DO IT YOURSELF AUDIO ISOLATION AMPLIFIER

TYPCIAL MONOPHONIC AND STEREO SYSTEMS SHOWN

REVISION -J- 09 SEP 06
Rev L 08/09/09

NOTE:

1. OPERATING VOLTAGE: 10.5 TO 30 VDC

2. OPRATING CURRENT: 0.05A MAX

3. MONOPHONIC INPUTS MIXED TO BOTH OUTPUT CHANNELS: 3

4. STEREO INPUTS: 1 SET

5. OUTPUT POWER: 100 mW PER CHANNEL

6. RESISTORS R103 THROUGH R107 ARE SELECTED TO EQUALIZE VOLUME LEVELS BETWEEN AUDIO SOURCES. START WITH 150 OHM RESISTORS IN ALL 5 LOCATIONS (DIGIKEY 150EBK-ND). FOR SOURCES WITH ADJUSTABLE VOLUME CONTROLS, THE GOAL IS TO ACHIEVE NORMAL LISTENING LEVELS WITH SOURCE CONTROL AT 1/3 TO 1/2 OF FULL TRAVEL. ADJUST RESISTOR VALUES UPWARD TO DECREASE VOLUME. THEN ADJUST RESISTORS FOR FIXED SOURCES (WARNING TONES, ETC) TO ACHIEVE LEVEL COMPATABLE WITH NORMAL LISTENING LEVELS FOR OTHER SOURCES.

   1/4W RESISTORS FOR R103 THRU R107 WILL "PLUG IN" TO A MACHINED PIN I.C. SOCKET AS SHOWN IN PHOTOGRAPH. ONE NEEDS TO SHORTEN A STOCK 14-PIN (7 SLOTS) TO A 10-PIN (5 SLOT) SOCKET ON A BELT SANDER BEFORE INSTALLATION ON ECB.

7. EVERY AUDIO SYSTEM WOULD BENEFIT FROM A HEADSET JACK WIRED TO GIVE YOU ACCESS TO THE COMM RADIO EVEN IF THE AUDIO AMPLIFIER ROLLS BELLY UP OR BECOMES UNPOWERED. WIRE AS SHOWN HERE. DO THE SAME THING FOR A MICROPHONE JACK UNLESS YOUR INTERCOM SYSTEM HAS A POWER-DOWN BYPASS FEATURE BUILT IN.

8. SOME ENTERTAINMENT AUDIO SOURCES DO NOT HAVE LOW LEVEL AUDIO OUTPUT CONNECTIONS. IF YOU MUST USE SPEAKER OUTPUT WIRES, YOU MIGHT NEED TO PROVIDE A "DUMMY LOAD" RESISTOR TO MAKE THE SOURCE BELIEVE IT IS DRIVING A SPEAKER. A 10-OHM, 1-WATT RESISTOR WILL USUALLY SUFFICE. SPACES HAVE BE PROVIDED ON THE BOARD TO INSTALL THESE RESISTORS. IF IN DOUBT, TRY RUNNING THE SYSTEM WITHOUT LOAD RESISTORS. LISTEN FOR DISTORTION AT LOW AUDIO LEVELS (VOICE PROGRAM MATERIAL IS BEST FOR THIS). IF NO DISTORTION NOTED, NO LOAD RESISTORS NEEDED.

9. SIGTRONICS HARNESS IS SUPPLIED WITH WIRES COLOR CODED AS SHOWN AT WIRES MARKED (*). IF IT WERE MY AIRPLANE, I'D REPLACE THE COLOR CODED WIRES WITH SHIELDED WIRES AS SHOWN. TERMINATE SHIELDS ONLY AS SHOWN.

10. SHIELDS FOR THESE WIRES CONNECTED THIS END ONLY.

11. GROUND SYMBOL ON SCHEMATIC DENOTES COMMON GROUND FOR THE ASSEMBLY. THIS GROUND SHOULD ISOLATED FROM THE CHASSIS GROUND.

12. WWW.DIGIKEY.COM CAN SUPPLY ALL PARTS.

13. THE AMPLIFIER AS SHOWN PROVIDES APPROXIMATELY UNITY GAIN.

14. CONNECTOR PIN NUMBER VARIATIONS: CONNECTOR PIN NUMBERS IN THIS DOCUMENT ASSUMES A 15-PIN MALE SOLDERED TO THE COMPONENT SIDE OF THE BOARD. D-SUB CONNECTORS ARE SYMETRICAL SO THAT THEY CAN BE INSTALLED ON EITHER SIDE OF THE BOARD WITH A REVERSED NUMBER PATTERN. IF YOU USE OUR ECB AND ASSEMBLE IT ON SIDE OPPOSITE ILLUSTRATIONS (CONNECTOR ON SAME SIDE AS COMPONENTS), THE PINOUTS WILL BE DIFFERENT THAN WHAT IS CALLED OUT IN THIS DRAWING PACKAGE.

FUNCTION NAME	PIN # FOR COMP SIDE CONNECTOR	PIN # FOR SOLDER SIDE CONNECTOR
+14V IN	1	8
L AUDIO OUT	2	7
R AUDIO OUT	3	6
L STEREO IN	4	5
A AUDIO IN	5	4
B AUDIO IN	6	3
C AUDIO IN	7	2
R STEREO IN	8	1

THIS IS THE PINOUT FOR ASSEMBLY AS-ILLUSTRATED THAT ALSO MATCHES WHAT'S SHOWN IN WIRING DIAGRAMS.

ALL OF THE PINS IN THE SHORT ROW (9 THRU 15) ARE GROUND IRRESPECTIVE OF CONNECTOR ORIENTATION.

15. AN ETCHED CIRCUIT BOARD FOR DIY ASSEMBLY IS AVAILABLE FROM AEROELECTRIC CONNECTION ORDER PART NUMBER AEC9009-301-2A

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		1	1	130	P120BACT	120 OHM, 1/4W, 5% CF	DIGIKEY
		1	1	129	P750BACT	750 OHM, 1/4W, 5% CF	DIGIKEY
		1	1	128	LM317TFS	V-REG, TO220-3	DIGIKEY
		1	1	127	399-1429	1.0uF/35V DIP TANT	DIGIKEY
				126	S/A 125		
		1	2	125	P100BACT	100 OHM, 5%, 1/4W CF	DIGIKEY
				124	S/A 122		
				123	S/A 122		
		2	3	122	399-1395	47uF, 10V DIP TANT	DIGIKEY
				121	S/A 120		
		1	2	120	399-2127	0.1uF/50V MONO CERAMIC	DIGIKEY
				119	S/A 118		
		1	2	118	P12BACT	12 OHM, 5%, 1/4W CF	DIGIKEY
				117	S/A 109		
				116	S/A 109		
				115	S/A 114		
		1	2	114	LM386N-1	AUDIO AMP, 8-DIP	DIGIKEY
				113	S/A 109		
				112	S/A 109		
				111	S/A 109		
				110	S/A 109		
		6	7	109	399-1403	10uF/16V DIP TANT	DIGIKEY
				108	S/A 101		
				107	(DON'T FORGET TO ORDER THESE! - SEE NOTE 6)		
				106			
				105			
				104			
				103			
				102	S/A 101		
		2	3	101	10EBK	10 OHM, 1/8W, 5% CF	DIGIKEY
		1	1	100	4215M	CONNECTOR, DI5M ECB	DIGIKEY
				99	S/A 98		
		2	2	98	P10W-1BK	10 OHM, 1W, 5% CF (NOTE 8)	DIGIKEY
		1	1	12	COMM STOCK	ALUM PLATE 2.1 X 3.8 X 0.050	
		1	1	11	HM605	2.7 X 2.2 X 1.6 PROJECT BOX	DIGIKEY
		1	1	10	A23423	JACKSCREW KIT	DIGIKEY
				9	NOT USED		
		1	1	8	ED60001	IC SOCKET, 14-DIP	DIGIKEY
				7	S/A 6		
		1	2	6	A24794	IC SOCKET, 8-DIP	DIGIKEY
		4	4	5	1891K	4-40 X .25" X .186 SPACER	DIGIKEY
		3	3	4	COMM STOCK	4-40 X.19 HEX NUT (SMALL PATTERN)	
		5	5	3	H342	4-40 X .25 PHP STEEL	DIGIKEY
		2	2	2	COMM STOCK	#4 FLAT WASHER	
		1	1	1	9009-301-2A	ECB	AEC
					9009-100-2	ECB ASSY - MONO ISO AMP	DIY FAB
					9009-100-1	ECB ASSY - STEREO ISO AMP	DIY FAB
		/-2	/-1	ITEM #	P/N	DESCRIPTION	SOURCE
QTY/ASSY							

BILL OF MATERIALS

TITLE

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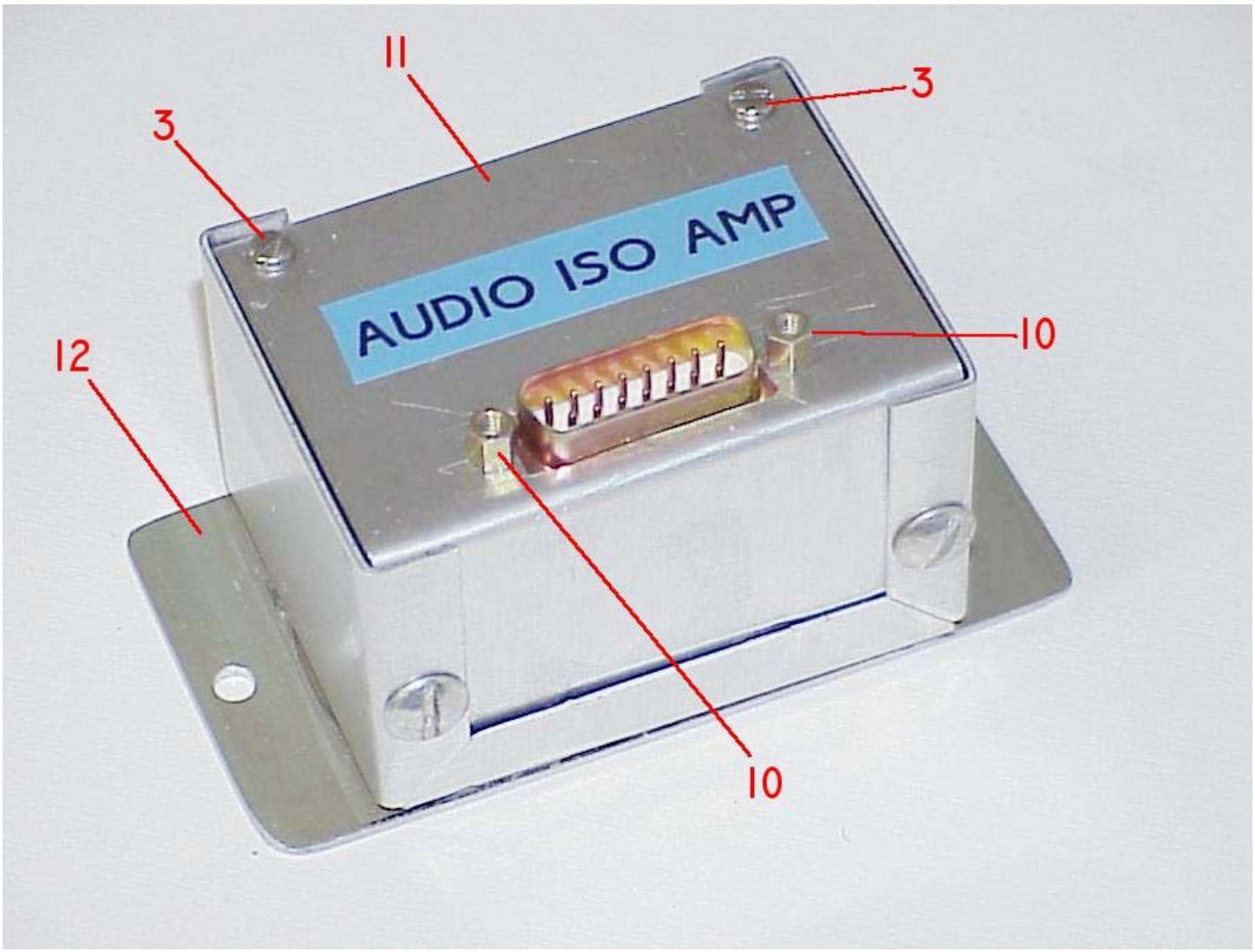
MVC-336X.lvp (911x688x16M jpeg)



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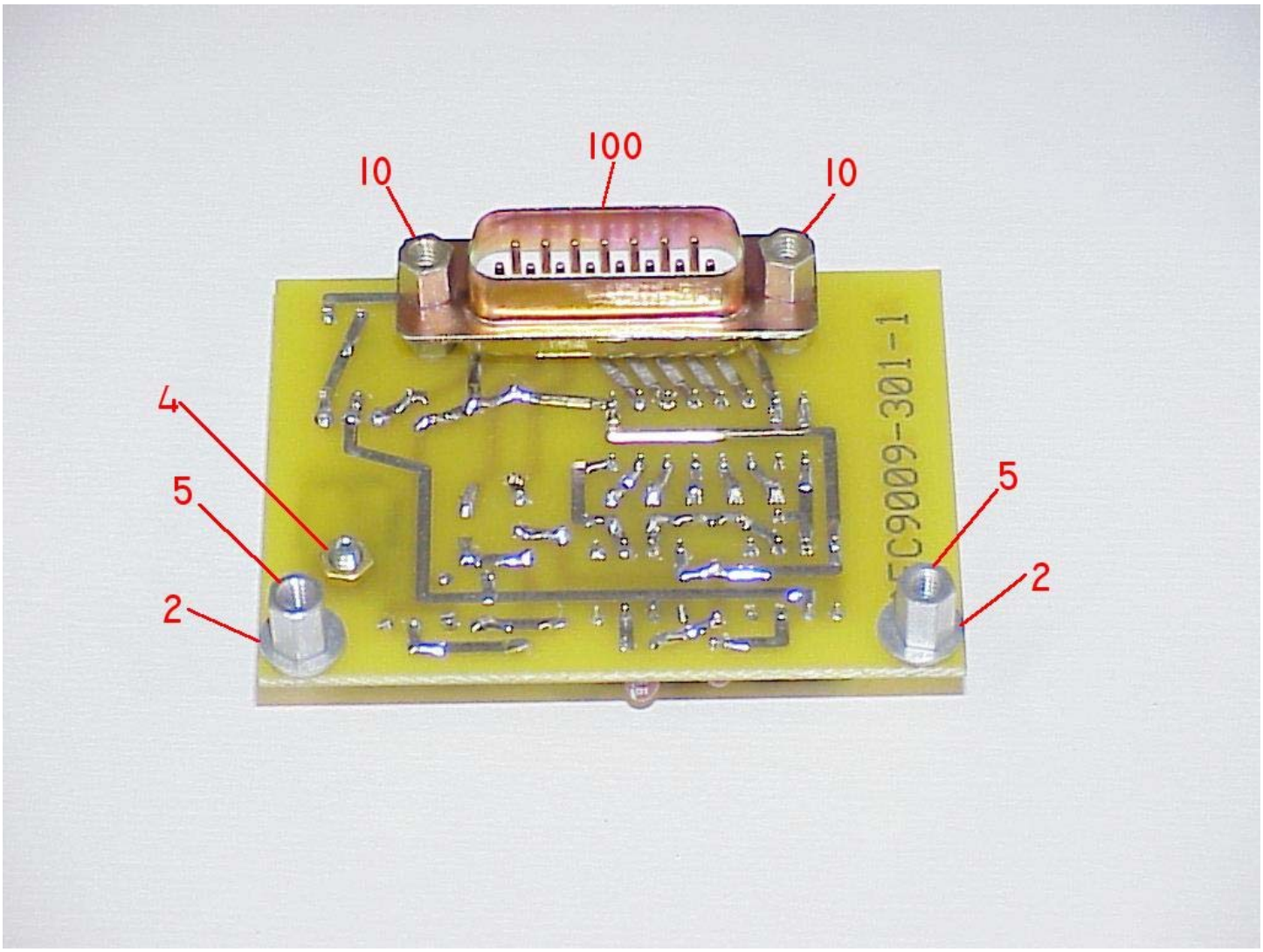

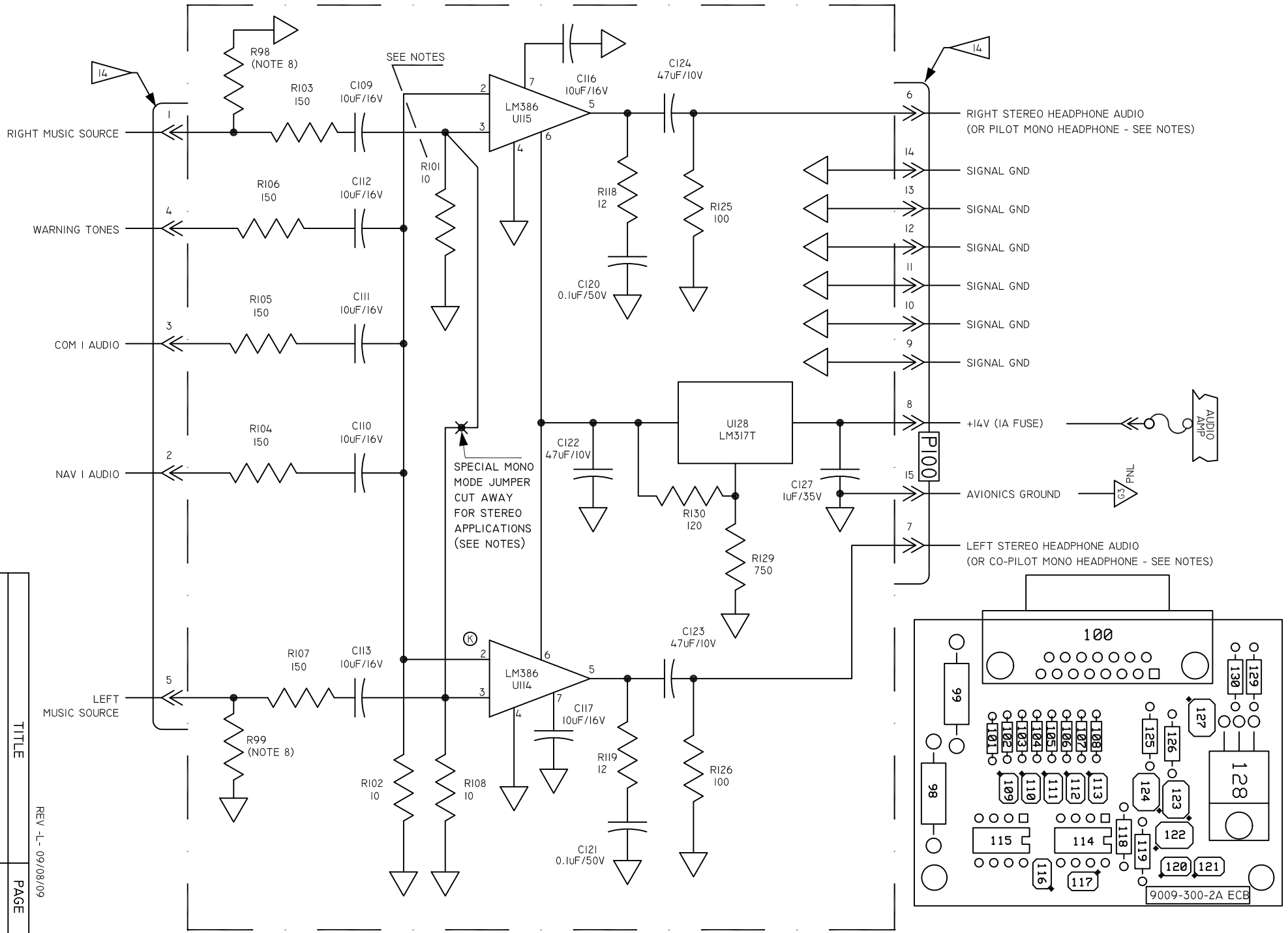
RIGHT MUSIC SOURCE
WARNING TONES
COM I AUDIO
NAV I AUDIO
LEFT MUSIC SOURCE
R98 (NOTE 8)
R99 (NOTE 8)
R103 150
R106 150
R105 150
R104 150
R107 150
C109 10UF/16V
C112 10UF/16V
C111 10UF/16V
C110 10UF/16V
C113 10UF/16V
SEE NOTES
R101 10
LM386 U115
LM386 U114
C116 10UF/16V
C117 10UF/16V
C124 47UF/10V
C120 0.1UF/50V
C121 0.1UF/50V
R118 12
R119 12
R125 100
R126 100
R102 10
R108 10
SPECIAL MONO MODE JUMPER CUT AWAY FOR STEREO APPLICATIONS (SEE NOTES)
U128 LM317T
C122 47UF/10V
C123 47UF/10V
C127 1UF/35V
R130 120
R129 750
P100
RIGHT STEREO HEADPHONE AUDIO (OR PILOT MONO HEADPHONE - SEE NOTES)
SIGNAL GND
SIGNAL GND
SIGNAL GND
SIGNAL GND
SIGNAL GND
SIGNAL GND
+14V (IA FUSE)
AUDIO AMP
AVIONICS GROUND
PNL 63
LEFT STEREO HEADPHONE AUDIO (OR CO-PILOT MONO HEADPHONE - SEE NOTES)
9009-300-2A ECB
SCHEMATIC - STEREO
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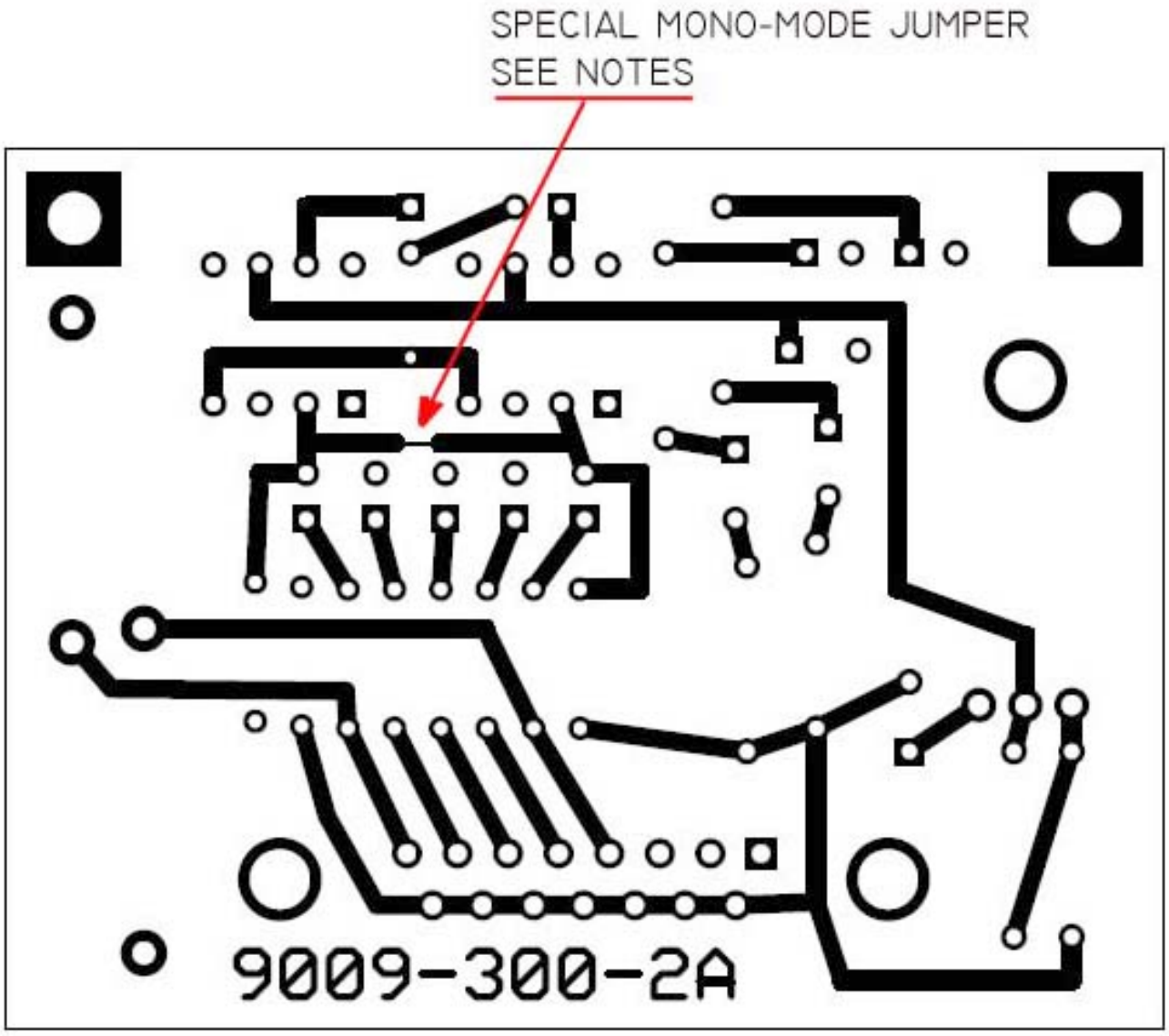
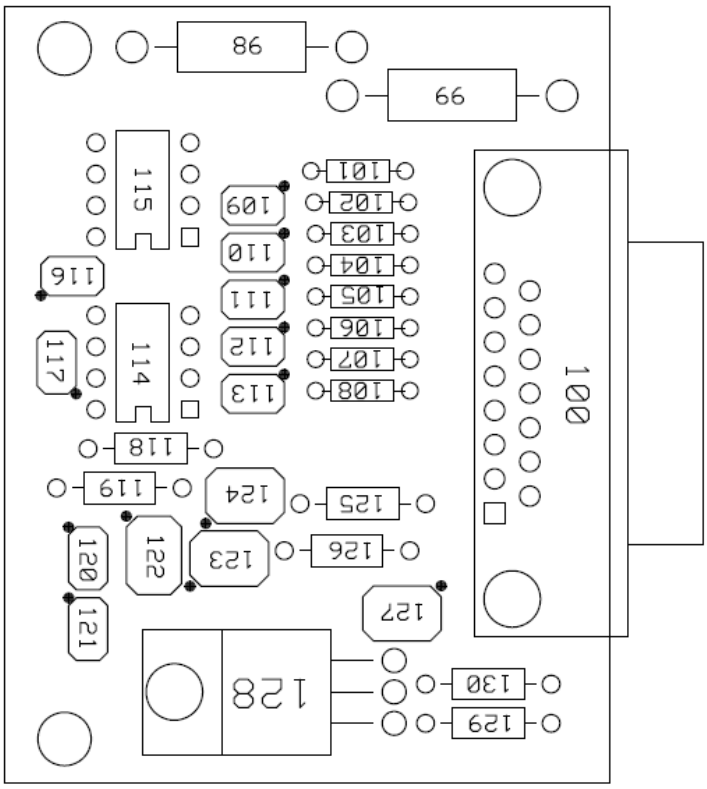
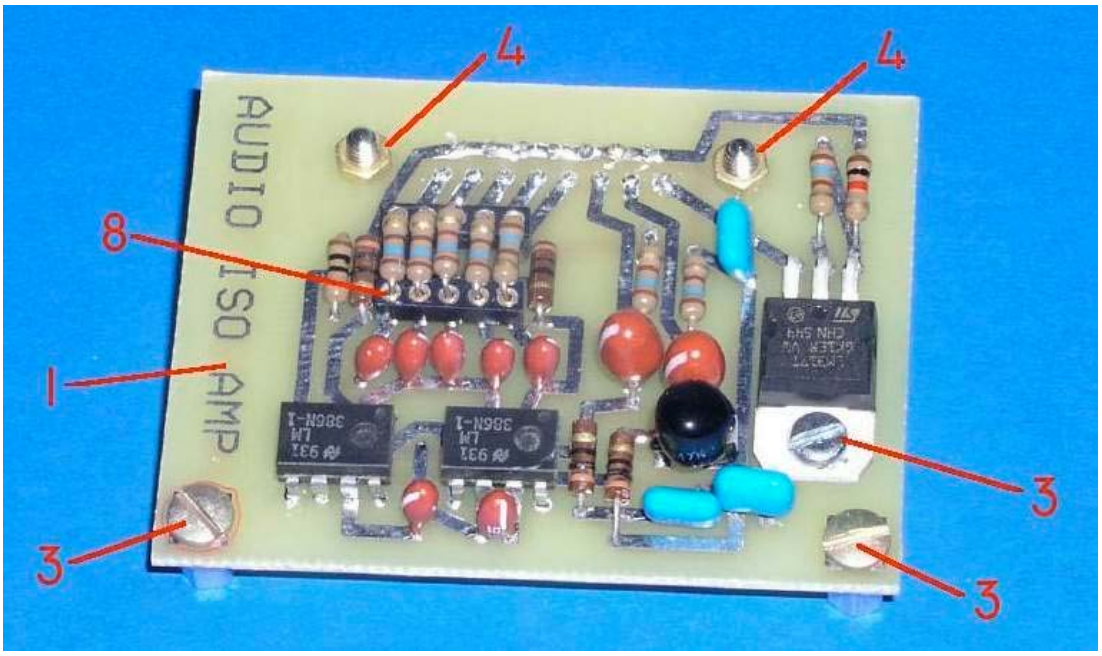


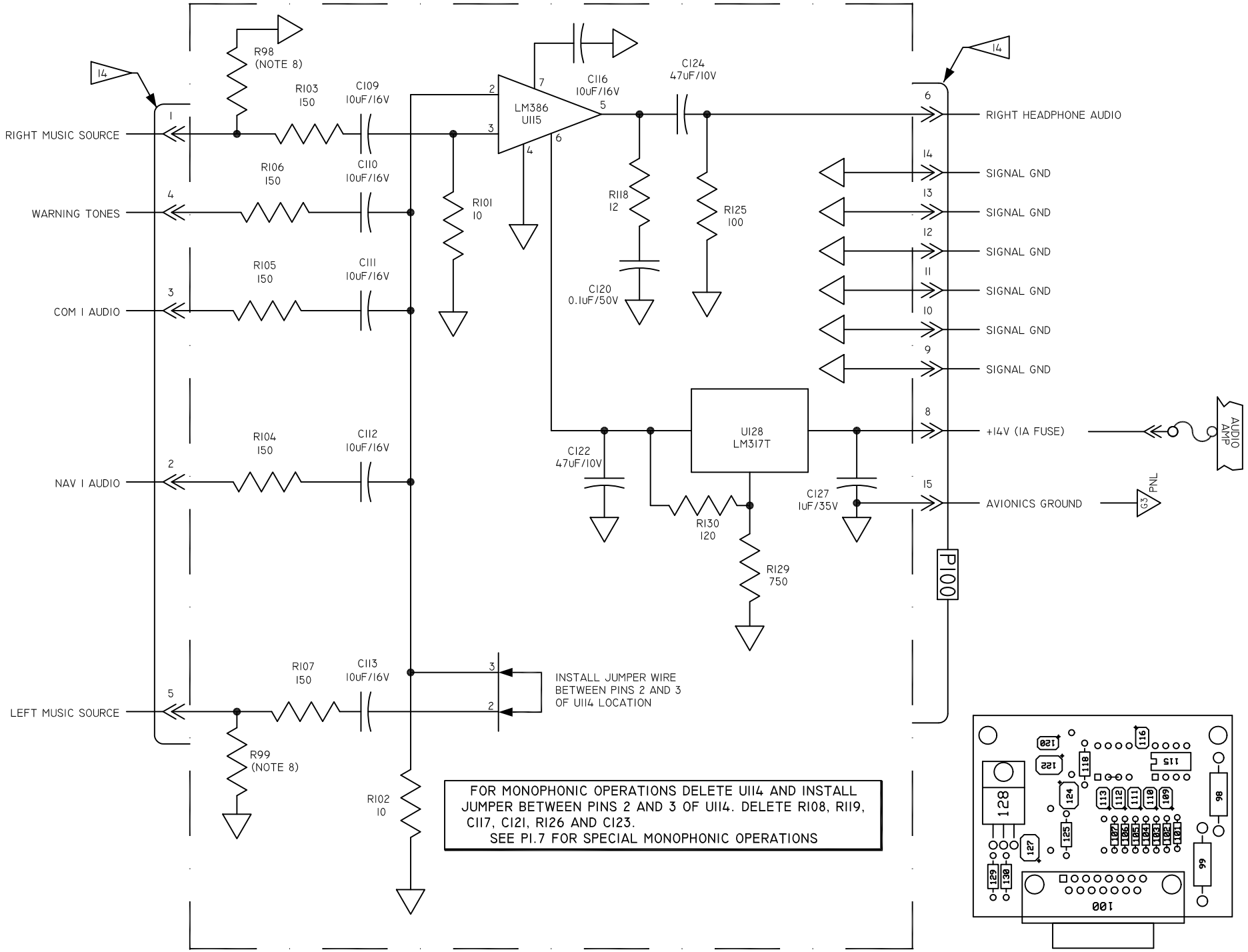
FOR STEREO OPERATION, THE JUMPER SHOWN ABOVE IS CUT AWAY WITH AN X-ACTO KNIFE. FOR PURELY MONOPHONIC OPS, THE INSTALLER MAY ASSEMBLE A STEREO AMPLIFIER EXCEPT DELETE RESISTOR R101 AND LEAVE THE JUMPER INTACT. ALL INPUTS BECOME MONOPHONIC INPUTS FROM VARIOUS SOURCES. THE PILOT AND COPILOT HEADPHONES MAY NOW BE DRIVEN BY ITS OWN AUDIO AMPLIFIER ON RIGHT AND LEFT CHANNELS OF THE ISO-AMP. THIS OPTION PREVENTS A SHORT ON ONE HEADSET LINE FROM DISABLING BOTH PAIRS OF HEADSETS.



PARTS LOCATOR (Rev L)



HARDWARE LOCATOR



SCHEMATIC - MONOPHONIC

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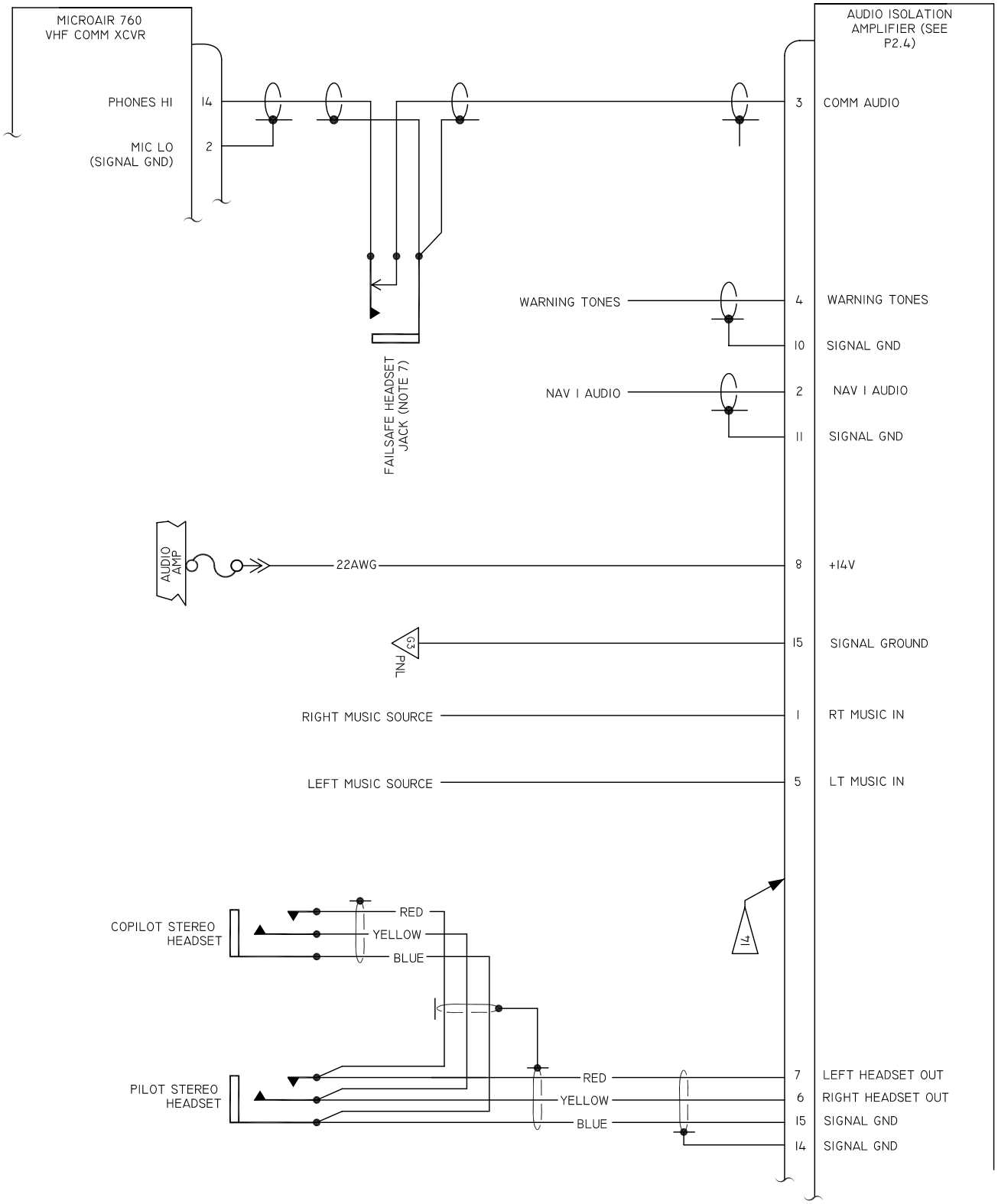

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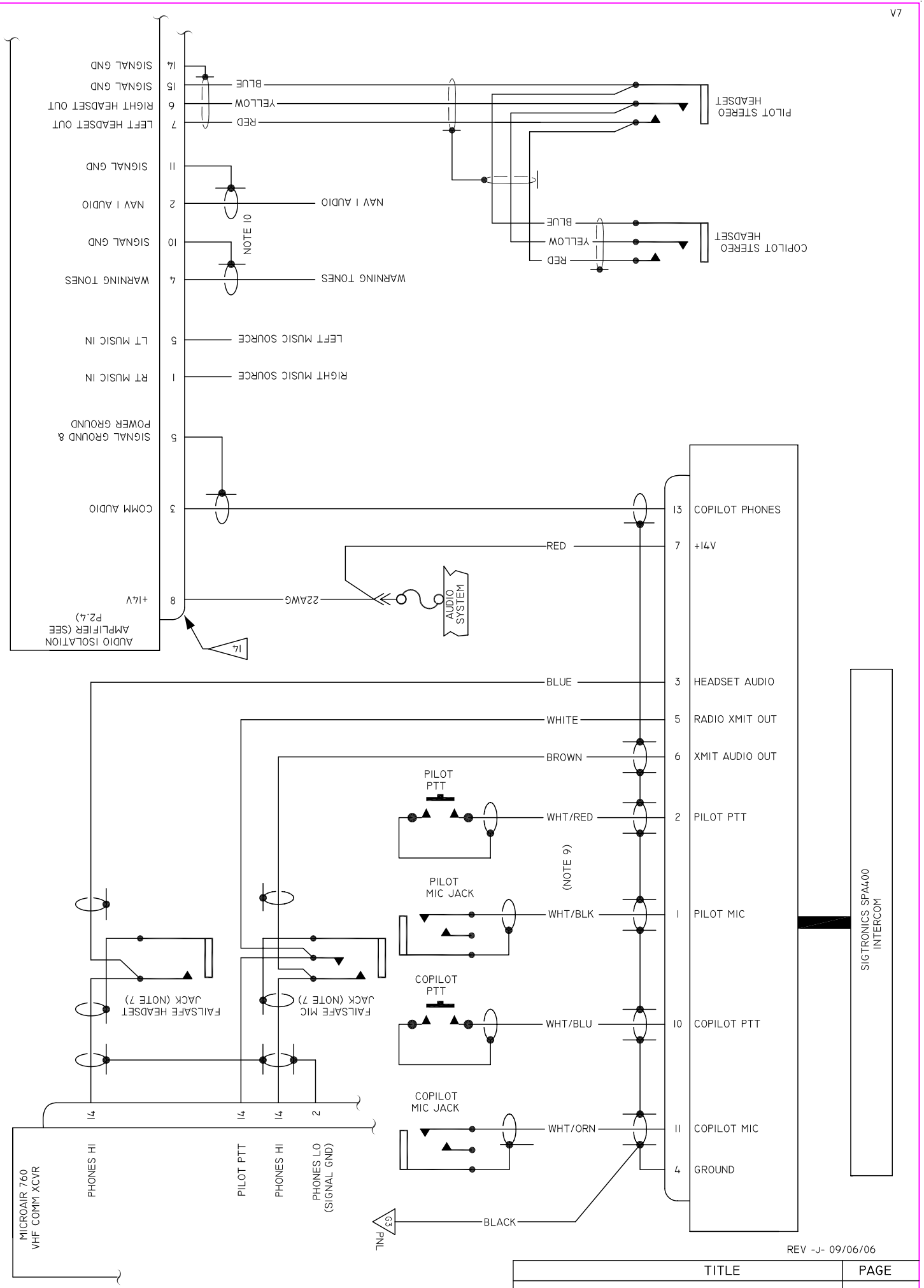

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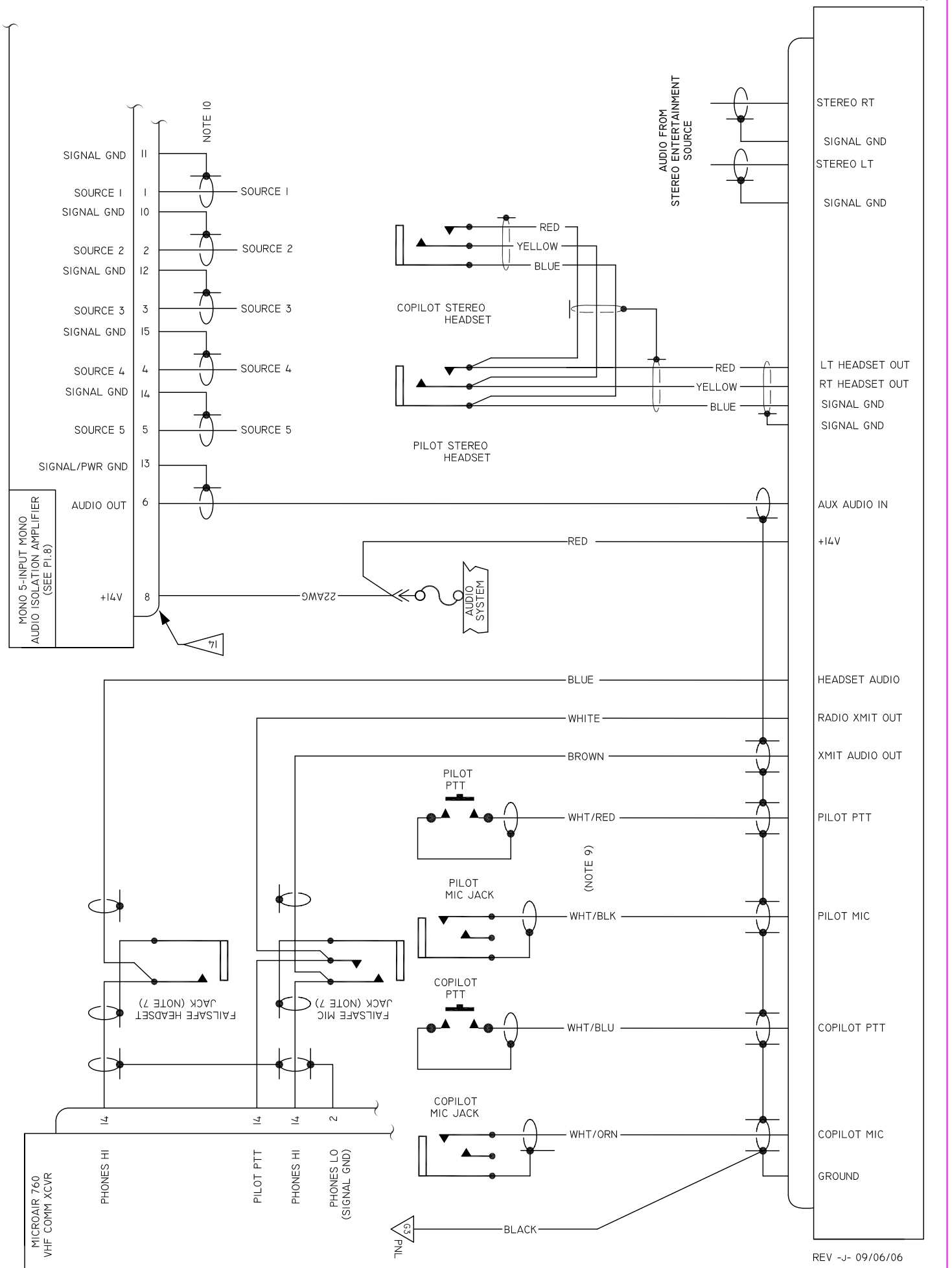
SPA400 (MONO) + STEREO ISO AMP	1.10



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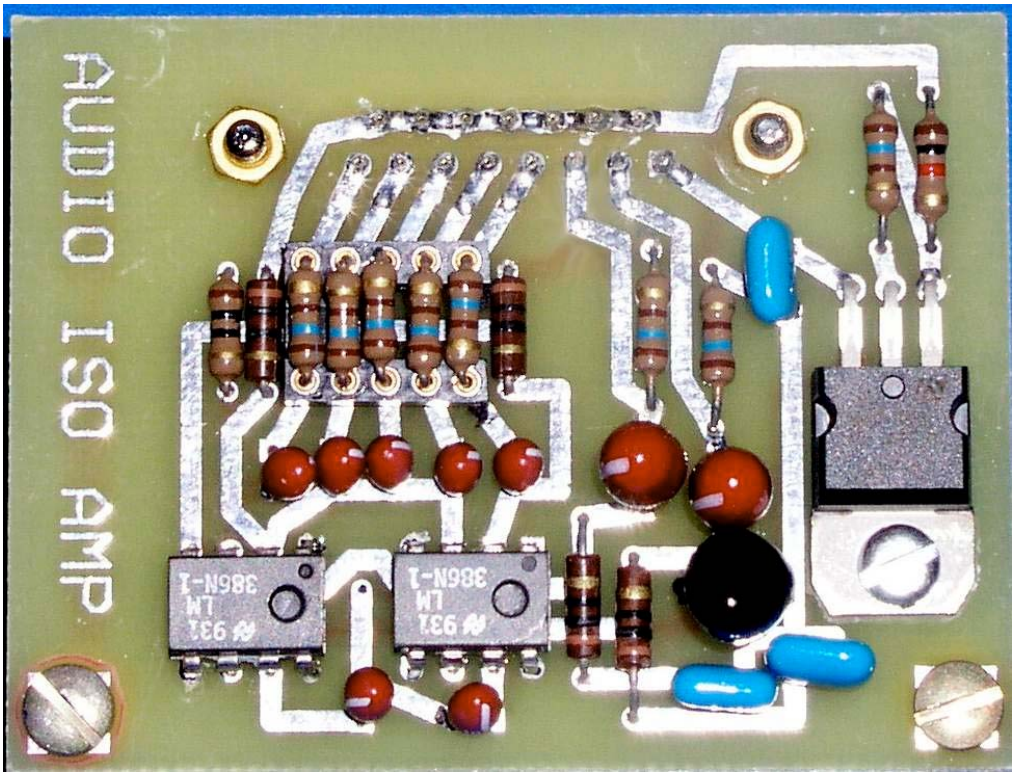
STEREO ICOM + MONO ISO AMP	1.11

Amplification of note 6:

Revision H deletes a previously cited integrated circuit socket and solder-in header and substitutes a machined pin IC socket as shown below



Raw material for the 10 pin (5-resistor slot) socket shown is a 14-pin socket that has been shortened on a belt sander.