

SERVICE MANUAL

YAMAHA

CR-1000

CONTENTS

FEATURES	2
CIRCUIT DESCRIPTION	3
SPECIFICATIONS	8
EXTERNAL VIEW	
FRONT PANEL	10
REAR PANEL (U.S. & CANADIAN MODELS).....	10
REAR PANEL (EUROPEAN MODEL)	10
INTERNAL VIEW	
TOP VIEW	12
BOTTOM VIEW	13
PARTIAL DISASSEMBLY	
CABINET REMOVAL	14
MAIN AMP CIRCUIT BOARD REMOVAL	14
SIGNAL, TUNING METER REMOVAL	15
TUNER CIRCUIT BOARD REMOVAL	15
TUNER UNIT REMOVAL	15
POWER CIRCUIT BOARD REMOVAL	16
FRONT PANEL REMOVAL	16
SUB CHASSIS UNIT REMOVAL	17
FUNCTION SWITCH AND EQUALIZER AMP CIRCUIT BOARD REMOVAL	17
LOUDNESS CIRCUIT BOARD REMOVAL	18
LIGHT EMITTING DIODE CIRCUIT BOARD REMOVAL	19
TAPE MONITOR SWITCH CIRCUIT BOARD REMOVAL	19
TONE CONTROL AMP AND TONE CONTROL VOLUME CIRCUIT BOARD REMOVAL	19
MODE SWITCH CIRCUIT BOARD REMOVAL	20
TONE CONTROL SWITCH CIRCUIT BOARD REMOVAL	20
FILTER AMP CIRCUIT BOARD REMOVAL	21
FILTER SWITCH CIRCUIT BOARD REMOVAL	21
MIC AMP CIRCUIT BOARD REMOVAL	21
MIC VOLUME CIRCUIT BOARD REMOVAL	21
POWER AND SPEAKER SWITCH REMOVAL	22
DROPPING THE REAR PANEL	22
REAR PANEL CIRCUIT BOARD REMOVAL	22
DIAL MECHANISM	23
MEASUREMENT AND ADJUSTMENT	
TUNER SECTION	24
AUDIO SECTION	
EQ AMP CIRCUIT BOARD ADJUSTMENT	29
MAIN AMP CIRCUIT BOARD ADJUSTMENT	30
BLOCK DIAGRAM	32
OVERALL SCHEMATIC DIAGRAM	33
PARTIAL CHANGES MADE ACCORDING TO DESTINATION	36
PRINTED CIRCUIT BOARD & SPECIAL REPLACEMENT PARTS LIST	
TUNER CIRCUIT BOARD	39
EQUALIZER AMP CIRCUIT BOARD	42
FUNCTION CIRCUIT BOARD	43
TAPE MONITOR SWITCH CIRCUIT BOARD	43
MODE SWITCH CIRCUIT BOARD	46
LOUDNESS CIRCUIT BOARD	47
TONE CONTROL AMP CIRCUIT BOARD	48
TONE CONTROL SWITCH CIRCUIT BOARD	49
TONE CONTROL VOLUME CIRCUIT BOARD	50
FILTER AMP CIRCUIT BOARD	51
MIC AMP CIRCUIT BOARD	54
MIC VOLUME CIRCUIT BOARD	55
MAIN AMP CIRCUIT BOARD	56
POWER CIRCUIT BOARD	58
LIGHT EMITTING DIODE CIRCUIT BOARD	61
REAR PANEL CIRCUIT BOARD	62

FEATURES

TUNER SECTION

- Thanks to the sensitive FM front end with dual-gate MOS FETs and frequency linear five-gang tuning capacitor the tuner section features outstanding performance characteristics: 1.7 μ V usable sensitivity (IHF), freedom from intermodulation distortion and beat interference.
- The seven-stage direct-coupled FM IF amplifier features a high-gain IC differential amp with constant current bias circuit and six-element phase-linear biresonator ceramic filters. They result in excellent bandpass characteristics and outstanding phase linearity for performance characteristics like 80dB selectivity and capture ratio better than 1.0dB.
- The CR-1000 multiplex circuit features exclusive Yamaha transistor-switching type demodulation employing negative feedback. The result is an MPX circuit with under 0.05% low distortion at 400Hz thanks to greatly improved intermodulation distortion, beat interference and SCA band disturbance protection characteristics. Since a conventional SCA filter is no longer needed, FM stereo separation is an outstanding 45dB at 400Hz, over 35dB at 50 to 10,000Hz, while stereo distortion is reduced to 0.15% during mono performance, 0.3% during stereo.
- The stereo separation maintains its outstanding high level regardless of fluctuations in signal strength, thanks to its outstanding FM front end and IF stage design which pays careful attention to input strength and phase characteristics.
- The specially developed Yamaha LC type active filters possess outstanding attenuation characteristics: over 70dB at 38kHz and over 50dB at 19kHz. They work together with the de-emphasis circuit to assure these excellent frequency characteristics: 0.5dB at 50 to 10,000Hz, 1.5dB at 20 to 15,000Hz.
- The exclusive Yamaha Auto-Touch AFC circuit provides steady, drift-free FM listening regardless of temperature or humidity. The circuit assures plenty of stability in weakest signal strength areas or in areas with signal strengths as high as 100dB. Noise and hiss between stations during tuning is cancelled by doubled input and output muting circuits. The CR-1000's outstanding performance comes from a design that resembles an independent tuner much more than it does a tuner section of an integrated receiver.

OTHER

IF Output for 4-channel capability and Multipath output for improved antenna setting.

EQUALIZER AMPLIFIER

- Direct-couples a unique SRPP (shunt-regulated push-pull) input stage employing carefully selected junction FET's, and a SEPP (single-ended push-pull) output stage of quality silicon transistors. 280mV input capacity: this is 100 times greater than necessary to drive it to full output (since input sensitivity is 3mV). The RIAA deviation is kept to within ± 0.2 dB. This EQ amp has an excellent signal-to-noise ratio of 80dB or better.

tone control & filter amplifier

- The tone control amplifier has Yamaha's unique collector-to-emitter negative feedback to achieve optimum tone control curves; the turnover frequency is selectable — between 250Hz and 500Hz for the Bass, and between 2.5kHz, and 5kHz for the Treble.
- The filter amplifier — also the advanced three-stage direct-coupled design — boasts a sharp 12dB/octave cut-off characteristic. The cut-off frequency is 20Hz and 70Hz for the low filter, 6kHz and 12kHz for the high filter.

CONTINUOUS LOUDNESS CONTROL

An ideal loudness effect, based on actual listening conditions, can be set. Using the main circuit a continuous loudness control and overall tone balance is possible at any volume level.

MAIN AMPLIFIER

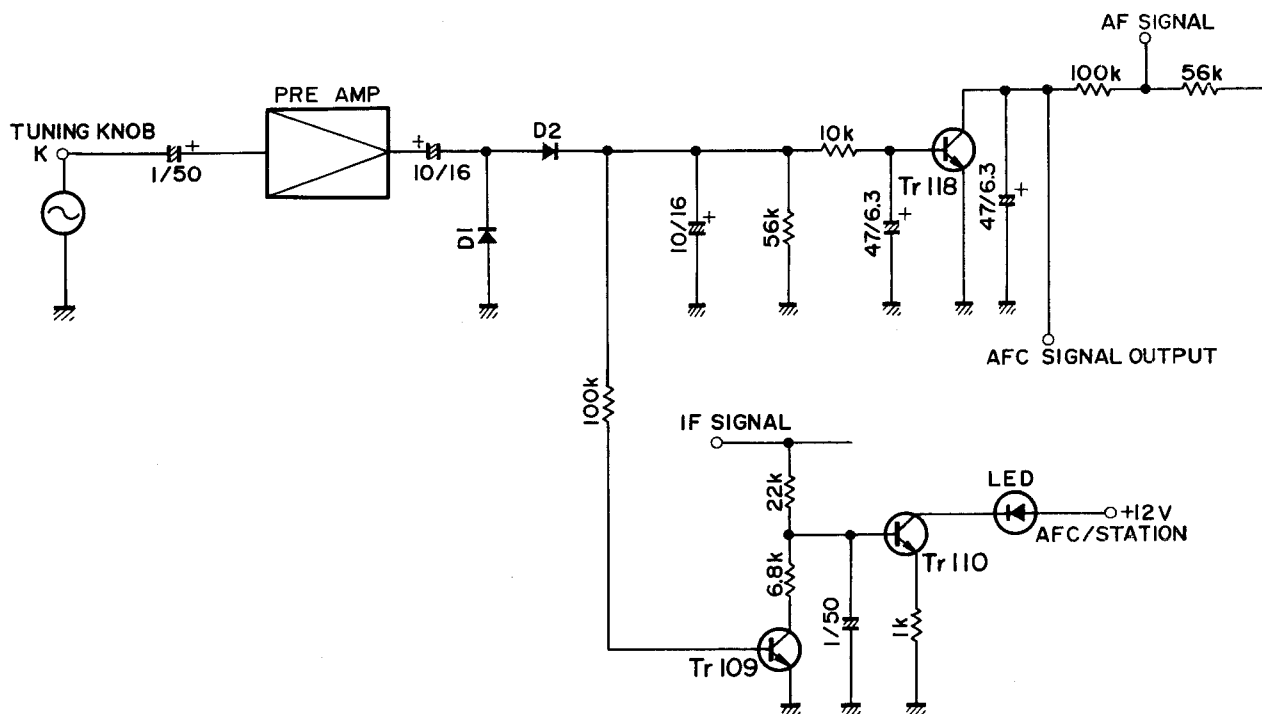
- The CR-1000's main amplifier direct-couples a differential amplifier and an output-capacitor-less (OCL) complementary amplifier, reduces distortion and expands the power bandwidth to 5 to 50,000Hz with total harmonic distortion of 0.5%. The main amplifier delivers, in the critical 20 to 20,000Hz range, 70 watts per channel into 8 Ω , both channels driven, at 0.1% T.H.D.

POWER AMPLIFIER

- The CR-1000 is provided with double protection circuits for the important power transistors and speakers. One is a circuit that detects the power dissipation of the power transistors and regulates the input signal the moment the power exceeds the ASO (area of safe operation). A second means of protection is a new relay-equipped speaker protection circuit that prevents direct current from reaching speakers and harming them. The circuit returns to normal operation automatically when the abnormal condition disappears. It also cancels the popping noise that is generated when the power switch is turned on or off.

CIRCUIT DESCRIPTION

• AUTO-TOUCH AFC OFF CIRCUIT



The human body's electric current (G) is detected by the tuning knob and amplified by the pre-amplifier, which then feeds it to D1 and D2.

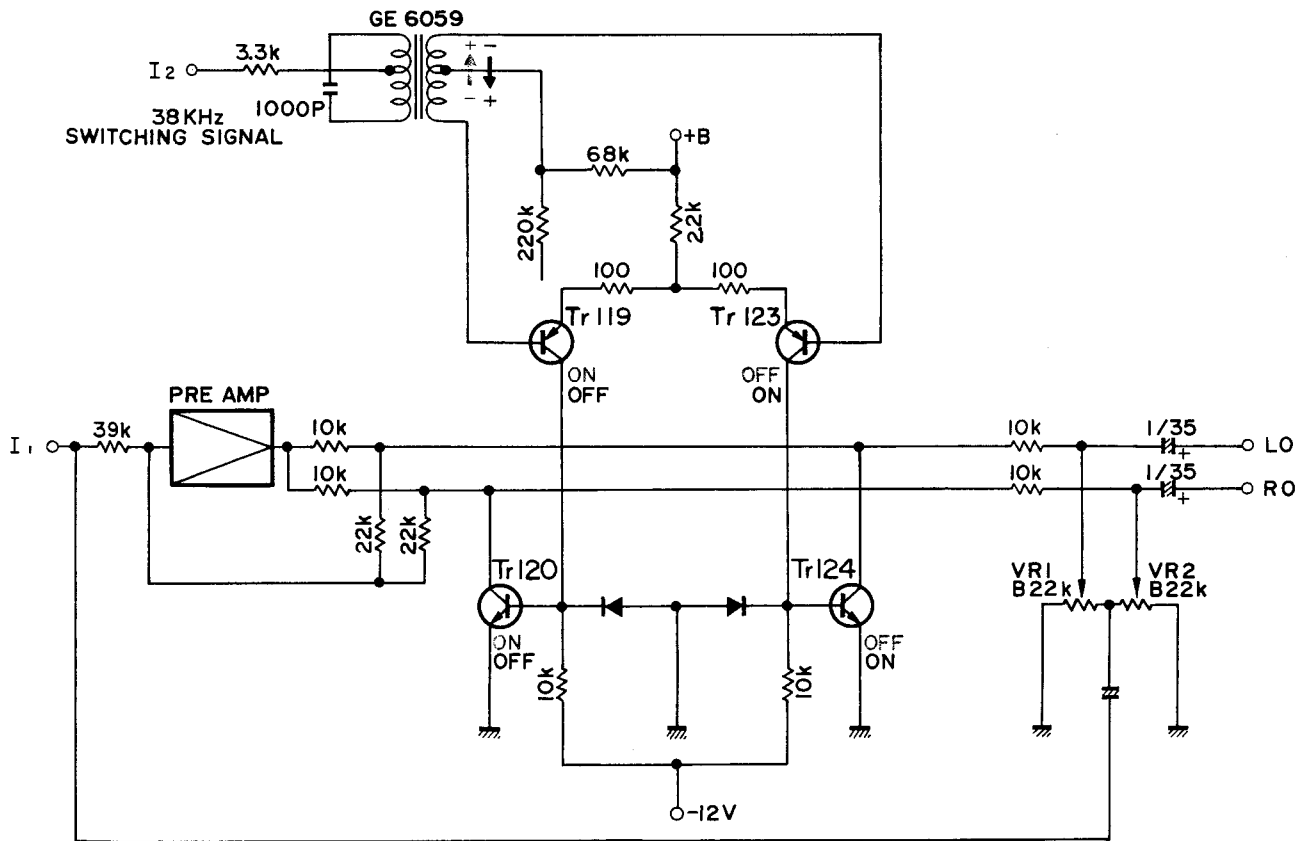
This current is then supplied to the base of the Tr118, switching it and the AFC signal on, while the AFC circuit goes off.

When the station is tuned in and the tuning knob released, the current going to the base of the Tr118 goes

off and the AFC circuit switches on for steady FM listening.

At the same time, the LED illuminated by the IF signal goes off to signal that the AFC circuit is off. This happens because D1 and D2 (mentioned above) feed current to the base of Tr109, lowering the Tr109 C-E impedance and thus reducing the Tr110 base collector current.

- MULTIPLEX DEMODULATOR WITH TRANSISTOR SWITCHING CIRCUIT EMPLOYING NEGATIVE FEEDBACK



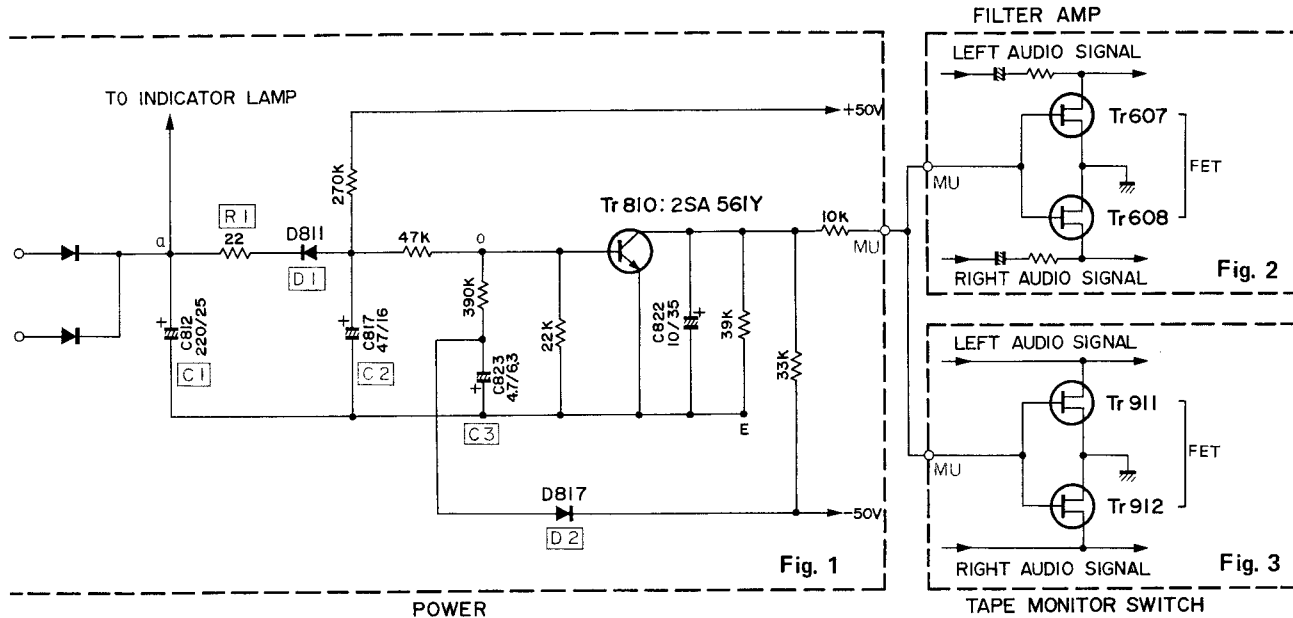
The composite signal entering through terminal I₁ is divided into L and R stereo signals through the on/off operation of TR119 and TR123, which are switched by the 38kHz switching signal. These in tune switch TR120 and TR124 on and off to the divided signal.

The stereo signal entering via terminal I₁ is separated into L and R.

At this time, crosstalk elements are removed from the L and R signals by VR1 and VR2 and negative feedback is fed to terminal I₁.

Thus the circuit assures excellent separation and ultra-low distortions.

TRANSIENT NOISE CANCELLATION CIRCUIT



1. When the Power switch is off FETs are on, so the signal is grounded.
2. When the Power switch is on -50V current immediately flows to C3, but it takes some time for the 0 point potential to reach C2. Thus for a short time after the Power switch is turned on Tr810 is on, but FETs is also on, thus cutting initial switching noise.

3. During listening Tr810 has zero potential and is thus off due to the bias. For this reason potential is fed to MU (i.e., the gate of FETs), FETs goes off and the signal is passed.
4. When the Power switch is turned off the potential for the indicator lamp passes to point O, creating E potential there. In this case the load at C2 discharges through R1 and D1, the base of Tr810 receives current from C3 and is switched on by the load. FETs also goes on and the signal is grounded, thus eliminating noise when the set is switched off.

PROTECTION CIRCUITS

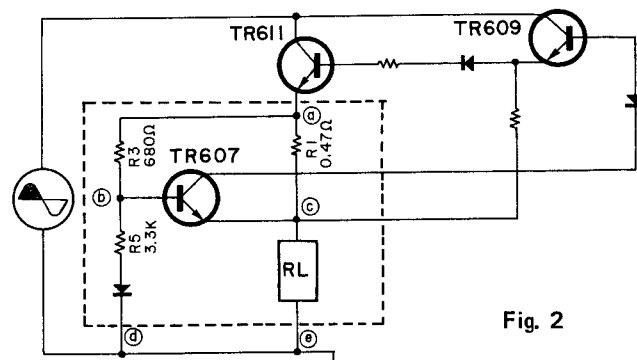
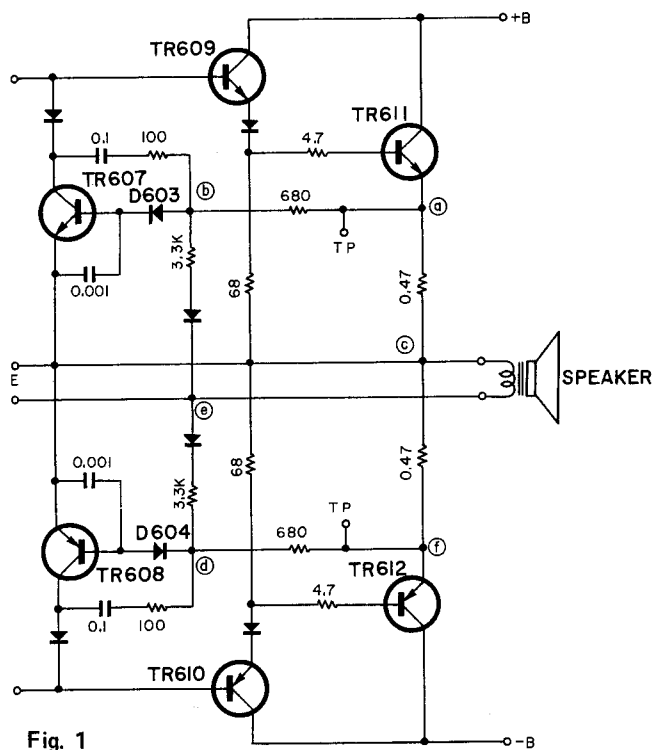


Fig. 2

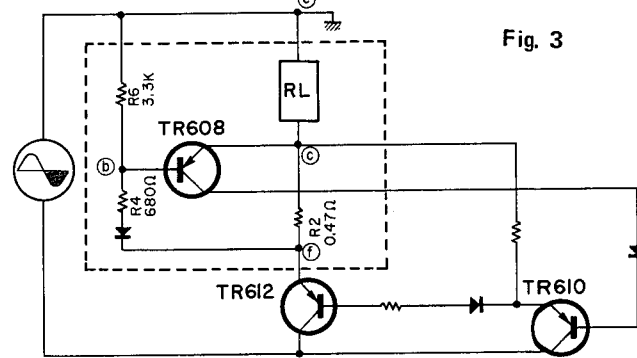


Fig. 3

The circuits indicated by the dotted lines in Figs. 2 and 3 are equivalent to the a, b, c, e and d, f, c, e bridge circuits in Fig. 1.

These bridge circuits detect both the voltage indicated by a drop in collector voltage, and that which shows power transistor current.

With these voltages damage to the set, caused by power transistor operation exceeding the area of safe operation, is avoided; Tr607~610 are suppressed and the signal driving the power transistors is controlled.

In reality, when the amp is operating the bridge, R1-R3-R5-RL and R2-R4-R6-RL bridge circuits maintain the balance.

If load resistance is shorted or too low, the bridge circuits go out of balance.

First, as shown in Fig. 2, if we examine the bridge circuit for the plus half cycle we see that when it is unbalanced the potential at point D rises above that of point C. Tr607 goes on and the voltage at the base of Tr609 drops.

To avoid damage, power transistor (Tr611) current decreases in a few seconds.

In the same way, as Fig. 3 shows, if there is a short or drop in the minus half cycle bridge circuit load resistance Tr608 goes on and Tr610 impedance rises, causing the power transistor (Tr612) current to drop in a few seconds to avoid damage.

Because of D3 and D4, however, even if the load resistance of these circuits is shorted, power transistor current does not disappear. Approximately 1.3A remains, so the output signal is not completely cancelled.

SPECIFICATION**■ AUDIO SECTION****POWER OUTPUT**

Dynamic Power (IHF)	200 watts (4 Ω)
	200 watts (8 Ω)
Continuous RMS Power (each channel driven)	100/100 watts (4 Ω) at 1,000Hz
	80/80 watts (8 Ω) at 1,000Hz
Continuous RMS Power (both channels driven)	100/100 watts (4 Ω) at 1,000Hz
	75/75 watts (8 Ω) at 1,000Hz
Continuous RMS Power (both channels driven)	85/85 watts (4 Ω) at 20 to 20,000Hz
	70/70 watts (8 Ω) at 20 to 20,000Hz

TOTAL HARMONIC DISTORTION

Power Amplifier Only	less than 0.1% at rated power
	less than 0.04% at 1 watt
Preamplifier Only (PHONO to PRE OUT)	less than 0.1% at rated power
	(AUX to PRE OUT)
	less than 0.02% at rated power
Overall (AUX to Power Output)	less than 0.1% at rated power

INTERMODULATION DISTORTION

(70Hz:7,000Hz=4:1 SMPTE method)

Power Amplifier Only	less than 0.1% (8 Ω) at rated power
	less than 0.05% (8 Ω) at 1 watt
Overall (AUX to Power Output)	less than 0.1% (8 Ω) at rated output

POWER BANDWIDTH(IHF, distortion 0.5% const.)
5 to 50,000Hz**FREQUENCY RESPONSE** (at 1 watt)

Overall (AUX, TAPE PB to Power Output)	10 to 50,000Hz +0.5dB, -1dB
Overall (MIC to Power Output)	100 to 10,000Hz +0.5dB, -6dB
Power Amplifier Only	10 to 100,000Hz +0dB, -1dB
Deviation from RIAA (30 to 15,000Hz)	+0.2dB, -0.2dB

LOAD IMPEDANCE4 to 16 Ω **DAMPING FACTOR** (8 Ω)

70 at 1,000Hz

CHANNEL SEPARATION (at rated power, 1,000Hz)

Power Amplifier Only	60dB
Overall from PHONO 1, 2	50dB
Overall from AUX, TAPE PB	50dB
Overall from MIC	50dB

HUM AND NOISE (IHF, Closed circuit A Network)

Overall from PHONO 1, 2	better than 80dB
Overall from MIC	better than 70dB
Overall from AUX, TAPE PB	better than 90dB
Power Amplifier Only	better than 100dB
Volume at Minimum	better than 90dB

INPUT SENSITIVITY AND IMPEDANCE

(at rated power, 1,000Hz)

PHONO 1	3mV (30k Ω , 50k Ω , 100k Ω)
PHONO 2	3mV (50k Ω)
PHONO 1, 2 Max. Input Capability	280mV (T.H.D. 0.1%)
MIC	3mV (50k Ω)
MIC Max. Input Capability	450mV (T.H.D. 0.3%)
AUX 1, 2	150mV (40k Ω)
TAPE PB A, B	150mV (40k Ω)
Power Amplifier Input	775mV (40k Ω)

OUTPUT LEVEL AND IMPEDANCE

(at rated power, 1,000Hz)

TAPE REC OUT A, B	150mV (2k Ω)
PRE OUT	775mV (2k Ω)
	3,000mV (Max. Output T.H.D. 0.1%)

TONE CONTROLS

BASS	+15dB, -15dB at 50Hz
TREBLE	+10dB, -10dB at 10,000Hz

FILTERS

LOW	-3dB at 20Hz (12dB/oct.)
HIGH	-3dB at 6,000Hz (6dB/oct.)

LOUDNESS CONTROL(Continuous Loudness Volume at Minimum)
+10dB at 100Hz, +5dB at 10,000Hz

■ TUNER SECTION

FM:

Tuning Range	88MHz to 108MHz
Usable Sensitivity (IHF)	1.7 μ V
Quieting Slope	55dB at 5 μ V 60dB at 10 μ V
Image Frequency Rejection	110dB
IF Rejection	110dB
Spurious Response Rejection	110dB
AM Rejection	55dB
Capture Ratio	1.0dB
Alternate Channel Selectivity (IHF)	80dB
Signal-to-Noise Ratio	75dB
Total Harmonic Distortion	
MONO	0.15% at 400Hz 0.3% at 50 to 10,000Hz
STEREO	0.3% at 400Hz 1.0% at 50 to 10,000Hz
Stereo Separation	45dB at 400Hz 35dB at 50 to 10,000Hz
Frequency Response	+0.5dB, -0.5dB at 50Hz to 10,000Hz +1.5dB, -1.5dB at 20Hz to 15,000Hz

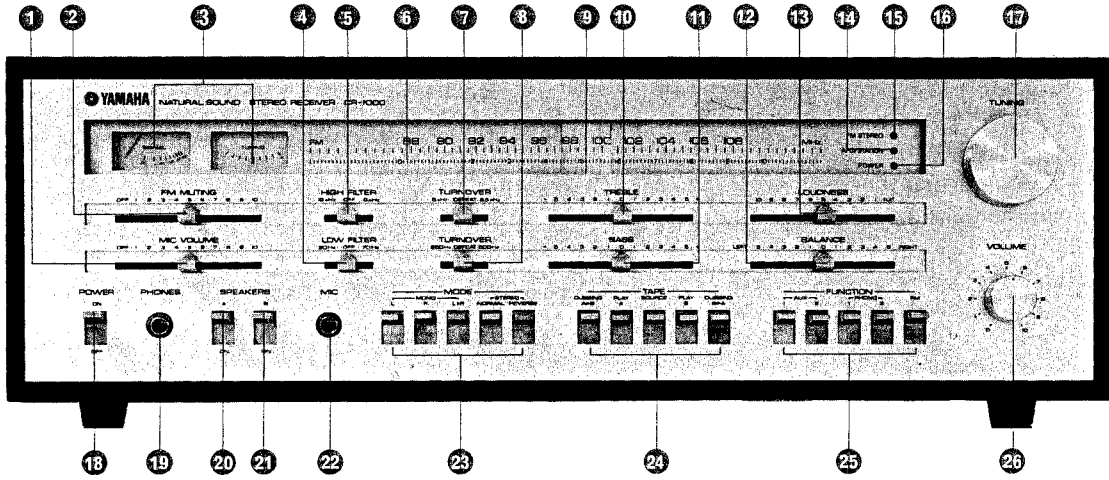
Sub-Carrier Suppression	60dB
Muting Override Signal Level	10 μ V to 30 μ V variable
Antenna Impedance	300 Ω balanced 75 Ω unbalanced
IF Out Level and Impedance	400mV/1k Ω

■ GENERAL

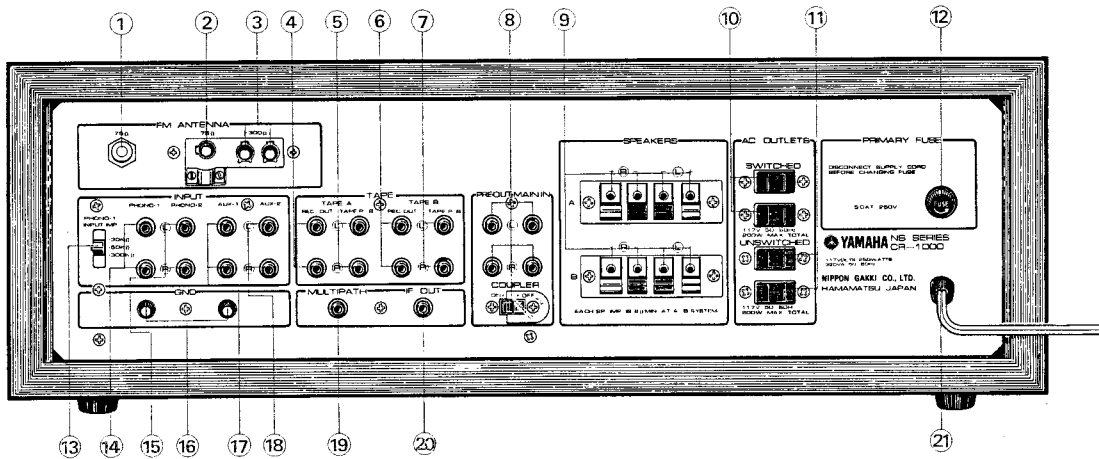
Semiconductors	2 IC's; 2 MOS FET's; 98 Transistors; 10 FET's; 3LD's; 56 Diodes; 6 Zener Diodes
Power Source	AC110,117,130,220,240V, 50/60Hz
Power Consumption	
Max.	430 watts
Rated	250 watts
AC outlets	
Switched	2 (total 200 watts)
Unswitched	2 (total 200 watts)
Dimensions	510mm (20" W x 174mm (6 $\frac{7}{8}$ ") (H x 335mm (13 $\frac{1}{4}$ ") D
Weight	19 kg (41.9 lbs.)

EXTERNAL VIEW

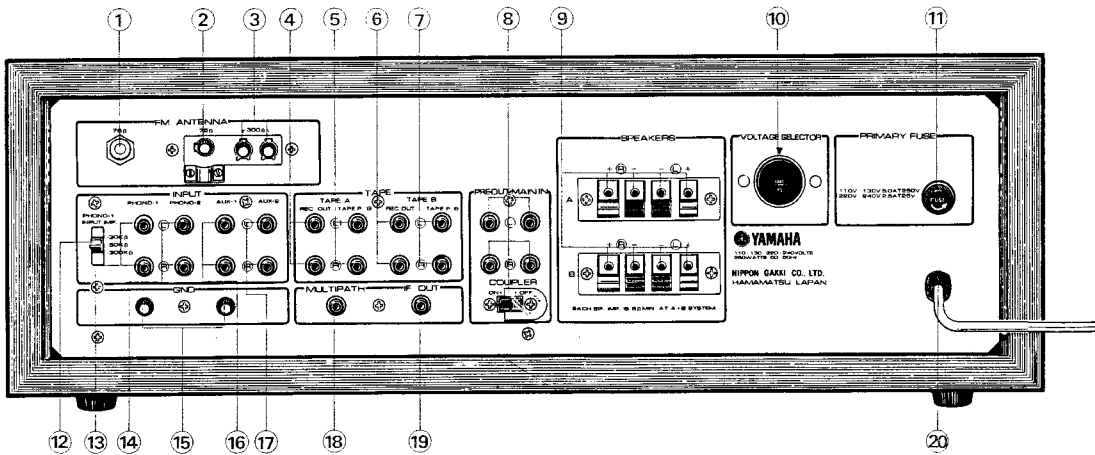
FRONT PANEL



REAR PANEL (U.S. & CANADIAN MODELS)



REAR PANEL (EUROPEAN MODEL)



FRONT PANEL

- | | | | |
|---|-------------------------|---|--------------------------|
| ① | MIC VOLUME CONTROL | ⑭ | AFC/STATION INDICATOR |
| ② | FM MUTING LEVEL CONTROL | ⑮ | FM STEREO INDICATOR |
| ③ | SIGNAL & TUNING METER | ⑯ | POWER INDICATOR |
| ④ | LOW FILTER SWITCH | ⑰ | TUNING KNOB |
| ⑤ | HIGH FILTER SWITCH | ⑱ | POWER SWITCH |
| ⑥ | DIAL SCALE | ⑲ | PHONES JACK |
| ⑦ | TREBLE TURNOVER SWITCH | ⑳ | SPEAKER SWITCH A |
| ⑧ | BASS TURNOVER SWITCH | ㉑ | SPEAKER SWITCH B |
| ⑨ | DIAL POINTER | ㉒ | MIC JACK |
| ⑩ | TREBLE TONE CONTROL | ㉓ | MODE SELECTOR SWITCH |
| ⑪ | BASS TONE CONTROL | ㉔ | TAPE MONITOR SWITCH |
| ⑫ | BALANCE CONTROL | ㉕ | FUNCTION SELECTOR SWITCH |
| ⑬ | LOUDNESS CONTROL | ㉖ | VOLUME CONTROL |

REAR PANEL (U.S. & CANADIAN MODELS)

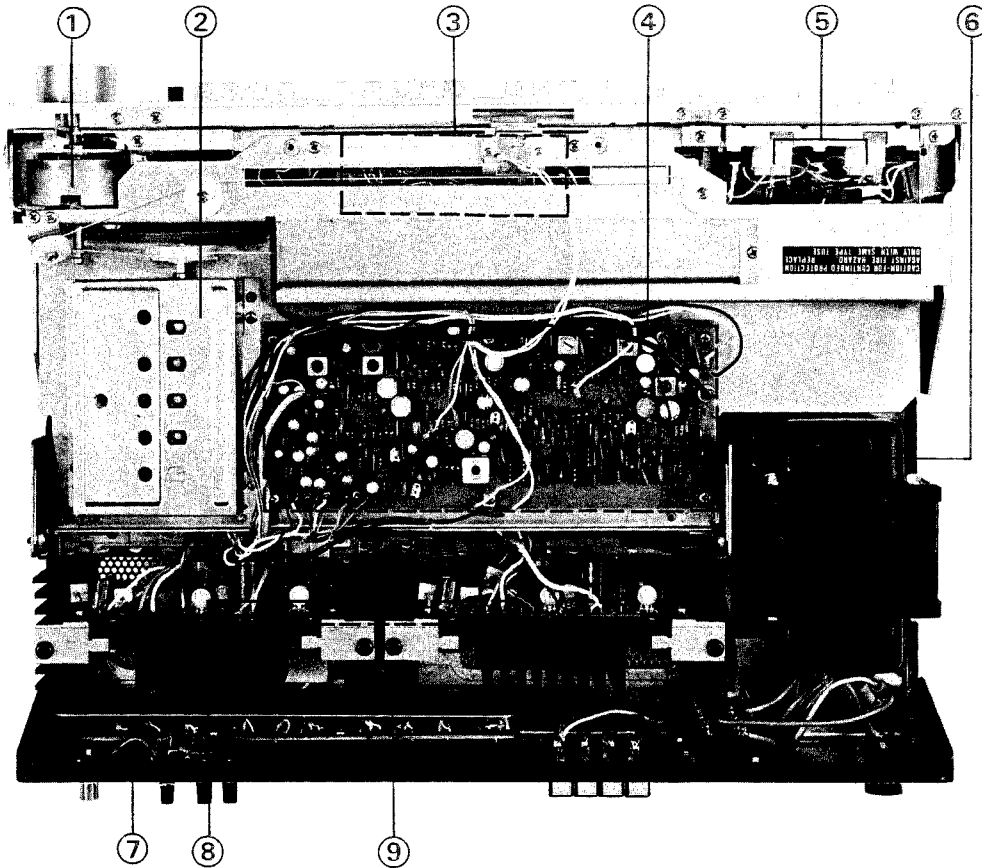
- | | | | |
|---|--|---|---|
| ① | FM ANTENNA CONNECTOR (75Ω UNBALANCED) | ⑩ | AC OUTLETS (SWITCHED) |
| ② | FM ANTENNA TERMINAL (75Ω UNBALANCED) | ⑪ | AC OUTLETS (UNSWITCHED) |
| ③ | FM ANTENNA TERMINAL (300Ω BALANCED) | ⑫ | PRIMARY FUSE HOLDER |
| ④ | TAPE A REC OUT JACKS | ⑬ | PHONO 1 INPUT IMPEDANCE SELECTOR SWITCH |
| ⑤ | TAPE A P/B JACKS | ⑭ | PHONO 1 INPUT JACKS |
| ⑥ | TAPE B REC OUT JACKS | ⑮ | PHONO 2 INPUT JACKS |
| ⑦ | TAPE B P/B JACKS | ⑯ | GROUND TERMINALS |
| ⑧ | PRE OUT/MAIN IN JACKS & COUPLER SWITCH | ⑰ | AUX 1 INPUT JACKS |
| ⑨ | SPEAKER TERMINALS | ⑱ | AUX 2 INPUT JACKS |
| | | ⑲ | MULTIPATH JACK |
| | | ㉒ | IF OUT JACK |
| | | ㉓ | AC CORD |

REAR PANEL (EUROPEAN MODLE)

- | | | | |
|---|--|---|----------------------------------|
| ① | FM ANTENNA CONNECTOR (75Ω UNBALANCED) | ⑨ | SPEAKER TERMINALS |
| ② | FM ANTENNA TERMINAL (75Ω UNBALANCED) | ⑩ | VOLTAGE SELECTOR |
| ③ | FM ANTENNA TERMINAL (300Ω BALANCED) | ⑪ | PRIMARY FUSE HOLDER |
| ④ | TAPE A REC OUT JACKS | ⑫ | PHONO 1 INPUT IMPEDANCE SELECTOR |
| ⑤ | TAPE A P/B JACKS | ⑬ | PHONO 1 INPUT JACKS |
| ⑥ | TAPE B REC OUT JACKS | ⑭ | PHONO 2 INPUT JACKS |
| ⑦ | TAPE B P/B JACKS | ⑮ | GROUND TERMINALS |
| ⑧ | PRE OUT MAIN IN JACKS & COUPLER SWITCH | ⑯ | AUX 1 INPUT JACKS |
| | | ⑰ | AUX 2 INPUT JACKS |
| | | ⑱ | MULTIPATH JACK |
| | | ⑲ | IF OUT JACK |
| | | ㉒ | AC CORD |

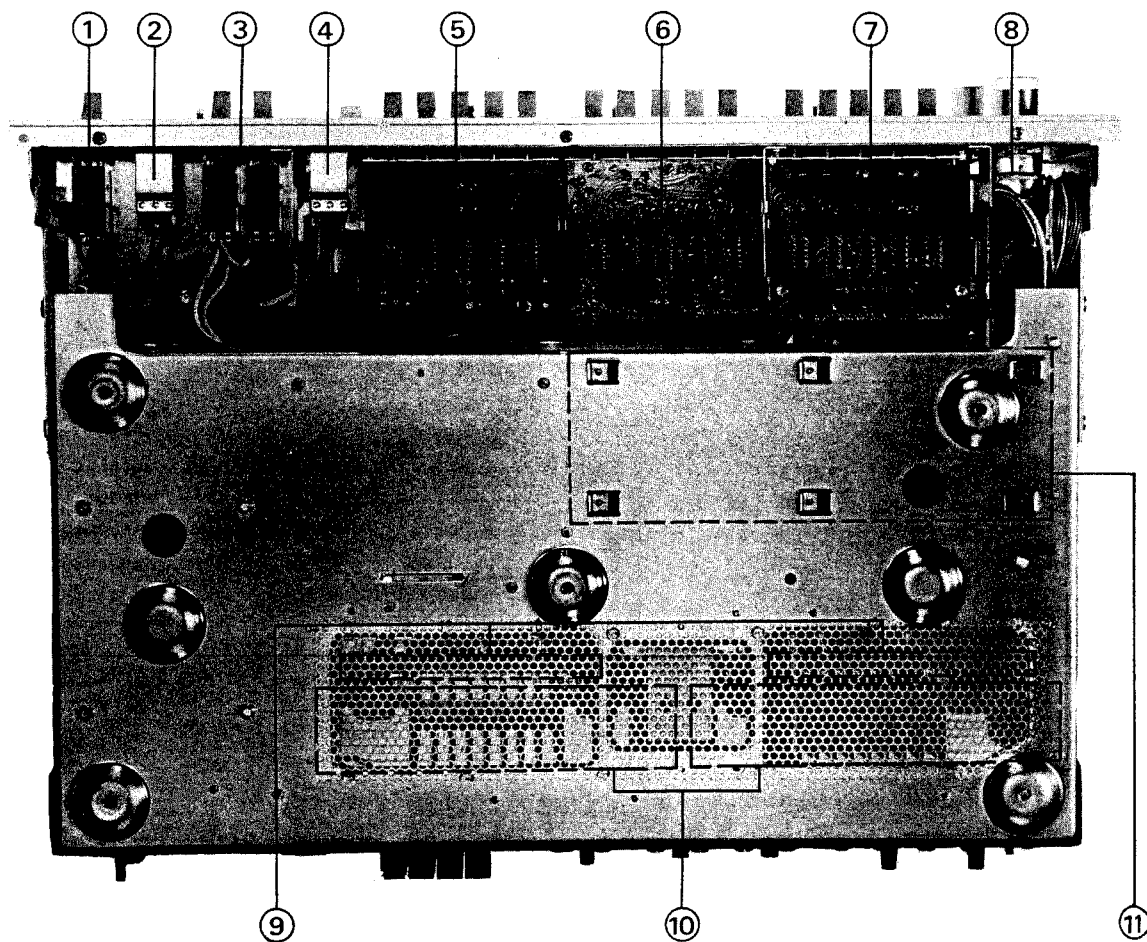
INTERNAL VIEW

TOP VIEW



- | | |
|--|--|
| ① FLY WHEEL | ⑤ SIGNAL & TUNING METER |
| ② RF FRONT END PACK
FS-112U
GENERAL, U.S. & CANADIAN,
AUSTRALIAN, EUROPEAN MODELS
FS-112S
SOUTH AFRICAN MODEL | ⑥ POWER TRANSFORMER
GA60580 |
| ③ TONE CONTROL AMP CIRCUIT BOARD
NA06365 | ⑦ REAR PANEL CIRCUIT BOARD
NA06358 |
| ④ TUNER CIRCUIT BOARD
NA06372
SOUTH AFRICAN MODEL
NA06405
U.S. & CANADIAN MODELS
NA06406
GENERAL, AUSTRALIAN,
EUROPEAN MODELS | ⑧ MAIN AMP CIRCUIT BOARD
NA06401
:EXCEPT EUROPEAN MODELS
NA06402
:EUROPEAN MODELS ONLY |
| | ⑨ HEAT SINK |

BOTTOM VIEW



- | | |
|---|---|
| ① POWER SWITCH | ⑦ FUNCTION CIRCUIT BOARD
NA06367 |
| ② PHONES JACK | ⑧ VARIABLE RESISTOR
(VOLUME CONTROL : A100k Ω) |
| ③ SPEAKER SWITCH | ⑨ MAIN AMP CIRCUIT BOARD |
| ④ MIC JACK | ⑩ HEAT SINK |
| ⑤ MODE SWITCH CIRCUIT BOARD
NA06369 | ⑪ POWER CIRCUIT BOARD
NA06357 |
| ⑥ TAPE MONITOR SWITCH CIRCUIT BOARD
NA0370 | |

PARTIAL DISASSEMBLY

BEFORE DISASSEMBLY

- The screwdriver for each screw should match the screw size. If you use a smaller or larger size it will damage the groove.
- If you use excessive force on the printed circuit board it will crack or cut the print wiring, so be careful.
- When using a soldering iron finish all work as quickly as possible.

Be careful not to install levers and knobs in the wrong place or upside-down. See Fig. 1.

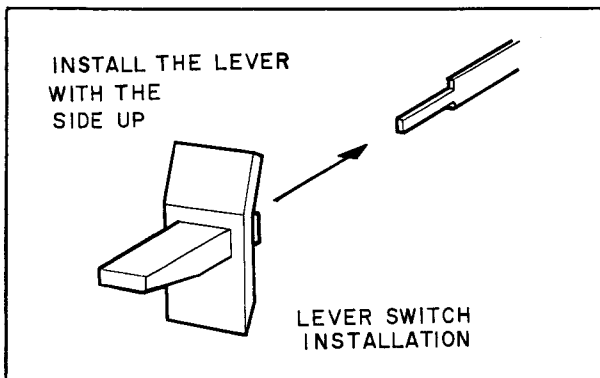


Fig. 1

CABINET REMOVAL

- Stand the set as shown in Photo 1 and remove the seven M5x25S small pan-head screws (1) to (7).
- Pull the cabinet forward to remove it as shown in Photo 2.

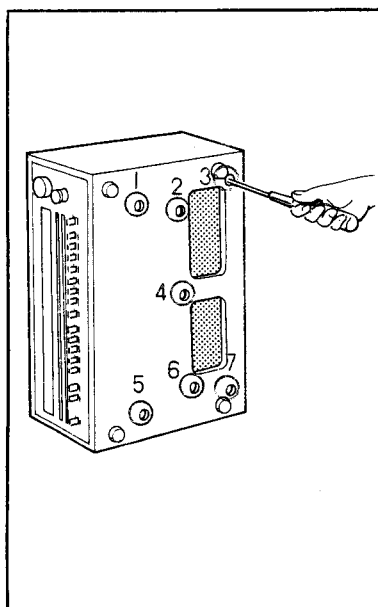


Fig. 2

MAIN AMP CIRCUIT BOARD REMOVAL

- Remove the two M5x95S small pan-head screws (1) and (2) shown in Photo 1. Then lift up to remove the heat sink and main amp circuit board.

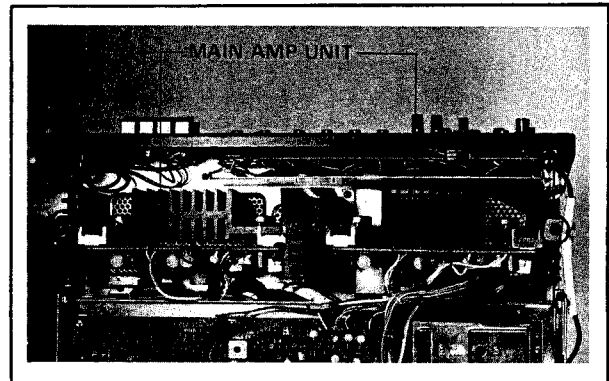


Photo 1

- Remove the four M3x16 small pan-head screws (1) to (4) shown in Photo 2, and then pull up to remove the power transistors.

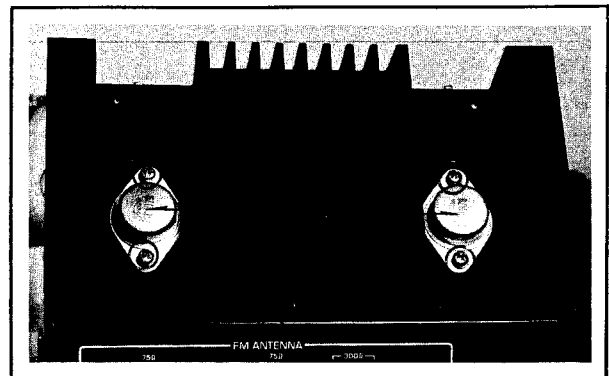


Photo 2

- Remove the two M3x8S small blind head screws (1) and (2) shown in Photo 3, then separate the main amp circuit board from the heat sink.

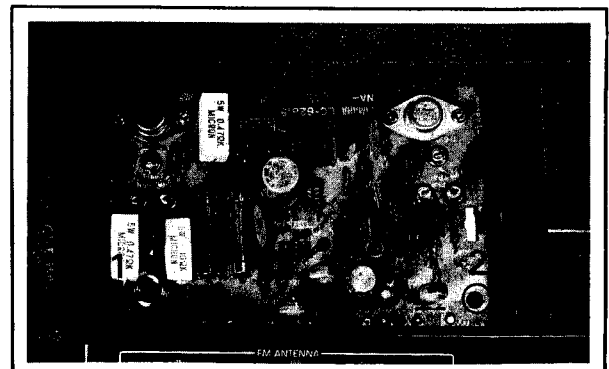


Photo 3

Note: When reinstalling the power transistor to the heat sink, be sure to fully lubricate with silicon grease. Do not tighten the fixing screws with excessive force. Attach as shown in Fig. 3.

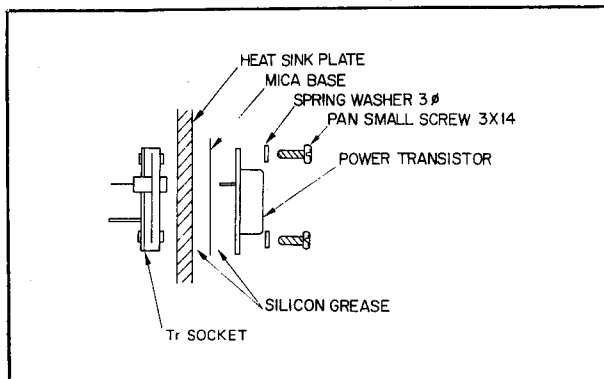


Fig. 3

SIGNAL, TUNING METER REMOVAL

- a. Pull off the meter lamps with their bushings.
- b. Remove the meter fixing springs (Photo 4) shown in Photo 5. Then remove the meters.

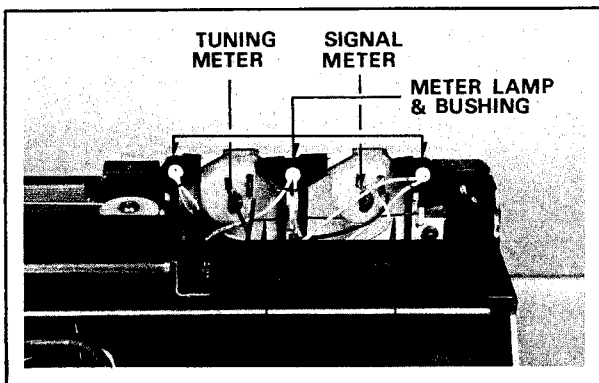


Photo 4

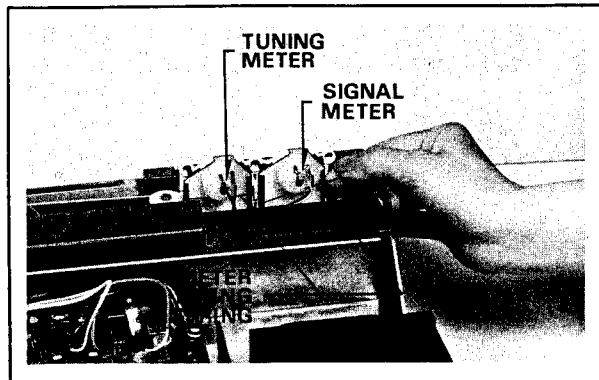


Photo 5

TUNER CIRCUIT BOARD REMOVAL

Remove the six 3x8S bind tapping screws (1) to (6) shown in Photo 6. Then lift the tuner circuit board up to remove it.

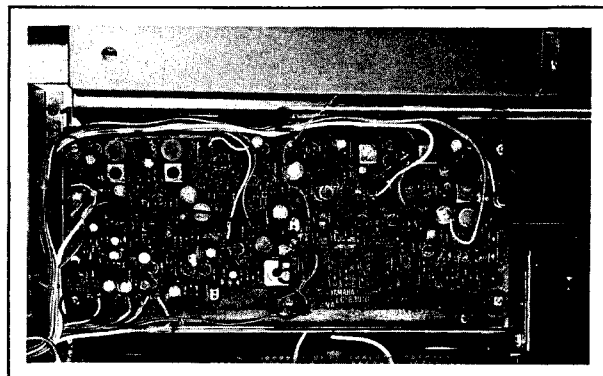


Photo 6

TUNER UNIT REMOVAL

Remove the four red-topped 3x8S bind tapping screws (1) to (4) shown in Photo 7, large-head slot screws (1) and (2) shown in Photo 8 and the red-topped screws (together with the M4x6S small bind screws) shown in Photo 9. Then remove the tuner unit as shown in Photo 10.

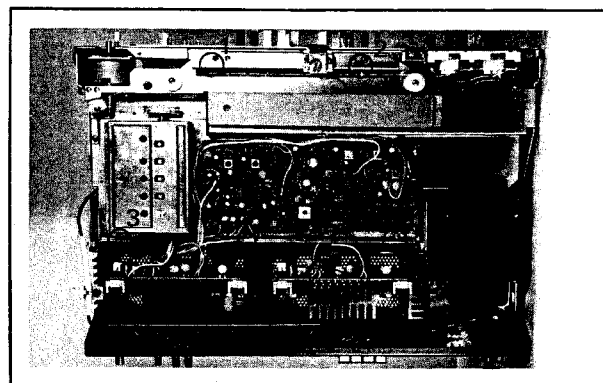


Photo 7

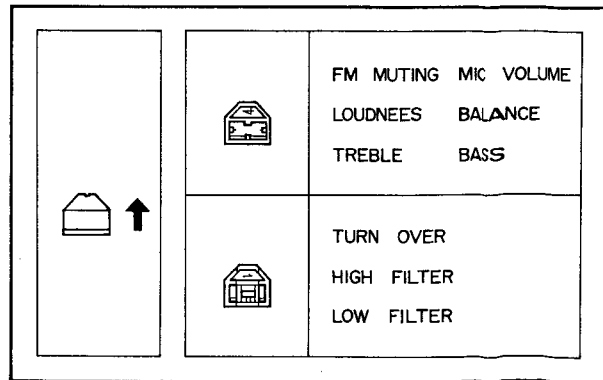


Fig. 4

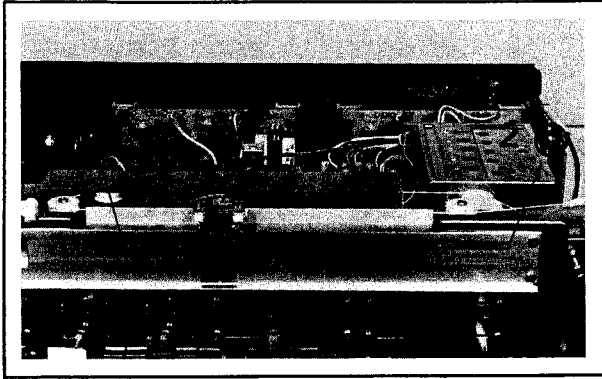


Photo 8

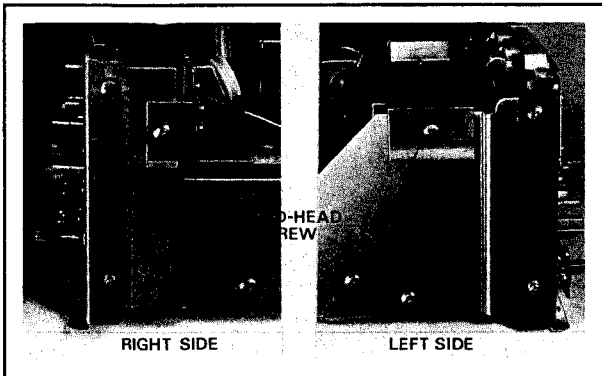


Photo 9



Photo 10

Note: Be careful not to pull too hard on the leads when removing the tuner unit as shown in Photo 14. Take great care not to break any leads.

POWER CIRCUIT BOARD REMOVAL

- a. First remove the tuner unit as explained above.
- b. Remove the six 3x8S bind tapping screws (1) to (6) shown in Photo 11, then lift up the power circuit board to remove it.

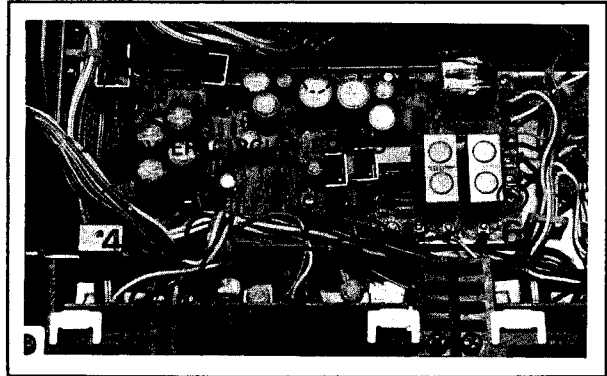


Photo 11

FRONT PANEL REMOVAL

- a. Remove the Tuning knob by using the hexagonal wrench provided.
- b. Pull off the Volume, FM Muting, Mic Volume, High Filter, Low Filter, Turnover, Treble, Bass, Loudness and Balance knobs.
- c. Remove the three 3x8S bind tapping screws (1) to (3) as shown in Photo 12, and the three M3x6S small bind screws (1) to (3) shown in Photo 13. Then pull the front panel forward to remove it.

Note: Refer to Fig. 4 when reattaching the knobs.

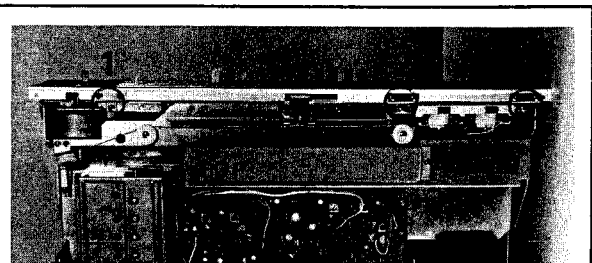


Photo 12

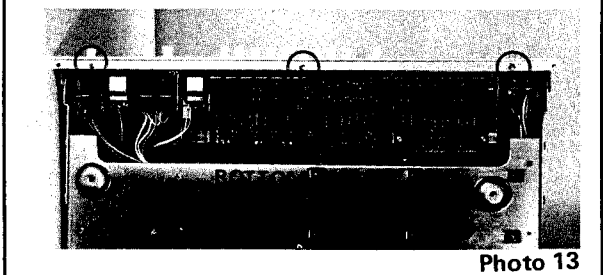
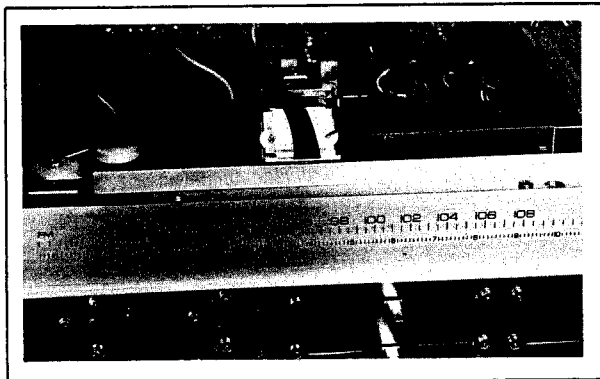


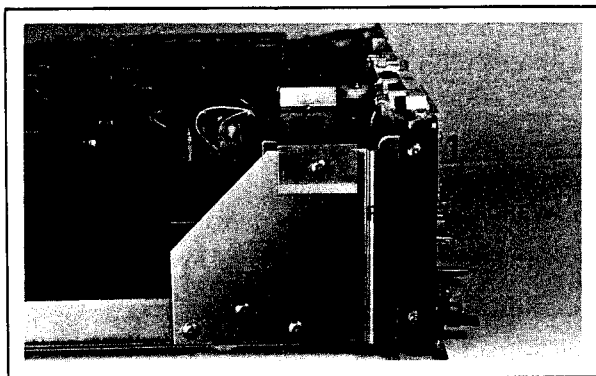
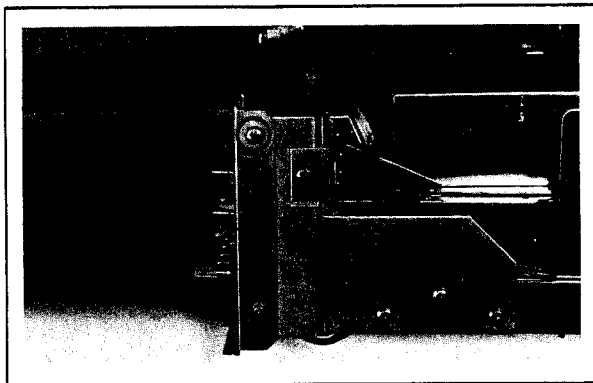
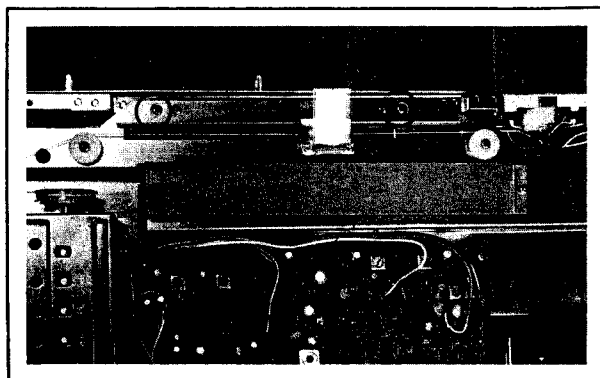
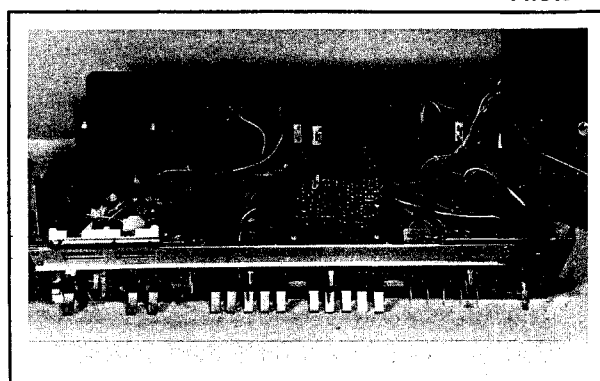
Photo 13

SUB CHASSIS UNIT REMOVAL

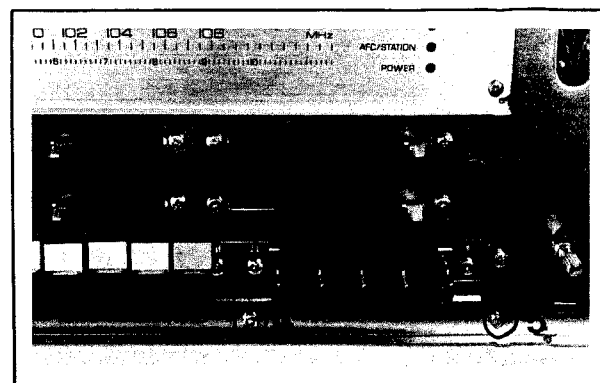
- a. Remove the dial indicator unit from the rail as shown in Photo 14.

**Photo 14**

- b. Remove the red-topped M4x6S small bind screws (1) and (2), and the M4x5S small pan-head screws (3) and (4) shown in Photos 15 and 16. Then remove the two red-topped 3x8S bind tapping screws (1) and (2) shown in Photo 17 and pull forward to remove the sub chassis as shown in Photo 18. Note that these last two screws (Photo 17) link the sub chassis to the tuner, so that if the tuner is already removed they do not have to be taken off for sub chassis removal.

**Photo 15****Photo 16****Photo 17****Photo 18****FUNCTION SWITCH AND EQUALIZER AMP CIRCUIT BOARD REMOVAL**

- a. Remove the front panel and tuner unit as explained above.
- b. Remove all Function levers and knobs.
- c. Remove the five M3x6S small bind screws (1) to (5) shown in Photo 19.

**Photo 19**

- d. Remove the three CIS connector shown in Photo 20 by pulling them in the direction of the arrow, then remove the function switch and equalizer amp circuit board.

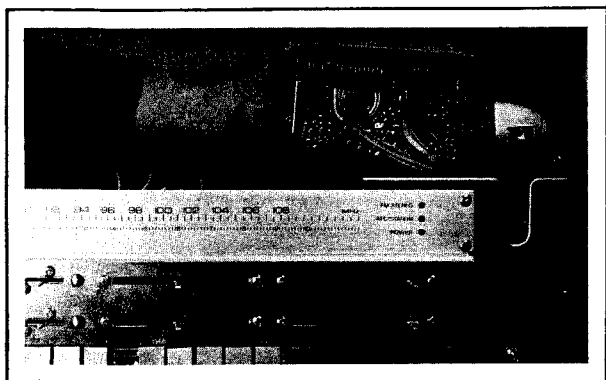


Photo 20

- f. Remove the two 3x8s small bind screws 1 ~ 2 as shown in Photo 22, then remove the function switch circuit board from its cover.

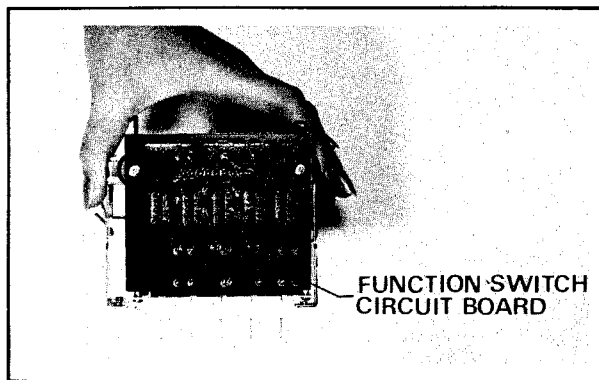


Photo 22

- e. To remove the equalizer amp circuit board, pull off the board in the direction shown by the arrow in Photo 21.

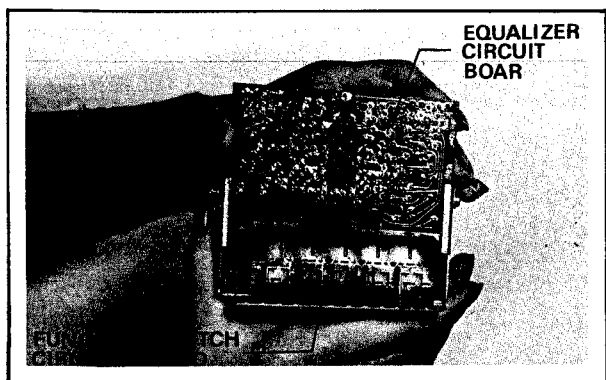


Photo 21

LOUDNESS CIRCUIT BOARD REMOVAL

- a. Remove the front panel and tuner unit as explained above.
 b. Remove the four M3x6S small bind screws (1) to (4) shown in Photo 23, then pull off the loudness circuit board.

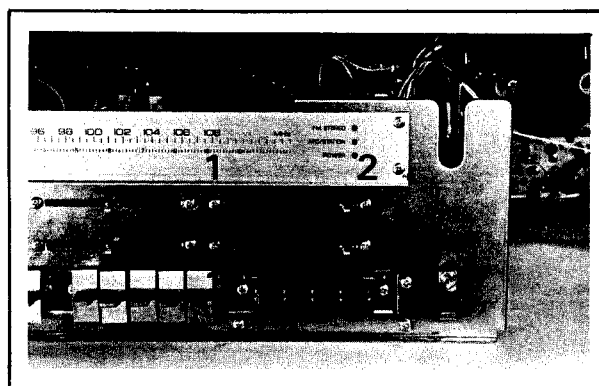


Photo 23

LED CIRCUIT BOARD REMOVAL

Remove the 3x8S bind tapping screw shown in Photo 24 and then pull off the LED circuit board.

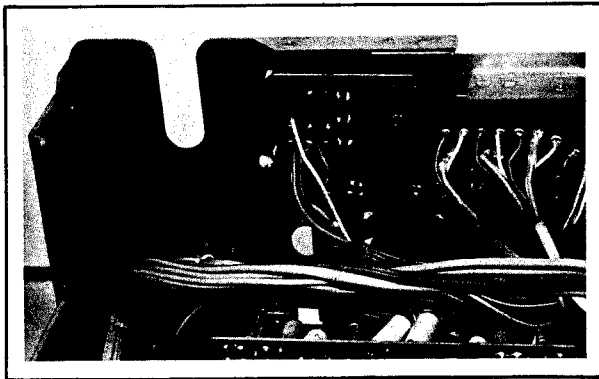


Photo 24

TAPE MONITOR SWITCH CIRCUIT BOARD REMOVAL

- a. Remove the front panel and tuner unit as explained above.
- b. Pull off all Tape levers.
- c. Pull off the three CIS connectors shown in Photo 25.

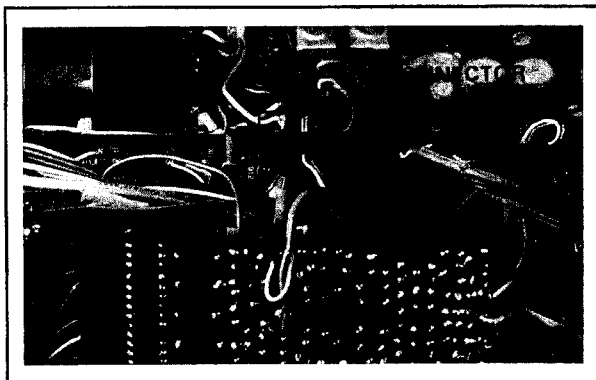


Photo 25

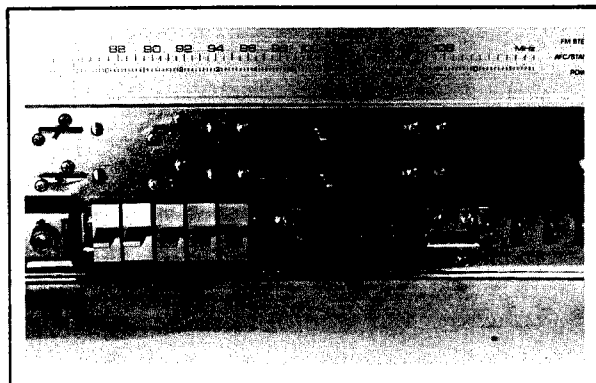


Photo 26

- d. Remove the two M3x6S small bind screws (1) and (2) shown in Photo 26. Then remove the Tape Monitor switch circuit board.

TONE CONTROL AMP CIRCUIT BOARD & TONE CONTROL VOLUME CIRCUIT BOARD REMOVAL

- a. Remove the front panel and tuner unit as explained above.
- b. Remove the two M3x6S small bind screws (1) and (2) and the two CIS connectors, as shown in Photo 27.
- c. Pull up on the tone amp circuit board to remove it.
- d. Remove the four M3x6S small bind screws (1) to (4) shown in Photo 28, then remove the tone control volume circuit board.

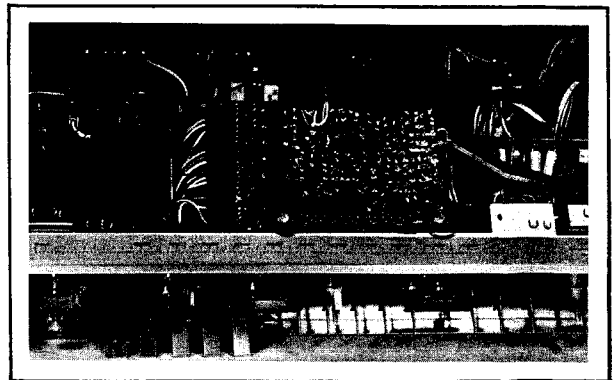


Photo 27

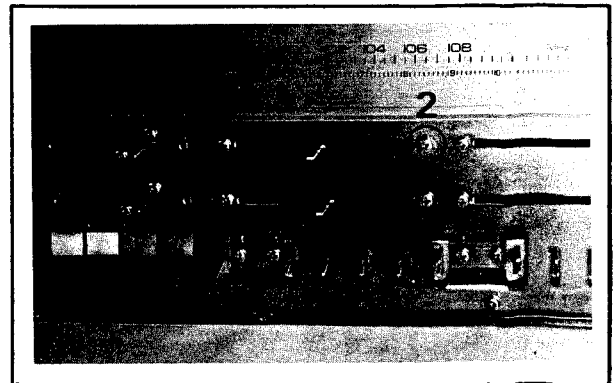


Photo 28

MODE SWITCH CIRCUIT BOARD REMOVAL

- a. Remove the front panel and tuner unit as explained above.
- b. Pull off all Mode levers.
- c. Remove the two M3x6S small bind screws (1) and (2) shown in Photo 29, and then remove the Mode switch circuit board.

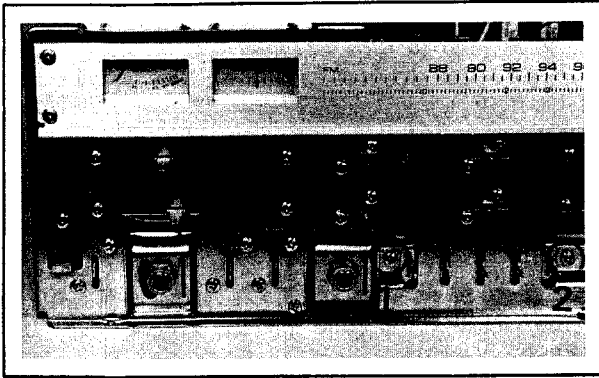


Photo 29

TONE CONTROL SWITCH CIRCUIT BOARD REMOVAL

- a. Remove the front panel and tuner unit as explained above.
- b. Remove the two CIS connectors shown in Photo 30.

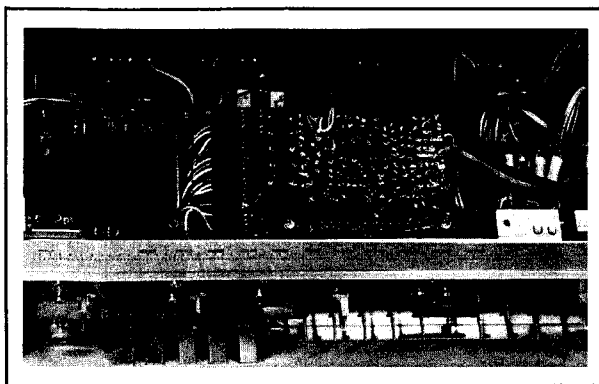


Photo 30

- c. Remove the four M3x6S small bind screws (1) to (4) shown in Photo 31, then remove the tone control switch circuit board.

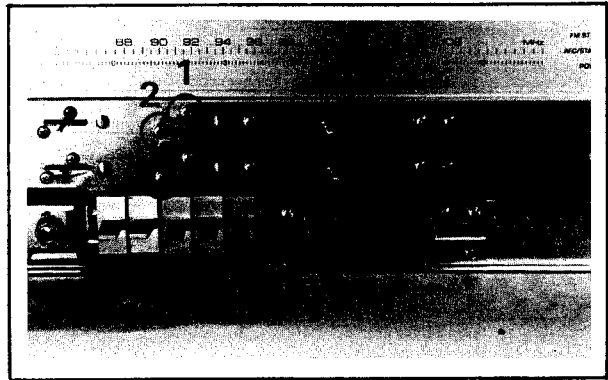


Photo 31

FILTER AMP CIRCUIT BOARD REMOVAL

- Remove the two M3x6S small bind screws (1) and (2) shown in Photo 32, then pull off the filter amp circuit board.

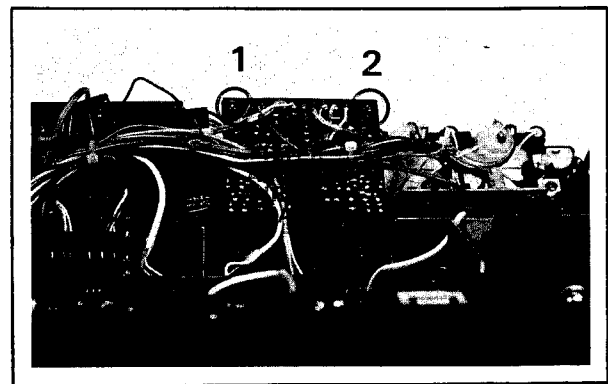


Photo 32

FILTER SWITCH CIRCUIT BOARD REMOVAL

- a. Remove the front panel, sub chassis and filter amp circuit board as explained above.
- b. Remove the four M3x6S small bind screws (1) to (4) shown in Photo 33, then pull off the filter switch circuit board.

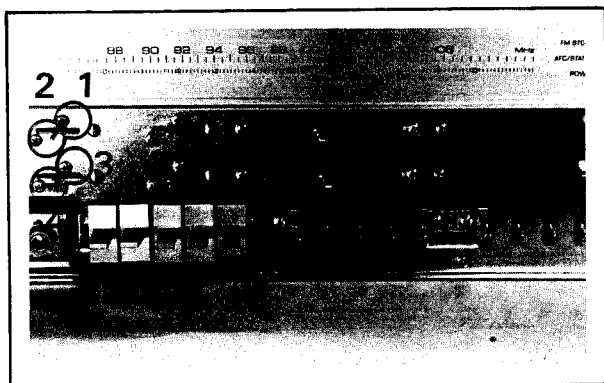


Photo 33

MIC VOLUME CIRCUIT BOARD REMOVAL

- a. Remove the front panel, sub chassis and mic amp circuit board as explained above.
- b. Remove the four M3x6S small bind screws (1) to (4) shown in Photo 35.

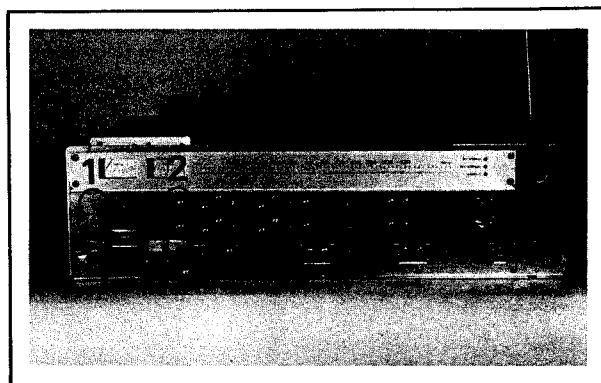


Photo 35

MIC AMP CIRCUIT BOARD REMOVAL

- a. Pull off the sheet holder shown in Photo 34.
- b. Pull the mic amp circuit board in the direction shown by the arrow to remove it.

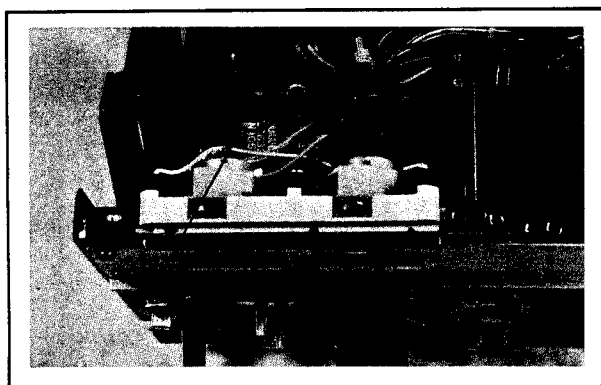


Photo 34

POWER AND SPEAKER SWITCH REMOVAL

- Loosen the fixing screws on all the switches and knobs as shown in Photo 36 (all are M3x6S small bind screws), and then pull off each knob and switch.

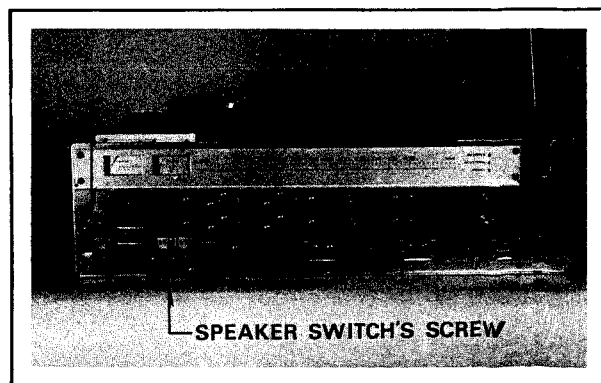


Photo 36

DROPPING THE REAR PANEL

- a. As shown in Photos 37 and 38, remove the 4x8S red-topped bind tapping screws (1) and (2), and loosen the other two (3) and (4).
- b. Remove the three 3x8S bind tapping screws (1) to (3) shown in Photo 39, then drop the rear panel as shown in Photo 40.

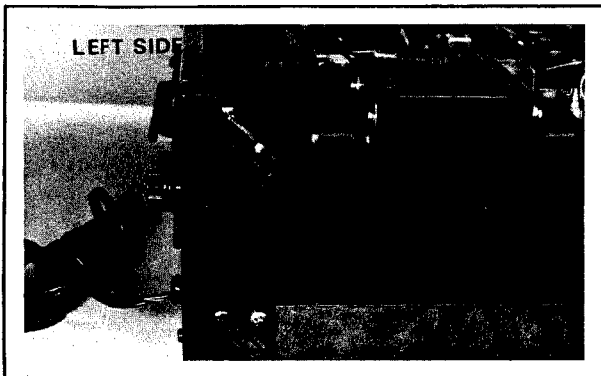


Photo 37

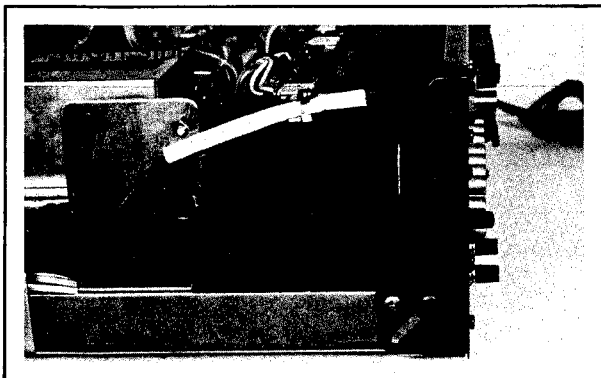


Photo 38

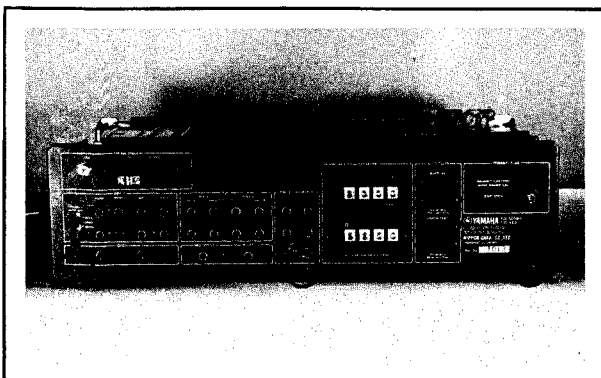


Photo 39

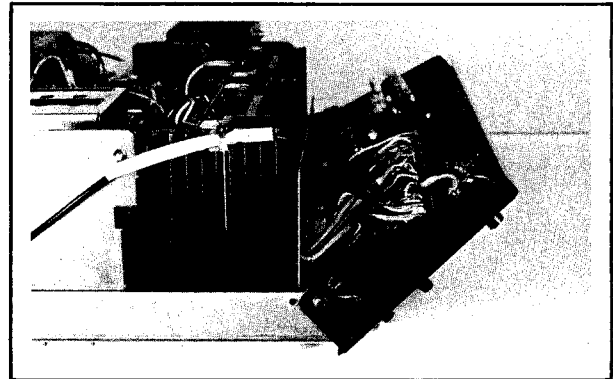


Photo 40

REAR PANEL CIRCUIT BOARD REMOVAL

- a. Remove the nine screws shown in Photo 41: M2.6x5S small torus head screws (1), (2), (8) and (9) and 3x8S bind tapping screws (3) to (7).
- b. Drop the rear panel as explained above and lift off the rear panel circuit board.

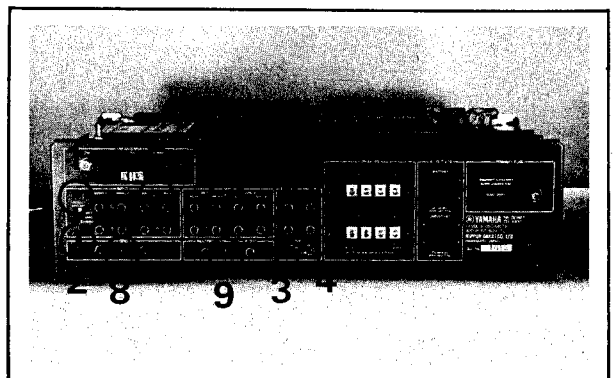
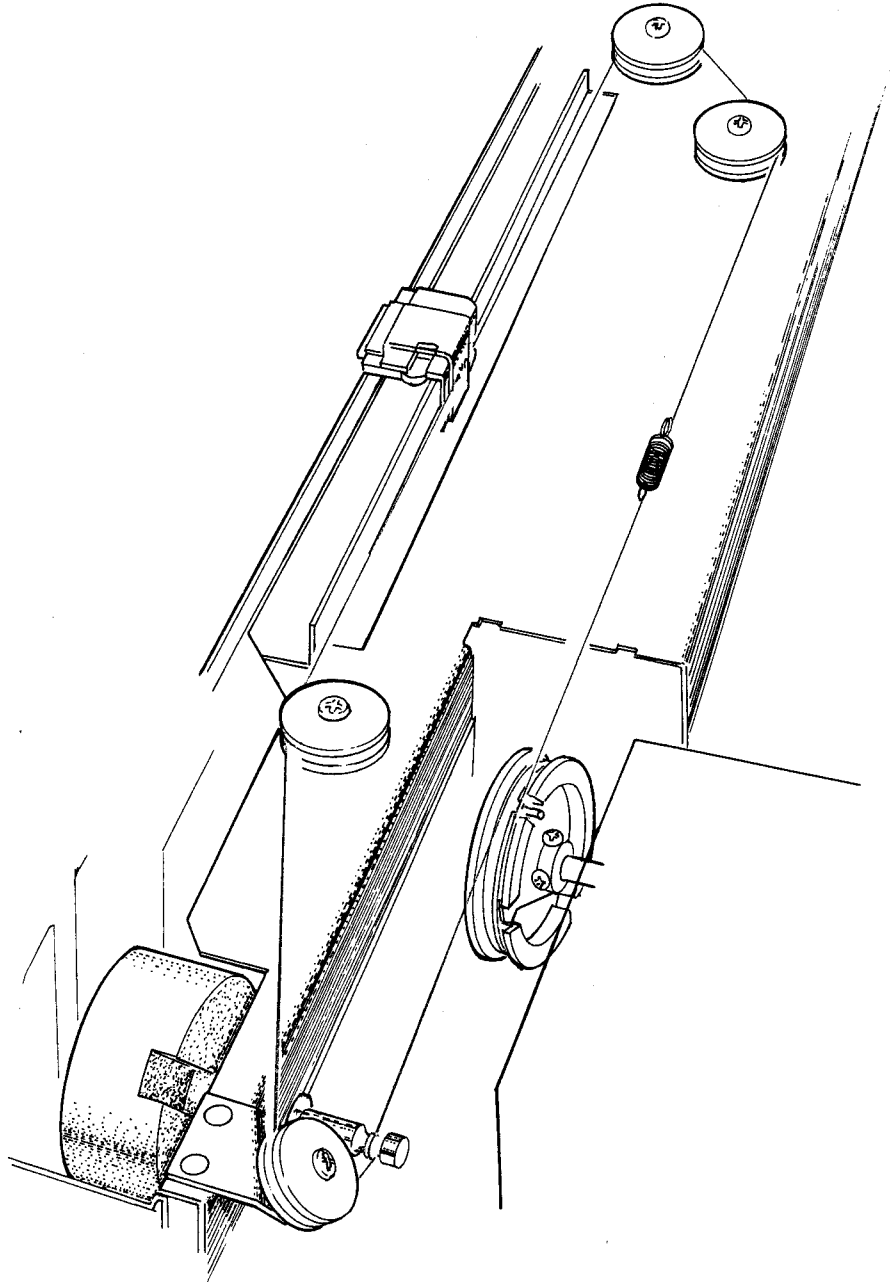


Photo 41

DIAL MECHANISM



MEASUREMENT AND ADJUSTMENT

TUNER SECTION

FM IF ADJUSTMENT

STEP	ADJUSTMENT ITEM	TERMINALS TO BE CONNECTED & INSTRUMENTS REQUIRED	ADJUSTMENT	HOW TO ADJUST	RATING OR STANDARD	REMARKS
1	S-Curve	Input Jack (Refer to Fig. 1.) Sweep Generator Output: 40dB/400Ω ±100Ω IO-E Oscilloscope (Refer to Fig. 1.)	T101 discrim coil (top & bottom) core, Top:Secondary T101 discrim Bottom: Primary Side	Adjust for symmetrical S-curve with the secondary-side core. Adjust for max. height with the primary-side core.	Output Voltage:400-mVp-p Intermediate Frequency: 10.7MHz ±200kHz Bandwidth: 300kHz (Refer to Fig. 2.)	

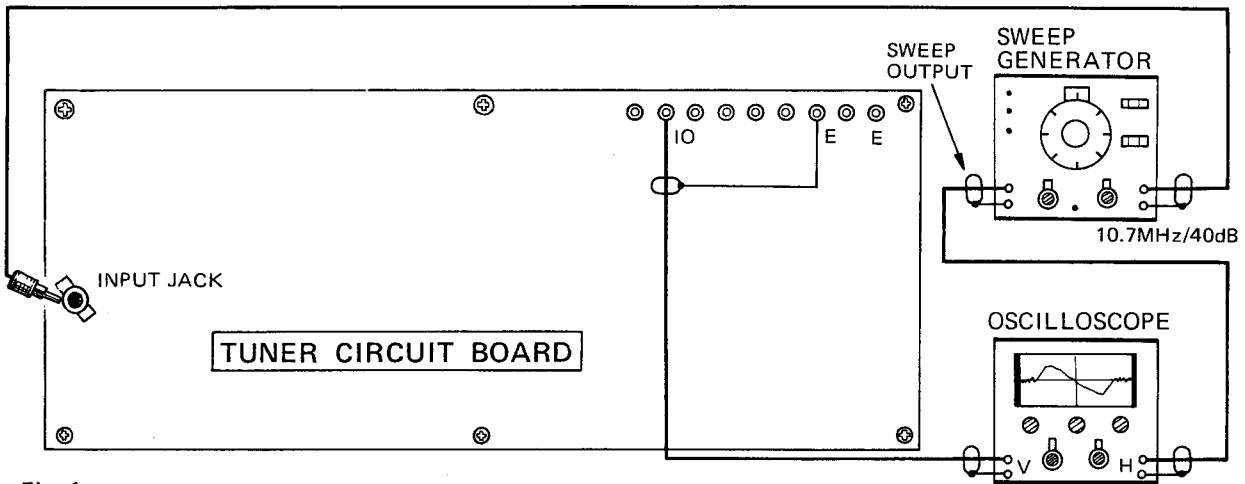


Fig. 1

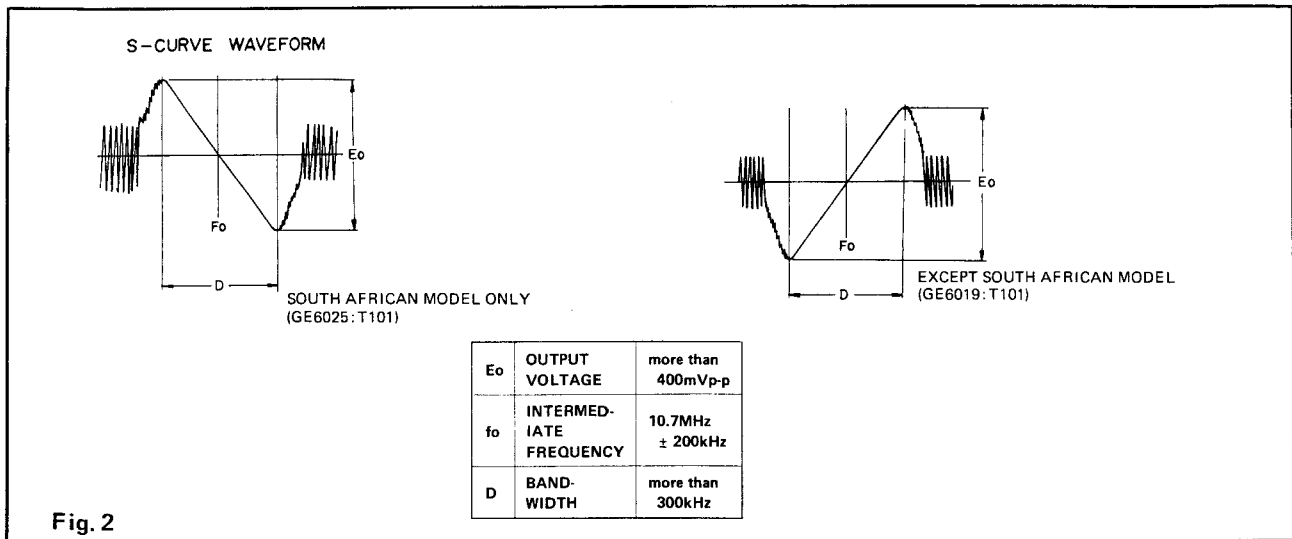
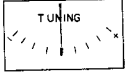
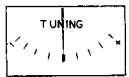
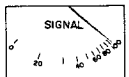


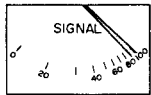
Fig. 2

FM MPX ADJUSTMENT


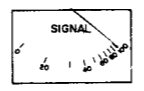
STEP	ADJUSTMENT ITEM	TERMINALS TO BE CONNECTED & INSTRUMENT REQUIRED	ADJUSTMENT	HOW TO ADJUST	RATING OR STANDARD	REMARKS
1	19kHz Filter adjustment	FM antenna terminal FM signal Generator 98MHz/60dB μ ● Modulate the stereo pilot signal only. Rec Out terminal Oscilloscope, Distortion ratio meter, Electronic voltmeter.	T105 (L) T106 (R) :GE6057 (Refer to Fig. 3.)	Adjust for minimum 10kHz leak element.	Leak level: less than -60dB	Should be set at tuning point at TUNER COMPLETE ADJUSTMENT -"2".
2	Separation adjustment	FM antenna terminal FM signal Generator 98MHz/60dB μ Modulation Frequency: 400Hz/100% stereo (L, R & L-R) Rec Out terminal Oscilloscope, Distortion ratio meter, Electronic voltmeter.	VR103 (L) VR104 (R) : B22k Ω (Refer to Fig. 3.)	Adjust for maximum separation (obtain this maximum by repeated left and right adjustments).	Separation: more than -42dB Standard Value: -50dB	Should be set at tuning point at TUNER COMPLETE ADJUSTMENT -"2".

TUNER COMPLETE ADJUSTMENT

STEP	ADJUSTMENT ITEM	TERMINALS TO BE CONNECTED & INSTRUMENTS REQUIRED	ADJUSTMENT	HOW TO ADJUST	RATING OR STANDARD	REMARKS
1	Discrim Balance		T101 discrim coil:Secondary Side (top) Refer to Fig. 3.	Adjust for tuning meter position at 0 with out of tune noise.		Do not connect anything to the FM antenna terminal.
2	Tuning Point Set	FM antenna terminal (300 Ω) FM signal Generator 98MHz/60dB μ Modulation Frequency: 400Hz/100% mono	Tuning knob	Center tuning meter at 0 by tuning.		AFC-E (AFC OFF)
3	Front-end IF tuning	FM antenna terminal (300 Ω) FM signal Generator 98MHz/30dB μ or so Modulation Frequency: 400Hz/100% mono	Front-end IF core primary and secondary side. Refer to Fig. 4.	Set for max. signal meter deflection.		Should be set at tuning point 2.
4	Distortion adjustment (mono)	FM antenna terminal (300 Ω) FM signal Generator 98MHz/60dB μ Modulation Frequency: 400Hz/100% mono Rec Out terminal Oscilloscope, Distortion ratio meter, Electronic volt meter.	T101 discrim coil:primary side (bottom) Refer to Fig. 4.	Adjust right and left little by little until achieving lowest distortion.	Distortion: less than -50dB (0.25%) Standard Value:less than -58dB (0.12%)	Should be set at tuning point 2.

STEP	ADJUSTMENT ITEM	TERMINALS TO BE CONNECTED & INSTRUMENT REQUIRED	ADJUSTMENT	HOW TO ADJUST	RATING OR STANDARD	REMARKS
5	Distortion adjustment (Stereo)	FM antenna terminal (300Ω) FM signal Generator 98MHz/60dBμ Modulation Frequency: 400Hz 100% stereo (L,R & L-R)	T104 (GE-6059), Front-end IF core (top & bottom). Refer to Fig. 3 ~ 4.	Adjust T104 for minimum distortion at maximum L-R signal. Adjust from end IF (top & bottom) core via L or R for minimum distortion.	Distortion: less than -40dB (0.4%) Standard Value: less than -54dB (0.2%)	Should be set at tuning point 2.
		Rec Out terminal Oscilloscope, Distortion ratio meter, Electronic volt meter.				
6	Meter adjustment	FM antenna terminal (300Ω) FM signal Generator 98MHz/100dBμ Modulation Frequency: 400Hz/100% mono	Set VR101 (semi-fixed variable resistor for meter adjustment, B10kΩ) (Refer to Fig. 3.)	Set for Maximum ("100") signal meter deflection.	Allowable Error: +0mm, -1mm. 	Should be set at tuning point 2.
7	Muting level adjustment	FM antenna terminal (300Ω) FM signal Generator 98MHz/20dBμ Modulation Frequency: 400Hz/100% mono	Set VR102 (semi-fixed variable resistor for muting level adjustment; B4.7kΩ) (Refer to Fig. 3.)	Turn to the right little by little until output power appears.	Level where output appears: 20-dBμ +5dBμ -3dBμ	Should be set at tuning point 2.
		Rec Out terminal Oscilloscope, Electronic voltmeter				

TRACKING ADJUSTMENT

STEP	ADJUSTMENT ITEM	TERMINALS TO BE CONNECTED & INSTRUMENT REQUIRED	ADJUSTMENT	HOW TO ADJUST	RATING OR STANDARD	REMARKS
1	Dial pointer adjustment I Dial pointer adjustment II	FM antenna terminal FM signal Generator 98MHz/60dBμ	Tuning knob Dial pointer	Turn the knob and set the tuning point at TUNER COMPLETE ADJUSTMENT - "2". Set to the middle of the "98" on the gauge board.		AFC-E (AFC OFF)
2	Low-band tracking conformation	FM antenna terminal FM signal Generator 90MHz/60dBμ	Tuning knob	Turn the knob and set the tuning point at 1.	Deviation should be within ±1.0-mm of the center of the numbers.	AFC-E, CM-E If the check shows that only one of the standards (2 and 2') are not met, adjust the needle for that measurement to within the standard.
2'	High-band tracking conformation	FM antenna terminal FM signal Generator 106MHz/60dBμ	Dial pointer	Inspect for deviation from the center of the numbers on the dial scale.		
3	Tracking adjustment I	FM antenna terminal FM signal Generator 90, 98, 106MHz/60dBμ	Tuning knob Dial pointer	Reset the dial pointer so that the greatest deviation is within the standard range.		When both 2 and 2' are out of the standard range.
4	Tracking adjustment II	FM antenna terminal FM signal Generator 90, 98, 106MHz/60dBμ	Tuning knob	Match the needle to the numbers.		When the standard is not met even after adjustments 2, 2' and 3.
		FM antenna terminal FM signal Generator 88MHz/60dBμ 88MHz/30dBμ	Front end L OSC core	Set the tuning point at 1. Set for maximum meter deflection.		
		FM antenna terminal FM signal Generator 106MHz/60dBμ 106MHz/30dBμ	Front end L OSC trimmer	Set the tuning point at 1. Set for maximum meter deflection.		

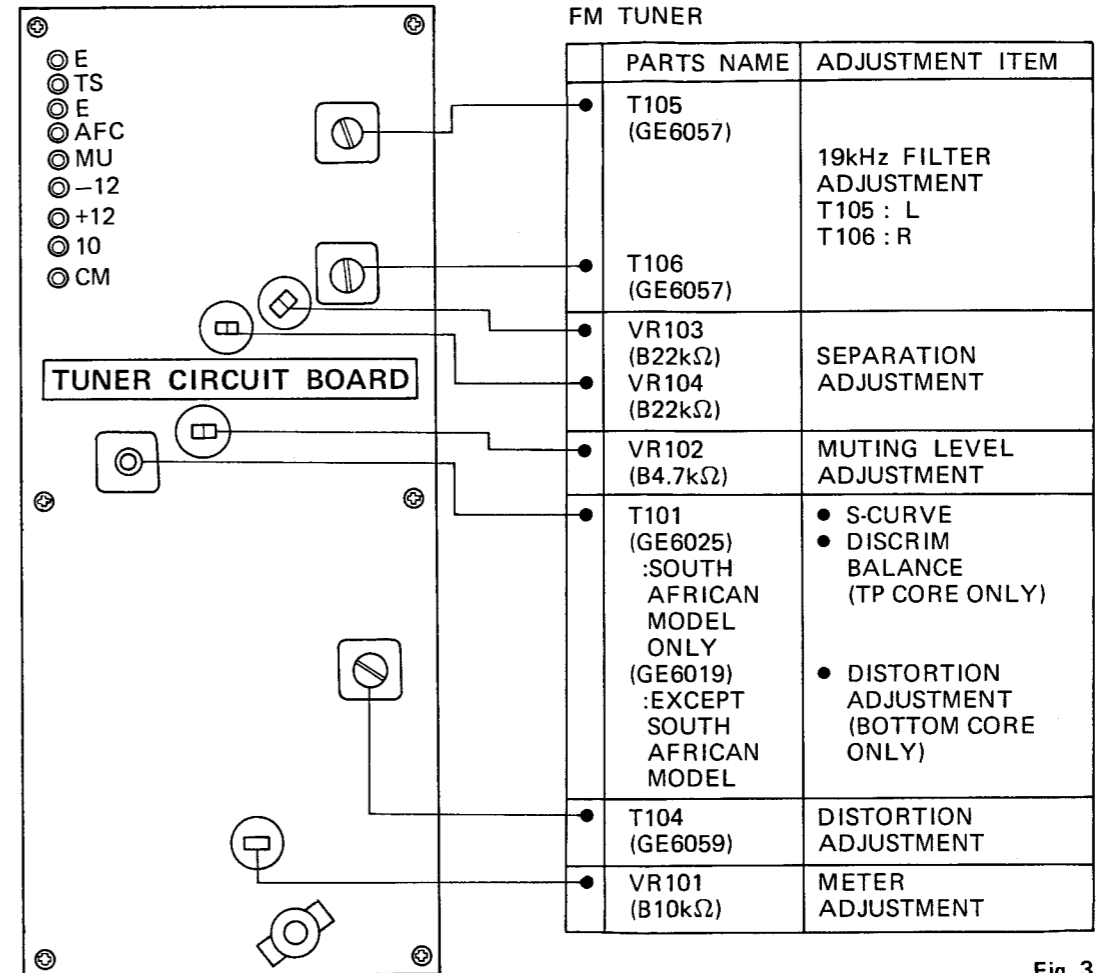
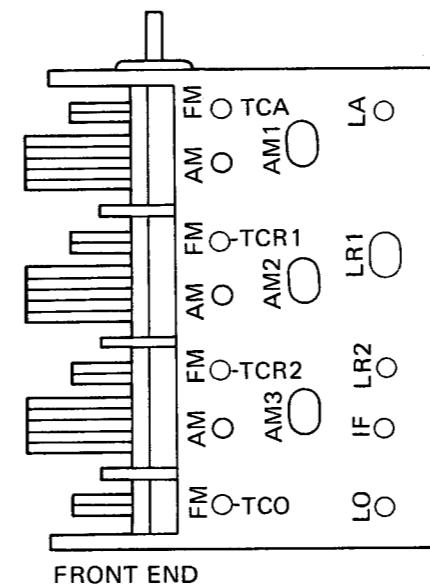


Fig. 3



CORE	TRIMMER	ADJUSTMENT ITEM
IF		<ul style="list-style-type: none"> FRONT END IF TUNING DISTORTION ADJUSTMENT
L0 LR2 LR1 LA	TCO TCR2 TCR1 TCA	<ul style="list-style-type: none"> SENSITIVITY ADJUSTMENT TRACKING ADJUSTMENT

Fig. 4

AUDIO SECTION

EQ AMPLIFIER ADJUSTMENT

STEP	ADJUSTMENT ITEM	TERMINALS TO BE CONNECTED & INSTRUMENT REQUIRED	ADJUSTMENT	HOW TO ADJUST	RATING OR STANDARD	REMARKS
1	SEPP Output mid-point voltage adjustment	TP1 — E (L) TP2 — E (R) Refer to Fig.5 Electronic voltmeter	VR401 (L) VR402 (R) Refer to Fig.5	Set the voltage between TP1 and E, TP2 and E to rating value (28.0V ±0.5V) with VR401, VR402.	28.0V ±0.5V	
2	Bias adjustment	PHONO 1 or 2 jack Oscillator 1kHz/240mV REC OUT JACK Distortion ratio meter Electronic voltmeter Oscilloscope	VR401 (L) VR402 (R) Refer to Fig.6	Set VR401 and VR402 for lowest possible distortion within the limits set by the Step 1 adjustment of the SEPP output voltage (28.0V ±0.5V).		

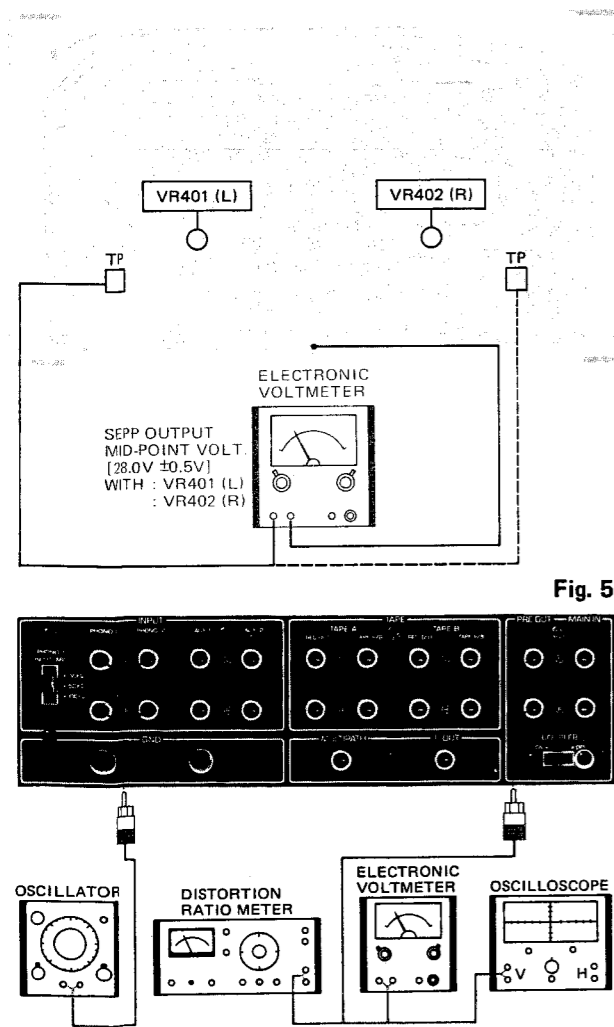


Fig. 5

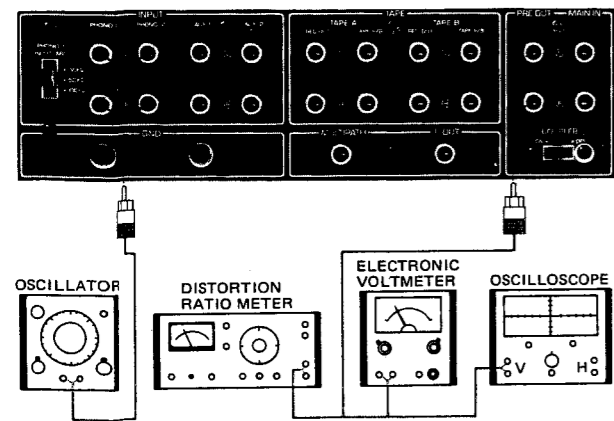


Fig. 6

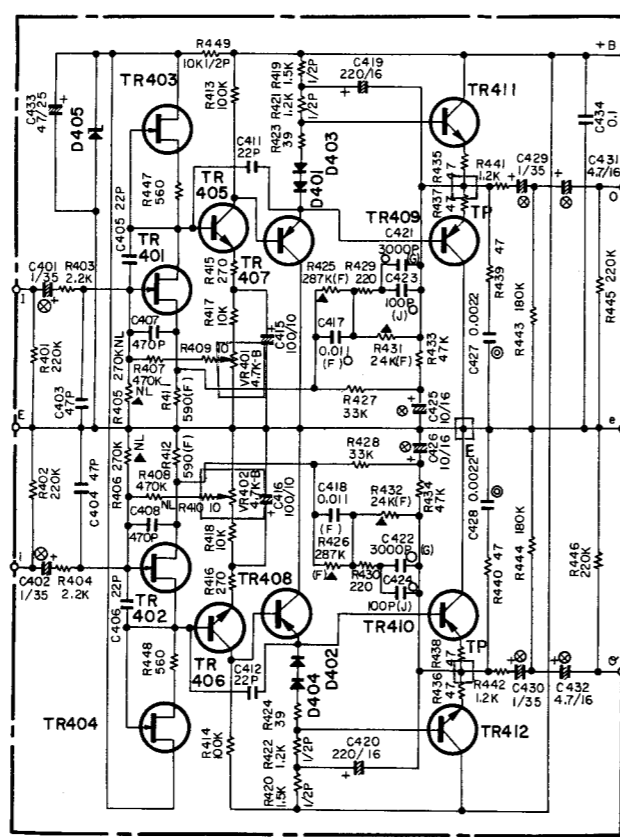


Fig. 7

MAIN AMPLIFIER ADJUSTMENT

BEFORE ADJUSTMENT

- Turn the Pre/Main coupler switch Off.
- After the power switch is turned in, wait 1 minute before adjustment, to be sure of the most stable operation.
- Do not connect speakers or dummy load resistor to the speaker terminals.

STEP	ADJUSTMENT ITEM	TERMINALS TO BE CONNECTED & INSTRUMENT REQUIRED	ADJUSTMENT	HOW TO ADJUST	RATING OR STANDARD	REMARKS
1	Primary stage differential amplification circuit current adjustment	TP1 (-) — TP2 (+) Refer to Fig.8. Electronic voltmeter	VR602 Refer to Fig.8.	Set the voltage between TP1 and TP2 to rating value (15V ±0.15V) with VR602.	15V ±0.15V	
2	Mid-point voltage adjustment	OUT — E Refer to Fig.8. Electronic voltmeter.	VR601 Refer to Fig.8.	Set the voltage between OUT and E to rating value (0V ±0.01V) with VR601.	0V ±0.01V	
3	Idling current adjustment	TP3 (+) — TP4 (-) Refer to Fig.8. Electronic voltmeter.	VR603 Refer to Fig.8.	Set the voltage between TP3 and TP4 to rating value (0.047V ±0.01V)	0.047V ±0.01V	
4				Repeat steps 1 ~ 3 several times.		

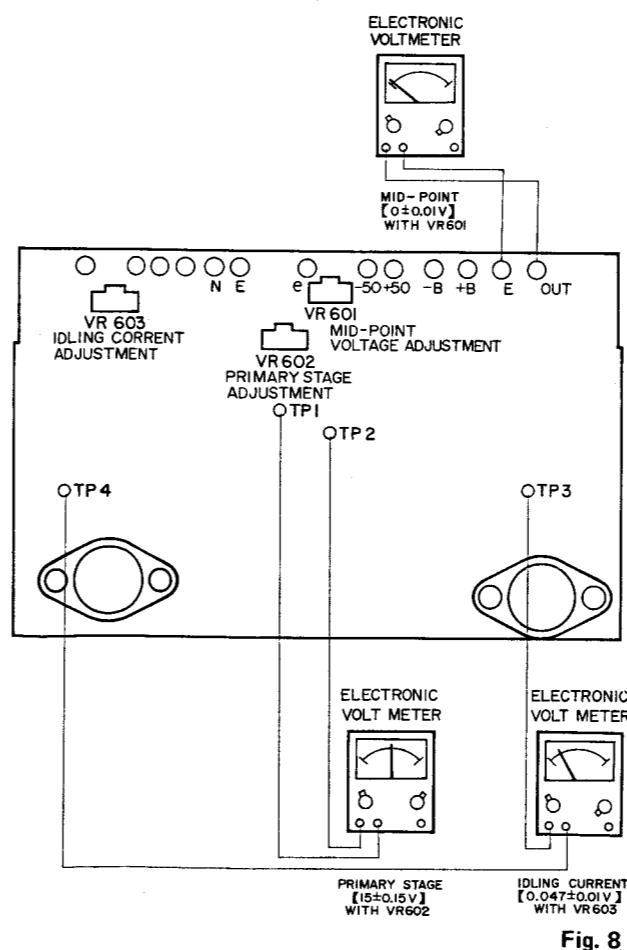


Fig. 8

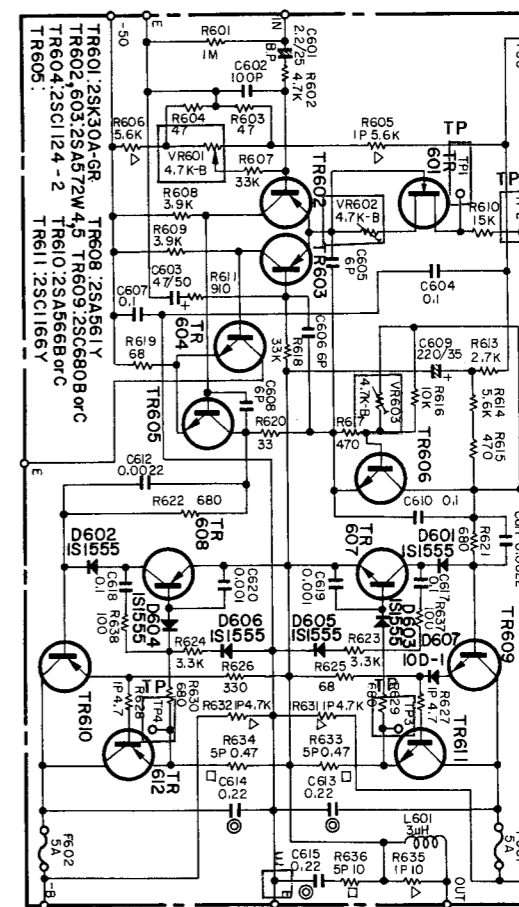
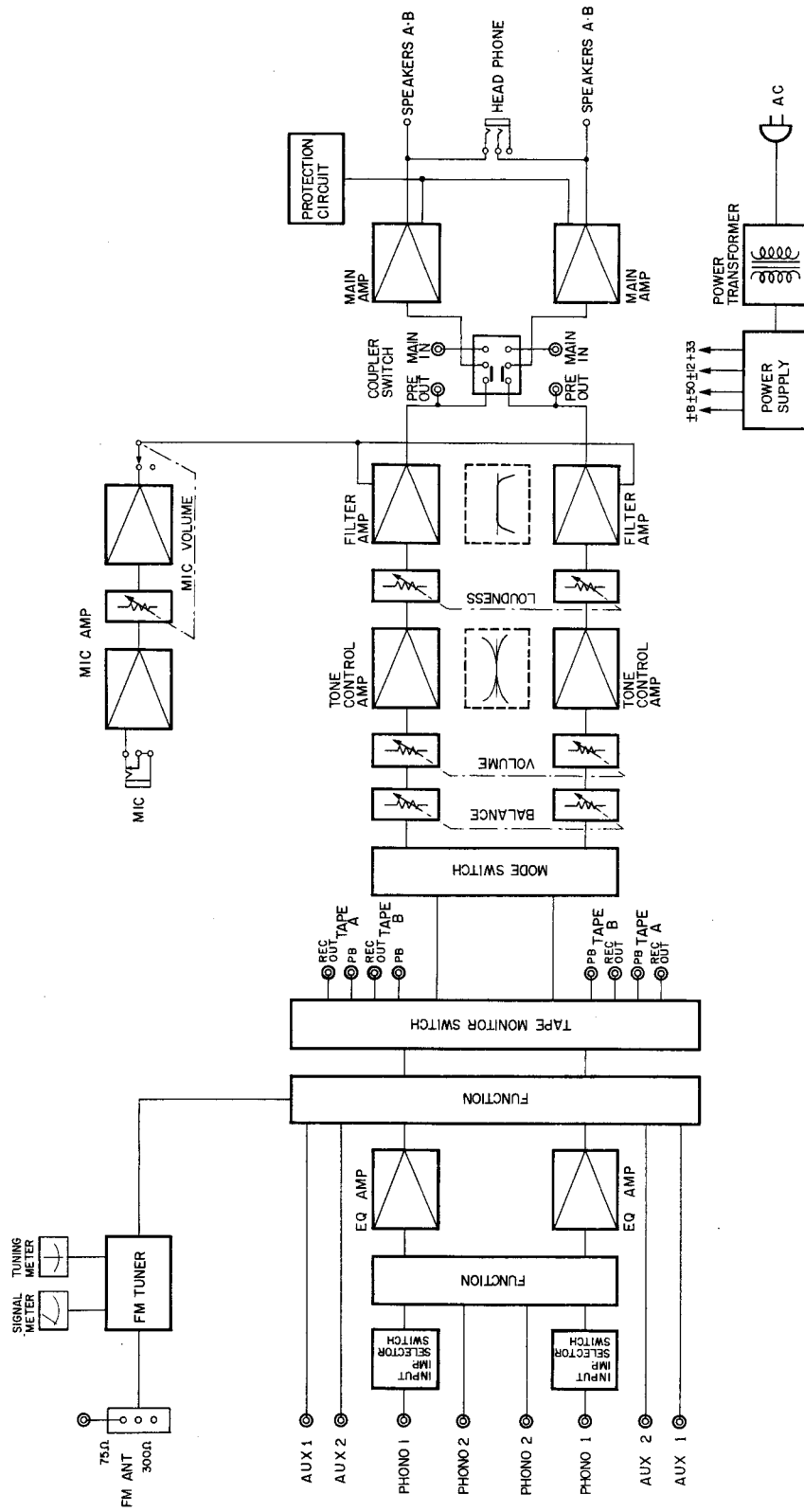
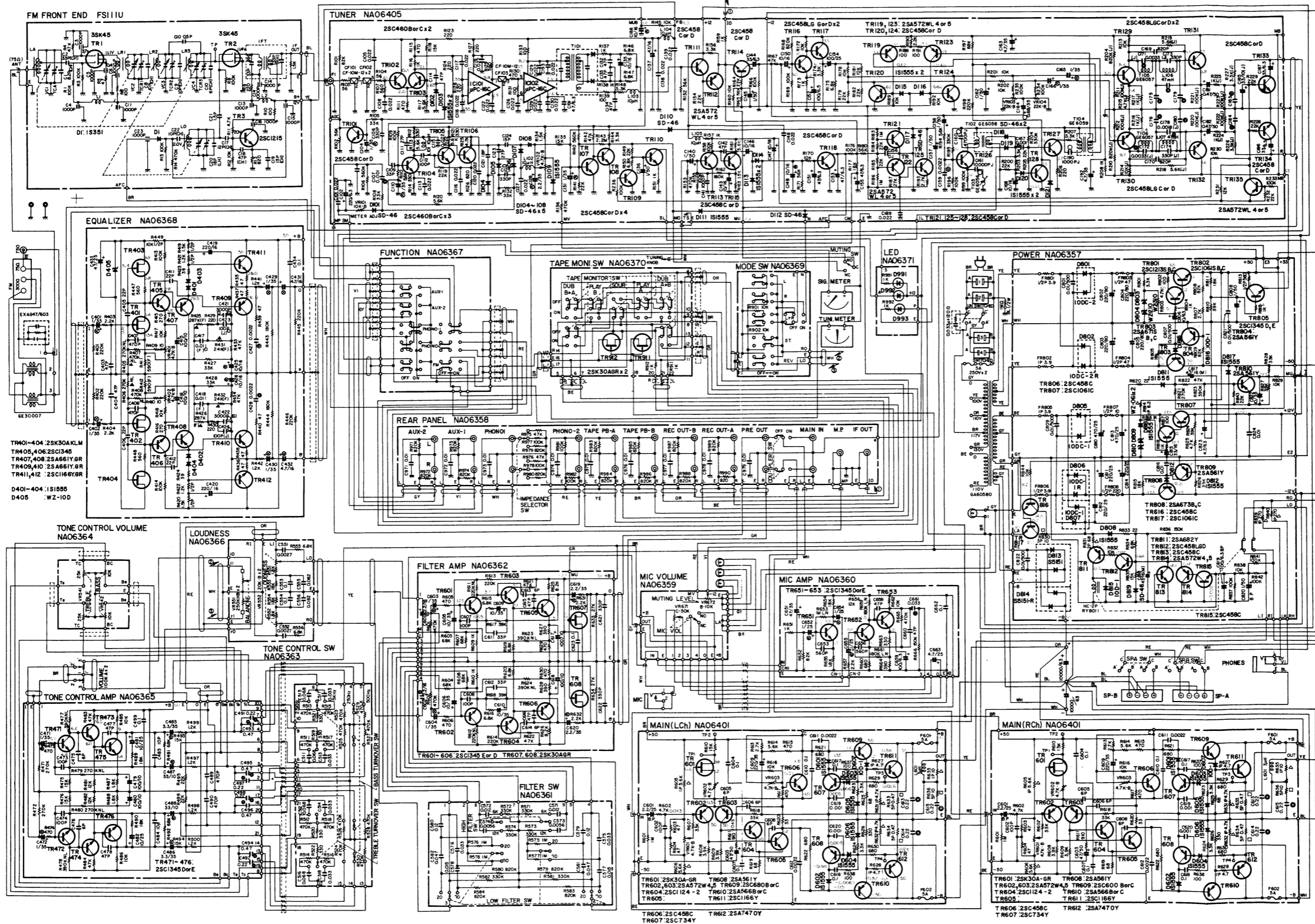


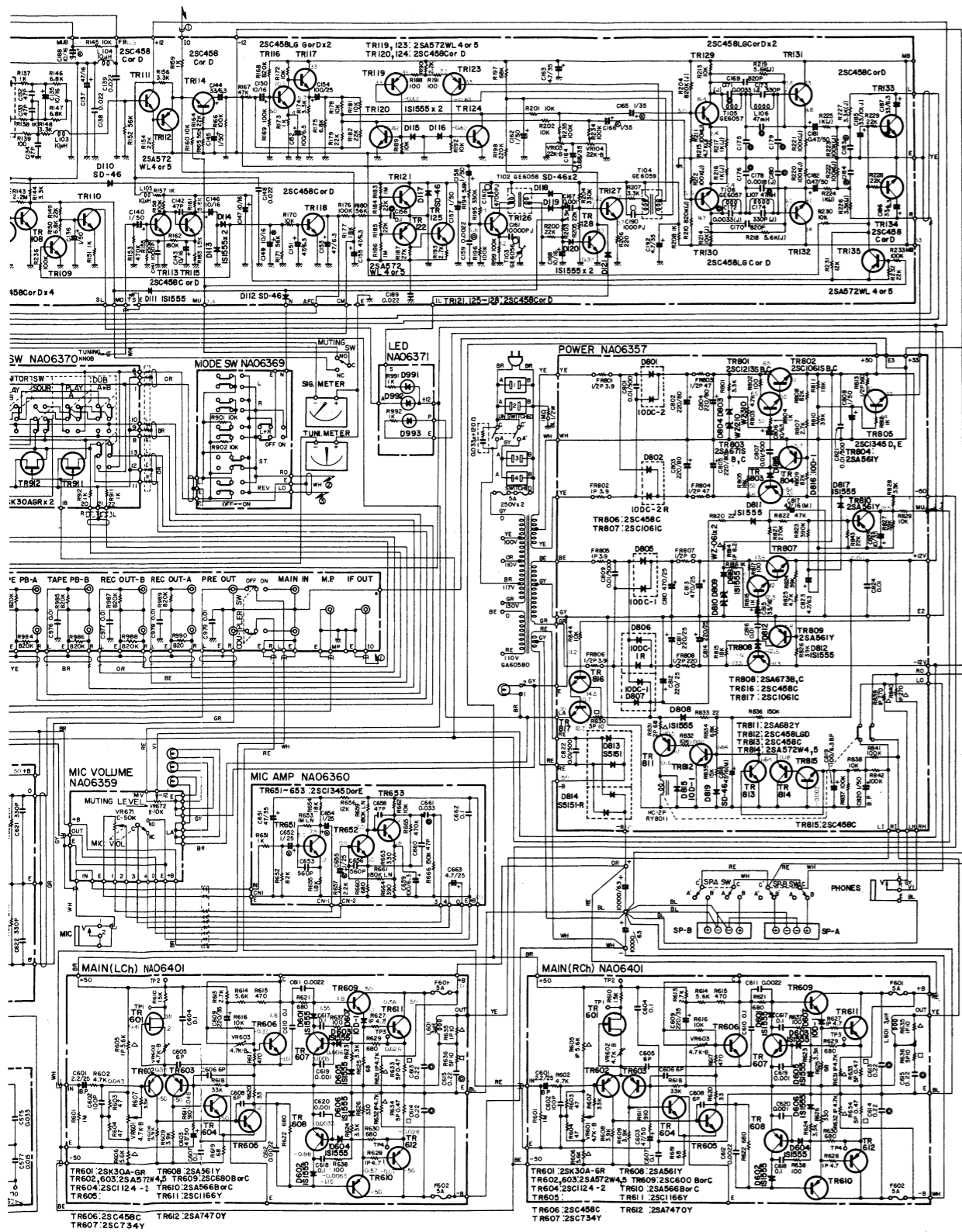
Fig. 9

BLOCK DIAGRAM



OVERALL SCHEMATIC DIAGRAM





VOLTAGE TABLE

MUTING CIRCUIT

		OUT OF TUNE [98MHz]		TUNE [103.25MHz]	
		MUTING SW: OFF	MUTING SW: ON	MUTING SW: OFF	MUTING SW: ON
Tr101	C				
	B				
	E				
Tr104	C	10.5		11.0	
	B	1.16		0.82	
	E	0.5		0.15	
Tr105	C	1.7		1.3	
	B	0.68		0.68	
	E	0		0	
Tr106	C	4.8		4.2	
	B	1.7		1.3	
	E	1.0		1.05	
Tr107	C	0.7	0.69	0.021	0.63
	B				
	E	0	0	0	0
Tr108	C	0.056	0.048	11.0	9.0
	B	0.7	0.69	0.021	0.021
	E	0	0	0	0
Tr114	C	-0.52	-0.5	0.056	0.056
	B	0.1	-1.65	0.69	0.7
	E	-0.5	-0.49	0.05	0.055
Tr121	C	-0.13	-0.12	0.6	0.6
	B	-0.12	-0.12	0.3	0.3
	E	0	0	0	0
Tr122	C	-10.5	-10.5	-11.3	-11.3
	B	-0.58	-0.58	-0.2	-0.2
	E	0	0	0	0
Tr125	C	-0.13	-0.12	0.6	0.6
	B	-10.5	-10.5	-11.3	-11.3
	E	-11.0	-11.0	-11.3	-11.3
Tr133	C	0	0	0	0
	B	-1.7	0.67	-1.7	-1.7
	E	0	0	0	0
Tr134	C	0	0	0	0
	B	-1.7	0.67	-1.7	-1.7
	E	0	0	0	0
Tr135	C	-1.7	8.5	-1.7	-1.7
	B	9.5	8.0	9.4	9.8
	E	9.8	8.5	9.8	9.8

FUNCTION: FM MONO
MUTING LEVEL: "0"

FM AGC

		OUT OF TUNE [98MHz]	TUNE [103.25MHz]
		C	4.2
Tr101	B	0	0.24
	E	0	0

BUFFER AMP

		AT OUT OF TUNE [98MHz]	AT TONE [103.25MHz]
		C	11.3
Tr111	B	-0.48	0
	E	-1.1	-0.58
Tr112	C	-11.3	-11.3
	B	-1.1	-0.58
	E	-0.5	0.015

AUTO TOUCH AFC OFF

		AT OUT OF TUNE [98MHz]		AT TUNE [103.25MHz]	
		☆UN-TOUCH-ED	★TOUCH-ED	☆UN-TOUCH-ED	★TOUCH-ED
Tr109	C	0.056	0.008	10	0.076
	B	0	0.57	0	0.64
Tr110	C	10.0	10.0	9.5	9.7
	B	0.056	0.02	10	2.4
Tr118	C	-0.42	0	0.063	0.006
	B	0	0.64	0	0.62
	E	0	0	0	0

☆ UNTOUCHED: When tuning knob is untouched.
★ TOUCHED : When tuning knob is touched.

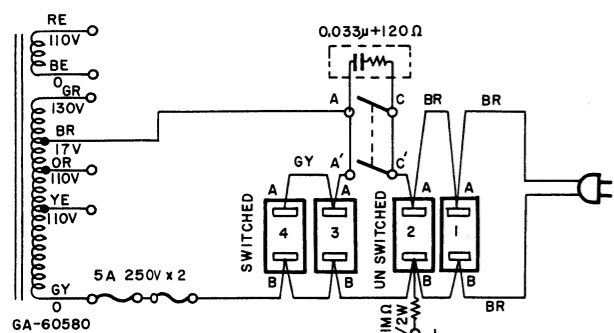
Circuit Diagram Lead Cord Color Code Chart

Code	Color	Code	Color
BL	Black	VI	Violet
BR	Brown	GY	Grey
RE	Red	WH	White
OR	Orange	GG	Light Green
YE	Yellow	SB	Light Blue
GR	Green	PK	Pink
BE	Blue		

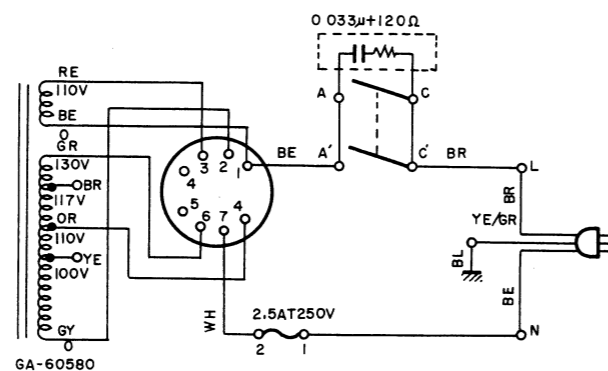
PARTIAL CHANGES MADE ACCORDING TO DESTINATION

POWER CIRCUIT : PRIMARY SIDE

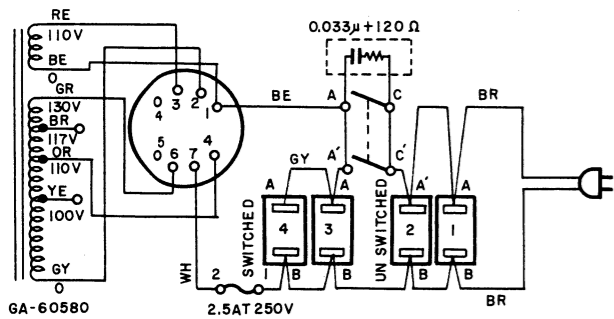
▼ U.S. & CANADIAN MODELS



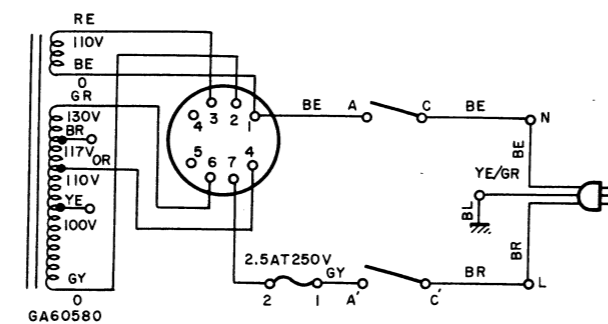
▼ SOUTH AFRICAN MODEL



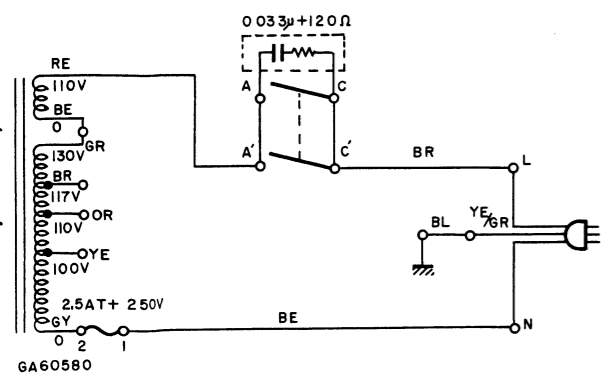
▼ GENERAL MODEL



▼ EUROPEAN MODEL



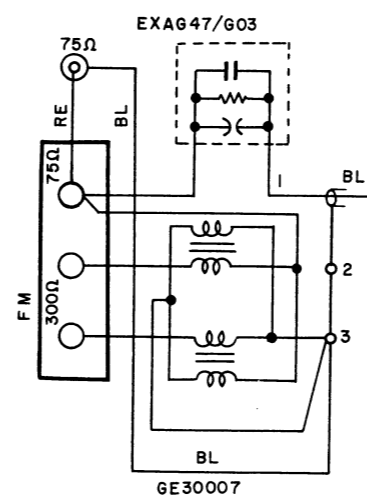
▼ AUSTRALIAN MODEL



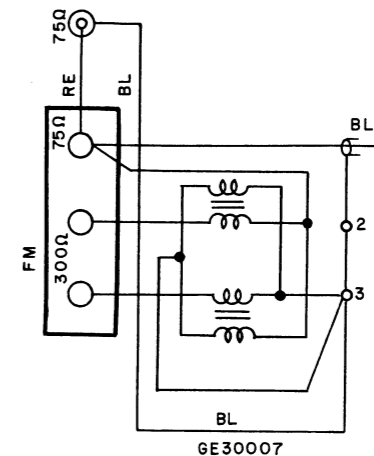
RF CIRCUIT

TUNER CII

▼ U.S. & CANADIAN MODELS ONLY



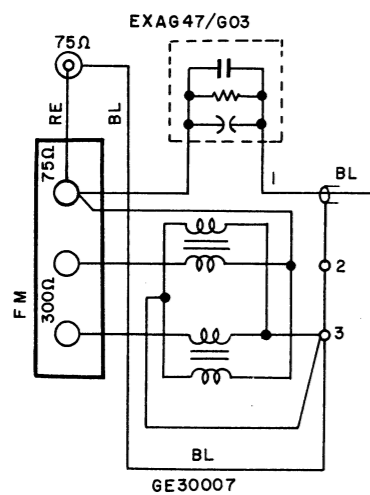
▼ EXCEPT U.S. & CANADIAN MODELS



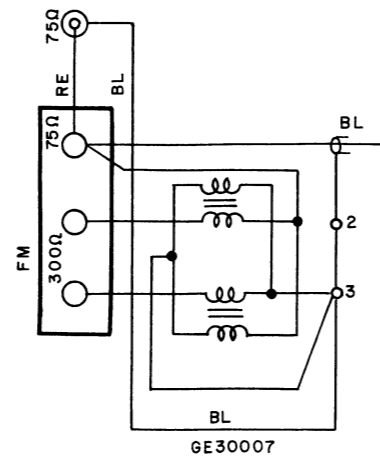
DESTINATION	PARTS NO.
NA	C 175
	C 176
	C 179
	C 180
	C 183
	C 184
	R 218
	R 219
	R 224
	R 225
	T 101
	DE-EMPHA

RF CIRCUIT

▼ U.S. & CANADIAN MODELS ONLY



▼ EXCEPT U.S. & CANADIAN MODELS

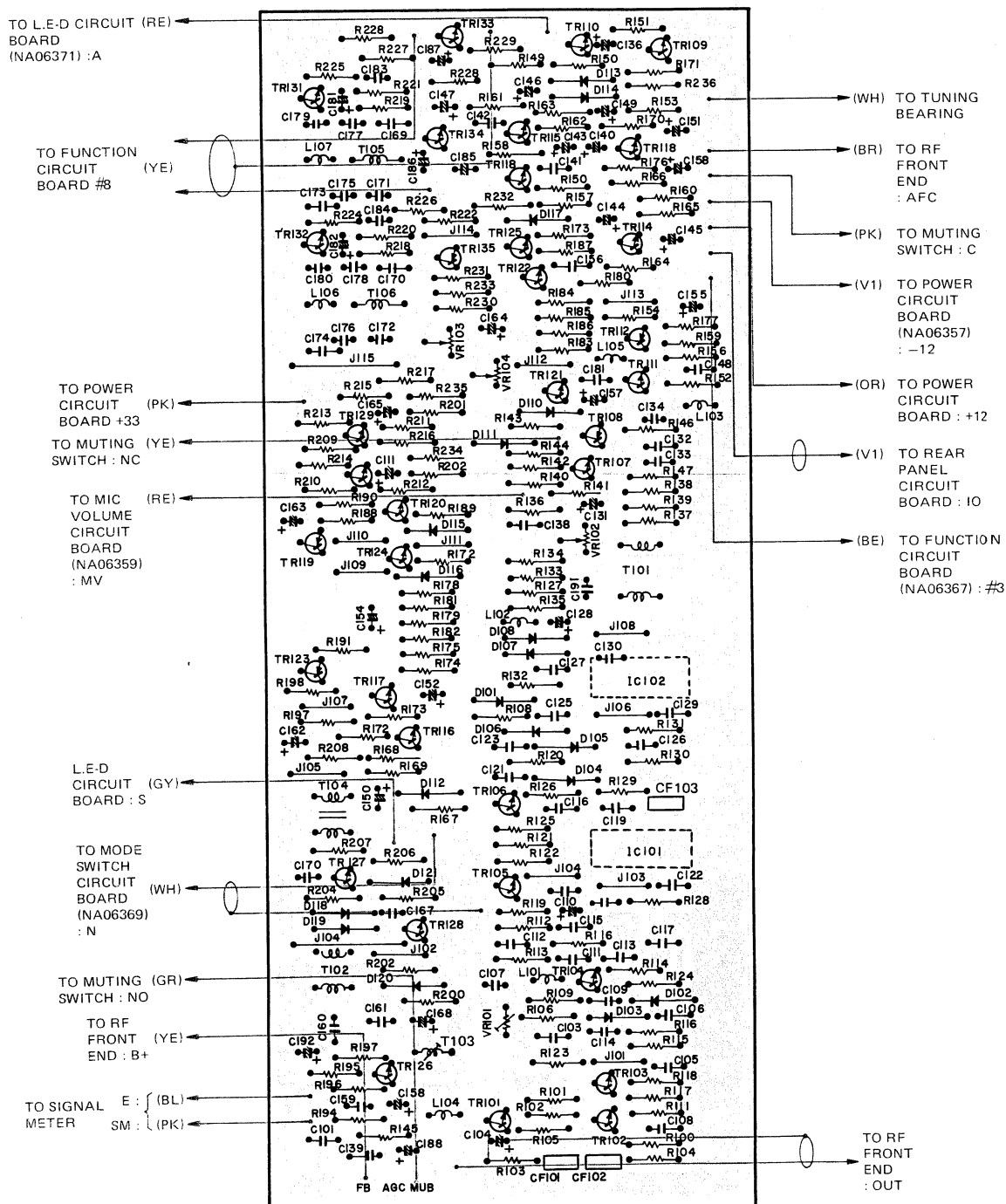


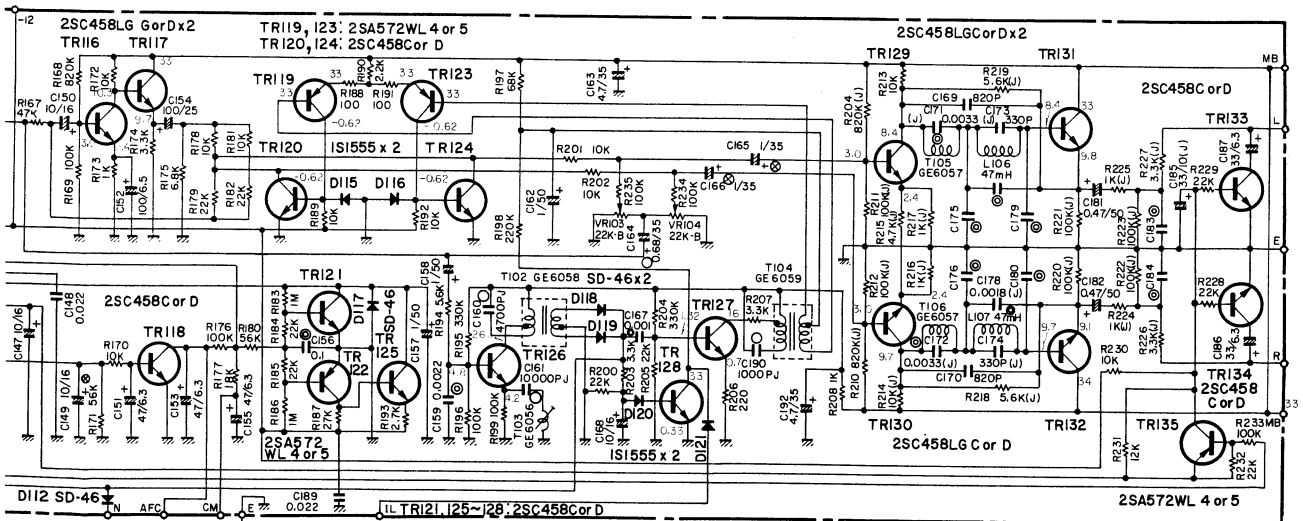
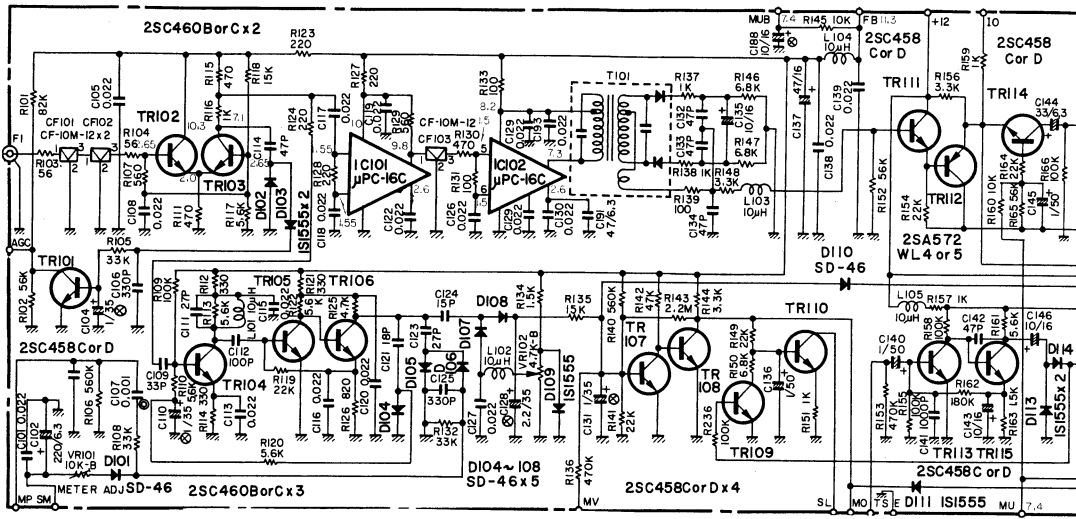
TUNER CIRCUIT BOARD ADJUSTMENT

DESTINATION	SOUTH AFRICAN MODEL	EUROPEAN, AUSTRALIAN & GENERAL MODELS	U.S. & CANADIAN MODELS
NA. NO.	NA06461	NA06463	NA06462
PARTS NO.			
C 175	MYLAR CAPACITOR	SAME AS SOUTH AFRICAN MODEL	MYLAR CAPACITOR
C 176	0.0027μF (±5%)		0.0047μF (±5%)
C 179	MYLAR CAPACITOR	SAME AS SOUTH AFRICAN MODEL	MYLAR CAPACITOR
C 180	0.0027μF (±5%)		0.0033μF (±5%)
C 183	MYLAR CAPACITOR	SAME AS SOUTH AFRICAN MODEL	MYLAR CAPACITOR
C 184	0.0022μF (±5%)		0.018μF (±5%)
R 218	CARBON RESISTOR	SAME AS SOUTH AFRICAN MODEL	CARBON RESISTOR
R 219	6.8kΩ ¼W (±5%)		5.6kΩ ¼W (±5%)
R 224	CARBON RESISTOR	SAME AS SOUTH AFRICAN MODEL	CARBON RESISTOR
R 225	1kΩ ¼W (±5%)		1.2kΩ ¼W (±5%)
T 101	GE 6025	GE 6019	GE 6019
DE-EMPHASIS	50μsec	50μsec	75μsec

PRINTED CIRCUIT BOARD & SPECIAL REPLACEMENT PARTS LIST

**TUNER CIRCUIT BOARD NAO6461 : SOUTH AFRICAN MODELS
NAO6462 : U.S. & CANADIAN MODELS
NAO6463 : EUROPEAN, AUSTRALIAN &
GENERAL MODELS**







▼ RESISTOR

ALL CARBON RESISTOR

▼ CAPACITOR



SYMBOL	PARTS NAME	REMARKS
⊗	TANTALUM CAPACITOR	
NO MARK	ELECTROLYTIC CAPACITOR & BI-POLAR ELECTROLYTIC CAPACITOR	
○	POLYSTYRENE CAPACITOR	
⊙	MYLAR CAPACITOR	
NO MARK	CERAMIC CAPACITOR	

Ref. No.	Parts No.	Description		Remarks
TR107 ~ 110 111 113 ~ 115 118 120 ~ 121 124 ~ 128 133 ~ 134	iC04583	Transistor	2SC458	C or D
TR102 ~ 106	iC04608	Transistor	2SC460	B or C
TR112, 119 122 ~ 123 135	iA05720	Transistor	2SA572	WL4, 5
TR116 ~ 117 129 ~ 132	iC04585	Transistor	2SC458	LGC or D
IC101 ~ 102	iG00003	Integrated Circuit	μPC-16C	
D 101 104 ~ 108 110 112 117 ~ 119	iF00004	Diode	SD-46	-4
D 102 ~ 103 109, 111 113 ~ 114 115 ~ 116 120, 121	iF00004	Diode	1S1555	
VR101	HT41007	Solid Variable Resistor	B 10kΩ	
VR102	HT41004	Solid Variable Resistor	B 4.7kΩ	
VR103 ~ 104	HY00016	Metal Glazed Semi-Fixed Variable Resistor	TM-10kΩ B 22kΩ	
L 101 ~ 105	GE30001	RF Inductor	10μH	
L 106 ~ 107	GE20013	MPX Coil	47mH	GE20013
T 101	GE100006	FM IFT	GE6025	South African Models only except South African model
T 101	GE10005	FM IFT	GE6019	
T 102	GE20009	MPX Coil	GE6058	
T 103	GE20007	MPX Coil	GE6056	
T 104	GE20010	MPX Coil	GE6059	
T 105 ~ 106	GE20008	MPX Coil	GE6057	
CF101 ~ 103	GG000002	Ceramic Filter	CF10M-2	
LB10020	LB10020	Printed Circuit board type Pin jack	1P	SQ3056

▲ RESISTOR

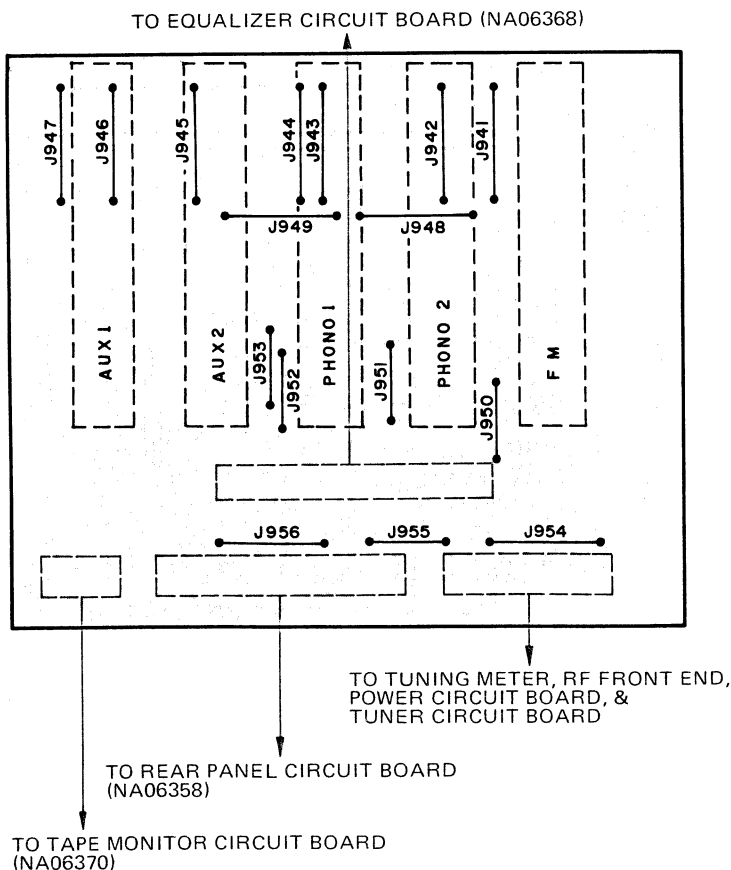
SYMBOL	PARTS NAME
▲	METAL FILM RESISTOR
NO MARK	CARBON RESISTOR

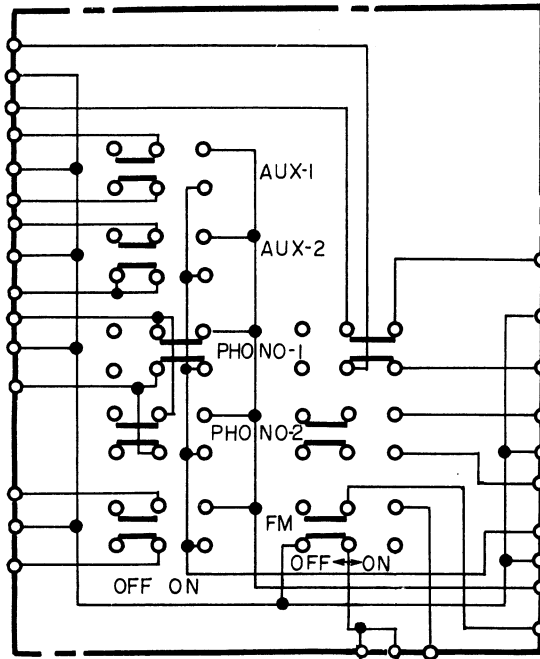
▲ CAPACITOR

SYMBOL	PARTS NAME	REMARKS
⊙	MYLAR CAPACITOR	
○	POLYSTYRENE CAPACITOR	
NO MARK	CERAMIC CAPACITOR	
⊗	TANTALUM CAPACITOR	
NO MARK	ELECTROLYTIC CAPACITOR & BI-POLAR ELECTROLYTIC CAPACITOR	

Ref. No.	Part No.	Description		Remarks
TR401 ~ 404	iE00004	FET	2SK30A	K, L or M
TR405 ~ 406	iC13455	Transistor	2SC1345	E, F
TR407 ~ 410	iA06613	Transistor	2SA661	GR, Y
TR411 ~ 412	iC11663	Transistor	2SC1166	GR, Y
D 401 ~ 404	iF00004	Diode	1S1555	
D 404	iF00027	Zener Diode	WZ-100	
	LB30013	Connector Socket	3P	No. 2145
	LB60028	Connector Socket	6P	No. 2145

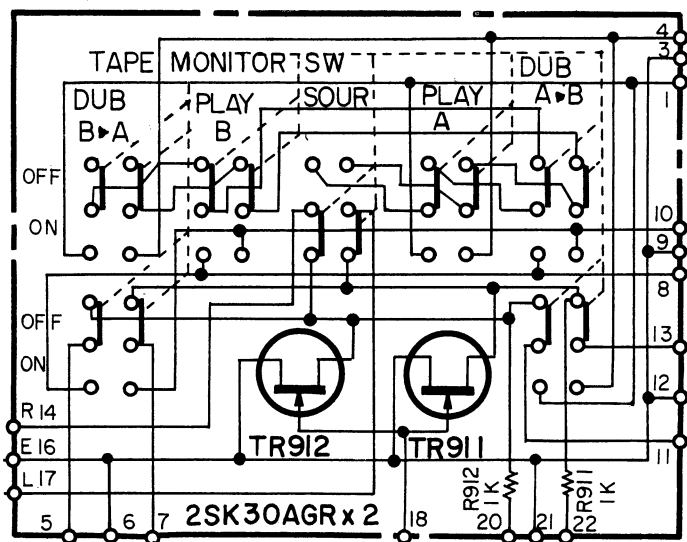
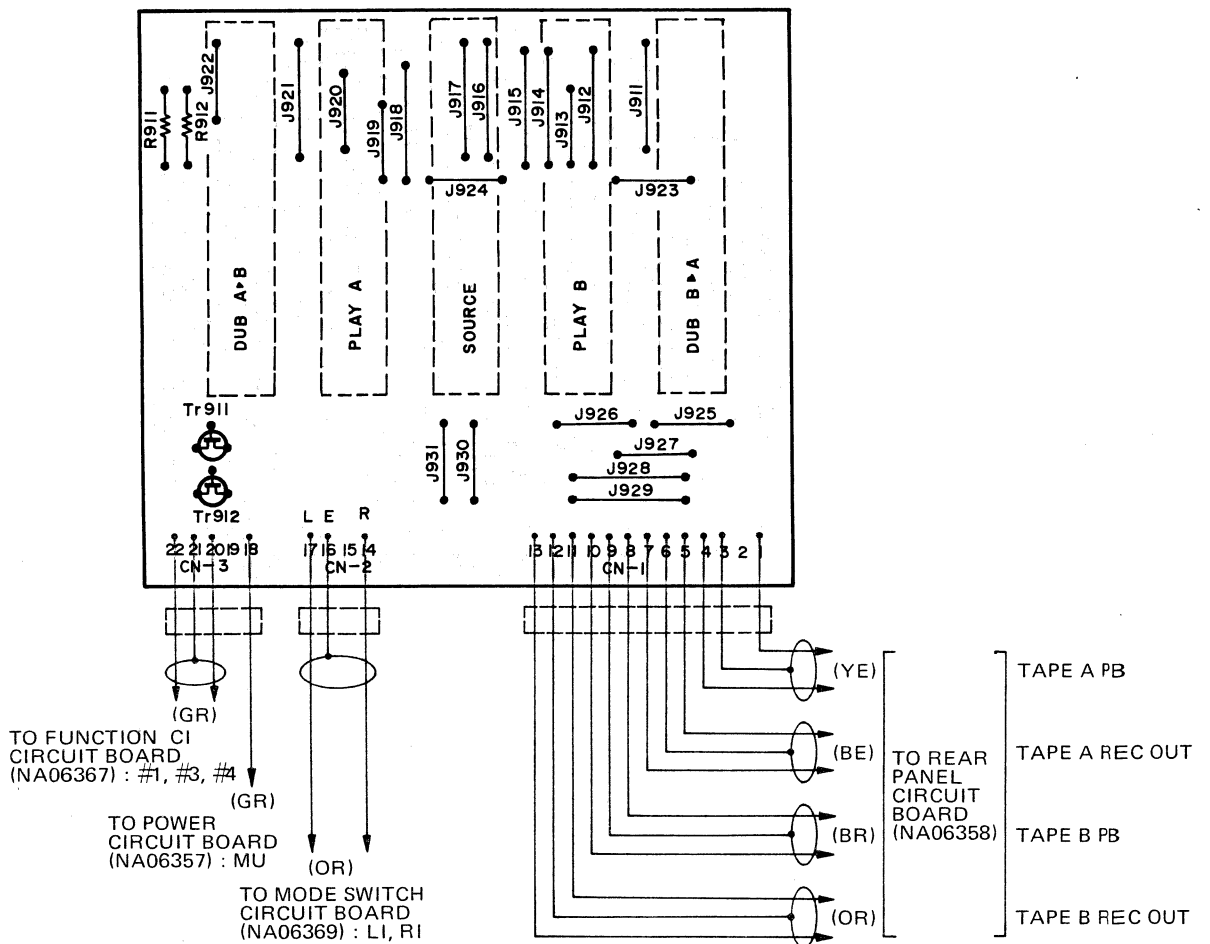
FUNCTION SWITCH CIRCUIT BOARD NAO6367





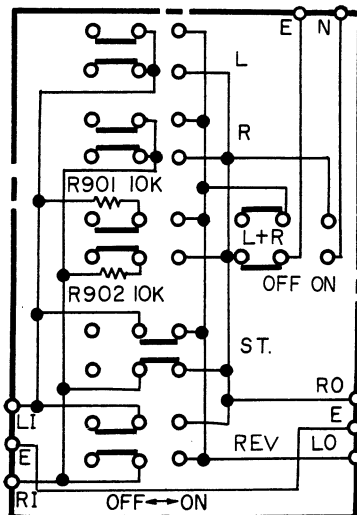
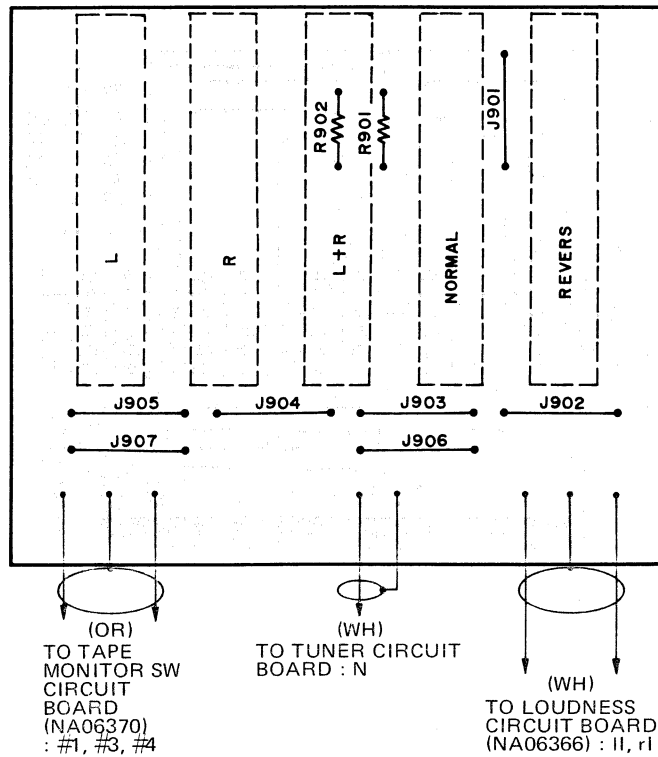
Ref. No.	Parts No.	Description	Remarks
	KA70042	5-gong Piano-type Switch	SPZ-52002 (S)
	LB40008	CIS Connector Socket	4P
	LB60025	CIS Connector Socket	9P
	LB60030	CIS Connector Socket	13P
	LB10016	CIS Keying Pin	
	LB30012	Connector Plug	3P No. 2183-3A
	LB60027	Connector Plug	6P NO. 2183-6A

TAPE MONITOR SWITCH CIRCUIT BOARD NA06370



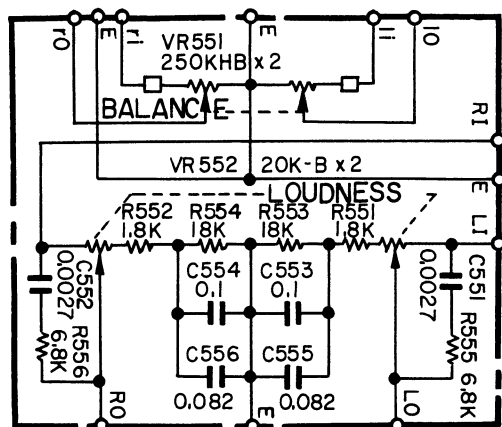
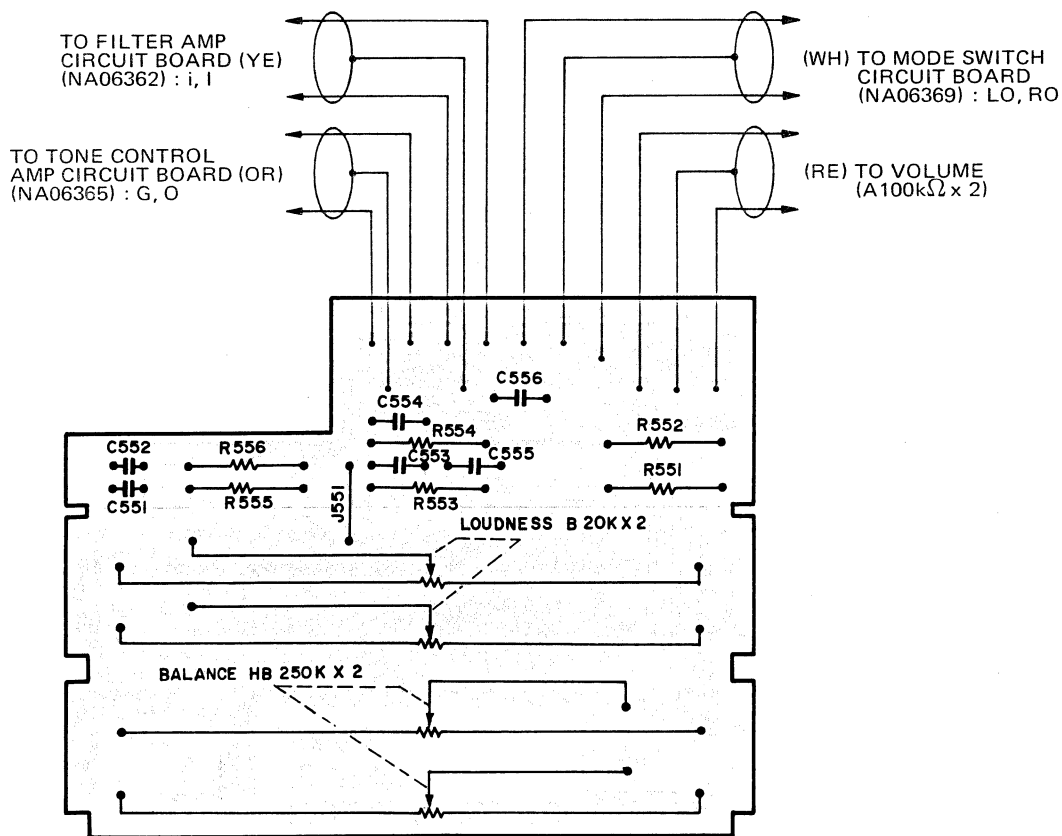
Ref. No.	Parts No.	Description		Remarks
TR911 ~ 912	jE00002 KA70044	FET 5-gong Piano-type Switch	2SK30A	GR SPZ-52001 (N) (No-Shorting)
CN1	LB60030	CIS Connector	13P	
CN2	LB40008	CIS Connector	4P	
CN3	LB50007 LB10016	CIS Connector CIS Keying Pin	5P	

MODE SWITCH CIRCUIT BOARD NAO6369



Ref. No.	Parts No.	Description	Remarks
	KA70042	5-gong Piano-type Switch	SPZ-52002 (S)

LOUDNESS CONTROL CIRCUIT BOARD NAO6366



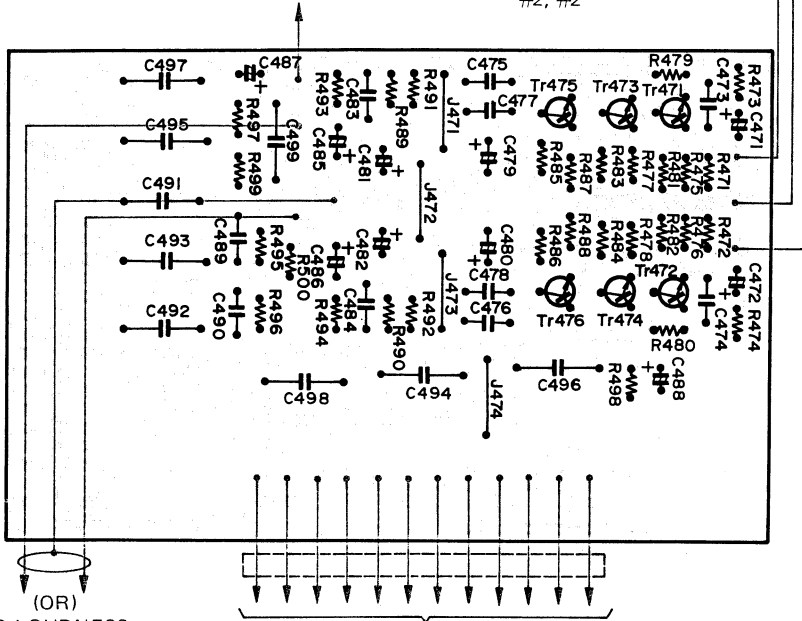
- ▼ RESISTOR
ALL CARBON RESISTOR
- ▼ CAPACITOR
ALL MYLAR CAPACITOR

Ref. No.	Part No.	Description	Remarks
VR551	HQ22014	Slide Variable Resistor	HB250kΩ x 2 EVB-SO2A11252
VR552	HQ20013	Slide Variable Resistor	B20kΩ x 2 EVB-SO3A11B24

TONE CONTROL AMP CIRCUIT BOARD NAO6365

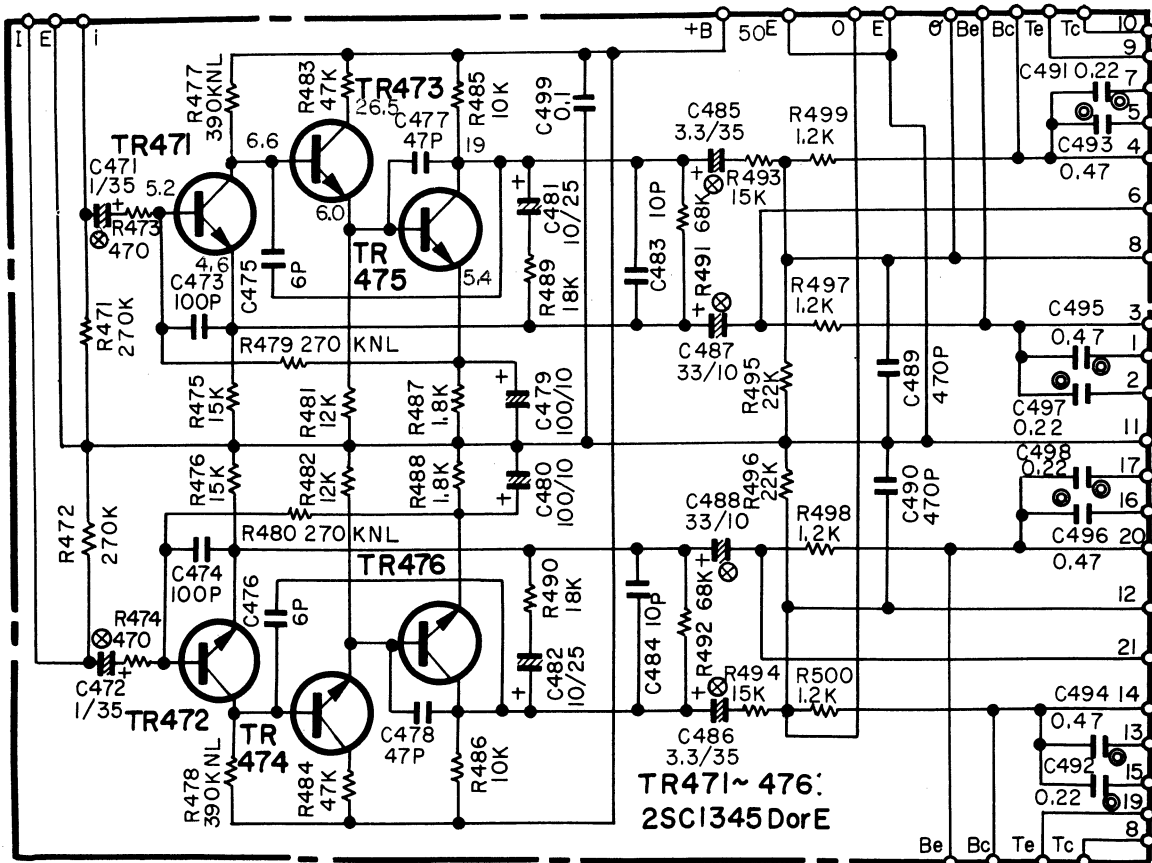
TO POWER CIRCUIT BOARD (NA06357) : +50
 & FILTER AMP CIRCUIT BOARD
 (NA06362) : +B

TO VOLUME
 (A100kΩ x 2) (BR)
 #2, #2'



TO LOUDNESS
 CIRCUIT
 BOARD
 (NA06366)
 : LI, RI

TO TONE CONTROL VOLUME
 CIRCUIT BOARD (NA06364)



TR471~ 476:
 2SC1345DorE

▼ RESISTOR

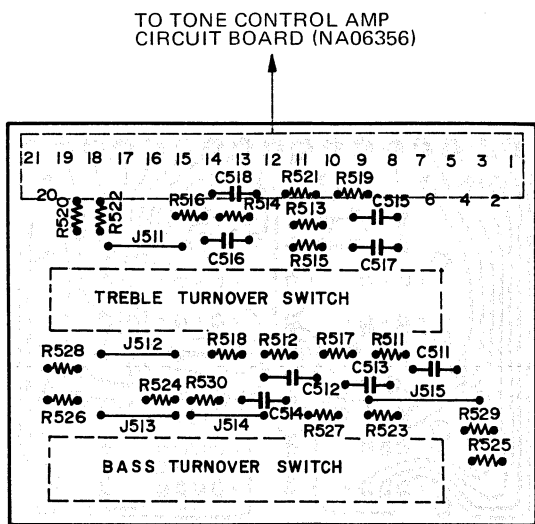
ALL CARBON RESISTOR

▼ CAPACITOR

SYMBOL	PARTS NAME	REMARKS
⊙	MYLAR CAPACITOR	
NO MARK	CERAMIC CAPACITOR	
⊗	TANTALUM CAPACITOR	
NO MARK	ELECTROLYTIC CAPACITOR & BI-POLAR ELECTROLYTIC CAPACITOR	

Ref. No.	Parts No.	Description		Remarks
TR471 ~ 476	iC13454	Transistor	2SC1345	D, E
	LB40011	CIS Connector Socket	4P	
	LB60036	CIS Connector Socket	20P	
	LB10016	CIS Keying Pin		
	LB60027	Connector Plug	6P	No. 2185-6A

**TONE CONTROL SWITCH CIRCUIT BOARD
NAO6363**

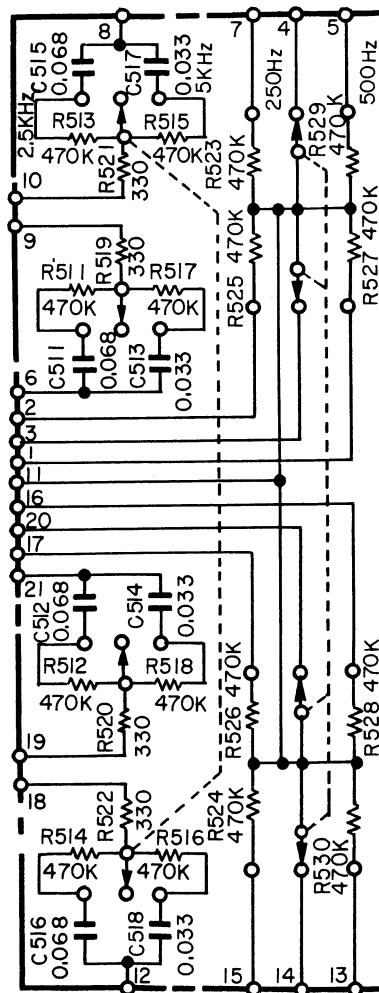


▼ RESISTOR

ALL CARBON RESISTOR

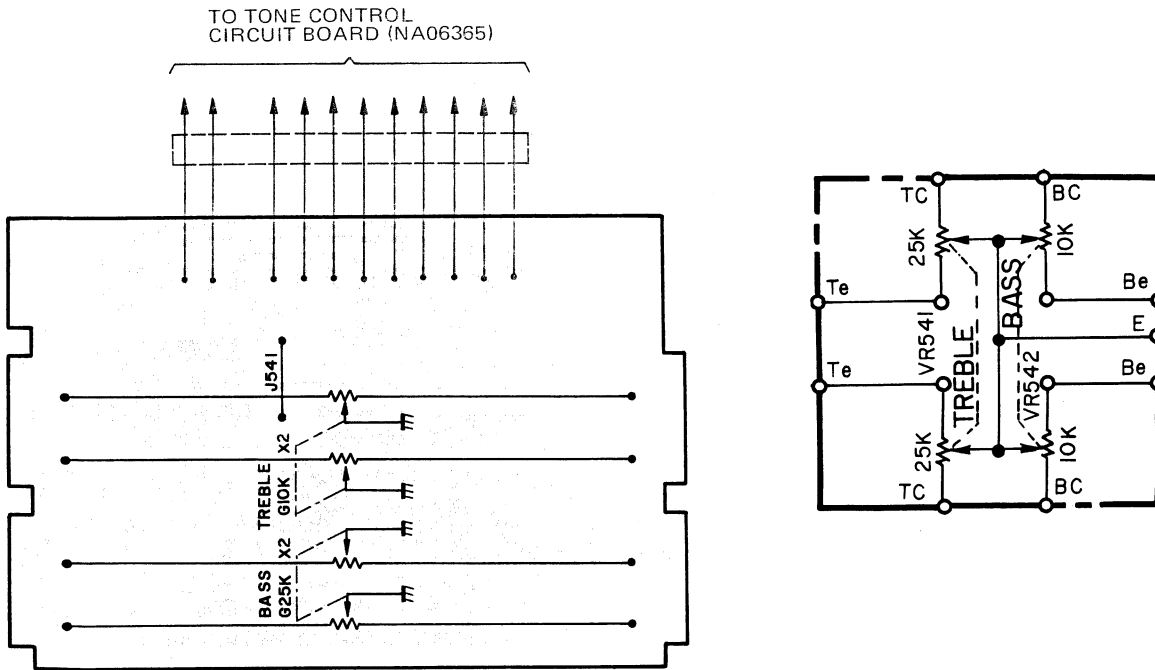
▼ CAPACITOR

ALL MYLAR CAPACITOR



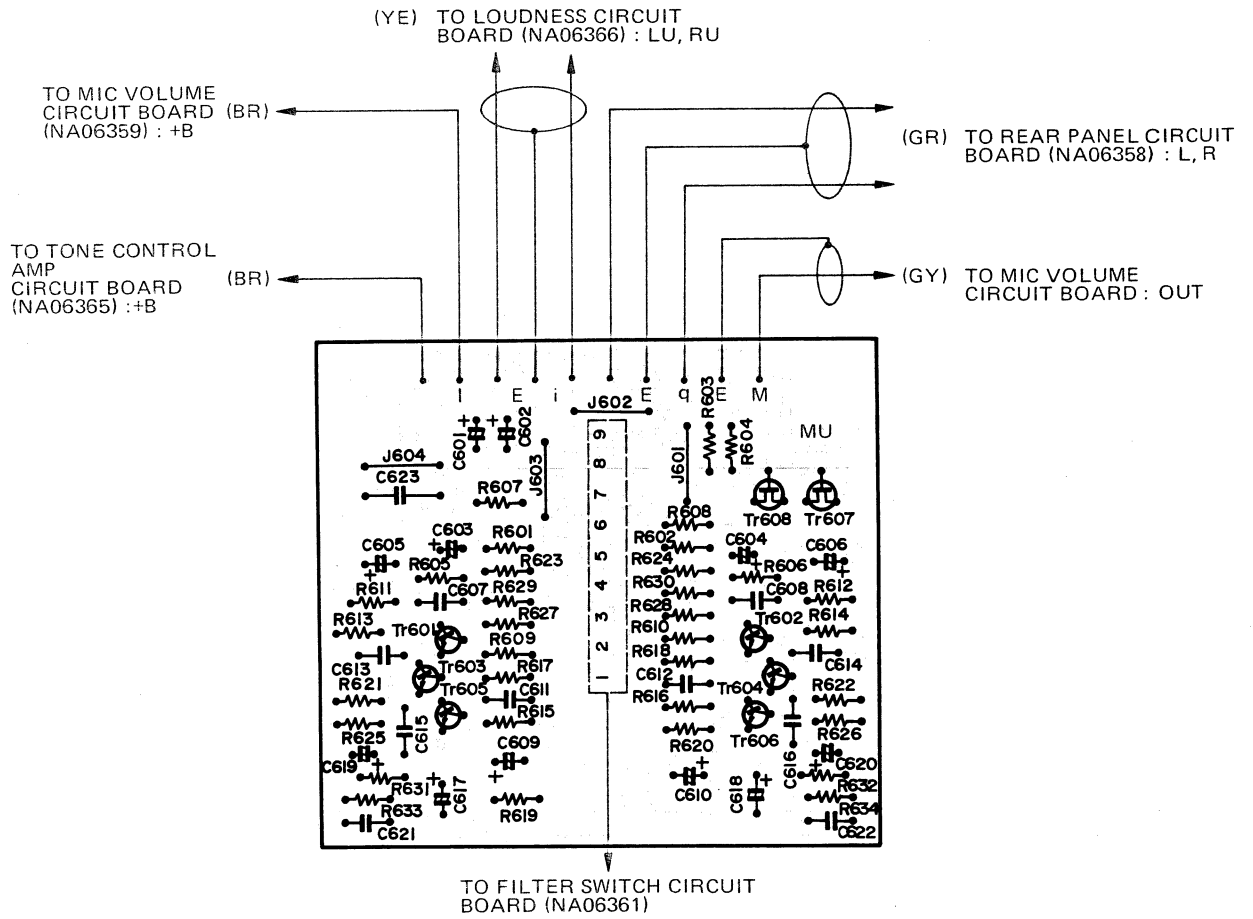
Ref. No.	Parts No.	Description	Remarks
	KA20014	Lever Switch	SLA-34301
	KA20016	Lever Switch	SLA-32301
	LB30013	Connector Socket	No. 2145-3A
	LB60028	Connector Socket	No. 2145-6A

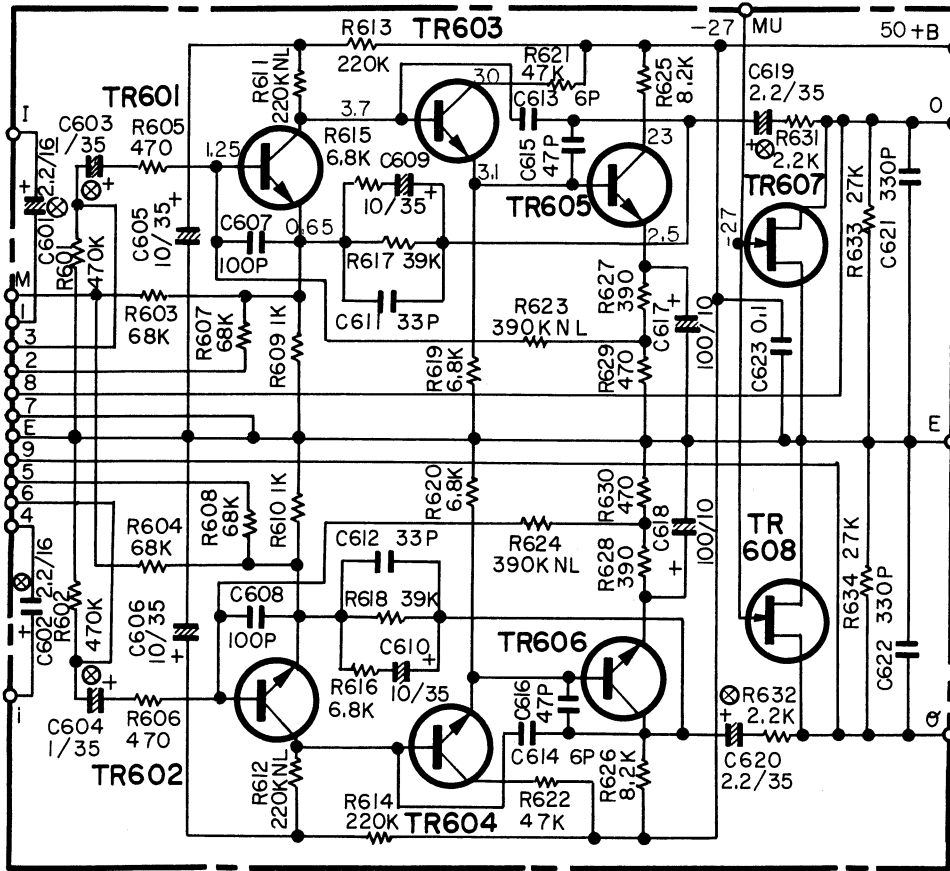
STONE CONTROL VOLUME CIRCUIT BOARD NAO6364



Ref. No.	Parts No.	Description	Remarks
VR541	HQ20011	Slide Variable Resistor	G25kΩ
VR542	HQ20012	Slide Variable Resistor	G10kΩ
	LB60028	Connector Socket	6P

FILTER AMP CIRCUIT BOARD NAO6362

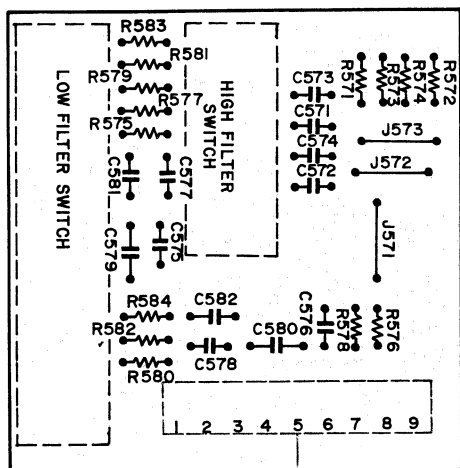




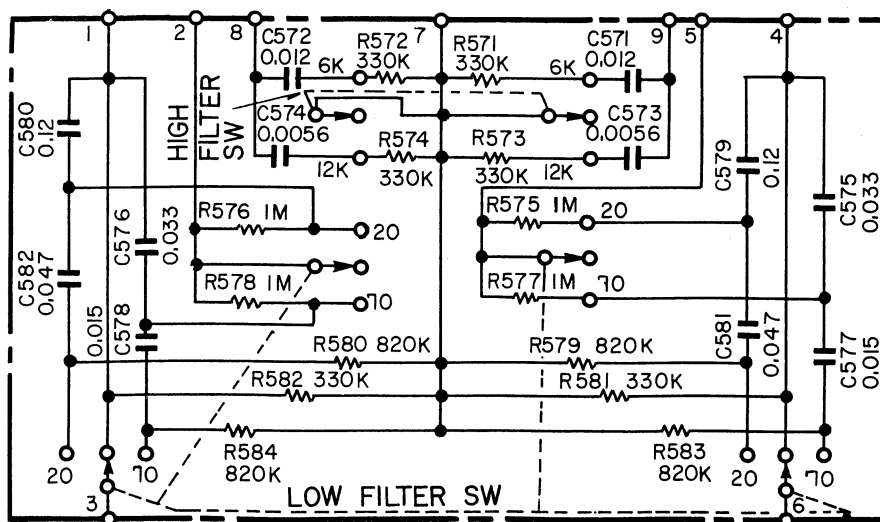
- ▼ RESISTOR
- ALL CARBON RESISTOR
- ▼ CAPACITOR
- ⊗ : TANTALUM CAPACITOR

Ref. No.	Parts No.	Description		Remarks
TR601 ~ 606	iC13454	Transistor	2SC1345	E, D
TR607 ~ 608	iE00002	FET	2SK30A	GR
	LB30012	Connector Plug	3P	No. 2183-3A
	LB60027	Connector Plug	6P	No. 2183-6A

FILTER SWITCH CIRCUIT BOARD NAO6361



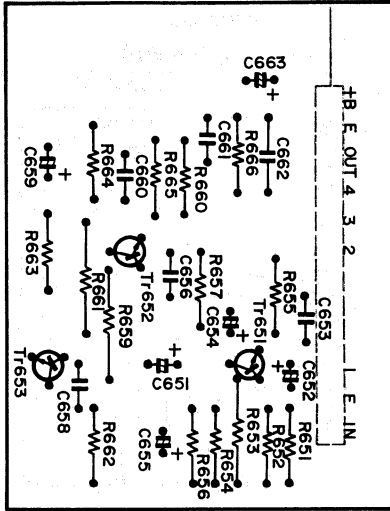
TO FILTER AMP CIRCUIT BOARD (NA06362)



Ref. No.	Parts No.	Description	Remarks
	KA20014	Lever Switch	SLA34301
	LB40009	CIS Connector Housing	4P
	LB60037	CIS Connector Housing	20P
	LB10019	CIS Connector Pin	

MIC AMP CIRCUIT BOARD NAO6360

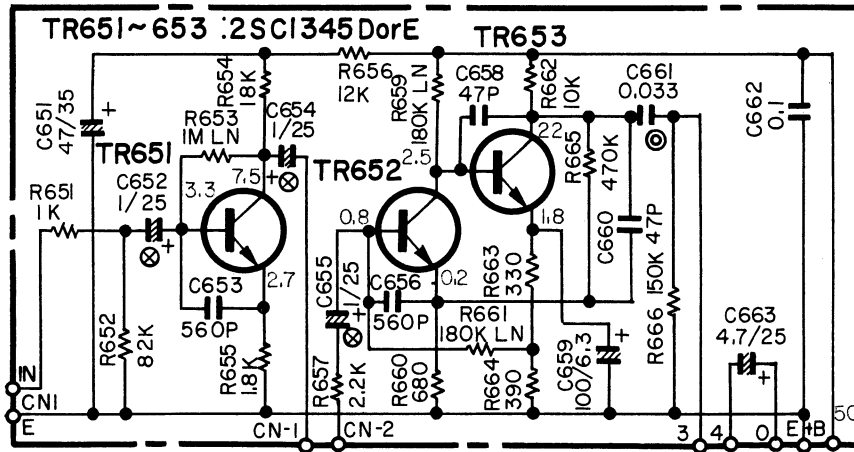
TO MIC VOLUME CIRCUIT BOARD (NA06359)



▼ RESISTOR
ALL CARBON RESISTOR

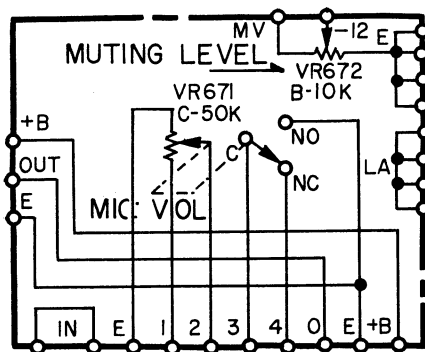
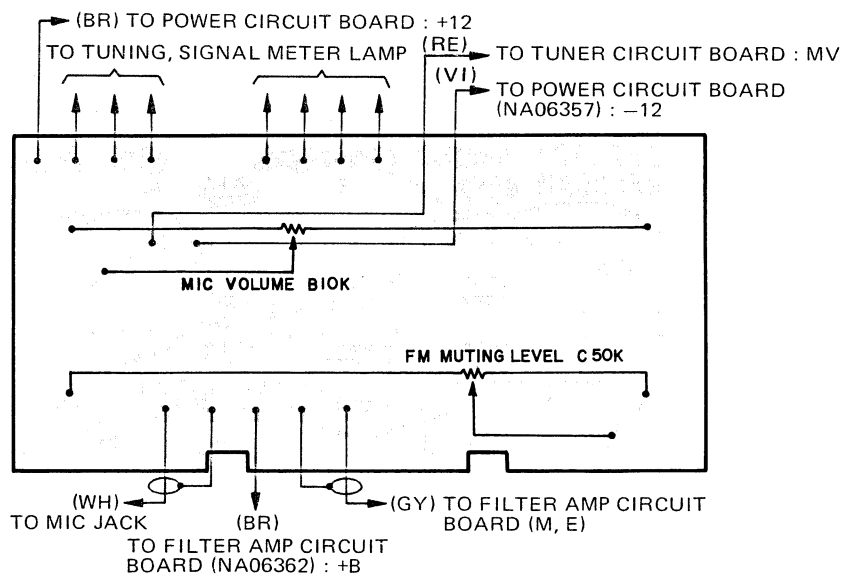
▼ CAPACITOR

SYMBOL	PARTS NAME	REMARKS
⊙	MYLAR CAPACITOR	
NO MARK	CERAMIC CAPACITOR	
⊗	TANTALUM CAPACITOR	
NO MARK	ELECTROLYTIC CAPACITOR & BI-POLAR ELECTROLYTIC CAPACITOR	



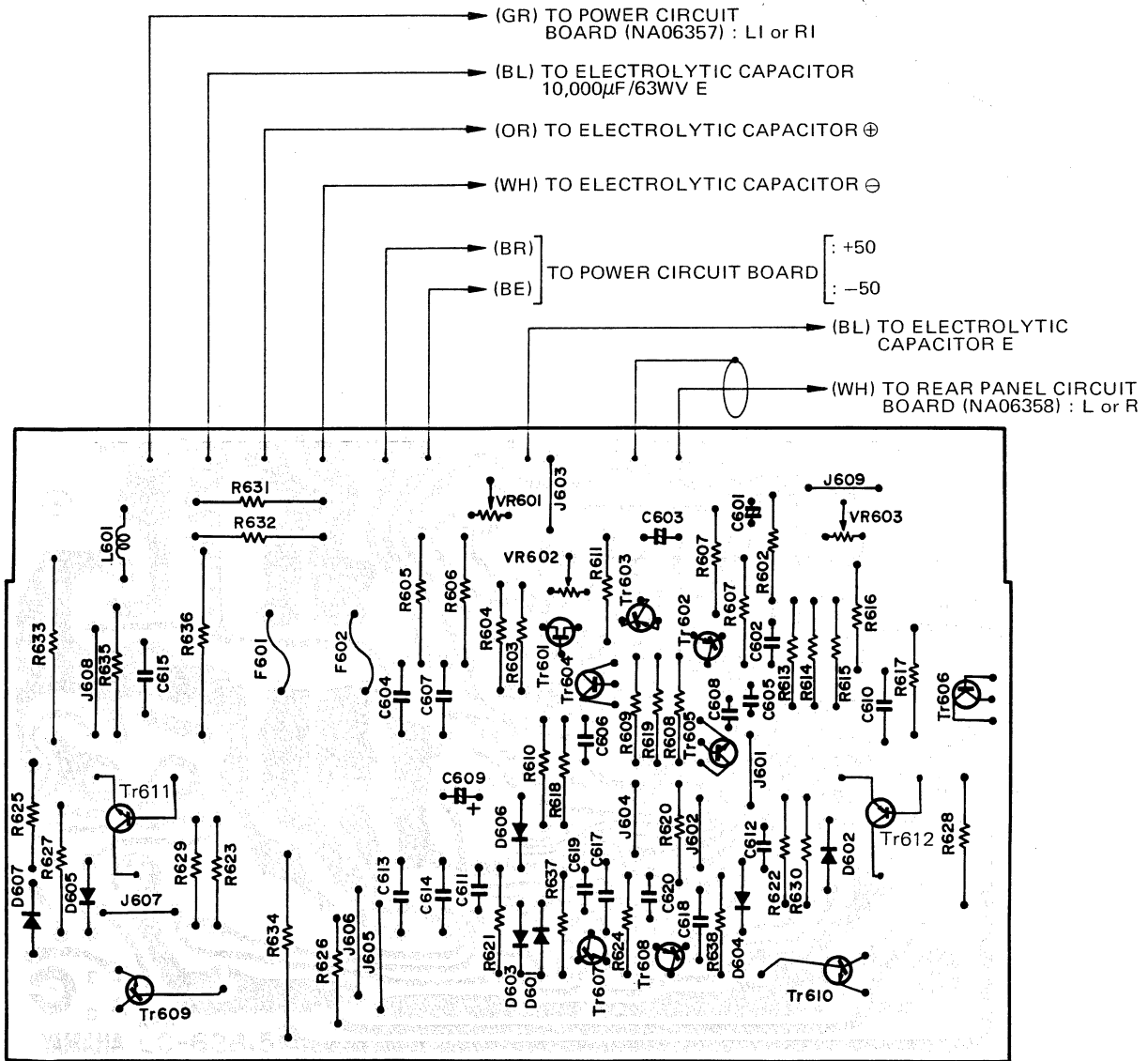
Ref. No.	Parts No.	Description	Remarks
TR651, 652, 653	iC13454	Transistor	2SC1345 D, E
VR671	HQ20015	Slide Variable Resistor	C50kΩ EVA-S02A11C52
VR672	HQ20016	Slide Variable Resistor	B10kΩ EVA-201A11B14
	LB60027	Connector Plug	6P No. 2183-6A
	LB30012	Connector Plug	3P No. 2183-3A
	KA60011	Micro Switch	AM6220-44

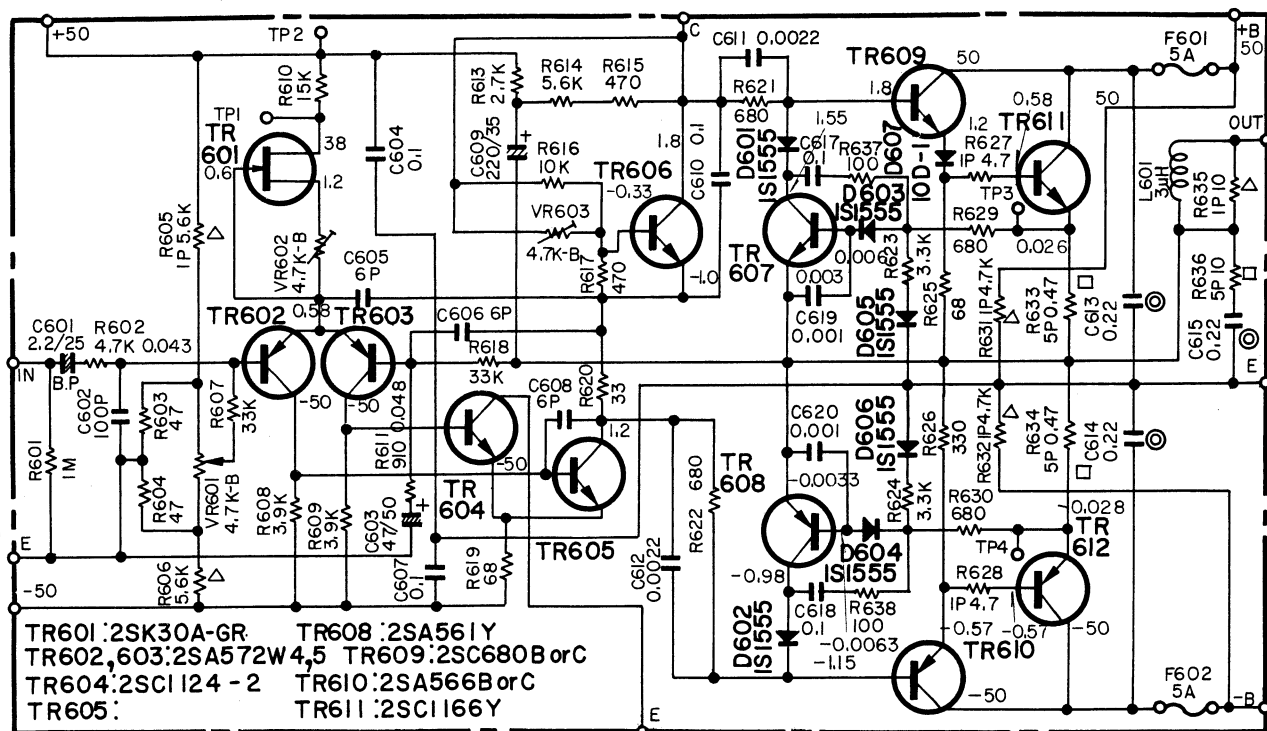
MIC VOLUME CIRCUIT BOARD NAO6359



Ref. No.	Parts No.	Description		Remarks
VR671	HQ20015	Slide Variable Resistor	C 50k Ω	EVA-S02A11C52
VR672	HQ20016	Slide Variable Resistor	B 10k Ω	EVA-S01A11B14
	LB60027	Connector Plug	6P	No. 2183-6A
	LB30012	Connector Plug	3P	No. 2183-3A
	KA60011	Micro Switch		AM6220-44

**MAIN AMP CIRCUIT BOARD NAO6401 : EXCEPT EUROPEAN MODELS
NAO6402 : EUROPEAN MODELS ONLY**





TR601 :2SK30A-GR TR608 :2SA561Y
 TR602,603:2SA572W4,5 TR609:2SC680B or C
 TR604:2SC1124 - 2 TR610:2SA566B or C
 TR605: TR611 :2SC1166Y

▼ CAPACITOR

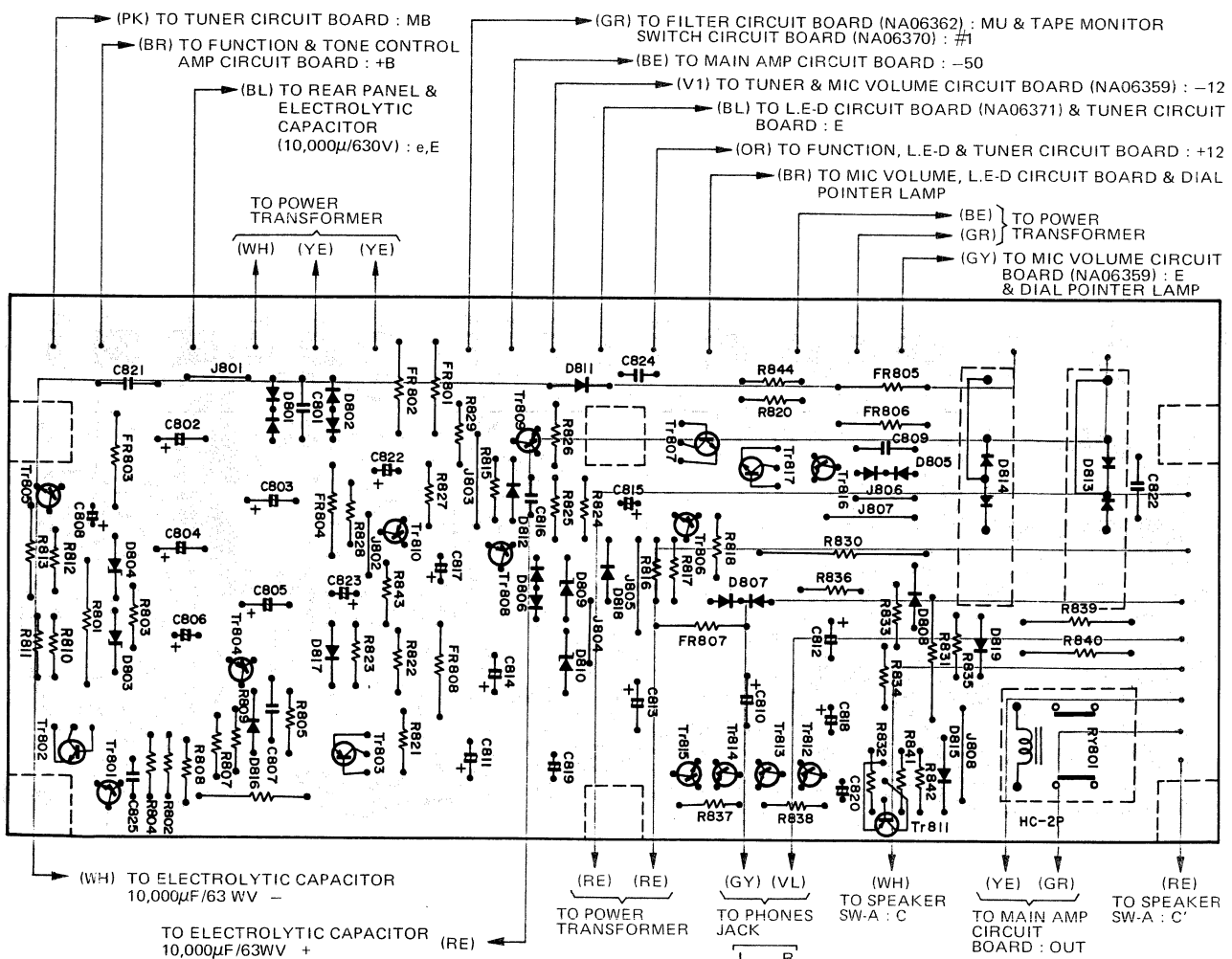
▼ RESISTOR

SYMBOL	PARTS NAME
	FUSE RESISTOR
	METALIZED OXIDATION RESISTOR
	CEMENT RESISTOR
NO MARK	CARBON RESISTOR
	CEMENT MOLDED RESISTOR


SYMBOL	PARTS NAME	REMARKS
	MYLAR CAPACITOR	
NO MARK	CERAMIC CAPACITOR	
	TANTALUM CAPACITOR	
NO MARK	ELECTROLYTIC CAPACITOR & BI-POLAR ELECTROLYTIC CAPACITOR	

Ref. No.	Parts No.	Description		Remarks
TR601	iE00002	FET	2SK30A	GR
TR602~603	iA05720	Transistor	2SA572	W-4, 5
TR604~605	iC11242	Transistor	2SC1124	-2
TR606	iC04583	Transistor	2SC458	C
TR607	iC07342	Transistor	2SC734	Y
TR608	iA05612	Transistor	2SA561	Y
TR609	iC06802	Transistor	2SC680	B, C
TR610	iA05662	Transistor	2SA566	B, C
TR611	iC11161	Transistor	2SC1116	O, Y
TR612	iA07471	Transistor	2SA747	O, Y
D 601~606	iF00004	Diode	1S1555	
D 607	iH00003	Diode	10D-1	
VR601~603	HT41015	Variable Resistor	B4.7kΩ	SR-29R
L 601	GD90005	Coil	3µH	
F 601 ~ 602	KB00110	UL Fuse	SS-2	5.0A 250V except European model
F 601 ~ 602	KB00059	S Fuse		5.0A 250V European model only



POWER CIRCUIT BOARD NAO6357



▲ RESISTOR

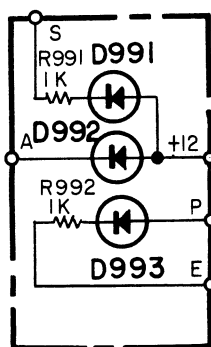
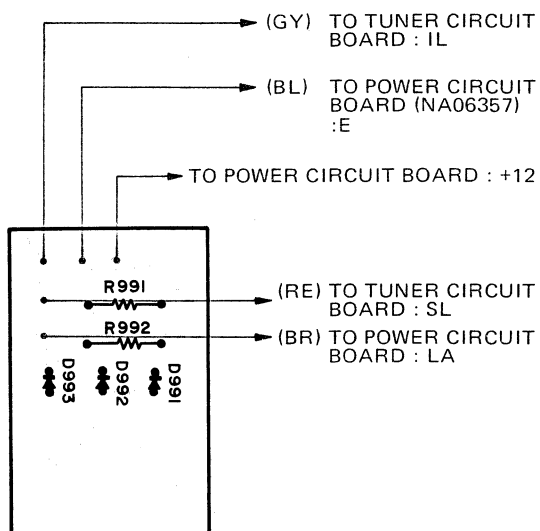
SYMBOL	PARTS NAME
△	METALIZED OXIDATION RESISTOR
□	CEMENT RESISTOR
NO MARK	CARBON RESISTOR
	FUSE RESISTOR

▲ CAPACITOR

SYMBOL	PARTS NAME	REMARKS
⊙	MYLAR CAPACITOR	
NO MARK	CERAMIC CAPACITOR	
⊗	TANTALUM CAPACITOR	
NO MARK	ELECTROLYTIC CAPACITOR & BI-POLAR ELECTROLYTIC CAPACITOR	

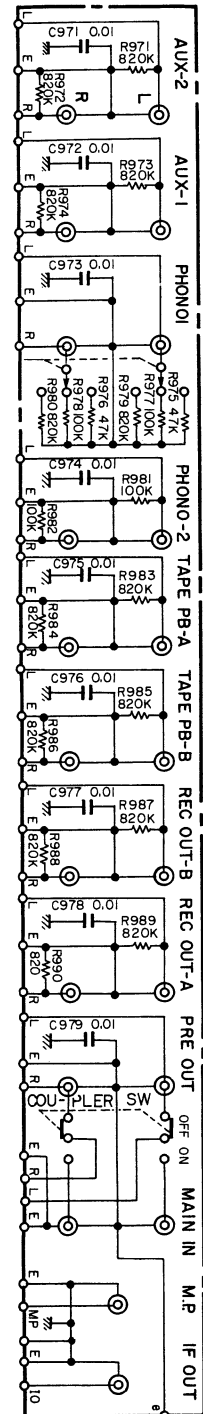
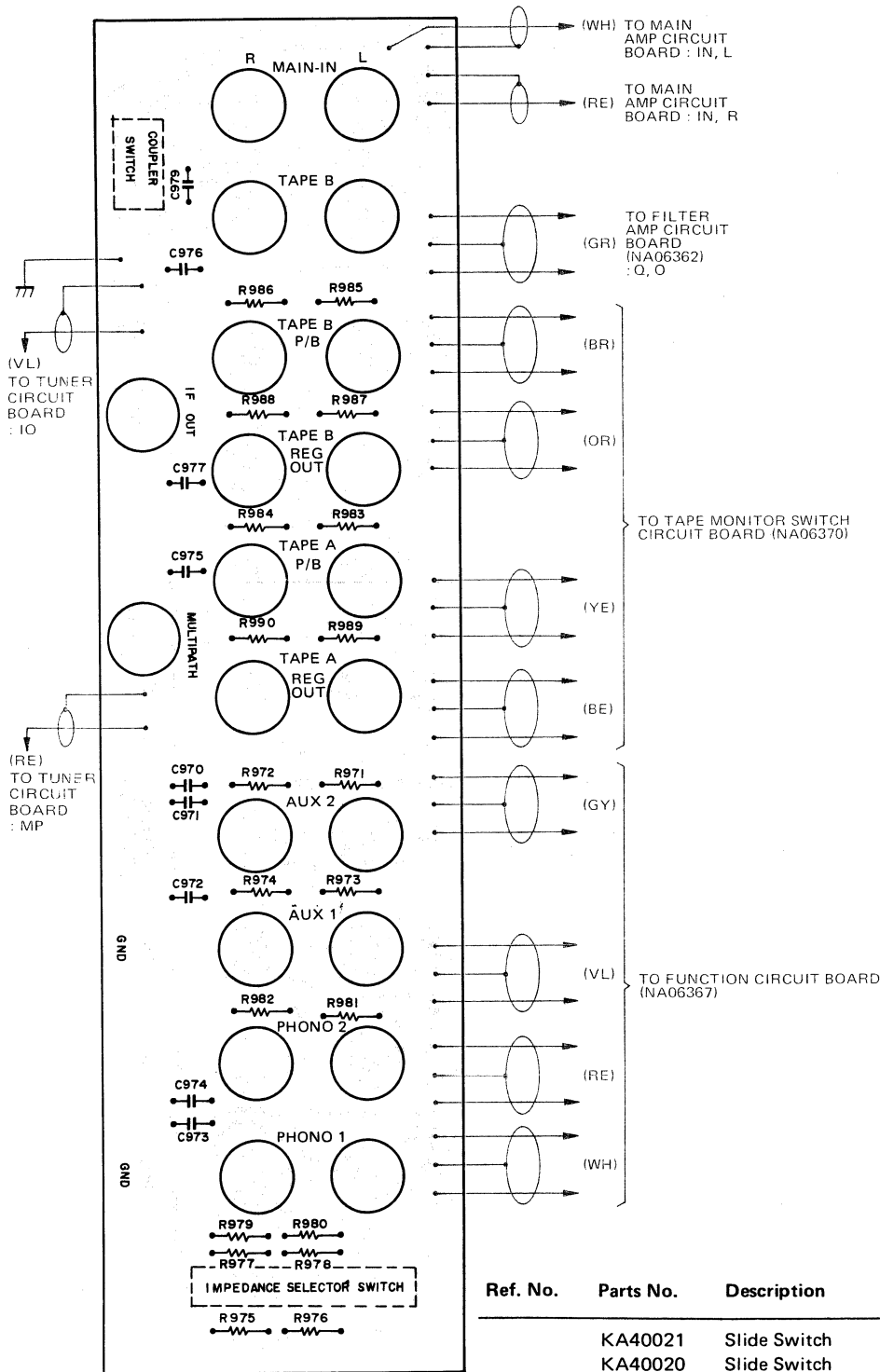
Ref. No.	Parts No.	Description		
TR801	iC12139	Transistor	2SC1213	S B, C
TR802, 807, 817	iC10618	Transistor	2SC1061	S B, C
TR803	iA06719	Transistor	2SA671	S B, C
TR804, 809 810	iA05612	Transistor	2SA561	Y
TR805	iC13454	Transistor	2SC1345	D, E
TR806, 813, 815, 816	iC04583	Transistor	2SC458	C
TR808	iA06739	Transistor	2SA673	B, C
TR811	iA06820	Transistor	2SA682	Y
TR812	iC04586	Transistor	2SC458	LGD
TR814	iA05720	Transistor	2SA572	W4, 5
D 801	iH00005	Diode	10DC-2	
D 802	iH00013	Diode	10DC-2R	
D 803	iF00022	Zener Diode	WZ-310	
D 804	iF00028	Zener Diode	WZ-210	
D 805 807	iH00008	Diode	10DC-1	
D 808, D 811, 812, 817, 818	iF00004	Diode	1S1555	
D 809 810	iF00032	Zener Diode	WZ-061	
D 813	iH00021	Silicon Rectifier	S5151	
D 814	iH00022	Silicon Rectifier	S5151R	
D 815 816	iH00003	Diode	10D-1	
D 819	iF00002	Diode	SD-46	
RY801	KC00008	Relay	HC-2P	

LIGHT EMITTING DIODE CIRCUIT BOARD NAO6371



Ref. No.	Part No.	Description	
D 991 ~ 993	iF00029	Light Emitting Diode	TLR-102

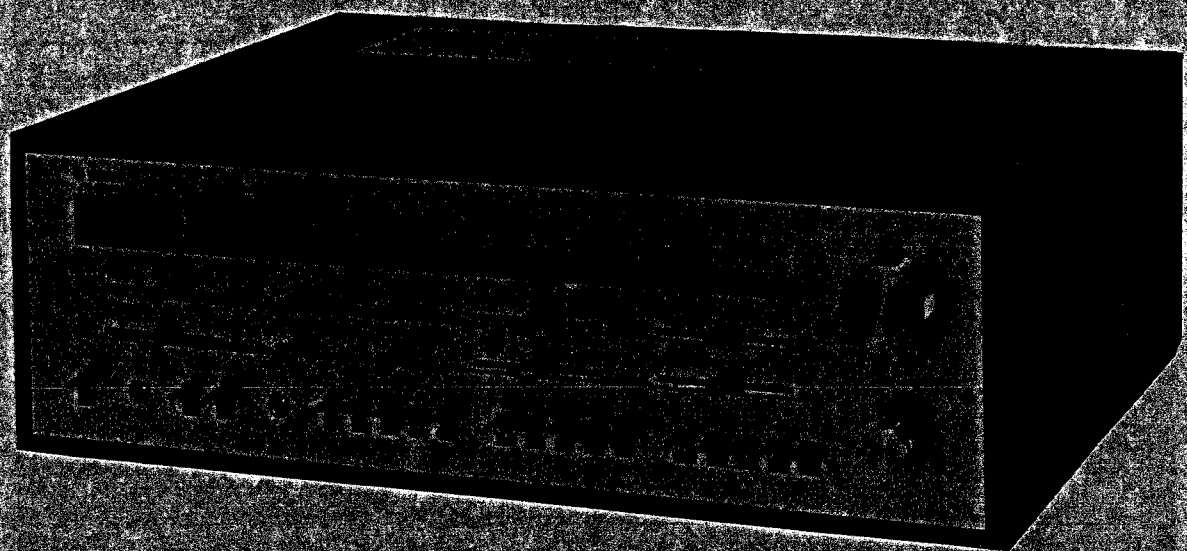
REAR PANEL CIRCUIT BOARD NAO6358

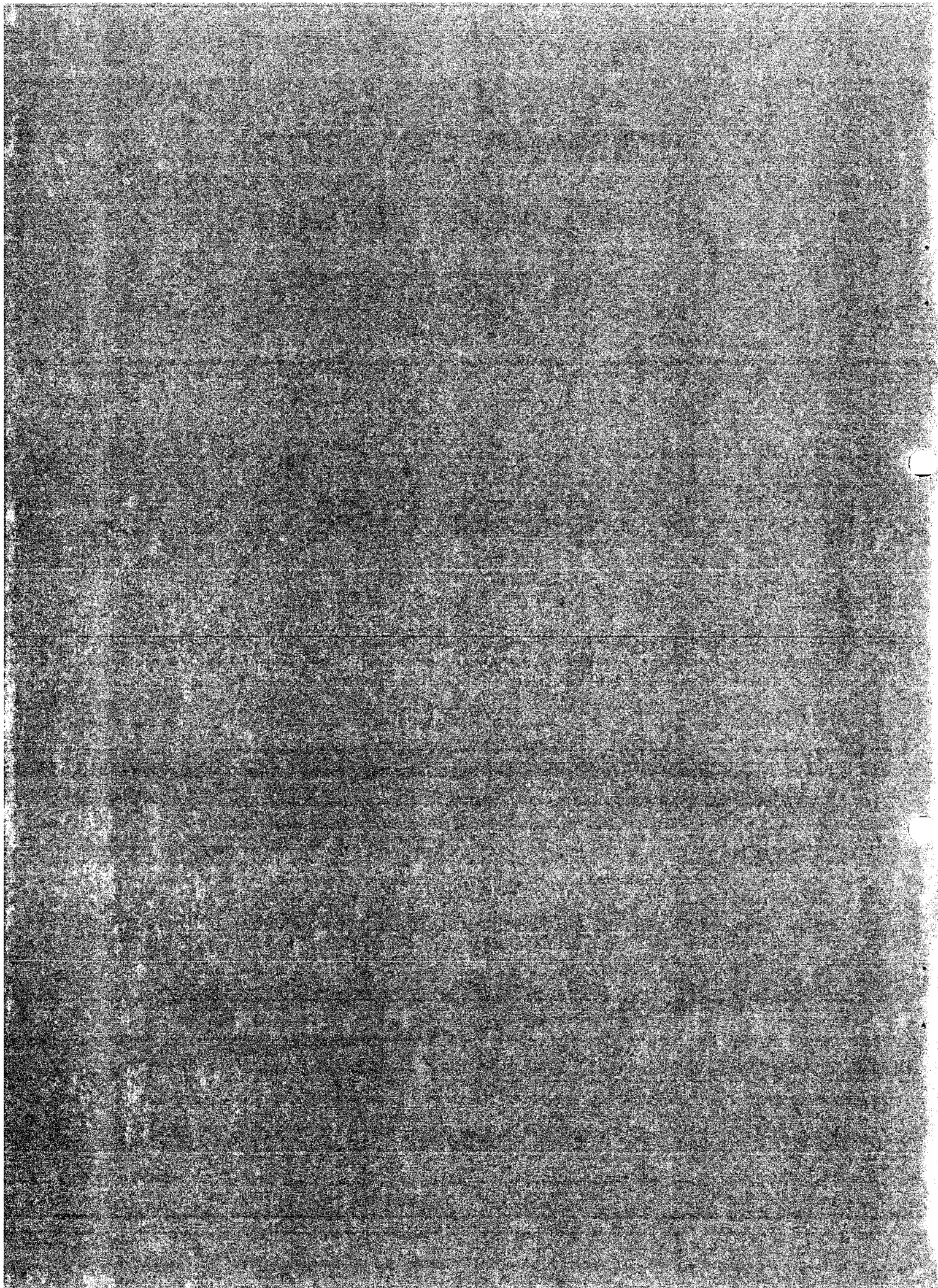


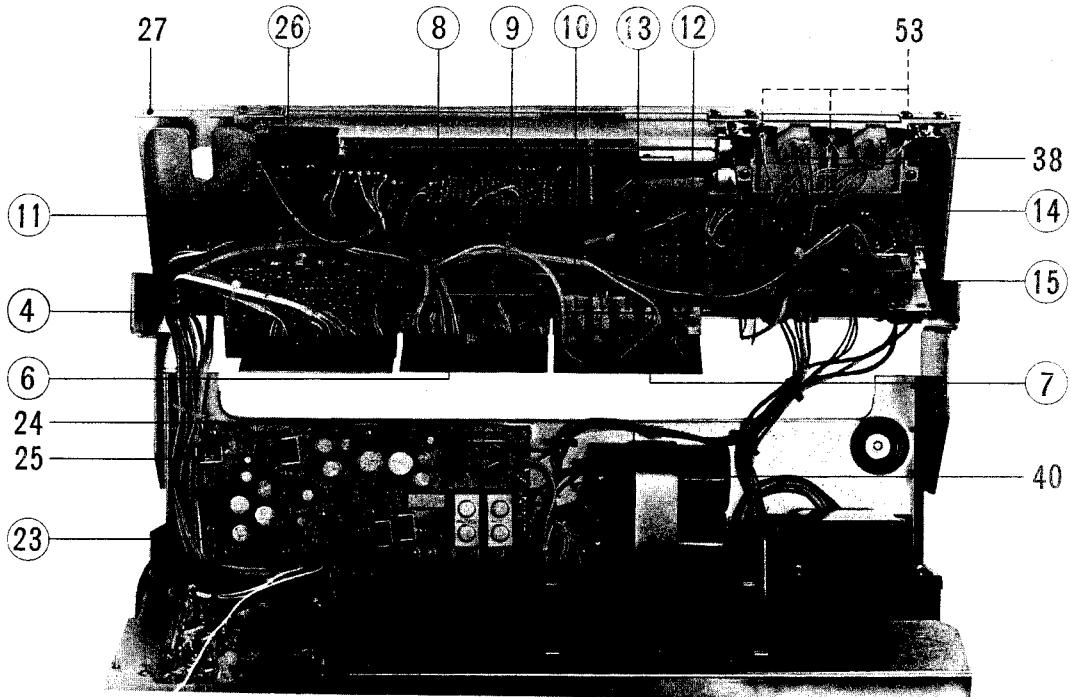
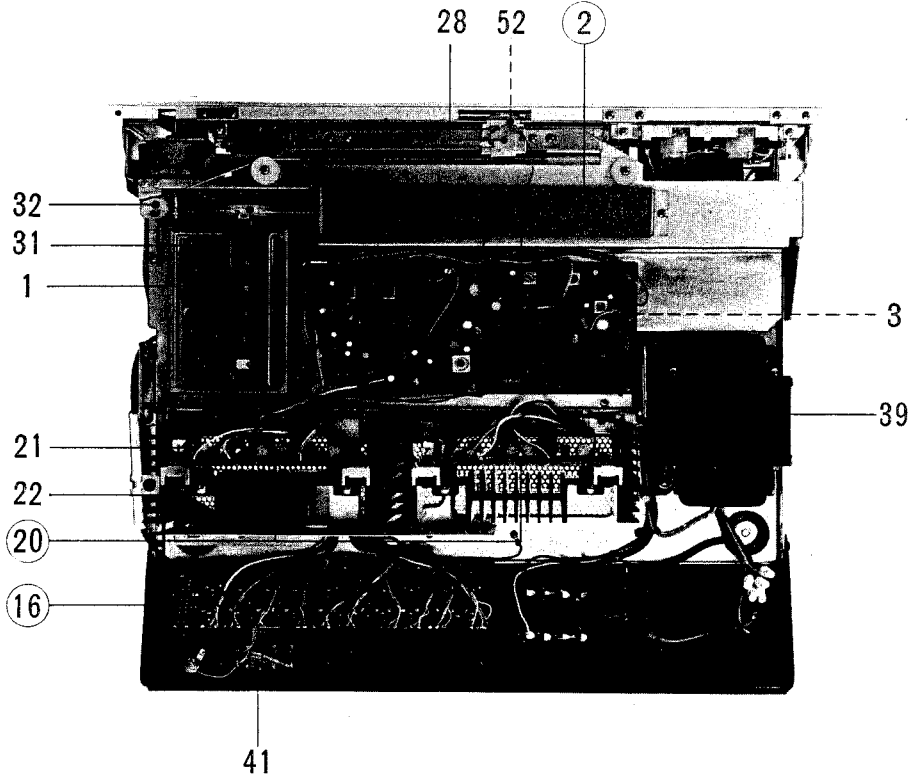
Ref. No.	Parts No.	Description	Remarks
	KA40021	Slide Switch	SSB02242
	KA40020	Slide Switch	SL243B4
	LB10014	Pin Jack (for the printed circuit board)	SMK S-Q3061

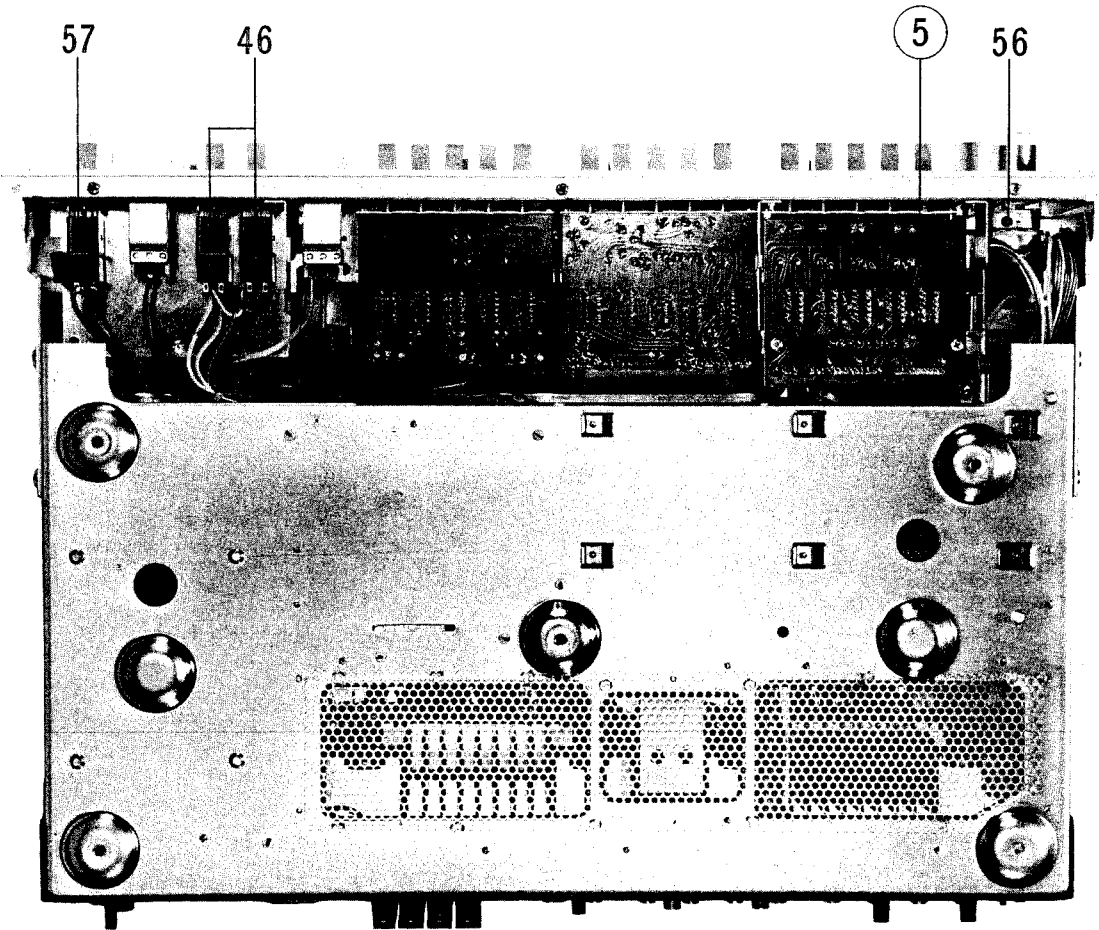
**YAMAHA CR-1000
COMPONENT STEREO
FM RECEIVER**

PARTS LIST









Ref. No.	Part No.	Description			Remarks	Common Models
1	PA00016	FM Pack	FS112J	F M パ ッ ク	Domestic model	
	PA00017	"	FS112U	"	U.S., Canadian, Australian & European models	
	PA00018	"	FS112S	"	South African model	
②	NA06372	FM IF circuit board	63012	F M I F シ ー ト	South African model	CR1000 CR800
	NA06405	"	"	"	U.S. & Canadian models	"
	NA06406	"	"	"	General, Australian & European models	"
	FF04310	Polystyrene capacitor (X type)	1000PF	X 型 ス チ ロ ー ル コ ン デ ン サ		
	FF04347	"	4700PF	"		
	FF04410	"	10000PF	"		
		Tantalum capacitor	10 μ F 16WV	タ ン タ ル 固 体 コ ン デ ン サ		
		"	0.68 μ F 35WV	"		
		"	1 μ F "	"		
		"	2.2 μ F "	"		
		Bipolar electrolytic capacitor	3.3 μ F 25WV	バ イ ボ ー ラ コ ン デ ン サ		
	HT41004	Variable resistor (SV10KR)	B4.7K Ω	ソ リ ッ ド V R		
	HT41007	" (")	B10K Ω	"		
	HY00017	" (TM-10K)	B22K Ω	メ タ ル グ レ ー ス V R		
	GE30001	RF inductor	10 μ H	R F イ ン ダ ク タ ー		
	GE10005	FM IFT		F M I F T	GE6019	
	GE10006	"		"	GE6025	
	GE20008	MPX coil		M P X コ ー ル	GE6057	
	GE20009	"		"	GE6058	
	GE20010	"		"	GE6059	
	GE20011	"	47mH	"	GE6062	
	GG00002	Ceramic filter	CF-10M-12	セ ラ ミ ッ ク フ ィ ル タ ー		
		Integrated circuit	μ PC-16C	I C		
		Diode	1S1555	ダ イ オ ー ド		
		"	SD-46	"		
		Transistor	2SA572(WL-4.5)	ト ラ ン ジ ス タ		
		"	2SC458(C or D)	"		
		"	2SC458LG(C or D)	"		
		"	2SC460(B or C)	"		
3	LB10020	Pin jack	SQ3056	基 板 型 ピ ン ジ ャ ッ ク		

Ref. No.	Part No.	Description	Remarks	Common Models
④	NA06368	Equalizer circuit board #63372	イコライザート シ	
		Metal oxide film resistor 1.5K Ω 1/2W	酸化金属抵抗	
		Metalized film resistor ($\pm 1\%$) 590 Ω	金属被膜抵抗	
		" (") 24K Ω	"	
		" (") 287K Ω	"	
		Tantalum capacitor 4.7 μ F 16WV	デッド型タンタル コンデンサ	
		" 1 μ F 35WV	"	
		Polystyrene capacitor 100PF $\pm 5\%$	スチロール コンデンサ	
		" 3000PF $\pm 2\%$	"	
		" 0.011 μ F $\pm 1\%$	"	
		Diode ISI555	ダイオード	
		Zener diode WZ-100	ツェナーダイオード	
		Transistor 2SA661 (GR or Y)	トランジスタ	
		" 2SC1166 (GR or Y)	"	
		" 2SC1345 (E or F)	"	
		FET (field effect transistor) 2SK30A (K,L or M)	電界効果 トランジスタ	
	LB30013	Connector socket 3P	3Pコネクタ ソケット	
	LB60028	" 6P	6Pコネクタ ソケット	
	HT41004	Variable resistor (SV10KR) B4.7K Ω	ソリッドVR	
⑤	NA06367	Function switch circuit board #63360	ファンクション スイッチシート	
	KA70042	Lever switch (5 interlocking) SPZ-5202(S)	5連ピアノスイッチ	Function
	LB60027	Connector plug 6P No.2183-6A	コネクタプラグ	
	LB30012	" 3P No.2183-3A	"	
	LB60030	CIS connector socket 13P	CISコネクタ ソケット 13P	
	LB60025	" 9P	" 9P	
	LB40008	" 4P	" 4P	
	LB10016	CIS keying pin	CISキーイン ピン	
⑥	NA06370	Tape monitor switch circuit board #63390	テープモニター スイッチシート	
	KA70044	Lever switch (5 interlocking)	5連ピアノ スイッチ	TAPE

Ref. No.	Part No.	Description	Remarks	Common Models
	LB40008	CIS connector 4P	CISコネクタ 4P	
	LB50007	" 5P	" 5P	
	LB60030	" 13p	" 13P	
	LB10016	CIS keying pin	CISキーイング ピン	
⑦	NA06369	Mode switch circuit board #63380	モードスイ ッチ	
	KA70042	Lever switch (5 interlocking)	5連ピアノス イッチ	MODE
⑧	NA06364	Tone volume circuit board #63330	トーンボリ ウム	
	HQ20012	Slide variable resistor, with click 60mm 10K Ω x 2	スライドボリ ウム 11点クリック付	TREBLE
	HQ20011	" 25K Ω x 2	"	BASS
	LB60028	Connector socket 6P No.2145-6A	コネクタ ソケット	
⑨	NA06365	Tone amp. circuit board #63341	トーンアン プシート	
		Tantalum capacitor 33 μ F 10WV	タンタル固 体 コンデン サ	
		" 1 μ F 35WV	"	
		" 3.3 μ F 35WV	"	
		Transistor 2SC1345(D or E)	トランジ スタ	
	LB60027	Connector plug 6P No.2183-6A	コネクタ プラグ	
	LB40011	CIS connector socket 4P	CISコネク タ ソケット 4P	
	LB60036	" 20P	" 20P	
	LB10016	CIS keying pin	CISキー イング ピン	
⑩	NA06363	Tone control switch circuit board #63321	トーンスイ ッチ	
	KA20014	Lever switch SLA-34301	レバース イッチ	TURN OVER DEFEAT
	LB60037	CIS connector housing 20P	CISコネク タ ハウジ ング	
	LB40009	" 4P	"	
	LB10019	CIS connector pin	CISコネク タ ピン	
⑪	NA06366	Loudness circuit board #63350	ラウドネ スシート	

Ref. No.	Part No.	Description		Remarks	Common Models
	HQ20013	Slide variable resistor	B20K Ω x 2	スライドVR	LOUDNESS
	HQ20014	"	HB250K Ω x 2	"	BALANCE
⑫	NA06362	Filter amp circuit board	#63310	フィルターアンプ	
		Tantalum capacitor	2.2 μ F 16WV	タンタルコンデンサ	
		"	1 μ F 35WV	"	
		"	2.2 μ F 35WV	"	
		Transistor	2SC1345 (E or D)	トランジスタ	
		FET (field effect transistor)	2SK30A (GR)	電界効果トランジスタ	
	LB60027	Connector plug	6P No.2183-6A	コネクタプラグ	
	LB30012	"	3P No.2183-3A	"	
⑬	NA06361	Filter switch circuit board	#63301	フィルタースイッチ	
	KA20016	Lever switch	SLA-32301	レバースイッチ	TREBLE
	KA20014	"	SLA-34301	"	BASS
	LB30013	Connector socket	3P No.2145-3A	コネクタソケット 3P	
	LB60028	"	6P No.2145-6A	" 6P	
⑭	NA06359	Mic volume circuit board	#63281	マイクVRシート	
	HQ20015	Slide variable resistor	60mm C-50K Ω	スライドVR	INPUT GAIN
	HQ20016	"	" B10K Ω	"	OUTPUT GAIN
	KA60011	Micro switch	AM6220-44	マイクロスイッチ	MIC SW
	AA07533	Micro switch holder		マイクロスイッチホルダ	
	AA07534	Micro switch lever		マイクロスイッチレバ	
	AA07535	"		"	
	LB30012	Connector plug 3P	No.2183-3A	コネクタプラグ 3P	
	LB60027	" 6P	No.2183-6A	" 6P	
⑮	NA06360	Mic amp circuit board	#63291	マイクアンプ	
		Tantalum capacitor	1 μ F 25WV	タンタルコンデンサ	
		Transistor	2SC1345 (C or D)	トランジスタ	

Ref. No.	Part No.	Description			Remarks	Common Models
	LB60028	Connector socket	6P	No.2145-6A	コネクターソケット 6P	
	LB30013	"	3P	No.2145-3A	" 3P	
⑩	NA06358	Rear panel circuit board	#63271		リアパネル シ	
17	KA40021	Slide switch	SL222B4		スライドスイッチ	COUPLER
18	KA40020	"	SL243B4BM		"	PHONO IMP
19	LB10014	Pin jack	S-Q3061		ピンジャック	
⑳	NA06401	Main amp circuit board	#62815		メインシート	except European model
	NA06402	"	"		"	European model
		Cement molded resistor (fireproof)	4.7 Ω 1W		不燃性抵抗	
		Metalized Oxidation resistor	10 Ω 1W		酸化金属抵抗	
		"	4.7K Ω		"	
		"	5.6K Ω		"	
		Cement resistor	0.47 Ω 5W		セメント抵抗	
		"	10 Ω		"	
		Bipolar electrolytic capacitor	2.2 μF 25WV		バイポーラ コンデンサ	
		"	47 μF 50WV		"	
	HT41015	Variable resistor (SP29R)	B4.7K Ω		可変抵抗器	
21	GD90005	Coil	3 μH		空芯コイル	
		Transistor	2SA561(Y)		トランジスタ	
		"	2SA566(B or C)		"	
		"	2SA572(W-4.5)		"	
		"	2SC458(C)		"	
		"	2SC680(B or C)		"	
		"	2SC734(Y)		"	
		"	2SC1124(-2)		"	
		"	2SA679		"	
		"	2SC1079		"	
		FET (field effect transistor)	2SK30A GR		電界効果 トランジスタ	
		Diode	1S1555		ダイオード	
		"	10D-1		"	

Ref. No.	Part No.	Description		Remarks	Common Models
	LB30011	Transistor socket	S2-110B-00	トランジスタソケット	
	LB00057	Fuse holder pin		ヒューズホルダーピン	
	BB06308	Transistor pusher		トランジスタプッシャー	
	BA06487	Heat sink		放熱板	
	KB00110	Fuse (UL listed SS-2)	5.0A 250V	ヒューズ	except European model
	KB00059	Miniature fuse	5.0A 250V	"	European model
②③	NA06357	Power supply circuit board	#63263	電源シート	
		Metalized oxidation resistor	270Ω 1W	酸化金属抵抗	
		"	8.2KΩ "	"	
		"	68Ω 2W	"	
		"	3.3KΩ "	"	
		"	10Ω 3W	"	
		Fuse resistor	3.9Ω ½W	ヒューズ抵抗	
		"	10Ω "	"	
		"	47Ω "	"	
		"	220Ω "	"	
		Bipolar electrolytic capacitor	100μF 6.3WV	バイポーラコンデンサ	
		"	1μF 50WV	"	
		Diode	1S1555	ダイオード	
		"	10D-1	"	
		"	10DC-1	"	
		"	10DC-1R	"	
		"	10DC-2	"	
		"	10DC-2R	"	
		"	SD-46	"	
		Zenner diode	WZ-061	ツェナーダイオード	
		"	WZ-210	"	
		"	WZ-310	"	
		Transistor	2SA561(Y)	トランジスタ	
		"	2SA572(W-4.5)	"	
		"	2SA673(B or C)	"	
		"	2SA671(B or C)	"	
		"	2SA682(Y)	"	
		"	2SC458(C)	"	
		"	2SC458LG(D)	"	

Ref. No.	Part No.	Description		Remarks	Common Models
		Transistor	2SC1061(C)	トランジスタ	
		"	2SC1061(B or C)	"	
		"	2SC1213(B or C)	"	
		"	2SC1345(D or E)	"	
24	KC00008	Relay	HC-2P	リレー	
		Diode	S5151	シリコンダイオード	
		"	S5151R	"	
25	BA06161	Heat sink		放熱板	
②6	NA06371	L.E.D. circuit board	#63400	L. E. D. シート	
		Light emitting diode	TLR-102	発光ダイオード	
	CB06896	Indicator holder		インジケータホルダー	
	CB06944	Plastic revet		プラスチックリベット	
27	NB06754	Front panel assembly		パネルユニット	
	NB06756	Dial scale panel unit		目盛板ユニット	
28	NB06757	Dial pointer unit		ダイヤル指針ユニット	
	NB06776	Meter unit		メーターユニット	
29	CB06863	Cord stopper (small)		コードストッパー	General, U.S. & Canadian models
30	CB00441	" (larger)		"	South African, Australian & European models
31	CB06492	Pulley for variable capacitor		バリコンプーリー	
	CB06937	Slide volume cover		スライドVRカバー	
32	CB06599	Pulley		プーリー	
	CB06829	Meter frame		メーター枠	CR400
33	CB06893	Knob (lever switch)		レバースマミ	
34	CB06930	Knob (slide volume)		スライドVRマミ	
35	CB06931	Knob (change lever)		切換レバマミ	
36	BA06446	Knob (volume)		ツマミ	CA-1000
37	BA06486	Knob (tuning)		チューニングマミ	
	BA06490	Dial scale panel		ダイヤル目盛板	
	AA07038	Dial spring		ダイヤルスプリング	
38	AA07363	Meter fixed spring		メーター押えバネ	
39	GA60580	Power transformer		電源トランス	
40	FZ00014	Electrolytic capacitor	10000 μ F 63WV	電解コンデンサ	
41	GE30007	Baloon transformer		バルーントランス	
42	LA00110	Antenna terminal	3P	アンテナ端子	
43	LA00107	Ground terminal		アース端子	CA1000
44	LA00111	Push terminal (4PD)		4PD型プッシュターミナル	

