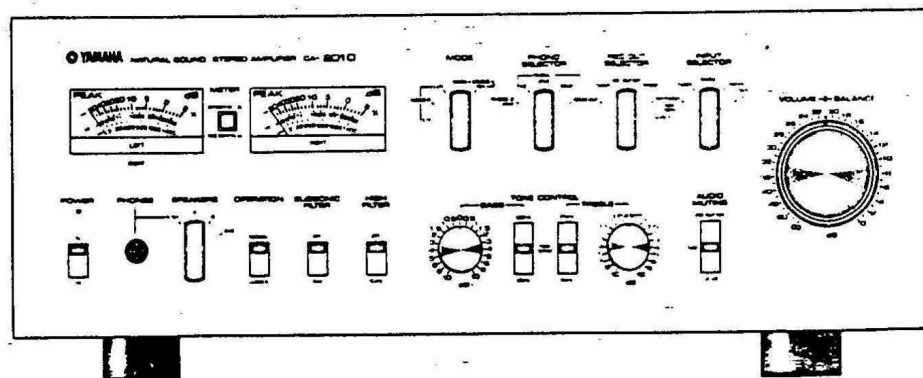


SERVICE MANUAL

CA-2010 INTEGRATED AMPLIFIER



SINCE 1887



YAMAHA

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SPECIFICATIONS

INPUT SENSITIVITY / IMPEADANCE / MAX.INPUT CAP

INPUT TERMINAL	SENSITIVITY	IMPEADANCE	MAXIMAM INPUT CAPACITY
PHONO 1	2mV	47,68,100K Ω	310mV (1KHz, 0.02%)
PHONO 2	2mV	47K Ω	310mV (1KHz, 0.02%)
MC	50 μ V	10 Ω	7.5mV (1KHz, 0.02%)
TUNER,AUX	120mV	50K Ω	20V (1KHz, 0.02%)
MAIN IN	1V	50K Ω	

OUTPUT LEVEL / IMPEADANCE / MAX OUTPUT LEVEL

OUTPUT TERMINAL	OUTPUT LEVEL	IMPEADANCE	MAXIMUM OUTPUT LEVEL
REC OUT	120mV	600 Ω	18.6V (1KHz, 0.02%)
PRE OUT	1V	500 Ω	7V (1KHz, 0.02%)

FREQUENCY RESPONCE

	FREQUENCY	RATING
PHONO 1,2, MC	30 ~ 15KHz	0 \pm 0.2dB (Deviation from RIAA)
TUNER \rightarrow PRE OUT	5 ~ 100KHz	0 \pm ₁ ⁰ dB
TUNER \rightarrow SP OUT	5 ~ 50KHz	0 \pm ₁ ⁰ dB (8 Ω load)

TONE CONTROL

	TURN OVER FREQUENCY	RATING
BASS	125Hz	20Hz \pm 10dB
TARBLE	500Hz 8KHz 2.5KHz	20KHz \pm 10dB

For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
 8 Cherry Tree Rd, Chinnor
 Oxon OX9 4QY
 Tel: 01844-351894 Fax: 01844-352554
 Email: enquiries@mauritron.co.uk

FILTER

	fc	RATING
SUBBSNIC	fc=15Hz	-12dB / OCT
HIGH	fc=10KHz	-12dB / OCT

NOISE LEVEL, S/N

	RATING
PHONO 1,2	82dB (IHF A NETWORK)
MC	71dB (IHF A NETWORK) INPUT 50 Ω short 68dB (IHF A NETWORK) INPUT 0 Ω short
TUNER, AUX, TAPE	100dB (IHF A NETWORK)
MAIN	118dB (IHF A NETWORK)
RESIDUAL NOISE	70 μ V

DISTORTION

	CONDITONS	RATING
PHONO 1.2	REC OUT 5V, 20 ~ 20KHz	Less than 0.003%
MC	REC OUT 3V, 20 ~ 20KHz	Less than 0.03%
TUNER, AUX	PRE OUT 3V, 20 ~ 20KHz	Less than 0.005%
MAIN IN	SP OUT 60W / 8Ω 20~20KHz (CLASS B)	Less than 0.01%
	SP OUT 15W / 8Ω 20~20KHz (CLASS A)	Less than 0.005%
TUNER→SP OUT	SP OUT 60W / 8Ω 20~20KHz (CLASS B)	Less than 0.01%
PHONO→SP OUT		
DISTORTION- POWER RANGE	VOL-20 dB, 0.1W~120W/8Ω	0.1%
	VOL-40 dB, 4mW~120W/8Ω	0.1%

OUTPUT

	CONDITIIS	RATING
AUX IN→SP OUT	8Ω, CLASS B, 120W+120W, 20 ~ 20KHz	0.03%
	130W+130W, 1KHz	0.03%
	4Ω, CLASS B, 140W+140W, 20 ~ 20KHz	0.03%
	180W+180W, 1KHz	0.03%
	8Ω CLASS A, 30W+30W, 20 ~ 20KHz	0.03%

POWER BANDWIDTH

	FREQUENCY	RATING
8Ω, CLASS B	10Hz ~ 50KHz	0.03%
8Ω, CLASS A	10Hz ~ 70KHz	0.03%

DAMPING FACTOR

	DAMPING FACTOR
1KHz, 8Ω	45

LEVEL METER

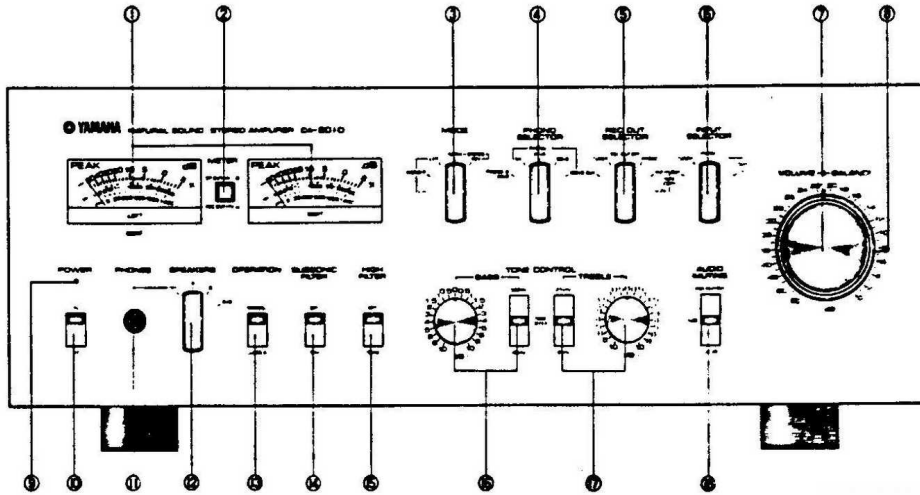
INDICATION RANGE	-50dB~+5dB (1mW~316W)
RESPONCE TIME	100μs
DECAY TIME	0.95 sec

OTHERS

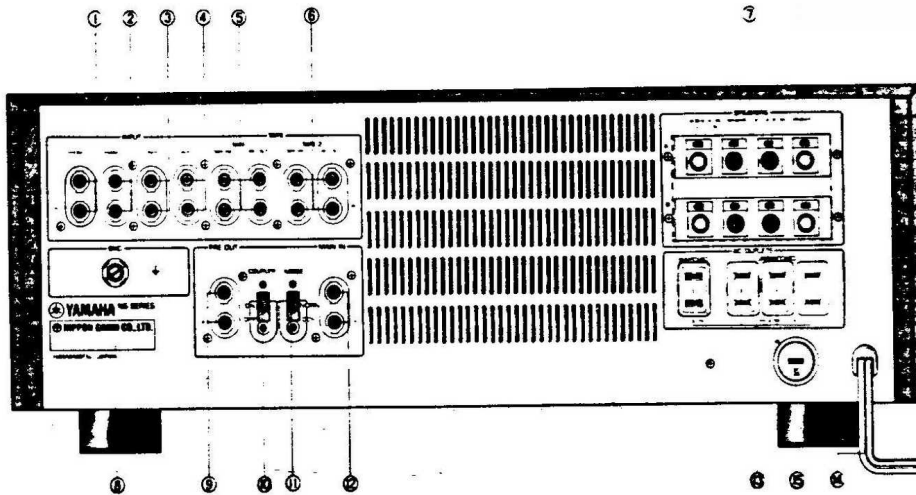
DIMENSIONS	461 x 360 x 170 mm (18-1/4" x 14-1/4" x 6-3/4")
WEIGHT	21 kg(46.2 lbs)
POWER SOURCE	AC 110-240V, 50 / 60Hz
POWER CONSUMPTION	U.S. & CANADIAN MODELS : 600W,700VA EUROPIAN MODEL:900W

EXTERNAL VIEW

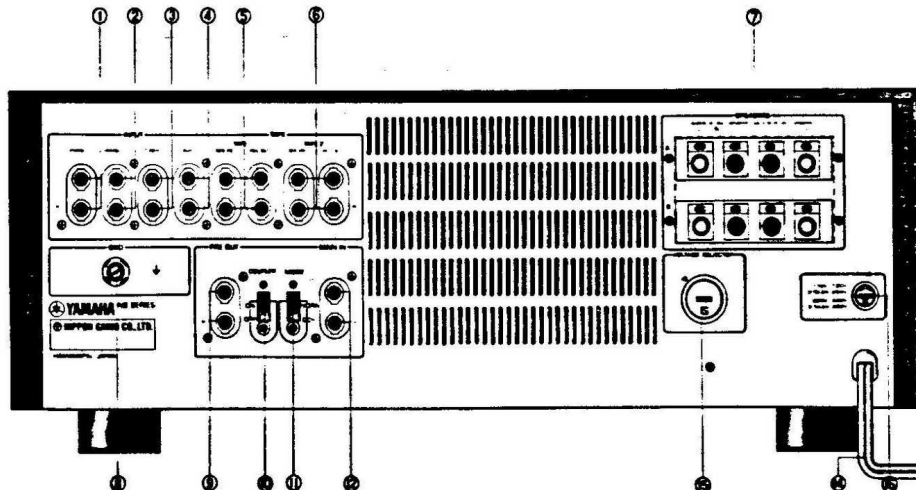
FRONT PANEL



REAR PANEL (GENERAL MODEL)



REAR PANEL (EUROPEAN MODEL)



FRONT PANEL

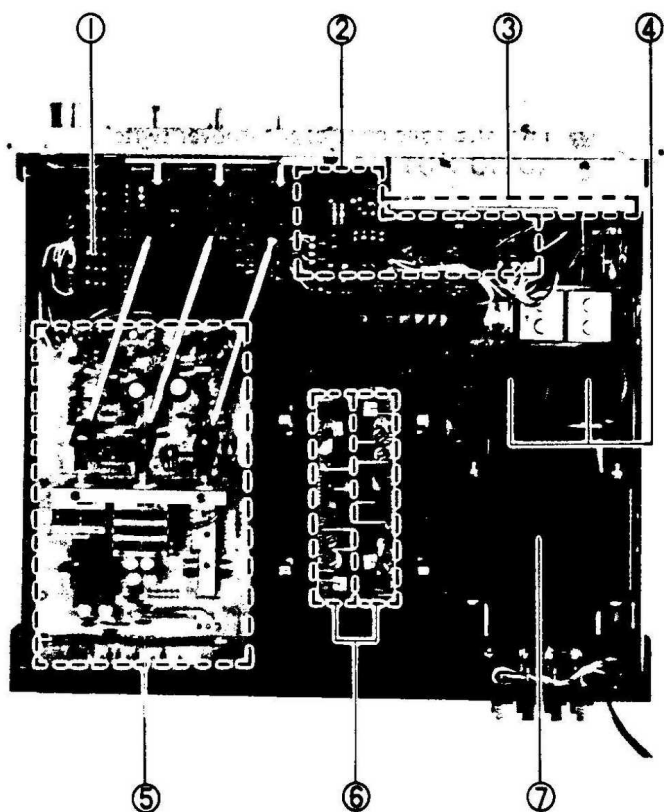
- ① PEAK level meters
- ② METER switch
- ③ MODE selector
- ④ PHONE selector
- ⑤ REC OUT selector
- ⑥ INPUT selector
- ⑦ VOLUME control
- ⑧ BALANCE control
- ⑨ POWER indicator
- ⑩ POWER switch
- ⑪ HEADPHONE jack
- ⑫ SPEAKERS selector
- ⑬ a class/b class OPERATION switch
- ⑭ SUBSONIC FILTER switch
- ⑮ HIGH FILTER switch
- ⑯ BASS tone control & turnover switch
- ⑰ TREBLE tone control & turnover swi
- ⑱ AUDIO MUTING switch

REAR PANEL

- ① PHONE-1 input jacks
- ② PHONE-2 input jacks
- ③ TUNER input jacks
- ④ AUX input jacks
- ⑤ TAPE 1 PB/REC OUT jacks
- ⑥ TAPE 2 PB/REC OUT jacks
- ⑦ SPEAKER terminals
- ⑧ GROUND terminal
- ⑨ PRE OUT jacks
- ⑩ COUPLER switch
- ⑪ MODE (dc/normal) switch
- ⑫ MAIN IN jacks
- ⑬ AC OUTLETS
- ⑭ AC cord
- ⑮ VOLTAGE selector
- ⑯ primary fuse

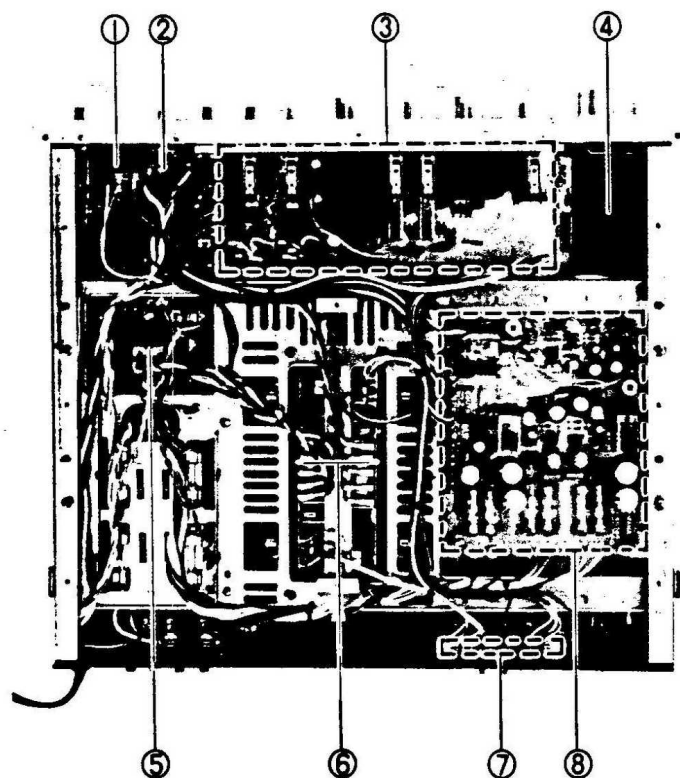
INTERNAL VIEW

TOP VIEW



- ① TONE CONTROL CIRCUIT BOARD
NA06827
NA06826: U.S. & Canadian Models
- ② METER AMP CIRCUIT BOARD (NA06836)
- ③ LAMP CIRCUIT BOARD (NA 06838)
- ④ ELECTROLYTIC CAPACITOR CIRCUIT BOARD
(NA06837)
- ⑤ FUNCTION CIRCUIT BOARD
NA06833
NA06832: U.S. & Canadian Models
- ⑥ MAIN CIRCUIT BOARD
NA06844
NA06843: U.S. & Canadian Models
- ⑦ POWER TRANSFORMER

BOTTOM VIEW



- ① HEADPHONE JACK
- ② SPEAKER SELECTOR SWITCH
- ③ TONE CONTROL CIRCUIT BOARD
- ④ VOLUME CONTROL
- ⑤ ELECTROLYTIC CAPACITOR CIRCUIT BOARD
- ⑥ MAIN CIRCUIT BOARD
- ⑦ COUPLER CIRCUIT BOARD
- ⑧ POWER CIRCUIT BOARD
NA06878: General & Australian Models
NA06789: U.S. & Canadian Models
NA06880: European & British Models

PARTIAL DISASSEMBLY

1. CABINET REMOVAL

- Remove screws 1 and 2 on both sides as shown in Photo 1.
- Lift cabinet upward and remove.

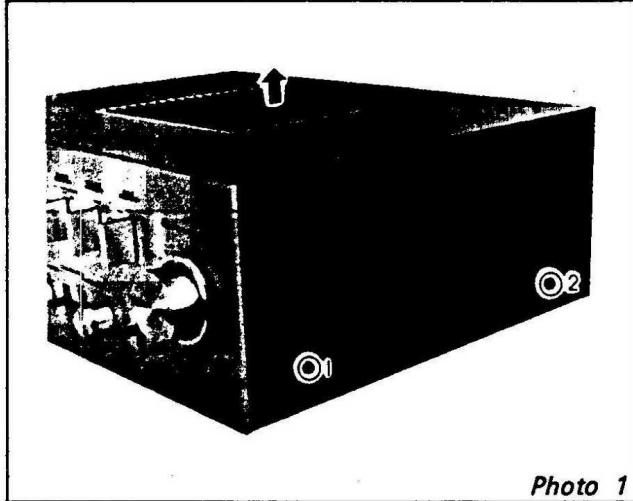


Photo 1

2. REAR PANEL REMOVAL

- Stand unit on side and remove screws 1 ~ 11 shown in Photo 2 and remove rear panel.

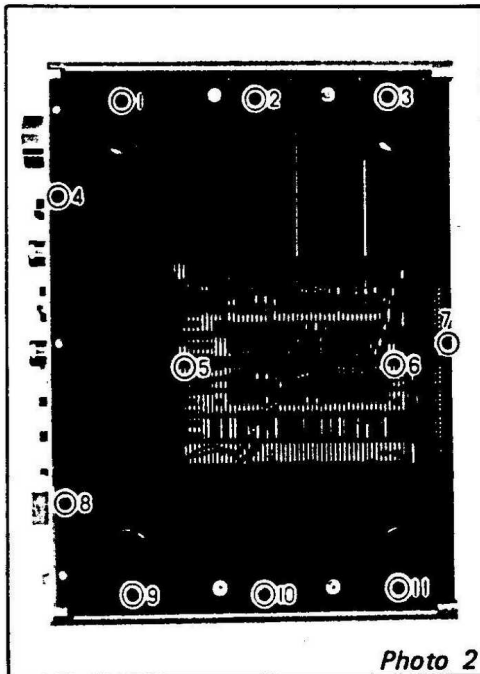


Photo 2

3. FUNCTION CIRCUIT BOARD REMOVAL

- Remove cabinet (refer to step 1)
- Remove screws 1 and 2 shown in Photo 3 and loosen screws 3 ~ 6.
- Slide the shield case toward the front-panel and remove.

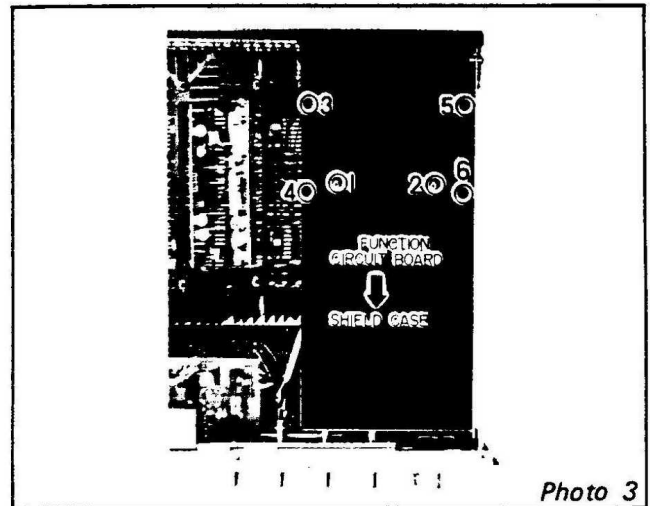


Photo 3

- Slide couplers 1 ~ 3 of the extension shaft in Photo 4 in the direction of the arrow and remove.
- Remove connected leads, then remove screws 4 ~ 9 shown in Photo 4.
- Remove rear panel screws 1 ~ 8 shown in Photo 5, then remove the function circuit board together with the pin jacks.

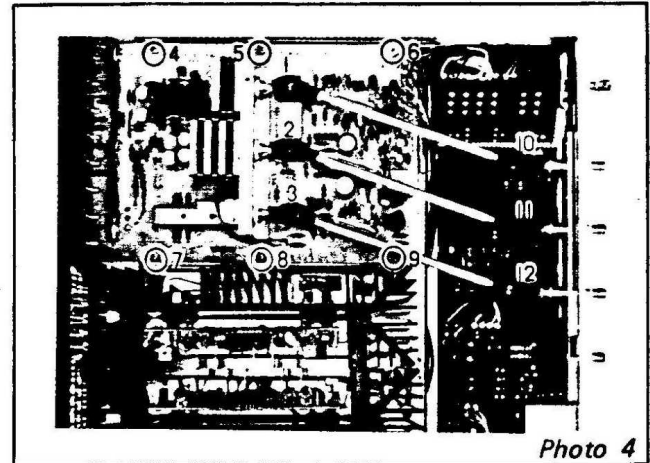


Photo 4

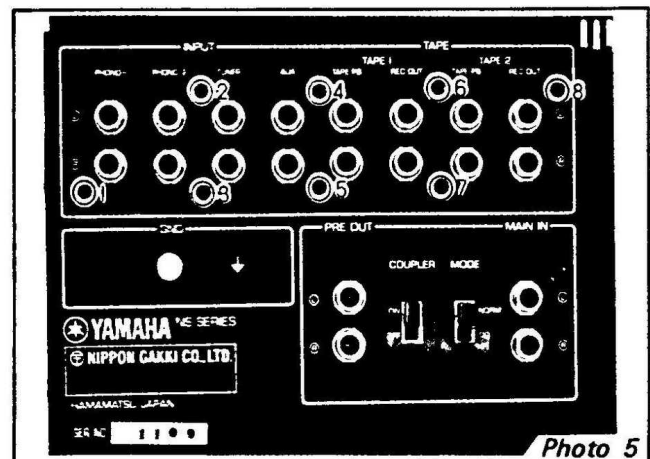
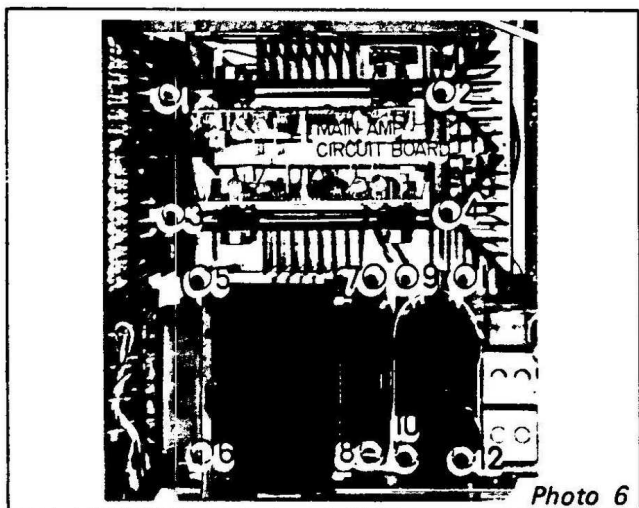


Photo 5

4. MAIN AMP CIRCUIT BOARD REMOVAL

- a. Remove cabinet (refer to step 1).
- b. Remove rear panel (refer to step 2).
- c. Remove screws 1, 2 (for RCH), 3 and 4 (for LCH), then remove lead wires connected from the bottom portion of the chassis to the main Amp circuit board.

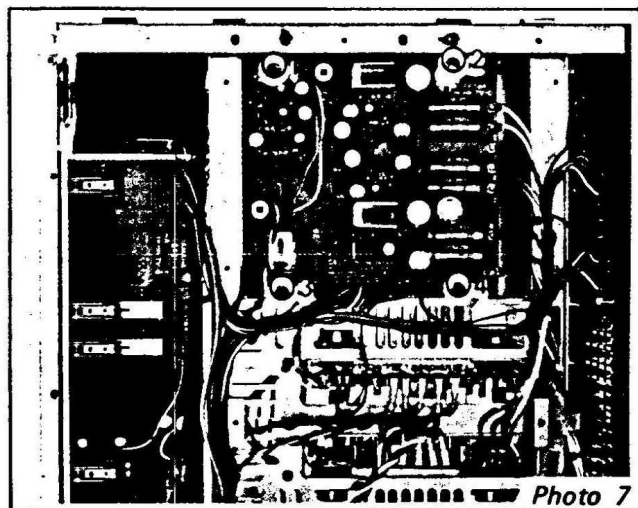


5. POWER TRANSFORMER REMOVAL

- a. Remove cabinet (refer to step 1).
- b. Remove the rear panel (refer to step 2).
- c. Remove lead wire from the bottom of the chassis to the transformer.
- d. Remove screws 5 ~ 8 and remove power transformer.

6. CHEMICAL CONDENSER CIRCUIT BOARD REMOVAL

- a. Remove cabinet (refer to step 1).
- b. Remove the rear panel (refer to step 2).
- c. Remove the wires leading from the bottom of the chassis to the chemical condenser circuit board.
- d. Then remove the chemical condenser circuit board by removing screws 9 ~ 12.

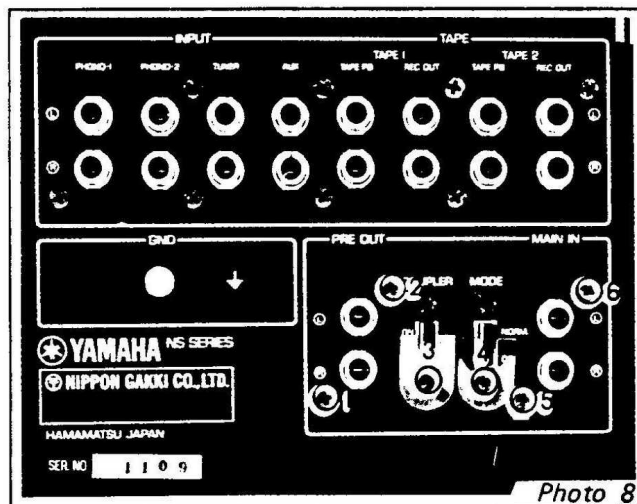


7. POWER CIRCUIT BOARD REMOVAL

- a. Remove the rear panel (refer to step 1).
- b. Remove screws 1-4 and the lead wire, then remove the power circuit board.

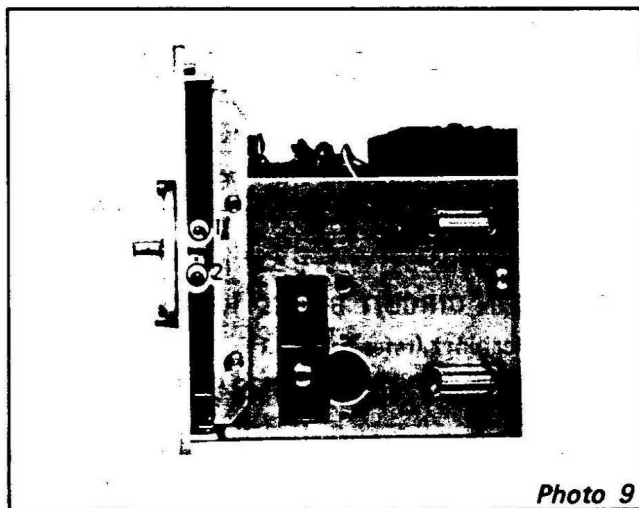
8. COUPLER CIRCUIT BOARD REMOVAL

- a. Remove the rear panel (refer to step 2).
- b. Remove rear panel screws 1 ~ 5, then remove coupler circuit board.



9. FRONT PANEL REMOVAL

- a. Remove cabinet (refer to step 1).
- b. Remove rear panel (refer to step 2).
- c. Remove all knobs on the front panel. Use hexagonal wrench to loosen the nuts on the SPEAKERS, MODE, PHONO SELECTOR, REC OUT SELECTOR, INPUT SELECTOR. Pull and remove TONE CONTROL and VOLUME knobs.
- d. Remove BALANCE knob from side of chassis after loosening screws 1 ~ 2 shown in Photo 9.



- e. Remove lead wires of the level meter and the power source indicating lamp.

LEADS ARE CONNECTED AS SHOWN IN FIGURE 1.

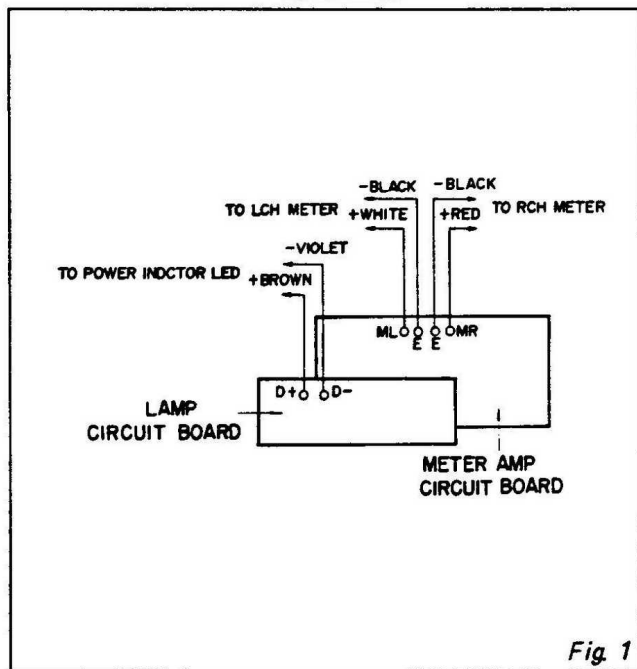


Fig. 1

10. LAMP CIRCUIT BOARD

- Remove cabinet (refer to step 1).
- Remove screws 1 and 2 shown in Photo 12 and remove the lamp circuit board with brackets and acry illumination plate attached.

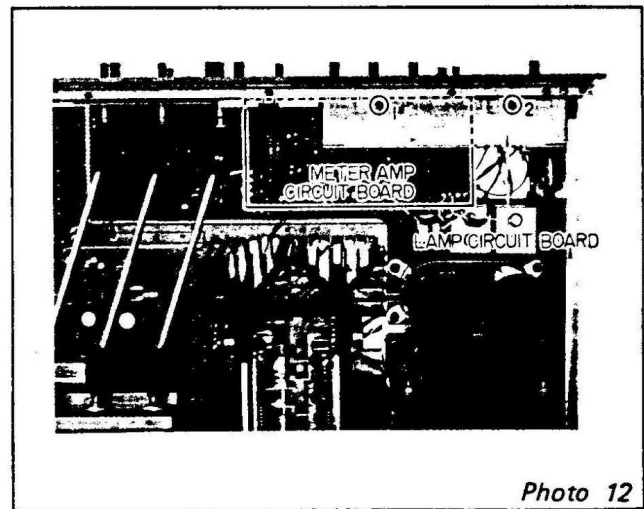


Photo 12

- f. Remove screws 1-3 in Photo 10 and screws 1-3 in Photo 11 and remove the front panel.

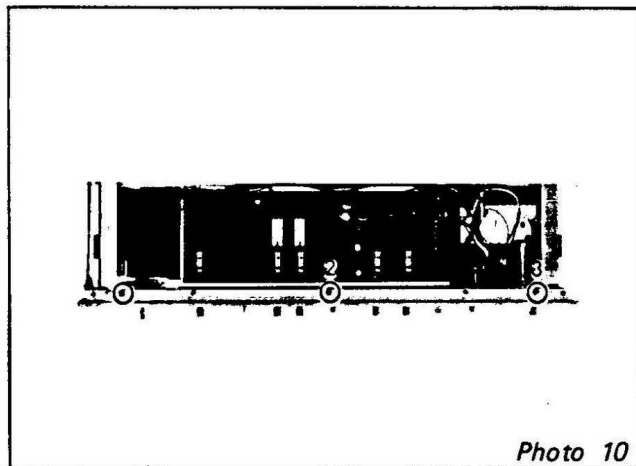


Photo 10

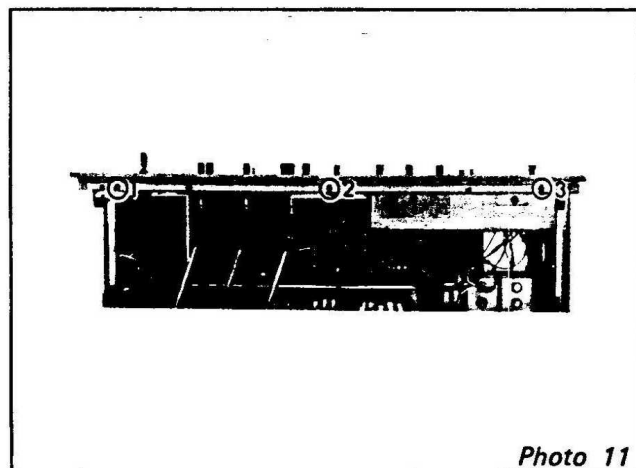


Photo 11

11. METER CIRCUIT BOARD

- Remove the front panel (refer to step 9)
 - Slide extension shaft joints 10 ~ 12 toward the function circuit board.
 - Remove screws 1 ~ 6 shown in Photo 13 and remove the meter circuit board together with brackets.
- * In this case, screws 7 ~ 9 for the stopper are removed in advance.

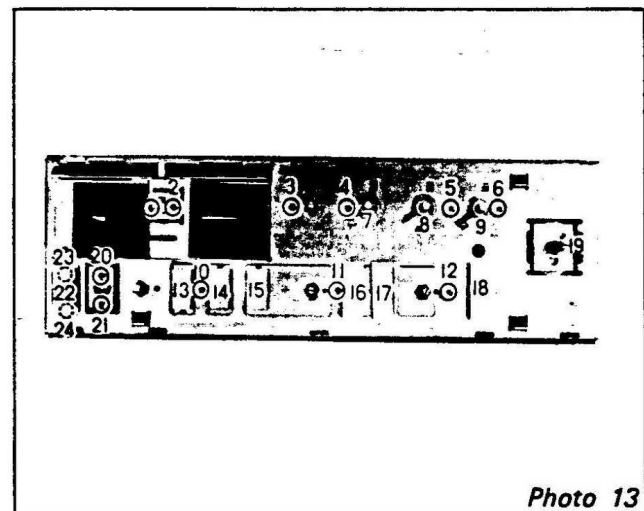


Photo 13

12. TONE CONTROL CIRCUIT BOARD REMOVAL

- Remove the front panel (refer to step 1).
- Remove lead wire connected to the circuit board in advance.

- c. Pull and remove knobs 14 ~ 19 of the lever switch shown in Photo 13.
- d. Remove screws 10 ~ 13 and remove the tone control circuit board.

13. VOLUME CIRCUIT BOARD REMOVAL

- a. Remove the front panel (refer step 9).
- b. Remove the jumper wire of the tone control circuit board.
- c. Remove nut 20 shown in Photo 13 and remove the volume circuit board.

14. HEAD PHONE JACK

- a. Remove the front panel (refer step 9).
- b. Remove screws 20 and 21 and remove the jack.

15. POWER SWITCH REMOVAL

- a. Remove the front panel (refer step 9).
- b. Pull and remove lever knob 23. Then remove screws 24, 25 and remove the power switch.

16. DROPPING THE REAR PANEL

- a. Remove cabinet (refer step 1).
- b. Remove the power source (refer to step 2).
- c. Remove screws 1~ 8 shown in Photo 5.
- d. Remove screw 1 and remove screw 2 on both sides.
Then rear panel can be dropped to the rear.

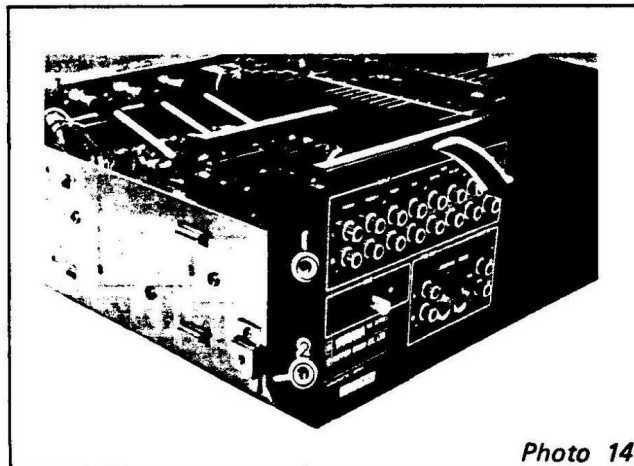


Photo 14

ADJUSTMENT

Carry out adjustments on both the "L" and "R" channels.

1. ADJUSTMENT OF THE IDLING CURRENT IN THE MAIN AMPLIFIER

1.1 With Class B operation (OPERATION switch at TP1 and TP2 of the main circuit board and adjust VR-302 so the reading is 25mV.
302 so the reading is 25mV.

(Refer Fig. 1)

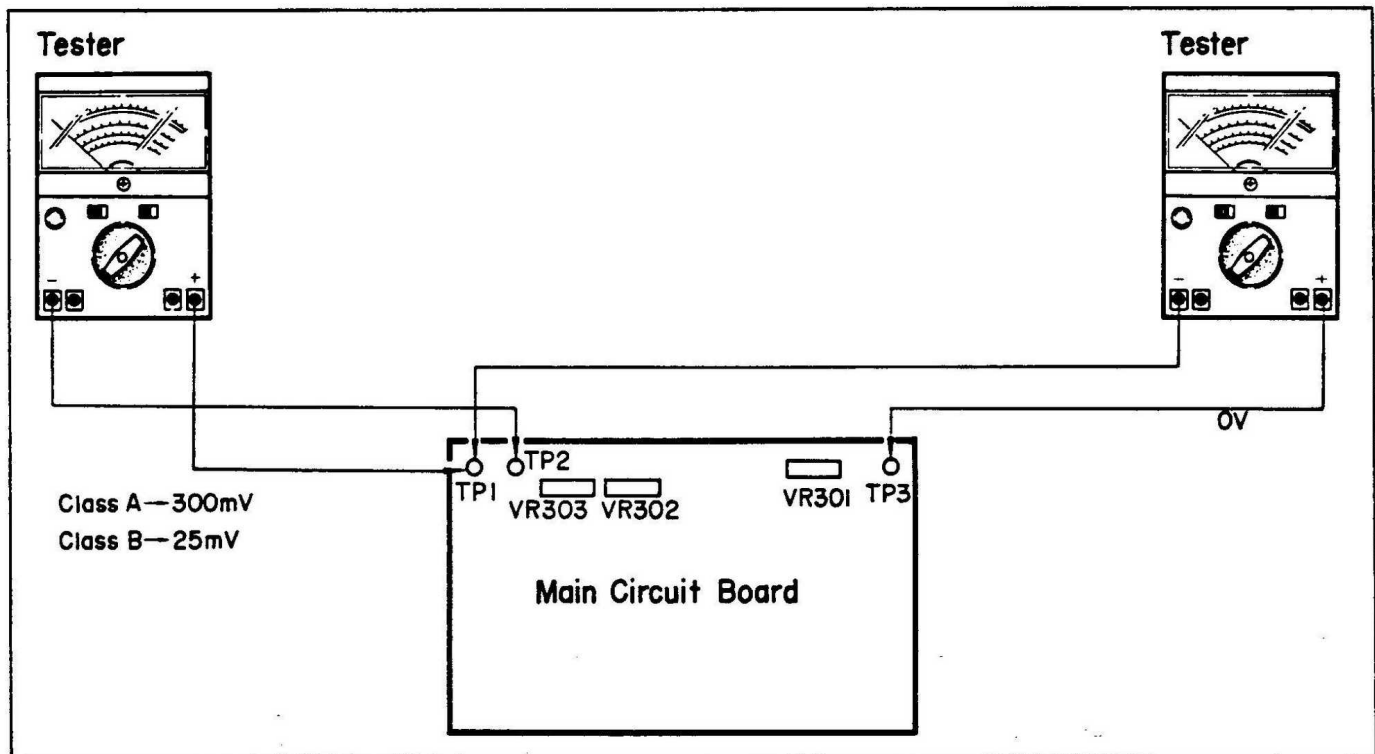
1.2 With Class A operation (OPERATION switch at

CLASS A), connect tester between terminals TP1 and TP2 of the main circuit board and adjust VR-303 so the reading is 300mV.

(Refer Fig. 1)

2. ADJUSTMENT OF THE MID-POINT POTENTIAL OF THE MAIN AMPLIFIER

Connect tester between terminals TP1 and TP3 of the main circuit board and adjust VR-301 so the reading is 0V. (Refer Fig. 1)



3. ADJUSTMENT OF DISTORTION IN THE MC AMPLIFIER

Connect a low frequency oscillator to PHONO-1 terminal and apply a 20KHz 30V output signal (signal source impedance 22 ohms).

Adjust VR-101 ("L" ch.) and VR-102 ("R" ch.) on the function circuit board for minimum distortion at the REC OUT terminals of TAPE 1 or TAPE 2. (Refer Fig. 2)

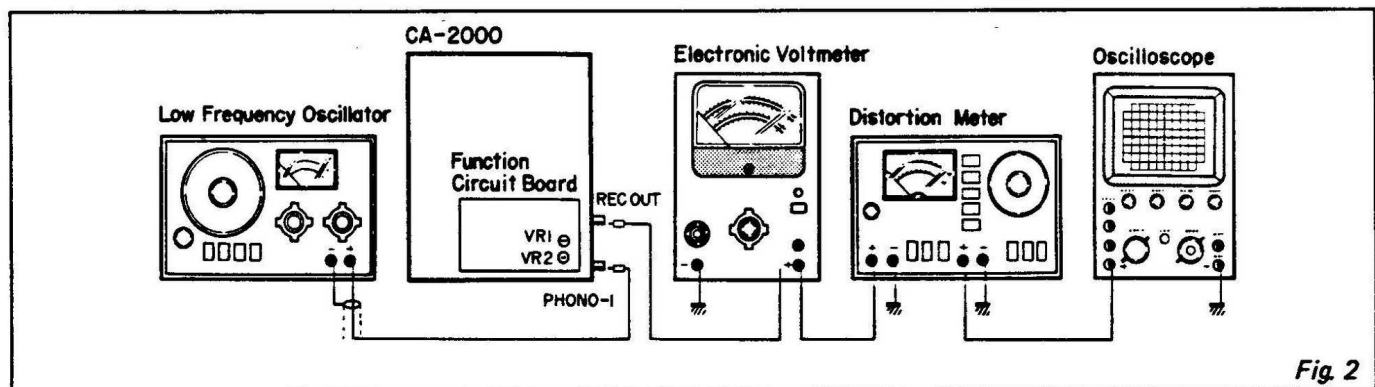


Fig. 2

4. ADJUSTMENT OF THE METERS

- 4.1 Adjust the "Zero Adjustment" screw at the lower part of the meter so the meter indicates "0" under no-signal conditions.
- 4.2 Connect an 8 ohm (over 150W) dummy resistor

to the speaker output terminal and adjust VR-501 ("L" ch) and VR-502 ("R" ch) of the meter amplifier circuit board until the meter indicates 0dB at an output of 100W (28.28V, 1KHz). (Refer Fig. 3).

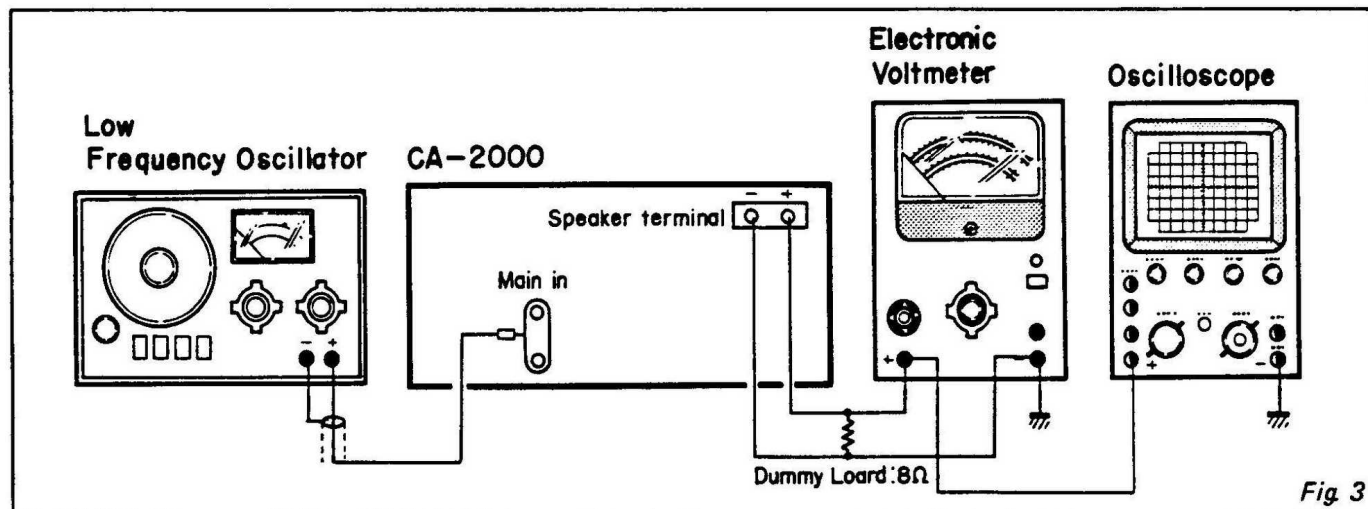
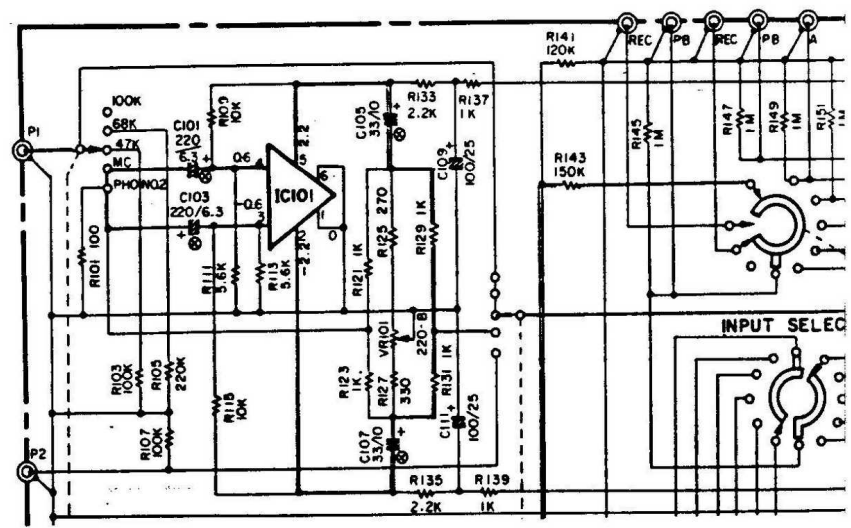
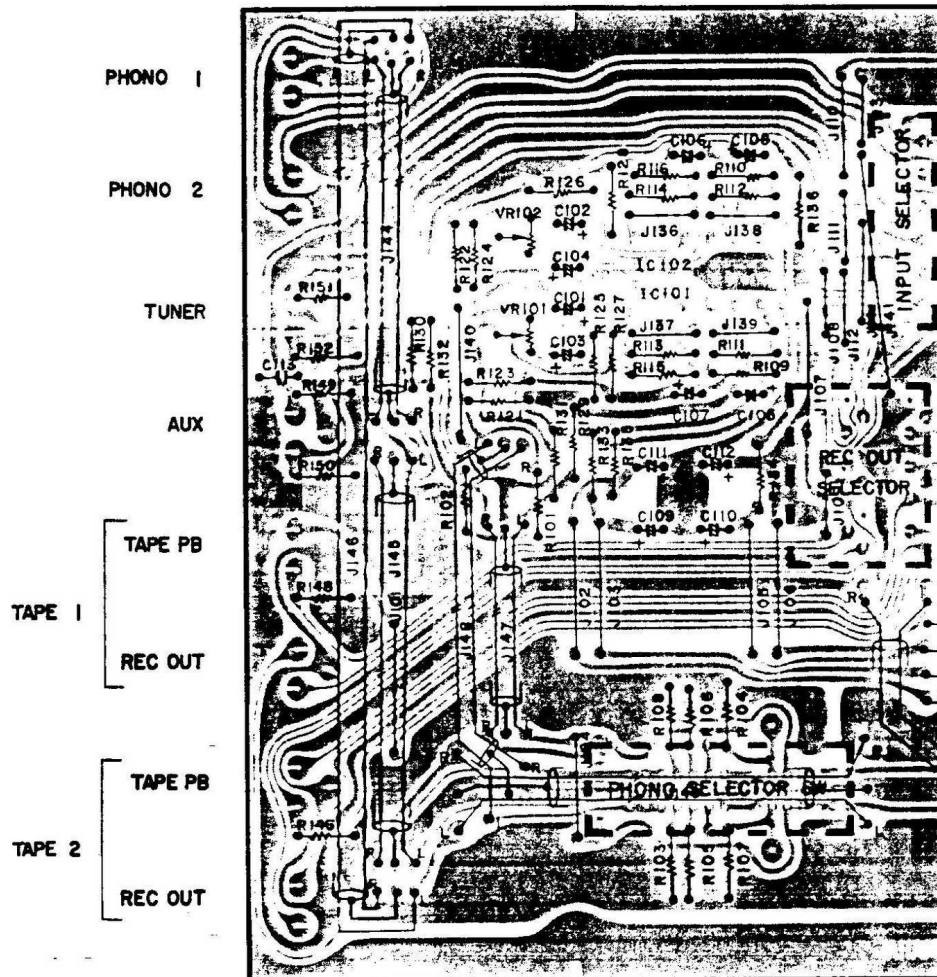
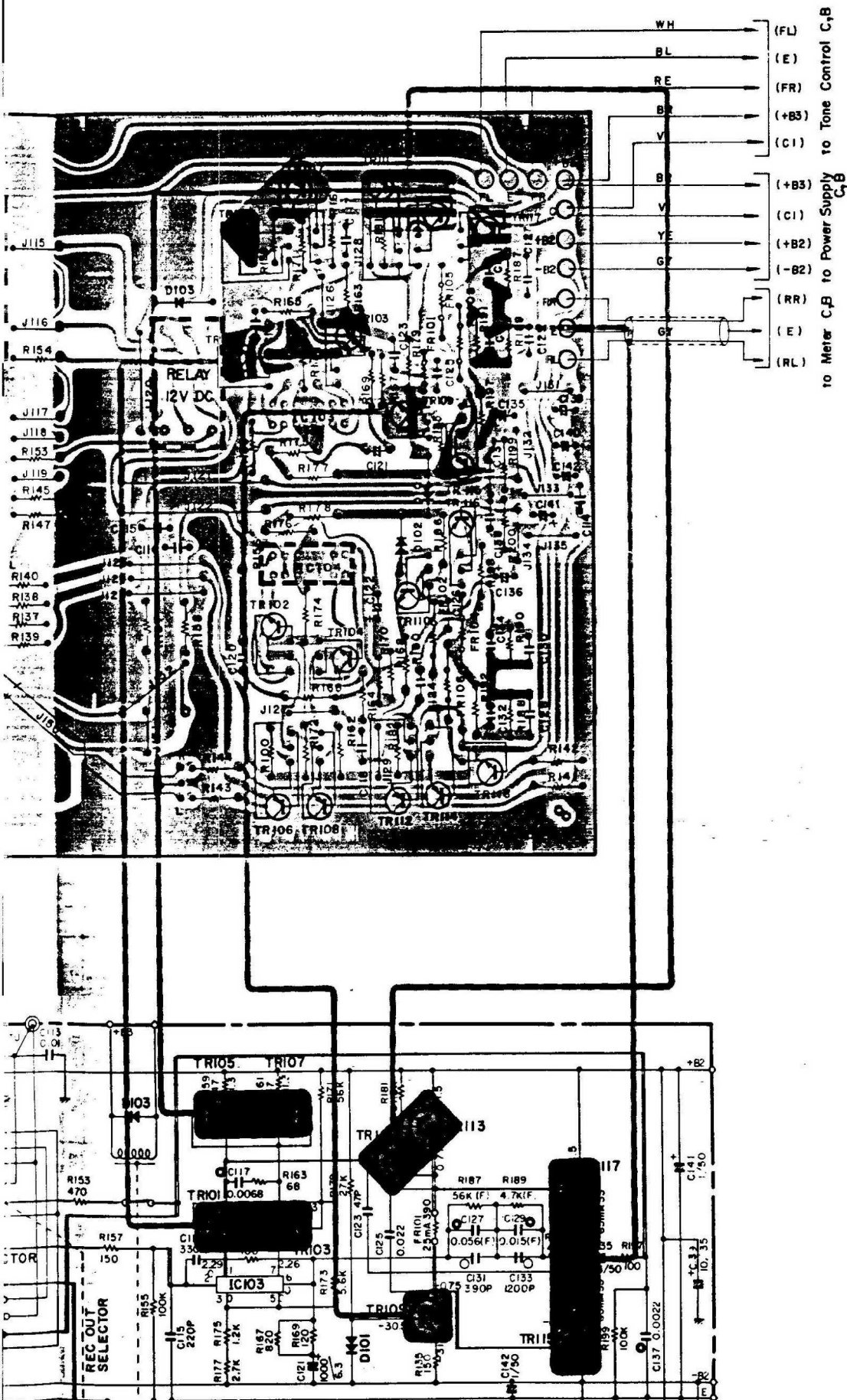


Fig. 3

FUNCTION CIRCUIT BOARD

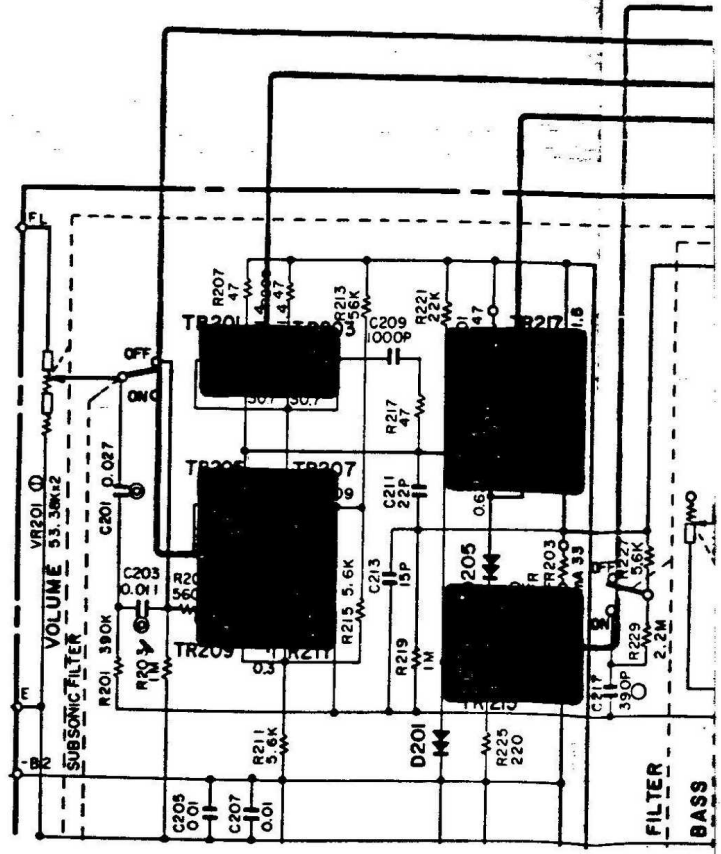
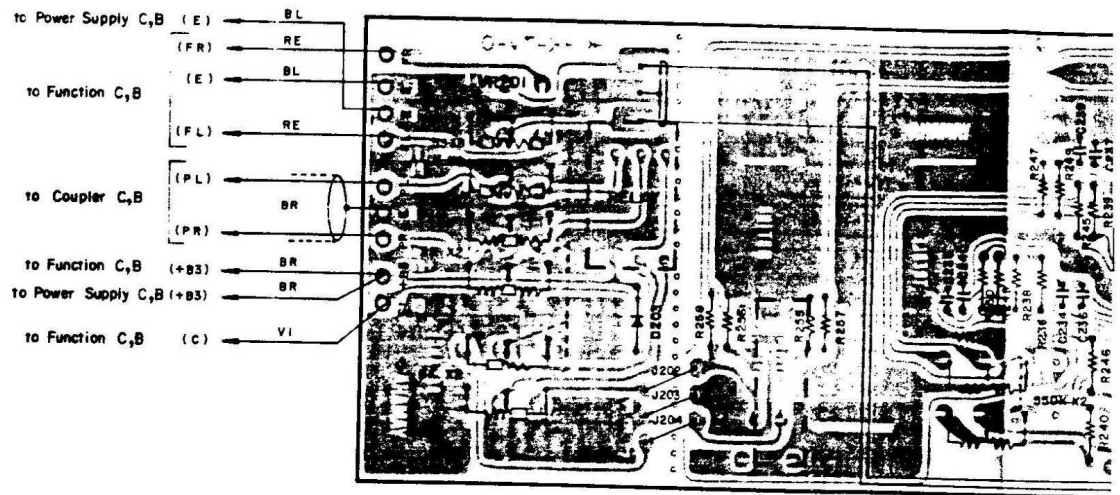


CUI BOARD

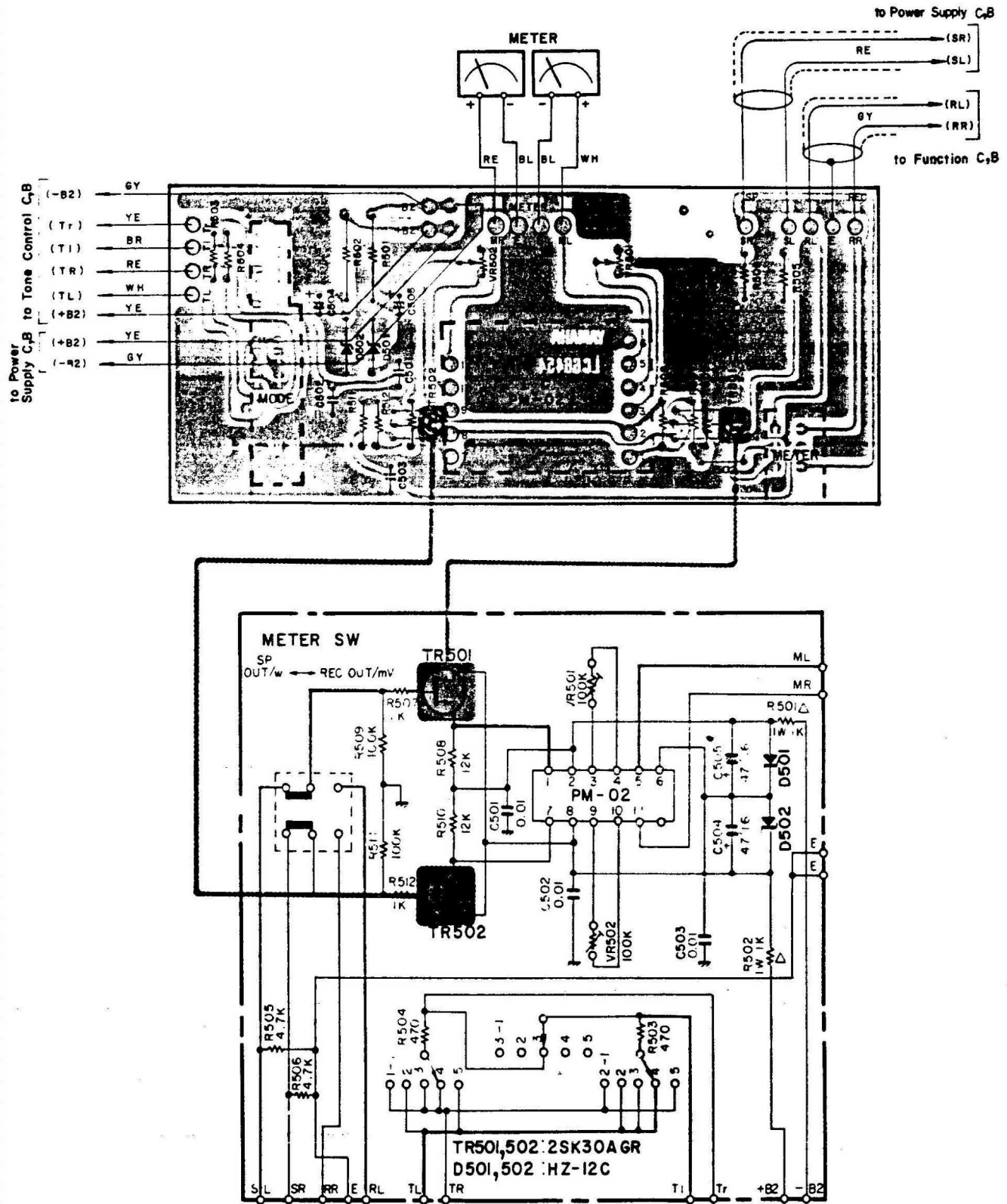


to Meter C,B to Power Supply C,B

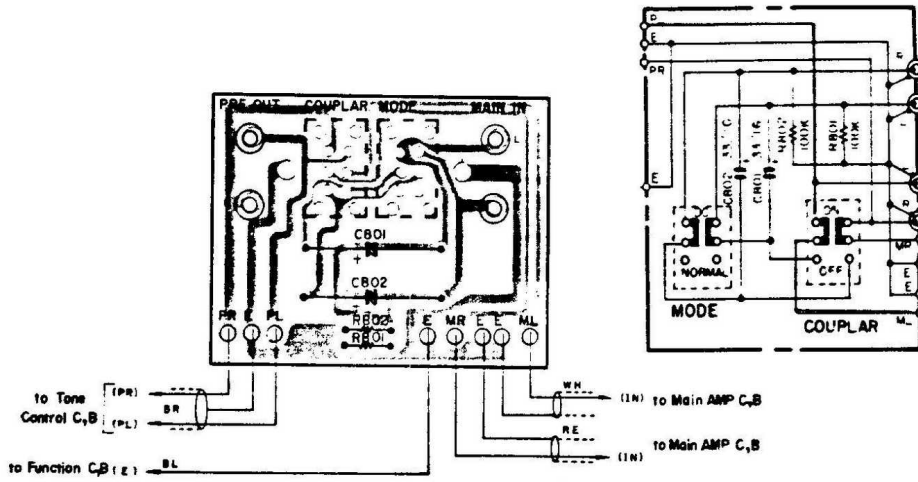
TONE CONTROL CIRCUIT BOARD



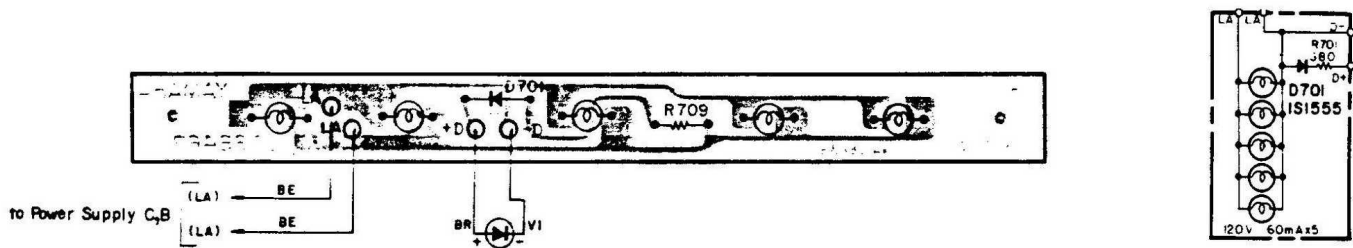
METER CIRCUIT BOARD



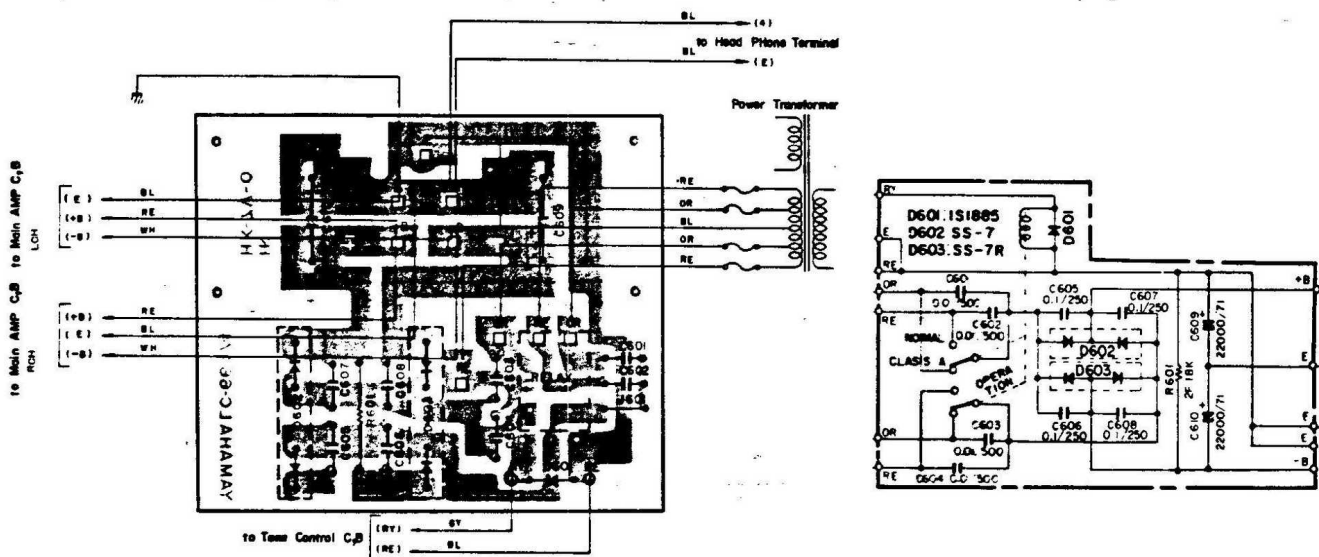
COUPLER CIRCUIT BOARD



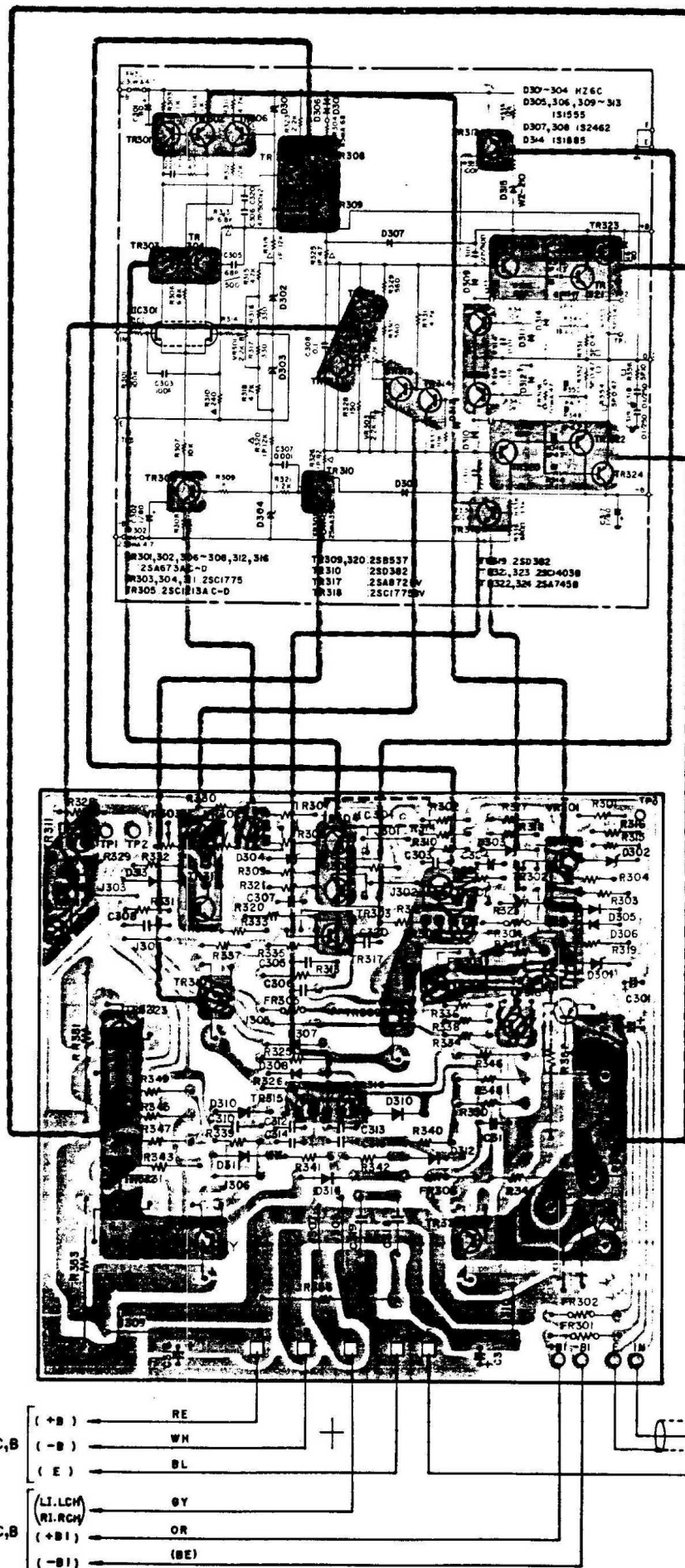
LAMP CIRCUIT BOARD



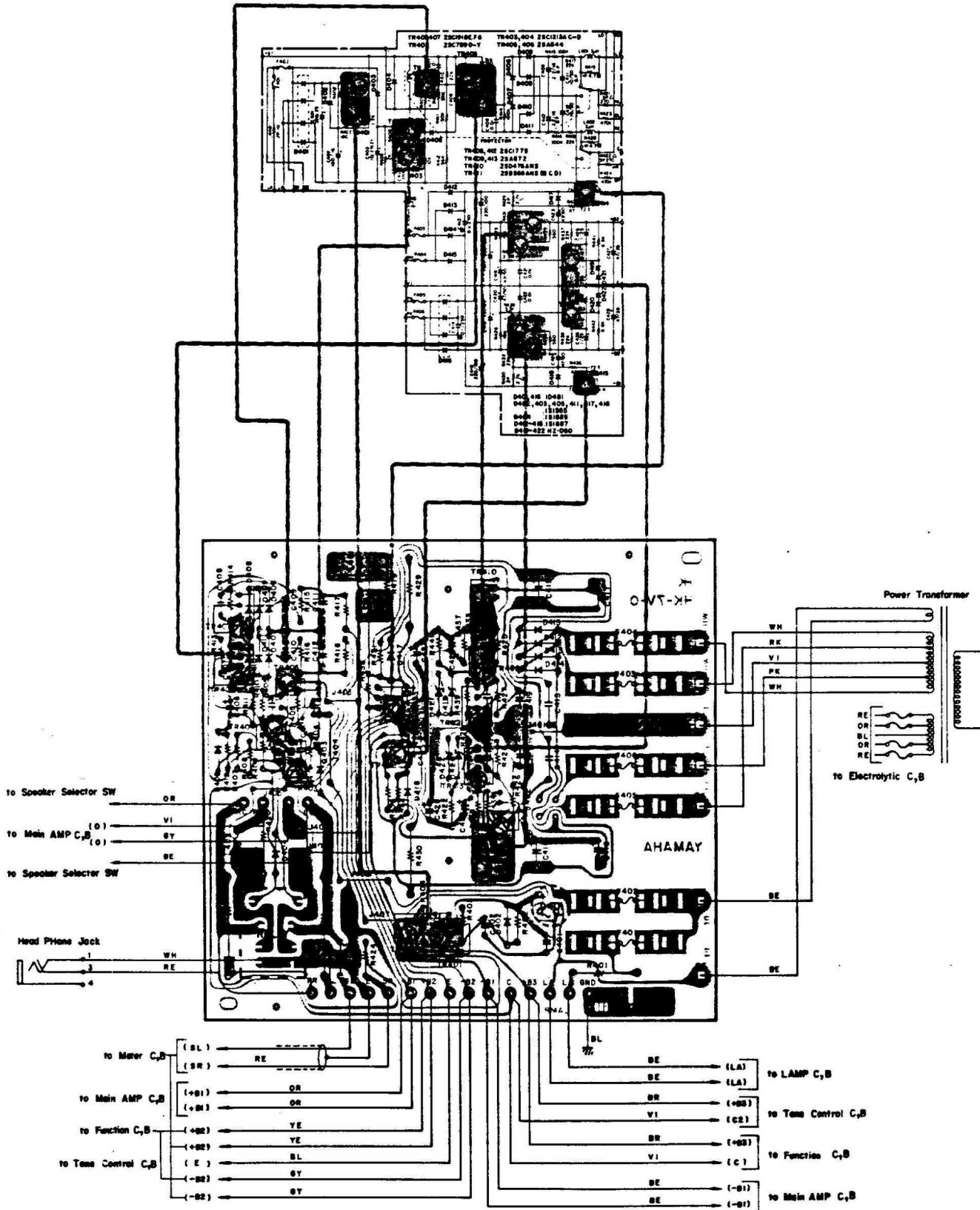
ELECTROLYTIC CAPACITOR CIRCUIT BOARD



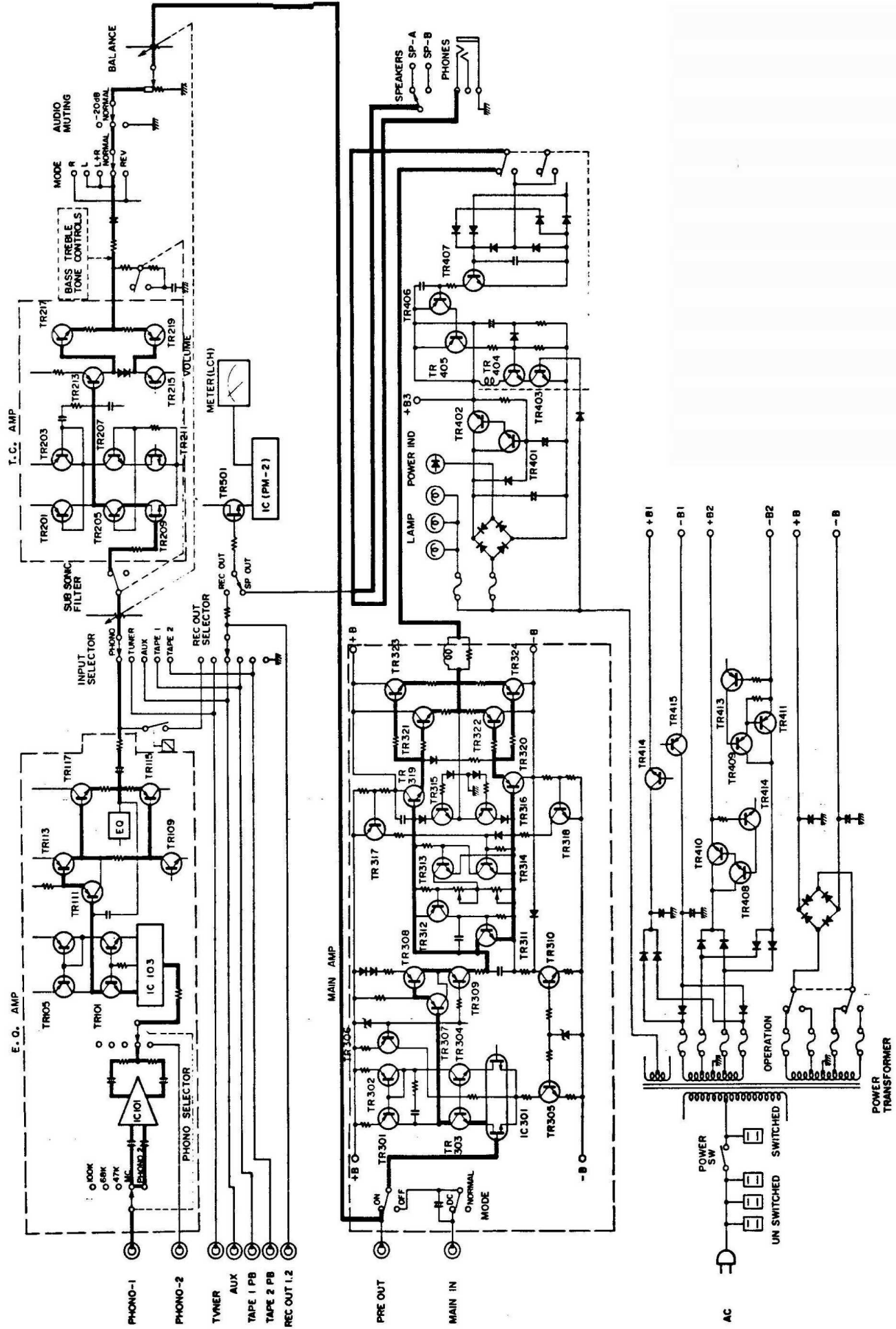
MAIN CIRCUIT BOARD



POWER SUPPLY CIRCUIT BOARD

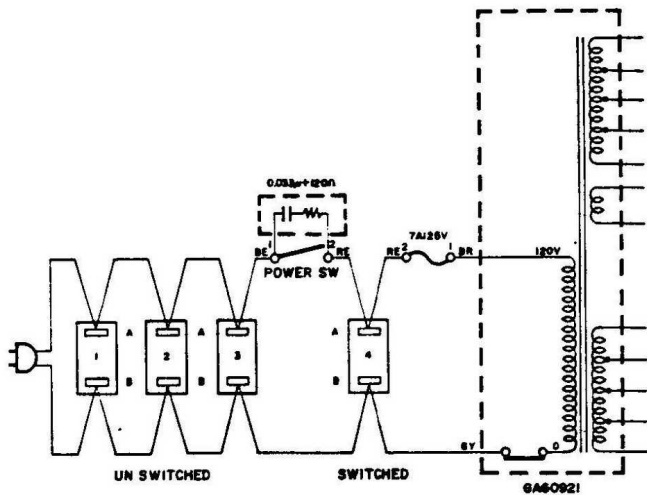


BLOCK DIAGRAM

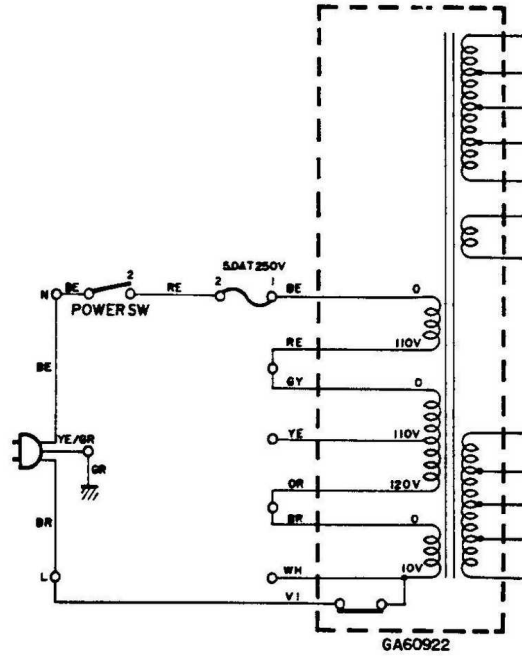


PARTIAL CHANGES MADE ACCORDING TO DESTINATION

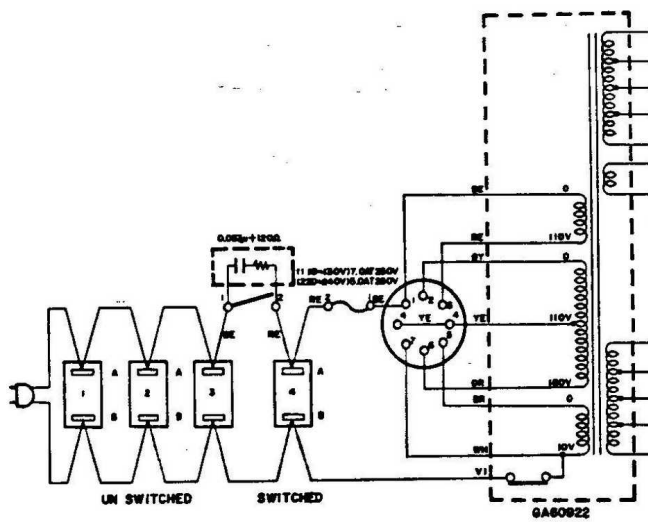
▼ U.S. & CANADIAN MODELS



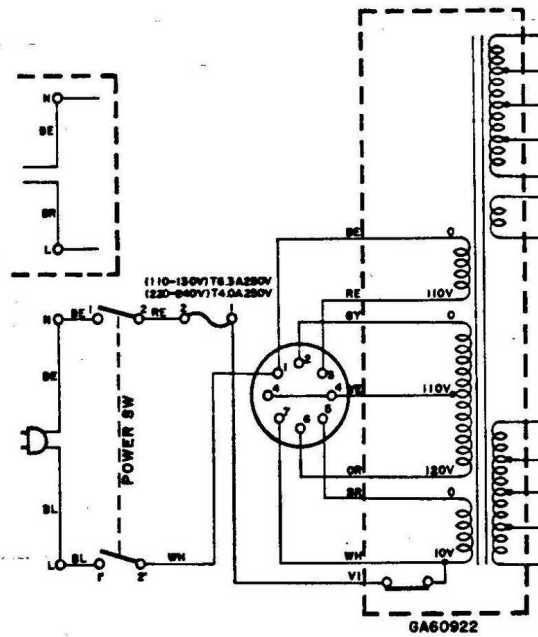
▼ AUSTRALIAN MODEL



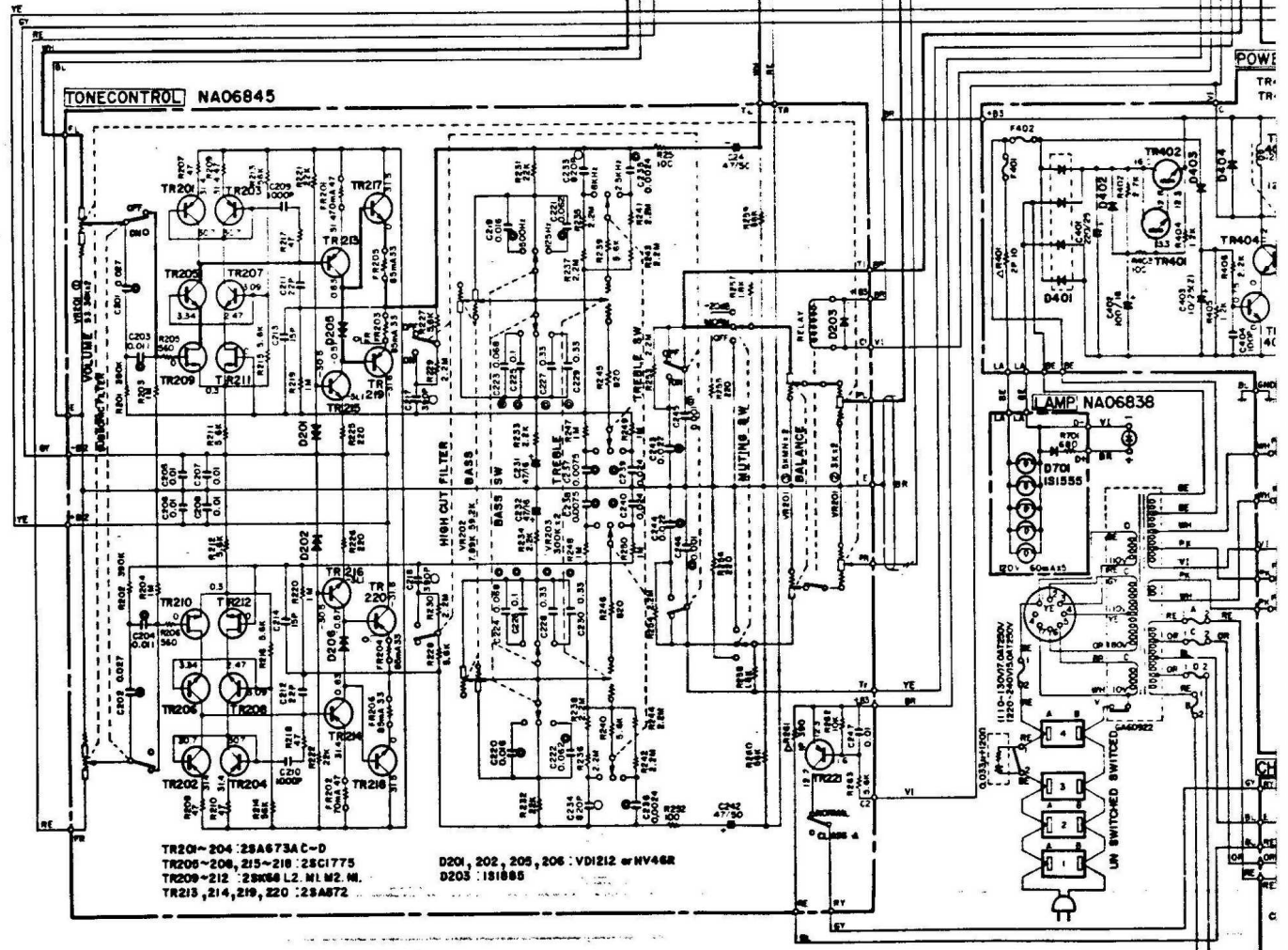
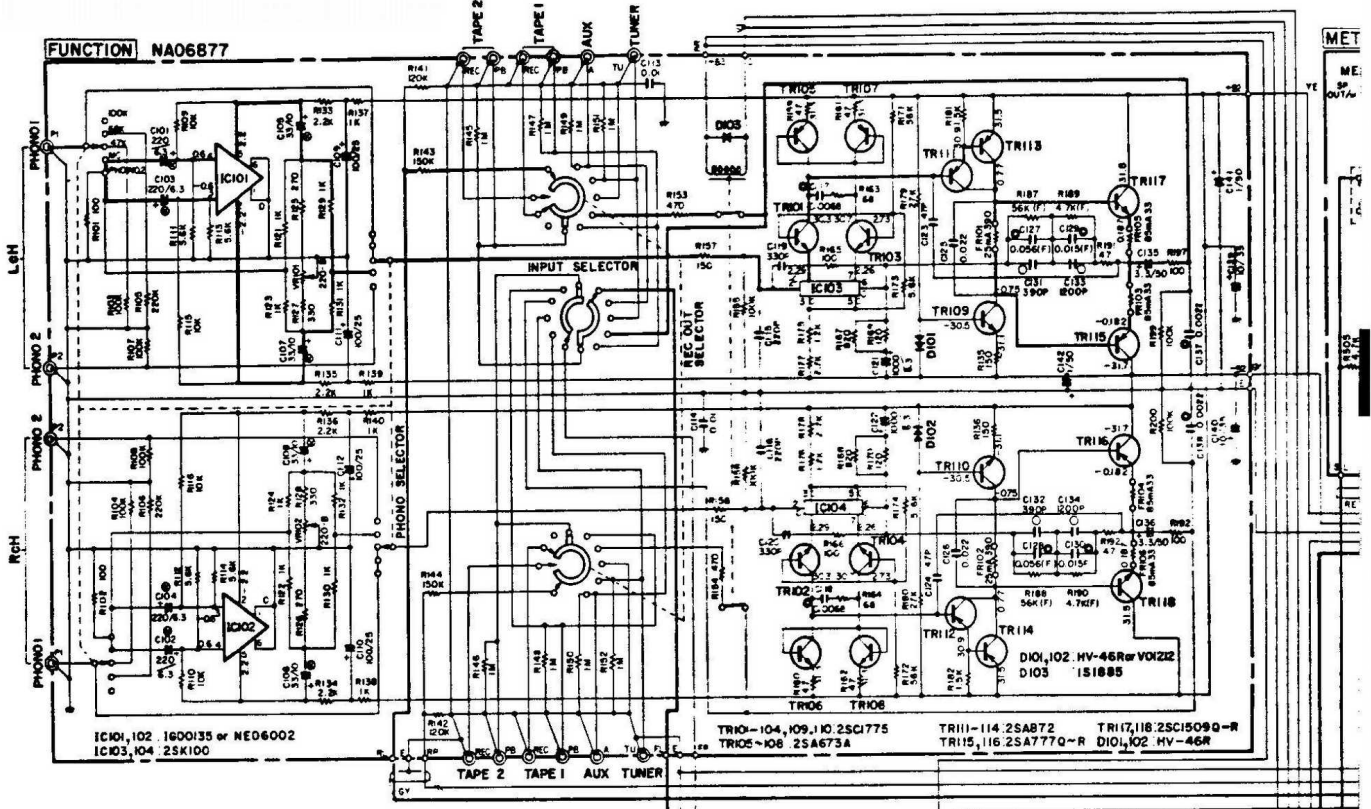
▼ GENERAL MODEL



▼ EUROPEAN MODEL



OVERALL SCHE



SCHEMATIC DIAGRAM

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (L) NAO6844

TR301

TR302

TR303

TR304

TR305

TR306

TR307

TR308

TR309

TR310

TR311

TR312

TR313

TR314

TR315

TR316

TR317

TR318

TR319

TR320

TR321

TR322

TR323

TR324

TR325

TR326

TR327

TR328

TR329

TR330

TR331

TR332

TR333

TR334

TR335

TR336

TR337

TR338

TR339

TR340

TR341

TR342

TR343

TR344

TR345

TR346

TR347

TR348

TR349

TR350

TR351

TR352

TR353

TR354

TR355

TR356

TR357

TR358

TR359

TR360

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (R) NAO6844

TR301

TR302

TR303

TR304

TR305

TR306

TR307

TR308

TR309

TR310

TR311

TR312

TR313

TR314

TR315

TR316

TR317

TR318

TR319

TR320

TR321

TR322

TR323

TR324

TR325

TR326

TR327

TR328

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (L) NAO6844

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (R) NAO6844

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (L) NAO6844

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (R) NAO6844

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (L) NAO6844

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (R) NAO6844

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (L) NAO6844

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (R) NAO6844

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (L) NAO6844

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (R) NAO6844

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

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PRE OUT

MAIN IN

MAIN (L) NAO6844

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TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

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TR501

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TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (L) NAO6844

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REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (R) NAO6844

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (L) NAO6844

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

0501,502 HZ-12C

COUPLAR NAO6842

MODE

COUPLAR

PRE OUT

MAIN IN

MAIN (R) NAO6844

REC SW

REC OUT

TR501

TR502

TR501,502 2SK30A BR

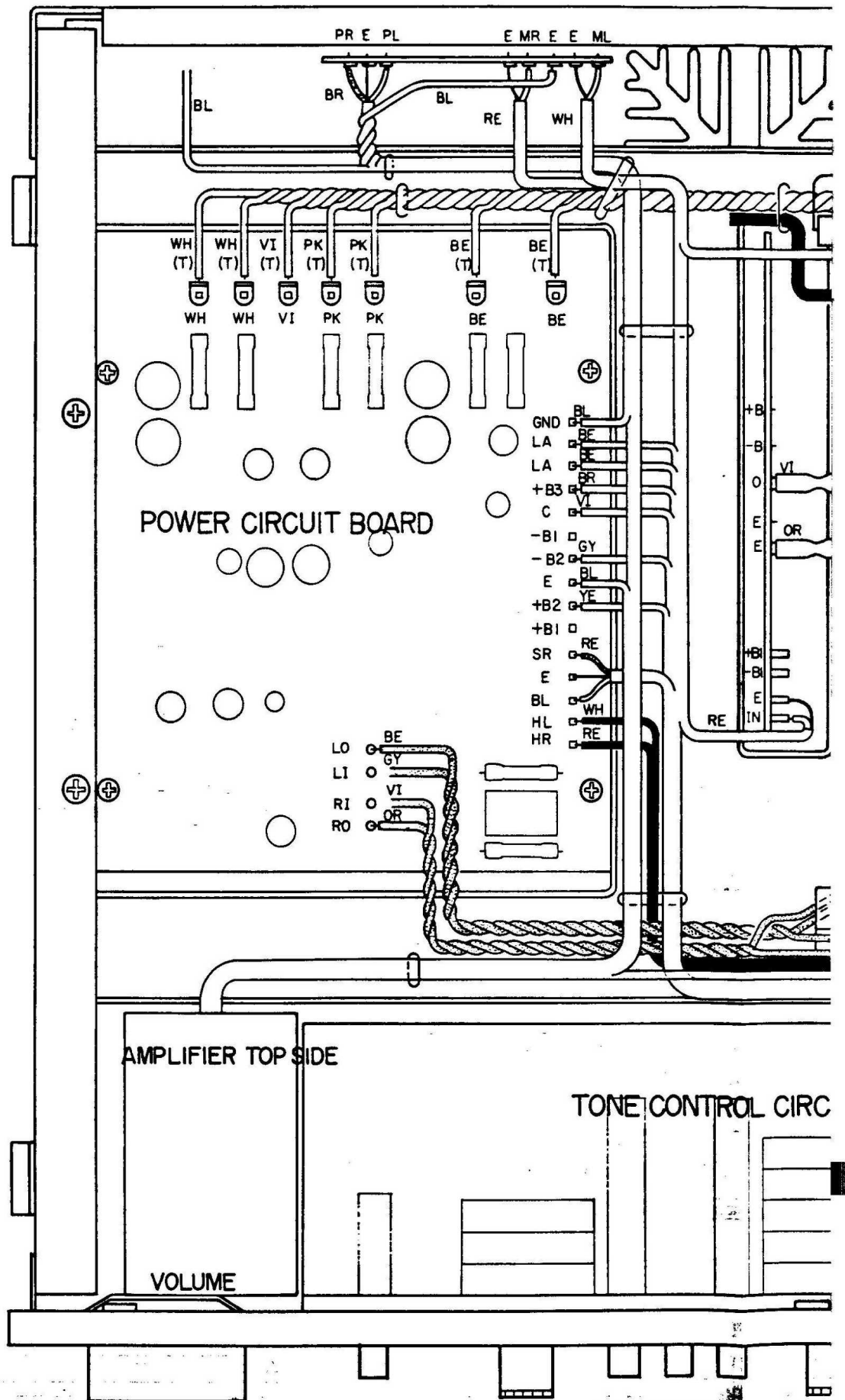
0501,502 HZ-12C

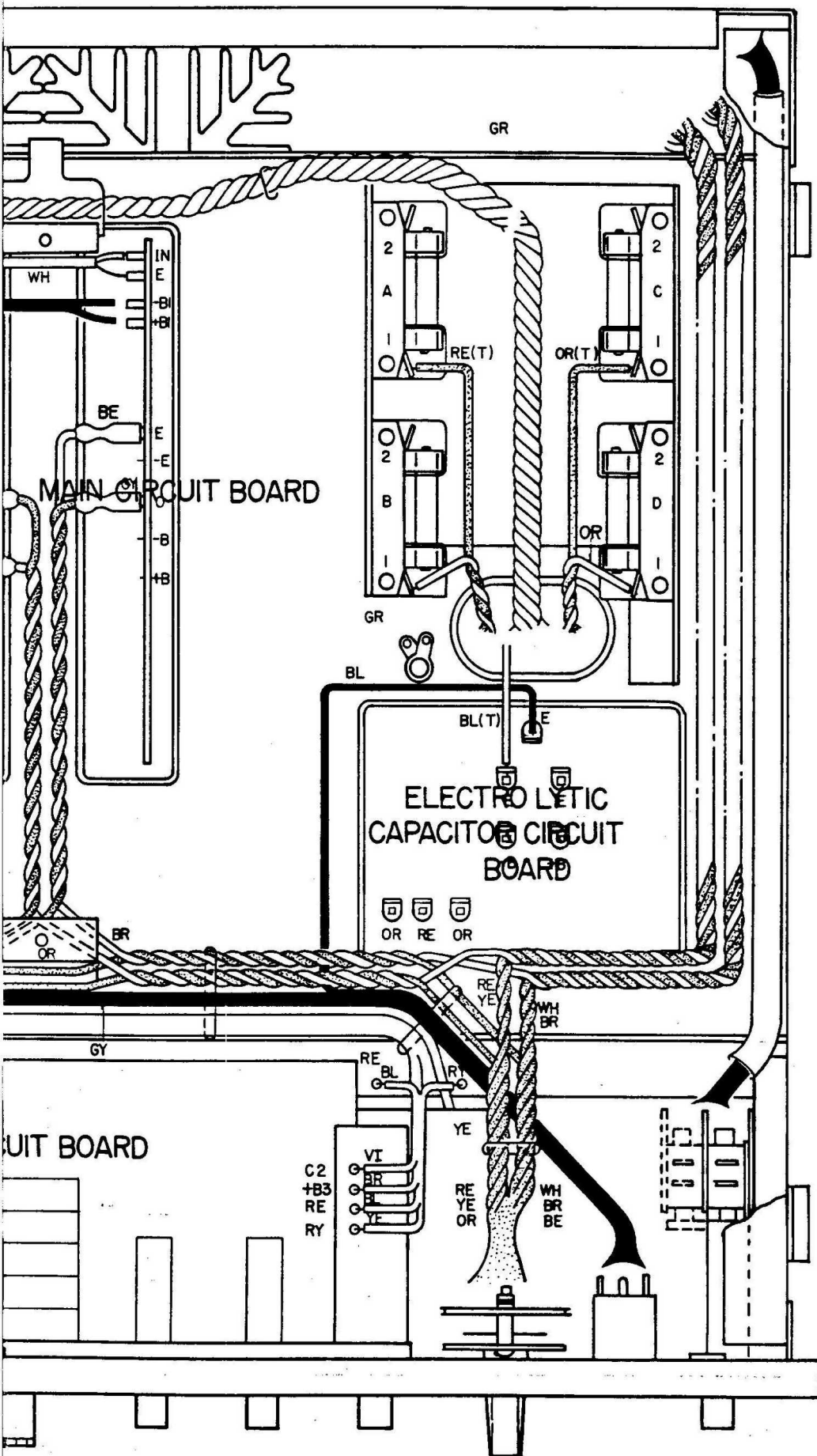
COUPLAR NAO6842

MODE

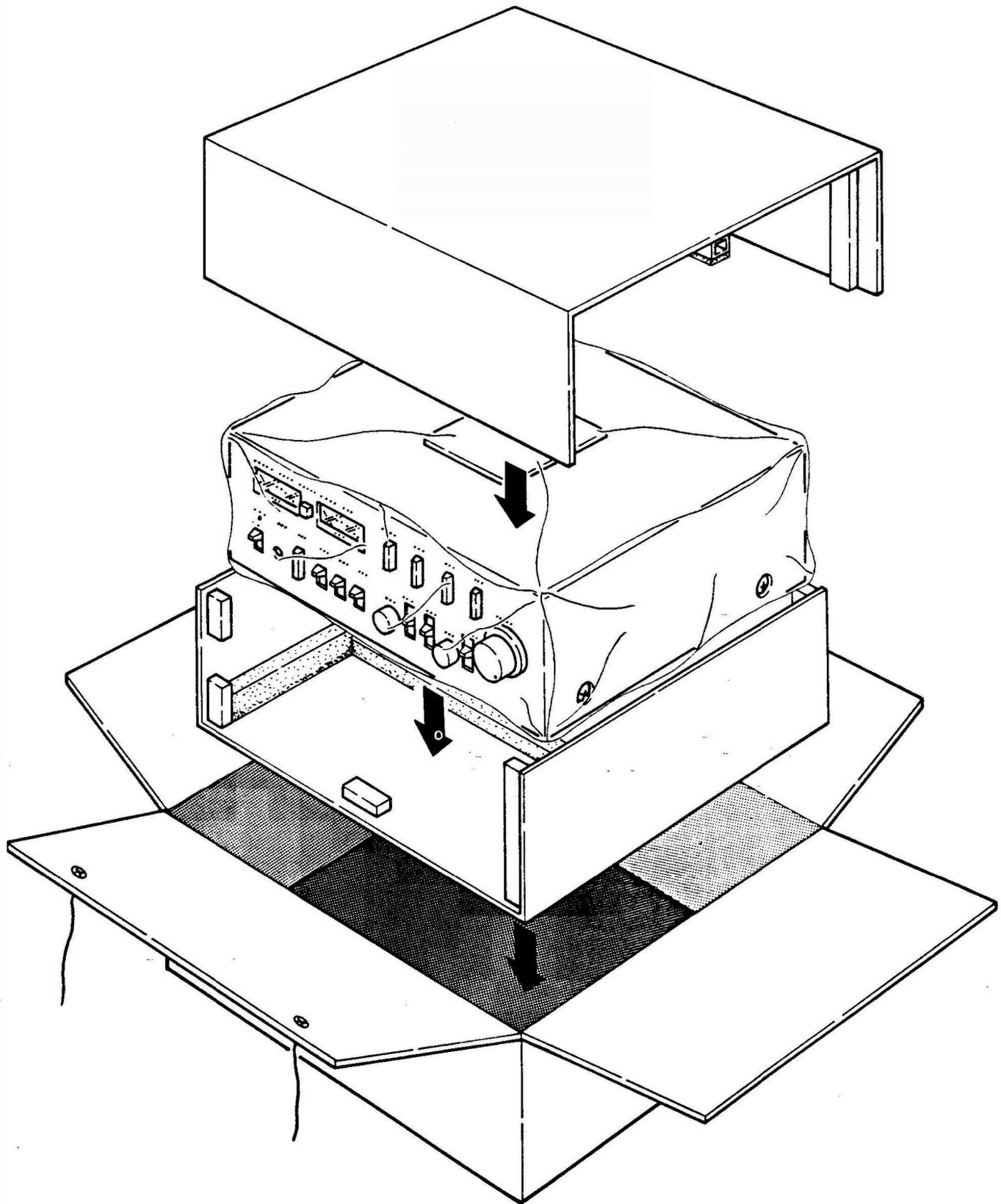
COUPLAR

WIRING





PACKAGE



PARTS LIST

