Designers and Manufacturers of Fine Audio Products

MADRIGAL

MADRIGAL AUDIO LABORATORIES INC.

PROCEED 5 CHANNEL AMPLIFIER REPAIR MANUAL

2081 South Main Street
Post Office Box 781
Middletown, CT 06457

This procedure will allow a qualified Proceed dealer to repair a 5 channel amplifier. Please read and understand all instructions outlined in this procedure before attempting repair. if a question should arise, call the MADRIGAL AUDIO LABS. TECHNICAL SERVICE DEPARTMENT for assistance (860)-346-0896 or FAX (860)-346-1540.

TOOLS REQUIRED

5/64" hexdriver
#1 phillips screwdriver
#2 phillips screwdriver
3/16" slotted screwdriver
5/32" hexdriver
DC voltage meter
trimpot adjustment tool
¼" nut driver

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CAUTION! Hazardous voltages available inside unit. Before proceeding, remove AC cable from AC outlet.

CAUTION! Static sensitive parts and subassemblies inside unit. Observe proper grounding procedures before continuing.

WARNING! Be careful when handling metal as it scratches easily. Place a soft towel under unit while doing repair.

REMOVING THE TOP COVER

1. Refer to *print#942659B*. Using a 5/32" hexdriver, loosen four screws(5) that secures the top cover(2) to the unit assembly(4). Remove cover(2) by lifting it straight up until it clears the unit.
2. To reinstall, hold the cover(2) by the sides and carefully guide the mounting tabs into the slots in the side bars. Be sure that the cutouts in the top cover line up with the audio channel heatsinks. Secure by tightening 4 screws(5). **WARNING: If a new cover is being installed be sure that it has dampers(12), and (1) in place or severe electrical damage may occur.**

REPLACING THE FACE PLATE

1. Refer to *print#942659B*. Using a 5/32" hexdriver, loosen four screws(5) that secures the top cover(2) to the unit assembly(4). Remove cover(2) by lifting it straight up until it clears the unit.
2. Refer to *print#942658B* and turn unit over. Using a #2 phillips screwdriver, remove four screws(13) that secures the face plate(8) to the chassis(19). Turn the unit over. Remove two screws(1) that secures the face plate(8) to the transformer bracket.
3. Carefully slide the face plate(8) away from the chassis(19) and unplug the 10pin ribbon cable from the ON/OFF PCB(3). Unplug the 2wire cable from the AC PCB(30). Set the unit aside.
4. Using a #2 phillips screwdriver and ¼" nutdriver, remove the following from the face plate, on/off switch(9), ON/OFF PCB(3), button/button bar assy(6). Unscrew the shock mounts(10) and the standoffs(2) from the face plate.
5. Install the previously removed hardware into the new face plate as follows, screw shock mounts(10) and the standoffs(2) into the face plate, button/button bar assy(6), ON/OFF PCB(3), on/off switch(9). Check the action of the on/off switch and the standby button and make sure they do not stick.

6. Bring the face plate(8) up to the front of the chassis(19) and connect the 10pin ribbon cable to the ON/OFF PCB(3) and the 2wire cable to the AC PCB(30). These cables can be connected only one way.
7. Secure the face plate(8) to the transformer bracket using two screws(1). Turn the unit over and secure the face plate(8) to the chassis(19) using four screws(13).
8. Refer to *print#942659B* . Install the top cover(2) by holding it by the sides and carefully guiding the mounting tabs into the slots in the side bars. Be sure that the cutouts in the top cover line up with the audio channel heatsinks. Secure by tightening 4 screws(5).

REPLACING THE ON/OFF SWITCH

1. Refer to *print#942659B*. Using a 5/32" hexdriver, loosen four screws(5) that secures the top cover(2) to the unit assembly(4). Remove cover(2) by lifting it straight up until it clears the unit.
2. Refer to *print#942658B* and turn unit over. Using a #2 phillips screwdriver, remove four screws(13) that secures the face plate(8) to the chassis(19). Turn the unit over. Remove two screws(1) that secures the face plate(8) to the transformer bracket.
3. Carefully slide the face plate(8) away from the chassis(19) and unplug the 10pin ribbon cable from the ON/OFF PCB(3). Unplug the 2wire cable from the AC PCB(30). Set the unit aside.
4. Using a #2 phillips screwdriver, remove the on/off switch(9) from the face plate(8). Install the new on/off switch(9) onto the face plate(8) and secure with two screws(1). Check the action of the on/off switch and make sure it does not stick.
5. Bring the face plate(8) up to the front of the chassis(19) and connect the 10pin ribbon cable to the ON/OFF PCB(3) and the 2wire cable to the AC PCB(30). These cables can be connected only one way.
6. Secure the face plate(8) to the top of the transformer bracket using two screws(1). Turn the unit over and secure the face plate(8) to the chassis(19) using four screws(13).
7. Refer to *print#942659B* . Install the top cover(2) by holding it by the sides and carefully guiding the mounting tabs into the slots in the side bars. Be sure that the cutouts in the top cover line up with the audio channel heatsinks. Secure by tightening 4 screws(5).

REPLACING A POWER TRANSFORMER

1. Refer to *print#942659B*. Using a 5/32" hexdriver, loosen four screws(5) that secures the top cover(2) to the unit assembly(4). Remove cover(2) by lifting it straight up until it clears the unit.
2. Refer to *prints#942658B, 942657B* and turn unit over. Using a #2 phillips screwdriver, remove four screws(13) that secures the face plate(8) to the chassis(19). Turn the unit over. Remove two screws(1) that secures the face plate(8) to the transformer bracket.
3. Carefully slide the face plate(8) away from the chassis(19) and unplug the 10pin ribbon cable from the ON/OFF PCB(3). Unplug the 2wire cable from the AC PCB(30). Set the face plate aside.
4. Turn the unit over. Remove eight screws(13) that secures the transformer bracket to the chassis(19).
5. Turn the unit over. Remove four screws(1) from the front of the unit that secures the transformer bracket to the chassis(19).
6. Remove fifteen screws(1), three screws per, that secures the five heatsink assy(37) to the power supply PCB.
7. To remove the transformer bracket assy, first slightly lift the front of the transformer bracket assy and slide it away from the heatsink assys(37) about 3". Disconnect the white and black wires from the VS PCB which is mounted on the power supply PCB(10). Remove the transformer bracket assy from the chassis and set the chassis aside.
8. Refer to *print#942657B* and turn the transformer bracket assy over. Using a bladed screwdriver, remove mounting screw(2) that secures the transformer to the front of the transformer bracket(1). Loosen the two adjacent mounting screws(2).
9. It is necessary to remove two capacitors in order to gain access to the rear transformer mounting screw(2). Using a bladed screwdriver, remove the capacitor mounting screws(8). Set the capacitors aside. Remove the transformer mounting screw(2).
10. Note the location and unplug the primary and secondary transformer wires form the power supply PCB. Remove the transformer(3), or (7) from the transformer bracket(1). NOTE: the outer transformers are different than the center transformer both in wiring and in part#. If the center transformer(7) is being removed, first remove the VS PCB from the power supply PCB(10), then loosen two screws(11) that secures the power supply PCB(10) to the transformer bracket(1). This will aid the removal of the center transformer(7) primary wire from in between the bracket(1) and the power supply PCB(10).

11. Install the new transformer into the transformer bracket(1) so that the primary and secondary wires that exit the transformers are not located where the bracket will meet the chassis.
12. Secure the transformer(3),(7) in place with two screws(2). And connect the primary and secondary wires to the power supply PCB(10). Reinstall the capacitors(12) onto the power supply PCB(10) and secure with screws(8). NOTE: match the polarity of the capacitor(12) to the designation on the power supply PCB(10). If the center transformer(7) has been replaced, tighten the two screws(11) loosened previously and reinstall the VS PCB onto the power supply PCB(10). Tighten remaining transformer mounting screws.
13. Refer to *print#942658B* . Carefully place the transformer bracket assy into the chassis(19). Connect white wire from the AC PCB to P522 on VS PCB and the black wire to P521.
14. Lift the front of the transformer bracket assy up and slide it back so that the mounting holes in the power supply PCB line up with the tabs on the heatsink assys(37). NOTE: be sure that transformer wires are not pinched in between the bottom of the transformer bracket and the chassis(19).
15. Secure the front of the transformer bracket with four screws(13). Using a magnetic #2 phillips screwdriver, secure the 5 heatsink assys(37) to the power supply PCB with fifteen screws(13). Turn the unit over. Secure transformer bracket to the chassis(19) with eight screws(13).
16. Bring the face plate(8) up to the front of the chassis(19) and connect the 10pin ribbon cable to the ON/OFF PCB(3) and the 2wire cable to the AC PCB(30). These cables can be connected only one way.
17. Secure the face plate(8) to the top of the transformer bracket using two screws(1). Turn the unit over and secure the face plate(8) to the chassis(19) using four screws(13).
18. Refer to *print#942659B* . Install the top cover(2) by holding it by the sides and carefully guiding the mounting tabs into the slots in the side bars. Be sure that the cutouts in the top cover line up with the audio channel heatsinks. Secure by tightening 4 screws(5).

REPLACING A FILTER CAPACITOR

1. Refer to *print#942659B*. Using a 5/32" hexdriver, loosen four screws(5) that secures the top cover(2) to the unit assembly(4). Remove cover(2) by lifting it straight up until it clears the unit.
2. Refer to *prints#942658B, 942657B* and turn unit over. Using a #2 phillips screwdriver, remove four screws(13) that secures the face plate(8) to the chassis(19). Turn the unit over. Remove two screws(1) that secures the face plate(8) to the transformer bracket.

3. Carefully slide the face plate(8) away from the chassis(19) and unplug the 10pin ribbon cable from the ON/OFF PCB(3). Unplug the 2wire cable from the AC PCB(30). Set the face plate aside.
4. Turn the unit over. Remove eight screws(13) that secures the transformer bracket to the chassis(19).
5. Turn the unit over. Remove four screws(1) from the front of the unit that secures the transformer bracket to the chassis(19).
6. Remove fifteen screws(1), three screws per, that secures the five heatsink assy(37) to the power supply PCB.
7. To remove the transformer bracket assy, first slightly lift the front of the transformer bracket assy and slide it away from the heatsink assys(37) about 3". Disconnect the white and black wires from the VS PCB which is mounted on the power supply PCB(10). Remove the transformer bracket assy from the chassis and set the chassis aside.
8. Refer to *print#942657B* . Using a bladed screwdriver, remove the capacitor mounting screws(8). Install the new capacitor(12) onto the power supply PCB(10) and secure with screws(8).
9. Refer to *print#942658B* . Carefully place the transformer bracket assy into the chassis(19). Connect white wire from the AC PCB to P522 on VS PCB and the black wire to P521.
10. Lift the front of the transformer bracket assy up and slide it back so that the mounting holes in the power supply PCB line up with the tabs on the heatsink assys(37). NOTE: be sure that transformer wires are not pinched in between the bottom of the transformer bracket and the chassis(19).
11. Secure the front of the transformer bracket with four screws(13). Using a magnetic #2 phillips screwdriver, secure the 5 heatsink assys(37) to the power supply PCB with fifteen screws(13). Turn the unit over. Secure transformer bracket to the chassis(19) with eight screws(13).
12. Bring the face plate(8) up to the front of the chassis(19) and connect the 10pin ribbon cable to the ON/OFF PCB(3) and the 2wire cable to the AC PCB(30). These cables can be connected only one way.
13. Secure the face plate(8) to the top of the transformer bracket using two screws(1). Turn the unit over and secure the face plate(8) to the chassis(19) using four screws(13).
14. Refer to *print#942659B* . Install the top cover(2) by holding it by the sides and carefully guiding the mounting tabs into the slots in the side bars. Be sure that the cutouts in the top cover line up with the audio channel heatsinks. Secure by tightening 4 screws(5).

REPLACING A HEATSINK ASSEMBLY

1. Refer to *print#942659B*. Using a 5/32" hexdriver, loosen four screws(5) that secures the top cover(2) to the unit assembly(4). Remove cover(2) by lifting it straight up until it clears the unit.
2. Refer to *print#942658B*. Turn unit over. Using a 5/64" hexdriver remove six screws that secures the heatsink assy(37) to the chassis(19). Turn the unit over. Remove three screws(1) that secures the heatsink assy(37) to the power supply PCB.
3. Unplug the 10pin ribbon cable from each heatsink assy(37) and drape in over the AC PCB assy(30).
4. Using a 3/8" wrench loosen the two nuts that secure the output wires from the heatsink assy(37) to the red(23) and black(24) binding posts located on the rear panel. Remove the wires from the posts.
5. Using a #1 phillips screwdriver, remove the three screws(26) from the RCA and XLR input connectors. On the outer heatsink assys only remove one screw(29) using a 5/32" hexdriver.
6. Lift the front of the heatsink assy(37) up first then remove it from the unit.
7. Before installing the new heatsink into the chassis, perform the **Adjustment** procedure at the end of this manual.
8. To install the new heatsink assy(37), reverse steps 2 through 5.
9. Refer to *print#942659B* . Install the top cover(2) by holding it by the sides and carefully guiding the mounting tabs into the slots in the side bars. Be sure that the cutouts in the top cover line up with the audio channel heatsinks. Secure by tightening 4 screws(5).

REPLACING A SPEAKER BINDING POST

1. Refer to *print#942659B*. Using a 5/32" hexdriver, loosen four screws(5) that secures the top cover(2) to the unit assembly(4). Remove cover(2) by lifting it straight up until it clears the unit.
2. Refer to *print#942658B*. Turn unit over. Using a 5/64" hexdriver remove six screws that secures the heatsink assy(37) to the chassis(19). Turn the unit over. Remove three screws(1) that secures the heatsink assy(37) to the power supply PCB.
3. Using a #1 phillips screwdriver, remove the three screws(26) from the RCA and XLR input connectors. On the outer heatsink assys only remove one screw(29) using a 5/32" hexdriver.
4. Move the heatsink assy(37) as far forward as possible.

5. Using a 3/8" wrench loosen the nut that secures the output wire from the heatsink assy(37) to the red(23) or black(24) binding posts located on the rear panel. Remove the wire from the posts.
6. Carefully remove Neoprene restraint(20) from the binding post(23) or (24). Remove two binding post nuts and remove the binding post from the unit.
7. Install new binding post by reversing steps 5 and 6.
8. Secure heatsink assy(37) to the chassis(19) by reversing steps 2 through 4.
9. Refer to *print#942659B* . Install the top cover(2) by holding it by the sides and carefully guiding the mounting tabs into the slots in the side bars. Be sure that the cutouts in the top cover line up with the audio channel heatsinks. Secure by tightening 4 screws(5).

REPLACING THE AC PCB ASSEMBLY

1. Refer to *print#942659B*. Using a 5/32" hexdriver, loosen four screws(5) that secures the top cover(2) to the unit assembly(4). Remove cover(2) by lifting it straight up until it clears the unit.
2. Refer to *print#942658B*. Using a 5/64" hexdriver, remove four screws(33) that secures the AC pcb assy(30) and the insulator(31) to the brackets(34). NOTE: early units did not have this insulator. Using a #2 phillips screwdriver, remove two screws(28) that secures the AC connector to the back panel. Be sure not to loose the phono jack washers(32).
3. Disconnect two 10pin ribbon cables from P300 and P303 on the AC pcb assy(30). Disconnect one 2wire cable from P101 and connectors P103 and P104 on the AC pcb assy(30).
4. Connect white wire and black wire from VS pcb to P104 and P103 respectively on the AC pcb assy(30). Connect 10pin ribbon cable from heatsink assys(37) to P300 on the AC pcb assy(30) so that the red wire on the cable is closest to the "1" on the pcb. Connect 10pin ribbon cable from the face plate(8) to P303 on the AC pcb assy(30) so that the red wire on the cable is closest to the "1" on the pcb. Connect the 2wire cable from the front plate(8) to P101 on the AC pcb assy(30). This connector is keyed and will only connect one way.
5. Install two phono jack washers(32) onto the trigger input jacks. Secure the AC pcb assy(30) and insulator(31) to the brackets(34) using four screws(33). NOTE: early units did not have this insulator. Secure the AC connector to the rear panel using two screws(28).
6. Refer to *print#942659B* . Install the top cover(2) by holding it by the sides and carefully guiding the mounting tabs into the slots in the side bars. Be sure that the cutouts in the top cover line up with the audio channel heatsinks. Secure by tightening 4 screws(5).

REPLACING FUSES

1. Refer to *print#942659B*. Using a 5/32" hexdriver, loosen four screws(5) that secures the top cover(2) to the unit assembly(4). Remove cover(2) by lifting it straight up until it clears the unit.
2. Refer to *print#942658B*. There are three fuses located on the AC pcb assy(30) two main fuses(F1,F2), one system monitor fuse (F101). There are three fuses located on the VS pcb, one for each transformer.
3. Refer to *print#942659B* . Install the top cover(2) by holding it by the sides and carefully guiding the mounting tabs into the slots in the side bars. Be sure that the cutouts in the top cover line up with the audio channel heatsinks. Secure by tightening 4 screws(5).

HEATSINK ASSEMBLY REPAIR CABLES

To make repair of the heatsink assys possible, they must be removed from the chassis. To apply power to the heatsink assys from the power supply pcb, three cables must be made using the following parts.

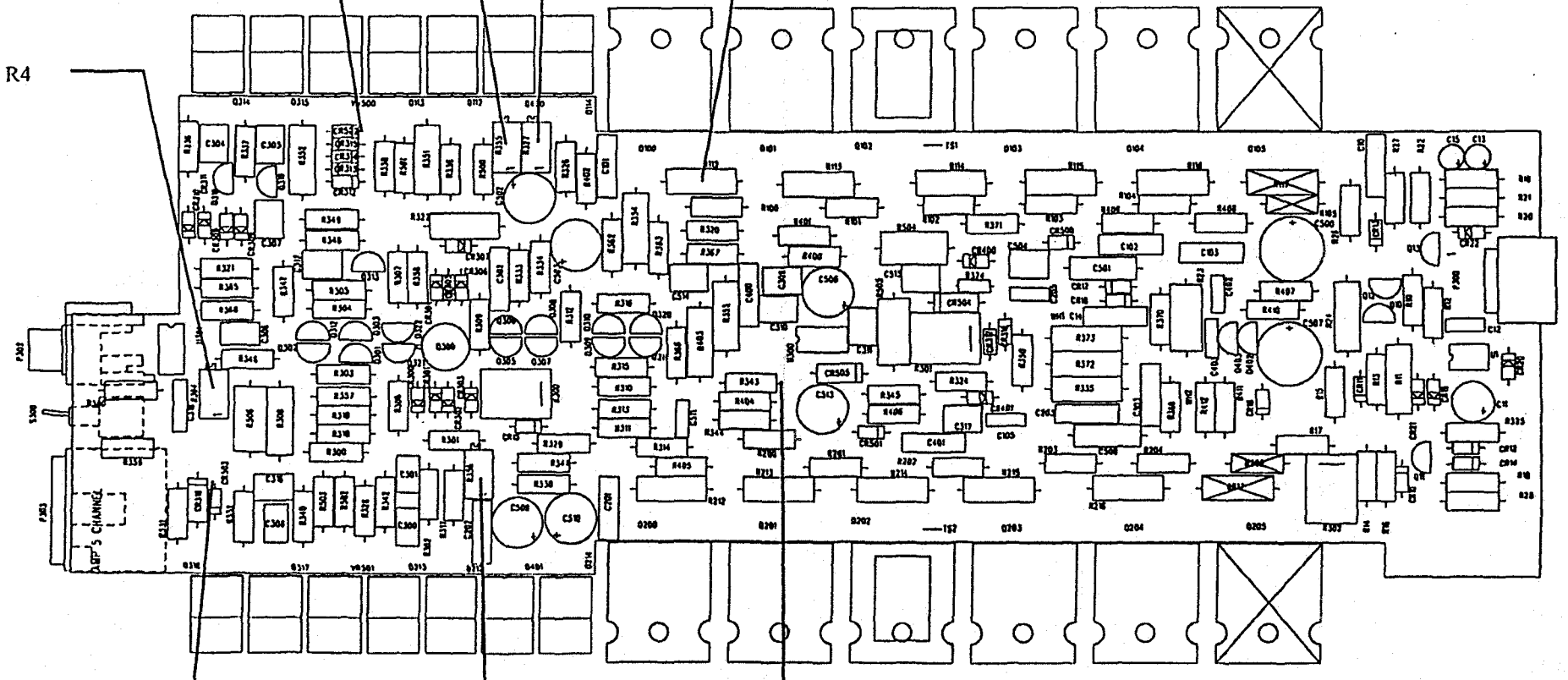
6pc #6 ring terminals
24" 12-14ga red wire (+V)
24" 12-14ga black wire (-V)
24" 12-14ga green wire (GND)

ADJUSTMENTS

Heatsink assembly adjustments should be performed after a repair or if a new assy is being installed. Because of the layout of the inside of the unit it is not possible to measure -regulator or DC servo. This means that the +/- regulator and DC servo measurements and adjustments must be performed with the assy outside of the unit with the acception of output bias which should be measured and adjusted with the heatsink assembly mounted inside the unit. To do this follow the procedure below.

1. If after a repair or a new heatsink assy is being installed, go to step 7. If not, continue. Refer to *print#942659B*. Using a 5/32" hexdriver, loosen four screws(5) that secures the top cover(2) to the unit assembly(4). Remove cover(2) by lifting it straight up until it clears the unit.
2. Refer to *print#942658B*. Turn unit over. Using a 5/64" hexdriver remove six screws that secures the heatsink assy(37) to the chassis(19). Turn the unit over. Remove three screws(1) that secures the heatsink assy(37) to the power supply PCB.

3. Unplug the 10pin ribbon cable from each heatsink assy(37) and drape in over the AC PCB assy(30).
4. Using a 3/8" wrench loosen the two nuts that secure the output wires from the heatsink assy(37) to the red(23) and black(24) binding posts located on the rear panel. Remove the wires from the posts.
5. Using a #1 phillips screwdriver, remove the three screws(26) from the RCA and XLR input connectors. On the outer heatsink assys only remove one screw(29) using a 5/32" hexdriver.
6. Lift the front of the heatsink assy(37) up first then remove it from the unit.
7. Using the heatsink repair cables (see "heatsink repair cables" section in this manual), connect the power from the power supply pcb to the heatsink assy.
8. Apply power to the unit and put the unit into the "ON" position. Allow the heatsink assy to warm up for 1 hour.
9. Refer to the **Adjustments** diagram in the back of this manual and adjust the +/- regulators and the DC servo.
10. To install the new heatsink assy, reverse steps 2 through 5.
11. Apply power to the unit and put the unit into the "ON" position. Allow the unit to warm up for 1 hour.
12. Refer to the **Adjustments** diagram in the back of this manual and adjust output bias.
13. Refer to *print#942659B* . Install the top cover(2) by holding it by the sides and carefully guiding the mounting tabs into the slots in the side bars. Be sure that the cutouts in the top cover line up with the audio channel heatsinks. Secure by tightening 4 screws(5).



ADJUSTMENTS

TROUBLESHOOTING GUIDE

unit won't turn on (no front LEDs) refer to main board print # 942542

measure fuses F101 and F102 for open circuit

open

replace the fuses with the appropriate value. measure T100, CR100, CR101, CR102 CR103, C105, C104, VR100 for short circuit. replace the shorted component.

OK

measure voltage from pin 1and ground of VR100.

0VDC

replace T100

9VDC

measure voltage from pin 3 of VR100 to ground.

0VDC

measure for short circuit from pin3 to ground on VR100.

short

replace the shorted component

5VDC

replace U302

no short

replace VR100

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unit will not go into standby. (power LED flashing)

measure fuses F1 and F2 on the mains board (print # 942542)

open

replace the fuses with the appropriate value. measure main power transformers, power supply capacitors and power supply rectifiers for short circuit (print #942657)

short

replace the shorted component

ok

remove one audio channel at a time from the chassis and measure between MT300, MT301 and MT302 for short circuit. (print 942539)

short refer to print# 942539D

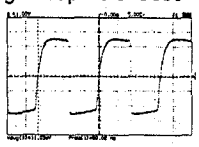
check output transistors C500, C501, C507, and C508 for short circuit replace faulty components

ok

disconnect ribbon cable from P300 on the mains board (print # 942542)

no change

check for frequency signal at pin 6 of U600



ok

change U302 on the mains board

unit goes into "standby"

reconnect the ribbon cable to P300 on the mains board and disconnect the ribbon cable connectors one at a time from each audio channel and turn the unit on

no change

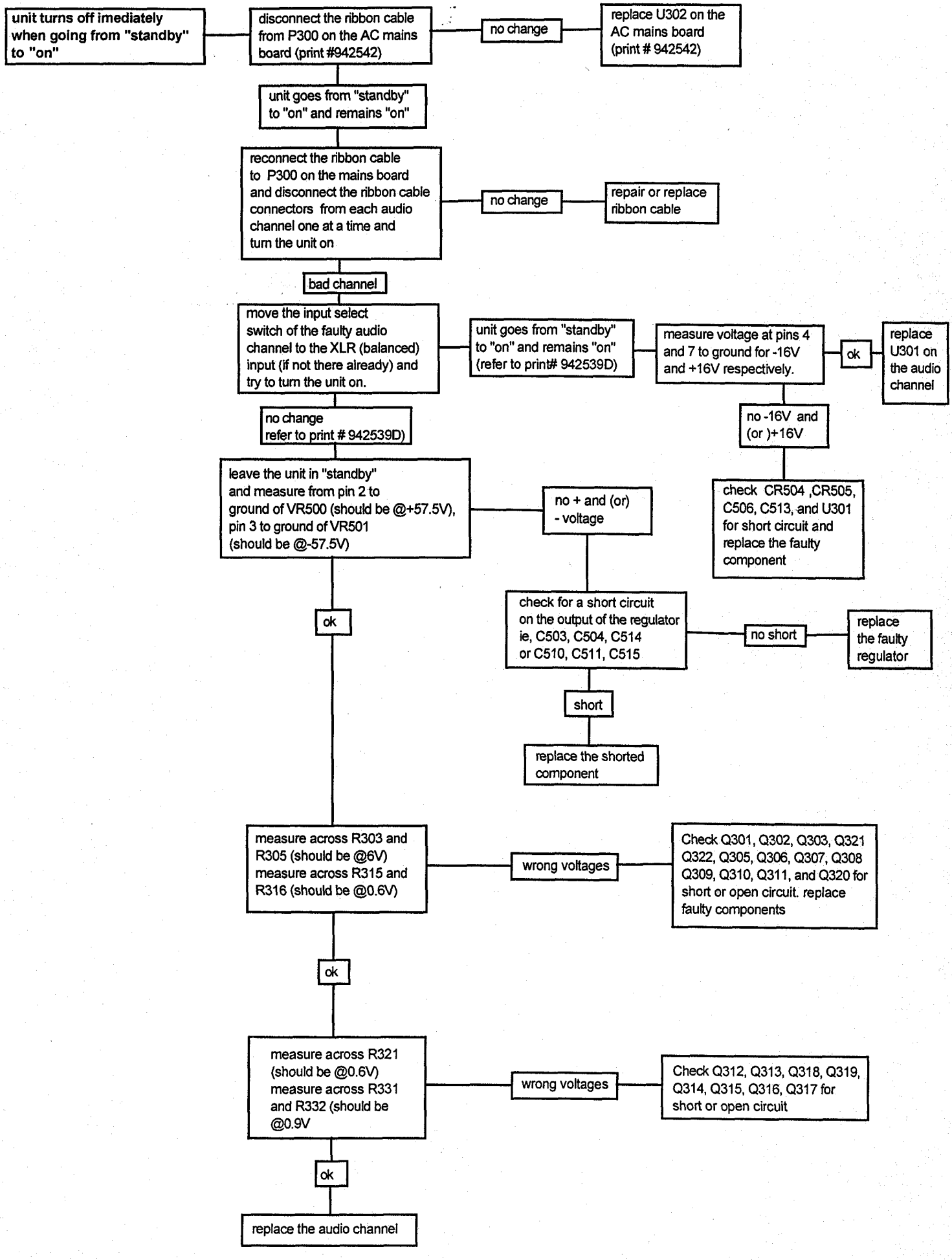
replace the ribbon cable

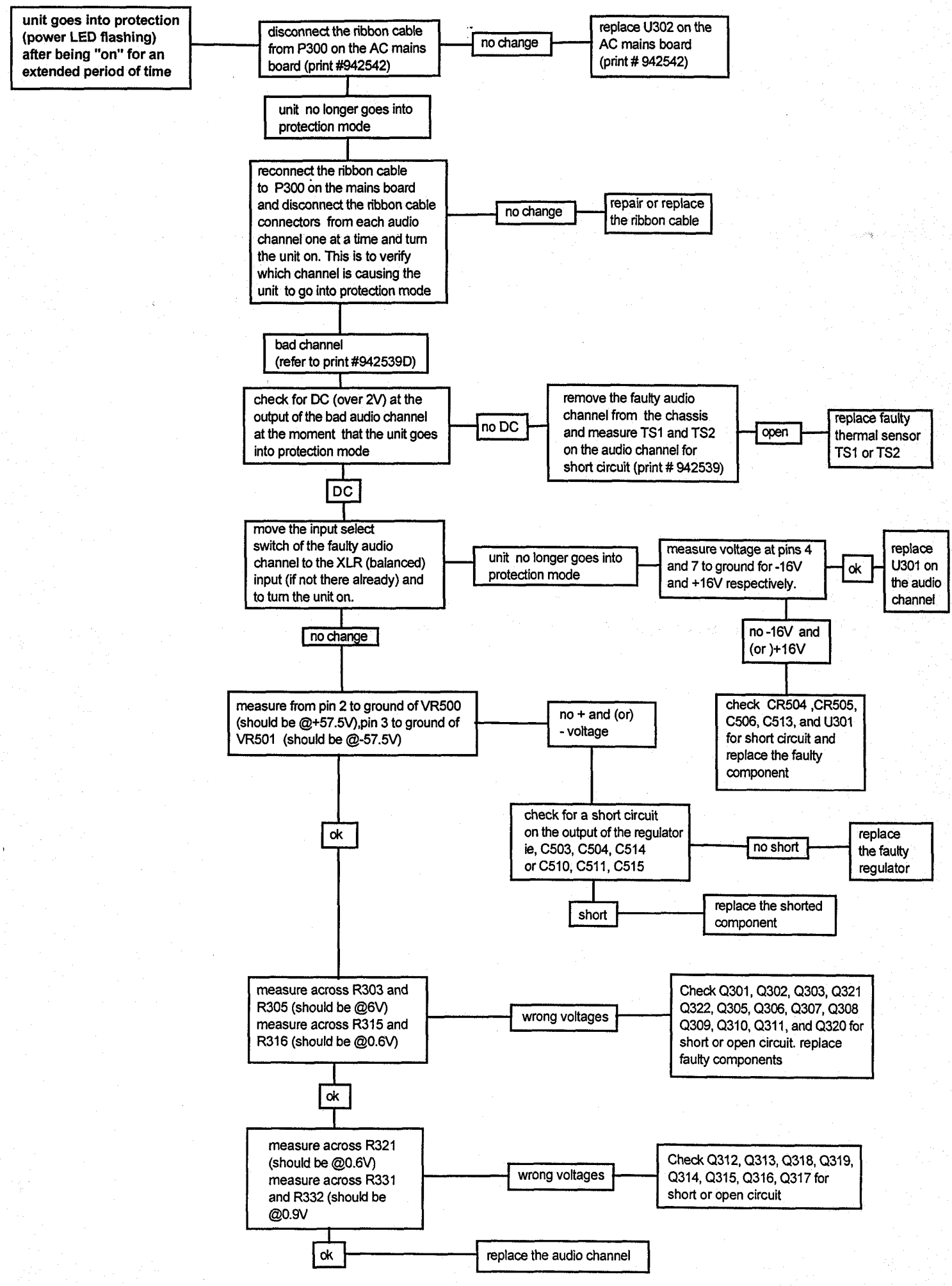
unit goes into standby

remove the faulty audio channel from the chassis and measure TS1 and TS2 on the audio channel for short circuit (print # 942539)

open

replace faulty thermal sensor TS1 or TS2


unit turns off imediately when going from "standby" to "on"
disconnect the ribbon cable from P300 on the AC mains board (print #942542)
no change
replace U302 on the AC mains board (print # 942542)
unit goes from "standby" to "on" and remains "on"
reconnect the ribbon cable to P300 on the mains board and disconnect the ribbon cable connectors from each audio channel one at a time and turn the unit on
no change
repair or replace ribbon cable
bad channel
move the input select switch of the faulty audio channel to the XLR (balanced) input (if not there already) and try to turn the unit on.
unit goes from "standby" to "on" and remains "on" (refer to print# 942539D)
measure voltage at pins 4 and 7 to ground for -16V and +16V respectively.
ok
replace U301 on the audio channel
no -16V and (or)+16V
check CR504 ,CR505, C506, C513, and U301 for short circuit and replace the faulty component
no change refer to print # 942539D)
leave the unit in "standby" and measure from pin 2 to ground of VR500 (should be @+57.5V), pin 3 to ground of VR501 (should be @-57.5V)
no + and (or) - voltage
check for a short circuit on the output of the regulator ie, C503, C504, C514 or C510, C511, C515
no short
replace the faulty regulator
short
replace the shorted component
ok
measure across R303 and R305 (should be @6V) measure across R315 and R316 (should be @0.6V)
wrong voltages
Check Q301, Q302, Q303, Q321 Q322, Q305, Q306, Q307, Q308 Q309, Q310, Q311, and Q320 for short or open circuit. replace faulty components
ok
measure across R321 (should be @0.6V) measure across R331 and R332 (should be @0.9V
wrong voltages
Check Q312, Q313, Q318, Q319, Q314, Q315, Q316, Q317 for short or open circuit
ok
replace the audio channel


unit goes into protection (power LED flashing) after being "on" for an extended period of time
disconnect the ribbon cable from P300 on the AC mains board (print #942542)
no change
replace U302 on the AC mains board (print # 942542)
unit no longer goes into protection mode
reconnect the ribbon cable to P300 on the mains board and disconnect the ribbon cable connectors from each audio channel one at a time and turn the unit on. This is to verify which channel is causing the unit to go into protection mode
no change
repair or replace the ribbon cable
bad channel (refer to print #942539D)
check for DC (over 2V) at the output of the bad audio channel at the moment that the unit goes into protection mode
no DC
remove the faulty audio channel from the chassis and measure TS1 and TS2 on the audio channel for short circuit (print # 942539)
open
replace faulty thermal sensor TS1 or TS2
DC
move the input select switch of the faulty audio channel to the XLR (balanced) input (if not there already) and to turn the unit on.
unit no longer goes into protection mode
measure voltage at pins 4 and 7 to ground for -16V and +16V respectively.
ok
replace U301 on the audio channel
no change
no -16V and (or)+16V
measure from pin 2 to ground of VR500 (should be @+57.5V),pin 3 to ground of VR501 (should be @-57.5V)
no + and (or) - voltage
check CR504 ,CR505, C506, C513, and U301 for short circuit and replace the faulty component
ok
check for a short circuit on the output of the regulator ie, C503, C504, C514 or C510, C511, C515
no short
replace the faulty regulator
short
replace the shorted component
measure across R303 and R305 (should be @6V) measure across R315 and R316 (should be @0.6V)
wrong voltages
Check Q301, Q302, Q303, Q321 Q322, Q305, Q306, Q307, Q308 Q309, Q310, Q311, and Q320 for short or open circuit. replace faulty components
ok
measure across R321 (should be @0.6V) measure across R331 and R332 (should be @0.9V
wrong voltages
Check Q312, Q313, Q318, Q319, Q314, Q315, Q316, Q317 for short or open circuit
ok
replace the audio channel

excessive noise through the speakers when going from "standby" to "on" or from "on" to "standby"

perform the DC SERVO adjustment described in the "adjustments" section of the repair manual.

no change (refer to print # 942539D)

measure the resistance of the trimpot (R364) for open circuit or broken wiper

ok → replace U301

broken → replace the trimpot and perform DC SERVO adjustment

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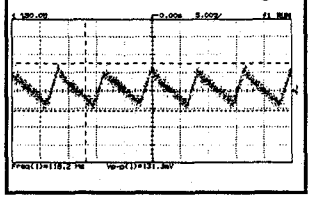
excessive "buzz" noise through the speakers when "on"

determine which channel has the "buzz" and measure the AC ripple on the channels main power supply capacitors should look like the following;



higher ripple → replace the faulty power supply capacitor

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no output from one channel

move the input select switch of the faulty audio channel to the XLR (balanced) input (if not there already) and try to turn the unit on. refer to print # 942539D)

unit now has output → measure voltage at pins 4 and 7 to ground for -16V and +16V respectively.

ok → replace U301 on the audio channel

no -16V and (or)+16V → check CR504 ,CR505, C506, C513, and U301 for short circuit and replace the faulty component

no change

remove the ribbon cable that connects to all of the audio channel from all the audio channels but the one with no output. cycle between "standby" and "on " and listen for relays engaging and disengaging on the audio channel

no relays engaging or disengaging → connect a different connector on to the channel and listen for relays

relays engaging and disengaging → repair or replace the ribbon cable

no change → measure voltage at pins 4 and 7 to ground for -16V and +16V respectively.

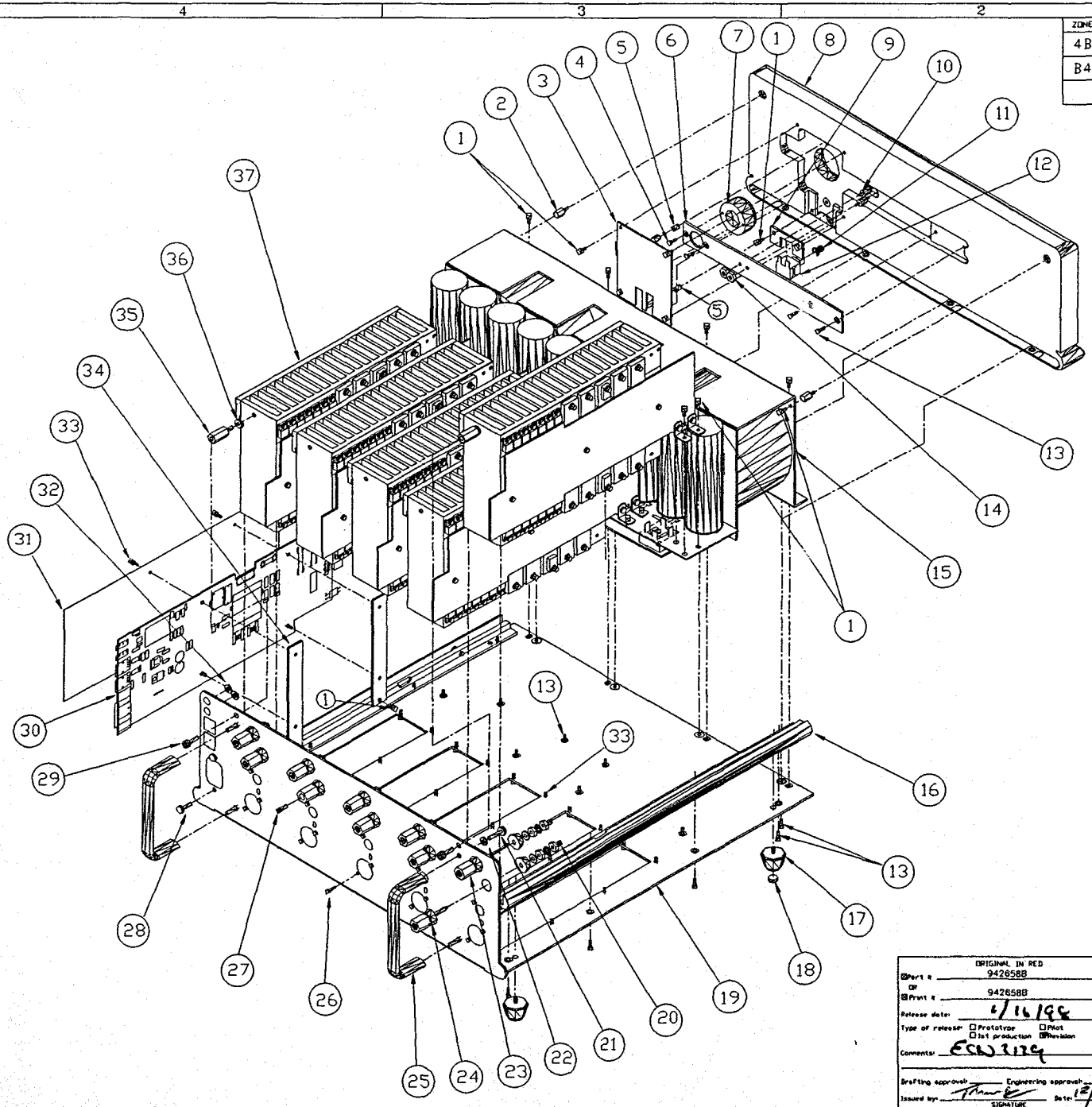
no -16V and (or)+16V → check CR504 ,CR505, C506, C513, and U301 for short circuit and replace the faulty component

ok → measure from pin4 to ground on IC U1 for @ 16V

0V → replace U1

16V → check Q12, Q13, C13, and C15 for short or open circuit replace faulty component

relays engaging and disengaging → check relays K300 and K301 for faulty contacts replace faulty relay



ZONE	SYM	REVISION DESCRIPTION	DFTR	DATE
4B	A	ADDED BINDING POST PLUG/ECN 2079	TMH	10/17/97
B4	B	ADDED AC MAIN PCB INSULATOR	TMH	12/11/97
		CHG. STD BY BUTTON P/N, ECR 680, 726		

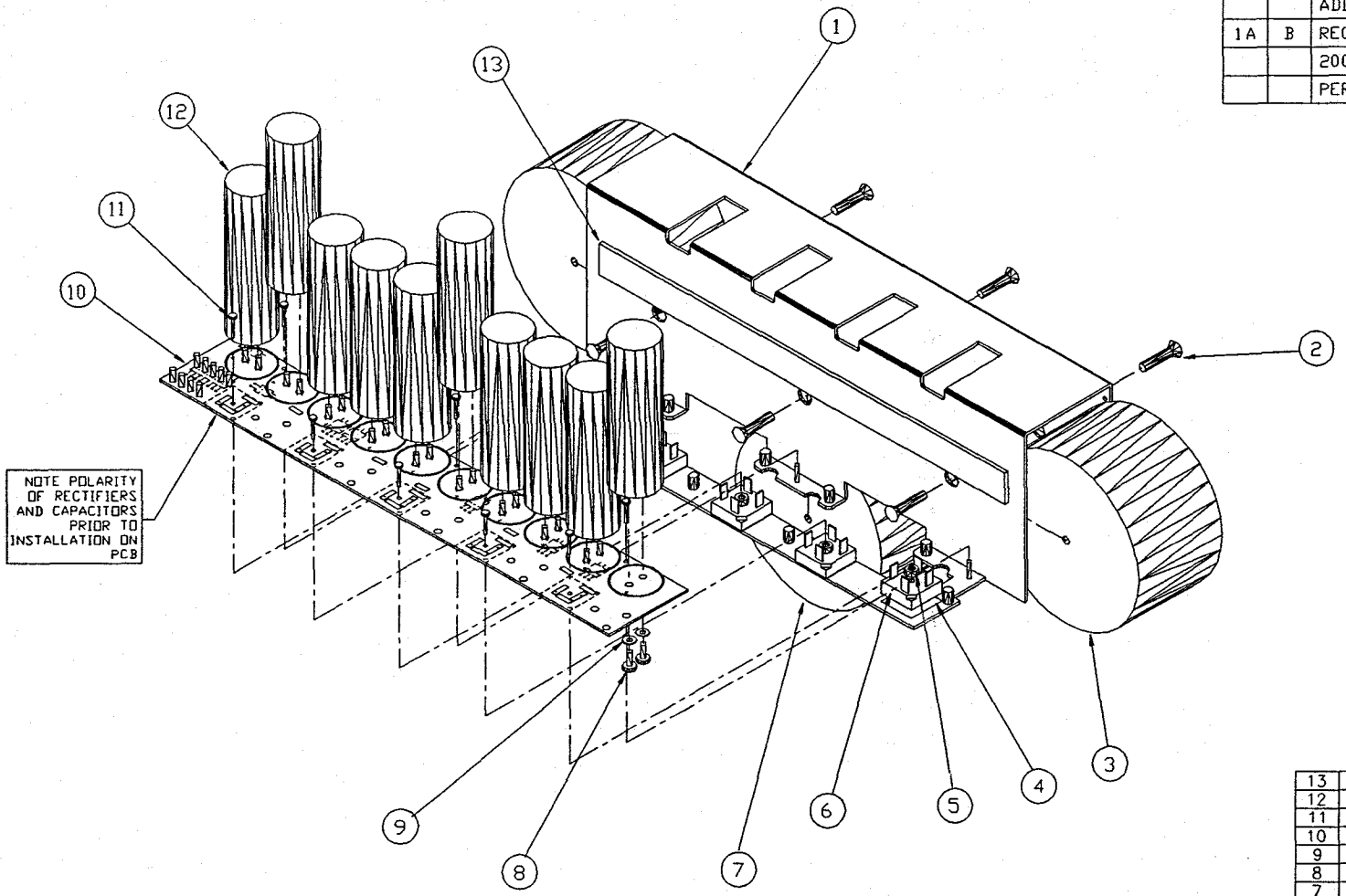
ITEM	REQD	PART NO	PART DESCRIPTION
37	5	MA1078	HEAT SINK ASSEMBLY
36	2	420945	SPACER.375ODx.192IDx.125THK STL Z
35	2	420944	STDOFF 10-32x.75Lx.375HEX MF STL
34	2	501432	AC PCB BRACKETS
33	34	420275	6-32X0.25 BHSCS SS BLK
32	2	460307	PHONO JACK WASHERS
31	1	430327	ACMAIN PCB INSULATOR
30	1	M10319	AC PCB ASSEMBLY
29	2	420941	SCR 10-32X0.50 SHCS BLK NYLOK
28	2	420407	#8X0.500 SELF TAPPING PHIL Z SCR
27	10	460442	BINDING POST PLUGS (BLACK)
26	15	420509	#4X0.375 SELF TAPPING PHIL Z
25	2	501447	HANDLES BLK(RAF 8368-1032-A-24)
24	5	330069	BINDING POST ASSY. BLK
23	5	330067	BINDING POST ASSY. RED
22	4	420737	#10 SPLIT LOCK WASHER SS
21	4	420697	#10-32x.625 PN HD PHIL Z SCR
20	10	430320	BPWSHR NEOPRENE.250Dx.05IDx.093T
19	1	501425	CHASSIS
18	4	430302	FOOT PAD
17	4	501433	FOOT
16	2	501427	SIDE BAR
15	1	MA1079	POWER PCB ASSY
14	2	420913	#4 KEP NUTS
13	22	420439	SCREW 6-32X0.25 FH PHIL BLK
12	1	350349	ON-OFF SW (MARQUADRT 1681.3101)
11	1	460487	POWER BUTTON
10	2	430213	SHK MOUNTS EAR-MM-100-UC04-V
9	1	501439	ON-OFF SWITCH BRACKET
8	1	501428	FACE PLATE
7	1	501437	STAND BY BUTTON
6	1	501438	BUTTON BAR
5	2	460488	AVP LIGHT PIPES
4	2	420011	4-40X1/4" FH PHIL
3	1	M10320	AMP5 PCB ON OFF ASSY.
2	2	420883	6-32X0.25LGX.375 HEX MF STD-OFF
1	29	420942	NO 6-32X.25 PAN HD PHIL Z SEMS

ORIGINAL IN RED
942658B
Part # 942658B
OR
Print # 942658B
Release date: 1/16/98
Type of release: ☐ Prototype ☐ Pilot ☐ 1st production ☒ Revision
Comments: ECN 3129
Drafting approval: Engineering approval:
Issued by: SIGNATURE Date: 1/23/98

TOLERANCES UNLESS OTHERWISE SPECIFIED
DECIMALS:
.X ±.1
.XX ±.01
.XXX ±.005
ANGLES ±1°
DR. TMH DATE 9/8/97
SCALE NONE

MADRIGAL audio laboratories, inc.
2081 south main street middletown connecticut 06457 u.s.a.
MATERIAL
SHEET 1 OF 1
SIZE C
A B C D E R
USED IN AMP5
NAME UNIT ASSEMBLY (MA1080)
No. 942658B

ZONE	SYM	REVISION DESCRIPTION	DFTR	DATE
B3	A	ITEM 8 WAS 420349 (PER ECR 599)	TMH	9/24/97
		ADDED INSTALLATION NOTES		
1A	B	RECT. P/N WAS 70060, CAP. P/N WAS	TMH	12/18/97
		200143, P/N 420290 WAS 420490		
		PER ECR 724		



ITEM	REQD	PART NO	PART DESCRIPTION
13	1	430324	CAP. DAMPER 15X1X1/8" PORON BLK
12	10	200227	CAPACITOR (DIMPLED CAN VERSION)
11	8	420290	#4-40X.625"PAN HD PHIL Z SCREWS
10	1	M10137	POWER SUPPLY BOARD ASSY.
9	20	420116	NO. 10 ITLW BRASS
8	20	420208	10-32X.3125 RD HD SLT BR SCR
7	1	290122	TRANSFORMER PLITRON 6016-B2-04
6	5	700060	RECTIFIER
5	5	430322	SILICONE WASHER.25IDX.625ODX.25THK
4	5	430323	SILICONE INSULATOR 1.12 SQ. IN.
3	2	290121	TRANSFORMER PLITRON 6017-B2-04
2	6	420943	FH C'SINK SCREW 1/4-20X1.00"PHIL
1	1	501430	TRANSFORMER BRACKET

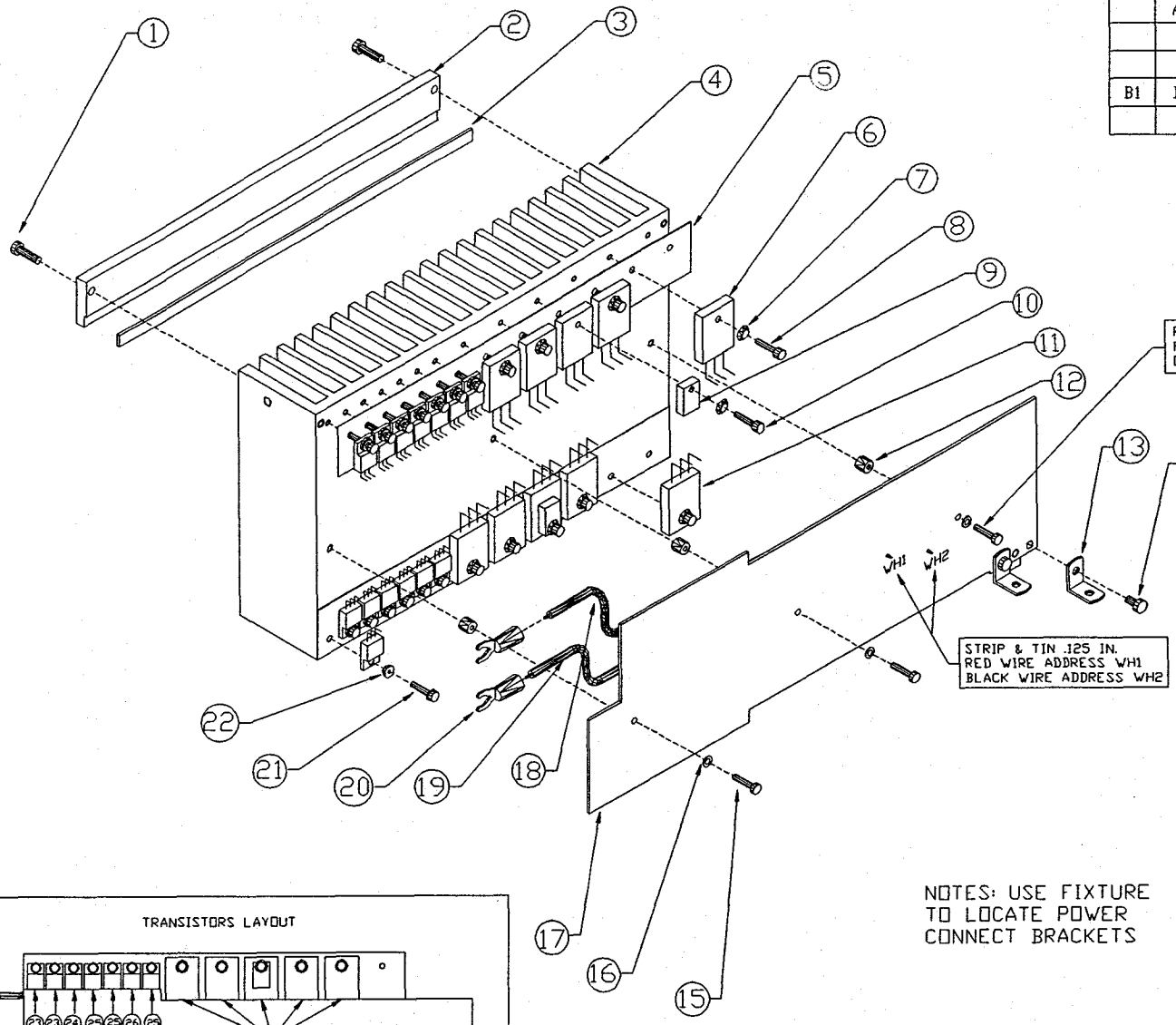
NOTES: INSTALL SILICONE INSULATORS ON TO TRANSFORMER BRACKET FIRST, THEN RECTIFIERS, SILICONE WASHERS AND PCB (W/OUT CAPACITORS). CAPACITORS ARE TO BE MOUNTED ON TO PCB AFTER RECTIFIERS HAVE BEEN SOLDERED TO PCB AND PCB IS PROPERLY FASTENED TO TRANSFORMER BRACKET.

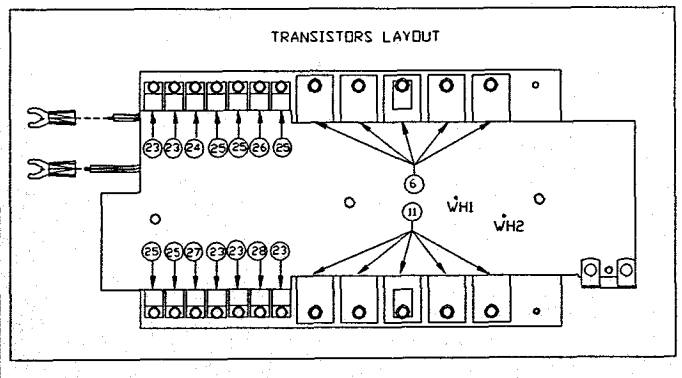
ORIGINAL IN REQ
Part # 942657B
OR
Print # 942657B
Release date: 12/23/97
Type of release: ☐ Prototype ☐ Pilot ☐ 1st production ☐ Revision
Comments:
Drafting approval: _____ Engineering approval: _____
Issued by: _____ SIGNATURE Date: 12/23/97

TOLERANCES UNLESS OTHERWISE SPECIFIED
DECIMALS: .X ±.1 .XX ±.01 .XXX ±.005
ANGLES ±1°
DR. TMH DATE 7/29/97
SCALE NONE

MADRIGAL audio laboratories, inc.
2081 south main street middletown connecticut 06457 u.s.a.
MATERIAL
USED IN AMPS
NAME POWER PCB ASSEMBLY (MA1079)
SHEET 1 OF 1
SIZE C
A B C D E R
No. 942657B

ZONE	SYM	REVISION DESCRIPTION	DFTR	DATE
	A	ADDED CABLE & LUGS, CHANGED ITEMS	TMH	9/30/97
		8, 10 AND 21 TO PHIL Z. ADDED		
		NOTE TO REMOVE SCREW F/HIPOT TEST		
B1	B	P/N OF ITEM 9 WAS 350124 (ECR 723)	TMH	12/18/97
		QTY OF ITEM 18, 19 CHG TO 12"		





NOTES: USE FIXTURE TO LOCATE POWER CONNECT BRACKETS

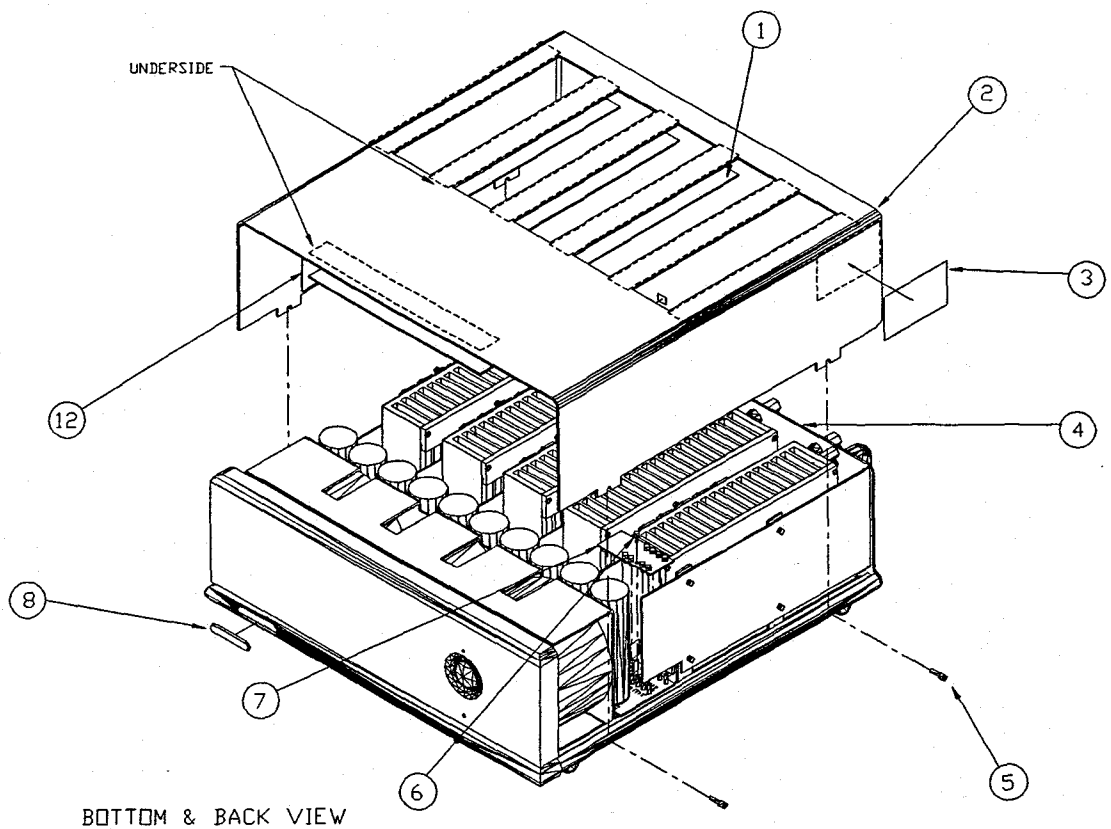
ITEM	REQD	PART NO	PART DESCRIPTION
28	1	720026	TIP122 TRANSISTOR
27	1	780066	ICS LINEAR LM337T ADJ. NEG. REG.
26	1	720028	XTR MOTOROLA/TEXAS INST. TIP127
25	5	720069A	MJE15030 TRANSISTOR
24	1	780065	ICS LINEAR LM317T
23	5	720070A	MJE15301 TRANSISTOR
22	14	460086	NO.4 SHOULDER WASHERS
21	14	420525	4-40x0.375 SEMS PAN HD PHIL Z
20	2	330814	NO. 10 SPADE LUGS
19	12"	300018	BLACK 2.5MM STRANDED WIRE
18	12"	300012	RED 2.5 MM STRANDED WIRE
17	1	M10316	AUDIO CHANNEL BOARD ASSEMBLY
16	3	420095	PCB NO. 4 ITLW
15	3	420007	PCB SCR 4-40X.536 PH PHIL Z
14	3	420942	SEMS 6-32X.25 PAN HD PHIL Z
13	3	501398	POWER CONNECT BRACKET
12	3	460491	0.218" THK NYLON SPACERS
11	5	720108A	TOSHIBA 2SA1302 PNP TRANSISTOR
10	2	420937	NO. 4-40 X.75 PAN HEAD PHIL Z
9	2	350351	SWS T.S. 6A 95° 250VAC NO LEADS
8	8	420524	NO. 4-40x0.4375 PAN HD PHIL Z
7	10	420602	SPRING WASHERS
6	5	720107A	TOSHIBA 2SC3281 NPN TRANSISTOR
5	2	430317/8	SILICONE INSULATORS
4	1	501424	HEAT SINK
3	1	430309	HEAT SINK DAMPER
2	1	501429	DRESSBAR
1	2	420006	NO. 6-32X.50 PAN HD PHIL Z

ORIGINAL IN RED
Part # 9426568
OR
Print # 9426568
Release date: 1/16/98
Type of release: ☐ Prototype ☐ Pilot ☐ 1st production ■ Revision
Comments: ECN 7129
Drafting approval _____ Engineering approval _____
Issued by: _____ SIGNATURE Date: 12/23/97

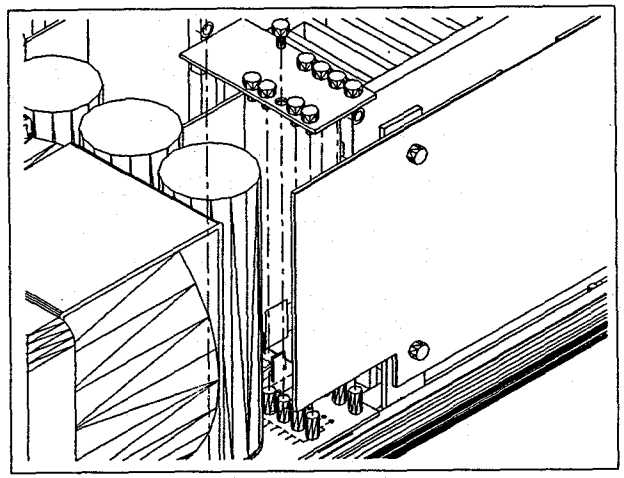
TOLERANCES UNLESS OTHERWISE SPECIFIED
DECIMALS:
.X ±.1
.XX ±.01
.XXX ±.005
ANGLES ±1°
DR. TMH DATE 7/28/97
SCALE NONE

MADRIGAL audio laboratories, inc.
2081 south main street middletown connecticut 06457 u.s.a.
MATERIAL
SHEET 1 OF 1
SIZE C
A B C D E R
USED IN AMP5
No. 942656B
NAME HEAT SINK ASSEMBLY (MA1078)

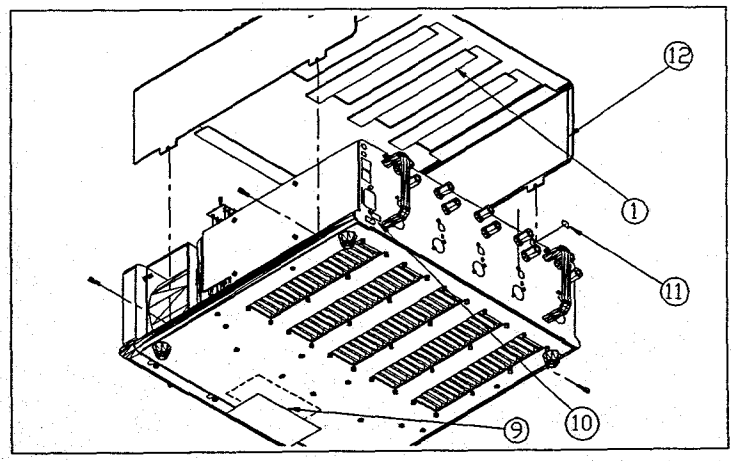
ZONE	SYM	REVISION DESCRIPTION	DFTR	DATE
	A	CORRECTED ITEM 2 P/N, WAS 430321	TMH	10/20/97
		INCREASED QTY OF ITEM 6 TO 9		
2C	B	MOVED T. COVER SIDE INS, ADDED IT. 9	TMH	12/11/97
		11&V/F LABEL P/NS (ECN 2129)		



VS PCB LOCATION



BOTTOM & BACK VIEW



*NOTES: There are six different voltage select board assemblies. Part numbers of each board assemblies and their respective voltage/frequency labels are as follows:

VS BOARD P/N	VOLT./FREQ. LABEL P/N
M10322 (100v)	480300
M10321 (120v)	480301
M10324 (200v)	480539
M10323 (220v)	480302
M10325 (230v)	480303
M10326 (240v)	480304

ITEM	REQD	PART NO	PART DESCRIPTION
12	1	430312	TOP COVER SIDE INSULATOR
11	1	480257	CE LABEL
10	*	*	VOLT/FREQ. LABEL
9	1	480532	S/N LABEL
8	1	480183	PROCEED LOGO BADGE
7	*	*	VS (VOLTAGE SELECT) PCB ASSY.
6	9	420942	NO.6-32X0.25 PAN HD PHIL Z SEMS
5	4	420941	#10-32X0.50 SHCS BLK NYLOK
4	1	MA1080	UNIT ASSEMBLY
3	1	480538	TW LABEL (WHEN APPLICABLE)
2	1	501426	TOP COVER
1	7	430311	TOP COVER DAMPERS

ORIGINAL IN RED
Part # 942659B
OR
Print # 942659B
Release date: 1/16/98
Type of release: ☐ Prototype ☐ Pilot ☐ 1st production ☐ Revision
Comments: ECN 2129
Drafting approval: _____ Engineering approval: TMH 1/13/98
Issued by: _____ Date: _____
SIGNATURE

TOLERANCES UNLESS OTHERWISE SPECIFIED
DECIMALS: .X ±.1, .XX ±.01, .XXX ±.005
ANGLES ±1°
DR: TMH DATE: 9/10/97
SCALE: NONE

MADRIGAL audio laboratories, inc.
2081 south main street middletown connecticut 06457 u.s.a.
MATERIAL
USED IN: AMPS
NAME: FINAL ASSEMBLY
SHEET 1 OF 1
SIZE C
A B C D E R
No. 942659B

Specifications

The correlation between published specifications and performance is unreliable. A list of numbers reveals virtually nothing. All technical measurements must be subject to qualitative as well as quantitative interpretation. Measurements of the Proceed amplifier yield excellent results by any standards. However, only those specifications that apply to its actual operation are included here. All specifications are subject to change at any time, in order to improve the product.

- **Rated power output:** 125 w/ch rms @ 8Ω, all channels driven, 20 Hz–20 kHz with no more than 0.1% THD
  250 w/ch into 4Ω
- **Frequency response:** within 0.15 dB from 20 Hz to 20 kHz
- **Signal to Noise ratio (main outputs):** better than –80 dB (ref. 1 w)
- **Input impedance:** 100kΩ (balanced)
  50kΩ (single-ended)
- **Voltage gain:** 23 dB (balanced)
  29 dB (single-ended)
- **Input sensitivity:** 2.24 V for full rated output (balanced)
  1.12 V for full rated output (single-ended)
- **Power consumption:** less than 150 W in standby
  less than 250 W when fully on and at idle
- **Mains voltage:** determined by the needs of country for which the unit was manufactured; cannot be reset by dealer or user
- **Overall dimensions:** See "Dimensions"
- **Shipping weight:** 110 lbs. (50 kg)
- **Connector Complement:** two binding posts per channel
  one 3-pin XLR balanced input connector per channel
  one RCA input connector per channel
  two ⅛" mini-jacks for remote turn-on and loop-through
  two RJ-45 modular connectors for PHAST™ communications
  one IEC AC mains connector
- **Output impedance:** less than 0.05Ω

For more information, see your Proceed dealer, or contact:

Madrigal Audio Laboratories, Inc.
P.O. Box 781
2081 South Main Street (Route 17)
Middletown, Connecticut 06457 USA
Telephone (860) 346-0896
FAX (860) 346-1540
Internet http://www.madrigal.com/

Madrigal provides an owner-transferable, five year extended warranty on all Proceed products within the U. S. and Canada ONLY. Warranty and service policies outside the U. S. and Canada are set by the local, authorized distributor and are applicable in the country of purchase ONLY. Madrigal products are designed to operate at set voltages appropriate for the country of sale and may be damaged if operated at the wrong voltage.