

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

6

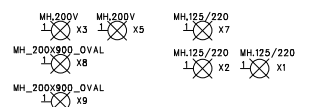
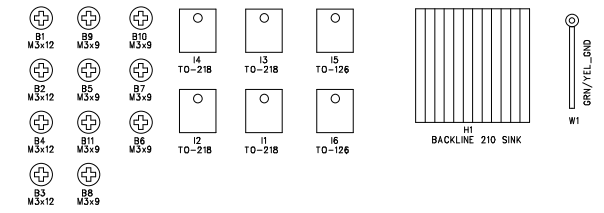
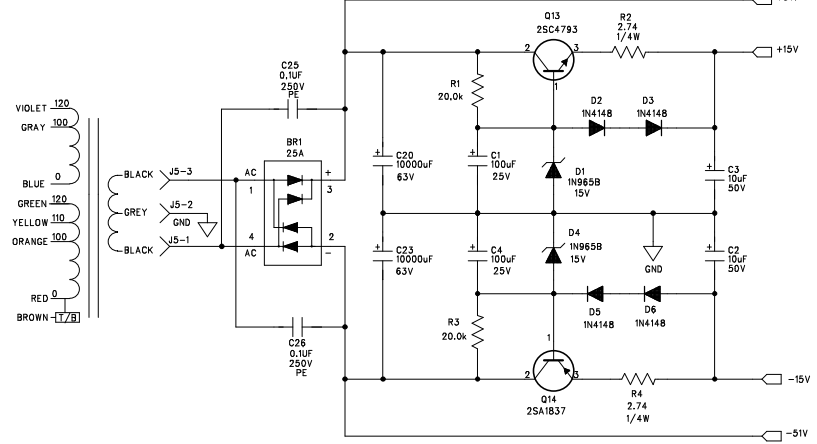
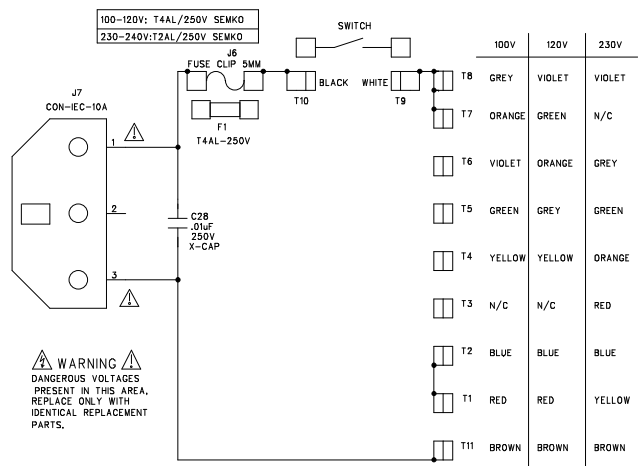
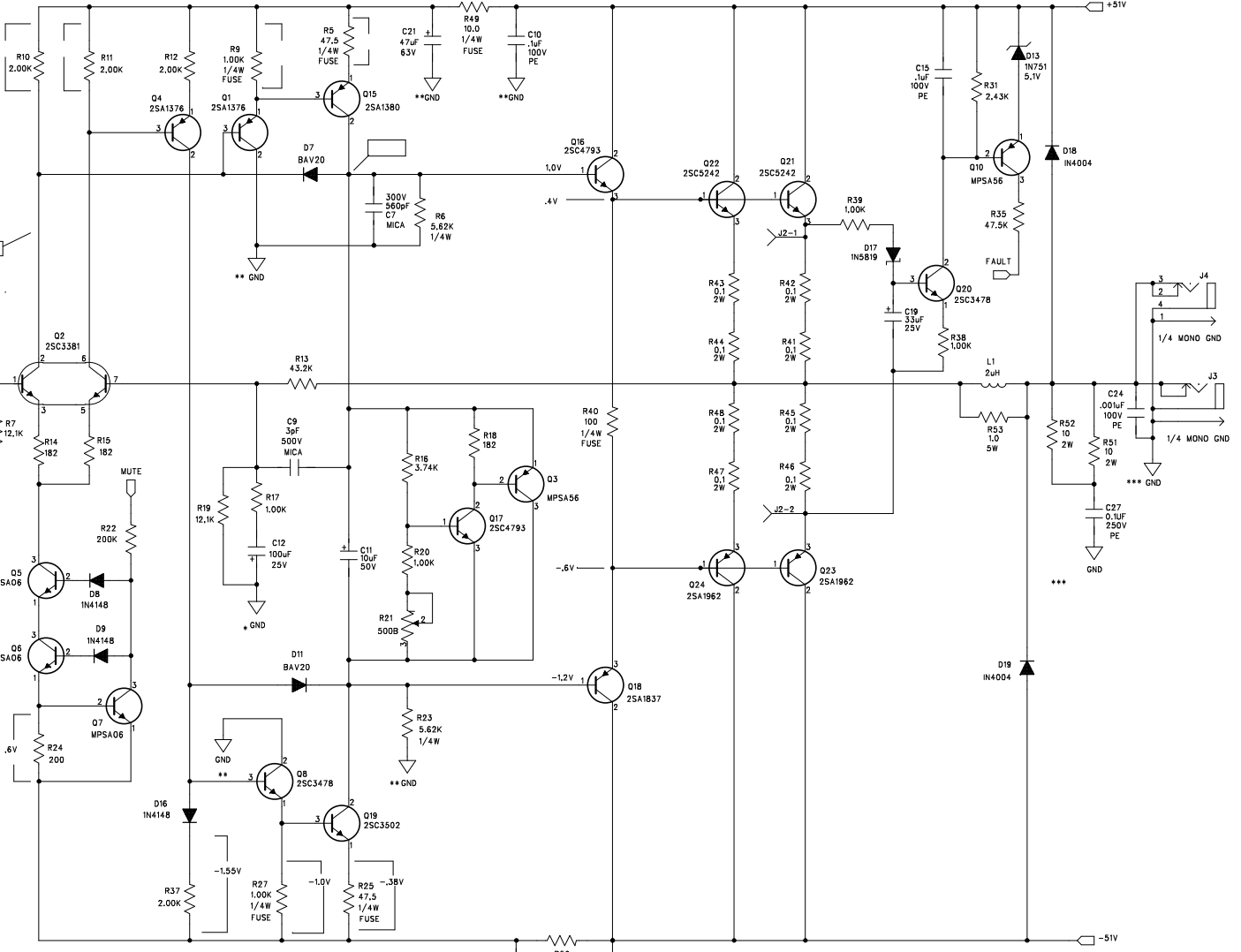
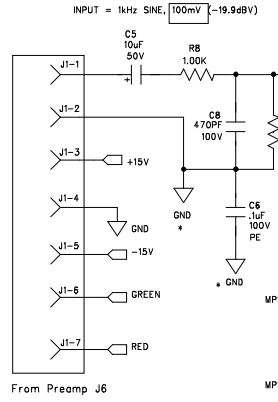
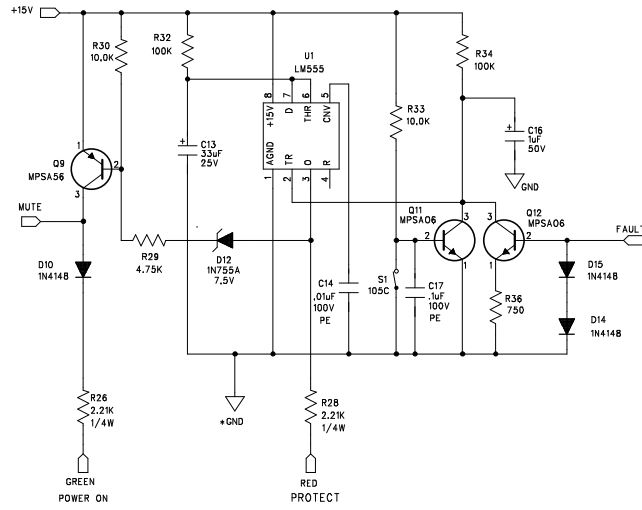
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4

3

2

1



NOTES: UNLESS OTHERWISE SPECIFIED,
 1. TEST CONDITIONS: 100mV 1kHz SINE, DIRECT INPUT (PRE-AMP BYPASSED) NO LOAD
 2. DENOTES RMS AC VOLTAGE

BIAS ADJUSTMENT PROCEDURE:
 WITH POWER OFF, ADJUST POT R21 TO FULL COUNTER-CLOCKWISE POSITION.
 TURN ON POWER AND WAIT 5 SECONDS FOR TURN ON DELAY.
 TURN R21 CLOCKWISE UNTIL VOLTAGE ACCROSS P3 READS 5 mVDC.

NOT VALID UNLESS STAMP IS RED

gallien technology

2240 PARAGON DRIVE
 SAN JOSE CA. 95131
 VOICE: 408-441-8081
 FAX: 408-441-8085

1. UPDATE REV TO A.		APPROVALS		TITLE: BACKLINE 210 POWER AMP	
INIT	DATE	DESIGNED:	R.A.G.	12/3/00	REV. A
DRAWN:	R.A.G.	ELEC:		4/09/03	
MECH:		COMPANY:	GALLIEN-KRUEGER		
Q/A:		FILENAME:	6270A		
RELEASED:					

D

C

B

A

D

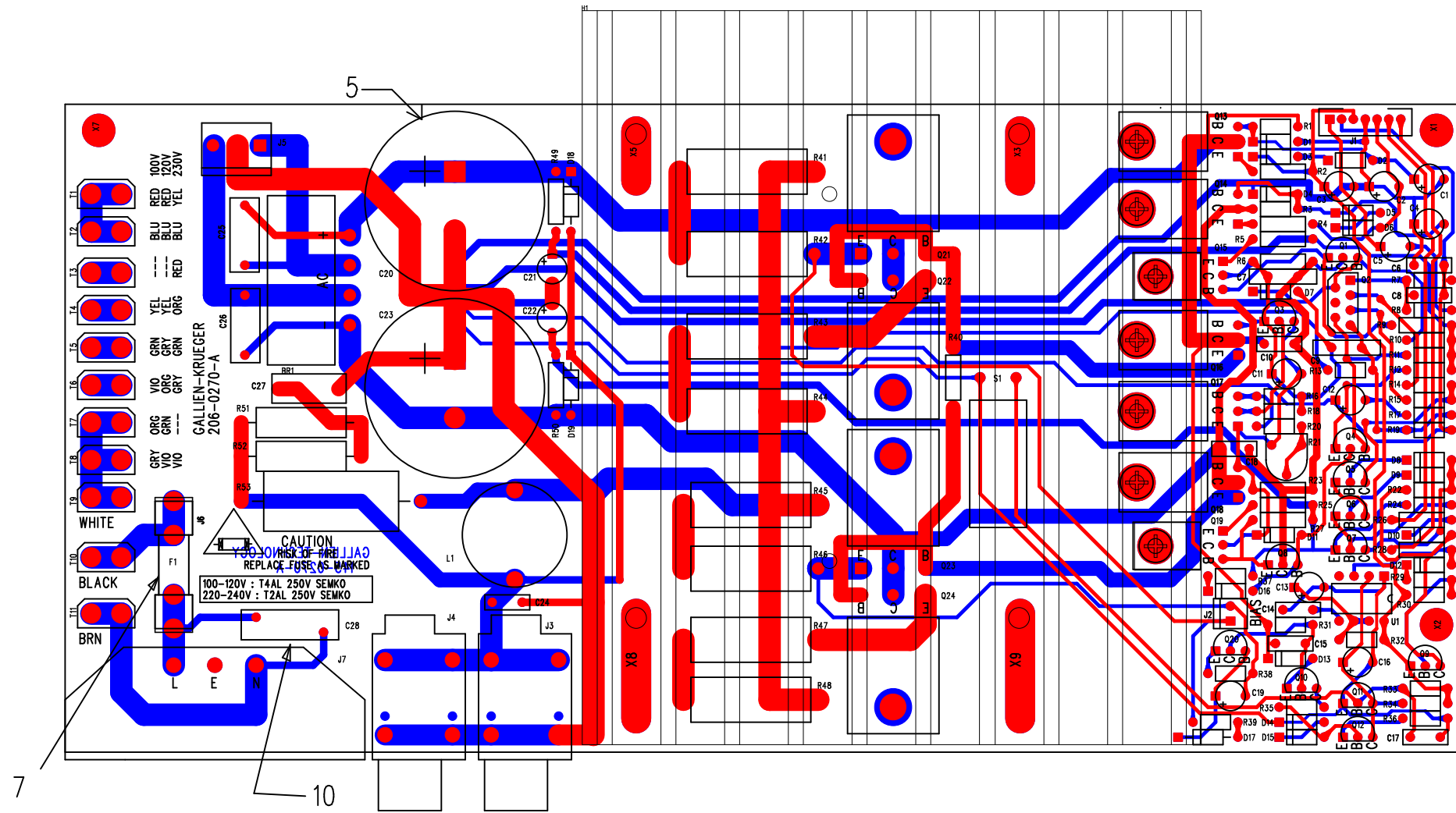
C

B

A

Backline 210 Power Amp 206-0270-A

Part No.	Reference	Description	Manufacturer	Mfr. Part No.
001-2060-0	U1	LM555, TIMER	NATIONAL	LM555CN
010-0000-0	Q2	2SC3381BL,NPNX2,80V,100MA,2-10M1B	TOSHIBA	2SC3281BL
010-0001-0	Q8 Q20	2SC3478, NPN,180V,100MA,TO-92	NEC	2SC3478-K
010-0003-0	Q19	2SC3502-F,NPN,200V,100MA,TO-126	TOSHIBA	2SC3502
010-0012-0	Q5-7 Q11-12	MPSAO6, NPN,80V,500MA,TO-92	MOTOROLA	MPS-A06
010-1002-0	Q1 Q4	2SA1376, PNP,180V,100MA,TO-92	NEC	2SA1376-K
010-1003-0	Q15	2SA1380-F,PNP,200V,100MA,TO-126	SANYO/TOSHIBA	2SA1380-F/E
010-1013-0	Q3 Q9-10	MPSA56 PNP 80V 500MA TO-92	MOTOROLA	MPS-A56
012-0002-0	Q13 Q16-17	2SC4793,NPN,200V,1.5A,2-10R1A	TOSHIBA	2SC4793
012-0003-0	Q21-22	2SC5242,NPN,230V,15A,2-16C1A	TOSHIBA	2SC5242-O
012-1002-0	Q14 Q18	2SA1837,PNP,200V,1.5A,2-10R1A	TOSHIBA	2SA1837
012-1003-0	Q23-24	2SA1962,PNP,230V,15A,2-16C1A	TOSHIBA	2SA1962
020-0004-0	D12	1N755A, ZENER,7.5V,500MW ,D035	TAITRON	1N755A
020-0050-0	D13	1N751, ZENER,5.1V,10%,400MW,DO-35	NATIONAL	1N751
020-0150-0	D1 D4	1N965B, ZENER, 15V, 5%, 500mW, DO-35	TAITRON	1N965B
020-1000-0	D2,3,5,6,8-10,14-16	1N4148, RECT-FAST, 200MA, 100V	MOTOROLA	1N4148
020-1022-0	D7 D11	BAV20, RECT, 200V, DO-35	NATIONAL	BAV20
020-1104-0	D17	SHOTTKY, 1A, 40V, 10NS, DO-41	MOTOROLA	1N5819
020-2106-0	D18-19	1N4004,RECT,1A,400V,DO-41	TAITRON	1N4004
023-0112-0	BR1	BRIDGE, 25A, 200V, VERT, PC, MO25S-02	CHENG-YI	MP25-02S
031-1107-0	C1 C4 C12	CAP,ELEC,RAD,107,20%,25V	UNITED CHEMI-CON	SMG25VB101M6X11LL
031-1336-0	C13 C19	CAP,ELEC,RAD,336,20%,25V	UNITED CHEMI-CON	SRG25VB33RM5X7LL
031-2105-0	C16	CAP,ELEC,RAD, 105, 20%, 50V	UNITED CHEMI-CON	C440C105M5U5CA
031-2106-0	C2-3 C5 C11	CAP,ELEC,RAD, 106, 20%, 50V	UNITED CHEMI-CON	SMG50VB10RM5X11LL
031-3109-0	C20 C23	CAP, ELEC, RADIAL, 10000UF, 20%, 63V	UNITED CHEMI-CON	SMH63VN103M30X50T2
031-3476-0	C21-22	CAP,ELEC,RAD,476,20%,63V	UNITED CHEMI-CON	SMG63VB47RM6X11LL
032-4102-0	C24	CAP,PE,102,5%,100V,	PANASONIC	ECQB1102JF
032-4103-0	C14	CAP,PE,103,5%,100V,	PANASONIC	ECQV1103JM
032-4104-0	C6 C10 C15 C17-18	CAP,PE,104,5%,100V,	PANASONIC	ECQV1104JM
032-7104-0	C25-27	CAP,PE,104,10%, 250V	ILLINOIS CAPACITOR	104MSR250K
034-4471-0	C8	CAP,MCR,470pF,5%,100V,	TAITRON	TMRS471J100NPOB
034-7103-0	C28	CAP, CERMIC DISK, 103, 10%, X-250V	PANASONIC	ECK-DRS103ZV
035-8030-0	C9	CAP MICA AXIAL , 3pF, 10%, 500V	CORNELL	CD10CD030D03
035-8561-0	C7	CAP MICA RADIAL, 561, 5%, 300V	CORNELL	CD15FC561J103
052-2.74-0	R2 R4	RES,METAL FILM, 2.74, 1/4W, 1%	ECI	M2F1AJ002.74
052-2212-0	R26 R28	RES,METAL FILM, 2.21k, 1/4W,1%	ECI	M2F1AK002.21
052-5622-0	R6 R23	RES,METAL FILM,5.62K,1/4W,1%	ECI	M5F1AK005.62
055-.100-0	R41-48	RES, CERAMIC, 0.1, 2W,5%	ECI	MOM20J3AJ001.10
055-0101-0	R51-52	RES, METAL OXIDE, 10 OHM, 2W, 5%	ECI	MOM20J3AJ010.00
056-0100-0	R53	RES, CERAMIC WW, 1.0, 5W, 10%	ECI	WWC50J3AJ001.00
059-1000-0	R49-50	RES,MF,FUSE, 10.0, 1/4W, 1%	JUKN.OHM	FR25-10.0
059-1001-0	R40	RES,MF,FUSE, 100, 1/4W, 1%	JUKN.OHM	FR25-100
059-1002-0	R9 R27	RES,MF,FUSE, 1.00K, 1/4W, 1%	JUKN.OHM	FR25-1.00K
059-4750-0	R5 R25	RES,MF,FUSE, 47.5, 1/4W, 1%	JUKN.OHM	FR25-47.5
060-1002-0	R8 R17 R20 R38-39	RES,METAL FILM, 1.00K, 1/8W, 1%	ECI	M1F1AK001.00
060-1003-0	R30 R33	RES,METAL FILM, 10.0K, 1/8W,1%	ECI	M1F1AK010.00
060-1004-0	R32 R34	RES,METAL FILM, 100K, 1/8W, 1%	ECI	M1F1AK100.00
060-1213-0	R7 R19	RES,METAL FILM, 12.1K, 1/8W, 1%	ECI	M1F1AK012.10
060-1821-0	R14-15 R18	RES,METAL FILM, 182, 1/8W, 1%	ECI	M1F1AJ182.00
060-2001-0	R24	RES,METAL FILM, 200, 1/8W, 1%	ECI	M1F1AJ200.00
060-2002-0	R10-12 R37	RES,METAL FILM, 2.00K, 1/8W, 1%	ECI	M1F1AK002.00
060-2003-0	R1 R3	RES,METAL FILM, 20.0K, 1/8W, 1%	ECI	M1F1AK020.00
060-2004-0	R22	RES,METAL FILM, 200K, 1/8W, 1%	ECI	M1F1AK200.00
060-2432-0	R31	RES,METAL FILM, 2.43K, 1/8W, 1%	ECI	M1F1AK002.43
060-3742-0	R16	RES,METAL FILM, 3.74K, 1/8W, 1%	ECI	M1F1AK003.92
060-4323-0	R13	RES,METAL FILM, 43.2K, 1/8W, 1%	ECI	M1F1AK043.20
060-4752-0	R29	RES,METAL FILM, 4.75K, 1/8W, 1%	ECI	M1F1AK004.75
060-4753-0	R35	RES,METAL FILM, 47.5K, 1/8W, 1%	ECI	M1F1AK047.50
060-7501-0	R36	RES,METAL FILM, 750, 1/8W, 1%	ECI	M1F1AJ750.00
070-0520-0	R21	POT,500B TRIM, 200mW	SONG HUEI	SH-655MCL-500B
081-0055-0	L1	INDUCTOR,2UH,20A,AIR CORE	SCHONBERG	081-0055-0
091-0024-0	F1	FUSE,5mm,T4AL,250V,SEMKO	LITTLE FUSE	218-004
091-1002-0	S1	THRM BRKR, 105C +/-5,0-DIFF, PC	KLIXON	7AM-028-A5
092-0001-0	J7	CON, IECX3, 10A, 250V, PC TERM	DIHTAIN	DTS-0045
092-0066-0	T1-11	FASTON, M, PC, .250"	KEYSTONE	1021



PCB WORK INSTRUCTIONS

DWG 420-0270-A

NOTES:

UNLESS OTHERWISE SPECIFIED:

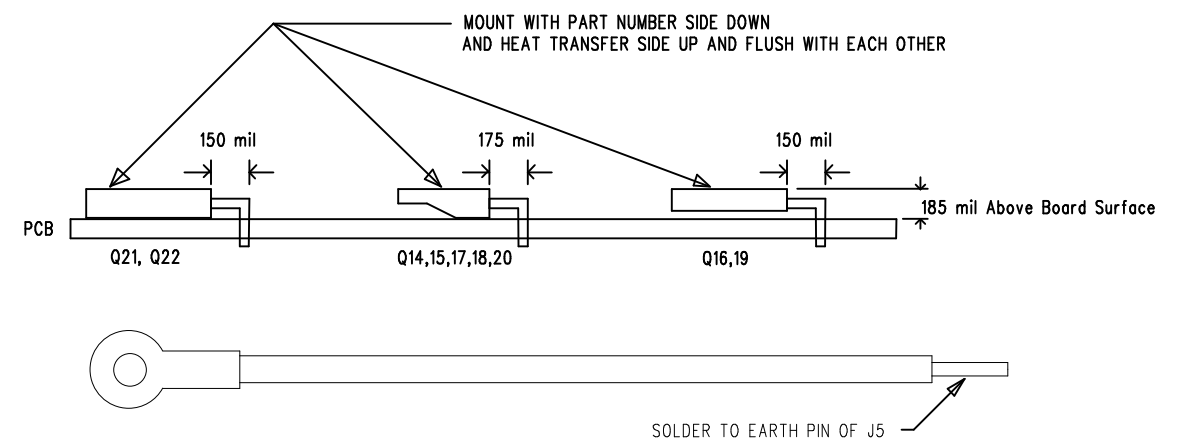
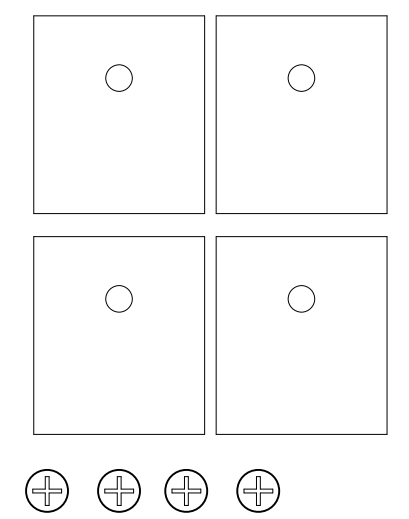
1. SQUARE PADS ON THRU HOLE PARTS (ie: CONNECTORS, DIPS, SIPS, LEDS) DENOTE PIN 1.
2. ALL BOARDS REQUIRE A COMPLETE AND THOROUGH VISUAL INSPECTION.
3. ALL BOARDS MUST BE BARE BOARD TESTED.
4. ASSEMBLE AND SOLDER PER ANSI/IPC-A-610B.

LOADING

5. C20, C23 LOAD WITH SILICON GLUE BETWEEN BOTTOM OF PART AND PCB
6. LOAD Q16 AND Q19 AFTER WAVE AS SHOWN BELOW, APPLY RUBER INSULATOR 105-0005-0. APPLY GREASED MICA INSULATOR TO Q21 AND Q22.
7. FUSE LOADING - F1
FOR 120V MODEL: LOAD FUSE, 5MM, T4AL, 250V
FOR 230V MODEL: LOAD FUSE, 5MM, T2AL, 250V

FINAL QA

8. CHECK R43, 44, 45, 46 TO BE FLUSH WITH PCB
9. CHECK J1,2,3,4,5,6 TO SEE COMPONENTS ARE FLUSH WITH PCB
10. GLUE C28 TO J5 WITH SILICON RTV



NOT VALID UNLESS STAMP IS RED		gallien technology 2240 PARAGON DRIVE SAN JOSE CA. 95131 VOICE: 408-441-8081 FAX: 408-441-8085	
APPROVALS INIT DATE DESIGNED: R.A.G. 2/15/01 DRAWN: R.A.G. 4/09/03		TITLE: BACKLINE 210 POWER AMP SIZE DRAWING NO: 405-0270-A REV. A B PART NO: 145-0270-A	
LAYER DESCRIPTION: TOPSIDE BOTTOMSIDE DRILL		COMPANY: GALLIEN-KRUEGER GERBER FILE NAME: sst0126.pho FILENAME: 5270A	

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

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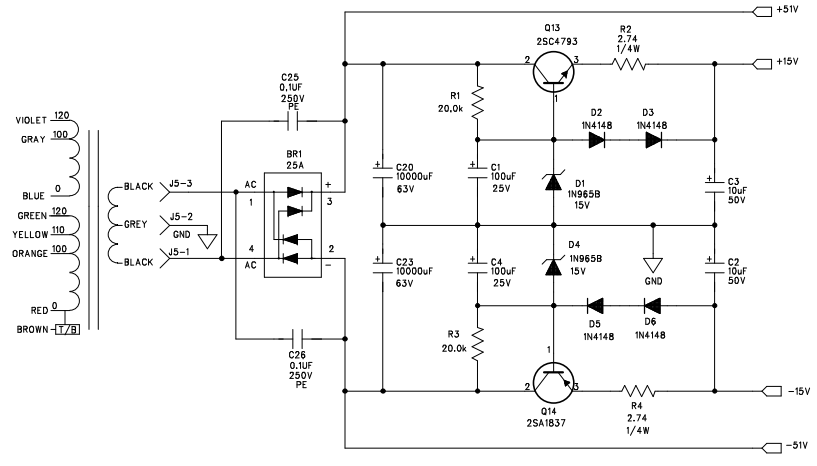
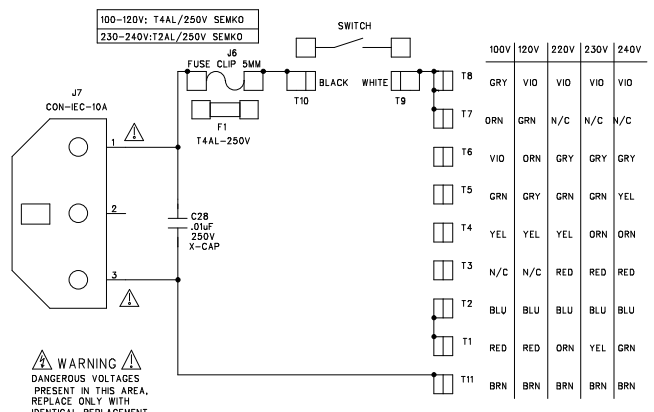
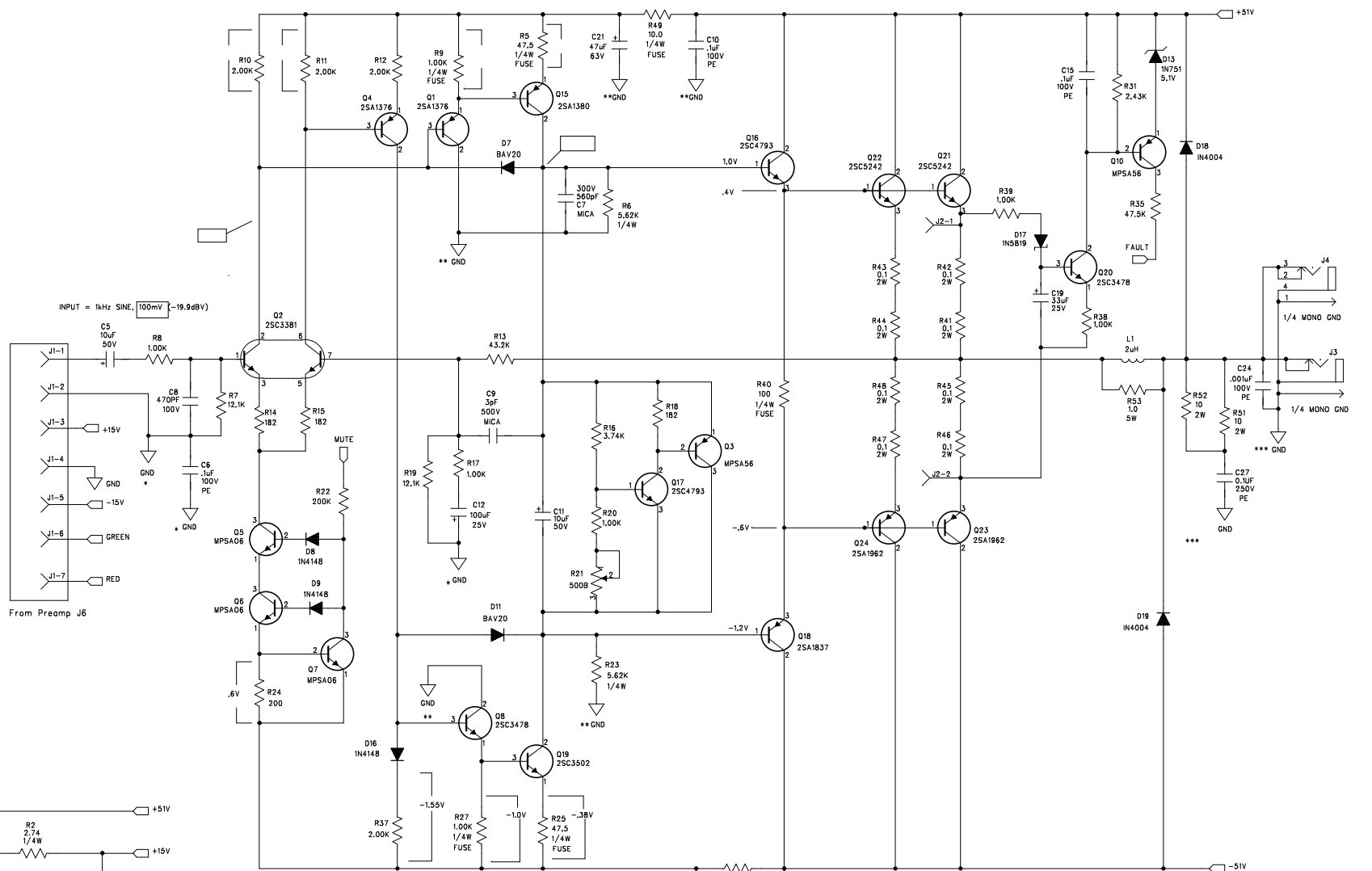
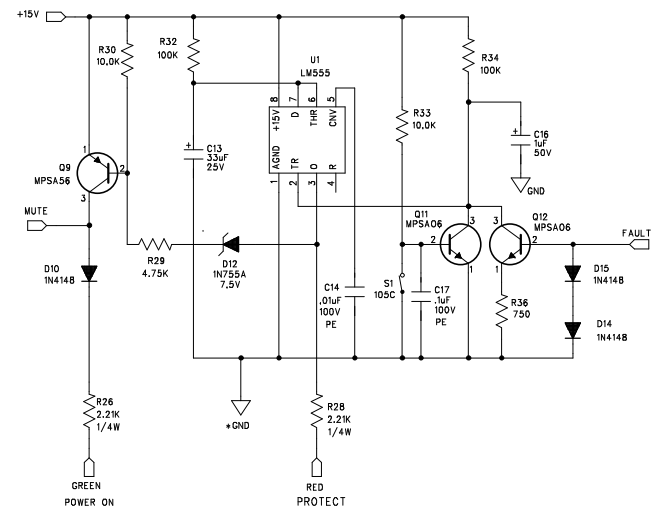
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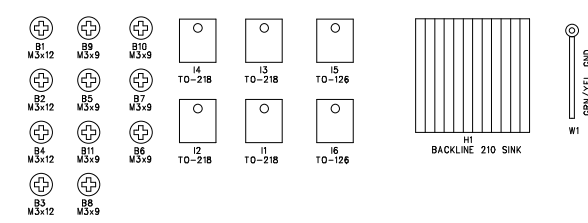
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WARNING
DANGEROUS VOLTAGES
PRESENT IN THIS AREA.
REPLACE ONLY WITH
IDENTICAL REPLACEMENT
PARTS.

BIAS ADJUSTMENT PROCEDURE:
WITH POWER OFF, ADJUST POT R21 TO FULL COUNTER-CLOCKWISE POSITION.
TURN ON POWER AND WAIT 5 SECONDS FOR TURN ON DELAY.
TURN R21 CLOCKWISE UNTIL VOLTAGE ACCROSS P3 READS 5 mVDC.

- NOTES: UNLESS OTHERWISE SPECIFIED,
- TEST CONDITIONS: 100mV 1kHz SINE, DIRECT INPUT (PRE-AMP BYPASSED) NO LOAD
 - DENOTES RMS AC VOLTAGE



NOT VALID UNLESS STAMP IS RED

gallien technology

2234 INDUSTRIAL DRIVE
STOCKTON CA. 95206
VOICE: 209-234-7300
FAX: 209-234-8420

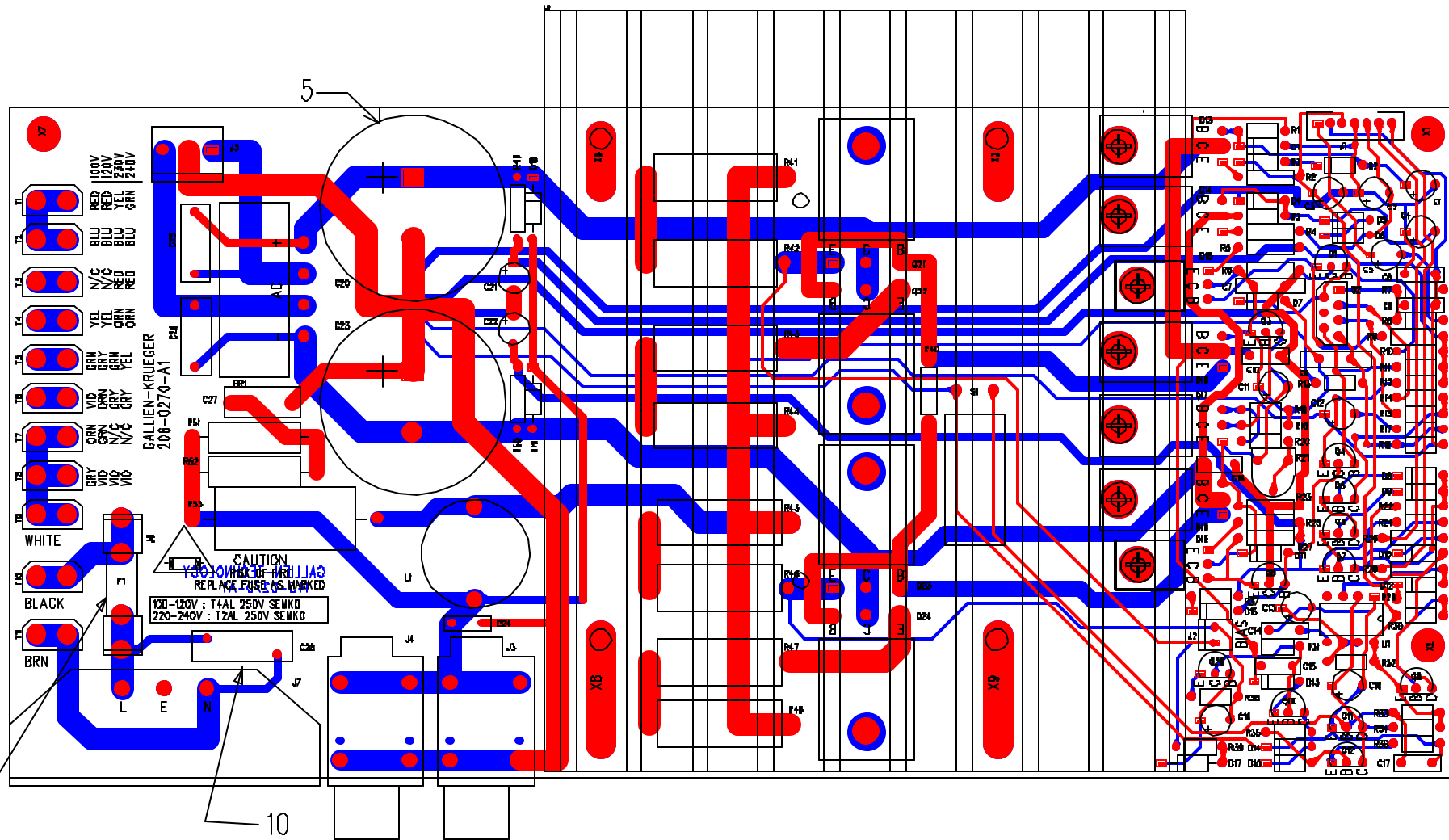
TITLE: BACKLINE 210 POWER AMP

NOTES TO REV A1:
1. ADD 240V SUPPLY TABLE TO LAYOUT.

APPROVALS		DATE	TITLE
INIT	R.A.G.	12/3/00	BACKLINE 210 POWER AMP
DRAWN:	R.A.G.	11/19/03	DRAWING NO: 406-0270-A1
ELEC:			PART NO: 206-0270-A1
MECH:			COMPANY: GALLIEN-KRUEGER
Q/A:			FILENAME: 6270A1
RELEASED:			

Backline 210 Power Amp 206-0270-A1

Part No.	Reference	Description	Manufacturer	Mfr. Part No.
001-2060-0	U1	LM555, TIMER	NATIONAL	LM555CN
010-0000-0	Q2	2SC3381BL,NPNX2,80V,100MA,2-10M1B	TOSHIBA	2SC3281BL
010-0001-0	Q8 Q20	2SC3478, NPN,180V,100MA,TO-92	NEC	2SC3478-K
010-0003-0	Q19	2SC3502-F,NPN,200V,100MA,TO-126	TOSHIBA	2SC3502
010-0012-0	Q5-7 Q11-12	MPSA06, NPN,80V,500MA,TO-92	MOTOROLA	MPS-A06
010-1002-0	Q1 Q4	2SA1376, PNP,180V,100MA,TO-92	NEC	2SA1376-K
010-1003-0	Q15	2SA1380-F,PNP,200V,100MA,TO-126	SANYO/TOSHIBA	2SA1380-F/E
010-1013-0	Q3 Q9-10	MPSA56 PNP 80V 500MA TO-92	MOTOROLA	MPS-A56
012-0002-0	Q13 Q16-17	2SC4793,NPN,200V,1.5A,2-10R1A	TOSHIBA	2SC4793
012-0003-0	Q21-22	2SC5242,NPN,230V,15A,2-16C1A	TOSHIBA	2SC5242-O
012-1002-0	Q14 Q18	2SA1837,PNP,200V,1.5A,2-10R1A	TOSHIBA	2SA1837
012-1003-0	Q23-24	2SA1962,PNP,230V,15A,2-16C1A	TOSHIBA	2SA1962
020-0004-0	D12	1N755A, ZENER,7.5V,500MW ,D035	TAITRON	1N755A
020-0050-0	D13	1N751, ZENER,5.1V,10%,400MW,DO-35	NATIONAL	1N751
020-0150-0	D1 D4	1N965B, ZENER, 15V, 5%, 500mW, DO-35	TAITRON	1N965B
020-1000-0	D2,3,5,6,8-10,14-16	1N4148, RECT-FAST, 200MA, 100V	MOTOROLA	1N4148
020-1022-0	D7 D11	BAV20, RECT, 200V, DO-35	NATIONAL	BAV20
020-1104-0	D17	SHOTTKY, 1A, 40V, 10NS, DO-41	MOTOROLA	1N5819
020-2106-0	D18-19	1N4004,RECT,1A,400V,DO-41	TAITRON	1N4004
023-0112-0	BR1	BRIDGE, 25A, 200V, VERT, PC, MO25S-02	CHENG-YI	MP25-02S
031-1107-0	C1 C4 C12	CAP,ELEC,RAD,107,20%,25V	UNITED CHEMI-CON	SMG25VB101M6X11LL
031-1336-0	C13 C19	CAP,ELEC,RAD,336,20%,25V	UNITED CHEMI-CON	SRG25VB33RM5X7LL
031-2105-0	C16	CAP,ELEC,RAD, 105, 20%, 50V	UNITED CHEMI-CON	C440C105M5U5CA
031-2106-0	C2-3 C5 C11	CAP,ELEC,RAD, 106, 20%, 50V	UNITED CHEMI-CON	SMG50VB10RM5X11LL
031-3109-0	C20 C23	CAP, ELEC, RADIAL, 10000UF, 20%, 63V	UNITED CHEMI-CON	SMH63VN103M30X50T2
031-3476-0	C21-22	CAP,ELEC,RAD,476,20%,63V	UNITED CHEMI-CON	SMG63VB47RM6X11LL
032-4102-0	C24	CAP,PE,102,5%,100V,	PANASONIC	ECQB1102JF
032-4103-0	C14	CAP,PE,103,5%,100V,	PANASONIC	ECQV1103JM
032-4104-0	C6 C10 C15 C17-18	CAP,PE,104,5%,100V,	PANASONIC	ECQV1104JM
032-7104-0	C25-27	CAP,PE,104,10%, 250V	ILLINOIS CAPACITOR	104MSR250K
034-4471-0	C8	CAP,MCR,470pF,5%,100V,	TAITRON	TMRS471J100NPOB
034-7103-0	C28	CAP, CERMIC DISK, 103, 10%, X-250V	PANASONIC	ECK-DRS103ZV
035-8030-0	C9	CAP MICA AXIAL , 3pF, 10%, 500V	CORNELL	CD10CD030D03
035-8561-0	C7	CAP MICA RADIAL, 561, 5%, 300V	CORNELL	CD15FC561J103
052-2.74-0	R2 R4	RES,METAL FILM, 2.74, 1/4W, 1%	ECI	M2F1AJ002.74
052-2212-0	R26 R28	RES,METAL FILM, 2.21k, 1/4W,1%	ECI	M2F1AK002.21
052-5622-0	R6 R23	RES,METAL FILM,5.62K,1/4W,1%	ECI	M5F1AK005.62
055-.100-0	R41-48	RES, CERAMIC, 0.1, 2W,5%	ECI	MOM20J3AJ001.10
055-0101-0	R51-52	RES, METAL OXIDE, 10 OHM, 2W, 5%	ECI	MOM20J3AJ010.00
056-0100-0	R53	RES, CERAMIC WW, 1.0, 5W, 10%	ECI	WWC50J3AJ001.00
059-1000-0	R49-50	RES,MF,FUSE, 10.0, 1/4W, 1%	JUKN.OHM	FR25-10.0
059-1001-0	R40	RES,MF,FUSE, 100, 1/4W, 1%	JUKN.OHM	FR25-100
059-1002-0	R9 R27	RES,MF,FUSE, 1.00K, 1/4W, 1%	JUKN.OHM	FR25-1.00K
059-4750-0	R5 R25	RES,MF,FUSE, 47.5, 1/4W, 1%	JUKN.OHM	FR25-47.5
060-1002-0	R8 R17 R20 R38-39	RES,METAL FILM, 1.00K, 1/8W, 1%	ECI	M1F1AK001.00
060-1003-0	R30 R33	RES,METAL FILM, 10.0K, 1/8W,1%	ECI	M1F1AK010.00
060-1004-0	R32 R34	RES,METAL FILM, 100K, 1/8W, 1%	ECI	M1F1AK100.00
060-1213-0	R7 R19	RES,METAL FILM, 12.1K, 1/8W, 1%	ECI	M1F1AK012.10
060-1821-0	R14-15 R18	RES,METAL FILM, 182, 1/8W, 1%	ECI	M1F1AJ182.00
060-2001-0	R24	RES,METAL FILM, 200, 1/8W, 1%	ECI	M1F1AJ200.00
060-2002-0	R10-12 R37	RES,METAL FILM, 2.00K, 1/8W, 1%	ECI	M1F1AK002.00
060-2003-0	R1 R3	RES,METAL FILM, 20.0K, 1/8W, 1%	ECI	M1F1AK020.00
060-2004-0	R22	RES,METAL FILM, 200K, 1/8W, 1%	ECI	M1F1AK200.00
060-2432-0	R31	RES,METAL FILM, 2.43K, 1/8W, 1%	ECI	M1F1AK002.43
060-3742-0	R16	RES,METAL FILM, 3.74K, 1/8W, 1%	ECI	M1F1AK003.92
060-4323-0	R13	RES,METAL FILM, 43.2K, 1/8W, 1%	ECI	M1F1AK043.20
060-4752-0	R29	RES,METAL FILM, 4.75K, 1/8W, 1%	ECI	M1F1AK004.75
060-4753-0	R35	RES,METAL FILM, 47.5K, 1/8W, 1%	ECI	M1F1AK047.50
060-7501-0	R36	RES,METAL FILM, 750, 1/8W, 1%	ECI	M1F1AJ750.00
070-0520-0	R21	POT,500B TRIM, 200mW	SONG HUEI	SH-655MCL-500B
081-0055-0	L1	INDUCTOR,2UH,20A,AIR CORE	SCHONBERG	081-0055-0
091-0024-0	F1	FUSE,5mm,T4AL,250V,SEMKO	LITTLE FUSE	218-004
091-1002-0	S1	THRM BRKR, 105C +/-5,0-DIFF, PC	KLIXON	7AM-028-A5
092-0001-0	J7	CON, IECX3, 10A, 250V, PC TERM	DIHTAIN	DTS-0045
092-0066-0	T1-11	FASTON, M, PC, .250"	KEYSTONE	1021



PCB WORK INSTRUCTIONS

DWG 420-0270-A1

NOTES:

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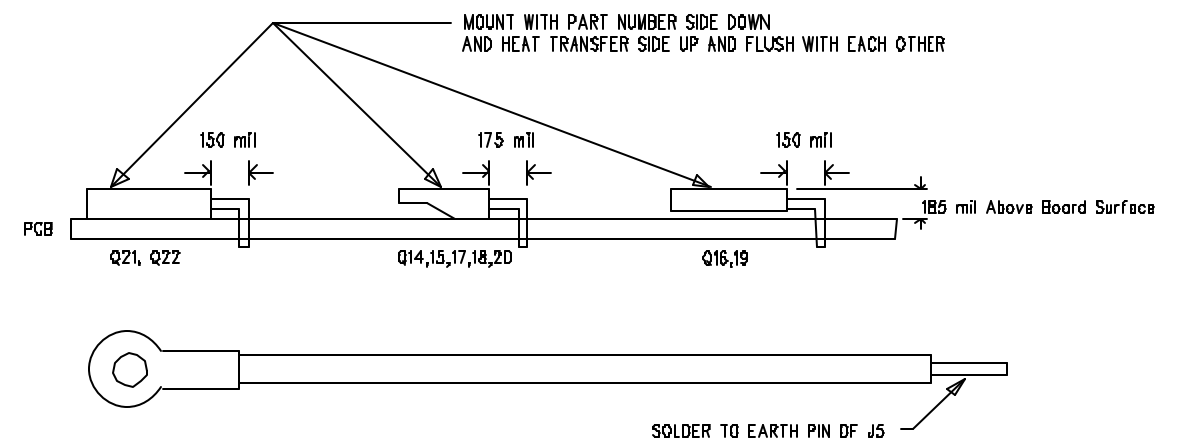
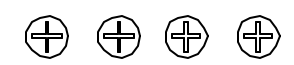
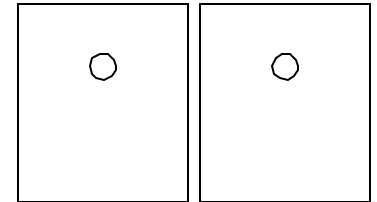
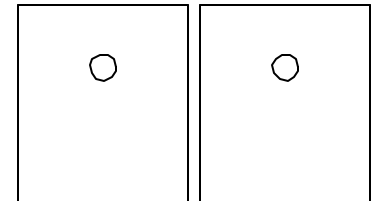
1. SQUARE PADS ON THRU HOLE PARTS (ie: CONNECTORS, DIPS, SIPS, LEDS) DENOTE PIN 1.
2. ALL BOARDS REQUIRE A COMPLETE AND THOROUGH VISUAL INSPECTION.
3. ALL BOARDS MUST BE BARE BOARD TESTED.
4. ASSEMBLE AND SOLDER PER ANSI/IPC-A-610B.

LOADING

5. C20, C23 LOAD WITH SILICON GLUE BETWEEN BOTTOM OF PART AND PCB
6. LOAD Q18 AND Q19 AFTER WAVE AS SHOWN BELOW, APPLY RUBER INSULATOR 105-0005-0. APPLY GREASED MICA INSULATOR TO Q21 AND Q22.
7. FUSE LOADING - F1
FOR 120V MODEL: LOAD FUSE, 5MM, T4AL, 250V
FOR 230V MODEL: LOAD FUSE, 5MM, T2AL, 250V

FINAL QA

8. CHECK R43, 44, 45, 46 TO BE FLUSH WITH PCB
9. CHECK J1,2,3,4,5,6 TO SEE COMPONENTS ARE FLUSH WITH PCB
10. GLUE C28 TO J5 WITH SILICON RTV



NOT VALID UNLESS STAMP IS RED				2234 INDUSTRIAL DRIVE STOCKTON CA 95206 VOICE: 209-234-7300 FAX: 209-234-8420	
APPROVALS		TITLE: BACKLINE 210 POWER AMP			
INIT	DATE	SIZE	DRAWING NO:	REV.	
R.A.G.	2/15/01	B	405-0270-A1	A1	
DRAWN:	R.A.G.	11/19/03	PART NO:	145-0270-A1	
ELEC:		COMPANY: GALLIEN-KRUEGER			
MECH:		FILENAME: 5270A1			
GERBER FILE NAME:		5270A1.pcb			
LAYER DESCRIPTION:		TOBESIDEYBOUTSIREN			

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

6

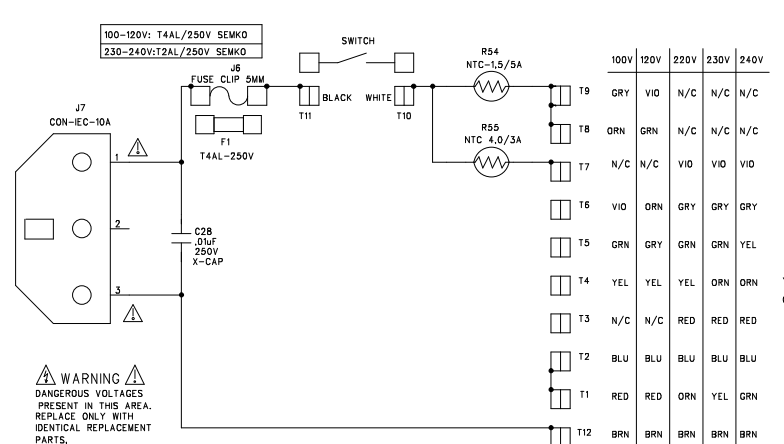
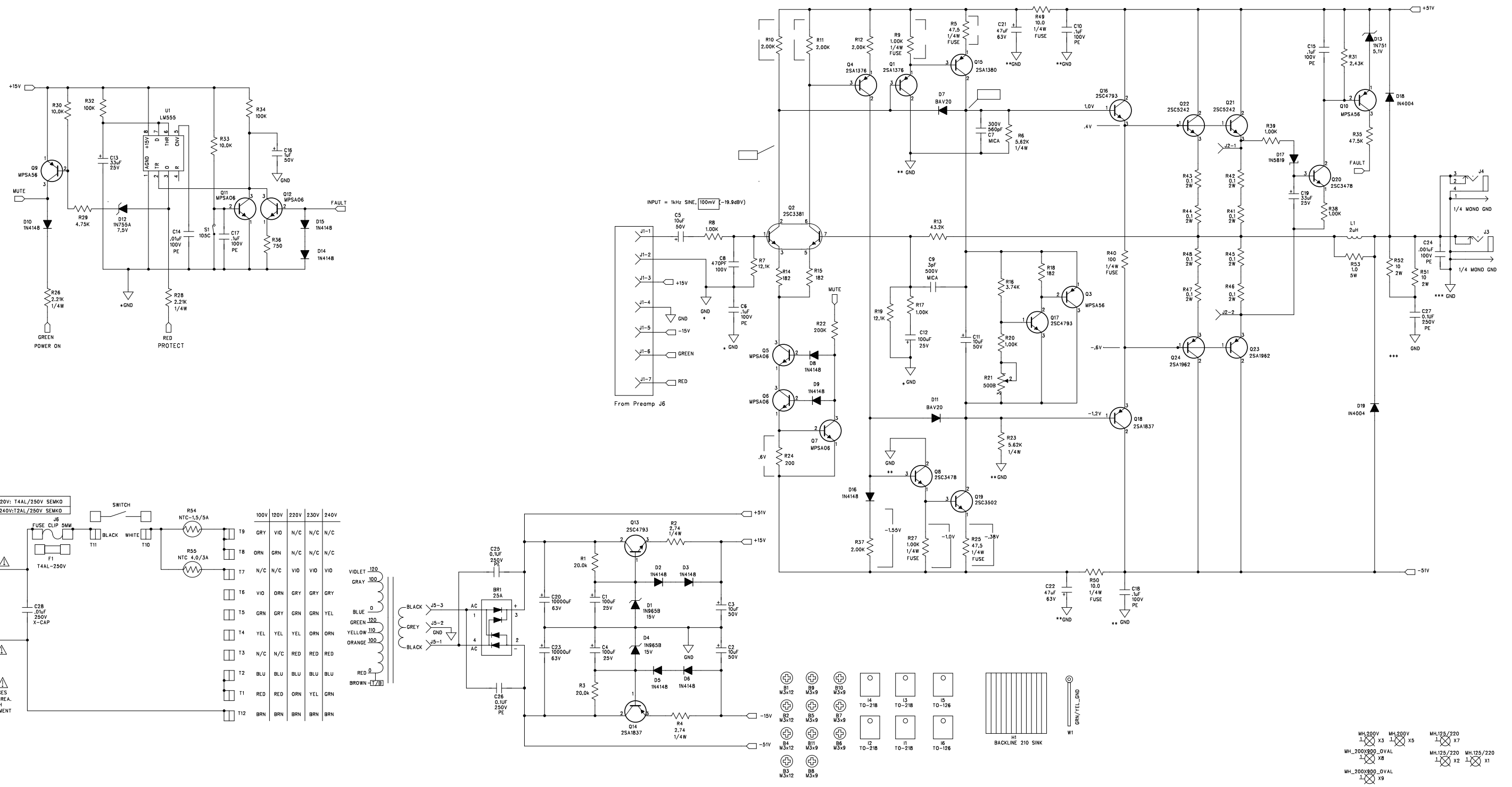
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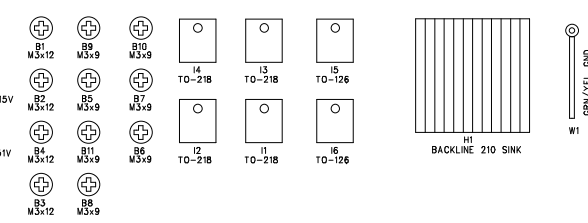
2

1



BIAS ADJUSTMENT PROCEDURE:
 WITH POWER OFF, ADJUST POT R21 TO FULL COUNTER-CLOCKWISE POSITION.
 TURN ON POWER AND WAIT 5 SECONDS FOR TURN ON DELAY.
 TURN R21 CLOCKWISE UNTIL VOLTAGE ACCROSS P3 READS 5 mVDC.

- NOTES: UNLESS OTHERWISE SPECIFIED,
- TEST CONDITIONS: 100mV 1kHz SINE, DIRECT INPUT (PRE-AMP BYPASSED) NO LOAD
 - DENOTES RMS AC VOLTAGE



NOT VALID UNLESS STAMP IS RED

gallen technology

2234 INDUSTRIAL DRIVE
 STOCKTON CA. 95206
 VOICE: 209-234-7300
 FAX: 209-234-8420

TITLE: BACKLINE 210 POWER AMP

DESIGNED: R.A.G. DATE: 12/3/00
 DRAWN: R.A.G. DATE: 12/12/03
 ELEC: B
 MECH: B
 Q/A: B
 RELEASED: B

REV. A2

PART NO: 206-0270-A2

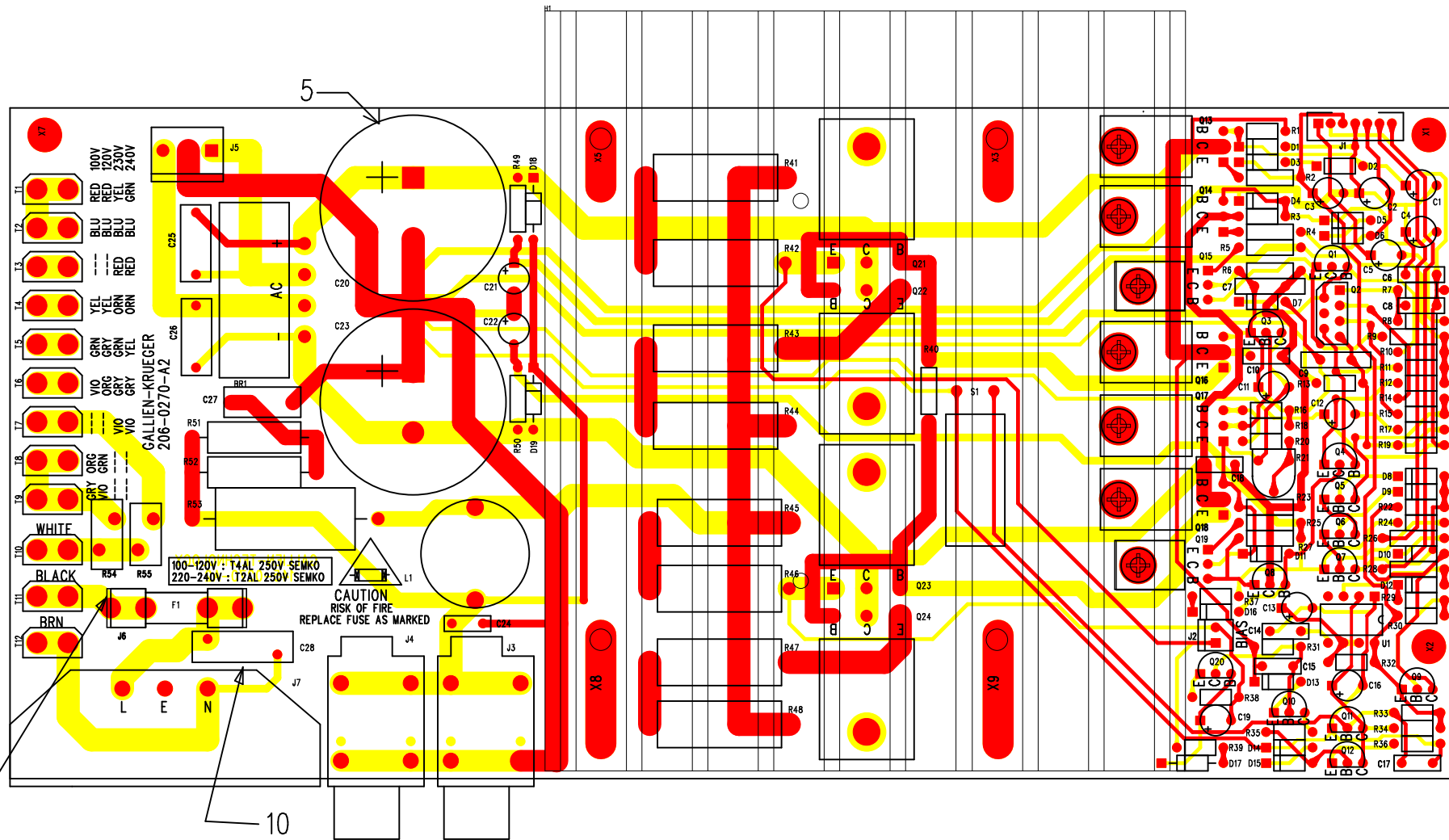
COMPANY: GALLIEN-KRUEGER

FILENAME: 6270A2

GALLIEN-KRUEGER

Backline 210 Power Amp 206-0270-A2

Part No.	Reference	Description	Manufacturer	Mfr. Part No.
001-2060-0	U1	LM555, TIMER	NATIONAL	LM555CN
010-0000-0	Q2	2SC3381BL,NPNX2,80V,100MA,2-10M1B	TOSHIBA	2SC3281BL
010-0001-0	Q8 Q20	2SC3478, NPN, 180V, 100MA, TO-92	NEC	2SC3478-K
010-0003-0	Q19	2SC3502-F,NPN,200V,100MA,TO-126	TOSHIBA	2SC3502
010-0012-0	Q5-7 Q11-12	MPSA06, NPN, 80V, 500MA, TO-92	MOTOROLA	MPS-A06
010-1002-0	Q1 Q4	2SA1376, PNP, 180V, 100MA, TO-92	NEC	2SA1376-K
010-1003-0	Q15	2SA1380-F, PNP, 200V, 100MA, TO-126	SANYO/TOSHIBA	2SA1380-F/E
010-1013-0	Q3 Q9-10	MPSA56 PNP 80V 500MA TO-92	MOTOROLA	MPS-A56
012-0002-0	Q13 Q16-17	2SC4793,NPN,200V,1.5A,2-10R1A	TOSHIBA	2SC4793
012-0003-0	Q21-22	2SC5242,NPN,230V,15A,2-16C1A	TOSHIBA	2SC5242-O
012-1002-0	Q14 Q18	2SA1837,PNP,200V,1.5A,2-10R1A	TOSHIBA	2SA1837
012-1003-0	Q23-24	2SA1962,PNP,230V,15A,2-16C1A	TOSHIBA	2SA1962
020-0004-0	D12	1N755A, ZENER, 7.5V, 500MW, .D035	TAITRON	1N755A
020-0050-0	D13	1N751, ZENER, 5.1V, 10%, 400MW, DO-35	NATIONAL	1N751
020-0150-0	D1 D4	1N965B, ZENER, 15V, 5%, 500mW, DO-35	TAITRON	1N965B
020-1000-0	D2,3,5,6,8-10,14-16	1N4148, RECT-FAST, 200MA, 100V	MOTOROLA	1N4148
020-1022-0	D7 D11	BAV20, RECT, 200V, DO-35	NATIONAL	BAV20
020-1104-0	D17	SHOTTKY, 1A, 40V, 10NS, DO-41	MOTOROLA	1N5819
020-2106-0	D18-19	1N4004,RECT,1A,400V,DO-41	TAITRON	1N4004
022-3011-0	R55	THERMISTOR, 4 OHM, 3 AMP	UEI	08SP004M
022-3020-0	R54	THERMISTOR, 1.5 OHM, 5 AMP	UEI	N10SP1R5M
023-0112-0	BR1	BRIDGE, 25A, 200V, VERT, PC, MO25S-02	CHENG-YI	MP25-02S
031-1107-0	C1 C4 C12	CAP,ELEC,RAD,107,20%,25V	UNITED CHEMI-CON	SMG25VB101M6X11LL
031-1336-0	C13 C19	CAP,ELEC,RAD,336,20%,25V	UNITED CHEMI-CON	SRG25VB33RM5X7LL
031-2105-0	C16	CAP,ELEC,RAD, 105, 20%, 50V	UNITED CHEMI-CON	C440C105M5U5CA
031-2106-0	C2-3 C5 C11	CAP,ELEC,RAD, 106, 20%, 50V	UNITED CHEMI-CON	SMG50VB10RM5X11LL
031-3109-0	C20 C23	CAP, ELEC, RADIAL, 1000UF, 20%, 63V	UNITED CHEMI-CON	SMH63VN103M30X50T2
031-3476-0	C21-22	CAP,ELEC,RAD,476,20%,63V	UNITED CHEMI-CON	SMG63VB47RM6X11LL
032-4102-0	C24	CAP,PE,102,5%,100V,	PANASONIC	ECQB1102JF
032-4103-0	C14	CAP,PE,103,5%,100V,	PANASONIC	ECQV1103JM
032-4104-0	C6 C10 C15 C17-18	CAP,PE,104,5%,100V,	PANASONIC	ECQV1104JM
032-7104-0	C25-27	CAP,PE,104,10%, 250V	ILLINOIS CAPACITOR	104MSR250K
034-4471-0	C8	CAP,MCR,470pF,5%,100V,	TAITRON	TMRS471J100NPOB
034-7103-0	C28	CAP, CERMIC DISK, 103, 10%, X-250V	PANASONIC	ECK-DRS103ZV
035-8030-0	C9	CAP MICA AXIAL , 3pF, 10%, 500V	CORNELL	CD10CD030D03
035-8561-0	C7	CAP MICA RADIAL, 561, 5%, 300V	CORNELL	CD15FC561J103
052-2.74-0	R2 R4	RES,METAL FILM, 2.74, 1/4W, 1%	ECI	M2F1AJ002.74
052-2212-0	R26 R28	RES,METAL FILM, 2.21k, 1/4W,1%	ECI	M2F1AK002.21
052-5622-0	R6 R23	RES,METAL FILM,5.62K,1/4W,1%	ECI	M5F1AK005.62
055-100-0	R41-48	RES, CERAMIC, 0.1, 2W,5%	ECI	MOM20J3AJ000.10
055-0101-0	R51-52	RES, METAL OXIDE, 10 OHM, 2W, 5%	ECI	MOM20J3AJ010.00
056-0100-0	R53	RES, CERAMIC WW, 1.0, 5W, 10%	ECI	WWC50J3AJ001.00
059-1000-0	R49-50	RES,MF,FUSE, 10.0, 1/4W, 1%	JUKN.OHM	FR25-10.0
059-1001-0	R40	RES,MF,FUSE, 100, 1/4W, 1%	JUKN.OHM	FR25-100
059-1002-0	R9 R27	RES,MF,FUSE, 1.00K, 1/4W, 1%	JUKN.OHM	FR25-1.00K
059-4750-0	R5 R25	RES,MF,FUSE, 47.5, 1/4W, 1%	JUKN.OHM	FR25-47.5
060-1002-0	R8 R17 R20 R38-39	RES,METAL FILM, 1.00K, 1/8W, 1%	ECI	M1F1AK001.00
060-1003-0	R30 R33	RES,METAL FILM, 10.0K, 1/8W,1%	ECI	M1F1AK100.00
060-1004-0	R32 R34	RES,METAL FILM, 100K, 1/8W, 1%	ECI	M1F1AK100.00
060-1213-0	R7 R19	RES,METAL FILM, 12.1K, 1/8W, 1%	ECI	M1F1AK012.10
060-1821-0	R14-15 R18	RES,METAL FILM, 182, 1/8W, 1%	ECI	M1F1AJ182.00
060-2001-0	R24	RES,METAL FILM, 200, 1/8W, 1%	ECI	M1F1AJ200.00
060-2002-0	R10-12 R37	RES,METAL FILM, 2.00K, 1/8W, 1%	ECI	M1F1AK002.00
060-2003-0	R1 R3	RES,METAL FILM, 20.0K, 1/8W, 1%	ECI	M1F1AK020.00
060-2004-0	R22	RES,METAL FILM, 200K, 1/8W, 1%	ECI	M1F1AK200.00
060-2432-0	R31	RES,METAL FILM, 2.43K, 1/8W, 1%	ECI	M1F1AK002.43
060-3742-0	R16	RES,METAL FILM, 3.74K, 1/8W, 1%	ECI	M1F1AK003.92
060-4323-0	R13	RES,METAL FILM, 43.2K, 1/8W, 1%	ECI	M1F1AK043.20
060-4752-0	R29	RES,METAL FILM, 4.75K, 1/8W, 1%	ECI	M1F1AK004.75
060-4753-0	R35	RES,METAL FILM, 47.5K, 1/8W, 1%	ECI	M1F1AK047.50
060-7501-0	R36	RES,METAL FILM, 750, 1/8W, 1%	ECI	M1F1AJ750.00
070-0520-0	R21	POT,500B TRIM, 200mW	SONG HUEI	SH-655MCL-500B
081-0055-0	L1	INDUCTOR,2UH,20A,AIR CORE	SCHONBERG	081-0055-0
091-0024-0	F1	FUSE,5mm,T4AL,250V,SEMKO	LITTLE FUSE	218-004
091-1002-0	S1	THRM BRKR, 105C +/-5.0-DIFF, PC	KLIXON	7AM-028-A5
092-0001-0	J7	CON, IECX3, 10A, 250V, PC TERM	DIHTAIN	DTS-0045
092-0066-0	T1-12	FASTON, M, PC, .250"	KEYSTONE	1021



PCB WORK INSTRUCTIONS

DWG 420-0270-A2

NOTES:

UNLESS OTHERWISE SPECIFIED:

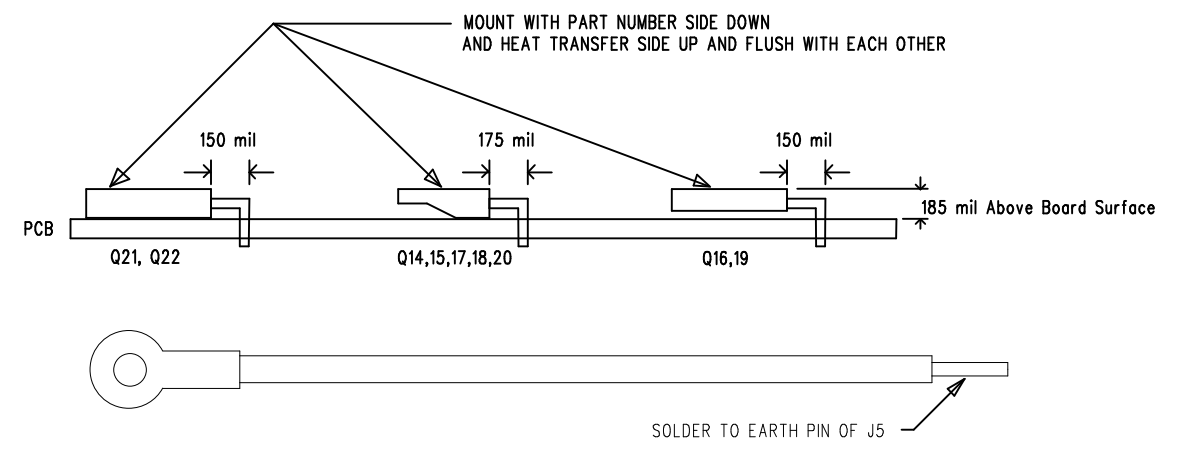
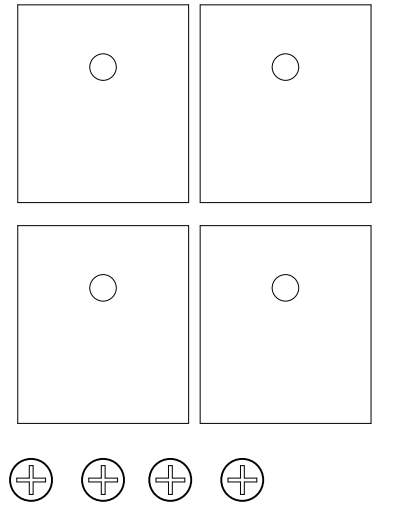
1. SQUARE PADS ON THRU HOLE PARTS (ie: CONNECTORS, DIPS, SIPS, LEDS) DENOTE PIN 1.
2. ALL BOARDS REQUIRE A COMPLETE AND THOROUGH VISUAL INSPECTION.
3. ALL BOARDS MUST BE BARE BOARD TESTED.
4. ASSEMBLE AND SOLDER PER ANSI/IPC-A-610B.

LOADING

5. C20, C23 LOAD WITH SILICON GLUE BETWEEN BOTTOM OF PART AND PCB
6. LOAD Q16 AND Q19 AFTER WAVE AS SHOWN BELOW, APPLY RUBER INSULATOR 105-0005-0. APPLY GREASED MICA INSULATOR TO Q21 AND Q22.
7. FUSE LOADING - F1
 FOR 120V MODEL: LOAD FUSE, 5MM, T4AL, 250V
 FOR 230V MODEL: LOAD FUSE, 5MM, T2AL, 250V

FINAL QA

8. CHECK R43, 44, 45, 46 TO BE FLUSH WITH PCB
9. CHECK J1,2,3,4,5,6 TO SEE COMPONENTS ARE FLUSH WITH PCB
10. GLUE C28 TO J5 WITH SILICON RTV



NOT VALID UNLESS STAMP IS RED		2234 INDUSTRIAL DRIVE STOCKTON CA. 95206 VOICE: 209-234-7300 FAX: 209-234-8420	
gallien technology		TITLE: BACKLINE 210 POWER AMP	
APPROVALS		SIZE: B	
INIT	DATE	DRAWING NO:	REV.
DESIGNED: R.A.G.	2/15/01	405-0270-A2	A2
DRAWN: R.A.G.	12/12/03	PART NO:	
ELEC:		145-0270-A2	
LAYER DESCRIPTION:		COMPANY: GALLIEN-KRUEGER	
TOPSIDE BOTTOMSIDE		GERBER FILE NAME: 5270A2	
		FILENAME: 5270A2	

This document is generated to address fuse failure due to excessive inrush current during turn on. It is applicable to Backline 350 and Backline 210 power amp boards with part number 206-0270-A.

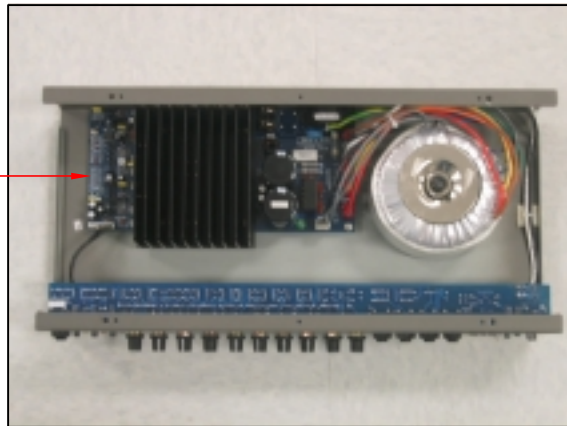
To correct the problem, a thermistor with part number 022-3020-0 is soldered in series with the primary side of the transformer.

The following is a guideline on how to modify the unit with the thermistor :

STEP I:

If the unit is a Backline 350 remove the top cover then remove the power amp board from the chassis assembly.

If the unit is a Backline 210, remove the chassis assembly from the cabinet, then remove the power amp board. Please see figure 1.



Chassis Assembly
figure 1

power amp board

STEP II:

Locate T8 and T9 on the power amp board (figure 2a). Turn the power amp board over as per figure 2b.

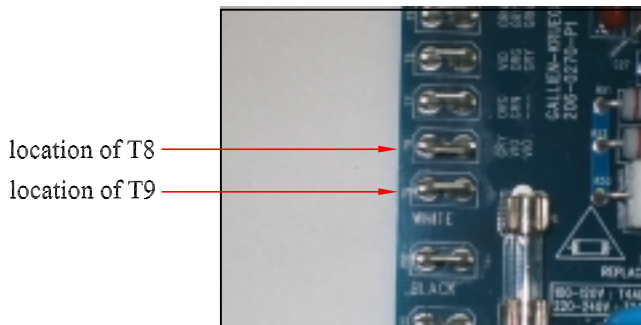
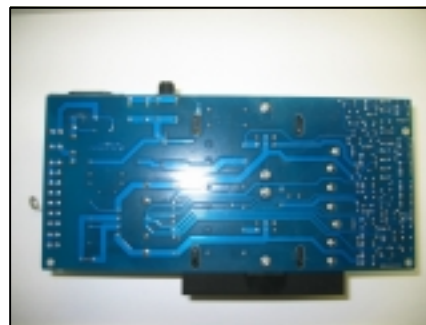


figure 2a



Power Amp Board
figure 2b

STEP III:

Locate T8 and T9 on the bottom/solder side of the board (figure 3a). Cut the trace between T8 and T9 as shown in figure 3b.

location of T8 and T9 on the bottom/solder side of the board

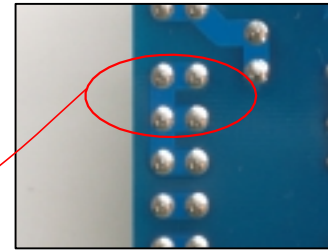


figure 3a

cut the trace here

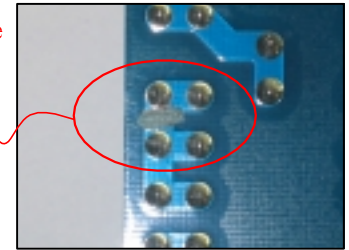


figure 3b

STEP IV:

Solder one lead of Thermistor (022-3020-0) to T9 and the other to T7, as shown in figure 4.

Note: Make sure that no portion or part of the thermistor is touching any terminal on the board except terminals T7 and T9.

Thermistor NTC 1.5 ohm, 5 amperes
Manufacturing Part #: N10SP1R5M
GK Part #: 022-3020-0

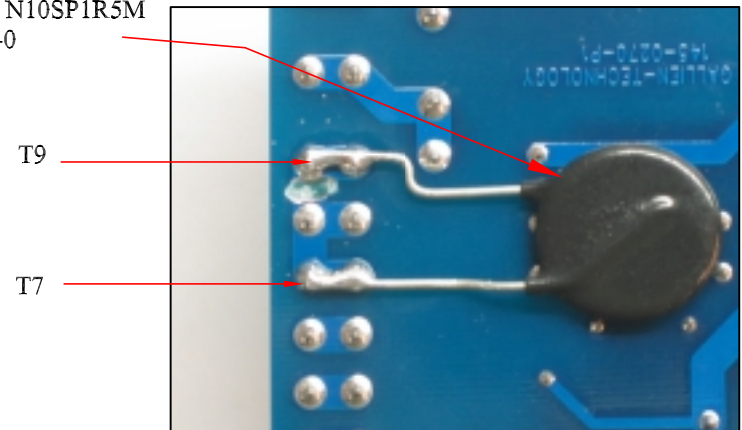


figure 4

PROPRIETARY		
THE DRAWING CONTAINS INFORMATION WHICH IS PROPRIETARY TO GALLIEN TECHNOLOGY CORPORATION. DO NOT REPRODUCE IN ANY FORM OR DISTRIBUTE IN ANY FASHION WITHOUT THE EXPRESS WRITTEN PERMISSION OF GALLIEN TECHNOLOGY CORPORATION.		
APPROVAL		
DEPT.	INITIAL	DATE
PRODUCTION	NOLLYALDRZ	12/18/2003

gallien technology 2234 INDUSTRIAL DRIVE STOCKTON, CA, 95207	
TITLE THERMISTOR MODIFICATION	
FILE NAME	REV.
DOCUMENT NUMBER	SIZE
SCALE NOT TO SCALE	SHEET 1 OF 1

This document is generated to address fuse failure due to excessive inrush current during turn on. It is applicable to Backline 350 and Backline 210 power amp boards with part number 206-0270-A.

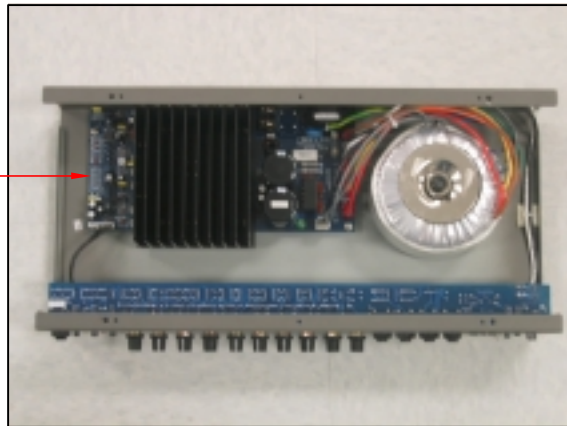
To correct the problem, a thermistor with part number 022-3011-0 is soldered in series with the primary side of the transformer.

The following is a guideline on how to modify the unit with the thermistor :

STEP I:

If the unit is a Backline 350 remove the top cover then remove the power amp board from the chassis assembly.

If the unit is a Backline 210, remove the chassis assembly from the cabinet, then remove the power amp board. Please see figure 1.



Chassis Assembly
figure 1

STEP II:

Locate T8 and T9 on the power amp board (figure 2a). Turn the power amp board over as per figure 2b.

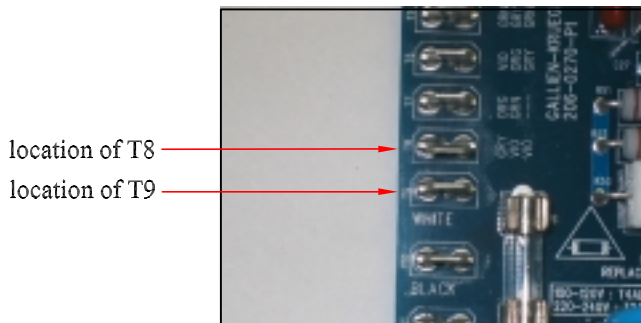
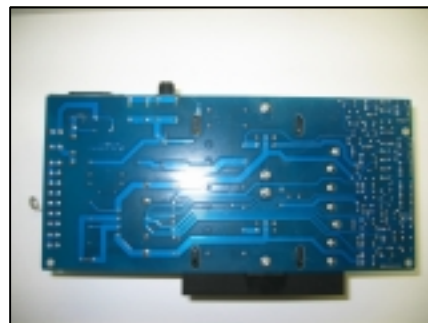


figure 2a



Power Amp Board
figure 2b

STEP III:

Locate T8 and T9 on the bottom/solder side of the board (figure 3a). Cut the trace between T8 and T9 as shown in figure 3b.

location of T8 and T9 on the bottom/solder side of the board

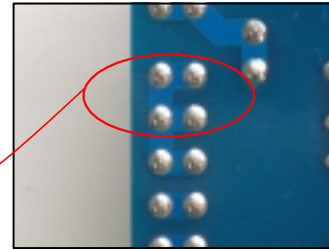


figure 3a

cut the trace here.

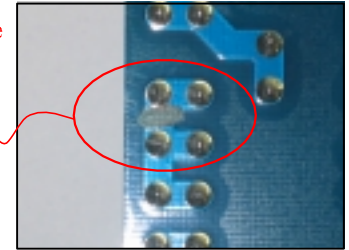


figure 3b

STEP IV:

Solder one lead of Thermistor (022-3011-0) to T9 and the other to T7, as shown in figure 4.

Note: Make sure that no portion or part of the thermistor is touching any terminal on the board except terminals T7 and T9.

Thermistor NTC 4 ohms, 3 amperes
Manufacturing Part #: 08SP004M
GK Part #: 022-3011-0

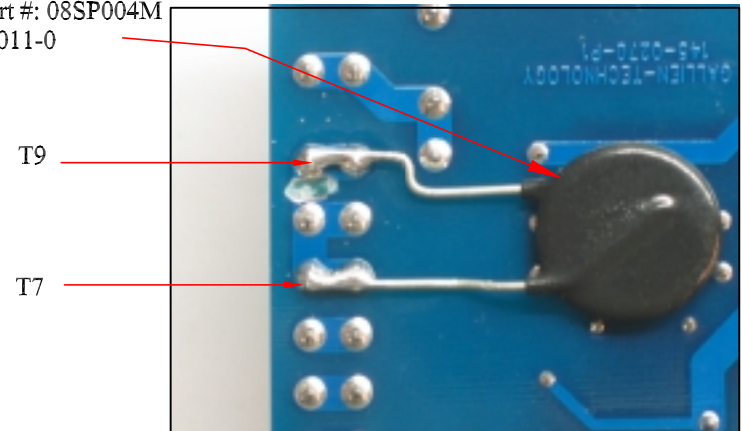


figure 4

<small>PROPRIETARY</small> THE DRAWING CONTAINS INFORMATION WHICH IS PROPRIETARY TO GALLIEN TECHNOLOGY CORPORATION. DO NOT REPRODUCE IN ANY FORM OR DISTRIBUTE IN ANY FASHION WITHOUT THE EXPRESS WRITTEN PERMISSION OF GALLIEN TECHNOLOGY CORPORATION.		
APPROVAL		
DEPT.	INITIAL	DATE
PRODUCTION	NOLLYADKZ	12/18/2003

gallien technology 2234 INDUSTRIAL DRIVE STOCKTON, CA, 95207	
TITLE THERMISTOR MODIFICATION	
FILE NAME	REV.
DOCUMENT NUMBER	SIZE
SCALE NOT TO SCALE	SHEET 1 OF 1