

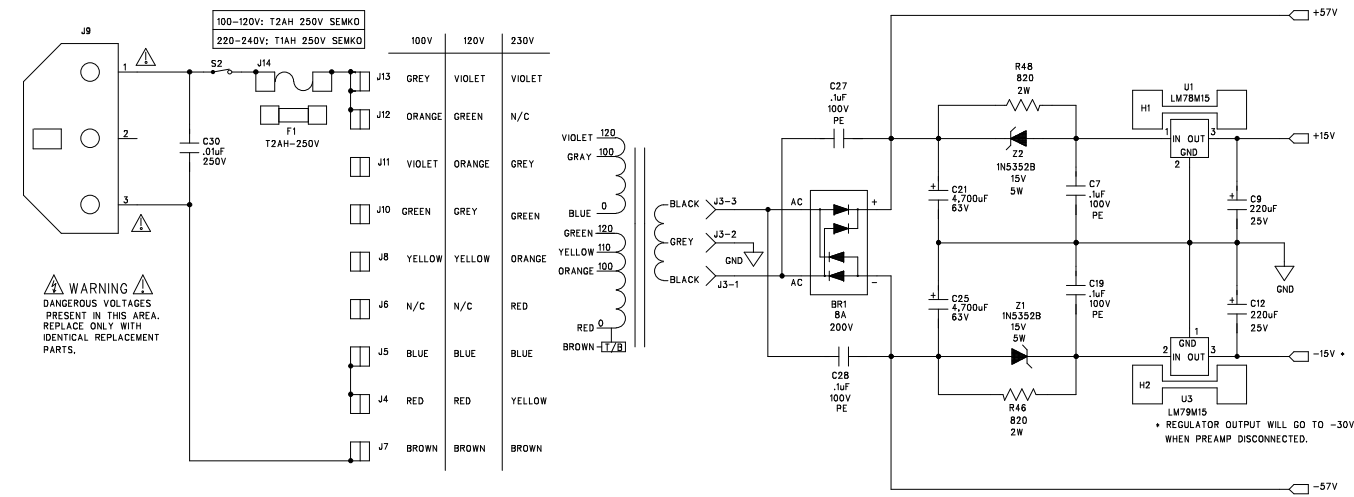
Service Manual

BACKLINE 1 1 2

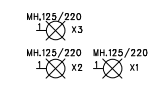
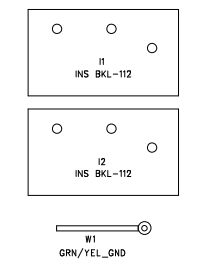
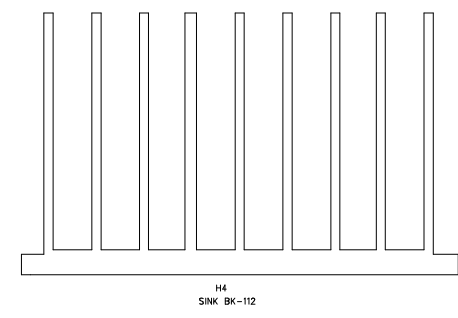
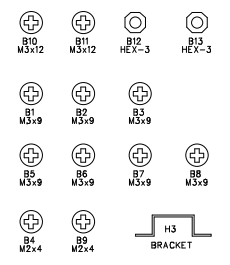
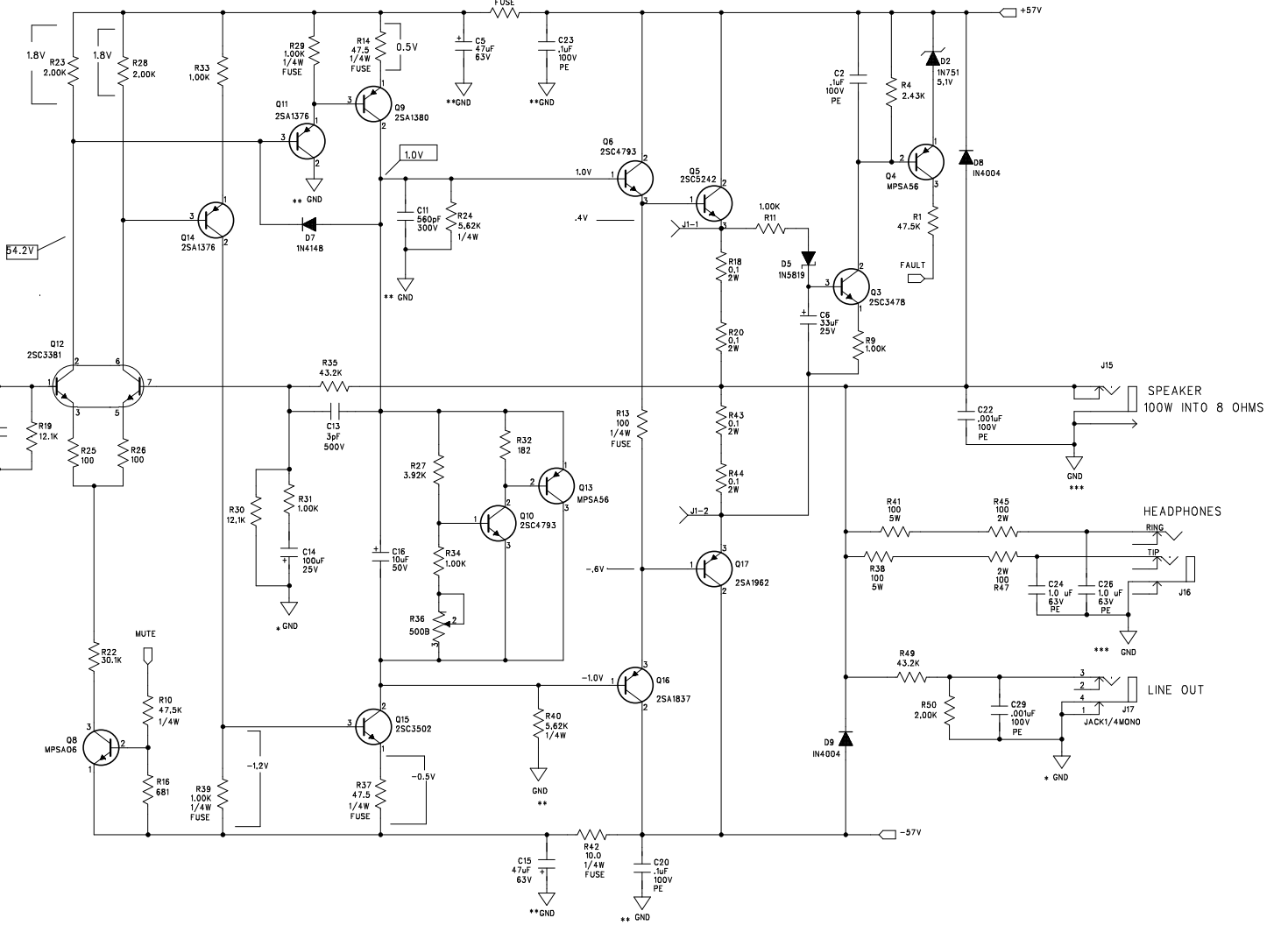
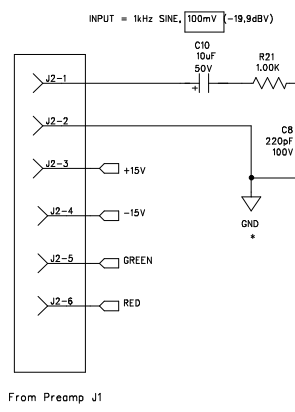
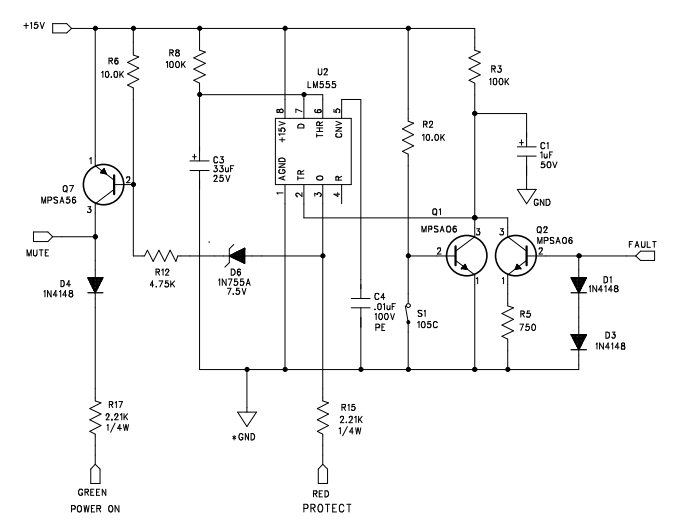
 **GALLIEN-KRUEGER**

| REVISION RECORD | | | |
|-----------------|---------|-----------|----------|
| LTR | ECO NO: | APPROVED: | DATE: |
| | A2 | | 12-21-01 |
| | | | |
| | | | |

6 5 4 3 2 1



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



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

BIAS ADJUSTMENT PROCEDURE:
WITH POWER OFF, ADJUST POT R35 TO FULL COUNTER-CLOCKWISE POSITION. TURN ON POWER AND WAIT 5 SECONDS FOR TURN ON DELAY. TURN R35 CLOCKWISE UNTIL VOLTAGE ACCROSS J1 READS 10 mVDC.

NOT VALID UNLESS STAMP IS RED

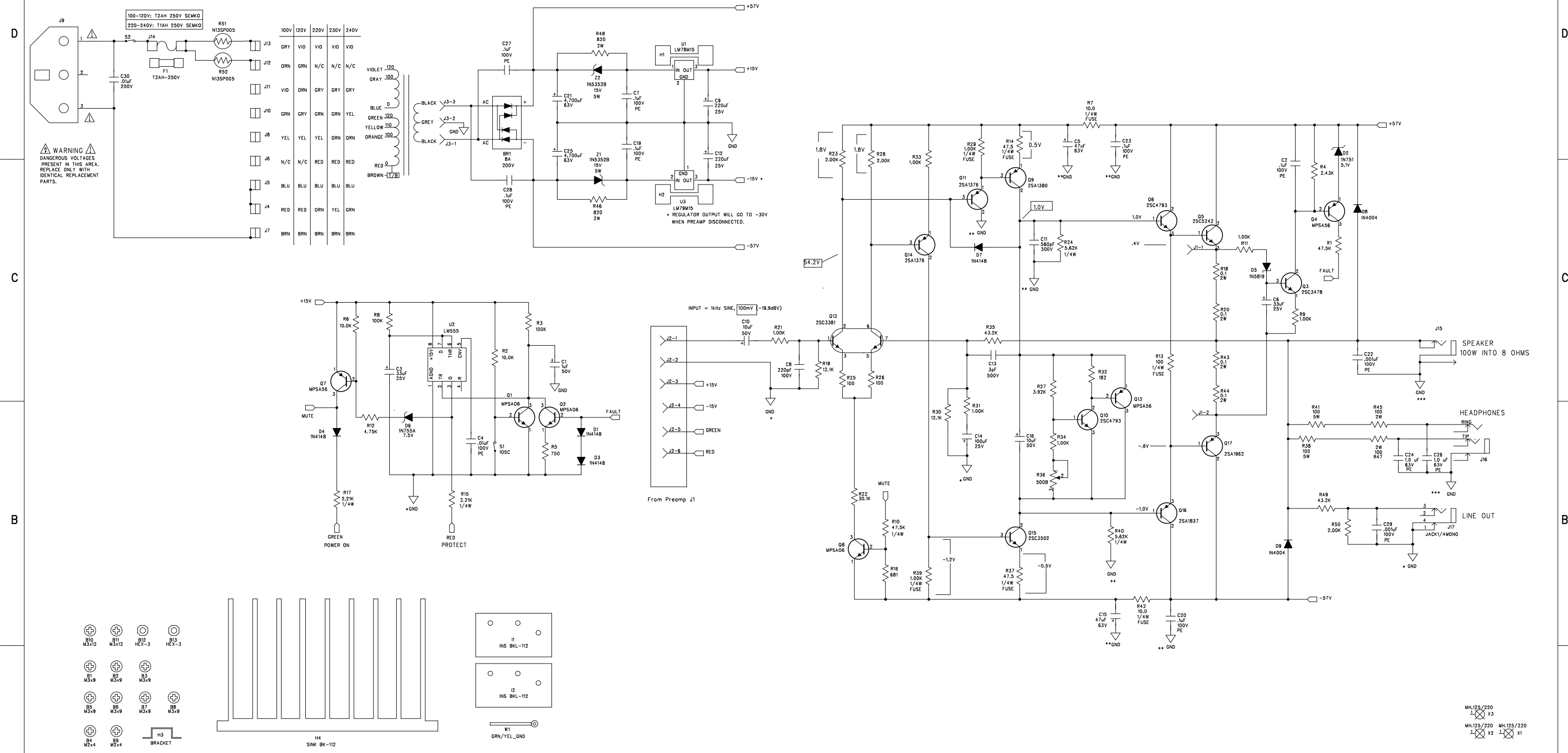
gallien technology

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

| APPROVALS | | TITLE: | |
|------------------|----------|--------------------------|-------------------------|
| INIT | DATE | BACKLINE 112 POWER AMP | |
| DESIGNED: R.A.G. | 10/01/01 | SIZE | DRAWING NO: 406-0190-A1 |
| DRAWN: R.A.G. | 9/30/03 | B | PART NO: 206-0190-A1 |
| ELEC: | | COMPANY: GALLIEN-KRUEGER | |
| MECH: | | FILENAME: 6190A1 | |
| Q/A: | | | |
| RELEASED: | | | |

REV. A1

| REVISION RECORD | | | |
|-----------------|---------|-----------|----------|
| LTR | ECO NO: | APPROVED: | DATE: |
| | A2 | | 12-21-01 |
| | | | |
| | | | |



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

BIAS ADJUSTMENT PROCEDURE:
 WITH POWER OFF, ADJUST POT R35 TO FULL COUNTER-CLOCKWISE POSITION.
 TURN ON POWER AND WAIT 5 SECONDS FOR TURN ON DELAY.
 TURN R35 CLOCKWISE UNTIL VOLTAGE ACCROSS J1 READS 10 mVDC.

NOT VALID UNLESS STAMP IS RED

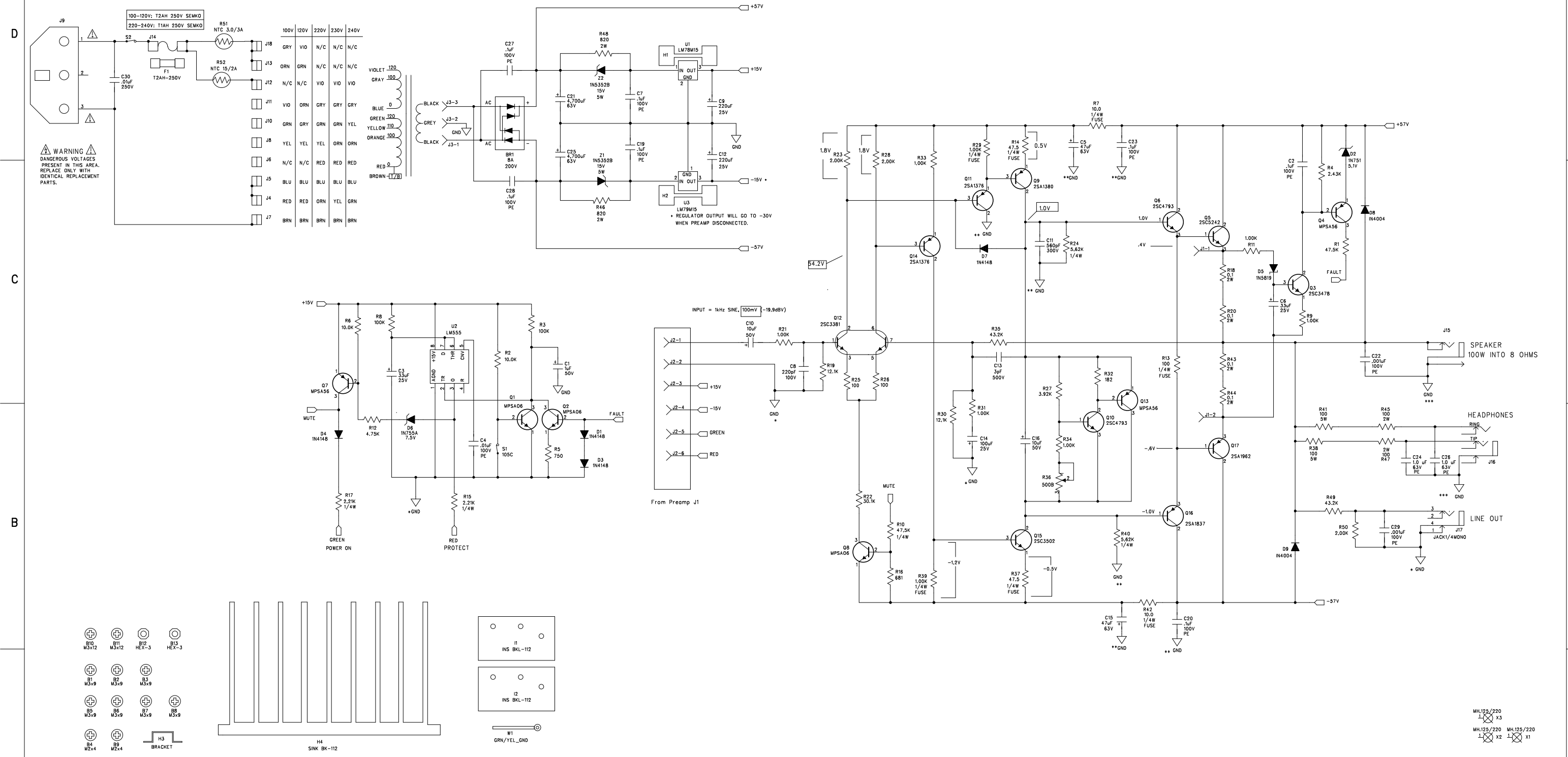
gallen technology

2234 INDUSTRIAL DRIVE
 STOCKTON CA, 95206
 VOICE: 4209-234-7300
 FAX: 209-234-8420

| APPROVALS | | TITLE: | |
|------------------|----------|------------------------|-------------------------|
| INIT | DATE | BACKLINE 112 POWER AMP | |
| DESIGNED: R.A.G. | 10/01/01 | SIZE | DRAWING NO: 406-0190-A2 |
| DRAWN: R.A.G. | 11/17/03 | B | PART NO: 206-0190-A2 |
| ELEC: | | | REV. A2 |
| MECH: | | COMPANY: | GALLIEN-KRUEGER |
| Q/A: | | FILENAME: | 6190A2 |
| RELEASED: | | | |

NOTES FOR REV A2:
 1. ADD THERMISTORS R51 & 52.
 2. ADD 240V SUPPLY TABLE.

| REVISION RECORD | | | |
|-----------------|---------|-----------|----------|
| LTR | ECO NO: | APPROVED: | DATE: |
| | A2 | | 12-21-01 |
| | | | |
| | | | |



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

BIAS ADJUSTMENT PROCEDURE:
 WITH POWER OFF, ADJUST POT R35 TO FULL COUNTER-CLOCKWISE POSITION.
 TURN ON POWER AND WAIT 5 SECONDS FOR TURN ON DELAY.
 TURN R35 CLOCKWISE UNTIL VOLTAGE ACCROSS J1 READS 10 mVDC.

NOT VALID UNLESS STAMP IS RED

gallen technology

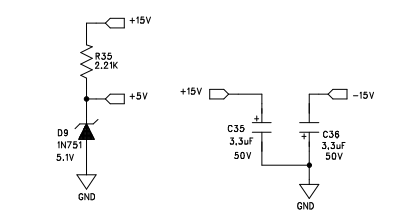
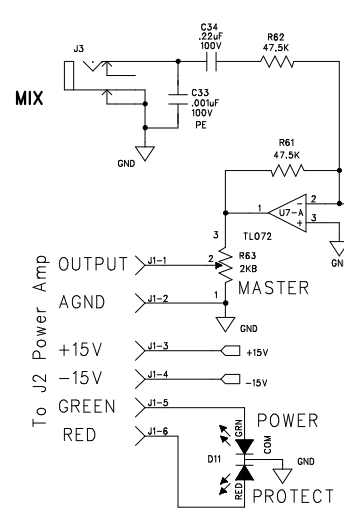
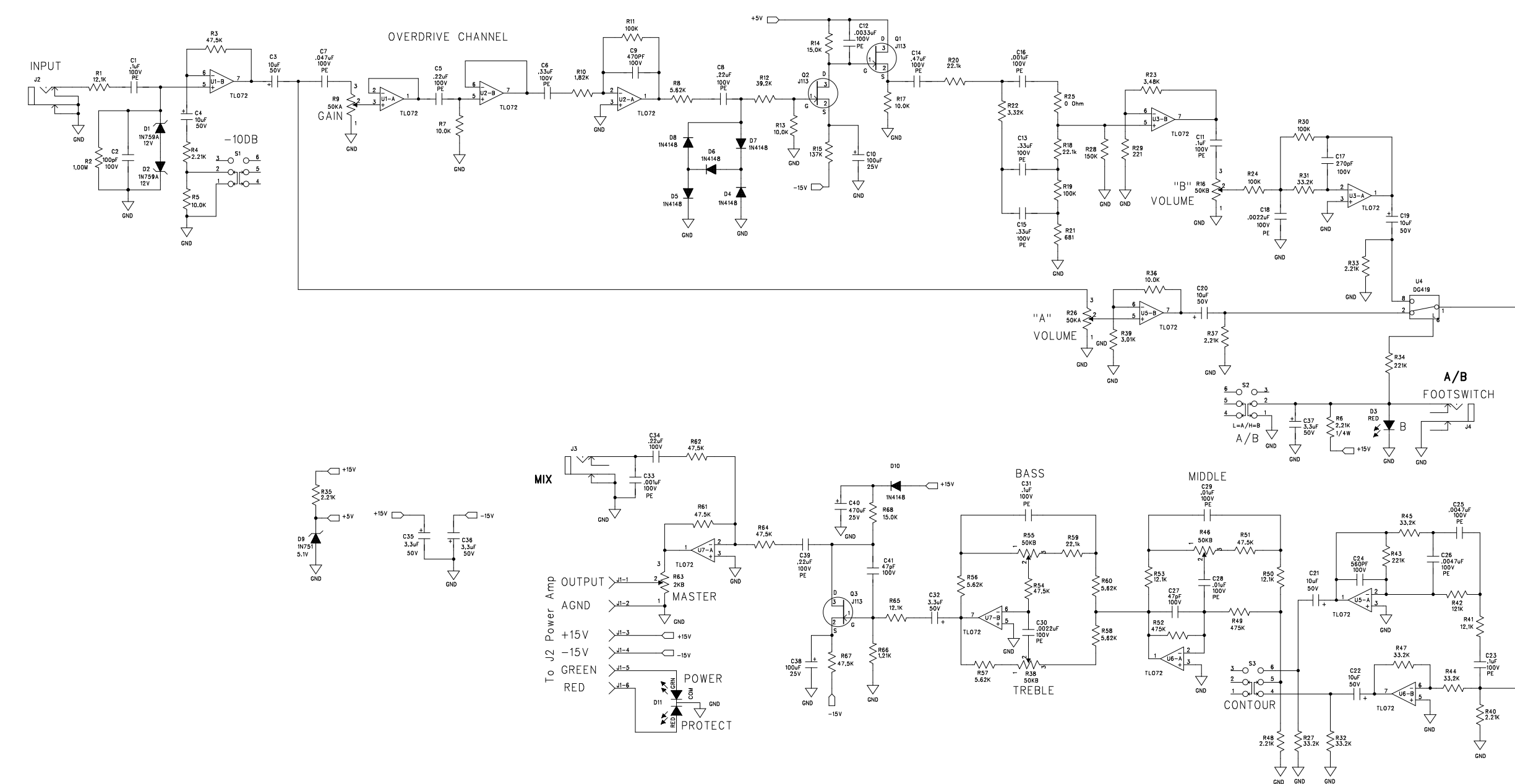
2234 INDUSTRIAL DRIVE
 STOCKTON CA. 95206
 VOICE: 4209-234-7300
 FAX: 209-234-8420

| APPROVALS | | DATE | | TITLE | |
|-----------|--------|----------|--|------------------------|-----------------|
| INIT | | | | BACKLINE 112 POWER AMP | |
| DESIGNED: | R.A.G. | 10/01/01 | | DRAWING NO: | 406-0190-A3 |
| DRAWN: | R.A.G. | 12/11/03 | | PART NO: | 206-0190-A3 |
| ELEC: | | | | | |
| MECH: | | | | COMPANY: | GALLIEN-KRUEGER |
| Q/A: | | | | FILENAME: | 6190A3 |
| RELEASED: | | | | | |

FILES FOR REV A3:
 1. ADD THERMISTORS R51 & 52.
 2. MODIFY SUPPLY TABLE FOR THERMISTORS.
 3. ADD J12.

MH125/220
 1 X 12
 MH125/220
 1 X 11

| REVISION RECORD | | |
|-----------------|-------------------------|----------|
| ECD NO: | Description Of Change | DATE: |
| A2 | R26 to 3.48K from 6.81K | 12-21-01 |
| | | |
| | | |



NOT VALID UNLESS STAMP IS RED

gallien technology

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

| | | | | | |
|-----------------------------------|----------|-----------------------------------|--------------------------|---|--|
| 1. CHANGE R5 TO 10.0K FROM 8.25K. | | 2. UPDATE ALL PAD AND HOLE SIZES. | | 3. CHANGE BOARD NO. TO 206-0191-A FROM 206-0150-B2. | |
| APPROVALS | | DATE | | TITLE: BACKLINE 110/112 PRE-AMP | |
| DESIGNED: R.A.G. | 10/01/01 | SIZE: B | DRAWING NO: 406-0191-A | REV. A | |
| DRAWN: R.A.G. | 12/6/02 | PART NO: 206-0191-A | COMPANY: GALLIEN-KRUEGER | | |
| ELEC: | | FILENAME: 6191A | | | |
| MECH: | | | | | |
| D/A: | | | | | |
| RELEASED: | | | | | |

| ZONE | Dim. | ECO# | Rev. | REVISIONS | Date |
|------|------|------|------|-----------|------|
| | | | | | |

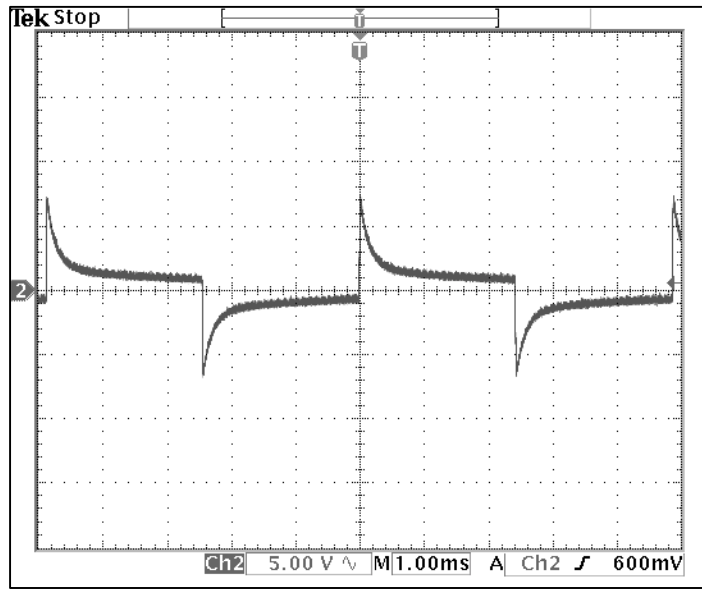


Figure 1
Tones center, Filters OFF

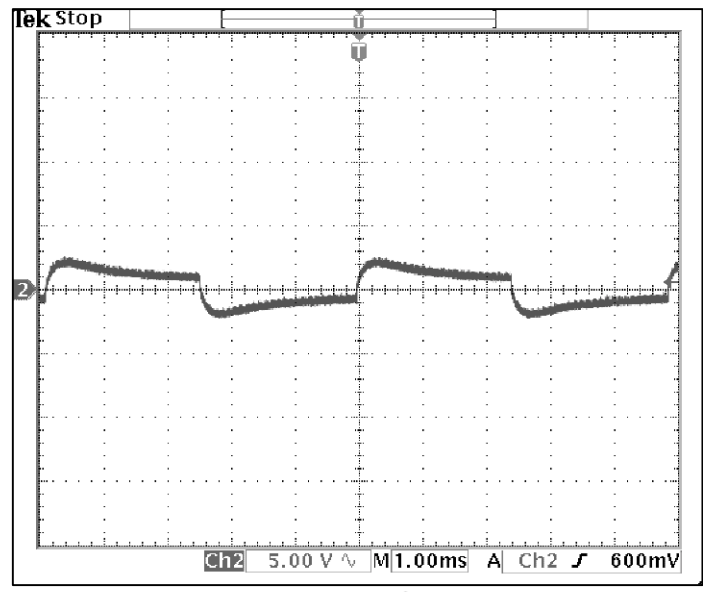


Figure 3
TREBLE to 0

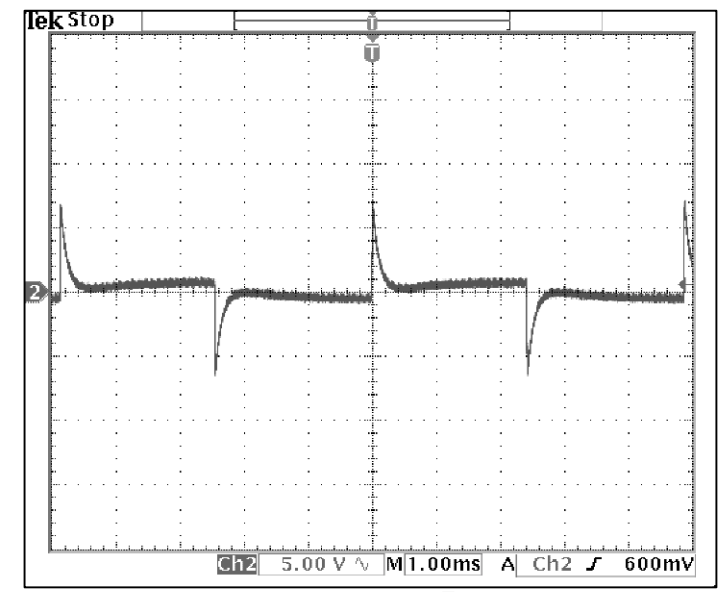


Figure 5
MID to 0

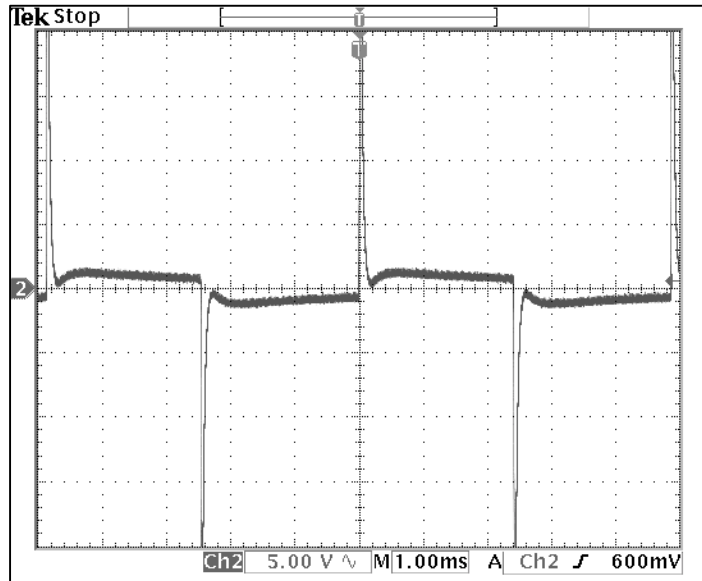


Figure 2
TREBLE to 10

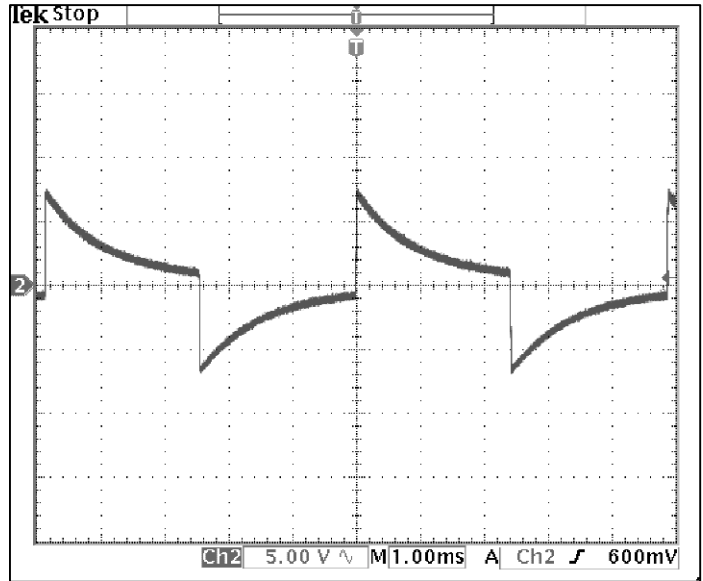


Figure 4
MID to 10

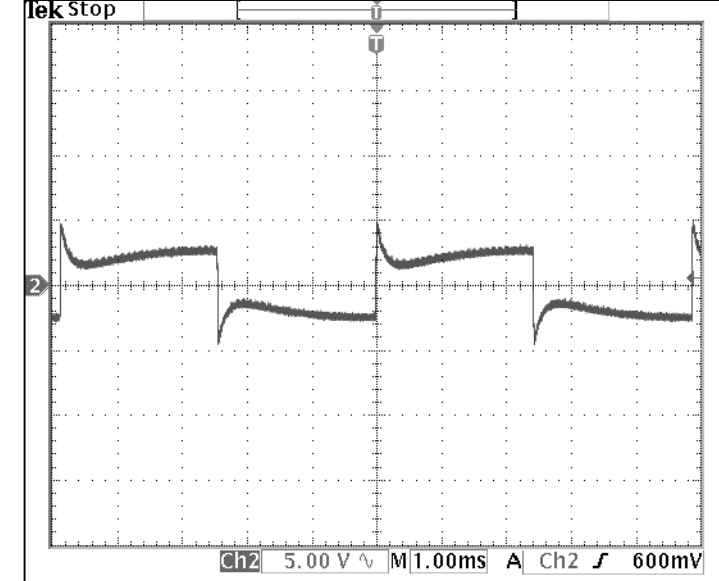


Figure 6
BASS to 10

Set up:

1. Apply signal into the input with 200Hz square wave @ -46dBV(5mVrms).
2. Set LEVEL-A, all ACTIVE EQ's, and MASTER to center(half way), CONTOUR switch OFF.
3. Look at output with scope set on 1mS/div and 5V/div.

| QTY PER ASSY | PART NUMBER | DESCRIPTION | DESIGNATION(S) | ITEM NO. |
|---|-------------|------------------|---------------------|-----------------|
| PROPRIETARY | | | | |
| THIS 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. | | | | |
| <small>TOLERANCES UNLESS OTHERWISE INDICATED DIMENSIONS SHOWN ARE IN INCHES</small> FRACTION ± ANGLES ± .XX ± 0.01 .XXX ± 0.005 | | APPROVALS | | |
| | | INIT | DATE | |
| MATERIAL: (SEE NOTE 1) | | MECH. DESIGN: | SIZE | DRAWING NUMBER: |
| FINISH: (SEE NOTE 1) | | DRAWN BY: ATM | B | 206-0191-A1 |
| PROJ. MGR.: | | ELEC: | FILENAME: | REVISION |
| Q/A: | | RELEASED: | SCALE: NOT TO SCALE | A1 |
| | | | SHEET 1 OF 2 | |

gallien technology
2234 INDUSTRIAL DRIVE
STOCKTON, CA 95206

TITLE: **BACLINE 110/112**
PREAMP TEST WAVEFORMS

| ZONE | Dim. | ECO# | Rev. | REVISIONS | Date |
|------|------|------|------|-----------|------|
| | | | | | |
| | | | | | |

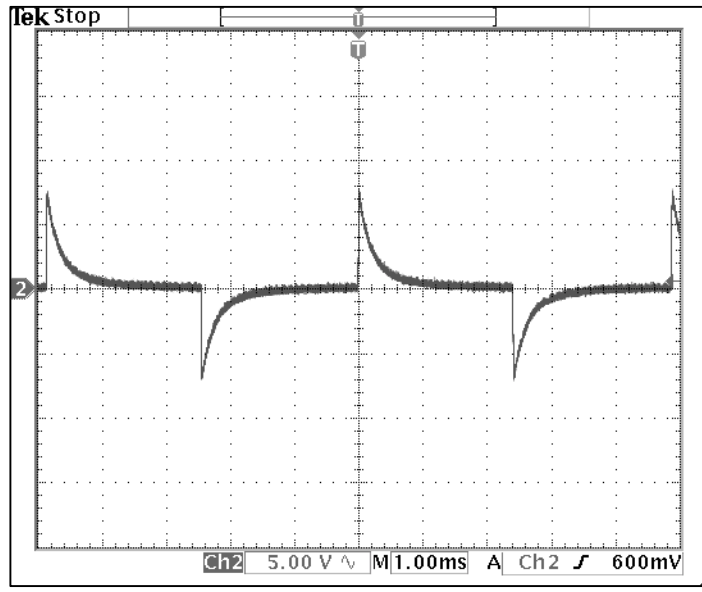
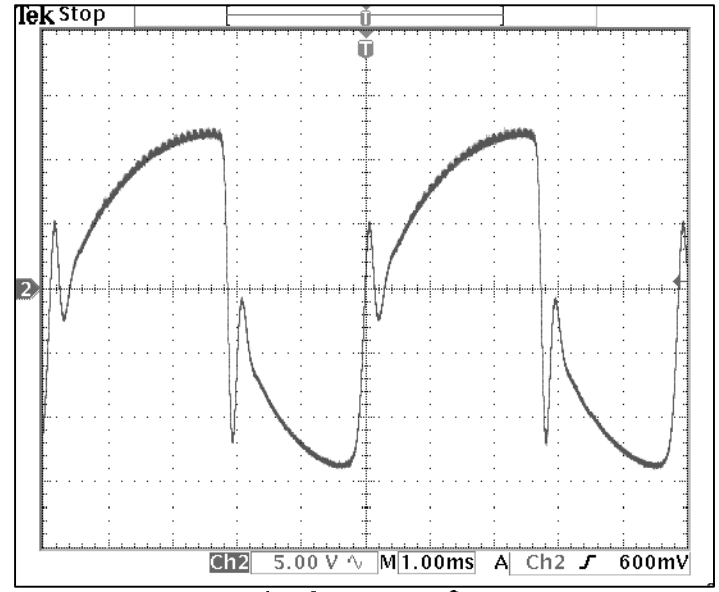


Figure 7
BASS to 0



***Figure 9**
OVERDRIVE ON

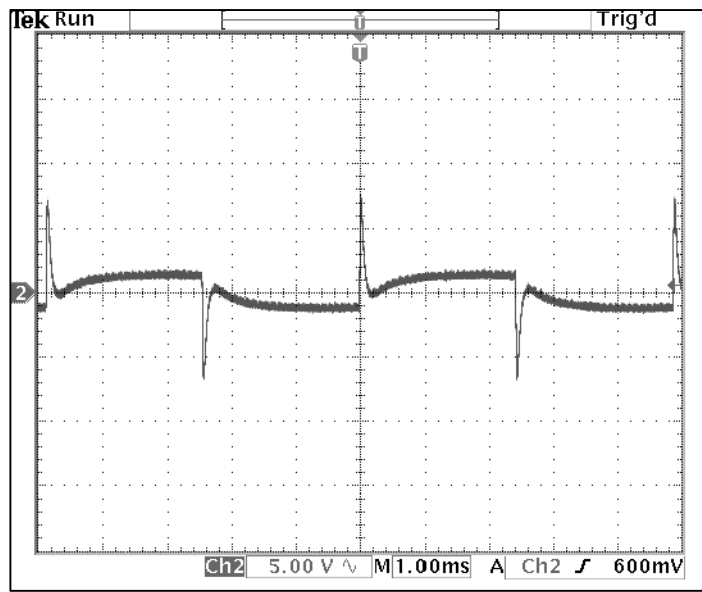


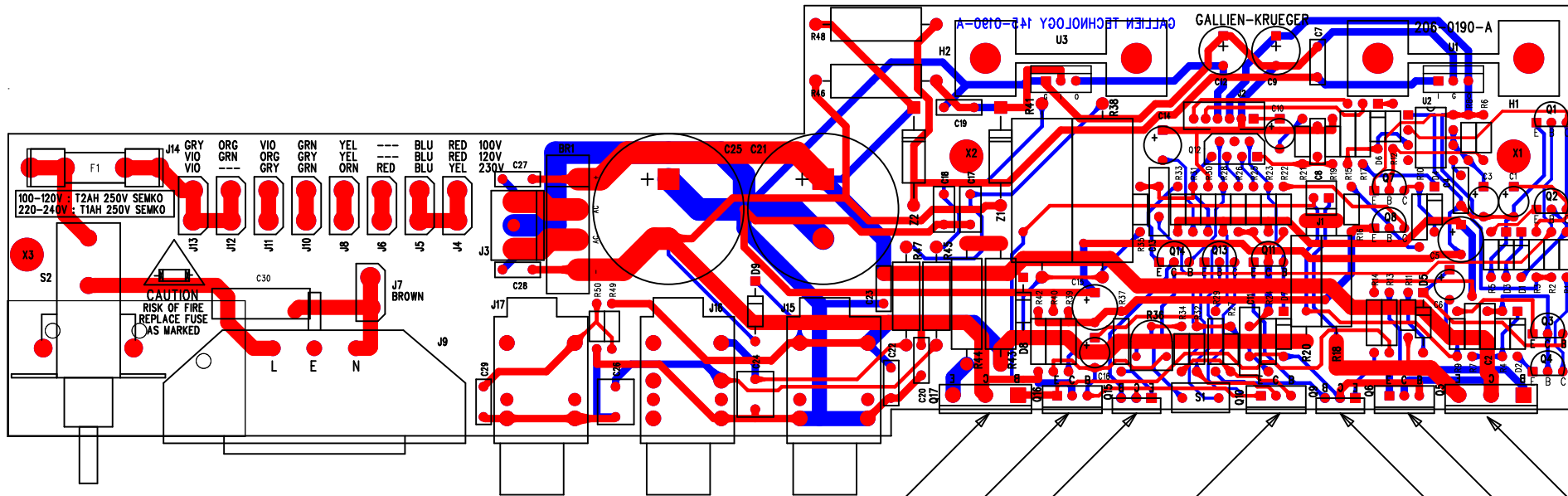
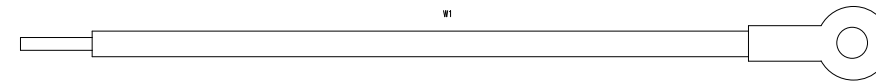
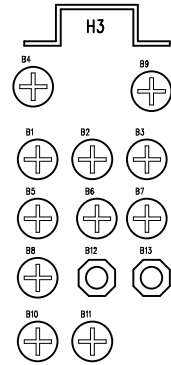
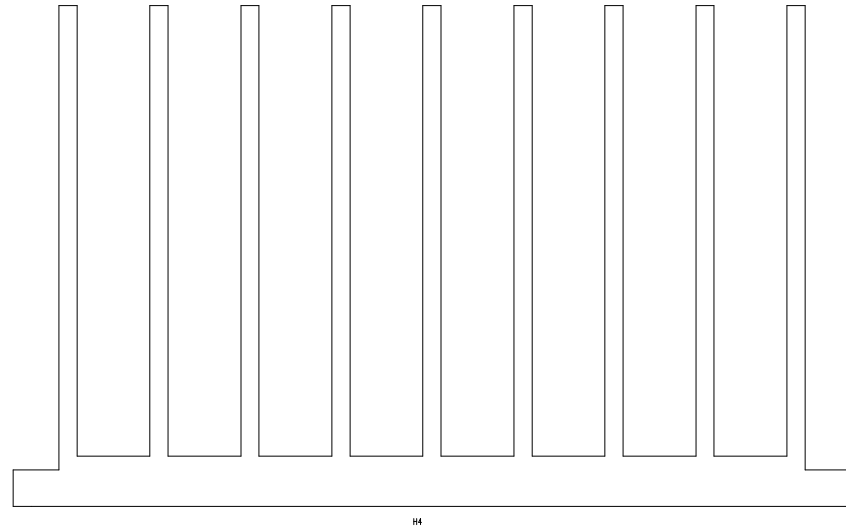
Figure 8
CONTOUR SWITCH IN

- *1. Change input signal to sinewave.
- 2. Press CH A/B to IN position.
- 3. Adjust GAIN to 10 and LEVEL-B to center(half-way).

Set up:

1. Apply signal into the input with 200Hz square wave @ -46dBV(5mVrms).
2. Set LEVEL-A, all ACTIVE EQ's, and MASTER to center(half way), CONTOUR switch OFF.
3. Look at output with scope set on 1mS/div and 5V/div.

| QTY PER ASSY | PART NUMBER | DESCRIPTION | DESIGNATION(S) | ITEM NO. |
|---|-------------|--------------------------|-------------------------------|-----------------|
| PROPRIETARY | | | | |
| THIS 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. | | | | |
| <small>UNLESS OTHERWISE INDICATED DIMENSIONS SHOWN ARE IN INCHES</small> TOLERANCES FRACTION ± ANGLES ± .XX ± 0.01 .XXX ± 0.005 | | APPROVALS | | |
| | | INIT | DATE | |
| MATERIAL: (SEE NOTE 1) | | MECH. DESIGN: | SIZE | DRAWING NUMBER: |
| FINISH: (SEE NOTE 1) | | ELEC: | B | |
| PROJ. MGR.: | | DATE: | ATM | 04/27/04 |
| Q/A: | | FILENAME: | TITLE: BAKLINE 110/112 | |
| RELEASED: | | PART NUMBER: 206-0191-A1 | | REVISION: A1 |
| SCALE: NOT TO SCALE | | | SHEET 2 OF 2 | |



PCB WORK INSTRUCTIONS
DWG 420-0190-A
NOTES:

UNLESS OTHERWISE SPECIFIED:

1. SQUARE PADS ON THRU HOLE PARTS 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.
5. FUSE LOADING - F1

FOR 120V MODEL: LOAD FUSE, 5MM, T2AH-250V SEMKO
FOR 230V MODEL: LOAD FUSE, 5MM, T1AH-250V SEMKO

FINAL QA

6. CHECK THAT U1, U2, U3, AND ALL JACKS AND HEADERS ARE FLUSH AND STRAIGHT
7. GLUE C30 TO J9 WITH SILICON RTV
8. MOUNT Q5, 6, 9, 10, 15, 16 & 17 AND Z1, 2 AS SHOWN IN DETAIL "A".

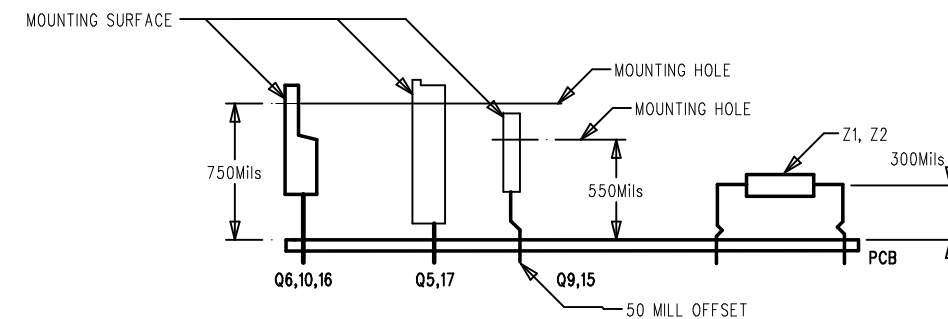
GREASE MOUNTING SURFACE
USE ONLY TOOLED MICA INSULATOR #105-0013-A, GREASE BOTH SIDES.

GREASE MOUNTING SURFACE
USE ONLY TOOLED MICA INSULATOR #105-0013-A GREASED BOTH SIDES.

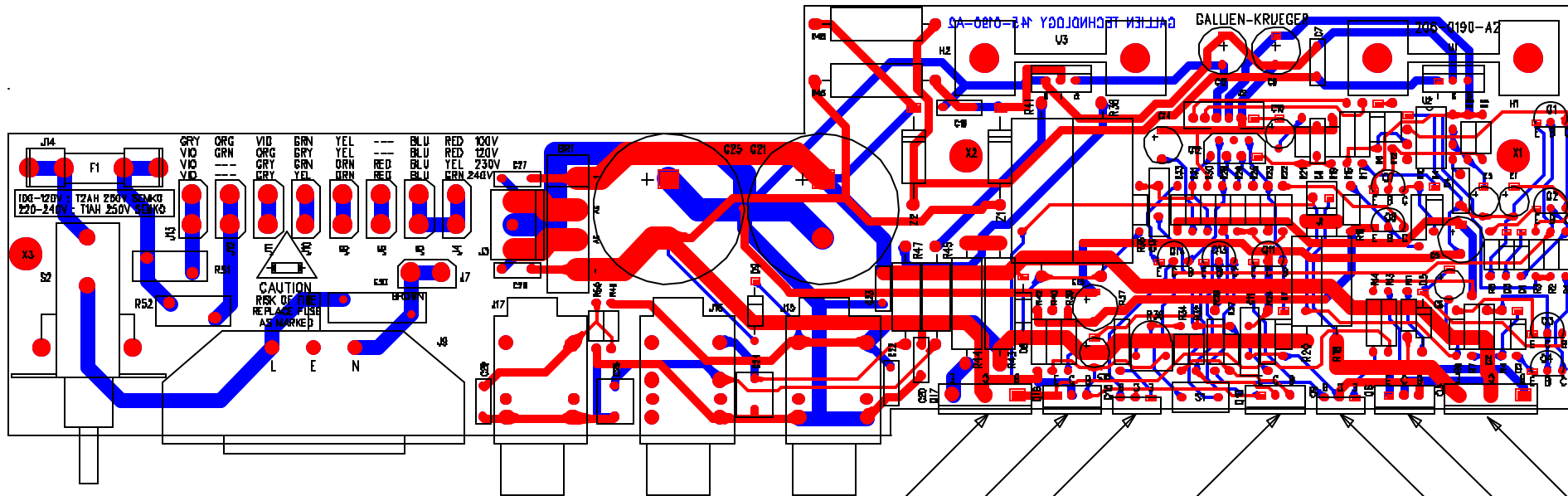
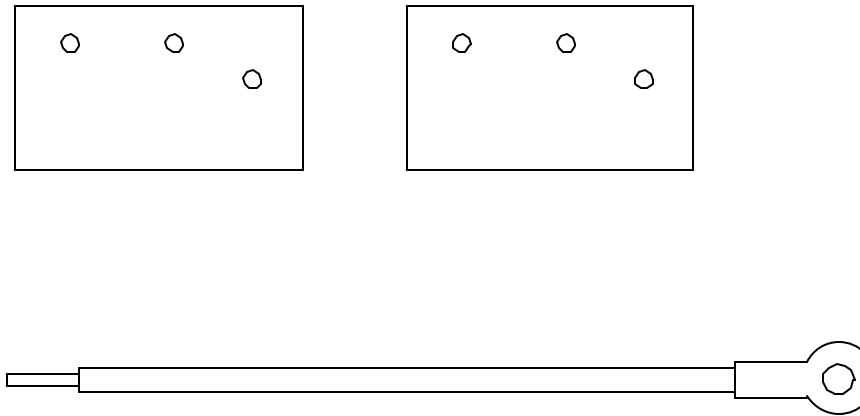
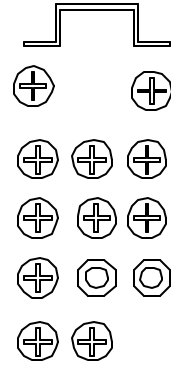
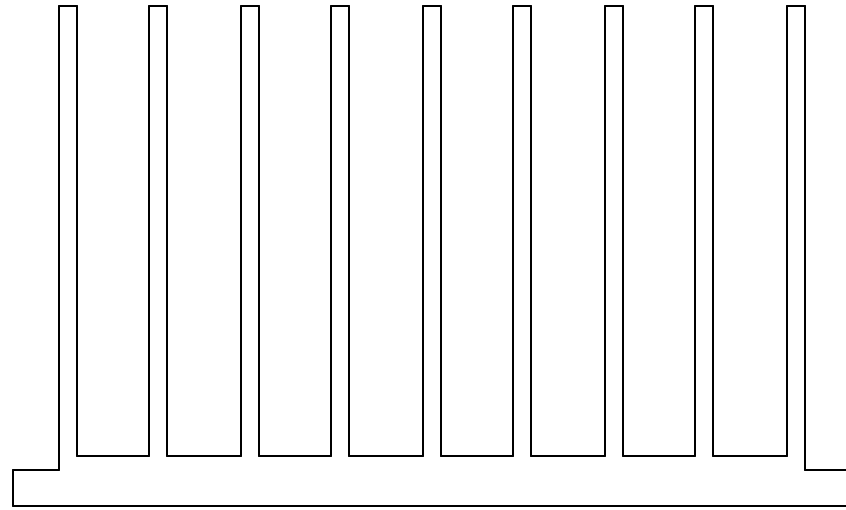
GREASE MOUNTING SURFACE

| | | | |
|--|----------|---|------------------------|
| NOT VALID UNLESS STAMP IS RED | | gallien technology 2240 PARAGON DRIVE SAN JOSE CA. 95131 VOICE: 408-441-8081 FAX: 408-441-8085 | |
| APPROVALS | | TITLE: BACKLINE 112 POWER AMP | |
| INIT | DATE | SIZE | DRAWING NO: 405-0190-A |
| DESIGNED: R.A.G. | 10/01/01 | B | REV. A |
| DRAWN: R.A.G. | 12/5/02 | PART NO: 145-0190-A | |
| ELEC: | | COMPANY: GALLIEN-KRUEGER | |
| MECH: | | FILENAME: 5190A | |
| GERBER FILE NAME: sst01229.pcb | | | |
| LAYER DESCRIPTION: | | | |
| TOP INNER PREPREG INNER TOP | | | |

DETAIL "A"



OBSERVE MOUNTING SURFACE NOTE ON LAYOUT FOR PROPER ORIENTATION.



PCB WORK INSTRUCTIONS
 DWG 420-0190-A2
 NOTES:

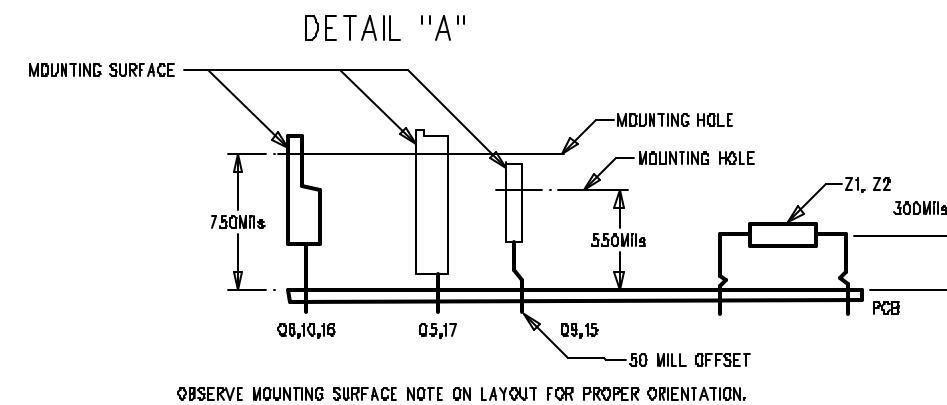
- UNLESS OTHERWISE SPECIFIED:
1. SQUARE PADS ON THRU HOLE PARTS DENOTE PIN 1.
 2. ALL BOARDS REQUIRE A COMPLETE AND THOROUGH VISUAL INSPECTION.
 3. ALL BOARDS MUST BE BARE BOARD TESTED.
 4. ASSEMBLE AND SOLDER PER ANSI/IPC-A-610B.
 5. FUSE LOADING - F1
 FOR 120V MODEL: LOAD FUSE, 5MW, T2AH-250V SENKO
 FOR 230V MODEL: LOAD FUSE, 5MW, T1AH-250V SENKO
 FINAL QA
 6. CHECK THAT U1, U2, U3, AND ALL JACKS AND HEADERS ARE FLUSH AND STRAIGHT
 7. GLUE C30 TO J9 WITH SLICDN RTV
 8. MOUNT Q5, 8, 9, 1D, 15, 16 & 17 AND Z1, 2 AS SHOWN IN DETAIL "A".

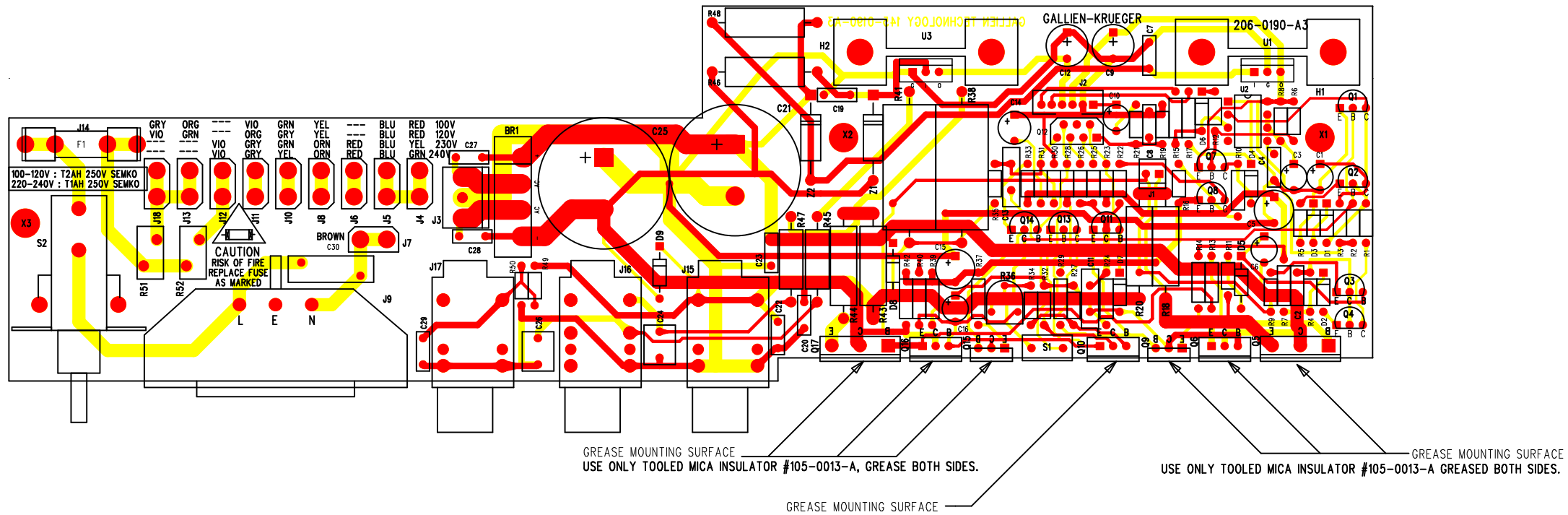
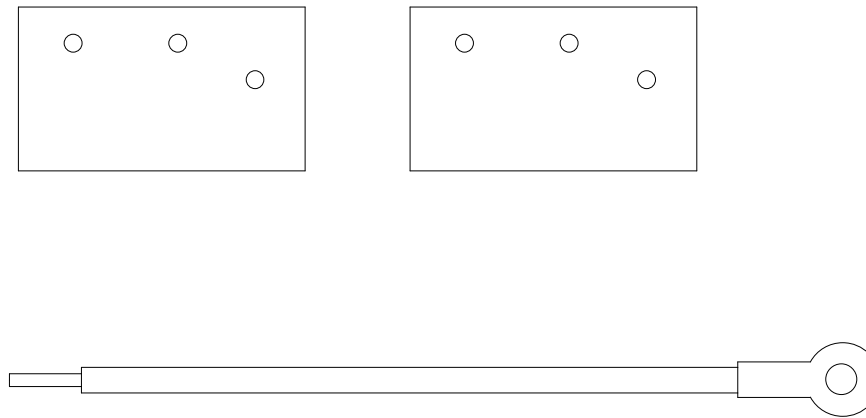
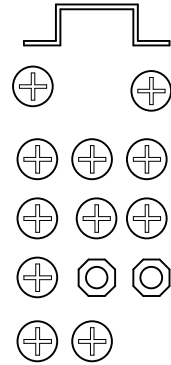
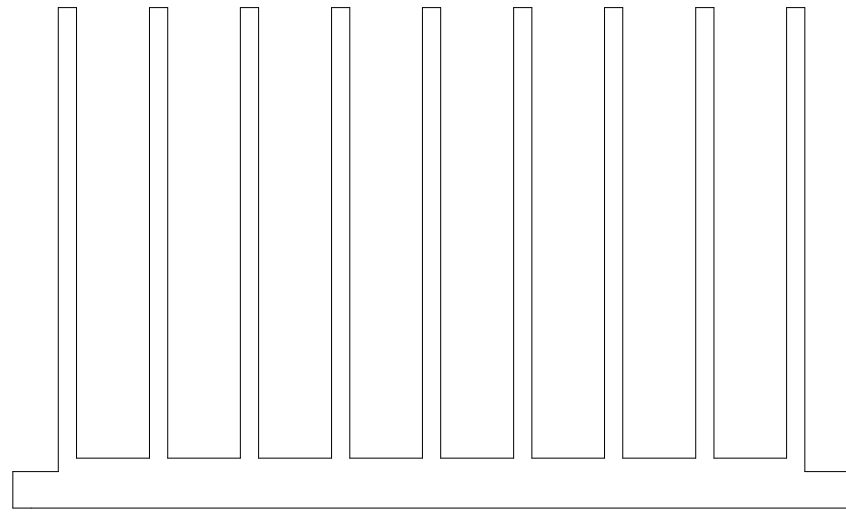
GREASE MOUNTING SURFACE
 USE ONLY TOOLED MICA INSULATOR #105-0013-A, GREASE BOTH SIDES.

GREASE MOUNTING SURFACE
 USE ONLY TOOLED MICA INSULATOR #105-0013-A GREASED BOTH SIDES.

GREASE MOUNTING SURFACE

| | | | | | |
|-------------------------------|----------|-------------------------------|-------------|--|--|
| NOT VALID UNLESS STAMP IS RED | | gallien technology | | 2234 INDUSTRIAL DRIVE STOCKTON CA 95206 VOICE: 209-234-7300 FAX: 209-234-8425 | |
| APPROVALS | | TITLE: BACKLINE 112 POWER AMP | | | |
| INT | DATE | SIZE | DRAWING NO: | REV. | |
| DESIGNED: R.A.G. | 10/01/01 | B | 405-0190-A2 | A2 | |
| DRAWN: R.A.G. | 11/17/03 | | PART NO: | | |
| ELEC: | | | 145-0190-A2 | | |
| LAYER DESCRIPTION: | | MECH: | | COMPANY: GALLIEN-KRUEGER | |
| GALLIEN TECHNOLOGY | | GERBER FILE NAME: 5190A2 | | FILENAME: 5190A2 | |

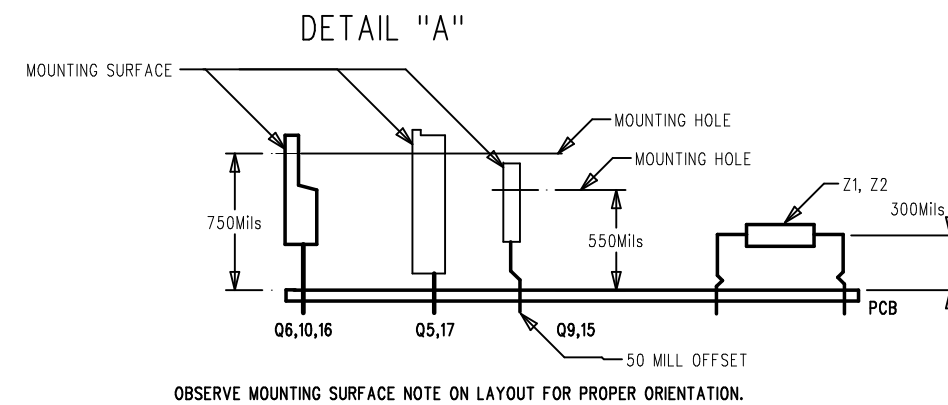


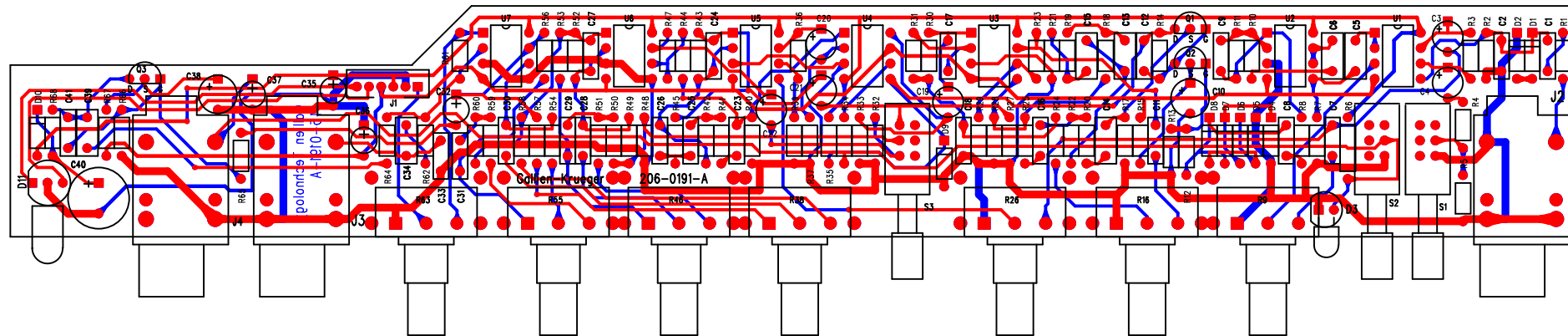


PCB WORK INSTRUCTIONS
DWG 420-0190-A3
NOTES:

- UNLESS OTHERWISE SPECIFIED:
1. SQUARE PADS ON THRU HOLE PARTS 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.
 5. FUSE LOADING - F1
FOR 120V MODEL: LOAD FUSE, 5MM, T2AH-250V SEMKO
FOR 230V MODEL: LOAD FUSE, 5MM, T1AH-250V SEMKO
- FINAL QA
6. CHECK THAT U1, U2, U3, AND ALL JACKS AND HEADERS ARE FLUSH AND STRAIGHT
 7. GLUE C30 TO J9 WITH SILICON RTV
 8. MOUNT Q5, 6, 9, 10, 15, 16 & 17 AND Z1, 2 AS SHOWN IN DETAIL "A".

| | | | |
|-------------------------------|----------|---|---------|
| NOT VALID UNLESS STAMP IS RED | | 2234 INDUSTRIAL DRIVE STOCKTON CA. 95206 VOICE: 209-234-7300 FAX: 209-234-8420 | |
| gallien technology | | TITLE: BACKLINE 112 POWER AMP | |
| APPROVALS | | SIZE: B | REV. A3 |
| INIT | DATE | DRAWING NO: 405-0190-A3 | REV. A3 |
| DESIGNED: R.A.G. | 10/01/01 | PART NO: 145-0190-A3 | |
| DRAWN: R.A.G. | 12/11/03 | COMPANY: GALLIEN-KRUEGER | |
| ELEC: | | FILENAME: 5190A3 | |
| LAYER DESCRIPTION: | | MECH: | |
| SOLDER MASK | | GERBER FILE NAME: sst01229.plt | |





PCB WORK INSTRUCTIONS

DWG #420-0191-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 INSPECTIONS.
3. ALL BOARDS MUST BE BARE BOARD TESTED.
4. ASSEMBLE AND SOLDER PER ANSI/IPC-A-610B.

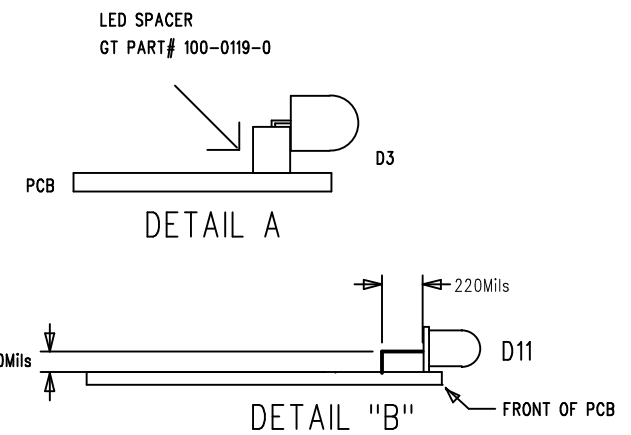
LOADING

6. SEE DETAIL A FOR MOUNTING D3
7. SEE DETAIL "B" FOR MOUNTING D11
8. CLIP BRACKET FROM RIGHT SIDE OF R9 TO CLEAR D3.

FINAL QA

8. CHECK TO SEE ALL POTS, JACKS, AND SWITCHES ARE MOUNTED FLUSH AND STRAIGHT

| | | | | |
|--|---------------------------|--------------------------|--|------------------------|
| NOT VALID UNLESS STAMP IS RED | gallien technology | | 2240 PARAGON DRIVE SAN JOSE CA. 95131 VOICE: 408-441-8081 FAX: 408-441-8085 | |
| | APPROVALS | | TITLE: BACKLINE 112 PREAMP BD | |
| | INIT | DATE | SIZE | DRAWING NO: 405-0191-A |
| | DESIGNED: R.A.G. | 10/01/01 | B | REV. A |
| | DRAWN: R.A.G. | 12/6/02 | | PART NO: 145-0191-A |
| | ELEC: | | | |
| LAYER DESCRIPTION: | MECH: | COMPANY: GALLIEN-KRUEGER | | |
| TOP SIDE BOTTOM | GERBER FILE NAME: | FILENAME: 5191A | | |
| | | ssd0029.pho | | |



| Customer Name: | | Gallien-Krueger | | Current Rev #: | A | New ECO Rev #: | A1 | | |
|--|----------------------------------|-------------------------------------|---------------------|-------------------------------------|---------------------|----------------|----------|---------------------------|---|
| Model: | | Backline 112 | | Distribute To: | | Page: | 1 | Of: | 1 |
| Assembly Description: | | Backline 112 power amp | | Originator: | A.R.V. | | | | |
| Assembly Numbers: | | 206-0190-A | | Approved by: | | | | | |
| | | | | Effective Date: | 9/30/2003 | | | | |
| Effective | | | | Document Update | | Date | Initials | | |
| <input checked="" type="checkbox"/> | All in Process | <input checked="" type="checkbox"/> | Next Buy | <input type="checkbox"/> | Artwork | | | | |
| <input checked="" type="checkbox"/> | All in Service | <input checked="" type="checkbox"/> | Next Production Run | <input type="checkbox"/> | Assembly Dwg. | | | | |
| <input type="checkbox"/> | All in Stock | <input type="checkbox"/> | | <input type="checkbox"/> | Board Artwork | | | | |
| Beginning Serial Number: | | | | <input checked="" type="checkbox"/> | BOM | 9/30/03 | A.R.V. | | |
| Reason For Change | | | | <input type="checkbox"/> | Control Form | | | | |
| To prevent R35 and R41 from overheating when the headphone output is not being used. | | | | <input checked="" type="checkbox"/> | Costing | | | | |
| | | | | <input type="checkbox"/> | Fab Drawing | | | | |
| | | | | <input type="checkbox"/> | Inspection Proc. | | | | |
| | | | | <input type="checkbox"/> | Part Master File | | | | |
| | | | | <input checked="" type="checkbox"/> | Schematic | 9/30/03 | A.R.V. | | |
| | | | | <input checked="" type="checkbox"/> | Service Manual | | | | |
| | | | | <input checked="" type="checkbox"/> | Test Procedure | | Noli | | |
| | | | | <input type="checkbox"/> | | | | | |
| | | | | <input type="checkbox"/> | | | | | |
| | | | | | | | | Other Affected Assemblies | |
| <input type="checkbox"/> | Continued on ECO Supplement Page | | | | | | | | |
| Description Of Change | | | | Distribution | | Date | Initials | | |
| Remove C17 and C18. | | | | <input type="checkbox"/> | Accounting | | | | |
| | | | | <input type="checkbox"/> | Assembly | | | | |
| | | | | <input type="checkbox"/> | Customer | | | | |
| | | | | <input checked="" type="checkbox"/> | Engineering | | | | |
| | | | | <input checked="" type="checkbox"/> | Incoming Q.C. | | | | |
| | | | | <input type="checkbox"/> | Planning | | | | |
| | | | | <input checked="" type="checkbox"/> | Production Eng. | | | | |
| | | | | <input checked="" type="checkbox"/> | Purchasing | | | | |
| | | | | <input type="checkbox"/> | Q.A. | | | | |
| | | | | <input type="checkbox"/> | Receiving | | | | |
| <input checked="" type="checkbox"/> | Service | | | | | | | | |
| <input checked="" type="checkbox"/> | Test | | | | | | | | |
| <input type="checkbox"/> | Vendor | | | | | | | | |
| <input type="checkbox"/> | | | | | | | | | |
| <input type="checkbox"/> | | | | | | | | | |
| <input type="checkbox"/> | Continued on ECO Supplement Page | | | <input type="checkbox"/> | Drawing(s) attached | | | | |
| Part Number | Description | Parts Added | | Parts Deleted | | | | | |
| | | Qty | Ref. Designator | Qty | Ref. Designator | | | | |
| 022 1174 0 | 17 and 18 | | | 2 | 17 and 18 | | | | |

| Customer Name: | | Gallien-Krueger | | Current Rev #: | A1 | New ECO Rev #: | A2 | | |
|--|----------------------------------|-------------------------------------|--------------------------|-------------------------------------|------------------|----------------|-----------------|-----|-----------------|
| Model: | | Backline 112 | | Distribute To: | | Page: | 1 | Of: | 1 |
| Assembly Description: | | Backline 112 power amp | | Originator: | RAG | | | | |
| Assembly Numbers: | | 206-0190-A | | Approved by: | | | | | |
| | | | | Effective Date: | 11/18/2003 | | | | |
| Effective | | | | Document Update | | Date | Initials | | |
| <input type="checkbox"/> | All in Process | <input checked="" type="checkbox"/> | Next Buy | <input type="checkbox"/> | Artwork | | | | |
| <input type="checkbox"/> | All in Service | <input type="checkbox"/> | Next Production Run | <input type="checkbox"/> | Assembly Dwg. | | | | |
| <input type="checkbox"/> | All in Stock | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | Board Artwork | | | | |
| Beginning Serial Number: | | | | <input checked="" type="checkbox"/> | BOM | | | | |
| Reason For Change | | | | <input type="checkbox"/> | Control Form | | | | |
| Prevent fuse failure due to inrush current at turn on. | | | | <input checked="" type="checkbox"/> | Costing | | | | |
| Expand supply table to include transformer hookup for 220V and 240V. | | | | <input type="checkbox"/> | Fab Drawing | | | | |
| | | | | <input type="checkbox"/> | Inspection Proc. | | | | |
| | | | | <input checked="" type="checkbox"/> | Part Master File | | | | |
| | | | | <input checked="" type="checkbox"/> | Schematic | | | | |
| | | | | <input type="checkbox"/> | Service Manual | | | | |
| | | | | <input type="checkbox"/> | Test Procedure | | | | |
| | | | | <input type="checkbox"/> | | | | | |
| | | | | Other Affected Assemblies | | | | | |
| | | | | 303-0190-A, All Voltages | | | | | |
| <input type="checkbox"/> | Continued on ECO Supplement Page | | | | | | | | |
| Description Of Change | | | | Distribution | | Date | Initials | | |
| Add thermistors in series with each transformer coil. | | | | <input type="checkbox"/> | Accounting | | | | |
| Update schematic and board silkscreen with new supply table. | | | | <input type="checkbox"/> | Assembly | | | | |
| | | | | <input checked="" type="checkbox"/> | Engineering | | | | |
| | | | | <input checked="" type="checkbox"/> | Incoming Q.C. | | | | |
| | | | | <input checked="" type="checkbox"/> | Production Eng. | | | | |
| | | | | <input checked="" type="checkbox"/> | Purchasing | | | | |
| | | | | <input type="checkbox"/> | Q.A. | | | | |
| | | | | <input type="checkbox"/> | Service | | | | |
| | | | | <input type="checkbox"/> | Test | | | | |
| <input type="checkbox"/> | Continued on Supplement Page | | <input type="checkbox"/> | Drawing(s) attached | | | | | |
| Part Number | Description | Parts Added | | Parts Deleted | | Qty | Ref. Designator | Qty | Ref. Designator |
| | | Qty | Ref. Designator | Qty | Ref. Designator | | | | |
| 022-3002-0 | THER-NTC 5R5A | 2 | R51,52 | | | | | | |
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| Customer Name: | | Gallien-Krueger | | Current Rev #: | | A2 | | New ECO Rev #: | | A3 | |
|---|----------------------------------|-------------------------------------|---------------------|-------------------------------------|---------------------|-----|--|--------------------------|--|------------|--|
| Model: | | Backline 112 | | Distribute To: | | | | Page: | | 1 Of: 1 | |
| Assembly Description: | | Backline 112 power amp | | Originator: | | RAG | | | | | |
| Assembly Numbers: | | 206-0190-A | | Approved by: | | | | Effective Date: | | 12/14/2003 | |
| Effective | | | | Document Update | | | | Date | | Initials | |
| <input checked="" type="checkbox"/> | All in Process | <input checked="" type="checkbox"/> | Next Buy | <input type="checkbox"/> | Artwork | | | | | | |
| <input type="checkbox"/> | All in Service | <input type="checkbox"/> | Next Production Run | <input type="checkbox"/> | Assembly Dwg. | | | | | | |
| <input type="checkbox"/> | All in Stock | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | Board Artwork | | | | | | |
| Beginning Serial Number: | | | | <input checked="" type="checkbox"/> | BOM | | | | | | |
| Reason For Change | | | | <input type="checkbox"/> | Control Form | | | | | | |
| Prevent fuse failure due to inrush current at turn on. An improvement to A2 which was not put into production. | | | | <input checked="" type="checkbox"/> | Costing | | | | | | |
| | | | | <input type="checkbox"/> | Fab Drawing | | | | | | |
| | | | | <input type="checkbox"/> | Inspection Proc. | | | | | | |
| | | | | <input checked="" type="checkbox"/> | Part Master File | | | | | | |
| | | | | <input checked="" type="checkbox"/> | Schematic | | | | | | |
| | | | | <input type="checkbox"/> | Service Manual | | | | | | |
| | | | | <input type="checkbox"/> | Test Procedure | | | | | | |
| | | | | <input type="checkbox"/> | | | | | | | |
| | | | | Other Affected Assemblies | | | | 303-0190-A, All Voltages | | | |
| <input type="checkbox"/> | Continued on ECO Supplement Page | | | | | | | | | | |
| Description Of Change | | | | Distribution | | | | Date | | Initials | |
| Add NTC thermistors to the primary side of the transformer. One for 120V and another for 230V. An additional primary terminal is added to accommodate the wiring. | | | | <input type="checkbox"/> | Accounting | | | | | | |
| For current production a thermistor of the proper value will be added to the bottom of the board. | | | | <input type="checkbox"/> | Assembly | | | | | | |
| For 220V-240V use NTC-15R/2A. | | | | <input checked="" type="checkbox"/> | Engineering | | | | | | |
| For 100V-120V use NTC-3R/3A. | | | | <input checked="" type="checkbox"/> | Incoming Q.C. | | | | | | |
| | | | | <input checked="" type="checkbox"/> | Production Eng. | | | | | | |
| | | | | <input checked="" type="checkbox"/> | Purchasing | | | | | | |
| | | | | <input type="checkbox"/> | Q.A. | | | | | | |
| | | | | <input type="checkbox"/> | Service | | | | | | |
| | | | | <input type="checkbox"/> | Test | | | | | | |
| <input type="checkbox"/> | Continued on Supplement Page | | | <input type="checkbox"/> | Drawing(s) attached | | | | | | |
| Part Number | Description | Parts Added | | Parts Deleted | | | | | | | |
| | | Qty | Ref. Designator | Qty | Ref. Designator | | | | | | |
| 022-3010-0 | THER-NTC 3R3A | 1 | R51 | | | | | | | | |
| 022-3017-0 | THER-NTC 15R2A | 1 | R52 | | | | | | | | |
| 092-0066-0 | FASTON | 1 | T13 | | | | | | | | |
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Backline 112 Power Amp

| Part No. | Reference | Description | Manufacturer | Mfr. Part No. |
|------------|---------------------|---------------------------------------|------------------|--------------------|
| 001-2060-0 | U2 | LM555, TIMER | NATIONAL | LM555CN |
| 010-0000-0 | Q12 | 2SC3381BL,NPNX2,80V,100MA,2-10M1B | TOSHIBA | 2SC3281BL |
| 010-0001-0 | Q3 | 2SC3478, NPN,180V,100MA,TO-92 | NEC | 2SC3478-K |
| 010-0003-0 | Q15 | 2SC3502-F,NPN,200V,100MA,TO-126 | TOSHIBA | 2SC3502 |
| 010-0012-0 | Q1-2 Q8 | MPSAO6, NPN,80V,500MA,TO-92 | MOTOROLA | MPS-A06 |
| 010-1002-0 | Q11 Q14 | 2SA1376, PNP,180V,100MA,TO-92 | NEC | 2SA1376-K |
| 010-1003-0 | Q9 | 2SA1380-F,PNP,200V,100MA,TO-126 | SANYO/TOSHIBA | 2SA1380-F/E |
| 010-1013-0 | Q4 Q7 Q13 | MPSA56 PNP 80V 500MA TO-92 | MOTOROLA | MPS-A56 |
| 012-0002-0 | Q6 Q10 | 2SC4793,NPN,200V,1.5A,2-10R1A | TOSHIBA | 2SC4793 |
| 012-0003-0 | Q5 | 2SC5242,NPN,230V,15A,2-16C1A | TOSHIBA | 2SC5242-O |
| 012-1002-0 | Q16 | 2SA1837,PNP,200V,1.5A,2-10R1A | TOSHIBA | 2SA1837 |
| 012-1003-0 | Q17 | 2SA1962,PNP,230V,15A,2-16C1A | TOSHIBA | 2SA1962 |
| 014-0032-0 | U1 | LM78M15, 15V POS REG 500MA, TO-220 | NATIONAL | LM78M15CT |
| 014-1003-0 | U3 | LM79M15, 15V POS REG 500MA, TO-220 | NATIONAL | LM79M15CT |
| 020-0004-0 | D6 | 1N755A, ZENER,7.5V,500MW ,D035 | TAITRON | 1N755A |
| 020-0050-0 | D2 | 1N751, ZENER,5.1V,10%,400MW,DO-35 | NATIONAL | 1N751 |
| 020-1000-0 | D1 D3-4 D7 | 1N4148, RECT-FAST, 200MA, 100V | MOTOROLA | 1N4148 |
| 020-1104-0 | D5 | SHOTTKY, 1A, 40V, 10NS, DO-41 | MOTOROLA | 1N5819 |
| 020-2106-0 | D8-9 | 1N4004,RECT,1A,400V,DO-41 | TAITRON | 1N4004 |
| 020-5352-0 | Z1-2 | 1N5352B, ZENER, 15V, 5%, 5W, DO-201AE | TAITRON | 1N5352B |
| 022-3010-0 | R51 | THERMISTOR, NTC, 3 OHMS, 3 AMPS | UEI | 08SP003M |
| 022-3017-0 | R52 | THERMISTOR, NTC, 15 OHMS, 2 AMPS | UEI | 08SP015M |
| 023-0004-0 | BR1 | BRIDGE, 8A, 200V, VERT, PC | TAITRON | TU802G |
| 031-1107-0 | C14 | CAP,ELEC,RAD,107,20%,25V | UNITED CHEMI-CON | SMG25VB101M6X11LL |
| 031-1227-0 | C9 C12 | CAP ELEC, 220uF,20% ,25V | UNITED CHEMICON | SMG25VB221M8X11LL |
| 031-1336-0 | C3 C6 | CAP,ELEC,RAD,336,20%,25V | UNITED CHEMI-CON | SRG25VB33RM5X7LL |
| 031-2105-0 | C1 | CAP,ELEC,RAD, 105, 20%, 50V | UNITED CHEMI-CON | C440C105M5U5CA |
| 031-2106-0 | C10 C16 | CAP,ELEC,RAD, 106, 20%, 50V | UNITED CHEMI-CON | SMG50VB10RM5X11LL |
| 031-3476-0 | C5 C15 | CAP,ELEC,RAD,476,20%,63V | UNITED CHEMI-CON | SMG63VB47RM6X11LL |
| 031-3478-0 | C21 C25 | CAP,ELEC,RAD,4,700uF, 20%,63V | UNITED CHEMI-CON | SMH63VN472M25X40T2 |
| 032-3105-0 | C24 C26 | CAP,PE,105,5%,63V, | PANASONIC | ECQV1J105JM |
| 032-4102-0 | C22 C29 | CAP,PE,102,5%,100V, | PANASONIC | ECQB1102JF |
| 032-4103-0 | C4 | CAP,PE,103,5%,100V, | PANASONIC | ECQV1103JM |
| 032-4104-0 | C2,7,19,20,23,27,28 | CAP,PE,104,5%,100V, | PANASONIC | ECQV1104JM |
| 034-4221-0 | C8 | CAP,MCR,220pF,5%,100V, | TAITRON | TMRS221J100NPOB |
| 034-7103-0 | C30 | CAP, CERMIC DISK, 103, 10%, X-250V | PANASONIC | ECK-DRS103ZV |
| 035-8030-0 | C13 | CAP MICA AXIAL , 3pF, 10%, 500V | CORNELL | CD10CD030D03 |
| 035-8561-0 | C11 | CAP MICA RADIAL, 561, 5%, 300V | CORNELL | CD15FC561J103 |
| 052-2212-0 | R15 R17 | RES,METAL FILM,2.21k,1/4W,1% | ECI | M2F1AK002.21 |
| 052-4753-0 | R10 | RES,METAL FILM,47.5K OHM, 1/4W,1% | ECI | M2F1AK047.50 |
| 052-5622-0 | R24 R40 | RES,METAL FILM,5.62k,1/4W,1% | ECI | M5F1AK005.62 |
| 055-100-0 | R18 R20 R43-44 | RES, CERAMIC, 0.1 Ohm, 2W,5% | ECI | MOM20J3AJ000.10 |
| 055-1001-0 | R45 R47 | RES, METAL OXIDE, 100 OHM, 2W, 5% | ECI | MOM20J3AJ100.00 |
| 055-8201-0 | R46 R48 | RES, METAL OXIDE, 820 OHM, 2W, 5% | ECI | MO20J3AJ820.00 |
| 056-1001-0 | R38 R41 | RES, METAL OXIDE, 100 OHM, 5W, 5% | ECI | MOM50J3AJ100.00 |
| 059-1000-0 | R7 R42 | RES,MF,FUSE,10.0 OHM, 1/4W,1% | JUKN.OHM | FR25-10.0 |
| 059-1001-0 | R13 | RES,MF,FUSE,100 OHM, 1/4W,1% | JUKN.OHM | FR25-100 |
| 059-1002-0 | R29 R39 | RES,MF,FUSE,1.00K,1/4W,1% | JUKN.OHM | FR25-1.00K |
| 059-4750-0 | R14 R37 | RES,MF,FUSE,47.5 OHM, 1/4W,1% | JUKN.OHM | FR25-47.5 |
| 060-1001-0 | R25-26 | RES, METAL FILM, 100 OHM, 1/8W, 1% | ECI | M1F1AJ100.00 |
| 060-1002-0 | R9,11,21,31,33,34 | RES,METAL FILM, 1.00K, 1/8W, 1% | ECI | M1F1AK001.00 |
| 060-1003-0 | R2 R6 | RES,METAL FILM, 10.0K, 1/8W,1% | ECI | M1F1AK010.00 |
| 060-1004-0 | R3 R8 | RES,METAL FILM, 100K, 1/8W, 1% | ECI | M1F1AK100.00 |
| 060-1213-0 | R19 R30 | RES,METAL FILM, 12.1K OHM, 1/8W, 1% | ECI | M1F1AK012.10 |
| 060-1821-0 | R32 | RES,METAL FILM, 182, 1/8W, 1% | ECI | M1F1AJ182.00 |
| 060-2002-0 | R23 R28 R50 | RES,METAL FILM, 2.00K, 1/8W, 1% | ECI | M1F1AK002.00 |
| 060-2432-0 | R4 | RES,METAL FILM, 2.43K, 1/8W, 1% | ECI | M1F1AK002.43 |
| 060-3013-0 | R22 | RES,METAL FILM, 30.1K, 1/8W, 1% | ECI | M1F1AK030.10 |
| 060-3922-0 | R27 | RES,METAL FILM, 3.92K, 1/8W, 1% | ECI | M1F1AK003.92 |
| 060-4323-0 | R35 R49 | RES,METAL FILM, 43.2K, 1/8W, 1% | ECI | M1F1AK043.20 |
| 060-4752-0 | R12 | RES,METAL FILM, 4.75K, 1/8W, 1% | ECI | M1F1AK004.75 |
| 060-4753-0 | R1 | RES,METAL FILM, 47.5K, 1/8W, 1% | ECI | M1F1AK047.50 |
| 060-6811-0 | R16 | RES,METAL FILM, 681 ohm, 1/8W, 1% | ECI | M1F1AJ681.00 |
| 060-7501-0 | R5 | RES,METAL FILM, 750 OHM, 1/8W, 1% | ECI | M1F1AJ750.00 |
| 070-0520-0 | R36 | POT,500B TRIM, 200mW | SONG HUEI | SH-655MCL-500B |
| 090-0007-0 | S2 | SWITCH, 8A/128A,250V,PP,PCB | TECX | KDC-A04-10-B, B2-F |

Backline 112 Power Amp

| Part No. | Reference | Description | Manufacturer | Mfr. Part No. |
|-------------|-------------------|-----------------------------------|--------------|--------------------|
| 091-0049-0 | F1 | FUSE,5mm,T2AH,250V,SEMKO | LITTLE FUSE | 215-002 |
| 091-1002-0 | S1 | THRM BRKR, 105C +/-5,0-DIFF, PC | KLIXON | 7AM-028-A5 |
| 092-0001-0 | J9 | CON, IECX3, 10A, 250V, PC TERM | DIHTAIN | DTS-0045 |
| 092-0066-0 | J4-8, J10-13, J18 | FASTON, M, PC, .250" | KEYSTONE | 1021 |
| 092-0079-0 | J16 | JACK,1/4",STEREO,PC,NON GROUNDING | NEUTRIK | S203-84 |
| 092-0081-0 | J17 | JACK,1/4",MONO,PC,NON GROUNDING | NEUTRIK | S102-84 |
| 092-0082-0 | J15 | JACK,1/4",MONO,PC, GROUNDING | NEUTRIK | S102-84G |
| 093-0025-0 | J1 | HDR,.1X2,VERT,MALE,LOCK,GOLD | AMP | 641126-2 |
| 093-0080-0 | J3 | HDR,.156X3,VERT,MALE,LOCKING | MOLEX | 26-60-4030 |
| 093-2002-0 | J2 | HDR,2MMX6,VERT,SHROUDED | JST | B6B-PH-K-S |
| 094-0004-0 | J14 | FUSE CLIP, 5MM, 15A, P.C. | MOUSER | 44FH052 |
| 100-0152-0 | H1-2 | HEAT SINK 2W VERTICAL | WAKEFIELD | 667-10ABSP & 330SC |
| 105-0013-A | I1-2 | INSULATOR, BACKLINE 112, MICA | | 105-0013-A |
| 116-0040-0 | B4 B9 | BOLT,M2x4,M2(TR),PHP,BLACK | LIQUAN SCREW | |
| 117-0097-0 | B1-3 B5-8 | BOLT,M3x9,M1,PHP/SW,CHROME | LIQUAN SCREW | |
| 117-0127-0 | B10-11 | BOLT,M3x12,M1,PHP/SW,CHROME | LIQUAN SCREW | |
| 117-6002-0 | B12-13 | NUT,M3,HEX,CHROME | LIQUAN SCREW | |
| 132-0190-A | H3 | SINK_BRACKET_BACKLINE 112 | | 132-0190-A |
| 132-0777-C | H4 | SINK BACKLINE 112 | | 132-0777-C |
| 202-6000-A | W1 | WIRE ASY,14GA,GRN/YEL,4",#4 TERM | LEOCO | 202-6000-A |
| 145-0190-A3 | | BACKLINE 112 RAW POWER BOARD | | |