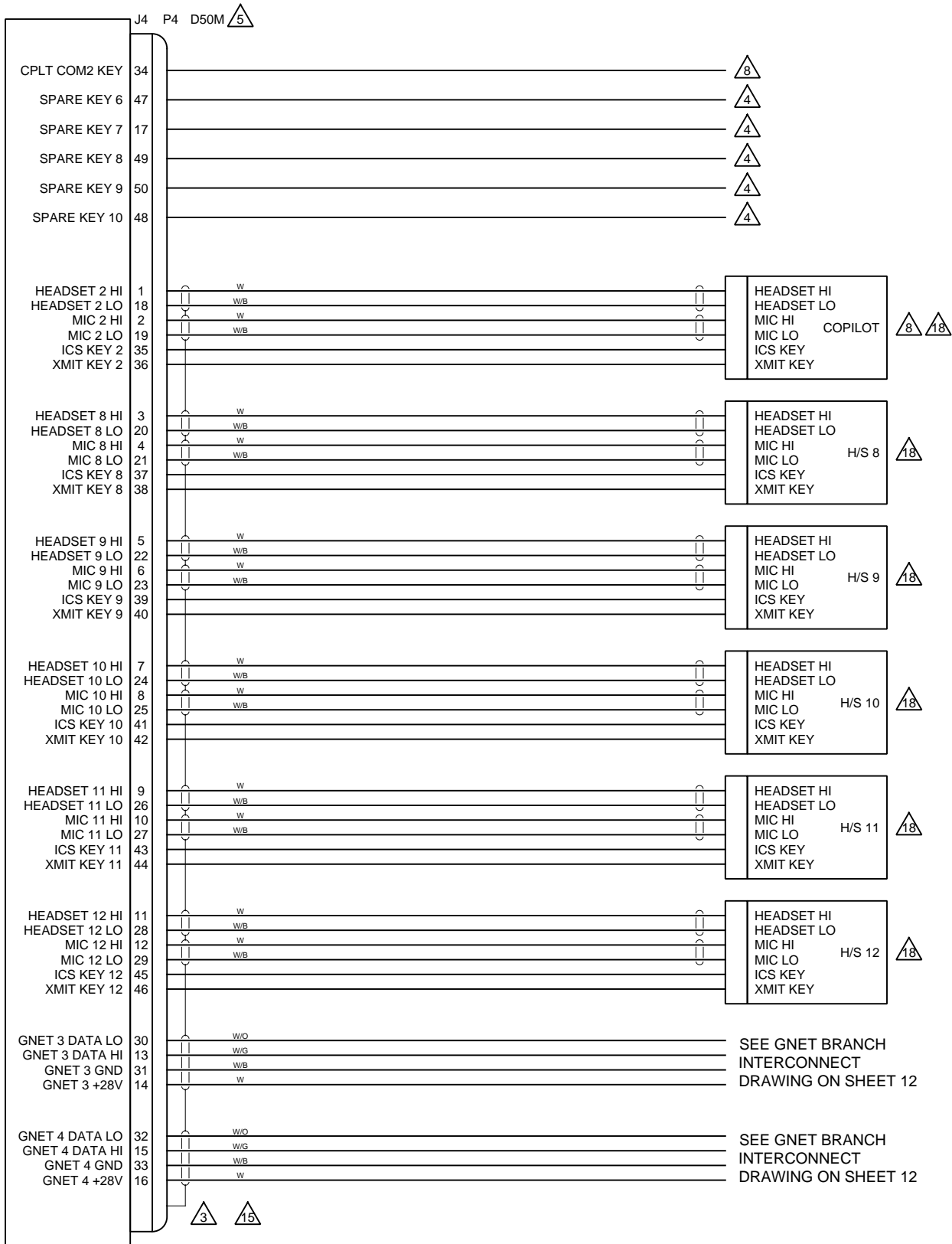
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					REV.	B

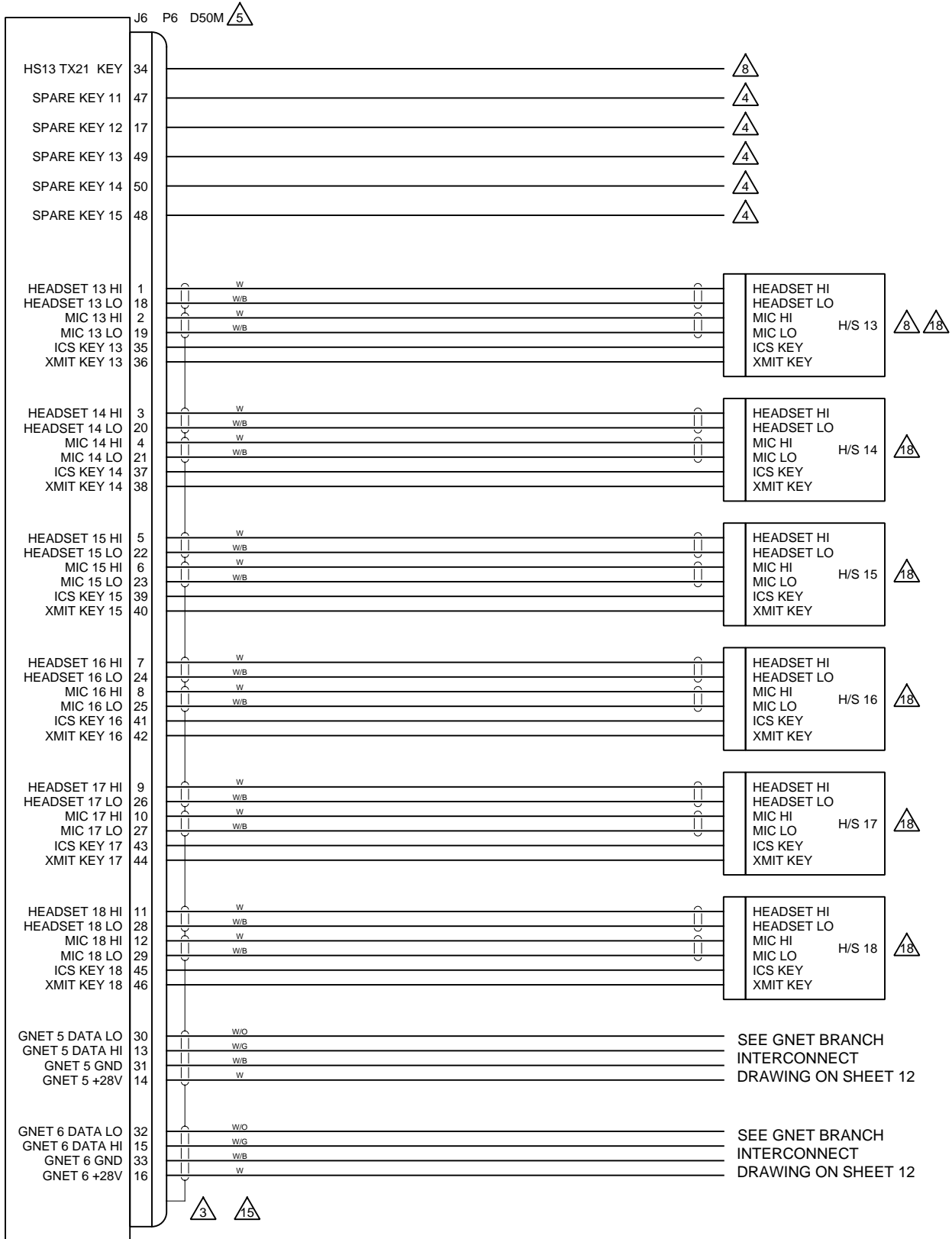


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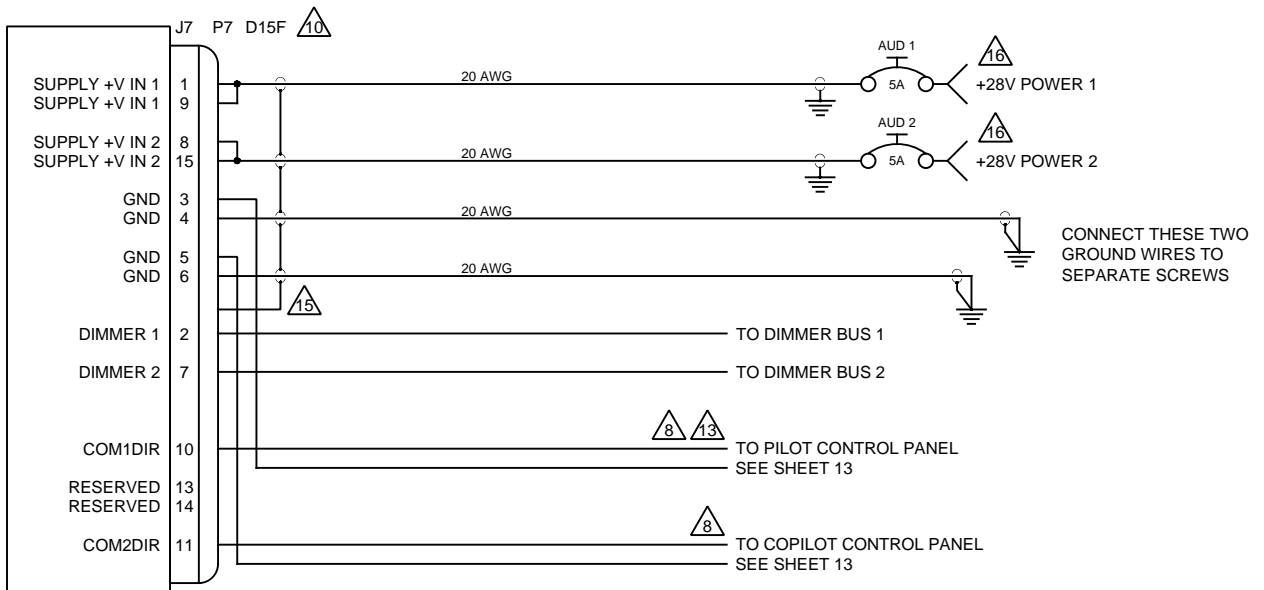
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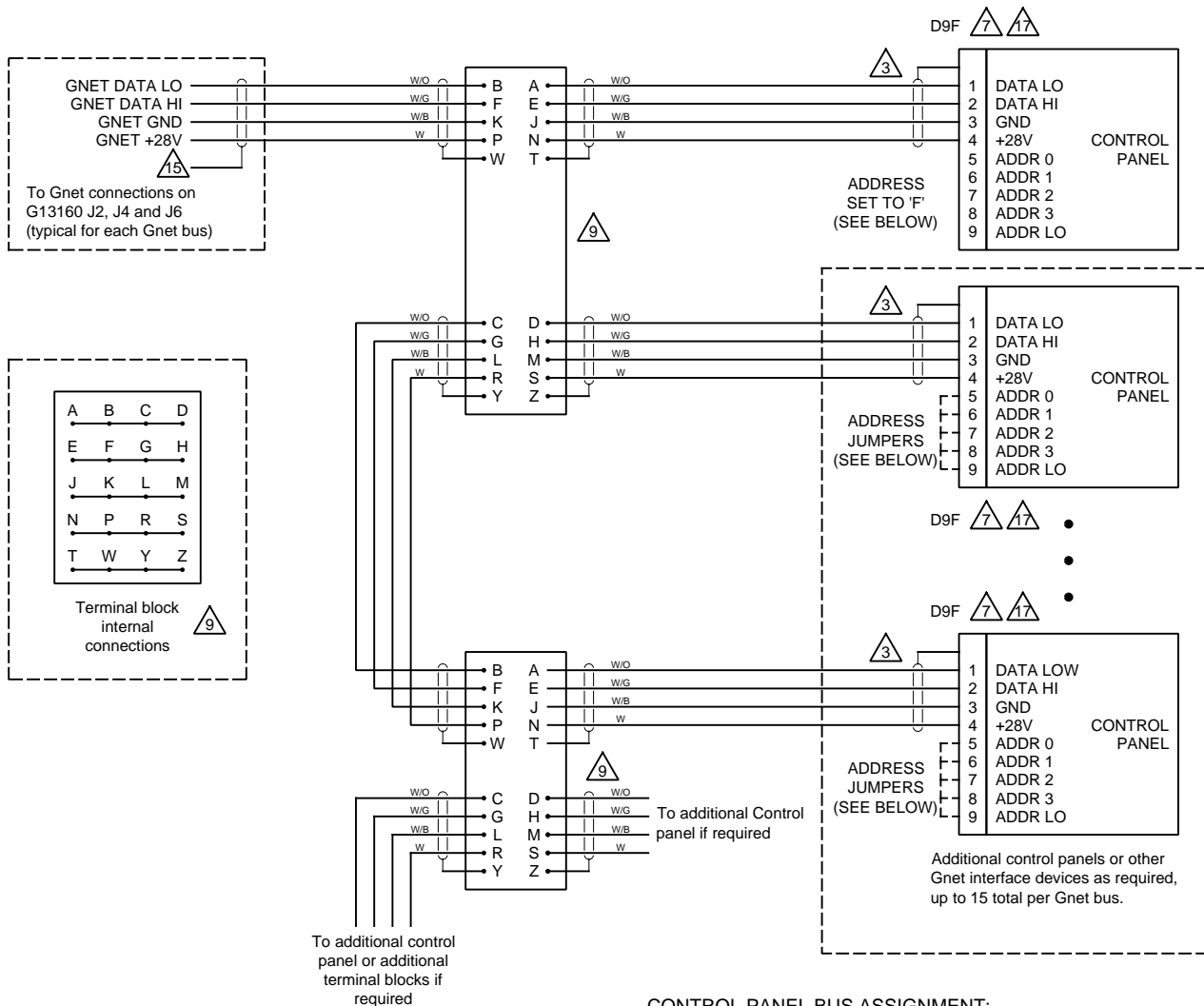
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	APPROVAL	CLB	DATE	3/27/14		
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**CONTROL PANEL BUS ASSIGNMENT:**

If six or less control panels are to be installed then each panel should be connected to a separate Gnet bus and terminal blocks are not required.

The pilot's primary control panel should be the first device on Gnet bus 1. The copilot's primary control panel should be the first device on Gnet bus 3. The control panel associated with HEADSET13 should be the first device on Gnet bus 5.

Additional control panels should be evenly distributed among available Gnet busses.

**GNET ADDRESS JUMPERS:**

For every control panel or other peripheral device connected to a particular Gnet bus, a unique device address from "1" to "9" or "A" to "F" must be wired into the connector. The address for each device on each Gnet bus is defined in the system configuration software for the specific installation.

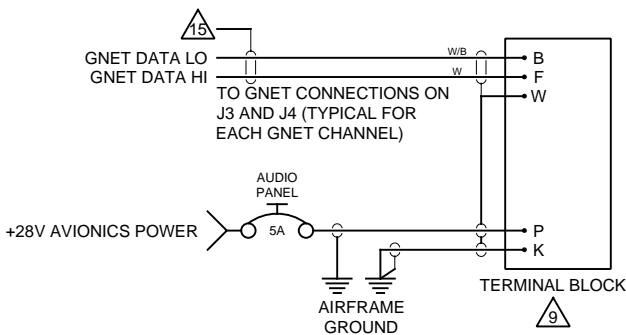
Using 24 AWG wire 1.5" long for each jumper, connect the following pins together for Gnet addressing for each connector, as specified in the system configuration requirements. Make no connections to unlisted pins.

The first control panel on any given Gnet bus should be set as address "F" with no jumpers. Additional panels on the same bus should be given addresses in descending order: "E", "D", "C" etc.

- "1" = 6-7-8-9
- "5" = 6-8-9
- "9" = 6-7-9
- "D" = 6-9
- "2" = 5-7-8-9
- "6" = 5-8-9
- "A" = 5-7-9
- "E" = 5-9
- "3" = 7-8-9
- "7" = 8-9
- "B" = 7-9
- "F" = NONE
- "4" = 5-6-8-9
- "8" = 5-6-7-9
- "C" = 5-6-9

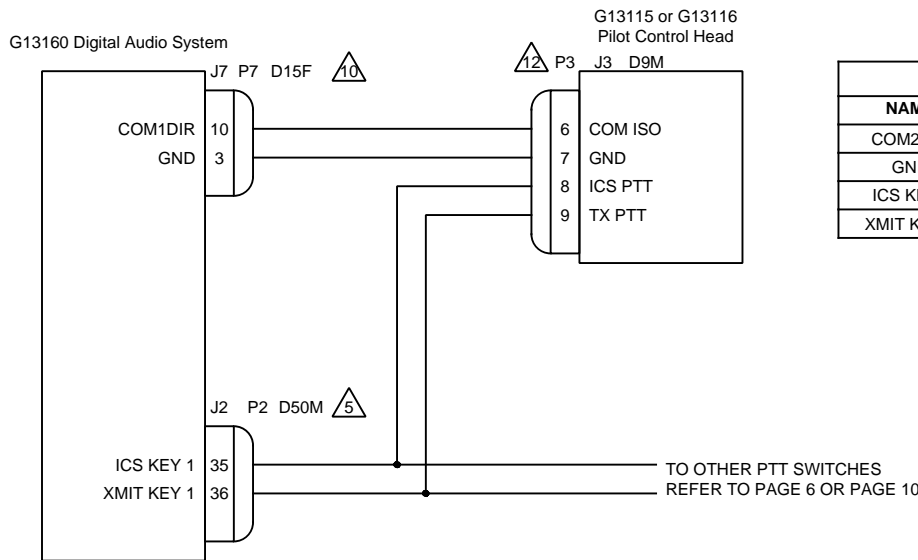
**GNET EXTERNAL POWER:**

If the audio system has more than 6 control panels an external power source for the additional panels must be provided. Up to 12 additional control panels may be powered from each external 5A breaker. Control panels powered by an external breaker should not be connected to router Gnet power.



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	CHECKED	SJC	DATE	3/27/14		
	APPROVAL	CLB	DATE	3/27/14		
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Copilot Pin Assignment		
NAME	G13115/6	G13160
COM2DIR	J3 pin 6	J7 pin 11
GND	J3 Pin 7	J7 pin 5
ICS KEY2	J3 pin 8	J4 pin 35
XMIT KEY 2	J3 Pin 9	J4 pin 36

The G13115 and G13116 control heads have two electromechanical toggle switches on the front panel; an EMERG/NORMAL locking toggle switch, and a 3-position momentary switch for ICS/OFF/TX PTT. When each switch is "on" the appropriate pin on the J3 connector is connected to GND, pin 7.

The above wiring diagram illustrates the use of the EMERG/NORMAL switch on the pilot's G13115/G13116 primary control panel to control the Emergency Mode operation for the pilot headset. The operation of the Digital Audio System in Emergency Mode is detailed in NOTE 8 on G13162 sheet 1.

The pilot's primary control head MUST be wired to COM1DIR as shown if this is the primary audio system installed. ONLY if the audio system is installed as a secondary may the connection be omitted and the COM1DIR pin on the G13160 be connected to ground.


In most installations, the copilot's primary control panel will be wired to COM2DIR, connecting to the appropriate pins as shown in the above table. Exceptions are if the audio system is not the primary audio system or if the HEADSET 2 port is not at a location used by flight crew. In these situations the COM2DIR pin on the G13160 should be directly connected to ground.

NOTE: When the Copilot goes into Emergency Mode, Headset Port 13 and Radio Ports 21 and 30 will also go into emergency mode as detailed in NOTE 8 on G13162 sheet 1.

The EMERG/NORMAL switch is only connected for the pilot and copilot control head. For other control panel locations, a G13115NS or G13116NS panel with the EMERG/NORMAL switch not installed may be used.

The ICS PTT and TX PTT pins on the copilot control panel should be connected in parallel with the appropriate PTT switches on the copilot cyclic and/or foot switches.

In all other crew positions the ICS PTT and TX PTT pins on the associated control head may be connected in parallel with the appropriate PTT switches for that headset.

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	CHECKED	SJC	DATE	3/27/14			
	APPROVAL	CLB	DATE	3/27/14			
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