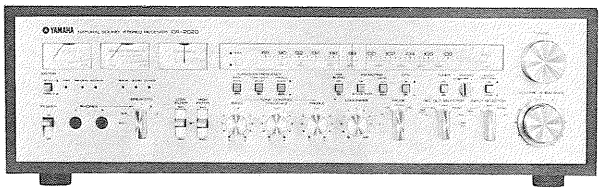
SERVICE MANUAL

CR-2020

FM/AM STEREO RECEIVER



SINCE 1887

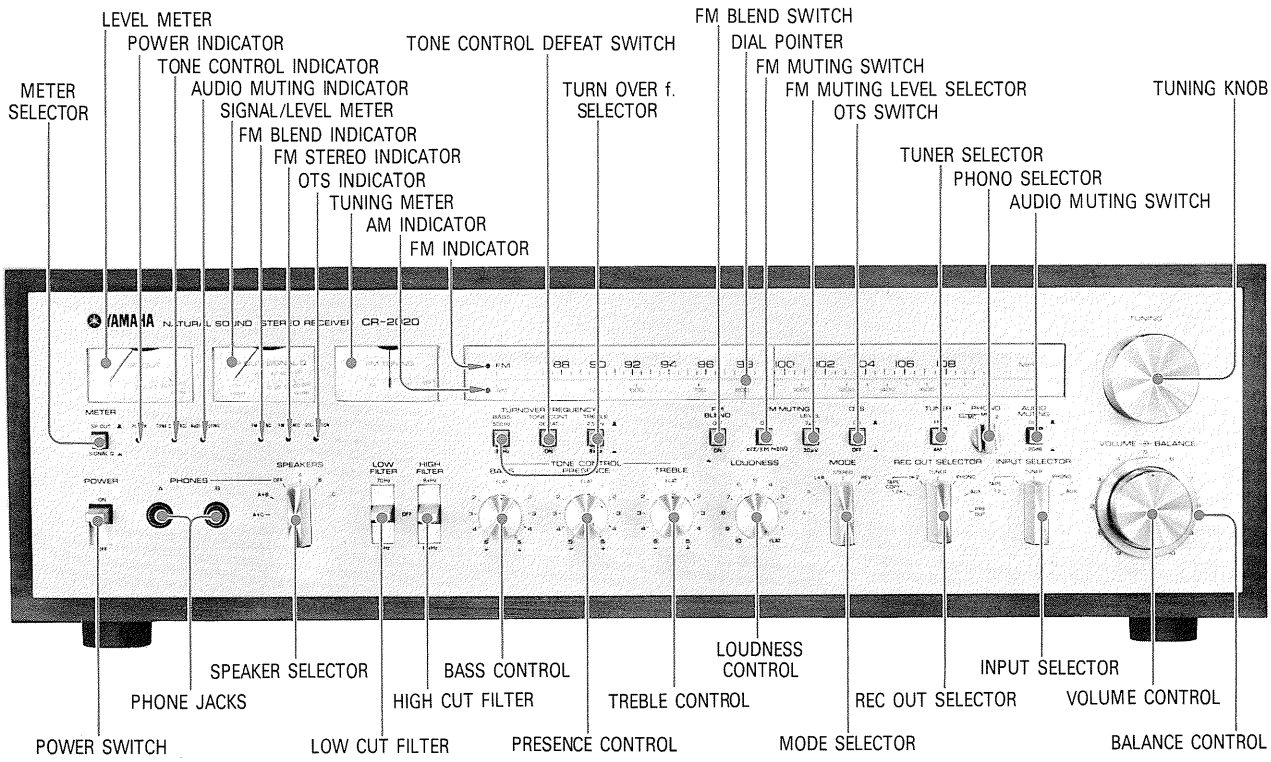
YAMAHA

NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

CONTENTS

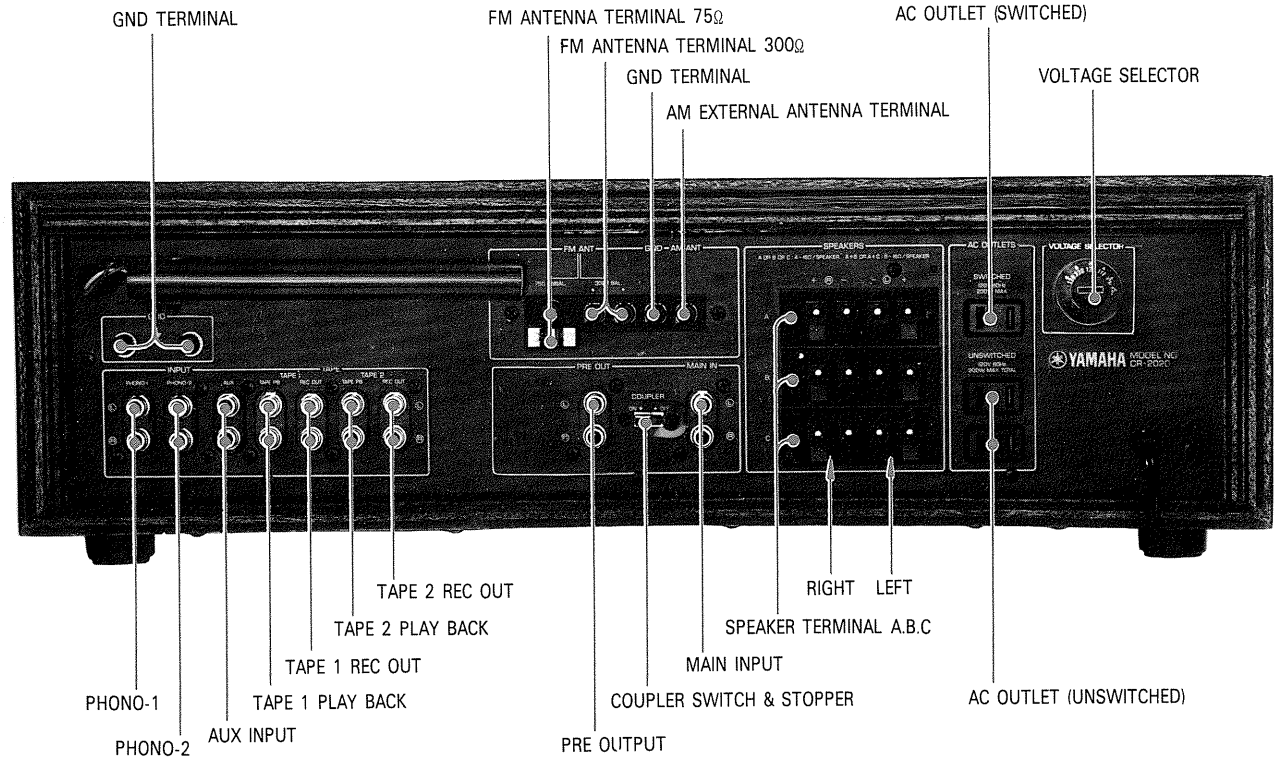
PANEL OPERATION

FRONT PANEL



REAR PANEL

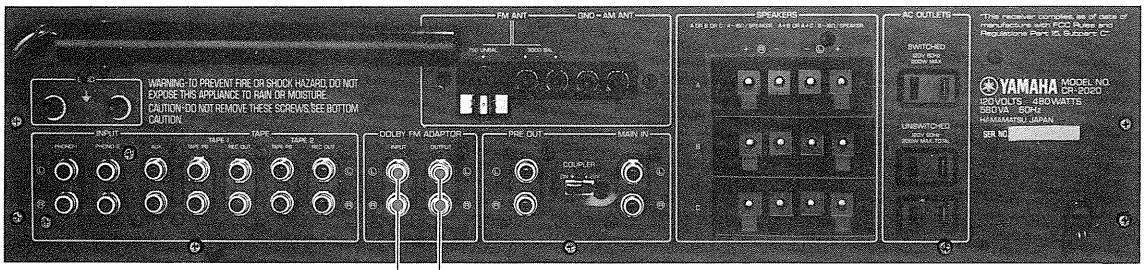
GENERAL MODEL



PANEL OPERATION

REAR PANEL

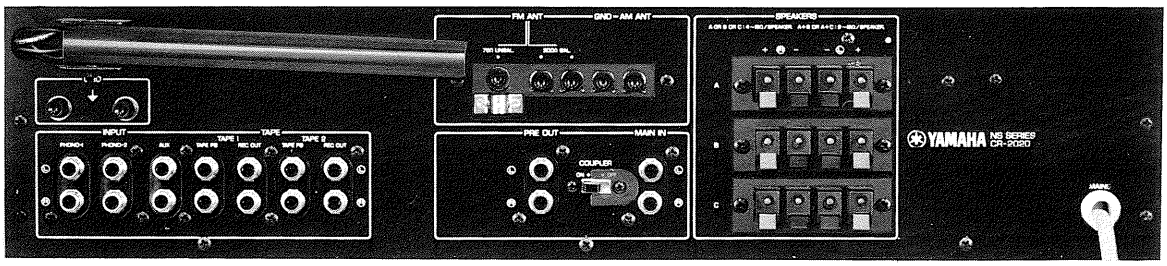
US & CANADIAN MODEL



INPUT OUTPUT

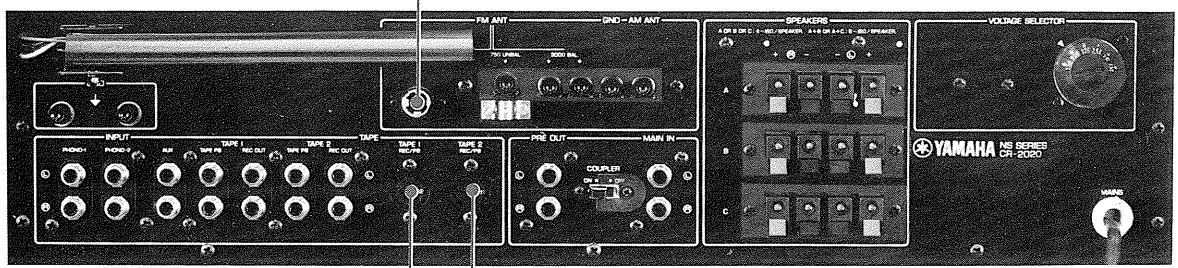
DOLBY FM ADAPTOR

UK & AUSTRALIAN MODEL



EUROPEAN MODEL

FM ANTENNA TERMINAL
(75Ω COAXIAL)



TAPE 2 DIN CONNECTOR

TAPE 1 DIN CONNECTOR

SPECIFICATIONS

AMPLIFIER SECTION

Input Sensivity/Impedance
- Phono 1, 2(MM) : 2mV-1kHz/47kΩ, max. 230V
- Phono 1(MC) : 50μV-1kHz/10Ω, max. 5mV
- AUX, Tape 1, 2 : 120mV/45kΩ
- DIN 1, 2 : 120V/45kΩ(European model only)
- Main In : 775mV/100kΩ

Output Level/Impedance
- REC. OUT 1.2 : 120mV/500Ω(Phono) 6kΩ(Tuner) max. 15V(Phono, 1kHz)
- DIN OUT 1, 2 : 30mV/52kΩ(European model only)
- PRE OUT : 775mV (0 to 2kΩ) max. 5V

Frequency Response
- Phono 1(MM, MC), 2 RIAA Deviation: ±0.2dB
- AUX, Tape 1, 2 to SP. out: ±2.5dB(10Hz to 100kHz)
- Main in to SP. out: ±2.5dB(10Hz to 100kHz)

Tone Control Characteristics
- BASS : Turnover 125,500Hz Variable Range ±15dB/50Hz
- TREBLE : Turnover 8, 2.5kHz Variable Range ±10dB/20kHz
- PRESENCE : Center 3kHz 2kHz±6dB

Filter Characteristics
- Low Filter : fc=15Hz, 70Hz 12dB/oct
- High Filter : fc=8kHz, 12kHz 12dB/oct

Loudness Characteristics
- According to the Fletcher and Munson curve

Signal-to-Noise Ratio and Noise Level
- Phono 1(MM), 2 : (2mV) 81dB (IHF A Network, Input Short Circuited)
- AUX : 100dB (IHF A Network, 5.1kΩ Short Circuited)
- Tape : 100dB (-do.-)
- Main : 112dB (-do.-)
- Residual Noise : 100μV (IHF A Network, Vol. min)

Total Harmonics Distortion
- Phono 1(MM), 2 : 0.01%(20 to 20kHz) REC OUT 7.5V
- Phono 1 (MC) : 0.05%(-do.-) REC OUT 3.0V
- AUX, Tape : 0.02%(-do.-) SP. OUT 50W/8Ω
- Main In : 0.015%(-do.-) SP. OUT 50W/8Ω
- Phono 1(MM), 2 : 0.1%(0.1 to 100W/8Ω) Vol. −20dB
- IM Distortion AUX: 0.02% SP. OUT 50W/8Ω

Rating Output and etc.
- 8Ω Both ch. driven: 100W (20 to 20kHz) 0.05% T.H.D
  110W (1kHz) 0.05% T.H.D
- 4Ω Both ch. driven: 120W (20 to 20kHz) 0.05% T.H.D
  (Except E & BS) 140W (1kHz) 0.05% T.H.D
- Power Band Width: 10 to 50kHz
- Dumping Factor: 40 or more, 1kHz/8Ω

TUNER SECTION-FM

Tuning Range
- 88 to 108MHz

Usable Sensitivity. 98MHz
- IHF mono : 1.8μV (300Ω) 10.3dBf
  0.9μV (75Ω) 10.3dBf
- DIN mono : 1.3μV (Dev: 40kHz, S/N: 26dB)
  stereo : 40μV (Dev: 40kHz, S/N: 46dB)

50-dB Quieting Sensitivity
- mono : 3.2μV, 15.3dBf
- stereo : 40μV, 37.2dBf

Signal-to-Noise Ratio
- mono : 77dB, DIN (Dev: 40kHz) 71dB
- stereo : 73dB, DIN (Dev: 40kHz) 67dB

Image Interference Ratio (98MHz) : 85dB
IF Interference Ratio (98MHz): 90dB
Spurious Interference Ratio (98MHz): 100dB
Amplitude Suppression Ratio IHF: 65dB
Capture Ratio: 1dB
Alternate-Channel Selectivity 80dB
DIN (Dev: ±300kHz, 40kHz): 60dB

Total Harmonics Distortion
- mono : 100Hz, 0.08%
  1kHz, 0.08%
  6kHz, 0.15%
- stereo : 100kHz, 0.15%
  1kHz, 0.1%
  6kHz, 0.2%

Cross Modulation Distortion
- IHF mono : 0.05%
  stereo : 0.1%

Stereo Separation 50Hz : 35dB
1KHz : 50dB
10kHz: 45dB

Frequency Response 50 to 10kHz : ±0.3dB
30 to 15kHz : ±0.5dB
10 to 18kHz : +0.5 −3dB

Sub Carrier Suppression 60dB

Muting Signal Level 3μV (14.8dBf), 30μV (34.8dBf)

TUNER SECTION-AM

Tuning Range 525 to 1605kHz

Usable Sensitivity (Used Bar antenna)
- IHF: 300μV/m (49dB/m)
- 1000kHz: 30dB

Selectivity
Signal-to-Noise Ratio 80dB/m: 50dB
Image Interference Ratio 1000kHz: 55dB
IF Interference Ratio 1000kHz: 40dB
Sprious Interference Ratio 1000kHz: 55dB
Total Harmonics Distortion 80dB/m: 0.4%

Output Level/Impedance
- FM(Mod. 100%) : 450mV/6.5KΩ(REC OUT)
- FM(Mod. 30%) : 120mV/6.5KΩ(REC OUT)

GENERAL

Used Semi Conductors

109 Transistors	58 Diodes
6 ICs	7 Zener Diodes
3 FETs	5 LEDs
	4 CFs

Rated Voltage
- 120V/60Hz (US. and CANADA)
- 240V/50Hz, (UK. and AUSTRALIA)
- 110, 120, 130, 220, 230 and 240V/50, 60Hz (EUROPE and General export models)

Rated Power Consumption
- 480W, 580VA (US., CANADA and General export models)
- 690W (UK., EUROPE and AUSTRALIA)

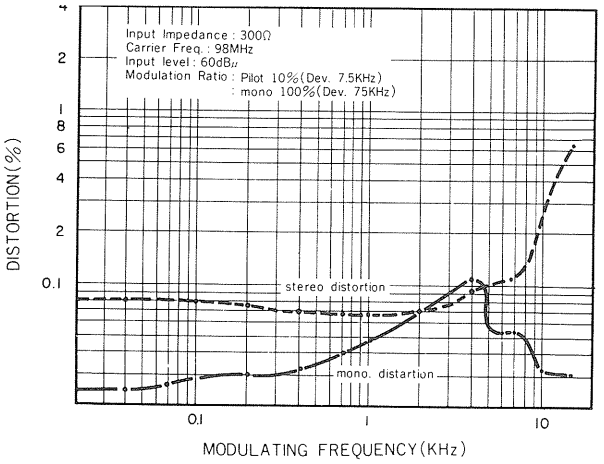
Dimensions
- 540(W) x 167(H) x 415(D)mm
- 21-1/4 x 6-9/16 x 16-5/16 in (US., CANADA and General export models)
- 521(W) x 146.5(H) x 415(D)mm
- 20-1/2 x 5-3/4 x 16-5/16 in (UK. and EUROPE)

Weight
- 19.3kg 42.5 lbs (US., CANADA, AUSTRALIA and General export models)
- 18.6kg 40.9 lbs (UK. and EUROPE)

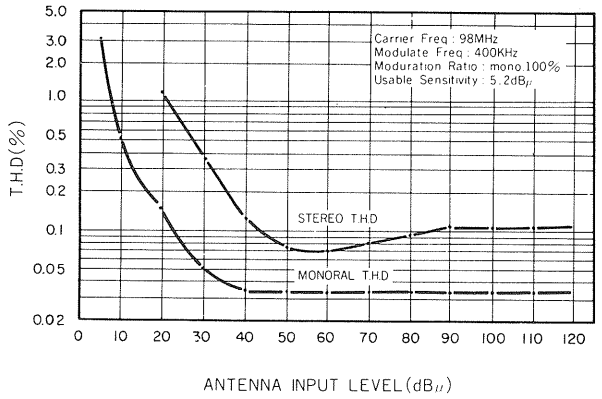
CHARACTERISTIC CHARTS

TUNER SECTION-FM

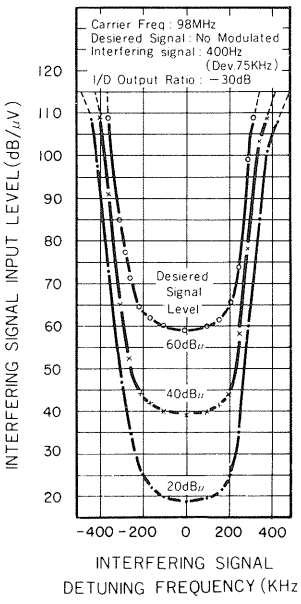
DISTORTION V. MODULATING FREQUENCY



T.H.D. V. INPUT LEVEL

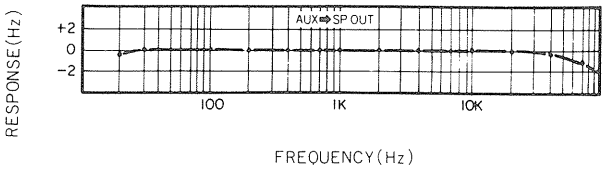


FM 2 SIGNALS EFFECTIVE SELECTIVITY

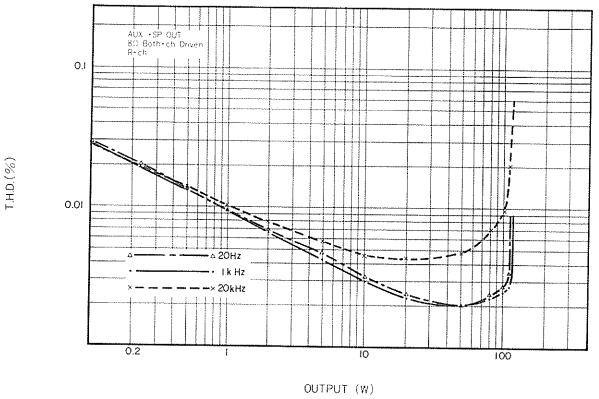


AMPLIFIER SECTION

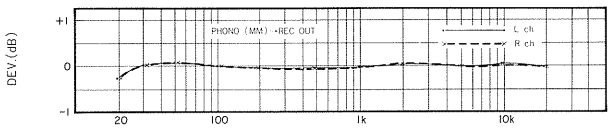
FREQUENCY RESPONSE



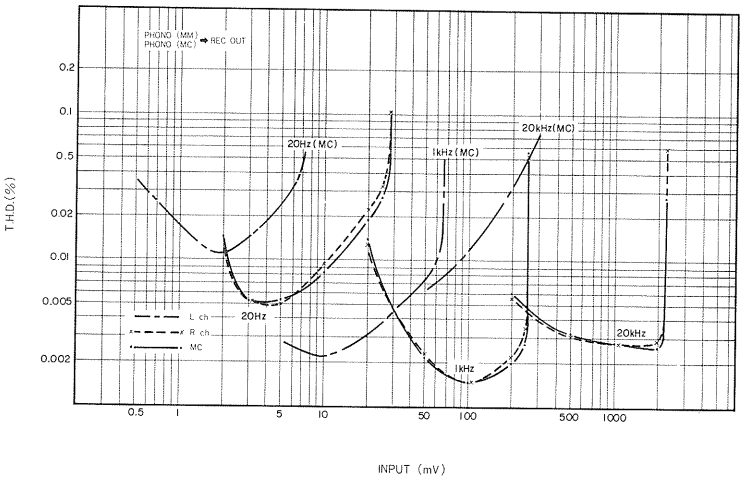
T.H.D.V. OUTPUT



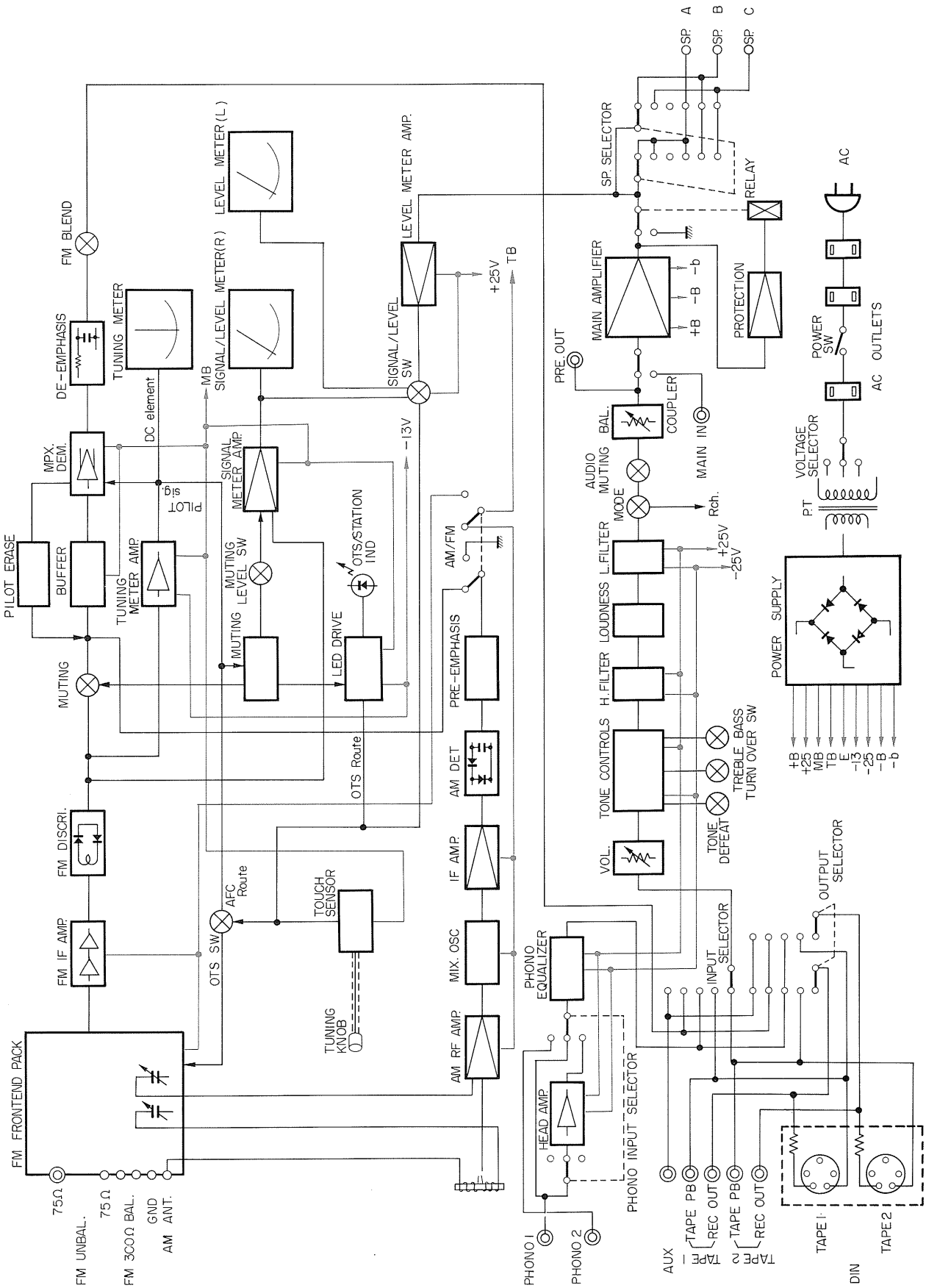
RIAA DEVIATION



T.H.D. V. PHONO INPUT

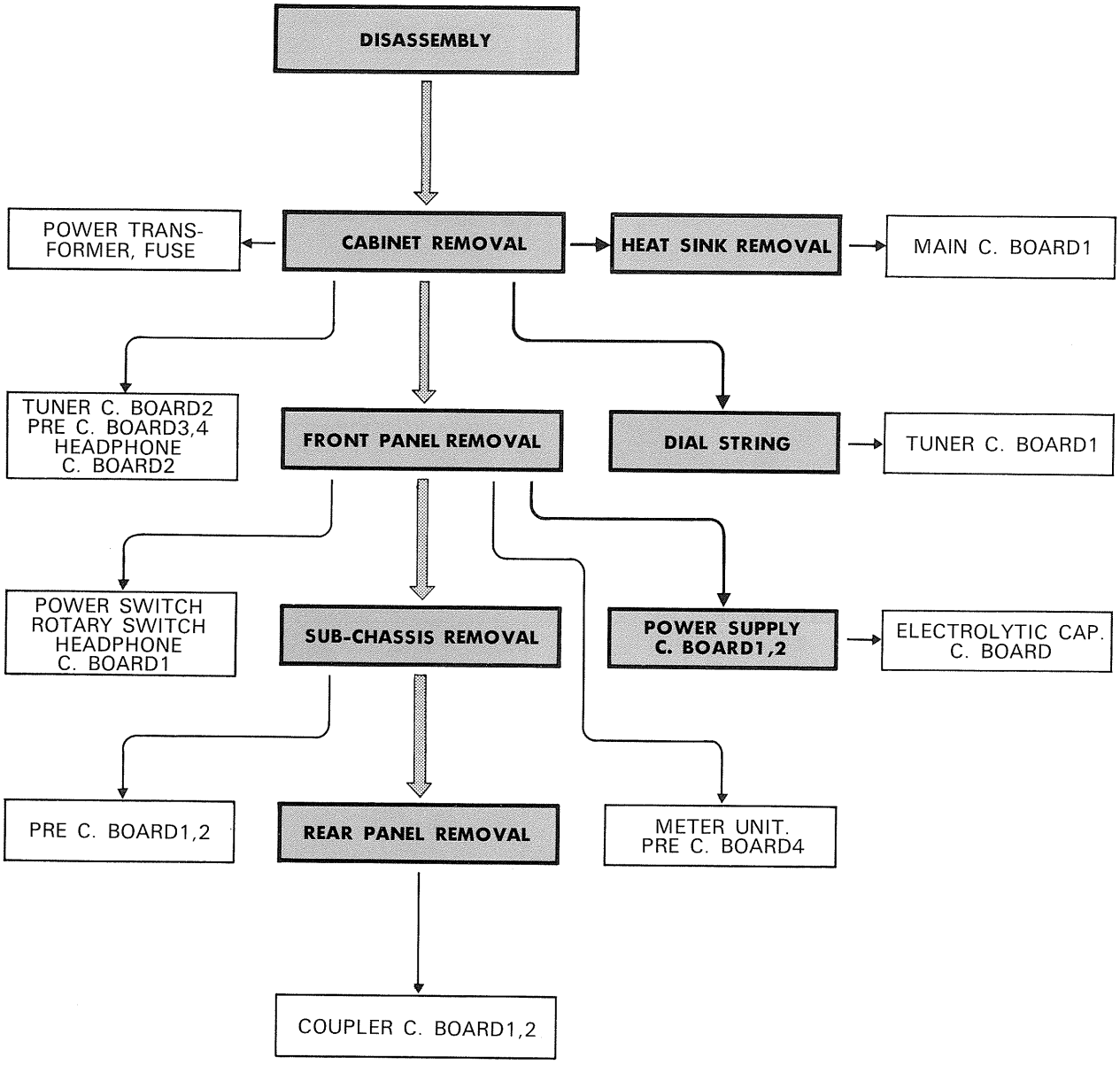


BLOCK DIAGRAM



FLOW CHART FOR DISASSEMBLY PROCEDURES

Disassembly procedures are shown in accordance with U.S. model.



Note

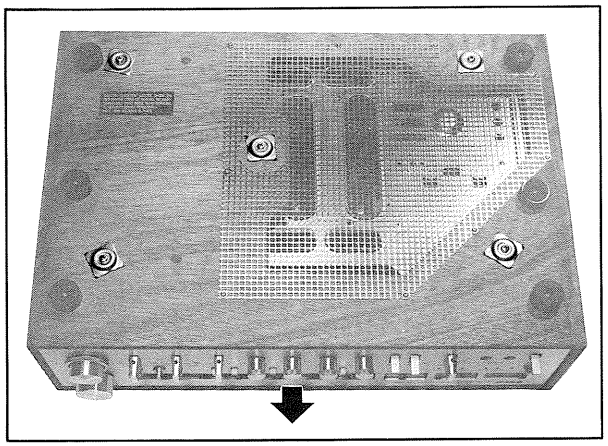
TUNER C. BOARD 2:	FM BLEND, FM MUTING, OTS AND AM-FM SWITCHES
PRE C. BOARD 1:	LOW AND HIGH FILTER SWITCHES, TONE AND LOUDNESS CONTROLS, MODE, REC OUT AND INPUT SELECTORS
PRE C. BOARD 2:	VOLUME AND BALANCE CONTROLS
PRE C. BOARD 3:	AUDIO MUTING SWITCH
PRE C. BOARD 4:	TURNOVER FREQUENCY SWITCHES
HEADPHONE C. BOARD 1:	HEADPHONE JACKS
HEADPHONE C. BOARD 2:	AM-FM INDICATORS
COUPLER C. BOARD 1:	ANTENNA TERMINALS
COUPLER C. BOARD 2:	COUPLER SWITCH AND PIN JACKS
POWER SUPPLY C. BOARD 2:	METER SELECTOR

DISASSEMBLY PROCEDURES

1. CABINET REMOVAL

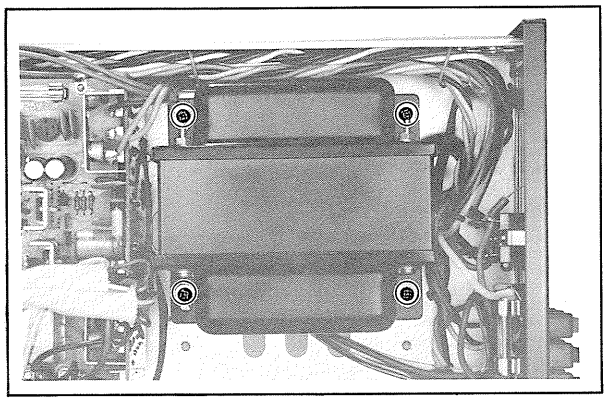
Remove 5 screws, then pull out the chassis in arrow direction.

Since the cabinet used for UK and European models are different from the photo shown below, refer to "EXPLODED VIEW" as shown in page 1 of the PARTS LIST.



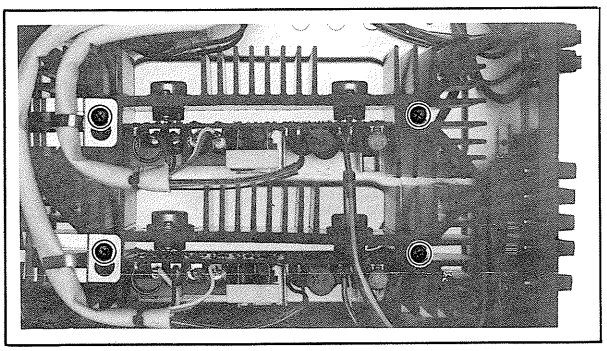
2. POWER TRANSFORMER REMOVAL

Remove 4 screws.

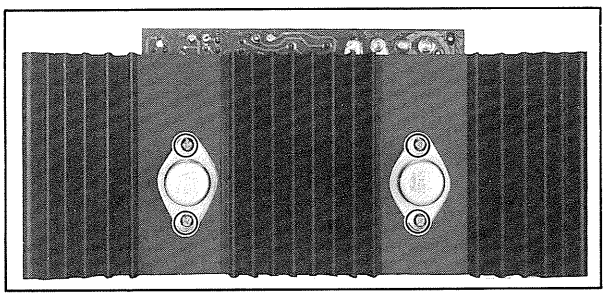


3. HEAT SINK AND MAIN CIRCUIT BOARD 1 REMOVAL

Step 1. Remove 4 screws, then dismantle the heat sink.



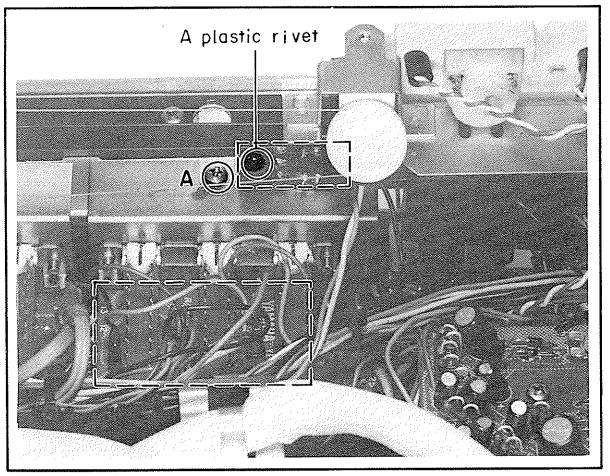
Step 2. Remove 4 screws fixing 2 power transistors.



4. HEADPHONE CIRCUIT BOARD 2 and PRE CIRCUIT BOARD 4 REMOVAL

Remove a plastic rivet, then detach the Headphone Circuit Board 2 from dial scale.

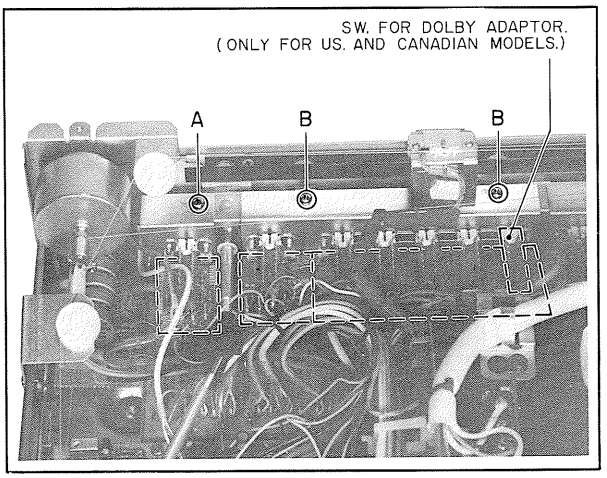
Remove a screw shown in A.



5. PRE CIRCUIT BOARD 3 AND TUNER CIRCUIT BOARD 2 REMOVAL

Screw **A** is for fixing the Pre Circuit Board 3.

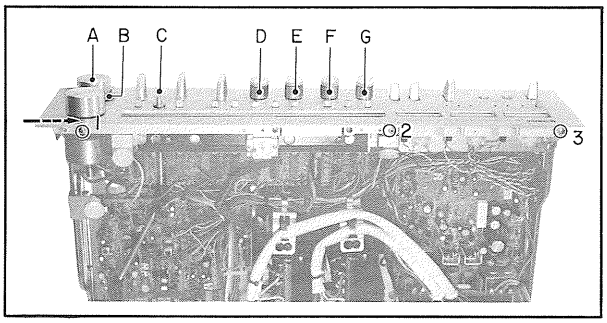
Screws **B** are for fixing the Tuner Circuit Board 2.



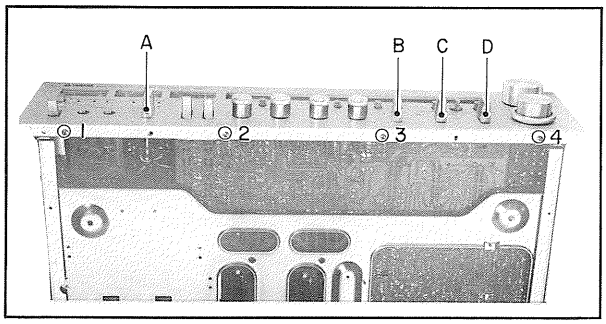
DISASSEMBLY PROCEDURES

6. FRONT PANEL REMOVAL

Step 1. 1) Remove 3 screws 1 to 3, and pull off 7 knobs **A** to **G**.
2) Insert a hexagonal allen wrench in arrow direction and loosen 2 screws fixing the tuning knob, then withdraw the knob.

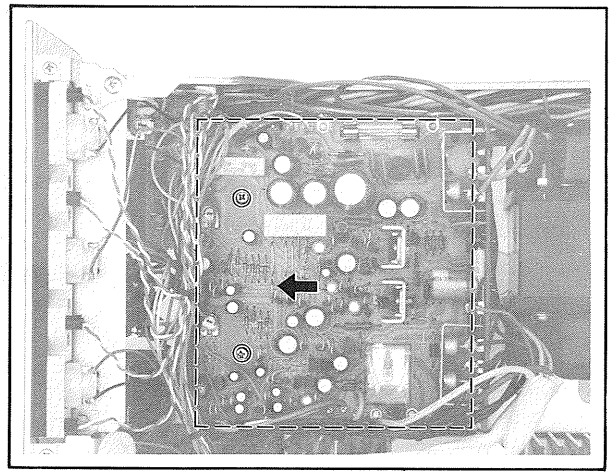


Step 2. 1) Remove 4 screws 1 to 4.
2) Loosen 4 screws **A** to **D** fixing each knob with a hexagonal allen wrench, then withdraw the knobs.



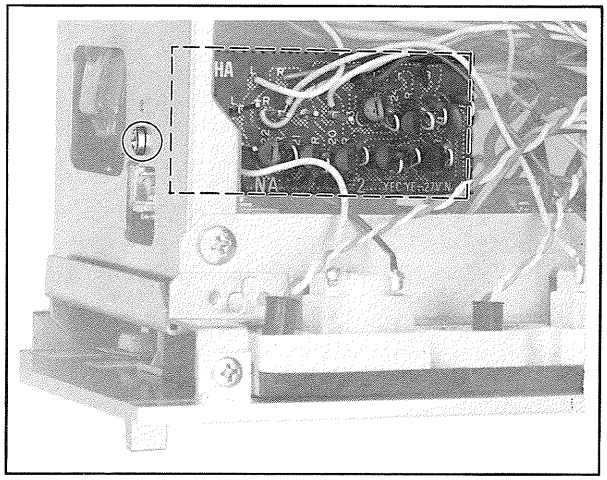
7. POWER SUPPLY CIRCUIT BOARD 1 REMOVAL

Remove 2 screws, then pull off the Power Supply Circuit Board 1 in arrow direction.



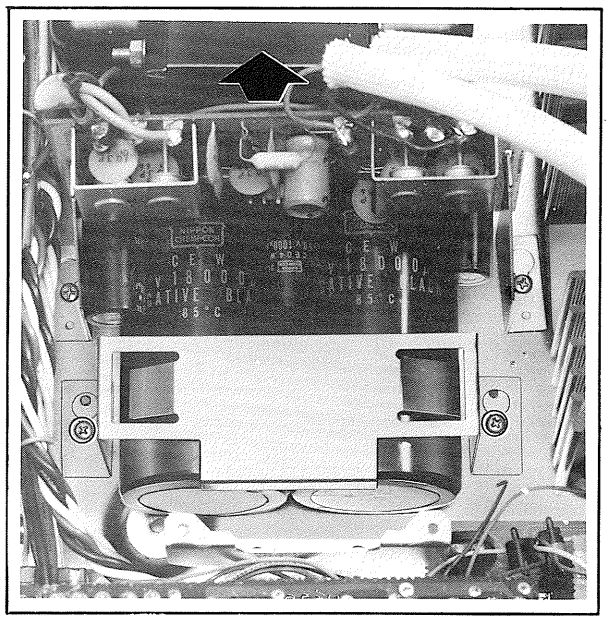
8. POWER SUPPLY CIRCUIT BOARD 2 REMOVAL

Remove a screw.



9. ELECTROLYTIC CAPACITOR CIRCUIT BOARD REMOVAL

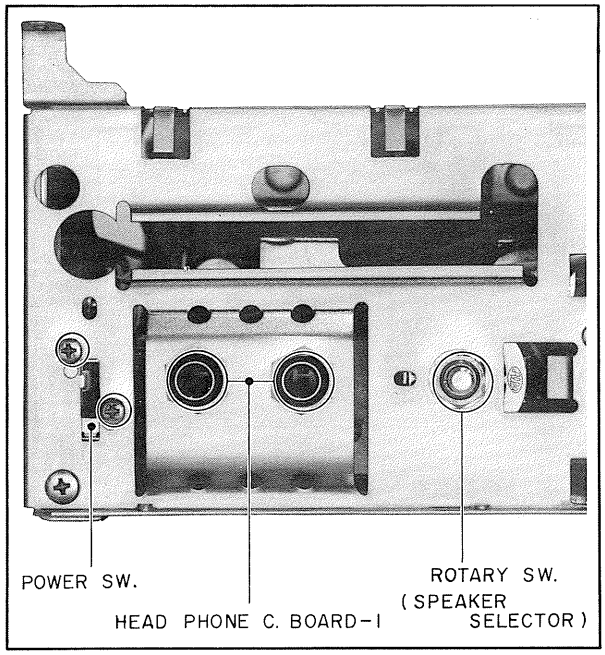
1) Remove 2 screws, then dismantle the holder securing 2 electrolytic capacitors.
2) Slide up the Electrolytic Capacitor Circuit Board in arrow direction.



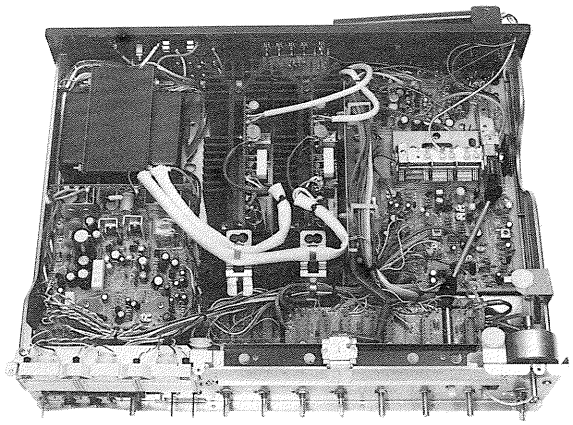
DISASSEMBLY PROCEDURES

10. POWER SWITCH, HEADPHONE CIRCUIT BOARD 1 AND ROTARY SWITCH REMOVAL

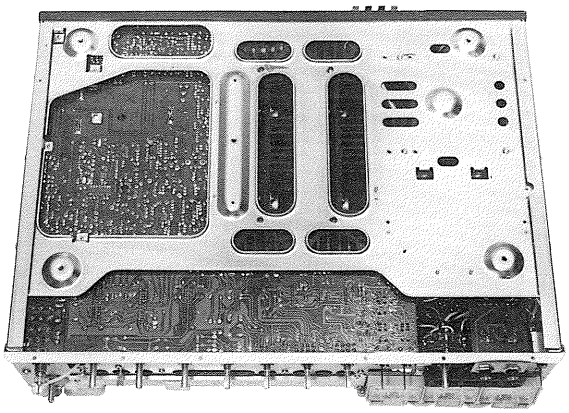
1) Pull off the knob of the power switch.
2) Remove 2 screws and 3 hexagonal nuts.



TOP VIEW

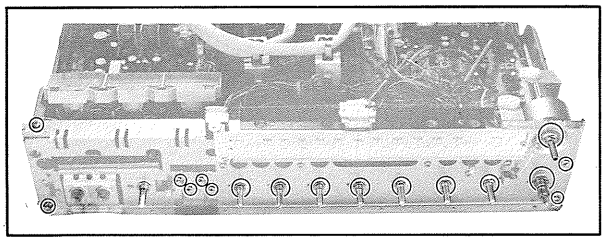


BOTTOM VIEW



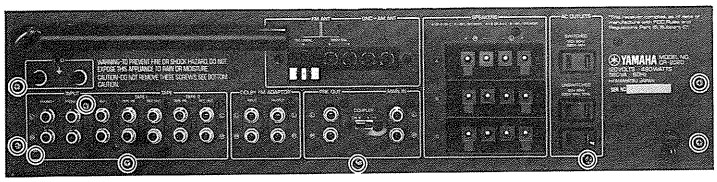
11. SUB-CHASSIS REMOVAL

1) Pull the knobs off.
2) Remove 8 screws and 9 hexagonal nuts.

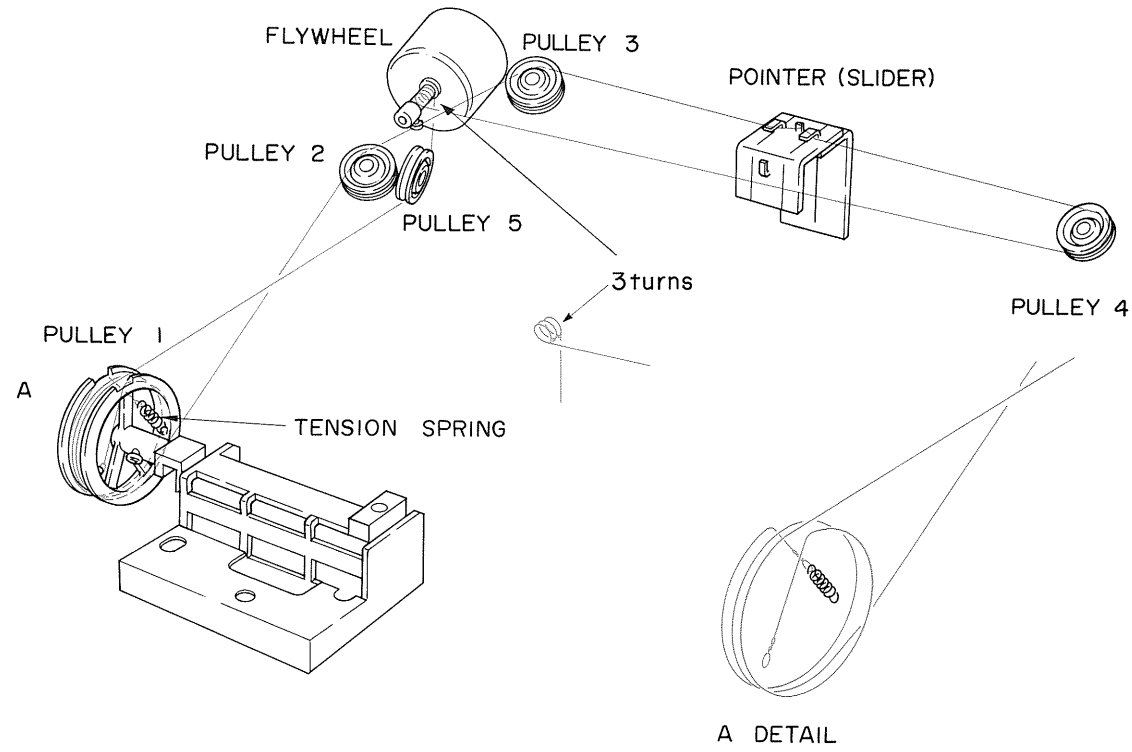


12. REAR PANEL REMOVAL

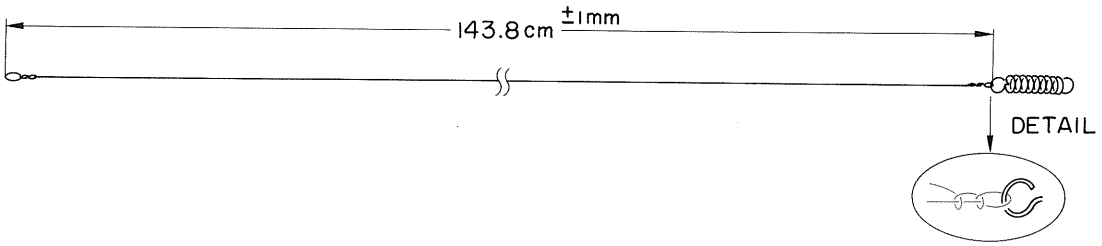
Remove 9 screws.

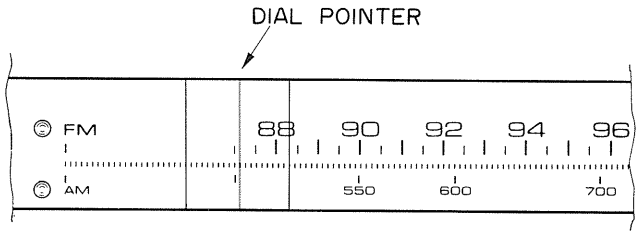


DIAL CORD STRINGING



DIAL CORD LENGTH

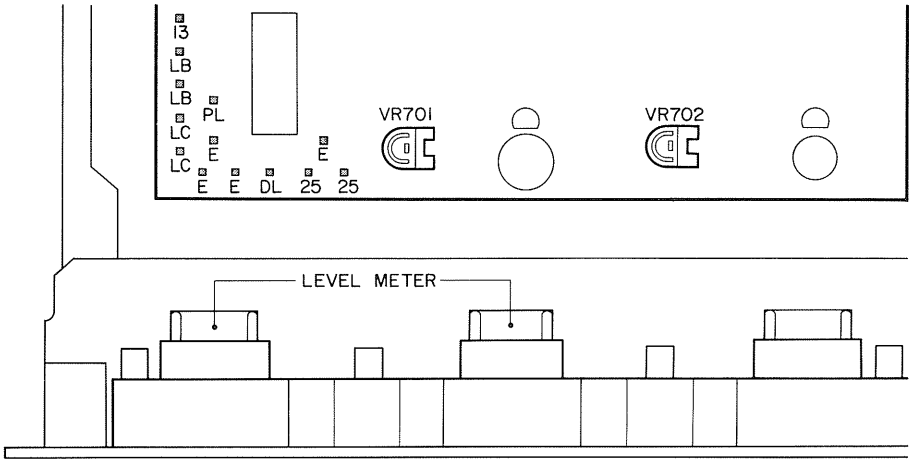




After stringing the dial cord, turn the tuning knob fully counterclockwise and set the pointer to lower end indication of the scale as illustrated above. Then hook the string to the pointer assembly and lock by painting.

ADJUSTMENT OF LEVEL METER

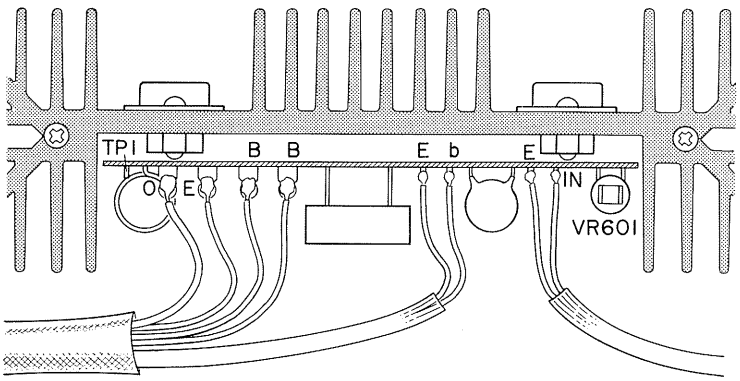
ADJUSTING POINTS



ITEM	AD-JUSTING POINTS	CON-NECTING POINT	EQUIPMENT	METHOD	INDI-CATION
LEVEL METER	VR-701 VR-702	—	50W/8Ω (1kHz)	Turn VR-701, 702 so that the wattage becomes rated value as shown on right hand side.	50W (±1m/m)

ADJUSTMENT OF MAIN C.BOARD

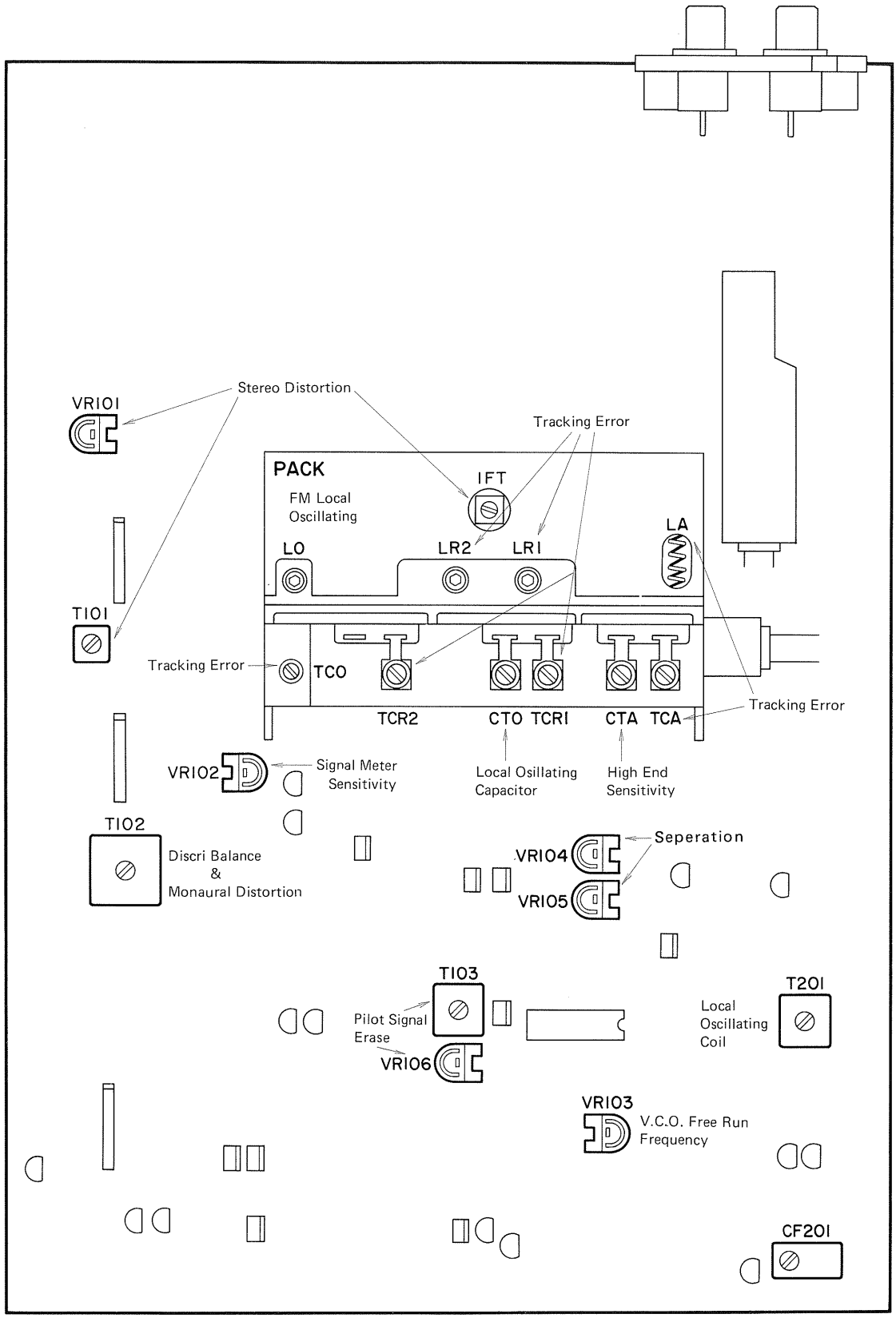
ADJUSTING POINTS



ADJUSTMENT FOR IDLING CURRENT

ITEM	AD-JUSTING POINT	CON-NECTING POINT	EQUIPMENT	METHOD	INDI-CATION
IDLING CURRENT	VR-601	TP1 — 0	VTVM or Digital Volt Meter	Turn VR601, so that the voltage between TP1 and TP0 becomes rated value as shown on right hand side.	10±1mV

ADJUSTMENT OF TUNER C.BOARD
ADJUSTING POINTS



ADJUSTMENT

ADJUSTMENT OF TRACKING ERROR OF FM SECTION

Step	ITEMS	ADJUSTING POINTS	CONNECTING INPUT	EQUIPMENT	METHOD	REMARKS
1	POINTER OF THE DIAL	Pointer	FM Ant.	FM SG 98MHz 60dBμ	Tune the receiver to SG, then loosen the pointer from the dial string and set the pointer to 98MHz of the scale.	±1mm or less
2	HIGH END TRACKING ERROR CONFIRMATION		FM Ant.	FM SG 108MHz 60dBμ	Tune the receiver to SG, then confirm so that the pointer is on 108MHz of the scale.	±2mm or less
3	TRACKING ERROR TRIMMING (Only when proper confirmation cannot be made by step 2, proceed to step 3.)	Pointer	FM Ant.	FM SG 88MHz to 108MHz 60dBμ	Reset the pointer, so that the pointer is on within allowance in all range as shown on right hand side.	±2mm or less
4	TRACKING ERROR ADJUSTING (Only when proper adjustment cannot be made by step 3, proceed step 4.)	TC0 (Pack)	FM Ant.	FM SG 98MHz 108MHz 60dBμ	Adjust error by the pointer and TCO alternately. 98MHz – pointer 108MHz – TCO	

ADJUSTMENT OF TRACKING ERROR OF AM SECTION

ADJUST AM SECTION AFTER ADJUSTMENT OF FM SECTION MADE CORRECTLY.

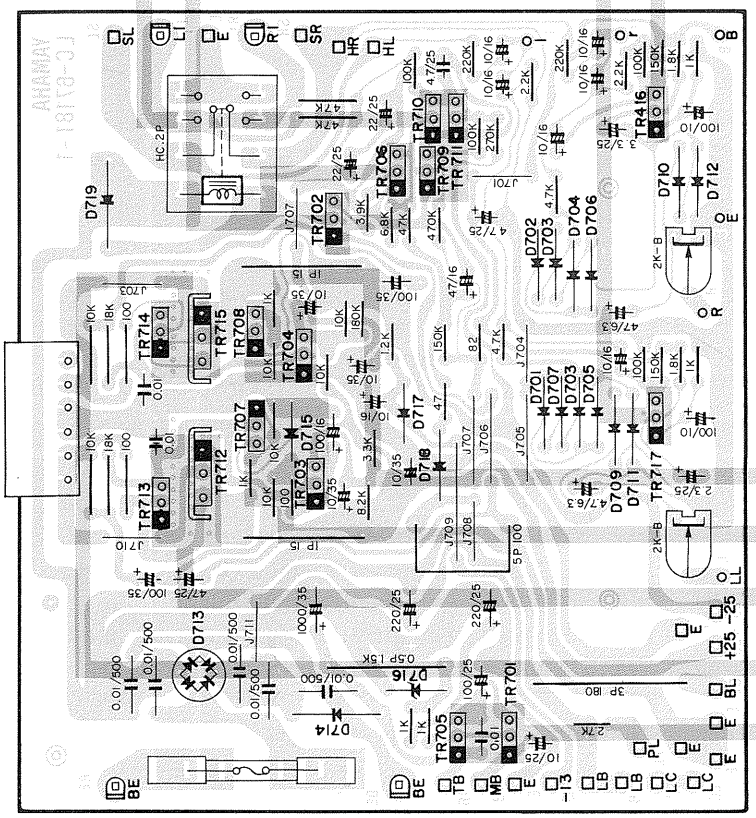
Step	ITEMS	ADJUSTING POINTS	CONNECTING POINTS	EQUIPMENT	METHOD	REMARKS
1	LOCAL OSCILLATING COIL	T201	Bar Ant.	AM SG 600kHz 80dB/m to 100dB/m	Set the pointer to 600kHz of the scale, then turn the core of T201 slowly, so that the signal meter swings to the maximum.	
2	LOW END SENSITIVITY	Core of bar ant.	Bar Ant.	AM SG 600kHz 60dB/m	Turn the cord of the bar antenna coil, so that the signal meter swings to the maximum.	
3	LOCAL OSCILLATING CAPACITOR	CT0 (Pack)	Bar Ant.	AM SG 1350kHz 80dB/m to 100dB/m	Set the pointer to 1350kHz of the scale, then turn the trimmer capacitor CT0, so that the signal meter swings to the maximum.	
4	HIGH END SENSITIVITY	CTA (Pack)	Bar Ant.	AM SG 1350kHz 60dB/m	Turn the trimmer capacitor CTA, so that the signal meter swings to the maximum.	
5	REPEAT			AM SG 600kHz 1350kHz 60dB/m	The above adjustments are necessary to repeat 2 to 3 times to minimize tracking error and differential of sensitivity between 600kHz and 1350kHz.	Tracking error: ±1.5mm or less
6	MID RANGE CONFIRMATION		Bar Ant.	AM SG 950kHz	Tune the receiver to SG, so that the signal meter swings to the maximum, then confirm so that the pointer is on 950kHz of the scale.	±2mm or less

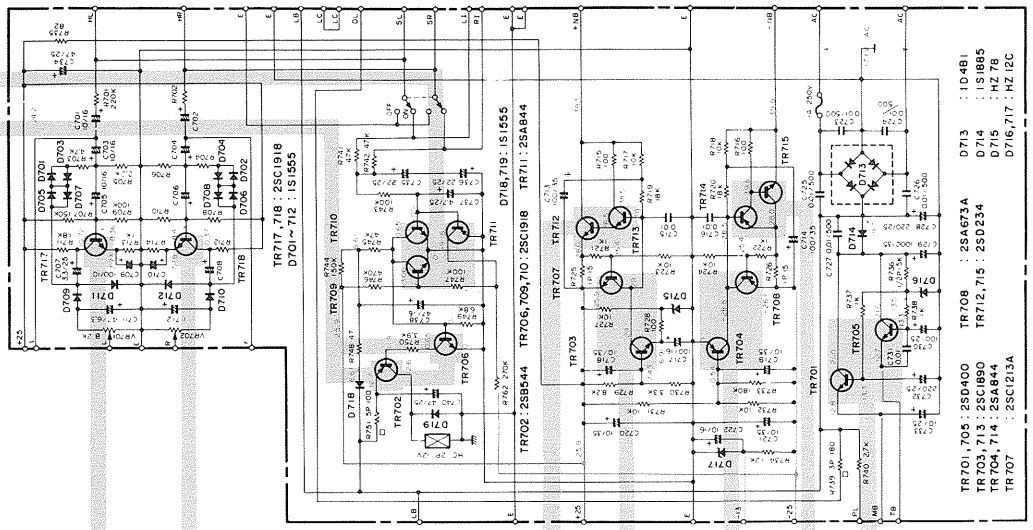
ADJUSTMENT OF TUNER CIRCUIT BOARD

Step	ITEMS	ADJUSTING POINT	CONNECTING INPUT	POINT OUTPUT	EQUIPMENT	METHOD	INDICATION (Typical)
1	DISCRI. BALANCE	T102 (up-side core)	FM Ant.			Turn the pointer to detuning point near by 98MHz, and turn the up-side core of the T102 so that the tuning meter reads zero. Note: Before adjusting, confirm that the meter reads zero when the power SW. is off.	0(zero)
2	TUNING POINT SETTING	Tuning knob	FM Ant.		FM SG 98MHz 60dBμ	Tune the knob so that the tuning meter reads center.	
3	VCO FREE RUN FREQUENCY	VR103	FM Ant.	19kHz TP	FM SG -do.- 0% (mod.) Frequency Counter (FC.)	Adjust VR103 so that FC. reads 19kHz. Confirm that FM SG is set to mono.	19kHz ±20Hz (±5Hz)
4	MONAURAL DISTORTION	T 102 (bottom-side core)	FM Ant.	Output (L or R)	-do.- FM SG mono. 1kHz 100%	Turn the bottom-side core of the T102 so that the distortion becomes minimum.	−60dB or less (−64dB)
5	STEREO DISTORTION	T101 VR 101 IFT (Pack)	FM Ant.	Output (L)	FM SG 98MHz 60dBμ L+R stereo 1kHz 100% Oscilloscope VTVM Distortion Meter (DM.) LPF (17kHz	Turn the core of the T101 IFT (Pack), and adjust VR101 so that the distortion becomes minimum.	−56dB or less (−62dB)
6	SEPARATION	VR 104 VR 105	FM Ant.	Output (L, R)	same as step 5 (except DM)	Adjust VR104 (SEP. BAL) so that the both seperations of L to R and R to L become approximately equal, then adjust VR105 (SEP.) so that the seperation becomes to the maximum. These adjustments should be repeated two or three times.	50dB or more (55dB)
7	PILOT SIGNAL ERASE	VR106 T103	FM Ant.	Output (L, R)	FM SG 98MHz 60dBμ stereo (MD) pilot: 9%	Connect VTVM and OSC to the Output terminal, and adjust VR106 and T103 so that carrier level becomes minimum.	60dB or more (both ch.)
8	SIGNAL METER SESITIVITY	VR102	FM Ant.		FM SG 98MHz 80dBμ 0%	Adjust VR102 so that the signal meter swings 90.	90

CIRCUIT BOARDS

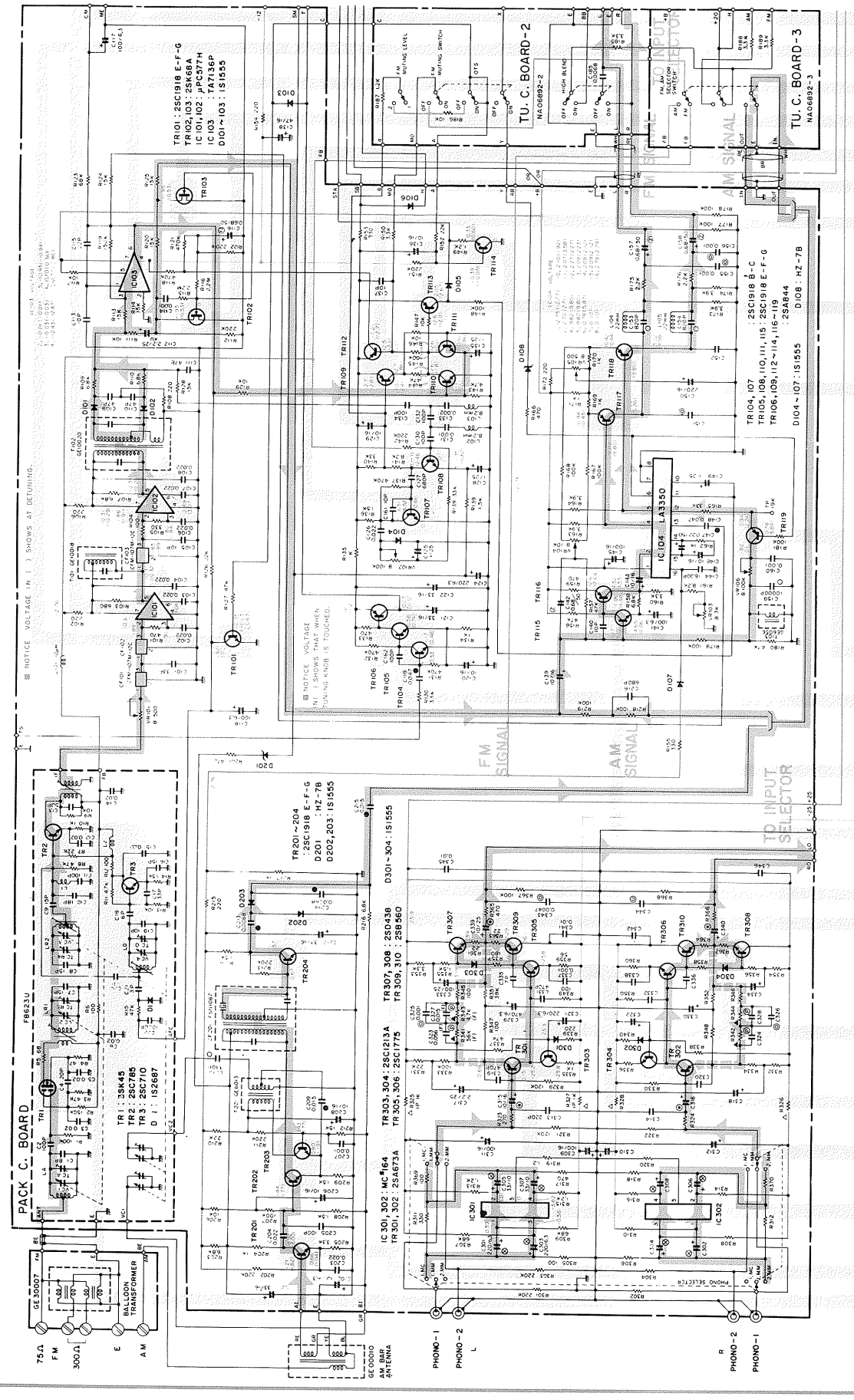
POWER SUPPLY C. BOARD-1

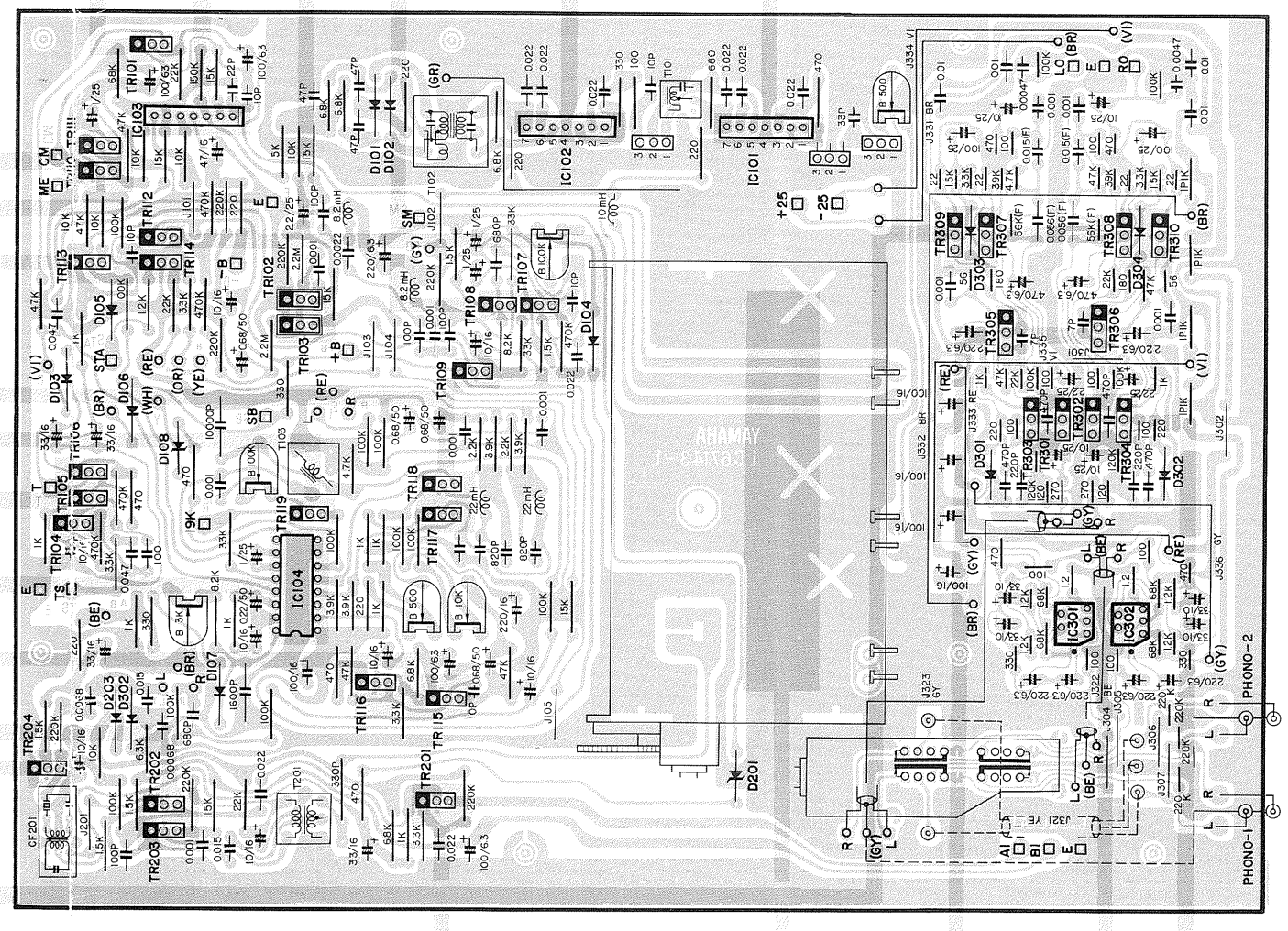




CR-2020

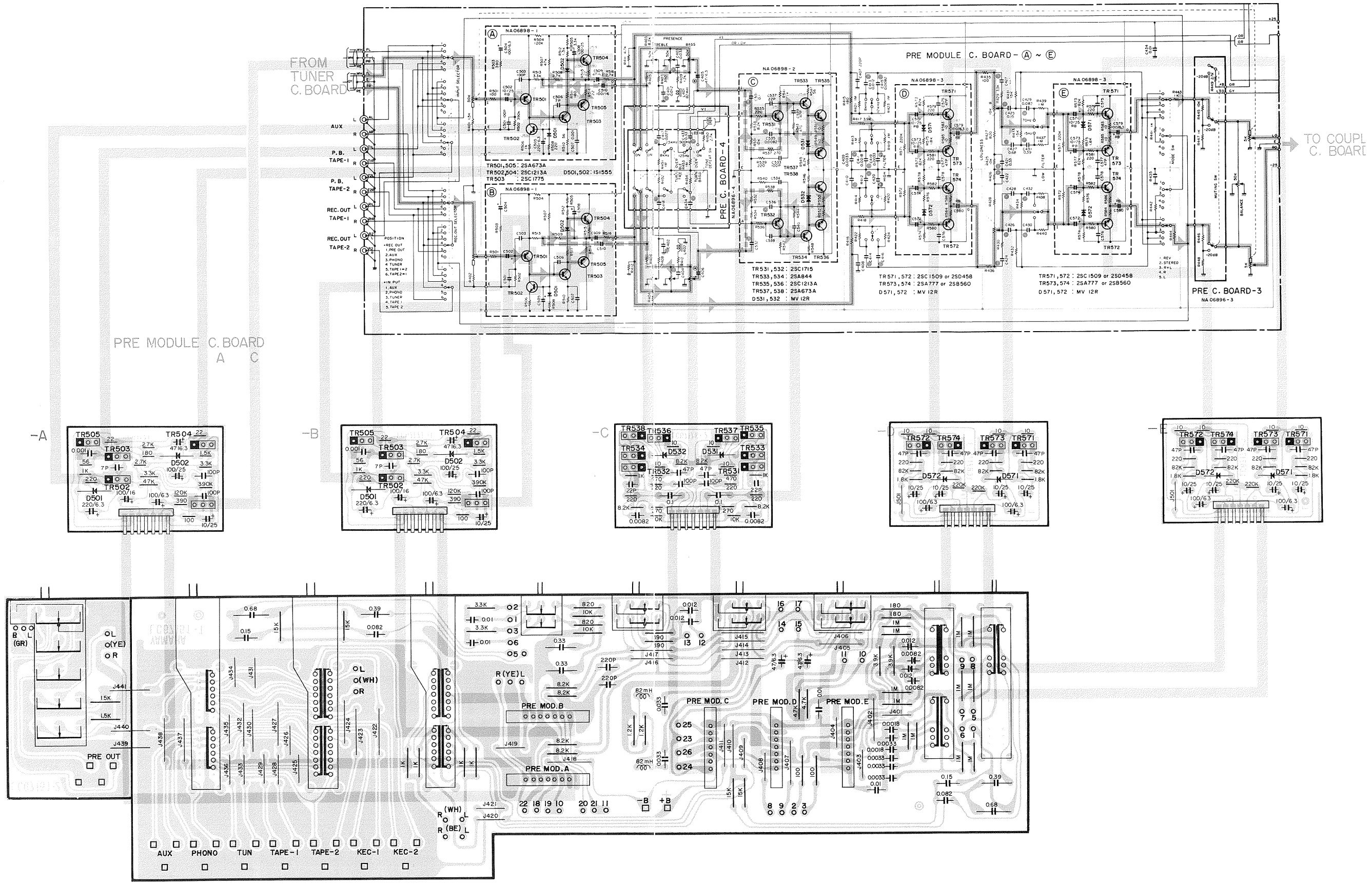
TUNER C.BOARD-1 (Tuner)





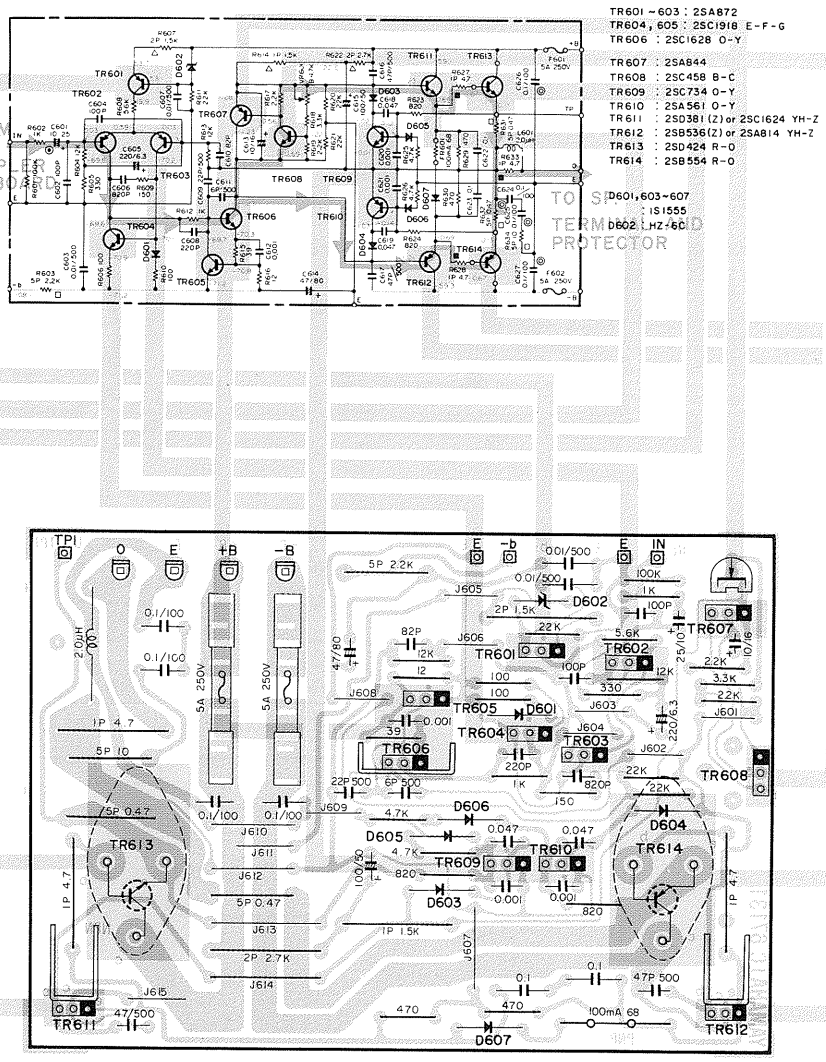
CIRCUIT BOARDS

PRE C.BOARD-1,2 (Equalizer and Tone Control Amp.)

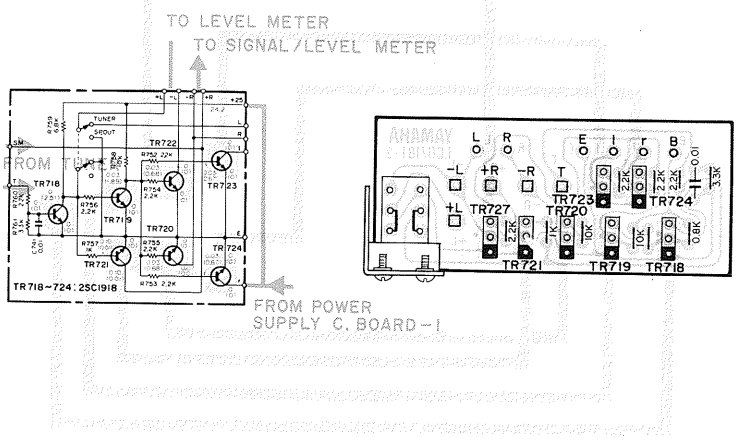


CIRCUIT BOARDS

MAIN C.BOARD

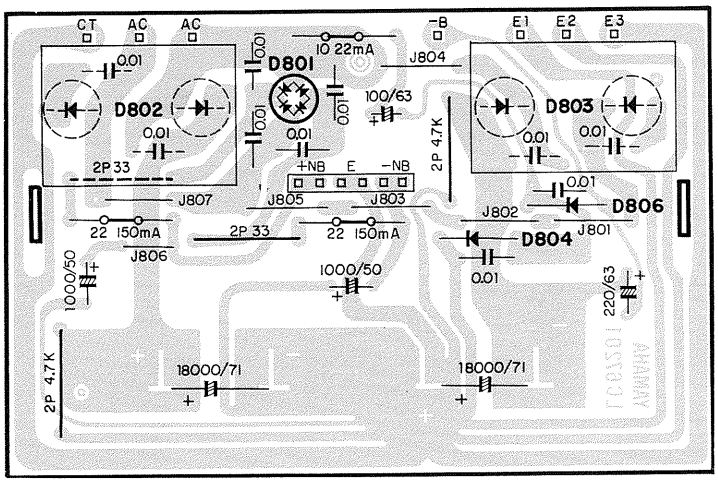


POWER SUPPLY C.BOARD-2

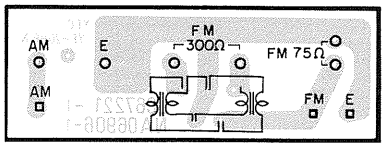


CIRCUIT BOARDS

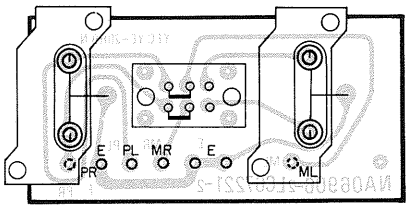
ELECTROLYTIC CAP. C. BOARD



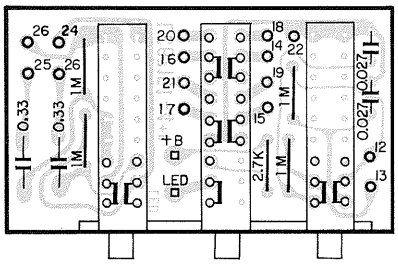
COUPLER C.BOARD-1



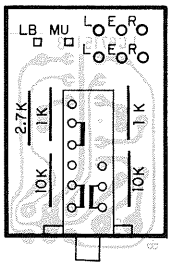
COUPLER C.BOARD-2



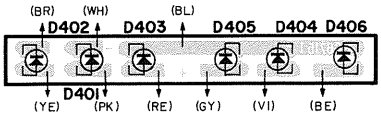
PRE C.BOARD -4



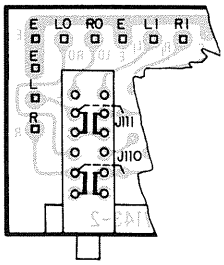
PRE C.BOARD-3



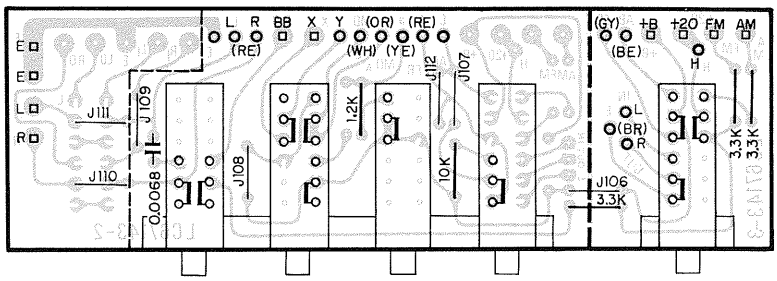
PRE C.BOARD-5



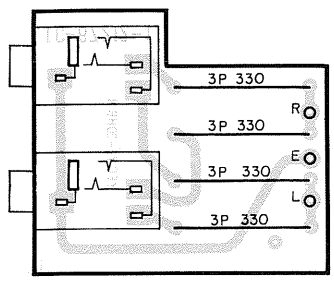
TUNER C.BOARD-2. -3



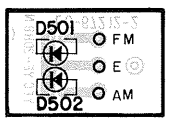
(Only for US. and Canadian models.)



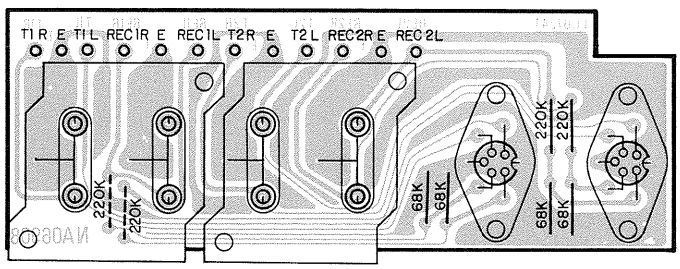
HEAD PHONE C.BOARD-1



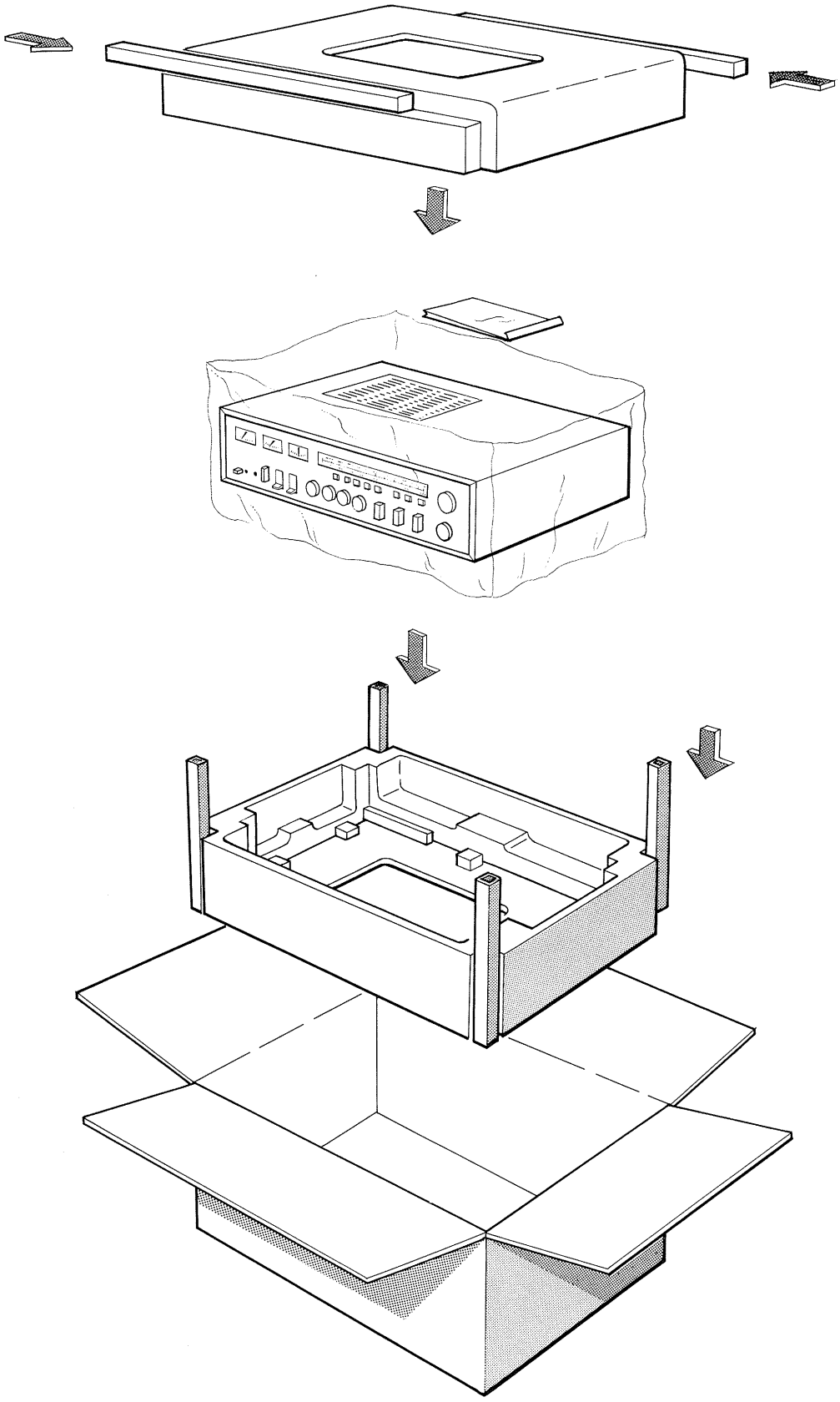
HEAD PHONE C.BOARD-2



DIN C.BOARD (Only for European models)



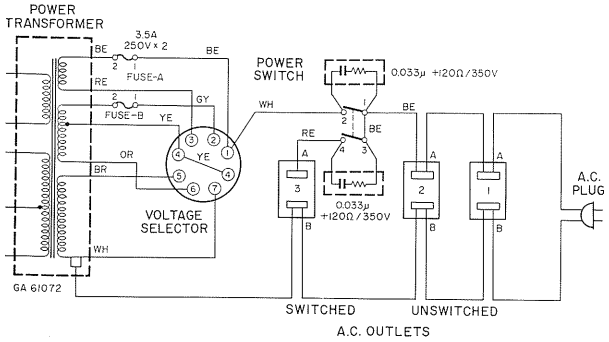
PACKAGE



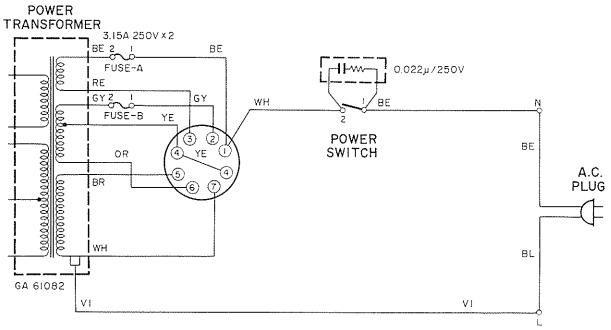
SCHEMATIC DIAGRAM BY EXPORT ZONE

POWER SUPPLY CIRCUIT

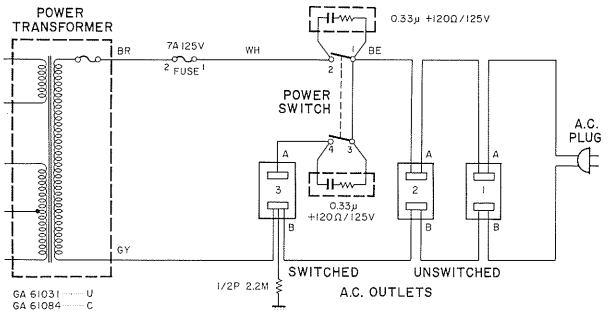
GENERAL EXPORT model



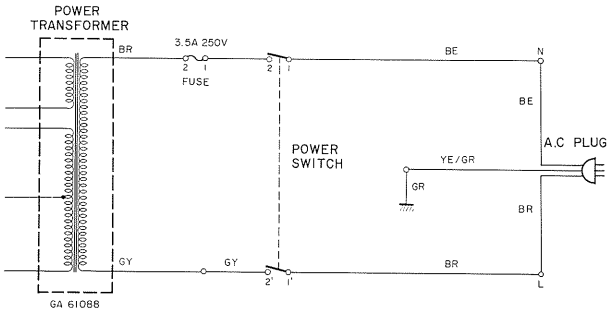
EUROPEAN model



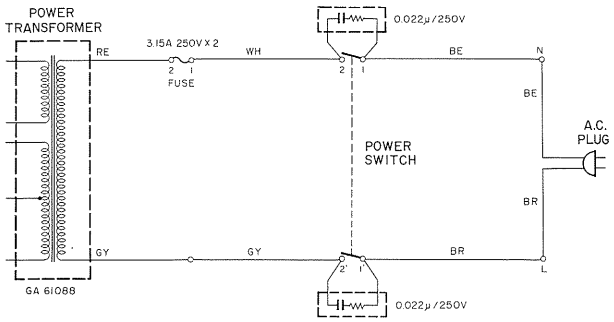
US & CANADIAN model



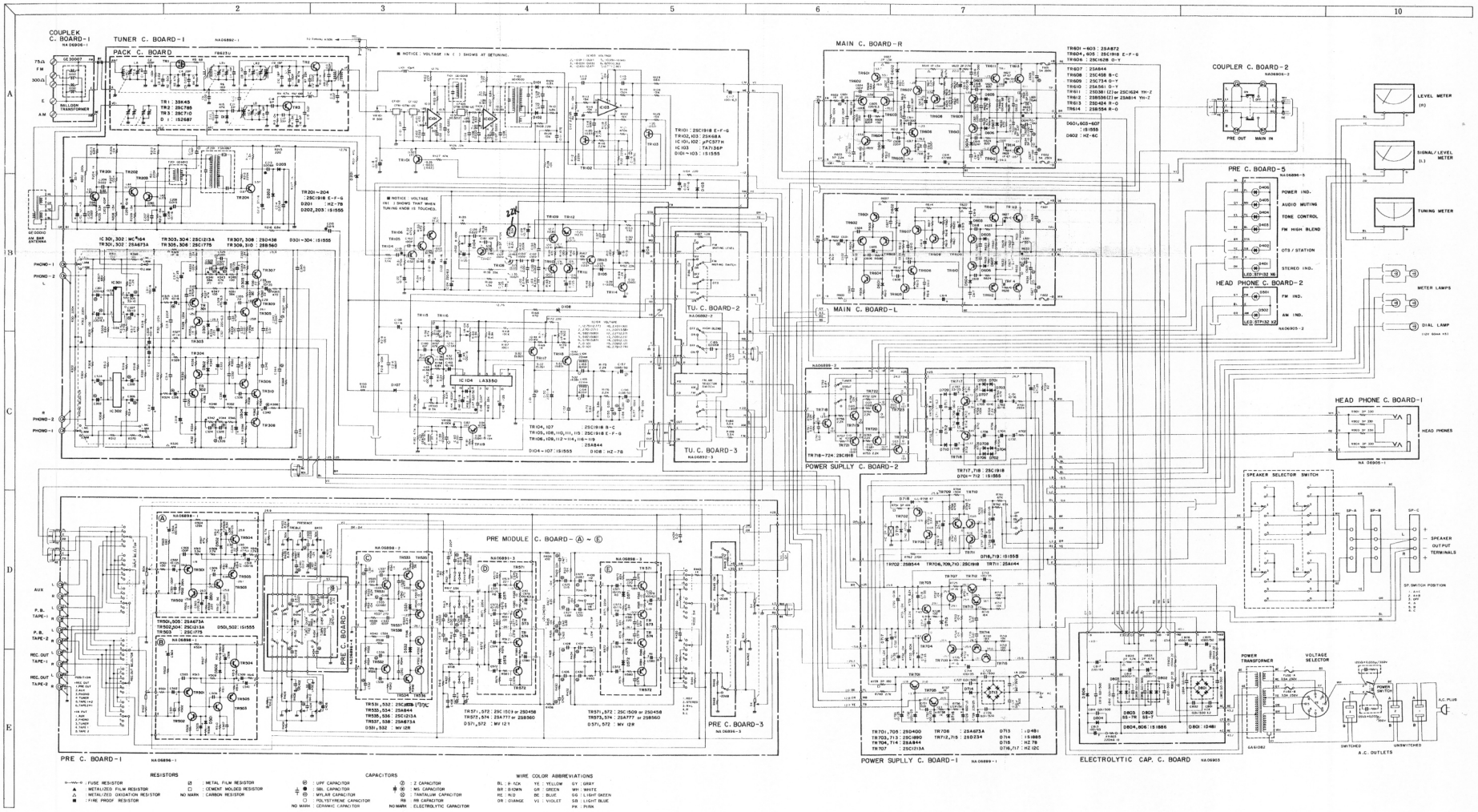
AUSTRALIAN model

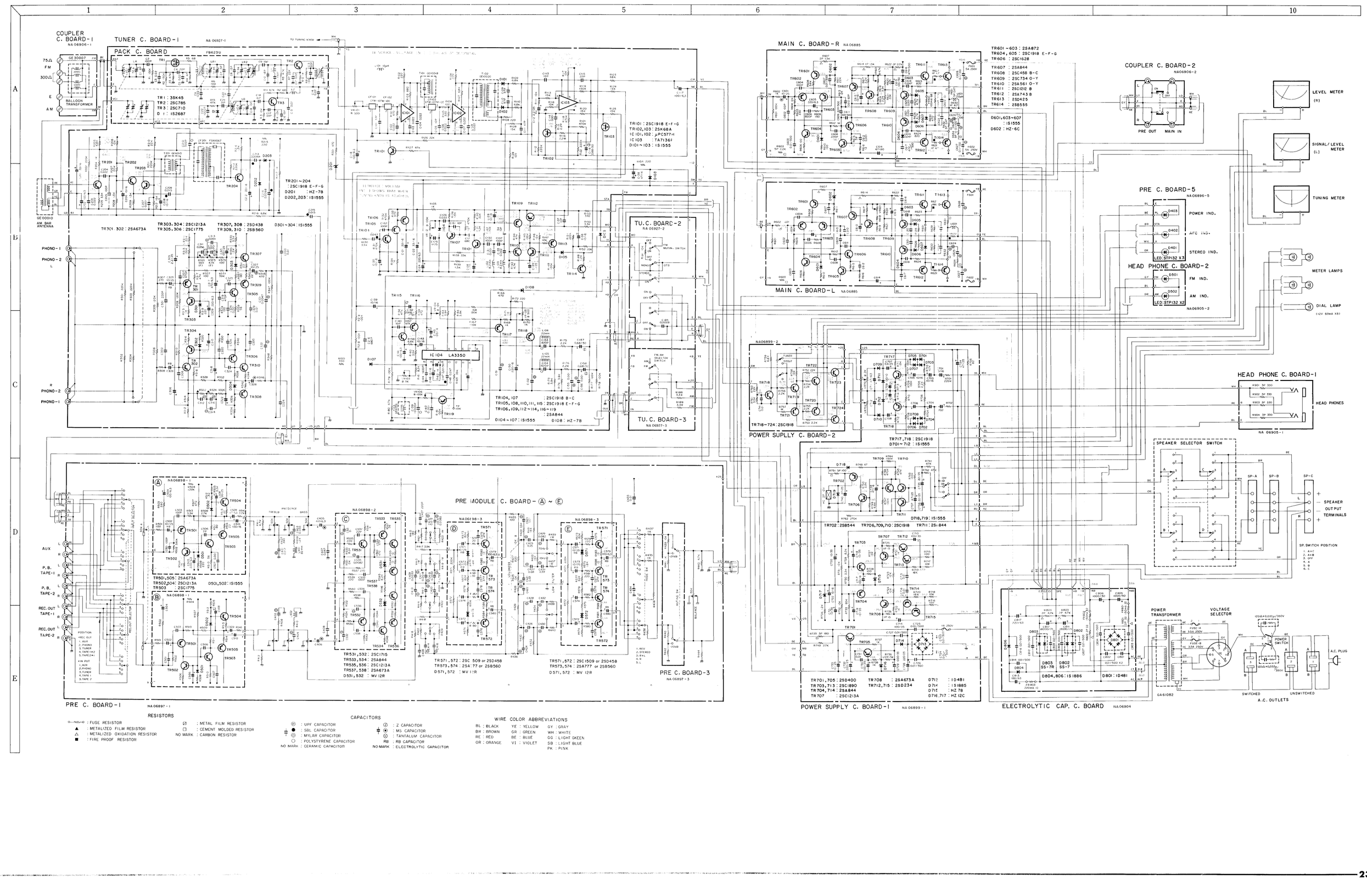


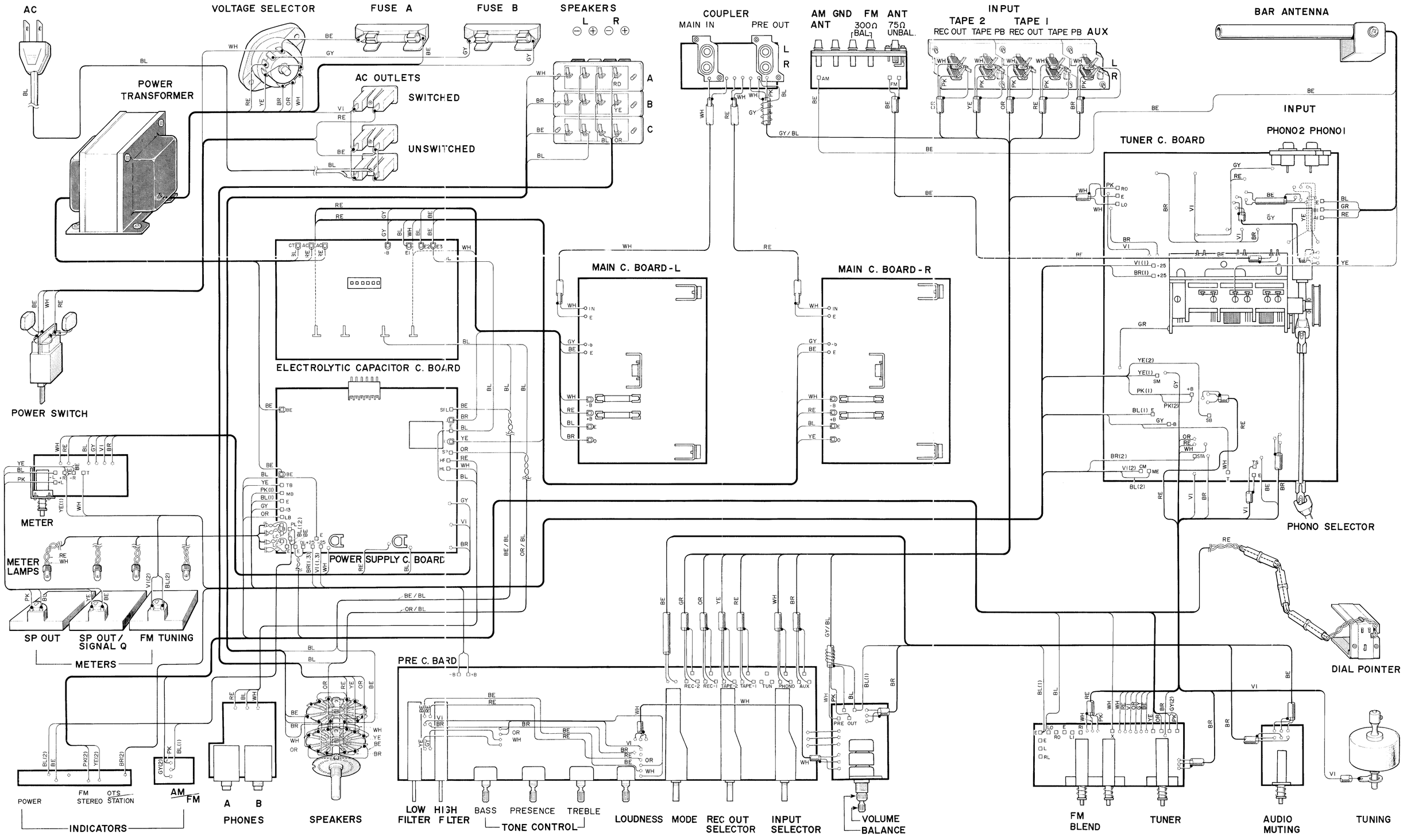
UK model



SCHEMATIC DIAGRAM




COUPLER C. BOARD-I
NA 06906-1
TUNER C. BOARD-I
NA 06927-1
PACK C. BOARD
FB623U
TR1 : 3SK45
TR2 : 2SC785
TR3 : 2SC710
D1 : 1S2687
TR101 : 2SC1918 E-F-G
TR102,103 : 2SK68A
IC101,102 : μPC577H
IC103 : TA7136F
D101~103 : 1S1555
TR201~204 : 2SC1918 E-F-G
D201 : HZ-7B
D202,203 : 1S1555
TR301 302 : 2SA673A
TR303,304 : 2SC1213A
TR305,306 : 2SC1775
TR307,308 : 2SD438
TR309,310 : 2SB560
D301~304 : 1S1555
IC104 LA3350
TR104,107 : 2SC1918 B-C
TR105,108,110,111,115 : 2SC1918 E-F-G
TR106,109,112~114,116~119 : 2SA844
D104~107 : 1S1555
D108 : HZ-7B
TU.C. BOARD-2
NA 06927-2
TU.C. BOARD-3
NA 06927-3
MAIN C. BOARD-R
NA 06885
MAIN C. BOARD-L
NA 06885
TR601~603 : 2SA872
TR604,605 : 2SC1918 E-F-G
TR606 : 2SC1628
TR607 : 2SA844
TR608 : 2SC458 B-C
TR609 : 2SC734 O-Y
TR610 : 2SA561 O-Y
TR611 : 2SC1212 B
TR612 : 2SA743 B
TR613 : 2SD425
TR614 : 2SB555
D601,603~607 : 1S1555
D602 : HZ-6C
COUPLER C. BOARD-2
NA06906-2
PRE OUT
MAIN IN
LEVEL METER (R)
SIGNAL/LEVEL METER (L)
TUNING METER
PRE C. BOARD-5
NA 06896-5
POWER IND.
AFC IND.
STEREO IND.
LED:STP132 X3
HEAD PHONE C. BOARD-2
FM IND.
AM IND.
LED:STP132 X2
NA06905-2
METER LAMPS
DIAL LAMP
(12V 60mA X5)
HEAD PHONE C. BOARD-1
HEAD PHONES
NA 06905-1
SPEAKER SELECTOR SWITCH
SP-A
SP-B
SP-C
SPEAKER OUTPUT TERMINALS
SP.SWITCH POSITION
1. A+C
2. A+B
3. OFF
4. A
5. B
6. C
POWER SUPPLY C. BOARD-2
TR718~724 : 2SC1918
TR717,718 : 2SC1918
D701~712 : 1S1555
D718,719 : 1S1555
TR702 : 2SB544
TR706,709,710 : 2SC1918
TR711 : 2SA844
POWER SUPPLY C. BOARD-1
NA 06899-1
TR701,705 : 2SD400
TR703,713 : 2SC1890
TR704,714 : 2SA844
TR707 : 2SC1213A
TR708 : 2SA673A
TR712,715 : 2SD234
D712 : 1D481
D714 : 1S1885
D715 : HZ-7B
D716,717 : HZ-12C
ELECTROLYTIC CAP. C. BOARD
NA 06904
D801~804,806 : 1S1886
D801 : 1D481
GA61082
POWER TRANSFORMER
VOLTAGE SELECTOR
POWER SWITCH
SWITCHED
UNSWITCHED
A.C. OUTLETS
A.C. PLUG
PRE C. BOARD-3
NA 06897-3
PRE MODULE C. BOARD-Ⓐ~Ⓔ
NA06898-1
NA06898-2
NA06898-3
TR501,505 : 2SA673A
TR502,504 : 2SC1213A
TR503 : 2SC1775
D501,502 : 1S1555
TR531,532 : 2SC1775
TR533,534 : 2SA844
TR535,536 : 2SC1213A
TR537,538 : 2SA673A
D531,532 : MV 12R
TR571,572 : 2SC 509 or 2SD458
TR573,574 : 2SA 77 or 2SB560
D571,572 : MV 11R
TR571,572 : 2SC1509 or 2SD458
TR573,574 : 2SA777 or 2SB560
D571,572 : MV 12R
PRE C. BOARD-1
NA 06897-1
AUX
P.B. TAPE-1
P.B. TAPE-2
REC.OUT TAPE-1
REC.OUT TAPE-2
PHONO-1
PHONO-2
TUNER
TAPE 1
TAPE 2
REC OUT
AUX
PHONO
RESISTORS
FUSE RESISTOR
METALIZED FILM RESISTOR
METALIZED OXIDATION RESISTOR
FIRE PROOF RESISTOR
METAL FILM RESISTOR
CEMENT MOLDED RESISTOR
NO MARK : CARBON RESISTOR
CAPACITORS
UPF CAPACITOR
SBL CAPACITOR
MYLAR CAPACITOR
POLYSTYRENE CAPACITOR
NO MARK : CERAMIC CAPACITOR
Z CAPACITOR
MS CAPACITOR
TANTALUM CAPACITOR
RB CAPACITOR
NO MARK : ELECTROLYTIC CAPACITOR
WIRE COLOR ABBREVIATIONS
BL : BLACK
BR : BROWN
RE : RED
OR : ORANGE
YE : YELLOW
GR : GREEN
BE : BLUE
VI : VIOLET
GY : GRAY
WH : WHITE
GG : LIGHT GREEN
SB : LIGHT BLUE
PK : PINK


AC
VOLTAGE SELECTOR
FUSE A
FUSE B
SPEAKERS
L R
COUPLER
MAIN IN
PRE OUT
AM GND FM ANT
ANT 300Ω BAL 75Ω UNBAL.
INPUT
TAPE 2 TAPE 1
REC OUT TAPE PB REC OUT TAPE PB AUX
BAR ANTENNA
POWER TRANSFORMER
AC OUTLETS
SWITCHED
UNSWITCHED
INPUT
PHONO2 PHONO1
TUNER C. BOARD
ELECTROLYTIC CAPACITOR C. BOARD
MAIN C. BOARD-L
MAIN C. BOARD-R
POWER SWITCH
METER
METER LAMPS
SP OUT
SP OUT/ SIGNAL Q
FM TUNING
METERS
POWER SUPPLY C. BOARD
PHONO SELECTOR
DIAL POINTER
PRE C. BARD
POWER
FM STEREO
OTS STATION
AM FM
INDICATORS
A B
PHONES
SPEAKERS
LOW FILTER
HIGH FILTER
BASS
PRESENCE
TREBLE
TONE CONTROL
LOUDNESS
MODE
REC OUT SELECTOR
INPUT SELECTOR
VOLUME BALANCE
FM BLEND
TUNER
AUDIO MUTING
TUNING