STR-6055

ISO
Set using ISO screws

GEP and NEP Model

SONY®

SERVICE MANUAL

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SECTION 1
TECHNICAL DESCRIPTION

1-1. TECHNICAL SPECIFICATIONS

Technical specifications for the STR-6055 are given in Table 1-1.

TABLE 1-1. TECHNICAL SPECIFICATIONS

Fm Tuner Section

Antenna:	300 ohms balanced
Tuning range:	87.5 to 108 MHz
Sensitivity:	2.6 μV (IHF usable sensitivity) 2.2 μV (S/N 30 dB) 1.8 μV (S/N 20 dB)
S/N ratio:	70 dB
Capture ratio:	1.5 dB
Selectivity:	80 dB
Image rejection:	75 dB
I-f rejection:	90 dB
Spurious rejection:	100 dB
A-m suppression:	65 dB
Frequency response:	20 Hz to 15 kHz ± 1 dB
Separation:	40 dB at 400 Hz 20 dB at 10 kHz
Harmonic distortion:	Mono: 0.2%, IHF (400 Hz 100% Mod) Stereo: 0.5%, IHF (400 Hz 100% Mod)
19 kHz, 38 kHz suppression:	60 dB
SCA suppression:	55 dB
Muting level:	less than 5 μV

A-m Tuner Section

Antenna:	Built-in ferrite bar antenna with external antenna terminal
Tuning range:	530 to 1,605 kHz
Sensitivity:	48 dB/m, built-in antenna (S/N: 20 dB) 20 μV, external antenna
I-f rejection:	46 dB at 1,000 kHz
Harmonic distortion:	0.8%

Audio Amplifier Section

IHF Dynamic power:	145 watts (4Ω), both channels operating (constant power supply method) 100 watts (8Ω), both channels operating (constant power supply method)
Rated output: (RMS Power)	50 watts (4Ω) per channel, both channels operating 40 watts (8Ω) per channel, both channels operating 60 watts (4Ω), each channel 43 watts (8Ω), each channel
20 Hz ~ 20 kHz power:	30 watts (8Ω) both channels operating
Power band width:	15 Hz to 30 kHz, IHF
Harmonic distortion:	less than 0.2% at 1 kHz at rated output less than 0.1% at 1W output
Frequency response:	PHONO: RIAA curve TAPE: 10 Hz to 60 kHz REC/PB: 10 Hz to 60 kHz
Input sensitivity and impedance:	PHONO: 1.8 mV 47 k AUX: 140 mV 100 k TAPE: 140 mV 100 k REC/PB: 140 mV 100 k
Signal output and output impedance:	REC OUT: 250 mV 10 k REC/PB: 30 mV 80 k PHONO: greater than 70 dB (weighting network "B") TAPE: greater than 90 dB (weighting network "A") REC/PB: greater than 90 dB (weighting network "A")
Tone controls:	BASS: 10 dB at 100 Hz TREBLE: 10 dB at 10 kHz

General

Power consumption:	Approx. 210 watts (NEP Model) Approx. 200 watts (GEP Model)
Power requirement:	100, 117, 220, 240 volts ac
Dimensions:	440 mm (width) × 148 mm (height) × 345 mm (depth)
Net weight:	12 kg
Shipping weight:	16 kg

1-2. DETAILED CIRCUIT ANALYSIS

The following describes the function or operation of all stages and controls. The text sequence follows signal paths. Stages are listed by transistor reference designation at the left margin; major components are also listed in a similar manner. Refer to the block diagram on page 11 and the schematic diagram on page 43 to 46.

Stage/Control	*Function*
Fm Front End	
Balun B901	This transformer matches 300-ohm twin lead to the fm front-end's input stage and thereby couples the receiver signal to the front-end.
Passive rf circuit	A triple-tuned circuit is employed between the antenna and mixer transistor. This passive coupling circuit contains no active amplifiers, so it is perfectly linear and cannot produce distortion and overload components. Thus, the factors that contribute to spurious responses are eliminated ahead of the mixer.
Local oscillator Q102	Supplies heterodyning voltage to the mixer via L104. The circuit is a modified Hartley type with feedback applied to the emitter from the tap on L104.
AFC circuit D101, D102 C120	An automatic frequency control circuit is incorporated in the oscillator circuit to eliminate frequency drift and precise tuning difficulty. The principle of afc operation is as follows: When the tuner is correctly tuned, the intermediate frequency is 10.7 MHz and no dc correction voltage is produced by the ratio detector as shown in the "S" curve response of Fig. 1-1. Thus the voltage applied to diode D101 is determined solely by the positive fixed reverse bias voltage supplied by zener diode D102. Now assume that the local oscillator frequency changes by +Δf. This means that the new intermediate frequency is 10.7 +Δf. See Fig. 1-1. As the result a positive dc component is fed back to the anode of D101, decreasing the reverse voltage to it, and making D101's barrier capacitance increase. This decreases the local oscillator's frequency, since the series circuit composed of C120 and D101 is connected in parallel with the tank circuit of the local oscillator. Conversely, if the local oscillator frequency decreases a negative dc voltage is fed back to D101 increasing the local oscillator frequency.
Mixer Q101	RF signals and local oscillator voltage are heterodyned in the gate-source junction of mixer Q101 to produce 10.7 MHz i-f output signal.
IFT101	Transformer IFT101 and capacitor C106 and C107 form a 10.7 MHz "high-C" tuned circuit. This type of circuit has the advantage of reducing the higher order harmonics of 10.7 MHz which cause cross-modulation or spurious interference.

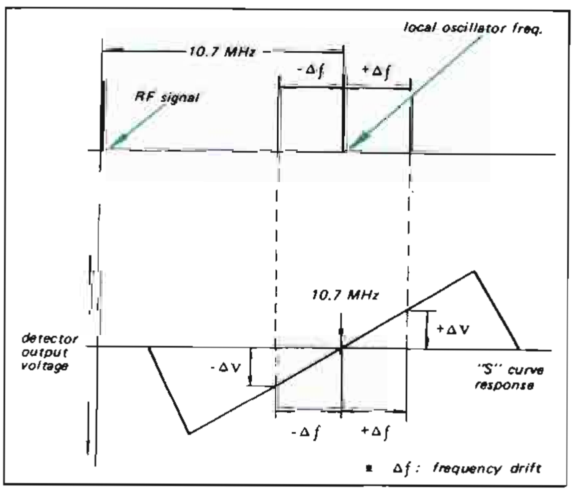


Fig. 1-1. Local oscillator's frequency drift and afc voltage relationship

Stage/Control	*Function*
I-f preamplifier Q103	The i-f signal coupled to the base of i-f preamplifier Q103 by the secondary winding of IFT101 is amplified to achieve a favorable signal-to-noise ratio before application to the filters in the i-f strip.
I-f Amplifier	
I-f amplifiers Q201 to Q205 CF201 to CF206	These i-f stages are basically RC coupled amplifiers (except Q205) that provide essentially flat response. The selectivity of this section is determined by three pairs of filters CF201, CF202, CF203, CF204, CF205 and CF206 in the interstage coupling path. Each of these filters is a two-section ceramic filter that operates in the "trapped-energy" mode. The filters provide extremely-sharp skirt selectivity and flat response inside the passband. Thus, these filters largely determine overall tuner selectivity.
I-f output Q206	Signal at the base of Q206 has had all amplitude variations removed by the preceding limiters, and only selected signals have been passed by ceramic filters. Q206 provides power to drive the ratio detector.
Diode limiters D201 to D206 D209, D210	Limiting is accomplished by diode pairs, connected in parallel and poled in opposite directions. The diodes conduct when the signal across them exceeds the barrier potential of about 0.6 volts in the forward direction. Thus the signal is limited in both directions to 1.2 volts peak-to-peak. The diodes provide symmetrical limiting.
Ratio detector D207, D208	T201 and diodes D207 and D208 form a balanced ratio detector that transforms the frequency-modulated signal into an audio signal. Output appears across C216.
Muting circuit Q207, Q208, Q209, Q210 D211 to D213	The i-f signal is extracted from limiter diodes D203 and D204 to drive the muting circuit. The extracted i-f signal is amplified by Q208 (FET) enough to drive voltage doubler D212 and D211 through tuned transformer T202. D213 provides positive fixed bias for Q209 through D212 and D211. T202 determines the bandwidth necessary to control the muting circuit without generating interstation or detuning noise. The output of the voltage doubler is a positive dc voltage proportional to the carrier levels of weak rf signals. Q209 and Q210 form a switching circuit which is driven by the voltage doubler. Q209 is normally cut off, thus forcing Q210 into conduction. The collector of Q210 is connected to the gate of FET Q207 through MUTING switch S7. FET Q207 acts as an electronic switch which is inserted between the ratio detector and MPX decoder, and is controlled by the gate voltage applied. With the MUTING switch ON, fm signals of average strength keep Q209 saturated, thus cutting off Q210. This causes Q207 to conduct and maintain normal operation. Weak stations and interstation noise can not produce sufficient dc voltage at the base of Q209 to keep it conducting. As a result, Q209 cuts off. This saturates Q210 and cuts off Q207, accordingly, the audio output is muted. With the MUTING switch OFF, Q207 is kept conducting regardless of the strength of the fm signal by a positive bias voltage on its gate. RV201 adjusts the muting level.

Stage/Control	Function
Stereo-mono automatic-switching circuit Q210, D409	The collector of Q210 is also connected to the output terminal of the MPX decoder's frequency doubler through diode D409. This prevents noisy stereo reception by automatically switching the MPX decoder's operation into the monaural mode. This is needed because in fm stereo broadcasting, the S/N ratio of a demodulated stereo signal degrades much more rapidly than that of a mono signal when the input signal strength decreases. As Q210 is forced into conduction by weak stations, the frequency doubler's output is effectively grounded, stopping the operation of the stereo demodulator. Thus, automatic switching of stereo to mono according to the input rf signal level is achieved.
TUNING meter M901	Center-zero meter assures correct tuning by utilizing the ratio detector's characteristic.
R243, R244	As indicated in Fig. 1-1 no dc voltage is produced across connection of R243 and R244 and ground when the tuner is correctly tuned. Deflection on the meter indicates the amount of deviation from the carrier frequency received. Note that the meter will indicate zero-reading when the tuner is not receiving any off-the-air signal.
SCA trap L203, C220	The composite signal containing monaural information from 0 to 15 kHz, the 19 kHz pilot carrier, and the fm stereo signal at 38 kHz is fed to Q207 through trap L203-C220. This trap removes the unwanted SCA signal to the base of Q401 (the 19 kHz amplifier) through Q207.

MPX Decoder

Stage/Control	Function
19 kHz amplifier Q401	This stage serves two functions. It extracts the 19 kHz pilot signal by means of a tuned circuit at its drain, and provides a low-impedance source of composite stereo signal (without pilot carrier) at its source. By using an FET, harmonics of the 19 kHz and 38 kHz components are reduced to a low level thereby causing less carrier leak or beat interference.
Frequency doubler D401, D402	Signals developed at the collector of Q401 are transformer coupled to a fullwave rectifier consisting of D401 and D402. The output of this rectifier is not filtered, resulting in two positive pulses for each input cycle. Thus, the 19 kHz pilot-carrier frequency is effectively doubled by D401 and D402. However, the wave form is not sinusoidal at the base of Q402.
38 kHz amplifier Q402	The 38 kHz pulses produced by D401 and D402 are amplified by Q402. The tank circuit at the collector of Q402 is tuned to 38 kHz to restore these pulses to a sinusoidal waveform. This signal is transformer coupled to the bridge-type demodulator to supply sampling drive for the demodulator.
STEREO lamp circuit Q403	The STEREO indicator lights when the FUNCTION switch is set to the FM-AUTO STEREO position and an fm stereo signal is received. The emitter of Q402 is connected to the base of Q403 (which is normally cut off). The circuit operates as follows: When a composite stereo signal is applied to the multiplex decoder, the 38 kHz pulses produced at the output of the frequency doubler yield a higher average current flow through Q402. This forces Q403 into conduction, lighting STEREO indicator lamp PL904.
Multiplex demodulator D405, D406, D407, D408	The demodulator circuit employs four diodes in a balanced-bridge arrangement. This system has the advantage of cancelling

Stage/Control	Function
	residual rf components (38 kHz signal, some 19 kHz signal, and higher-order harmonics of these frequencies.) "L" and "R" components are developed at each side of the bridge as the result of demodulation, when the receiver is operated in the stereo mode. In the monaural mode, diodes D405 and D408 are forward biased by supply voltage through R405, the stereo indicator lamp, R412, R414, and R413, so these diodes merely act as small resistances. Under this condition, the monaural signal is applied to both "L" and "R" audio amplifiers.
De-emphasis capacitors C413, C414, C422, C423	These capacitors provide the roll off at high audio frequencies necessary to compensate for pre-emphasis at the transmitter. S10 should be set to the proper time constant. Specified de-emphasis time constant is 50 micro-seconds in Europe.
Audio preamplifier Q404, Q405 Q406, Q407	Demodulated L and R signals are amplified by these stages to the level required at the input of the following low pass filter.
Separation control	The network that connects the emitters of Q404 and Q405 provides a form of negative feedback between left and right channels. Any residual "L" signal in the "R" channel (which is about 180° out of phase) is cancelled out by the "L" signal from the "L" channel. The same is true of residual "R" signal in the "L" channel. RV401 is therefore set for maximum separation.
LPF401	Filters out the unwanted higher-order harmonics of 19 kHz and 38 kHz leakage to obtain clear audio.

Stage/Control	Function
A-m Tuner	
Antenna circuit	A-m signals are received by the antenna tank circuit formed by L904, C302, L902, CV901, CT301, C305 and C304. C302 is selected not for its effect upon tuning, but to reduce spurious radiation by the local oscillator.
Low-pass filter L301, C302	The low pass filter (L301 - C302) reduces the spurious radiation caused by local oscillator which may interfere another receiver or communication system through the external antenna.
Local oscillator Q305	This stage supplies the injection voltage necessary to receive a-m signal. In this modified Hartley oscillator circuit, feedback is applied to the emitter of Q305 from a low-impedance winding on oscillator coil T301.
Mixer Q301	Incoming rf signal is fed to the base of Q301, while the local oscillator voltage is injected to the emitter circuit of Q301. These two signals are heterodyned in the base-emitter junction of Q301 to produce the 455-kHz output. This stage functions as the gain control element of the agc system due to Q302 in the emitter circuit, as will be explained later.
CFT301	CFT301 is a combination unit which contains a double-tuned circuit and one ceramic filter tuned to 455 kHz. It develops the i-f signal, and determines the selectivity inside the pass-band. It also provides link coupling to i-f amplifier Q303.
I-f amplifier Q303	This stage is basically an RC-coupled amplifier and amplifies the i-f signal to the proper level required by the following stages.

Stage/Control	*Function*
I-f amplifier Q304	Q304 and IFT301 form a tuned amplifier circuit which provides power to drive diode detector D302.
Detector D302	The i-f signal from the secondary side of IFT301 is rectified by diode D302. The i-f components of the output signal are filtered by C318, R320 and C319 and then cleaned audio signal is fed to the audio preamplifier through FUNCTION switch S1.
TUNING Meter M901	The detector's (D302) output is also fed to TUNING meter M901 as the dc component in the rectified a-m signal is roughly proportional to the input signal level (not exactly for strong signals due to agc action).
AGC circuit	There are two feedback loops which provide proper agc operation. One is the minor loop applying AGC to the i-f amplifier Q304's base circuit. The other is the major feedback loop applying dc from the emitter circuit of Q304 to the emitter circuit of Q301 through Q302. The minor feedback loop consists of D301, R317, C326, R326, C325 and R314. The a-m i-f signal is extracted from the collector circuit of Q304 through C314 and rectified by diode D301. The output of the diode D301 is a positive dc voltage roughly proportional (not exactly due to agc action) to the carrier levels of input signal and fed to the base of Q304 through a filter circuit. Thus the output of diode D301 controls the current flow in Q304 and its emitter voltage as well. Major feedback is produced by the emitter circuit of Q304, R315, C322, C321, R325 and Q302. The emitter voltage of Q304 is applied to the base of Q302 through the filter circuit, determining the positive bias on Q302. As the Q302 shunts the emitter resistor of mixer Q301, it controls the operation of Q301 as a forward agc element. When the strong signal is received, Q302 is forced into conduction, shorting Q301's emitter to ground through R305. As a result, current flow in the Q301 (mixer) increase, reducing its current gain and allowing stable operation in a strong field-strength area.

Preamplifier Section

Stage/Control	*Function*
Equalizer amplifier Q501, Q502	This direct-coupled two stage amplifier amplifies the small signal provided by the phono cartridge to the level required at the input of the following tone-control amplifier.
Bias circuit R502, R503, R508	Dc bias voltage for Q501 is extracted from R508 in the emitter circuit of Q502 and fed back to the base of Q501 through R502 and R503. This dc negative feedback technique provides stable operation during temperature changes.
Equalization circuit R509, R510, R511 C505, C506	RIAA equalization is achieved by the negative-feedback loop containing R509, R510, R511, C505 and C506. Be sure to use replacement components with the exact same values.
R513	R513 (R563) in the output circuit prevents interaction between left and right channel-equalization when the MODE switch is set to L + R.
MODE switch S4	In the STEREO position of S4, left and right input signals are routed to their respective amplifiers. In the L + R position, the left and right signals are added and the sum is then fed to both amplifier channels. A rotary switch having two sections is used to obtain L + R signal even if the MONITOR

Stage/Control	*Function*
	switch is set to the TAPE position.
VOLUME control RV601 (RV651)	The equalized phono signals and signals applied to the other input terminals are fed to the VOLUME control through the MONITOR and MODE switches. The level of the signal applied to the following tone-control amplifier is determined by the setting of RV601.
LOUDNESS switch S5	This switch and R601, R602, C601, C602 compensate for the characteristics of the human ear which vary according to the loudness of the sound being heard. When this switch is set to ON and the VOLUME control is set for 30 dB attenuation, the overall frequency response is increased 10 dB at 50 Hz and 4 dB at 10 kHz with reference to the level at 1 kHz.
Tone-control amplifier Q601, Q602 (Q651, Q652)	This direct-coupled two-stage amplifier has basically flat response, but it operates as a negative-feedback type tone-control circuit. The output generated at the collector circuit of Q602 is fed back to the emitter circuit of Q601 through the treble and bass tone-control network.
TREBLE control RV603 (RV653)	Increases or decreases the amount of negative-feedback voltage determined by the setting of RV603. It has a range of 10 dB at 10 kHz.
BASS control RV604 (RV654)	Similar to the treble control except for filter components and frequency characteristics, however in this circuit the negative-feedback voltage is determined by the setting of RV604. This has a range of 10 dB at 100 Hz.
HIGH FILTER switch S6	The high-cutoff filter (R616 and C613) eliminates unwanted high-frequency components (5 kHz and higher) from the input signal when this switch is ON.

Stage/Control	*Function*
Power Amplifier Section	
Preamplifier Q701, Q702	Q701 and Q702 form a paraphase amplifier but signal output is extracted from the collector circuit of Q701. This circuit has a various advantages in direct coupling system. One is high stability despite temperature variations and another is high input impedance without reducing the amplifier's gain. The ac output appears across load resistor R705 (R755) in the collector circuit. An emitter decoupling circuit is formed by the emitter-base resistance of Q702, C702 and R708 in the base circuit of Q702. This circuit forms a frequency-selective ac bypass circuit to reduce the amplifier's gain at very low frequencies. Common emitter-resistor R706 keeps the dc current flow constant in the Q701 and Q702, thus increasing dc stability.
Bias power supply D701, D751	These diodes are forward biased by positive and negative power supply voltage through RV701 and RV751. They provide a stabilized voltage to bias transistor Q701 that is used to
Dc balance adj. RV701 (RV751)	make the output terminal balance at zero dc through RV701.
Thermal compensation and noise suppressor D711	As all the stages are directly coupled, dc stability is required. The negative temperature coefficient of D711 provides thermal compensation for the following driver stage. It also acts as a noise suppressor to reduce the popping noise due to unbalanced current flow in the following stages when the power switch is turned off.
Driver Q703	Though this stage is a conventional flat amplifier, it determines the output voltage swings because the following stages are basically in the emitter-follower configuration. The ac load resistor for this stage is R712.

Stage/Control	*Function*
Dc bias adj. (idling current) Q704, RV702	Q704 is forced to conduct and operates as a small resistance providing the necessary forward bias on the two cascaded emitter-followers. RV702 controls the base bias of Q704, determining the impedance between the emitter and collector of Q704, and thereby controls the dc bias voltage for the following complementary circuit.
Thermal compensator for dc bias D702	The negative temperature coefficient of D702 provides thermal compensation for the complementary and power transistor circuits. D702 is attached to the power transistor's heat sink to detect temperature increases in the power transistors.
Complementary circuit Q707, Q708	These transistors operate as emitter-followers to provide the current swings demanded of the output stages and also provide the necessary phase inversion. Phase inversion is performed by using PNP and NPN type transistors.
Power transistor Q709, Q710	The output transistors (Q709 and Q710) are connected directly to a power supply of about ±40V. Q709 supplies power to the load during the positive half cycle and Q710 operates during the negative half cycle. As all the stages are directly coupled and designed to obtain zero potential at the output terminal, the large coupling capacitor at the output (which may cause power loss or distortion at low frequencies) is eliminated.
Protection circuit	To protect overloaded power transistors from destruction, a new protection circuit is employed. In the event of a short circuit at the output terminals, the protection circuit holds the current in the power transistor low enough not to make it overheat and also limit the

Stage/Control	*Function*
	input drive signals. Fig. 1-2 shows a partial schematic diagram detailing the protection circuit. With reference to this diagram, the protection circuit operates as follows: Since the protection circuit is identical for positive going half cycles and negative going half cycles, only the positive going half cycle operation is described here. Q705 limits the positive-going half cycle of the drive voltage applied to the base of Q707 when power consumption at the Q709 collector exceeds the safety margin. Since power dissipation at the collector can be considered a function of collector voltage and current, the trigger signal for Q705 is taken from the collector and emitter. Base voltage is partly determined by the ratio of resistance of R719 and series resistance of R726 and RL (load). Base voltage is also determined by the current flow in the R733. During normal operation, Q705 is cut off. When excessive current flows in the power transistor or power dissipation at the collector of power transistor exceeds the specified value, Q705 turns on and limits the input drive voltage to the power transistor. Limiting operation is also actuated by the condition of the load. The base voltage of Q705 is determined by the resistances R733, R726, R724, R725, and RL (load). D709 is employed to stop reverse voltage from being applied during the negative going-half cycle. Q705 turns on limiting the input drive voltage to the power transistor when the load resistance decreases to some extent. Under reactive load conditions in class B amplifiers maximum current

Stage/Control	Function
	will flow when the voltage across the power transistor is maximum and this is the worst case for secondary breakdown. See Fig. 1-3. As all speakers have reactive properties, a protection circuit which covers the reactive region is required. Fig. 1-3 shows the operating load lines for one half of a class B output stage under conditions of equal load impedance; in one case the load is purely resistive and in the other case purely reactive. It is apparent that the reactive load case could result in transistor failure. D710, C709 and R723 form a charging circuit charging the base voltage according to the reactive voltage induced in the load to obtain proper protection operation. C709 and R725 form a discharging circuit to detect reactive dc voltage. D705 protects Q705 from breakdown between base and emitter due to detected reactive voltage across C709. D703 protects Q705 from the breakdown between collector and emitter during the negative-going half cycle.

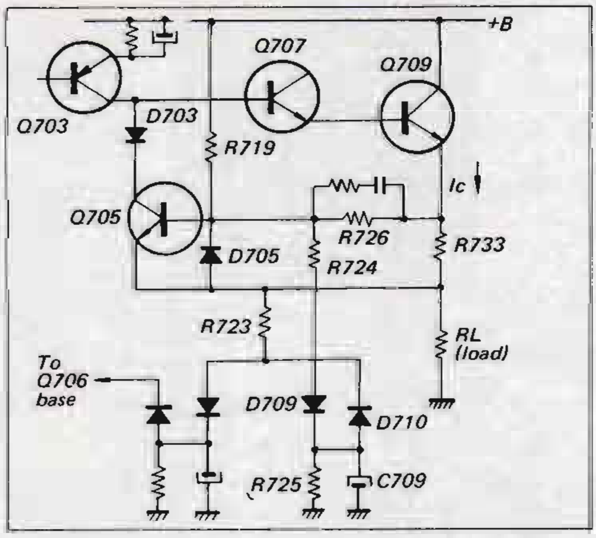


Fig. 1-2. Simplified protection circuit

Stage/Control	Function
Power supply rectifier D801	A full-wave bridge rectifier provides a positive and a negative dc power supply for the power amplifier.
Rectifier D802	A half-wave rectifier (D802) and ripple filter (C809, R801, R802 and C810) supply well-filtered dc power to the preamplifier section.
Ripple filter Q711 R741, R740 C714, C713 Q761, R791 R790, C764, C763	These components reduce the ripple voltages in the dc power supply for the preamplifier and driver stages of the power amplifier section to an extremely-low value. Q711 and Q761 serve as an electronic filter to supply well filtered dc of about ±37 V to each stage.
Voltage regulator Q801, D803, D804	Dc output from the rectifier is filtered by C807 and applied to series regulator Q801. Since the voltage at the base of Q801 is kept constant by means of zener diodes D803 and D804, the emitter voltage remains constant regardless of load or line-voltage variations. The regulated and well filtered output of 15V is supplied to the tuner section.

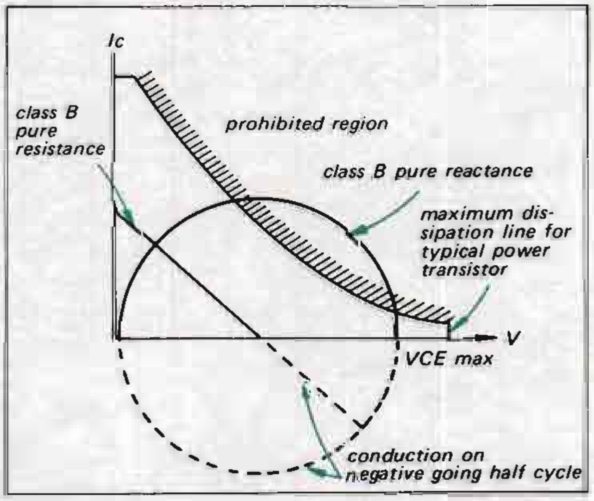
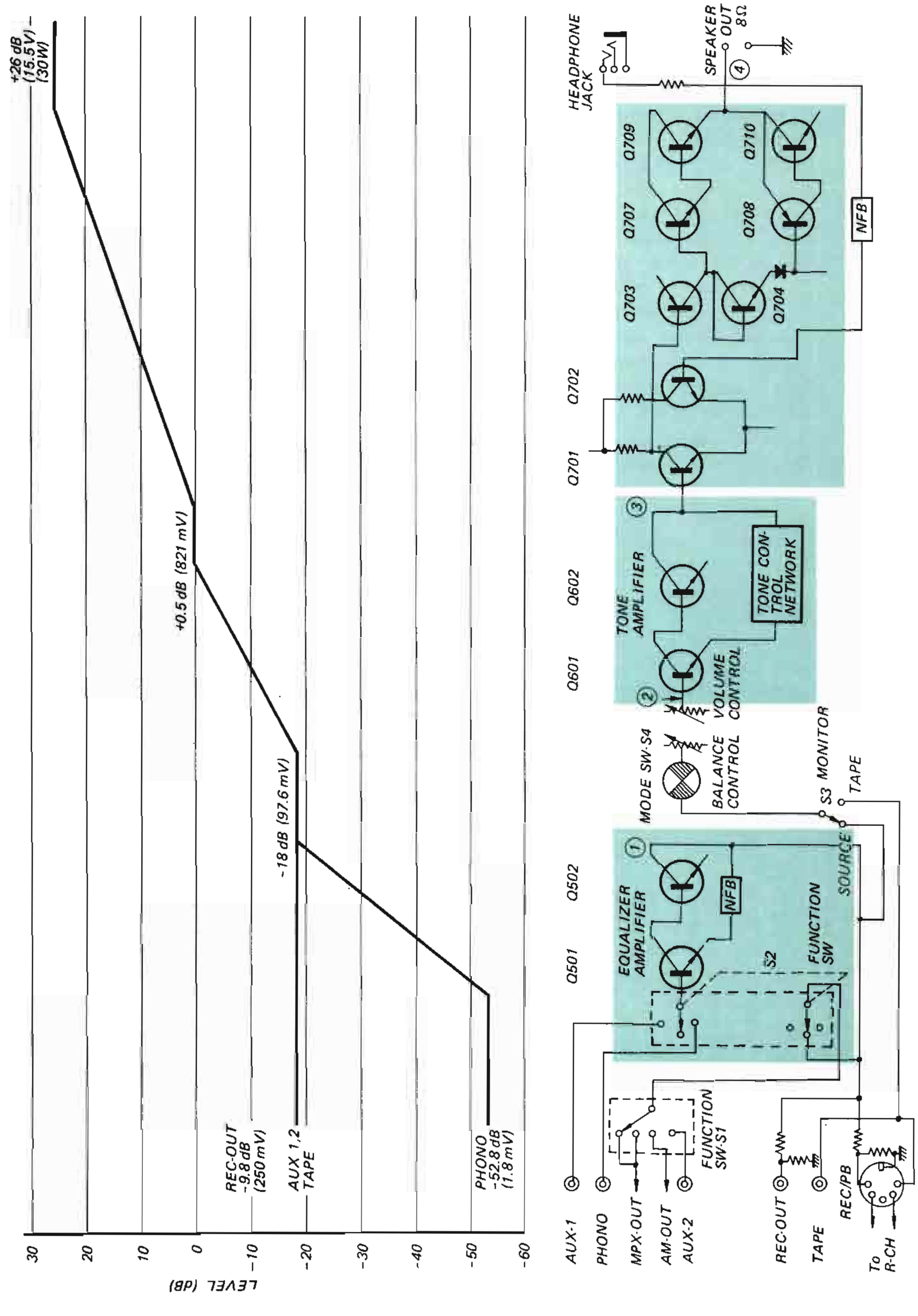


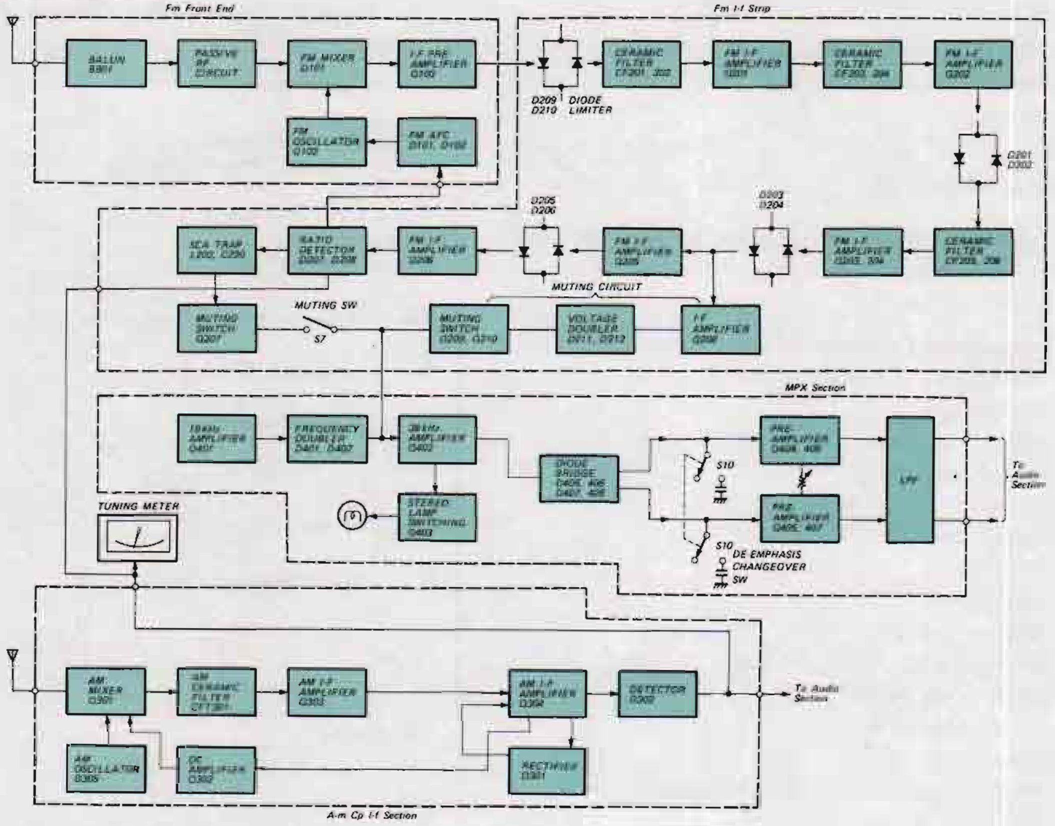
Fig. 1-3. Resistive and reactive load lines for class B output stage showing breakdown risk in purely resistive load

1-3. LEVEL DIAGRAM

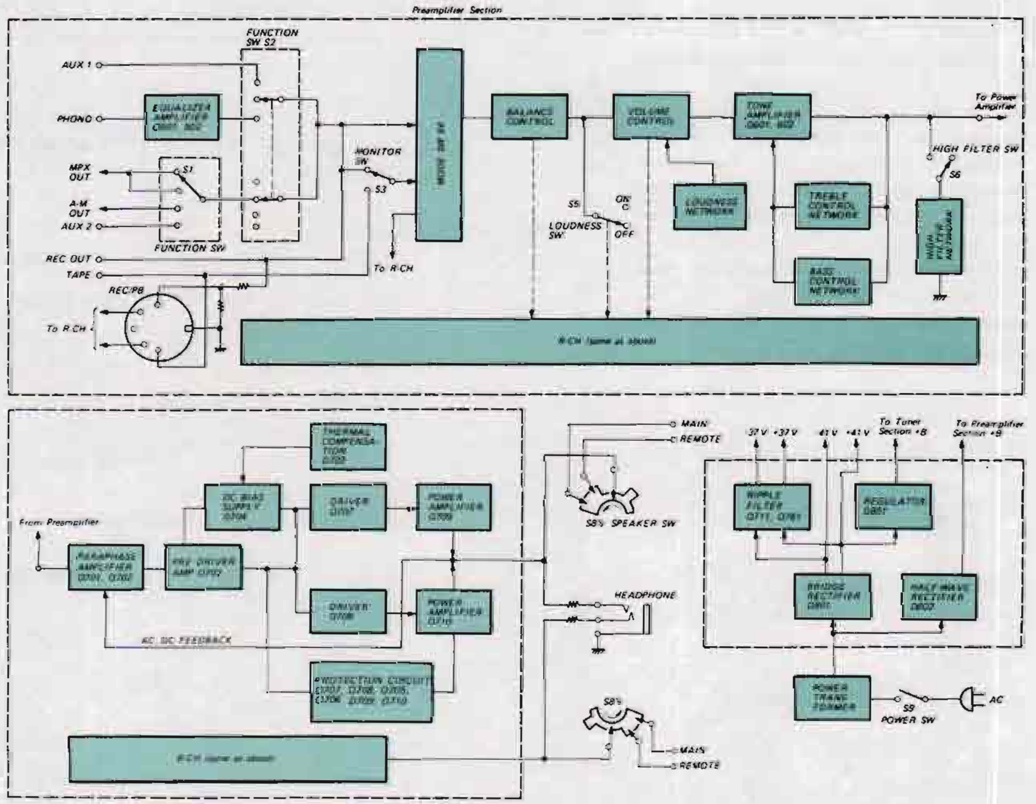


1-4. BLOCK DIAGRAM

– Tuner Section –



– Audio Section –



SECTION 2
DISASSEMBLY AND REPLACEMENT PROCEDURES

WARNING

Unplug the ac power cord before starting any disassembly or replacement procedures.

2-1. TOOLS REQUIRED

The following tools are required to perform disassembly and replacement procedures on the STR-6055.

1. Screwdriver, Phillips-head
2. Screwdriver, 1/8" blade (3 mm)
3. Pliers, long-nose
4. Diagonal cutters
5. Wrench, adjustable
6. Tweezers
7. Electric drill
8. Drill bits
9. Prick punch
10. Hammer, ball-peen
11. Soldering iron, 40~150 watts
12. Solder, rosin core
13. Cement solvent
14. Cement, contact
15. Thermal compound or silicone grease

2-2. HARDWARE IDENTIFICATION GUIDE

The following chart will help you to decipher the hardware codes given in this service manual.

Note: All screws in the STR-6055 are manufactured to the specifications of the International Organization for Standardization (ISO). This means that the new and old screws are not interchangeable because ISO screws have a different number of threads per mm compared to the old ones. The ISO screws have an identification mark on their heads as shown in Fig. 2-1.

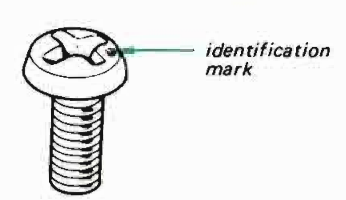


Fig. 2-1. ISO screw

– Hardware Nomenclature –

P	–	Pan Head Screw
PS	–	Pan Head Screw with Spring Washer
K	–	Flat Countersunk Head Screw
B	–	Binding Head Screw
RK	–	Oval Countersunk Head Screw
T	–	Truss Head Screw
R	–	Round Head Screw
F	–	Flat Fillister Head Screw
SC	–	Set Screw
E	–	Retaining Ring (E Washer)
W	–	Washer
SW	–	Spring Washer
LW	–	Lock Washer
N	–	Nut

– Example –

⊕ P 3x10

- Type of Slot (⊕)
- Type of Head (P)
- Diameter in mm (D) (3)
- Length in mm (L) (10)

2-3. TOP COVER AND BOTTOM PLATE REMOVAL

1. Remove the two machine screws at each side of the receiver, and lift off the top cover.
2. Remove the six self-tapping screws (⊕B 3x6) at the bottom of the receiver and pull the bottom plate in the direction indicated by the arrow in Fig. 2-2.

2-4. FRONT PANEL REMOVAL

1. Remove the top cover as described in Procedure 2-3.
2. Pull all the knobs off.

3. Remove the two screws (⊕B 3x6) and two hex-nuts securing the front panel to the front sub-chassis as shown in Fig. 2-3. Place piece of cardboard or cloth between the wrench and front panel to avoid marring the panel as shown in Fig. 2-4. Now the front panel is free for servicing.

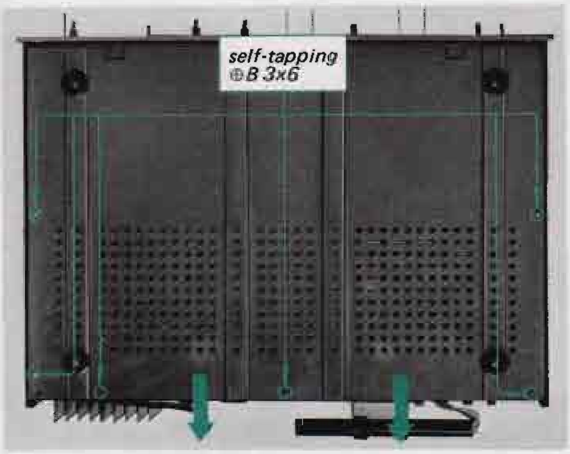


Fig. 2-2. Bottom plate removal

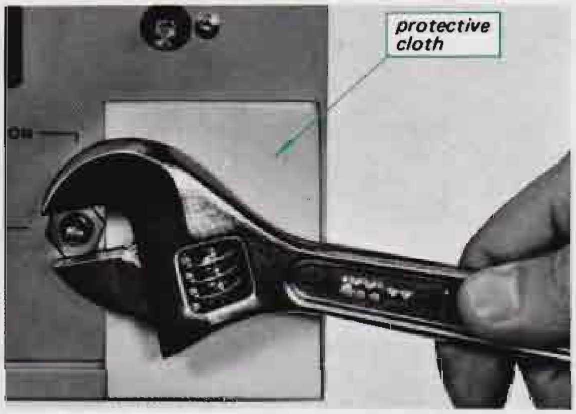


Fig. 2-4. Hex nut removal

2-5. DIAL-CORD RESTRINGING

Preparation:

1. Remove the top cover as described in Procedure 2-3.
2. Cut a 1,500 mm (59") length of dial cord.
3. Tie the end of the cord to a spring as shown in Fig. 2-5.
4. Rotate the tuning-capacitor drive drum fully clockwise (minimum capacitance position).

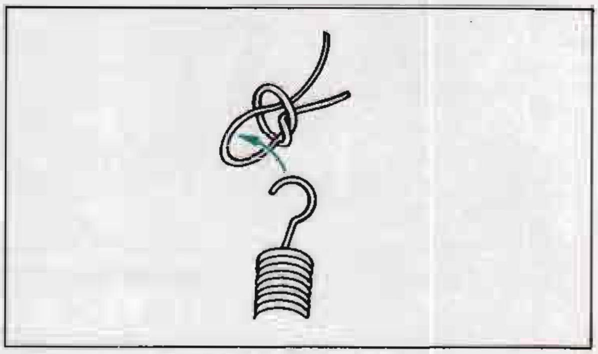


Fig. 2-5. Tying square knot to the coil spring

Procedure:

While referring to Fig. 2-6, proceed as follows:

1. Hook the spring to one hole of the drive drum as shown in Fig. 2-7.
2. Run the cord through the slot in the rim of the drum and wrap a half clockwise turn in the inner groove.
3. Run the cord over pulley "A" and, then wrap two counterclockwise turns around the tuning shaft.

Fig. 2-3. Front panel removal

4. Run the cord over pulleys "B", "C" and "D", then wrap two clockwise turns around the drum from outer groove to inner groove as shown in Fig. 2-8.
5. Pass the doubled end of the cord through the eyelet, then hook it to the spring as shown in Fig. 2-9.

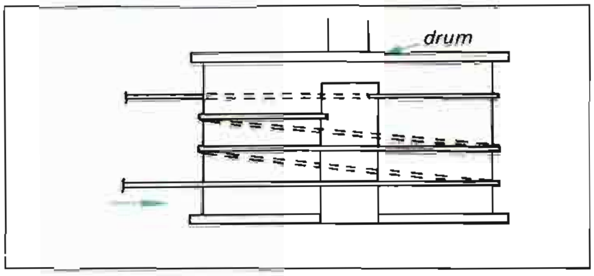


Fig. 2-8. Wrapping the dial cord

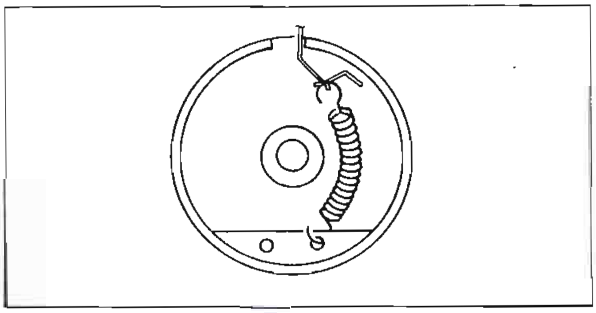


Fig. 2-7. Coil spring installation

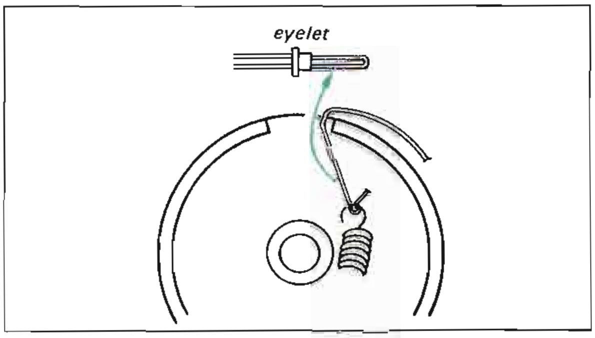


Fig. 2-9. Finishing dial cord stringing

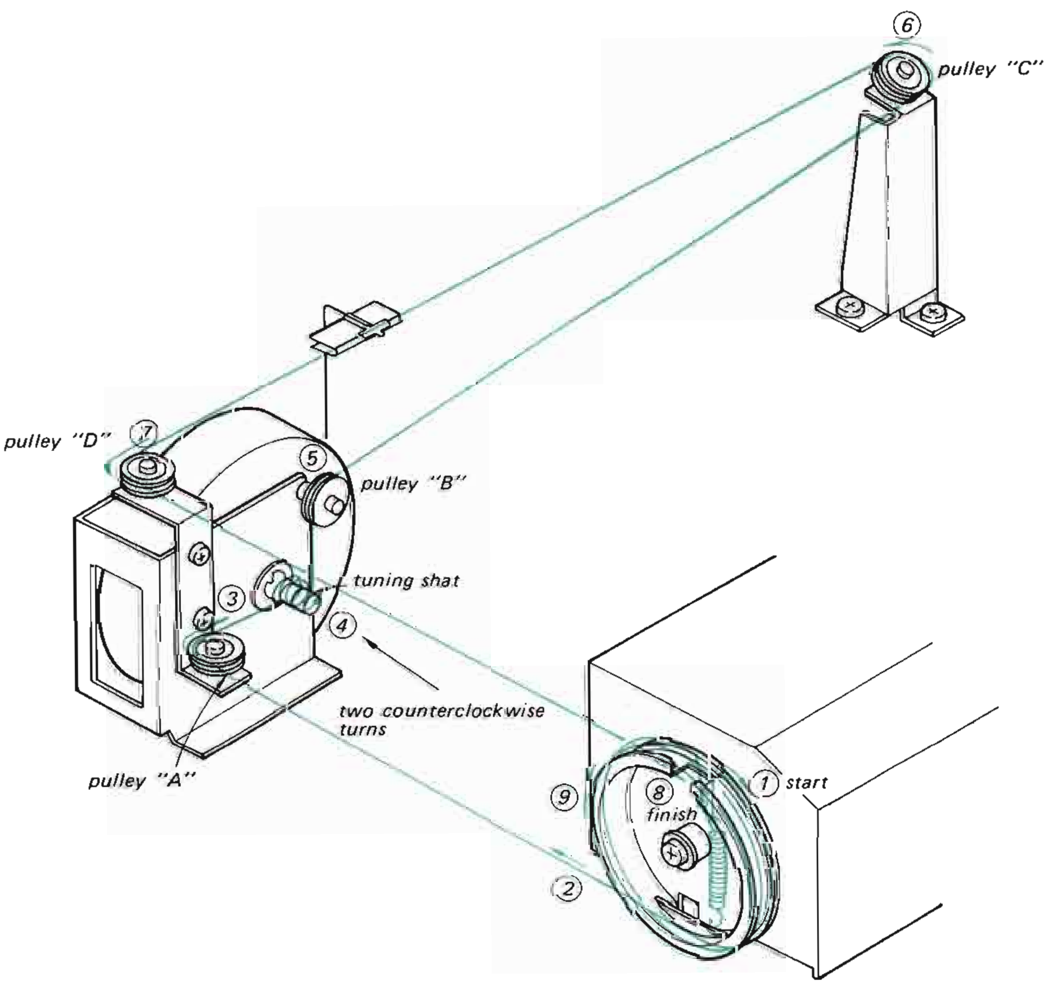


Fig. 2-6. Dial cord stringing

6. Tighten the cord, then squeeze the eyelet so that the spring is under tension. Make a knot in the cord end to keep it from slipping out of the eyelet.
7. After completing the dial-cord stringing, make sure that the tuning system works properly. Apply a drop of contact cement to the finish point.

2-6. MECHANICAL DIAL CALIBRATION

Note: This is required after replacing the dial cord, dial scale or front-end assembly.

1. Put the dial pointer on the cord as shown in Fig. 2-10 and move it to a position where the pointer coincides with the left gap on the dial scale as shown in Fig. 2-11, when the tuning capacitor is set to the maximum capacitance.
2. Apply a drop of contact cement to the tab of the dial pointer.

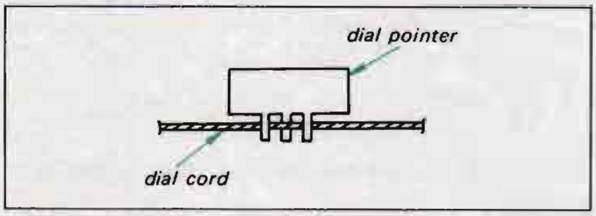


Fig. 2-10. Dial pointer installation

2-7. DIAL SCALE REPLACEMENT

1. Remove the top cover as described in Procedure 2-3.
2. Remove the front panel as described in Procedure 2-4.
3. Remove the two screws (⊕P 2.6x4) securing the dial-scale holder to the front subchassis as shown in Fig. 2-12.
4. Remove the defective dial scale and then install the replacement scale.

2-8. PILOT-LAMP REPLACEMENT

Prepare for replacement any of the pilot lamps by removing the top cover as described in Procedure 2-3.

Meter Lamp

1. Straighten the tab of the meter-lamp holder to permit the removal of the meter-lamp socket.
2. Pull out the meter-lamp socket, and then unscrew the lamp from the socket and install the new lamp.

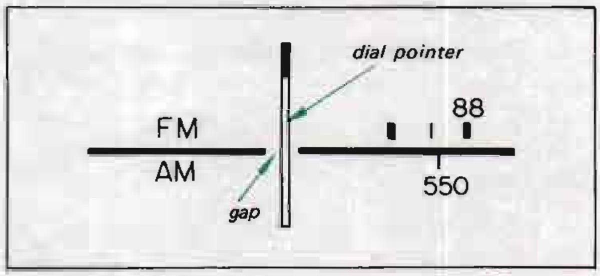


Fig. 2-11. Mechanical dial calibration

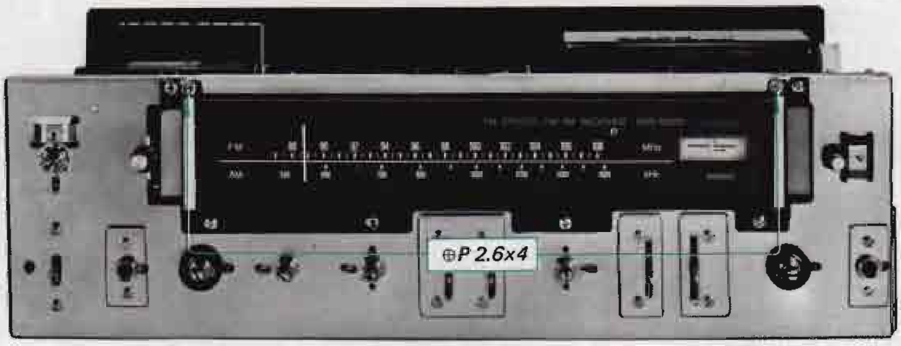


Fig. 2-12. Dial scale removal

Stereo Lamp

1. Remove the two self-tapping screws (⊕ B 3x6) securing the meter holder to the chassis as shown in Fig. 2-13.

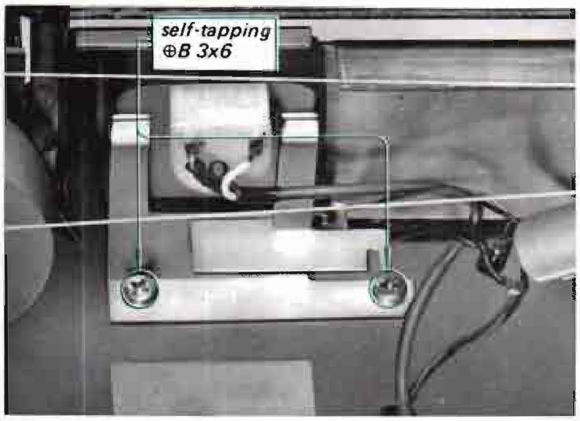


Fig. 2-13. Meter holder removal

2. Pull the lamp from its holder with tweezers.
3. Cut the lamp leads and solder the lead wires to the new lamp as shown in Fig. 2-14.
4. Wrap the soldered connections with electrical tape.
5. Install the new lamp in its holder.

Dial Lamp

1. Remove the front panel as described in Procedure 2-4.

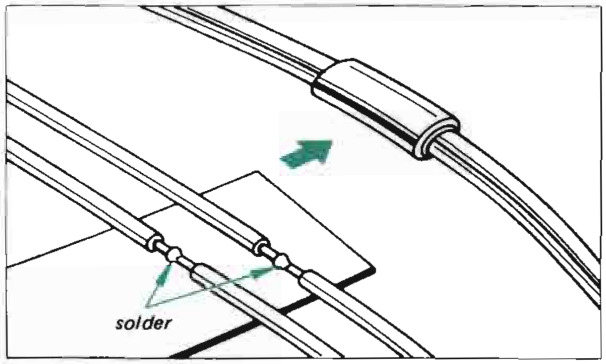


Fig. 2-14. Stereo lamp replacement

2. Pry out the fiber lamp shade, and then remove the lamp.

2-9. TUNING METER REPLACEMENT

1. Remove the top cover as described in Procedure 2-3.
2. Unsolder the leads from the defective meter.
3. Remove the two self-tapping screws (⊕ B 3x6) securing the meter holder to the chassis as shown in Fig. 2-13.
4. Remove the meter, and install the new one.

2-10. CONTROL AND SWITCH REPLACEMENT

Prepare for replacing any of the controls or switches by removing the top cover and front panel as described in Procedures 2-3 and 2-4. Refer to Fig. 2-15.

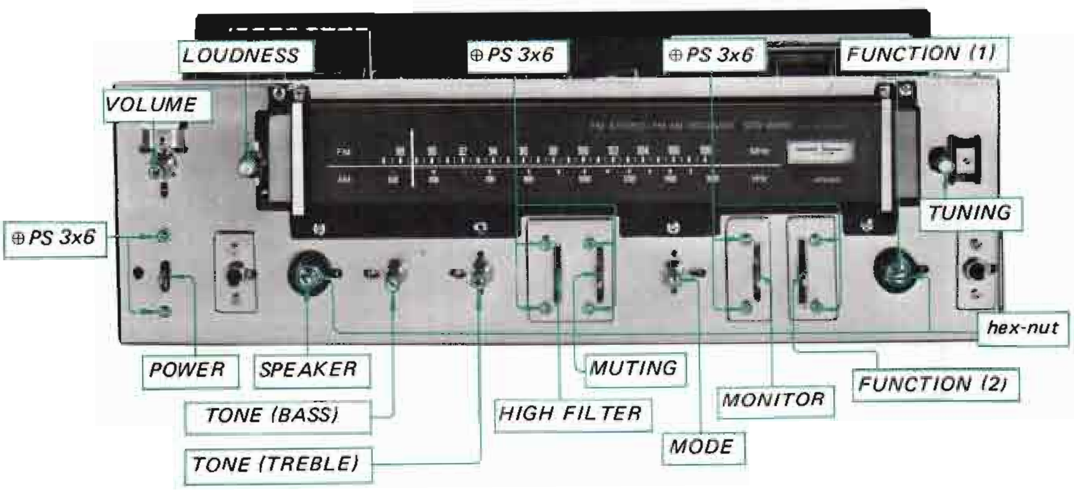


Fig. 2-15. Control and switch replacement

TONE Controls

1. Remove the hex nuts that secure the BASS and TREBLE controls to the front-subchassis.
2. Carefully remove them along with the tone-control circuit board.
3. Cut each lug of the defective control on the board to remove the part.
4. Unsolder and remove the clipped lugs, and clean out the holes of the circuit board.
5. Install the replacement control.

POWER, HIGH FILTER, MUTING, MONITOR, FUNCTION (2) Switches

1. Remove the two screws (⊕ PS 3x6) securing switches to the front subchassis as shown in Fig. 2-15.
2. Unsolder the lead wires from the defective switch, and then install the replacement switch.

SPEAKER, MODE, FUNCTION (1) Switches

1. Apply a drop of cement solvent to the ring spacer on the switches. Wait a few seconds for the cement to dissolve, and pry out the spacer with a screw driver.
2. Remove the hex nuts that secure the switches to the front-subchassis as shown in Fig. 2-15.
3. Unsolder the lead wires from the defective switch, and then install the replacement switch.

LOUDNESS Switch

1. Fasten the dial cord to the drum with cellophane tape.
2. Remove the two self-tapping screws (⊕ B 3x6) securing the dial pulley bracket to the chassis as shown in Fig. 2-16.
3. Put the bracket aside, and then remove the screw (⊕ B 2.6x4) securing the loudness switch to the front subchassis.
4. Remove it along with the loudness control board, and then install the replacement switch or replacement mounted circuit board including loudness switch (Part No. 8-982-571-85).

2-11. REAR PANEL REMOVAL

1. Remove the top cover and bottom plate as described in Procedure 2-3.

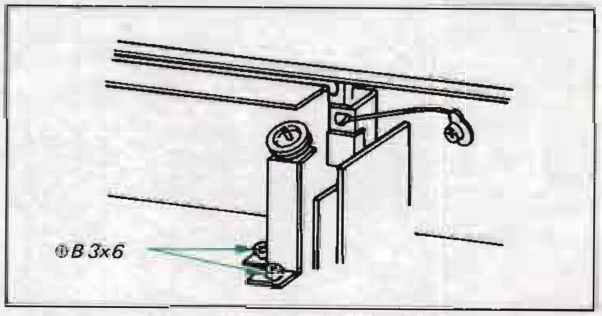


Fig. 2-16. Dial pulley bracket removal

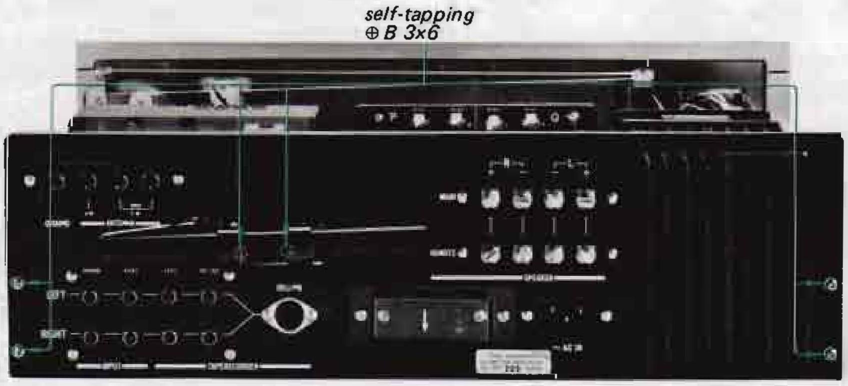


Fig. 2-17. Rear panel removal

2. Unsolder the lead wire connecting between ground terminal and chassis.
3. Unsolder the coaxial cable from fm antenna terminal.
4. Remove the six self-tapping screws (⊕ B 3x6), two of them secure the bar antenna holder to the chassis along with rear panel and others secure the rear panel to the chassis as shown in Fig. 2-17. This frees the rear panel.

2-12. REPLACEMENT OF COMPONENTS SECURED TO THE REAR PANEL BY RIVETS

1. Remove the rear panel as described in Procedure 2-11.
2. Bore out the rivets using a drill bit slightly larger in diameter than the rivet. See Fig. 2-18.

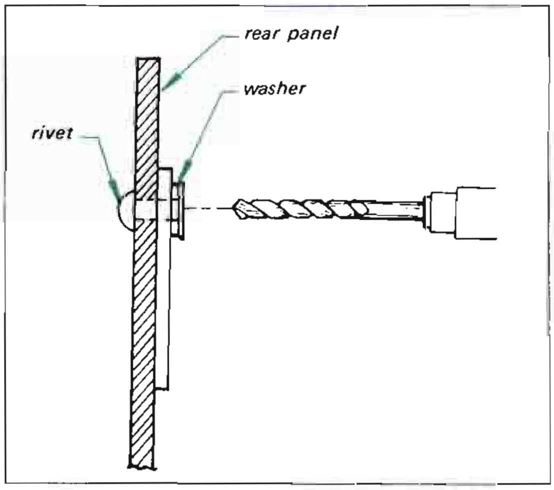


Fig. 2-18. Rivet replacement

3. Punch out the remainder of the rivet with a nail set or prick punch.
4. Remove the defective component, and install the new one.
5. Secure the new component with a suitable screw and nut, or a repair rivet screw (Part No. 3-701-402).

2-13. POWER TRANSISTOR REPLACEMENT

1. Remove the top cover and bottom plate as described in Procedure 2-3.
2. Remove the four self-tapping screws (⊕B 3x8) securing the heat sink to the chassis as shown in Fig. 2-19.

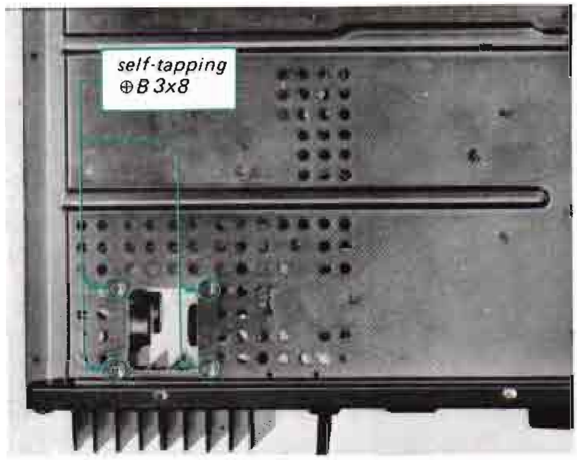
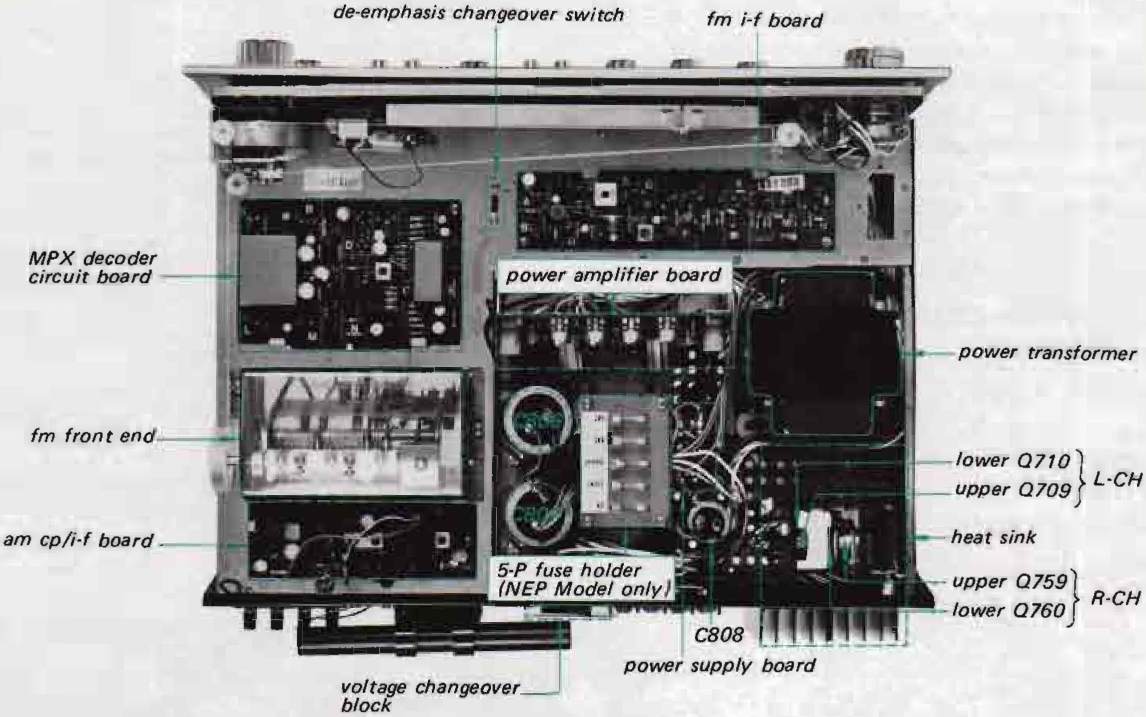


Fig. 2-19. Heat sink removal

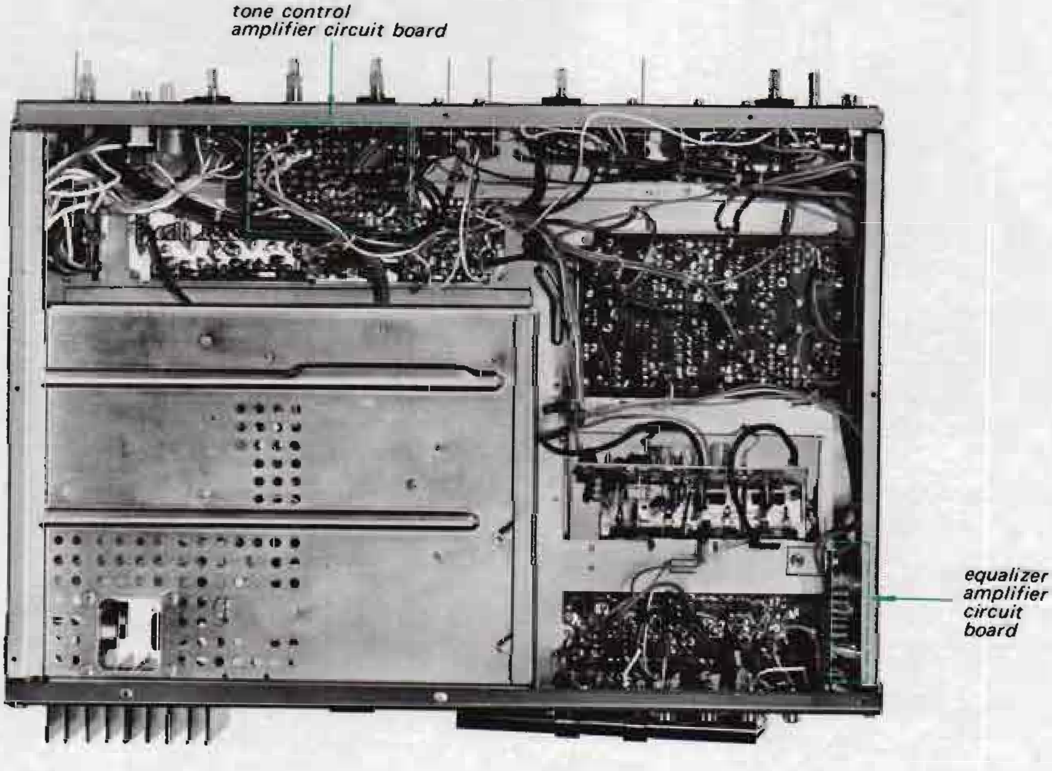
3. Cut the emitter and base leads of the defective power transistor with a diagonal cutter. This prevents damage to the mica washer when remove the defective power transistor.
4. Carefully draw back the heat sink, and then remove the two screws (⊕B 3x12) and nuts securing the power transistor to the heat sink.
5. When replacing the power transistor, apply a coating of a thermal compound or a heat-transferring grease to both sides of the insulating mica washer. Any excess compound or grease squeezed out when the mounting bolts are tightened should be wiped off with a clean cloth. • This prevents accumulation of conductive dust particles that might eventually cause a short.

2-14. CHASSIS LAYOUT

Top View



Bottom View



SECTION 3
ALIGNMENT AND ADJUSTMENT PROCEDURES

3-1. FM I-F STRIP ALIGNMENT

CAUTION

The ceramic filters in the fm i-f circuit are selected according to their specified center frequencies and color coded as shown in Fig. 3-1 and listed in Table 3-1. Check the color code of the filters to identify the same center frequency when replacing any of these filters.

TABLE 3-1.

FM I-F CERAMIC FILTERS

Part No.	Color	Specified Center Freq.
1-403-562-11	red	10.70 MHz
1-403-562-21	black	10.66 MHz
1-403-562-31	white	10.74 MHz
1-403-562-41	green	10.62 MHz
1-403-562-51	yellow	10.78 MHz

Test Equipment Required

1. Standard fm signal generator
2. Ac VTVM
3. Oscilloscope
4. Alignment tools

Note: This alignment is needed only after IFT101 in the front end or T201 (discriminator transformer) has been replaced.

Preparation

1. Remove the top cover as described in Procedure 2-3.
2. Remove the front-end cover by loosening the two screws securing it to the chassis.
3. Connect the input cable of the ac VTVM to the REC OUT terminal (J504).

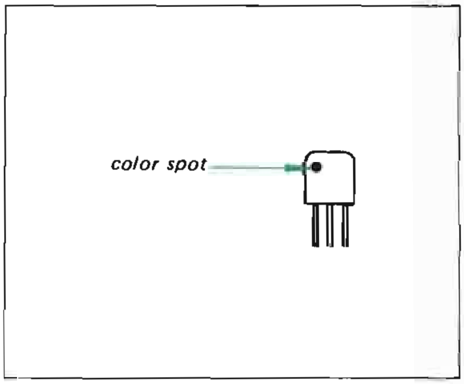


Fig. 3-1. Fm i-f ceramic filter

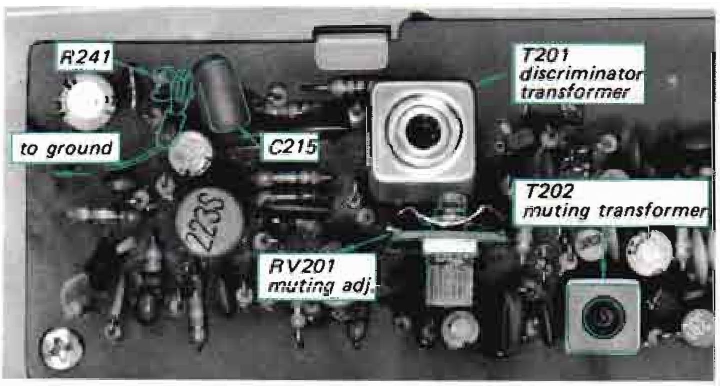


Fig. 3-2. Interruption of afc circuit and parts location

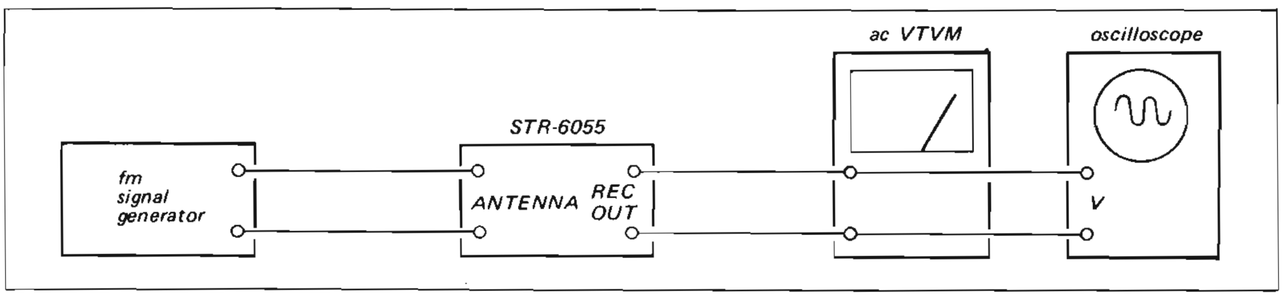


Fig. 3-3. Fm i-f, muting and front-end alignment test setup

4. Connect the signal-generator's output to the fm antenna terminal.
5. Short the connection point of R242 and C215 (AFC circuit) to ground as shown in Fig. 3-2.

Procedure

1. With the equipment connected as shown in Fig. 3-3, set the signal-generator's controls as follows:

Carrier frequency	98 MHz
Modulation	Fm, 400 Hz, 100%
Output level	30 μV (30 dB)

2. Set the receiver's controls as follows:

FUNCTION switch	FM MONO
MODE switch	STEREO
VOLUME control	Minimum

3. Turn the core of transformer IFT101 or T201 (bottom core) (see Fig. 3-2 or Fig. 3-4) with the alignment tool to obtain maximum output.

3-2. FM DISCRIMINATOR ALIGNMENT

Note: Before starting this alignment, the fm i-f alignment should be performed. There are two or three methods of discriminator alignment, but only the simplified method using the tuner's TUNING meter is described here.

Test Equipment Required

1. Oscilloscope
2. Alignment tools

Preparation

1. Remove the top cover as described in Procedure 2-3.
2. Connect the input cable of the oscilloscope to REC OUT (J504) terminal.
3. Short the connection point of R242 and C215 (AFC circuit) to ground as shown in Fig. 3-2.

Procedure

1. With the equipment connected as shown in Fig. 3-5, set the receiver's control as follows:

FUNCTION switch	FM MONO
MODE switch	STEREO

No signal should be received.

2. Adjust the controls of the oscilloscope to provide a visible indication of noise. Always watch the oscilloscope to confirm that the tuner is not receiving any off-the-air signals.
3. Turn the top core (secondary side) of discriminator transformer T201 (see Fig. 3-2) with a hex-head alignment tool to obtain a null-point reading on the tuning meter. If the discriminator transformer (T201) is not aligned correctly, some deviation on the tuning meter will be observed.

Note: Turn the core carefully and slowly. At both extreme positions of the top core, a null point will be observed. The real null point should be obtained in the middle of the core's thread length.

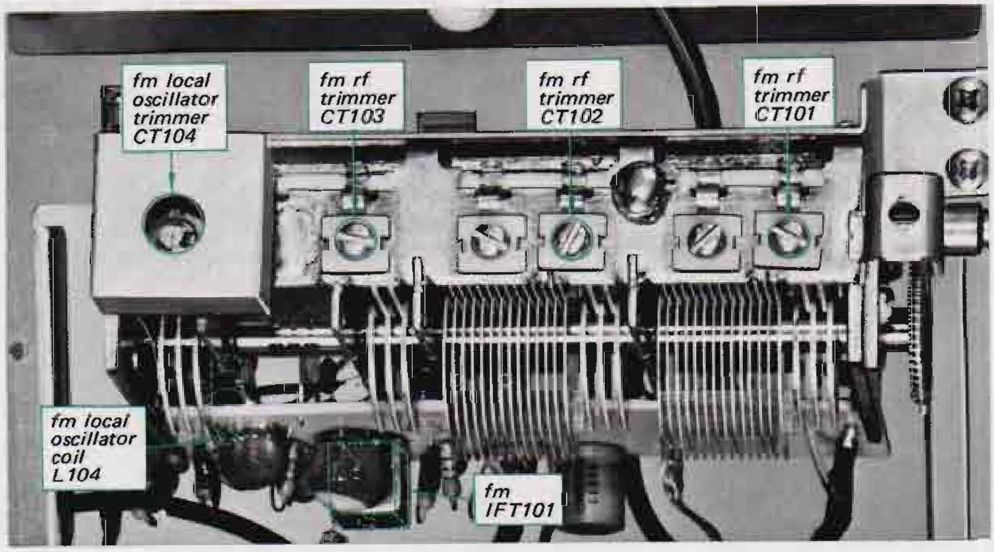


Fig. 3-4. Parts location

4. Repeat the above mentioned steps and fm i-f strip alignment two or three times.

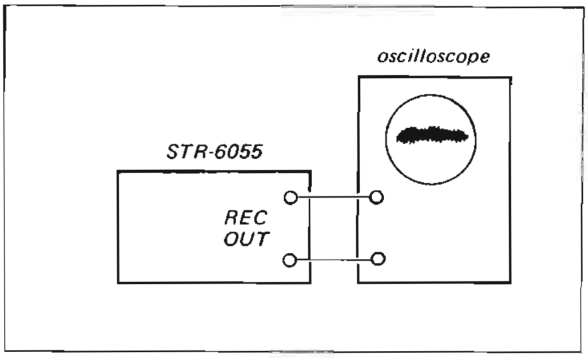


Fig. 3-5. Discriminator alignment test setup

3-3. MUTING ADJUSTMENT

Note: Two methods of muting alignment are available, signal generator alignment and alignment by using an off-the-air signal. You can use either of them.

Signal Generator Alignment

Test Equipment Required

1. Fm standard signal generator
2. Ac VTVM or oscilloscope
3. Alignment tool

Preparation

1. Remove the top cover as described in Procedure 2-3.
2. Turn the knob of RV201 (see Fig. 3-2) fully clockwise on the fm i-f and discriminator board.
3. Short the connection point of R242 and C215 (AFC circuit) to ground as shown in Fig. 3-2.

Procedure

1. With the equipment connected as shown in Fig. 3-3, set the receiver's controls as follows:

   FUNCTION switch .... FM MONO
   MODE switch .... STEREO
   MUTING switch .... ON

2. Follow the procedure given in Table 3-2. Note that the muting circuit should begin to operate at the symmetrical deflection point of TUNING meter when detuning the tuner to higher or lower than the reference carrier frequency.

Off-the-Air Signal Alignment

Accurate muting circuit adjustment can also be performed by utilizing off-the-air local fm signals instead of the fm S.S.G.

Note that a weak signal is best for this purpose.

3-4. FM FREQUENCY COVERAGE ALIGNMENT

CAUTION

Never attempt alignment of the front-end section except for the frequency-coverage and dial-calibration adjustments. The front-end section of the tuner has been carefully adjusted at the factory, so very little adjustment is necessary in the field. Alignment need not be performed when the front-end FET is replaced since charges in FET parameters have little effect upon tuning. If an rf-stage adjustment is required, ask your nearest SONY Service Station to send your unit to the Factory Service Center for a complete front-end alignment.

Exercise caution when returning the faulty unit so that is is not damaged in transit. The warranty will not cover damage incurrent in transit to the Factory Service Center.

Note: Before starting this alignment, the discriminator-transformer alignment should be performed.

TABLE 3-2. MUTING ADJUSTMENT

Coupling Between Receiver and SSG	SSG Frequency and Output Level	Tuner Dial Indication	Adjust	Remarks
Direct coupling	98 MHz 400 Hz, 30% Mod.	98 MHz	T202 See Fig. 3-2	Turn the core of T202 to obtain proper muting operation.

TABLE 3-3. FM FREQUENCY COVERAGE ADJUSTMENT

Step	Coupling Between Receiver and SSG	SSG Frequency and Output Level	Tuner Dial Indication	Ac VTVM Connection	Adjust	Indication
1.	Direct coupling	87.5 MHz 400 Hz 100% Mod. 30 μV (30 dB)	87.5 MHz	REC OUT (J504)	OSC coil L104 See Fig. 3-4	Maximum VTVM reading
2.	Same as above	108 MHz 400 Hz 100% Mod. 30 μV (30 dB)	108 MHz	Same as above	OSC trimmer CT104 See Fig. 3-4	Same as above

Signal Generator Alignment

Test Equipment Required

1. Standard fm signal generator
2. Ac VTVM
3. Alignment tools

Preparation

1. Remove the top cover as described in Procedure 2-3.
2. Connect the equipment as shown in Fig. 3-3.
3. Set the receivers controls as follows:
   FUCNTION switch .... FM MONO
   MODE switch .... STEREO
4. Short the connection point of R242 and C215 (AFC circuit) to ground as shown in Fig. 3-2.

Generator Alignment

Follow the procedures given in Table 3-3 when performing this alignment with an fm signal generator. Be sure that the dial is mechanically calibrated as described in Procedure 2-6.

Off-the-Air Alignment

Accurate dial calibration and a frequency-coverage test can also be performed by utilizing off-the-air local fm signals. However, before performing the following procedure, be sure that the dial pointer is correctly positioned, as described in Procedure 2-6.

Procedure

1. Short the connection point of R242 and C215 (AFC circuit) to ground as shown in Fig. 3-2.
2. Tune the receiver to the lowest-frequency station.
3. Check the dial scale for a calibration accuracy of ±200 kHz from the carrier frequency of the station. If the dial-accuracy deviation exceeds this limit, turn the local-oscillator coil L104 slightly as shown in Fig. 3-4 until optimum dial calibration is obtained.
4. Tune the receiver to the highest-frequency station in your locality. If the dial-calibration error is excessive, adjust local-oscillator trimmer CT104 (see Fig. 3-4) to obtain maximum calibration accuracy.
5. Repeat Steps 3 and 4.

3-5. FM STEREO SEPARATION ADJUSTMENT

Test Equipment Required

1. MPX generator
2. Fm signal generator
3. Audio oscillator
4. Ac VTVM
5. Oscilloscope
6. Alignment tools

Preparation

Before starting the stereo-separation adjustment, check and adjust the phase between the 19-kHz pilot signal and the sub-channel signal in the MPX stereo generator as follows:

1. With the equipment connected as shown in Fig. 3-6, set the MPX and audio signal-generator's control as follows:
   MAIN CHANNEL .... OFF
   SUB CHANNEL .... ON
   PILOT (19 kHz) .... OFF
   AUDIO OSCILLATOR
   OUTPUT .... 400 Hz, 250 mV

2. Adjust the oscilloscope controls to obtain a visible indication. Be sure the scope's horizontal display switch is set for external input.
3. Turn the pilot-signal (19 kHz) phase control to obtain an in-phase and stable lissajous pattern as shown in Fig. 3-7.

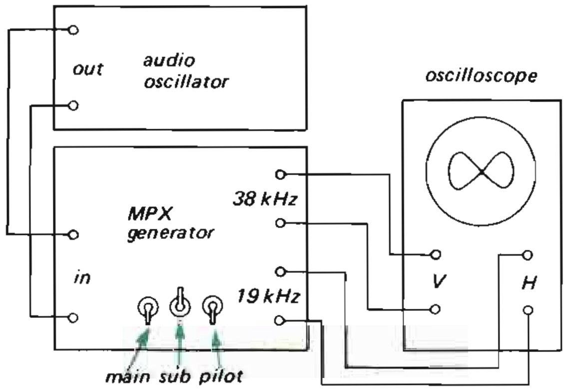


Fig. 3-6. MPX generator preadjustment

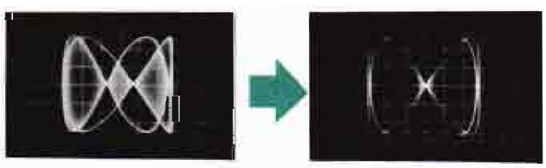


Fig. 3-7. Lissajous pattern

Procedure

1. Connect the equipment as shown in Fig. 3-8. Set the fm signal-generator's control as follows:

Carrier frequency	98 MHz
Output level	1,000 μV (60 dB)
Modulation:	
Main channel (400 Hz) ..	33.75 kHz (45%)
Sub channel (38 kHz) ...	33.75 kHz (45%)
Pilot (19 kHz)	7.5 kHz (10%)

The above mentioned modulation levels can be set as follows:

(a) With the equipment connected as shown in Fig. 3-8 set the MPX stereo generator controls as follows:

MAIN CHANNEL	OFF
SUB CHANNEL	OFF
19 kHz (PILOT)	ON

(b) Adjust the 19-kHz signal level to obtain a 7.5-kHz deviation on the FM SSG modulation indicator.

(c) Reset the MPX stereo-generator's control as follows:

MAIN CHANNEL	ON
SUB CHANNEL	OFF
19 kHz (PILOT)	OFF
INPUT SELECTOR	L-CH

(d) Adjust the audio-oscillator output (400 Hz) to obtain a 33.75-kHz deviation on the FM SSG modulation indicator.

(e) Set all controls to ON.

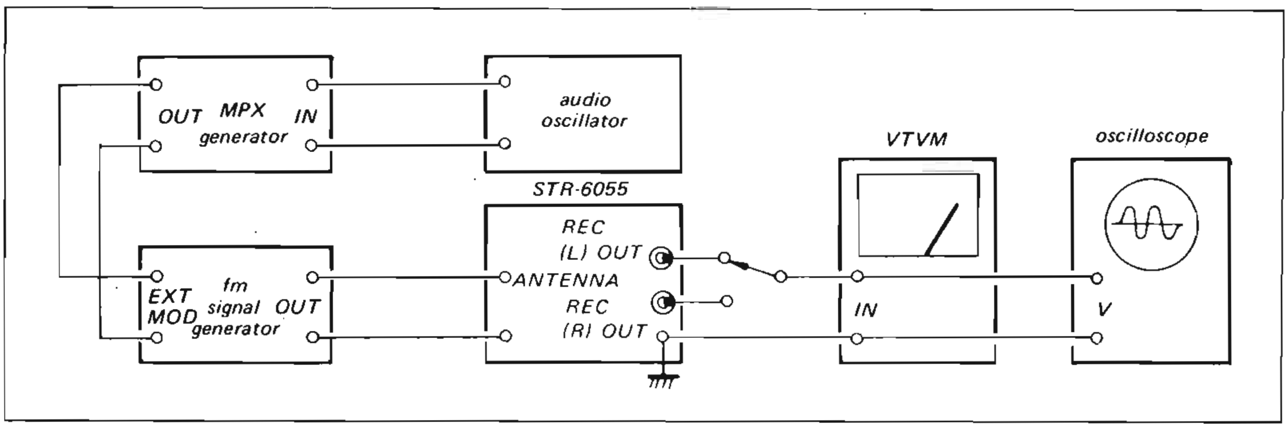


Fig. 3-8. Fm stereo separation adjustment test setup

2. Precisely tune the set to the S.S.G's carrier frequency then turn the top core of switching transformer T401 (see Fig. 3-9) to obtain maximum output at the left channel. Note that this adjustment is closely related to stereo distortion.
3. Record the output level of the left channel when the MPX generator input selector is set to the left channel.
4. Switch the input selector to the right channel and read the residual signal level in the left channel.
5. The output-level to residual-level ratio represents the separation. Adjust separation adj. control RV401 (see Fig. 3-9) for minimum residual level. Check the right channel for separation. Usually, about an 8 to 9 dB difference in channel separation exists. Re-adjust RV401 for minimum difference between left- and right-channel separation. While doing this, remember that the output-level also changes according to the setting of RV401.

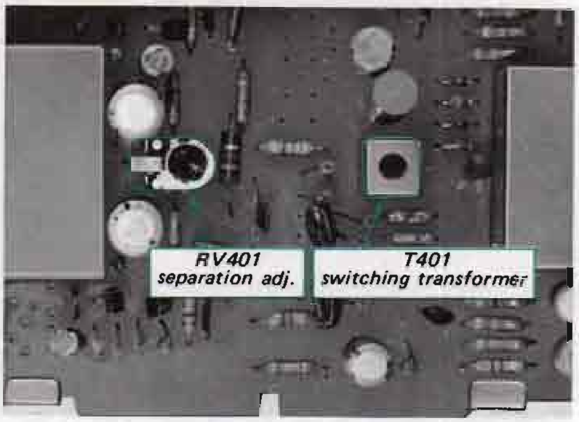


Fig. 3-9. Parts location (1)

3-6. A-M I-F STRIP ALIGNMENT

Note: The i-f transformers (CFT301 and IFT301) in the a-m i-f circuit are adjusted at the factory, so very little adjustment is necessary in the field. There is no need for alignment when replacing any of these i-f transformers.

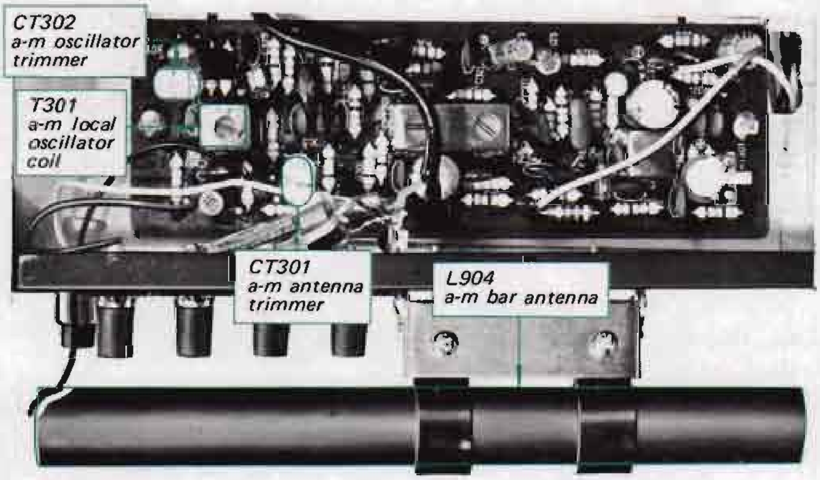


Fig. 3-10. Parts location (2)

3-7. A-M FREQUENCY COVERAGE AND TRACKING ADJUSTMENT

Preparation

Remove the top cover as described in Procedure 2-3. Then, set the FUNCTION switch to AM.

Signal Generator Method

Test Equipment Required

1. Standard a-m signal generator
2. Loop antenna
3. Ac VTVM or oscilloscope

Procedure

With the equipment connected as shown in Fig. 3-11, follow the procedures given in Tables 3-4 and 3-5 when performing this alignment with an a-m signal generator.

Off-the-Air Signal Method

Accurate dial calibration, and a frequency-coverage and tracking test can also be performed by utilizing off-the-air local a-m signals. However, before performing the following procedure, be sure that the dial pointer is correctly positioned, as in the Procedure 2-6.

Frequency Coverage Adjustment

Procedure

1. Tune the receiver to the lowest-frequency station in your locality.
   Check the dial scale for a calibration accuracy of ±20 kHz from the carrier frequency. If the dial calibration error exceeds this limit, turn the local oscillator-coil T301 (see Fig. 3-10) slightly until optimum dial calibration is obtained.
2. Tune the receiver to the highest-frequency station in your locality. If the dial calibration error exceeds ±30 kHz from the carrier frequency, adjust local-oscillator trimmer-capacitor CT302 (see Fig. 3-10) to obtain maximum calibration accuracy. Repeat the above steps two or three times.

Tracking Adjustment

1. Tune the set to the station whose carrier frequency is closest to 620 kHz and adjust the position of antenna core L904 as shown in Fig. 3-12 to obtain maximum output.
2. Tune the set to the station whose carrier frequency is closest to 1,400 kHz and adjust antenna trimmer CT301 to obtain maximum output. See Fig. 3-10.
3. Repeat the above steps two or three times.

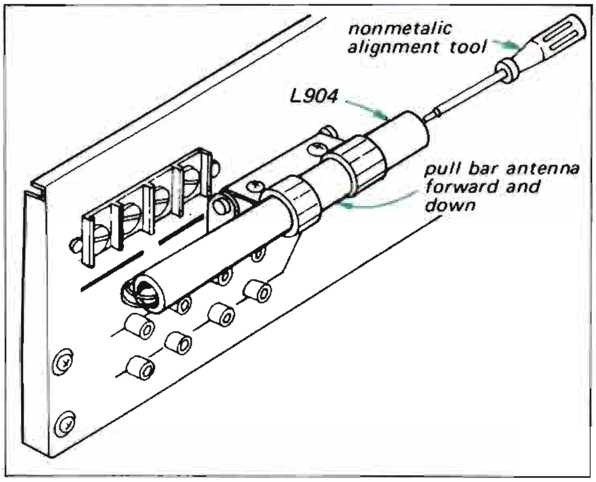


Fig. 3-12. A-m bar antenna core adjustment

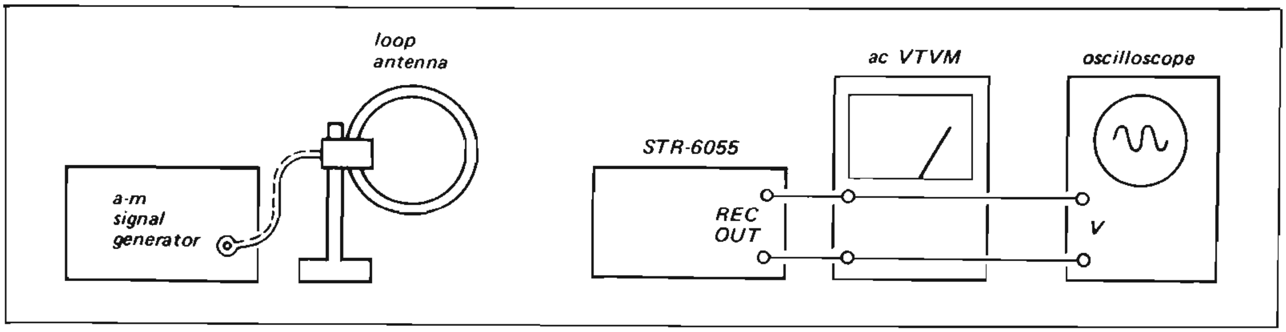


Fig. 3-11. A-m frequency coverage and tracking alignment test setup

TABLE 3-4. A-M FREQUENCY COVERAGE ALIGNMENT

SSG Coupling	SSG Frequency and Output Level	Tuner Dial Indication	Ac VTVM Connection	Adjust	Indication
Loop antenna	530 kHz 400 Hz 30% Mod. 3,000 μV (70 dB)	530 kHz	REC OUT (J504)	OSC coil T301 See Fig. 3-10	Maximum VTVM reading
Loop antenna	1,600 kHz Same as above	1,600 kHz	Same as above	OSC trimmer CT302 See Fig. 3-10	Same as above

TABLE 3-5. A-M TRACKING ALIGNMENT

SSG Coupling	SSG Frequency and Output Level	Tuner Dial Indication	Ac VTVM Connection	Adjust	Indication
Loop antenna	620 kHz 400 Hz 30% Mod. Output level as low as possible	620 kHz	REC OUT (J504)	Position of antenna core L904 See Fig. 3-12	Maximum VTVM reading
Loop antenna	1,400 kHz Same as above	1,400 kHz	Same as above	Antenna trimmer CT301 See Fig. 3-10	Same as above

3-8. POWER-AMPLIFIER ADJUSTMENT

Note: There are two adjustment items in the power amplifier. One is dc-bias adjustment and the other is dc-balance adjustment. These adjustments should be repeated alternately two or three times after replacing any of the power transistors until the best operation is obtained.

Dc-Bias Adjustment

Serious deficiencies in performance, such as thermal runaway of power transistors, will result if this adjustment is improperly set.

CAUTION

To avoid accidental power transistor damage, increase the ac line voltage gradually, using a variable transformer, while measuring the voltage across emitter of Q709 (Q759) and collector of Q710 (Q760) as shown in Fig. 3-13 or 3-14. Check to see that the reading does not exceed 50 mV. If it does, turn off the power as soon as possible, then check and repair the trouble in the power-amplifier board.

Test Equipment Required

1. Dc millivoltmeter
2. Variable transformer
3. Screwdriver with 3 mm (1/8") blade

Preparation

1. Remove the top cover as described in Procedure 2-3.
2. Connect the dc millivoltmeter across emitter of Q709 (Q759) and collector of Q710 (Q760) as shown in Figs. 3-13 or 3-14.

Procedure

1. Set the semi-fixed resistors (Fig. 3-15) on the power-amplifier board as follows:
   RV702
   (L-CH, dc bias) .... fully counterclockwise
   RV752
   (R-CH, dc bias) .... fully clockwise
   RV701, RV751
   (dc balance) .... mid-position

2. Set the variable transformer for minimum output.
3. Turn the POWER switch ON, and then increase the line voltage up to the rated value.
4. Apply a drop of cement solvent to the RV701, RV702, RV751 and RV752 then wait a few seconds for the cement to dissolve.
5. Adjust RV702 and RV752 to obtain a 50 mV reading on the meter, and then perform the dc-balance adjustment.

Dc-Balance Adjustment

Excessive harmonic distortion at high levels or speaker damage will result if this adjustment is improperly set.

Test Equipment Required

1. Dc null meter or dc millivoltmeter
2. Screwdriver with 3 mm (1/8") blade

Preparation

1. Set the SPEAKER switch to MAIN.
2. Connect the dc null meter or dc millivoltmeter to the MAIN speaker output terminal.

Procedure

1. Turn the POWER switch ON, and then adjust RV701 (RV751) to obtain a 0 V reading on the meter.
2. After 10 minutes warm-up, alternately repeat this and the dc bias adjustment two or three times.
3. After completing the adjustment, apply a drop of lock paint to RV701 and RV702 (RV751 and RV752).

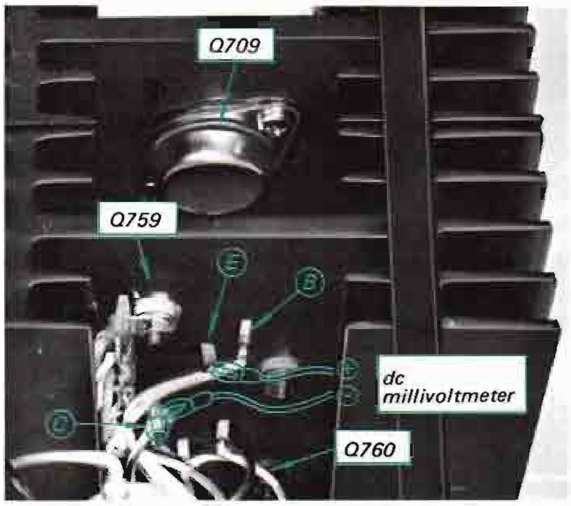


Fig. 3-14. Dc millivoltmeter connection

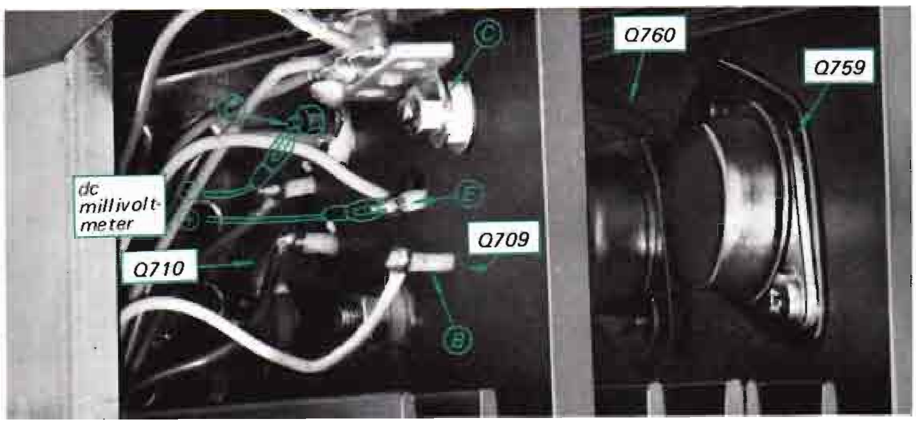


Fig. 3-13. Dc millivoltmeter connection

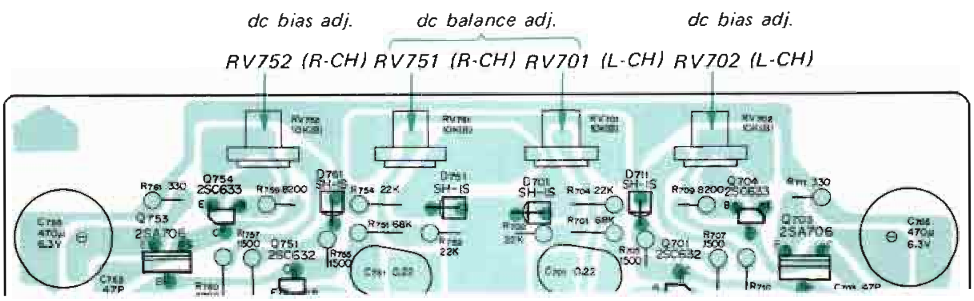


Fig. 3-15. Parts location

SECTION 4
REPACKING

The STR-6055's original shipping carton and packing material are the ideal container for shipping the unit. However to secure the maximum protection, the STR-6055 must be repacked in these materials precisely as before. The proper repacking procedures are shown in Fig. 4-1.

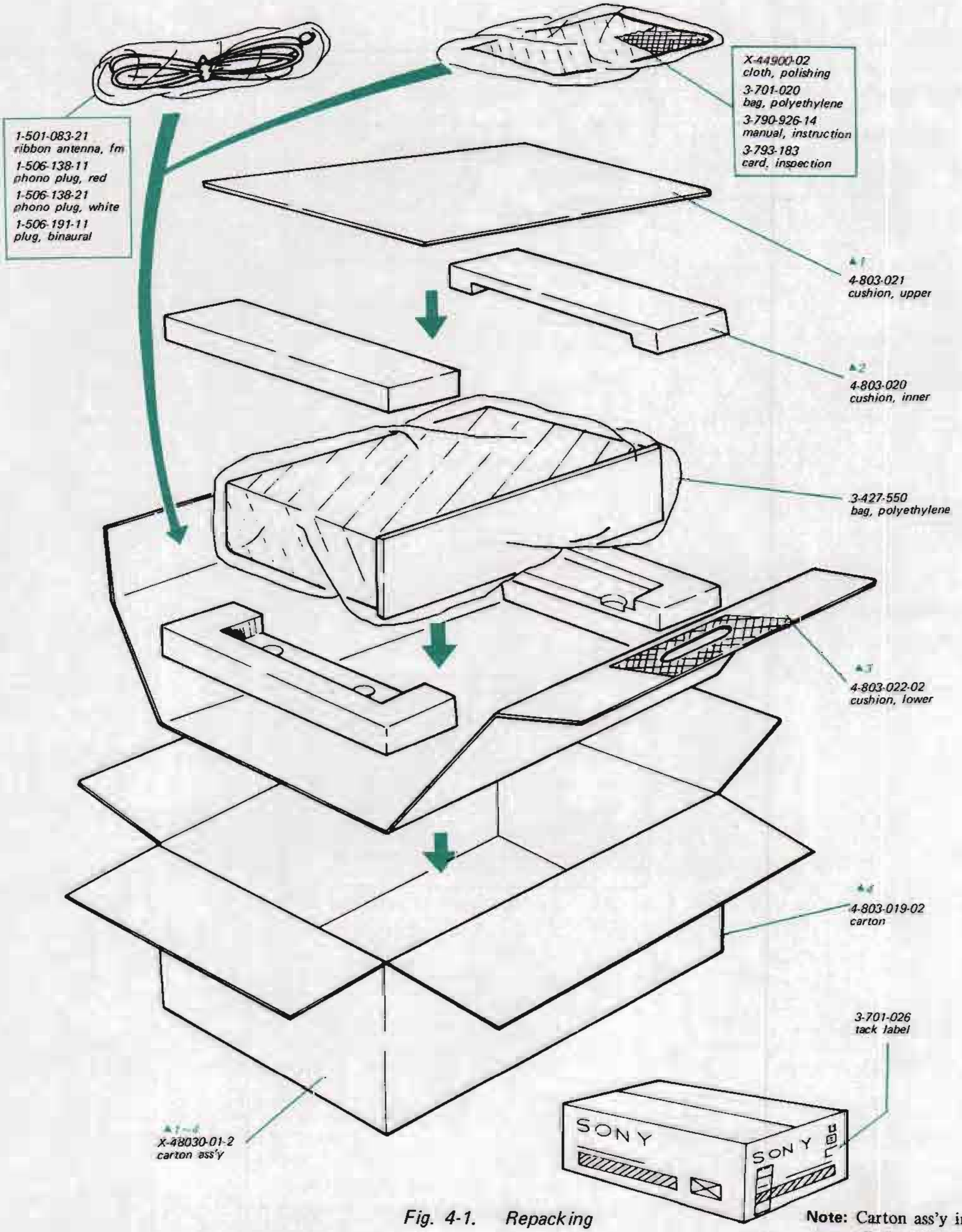


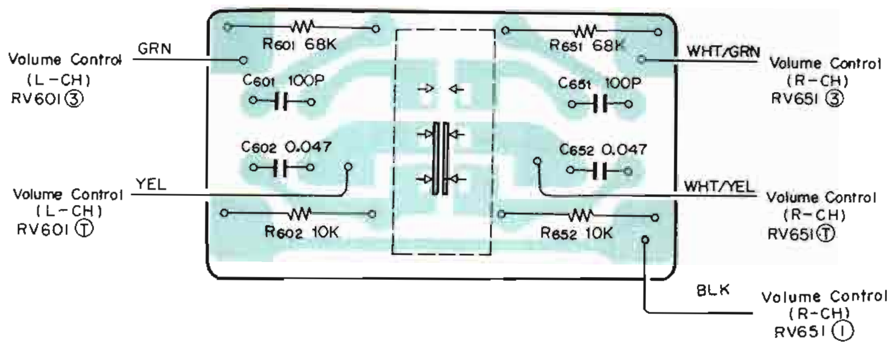
Fig. 4-1. Repacking

Note: Carton ass'y includes all the parts marked ▲

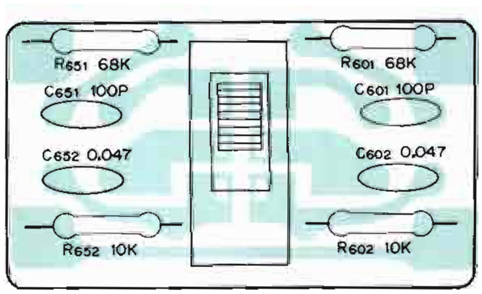
SECTION 5
DIAGRAMS

5-1. MOUNTING DIAGRAM –Loudness Control Board –

– Conductor Side –

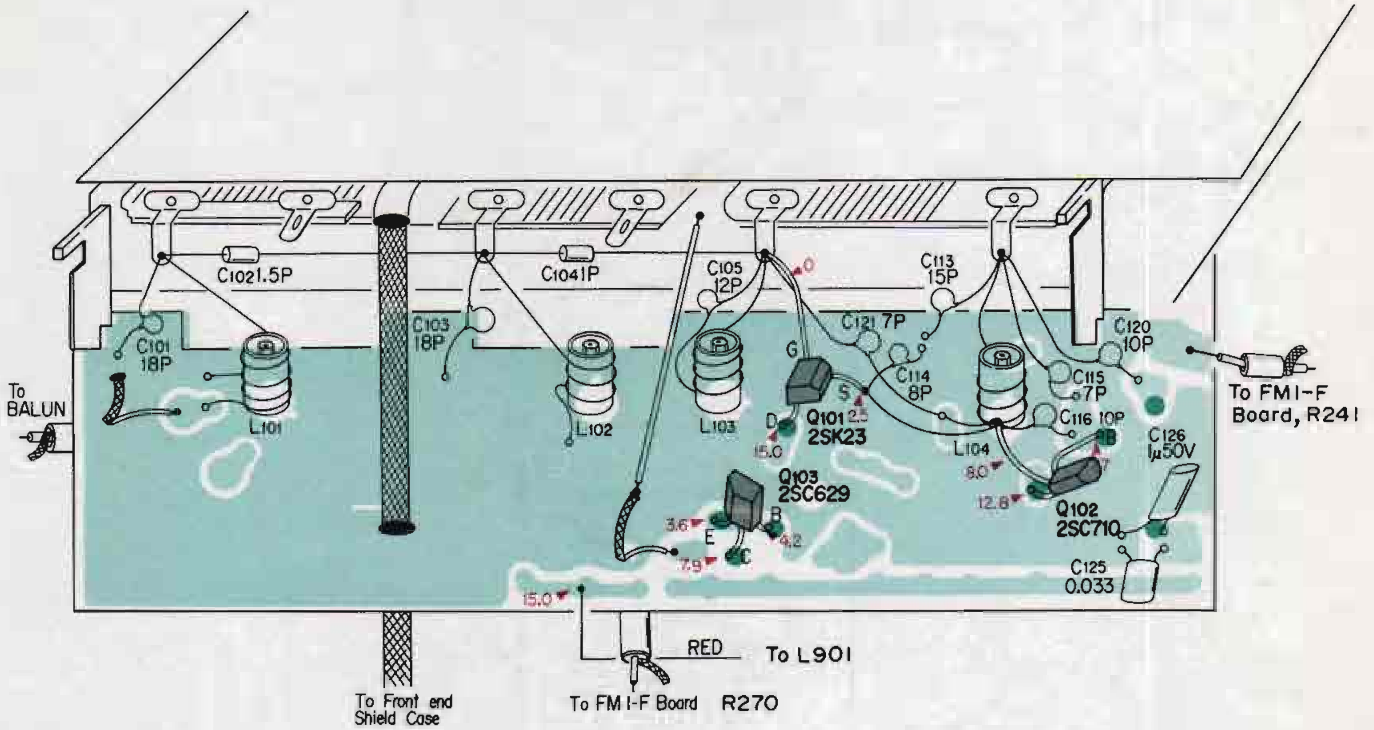


– Component Side –

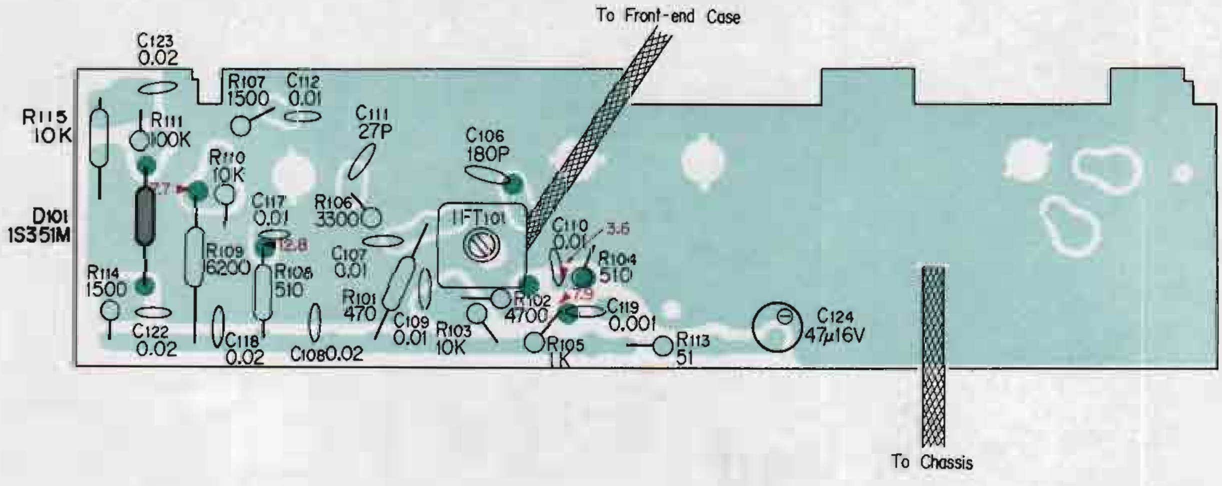


5-2. MOUNTING DIAGRAM – Fm Front End –

– Conductor Side –

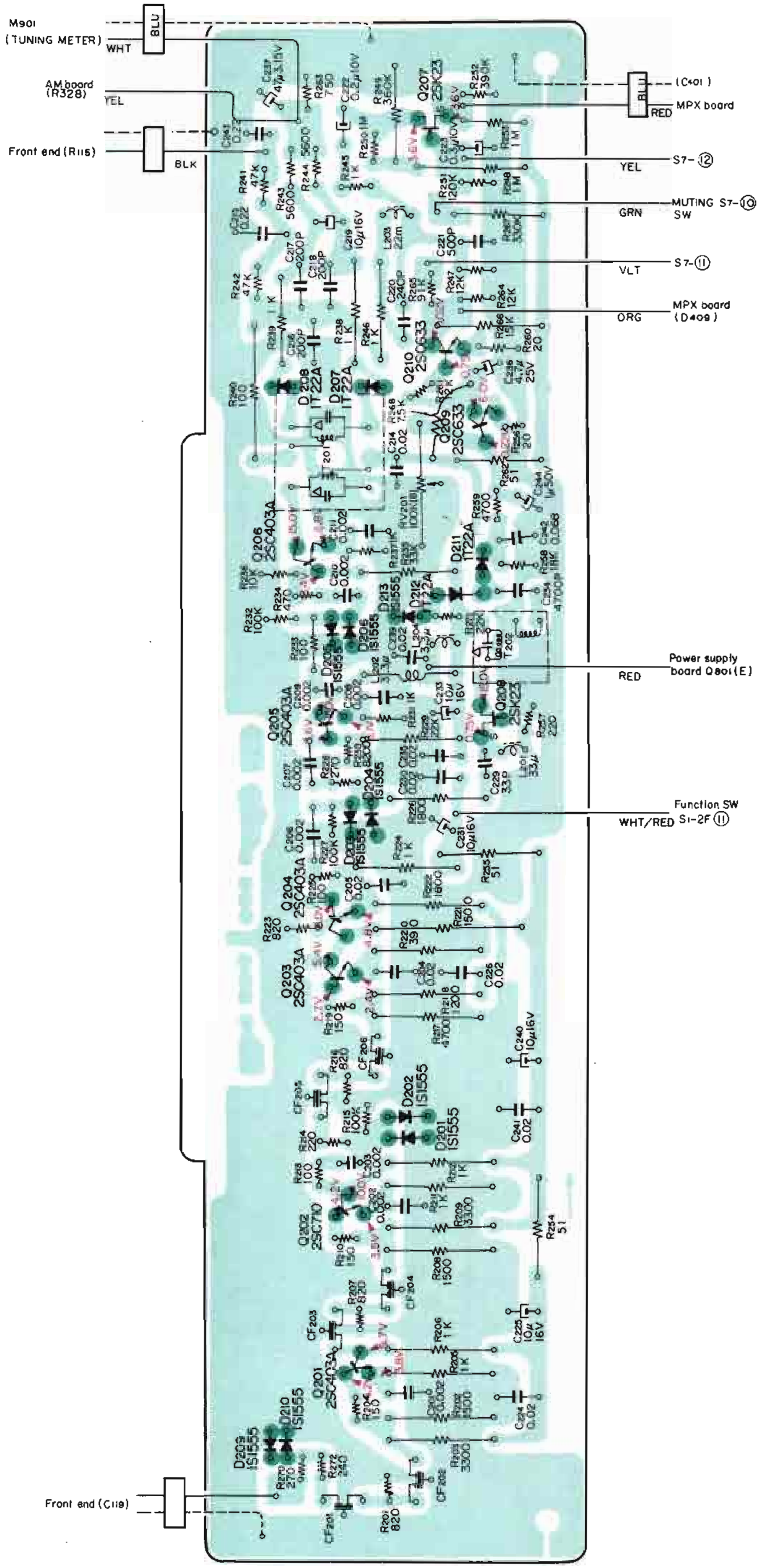


– Component Side –

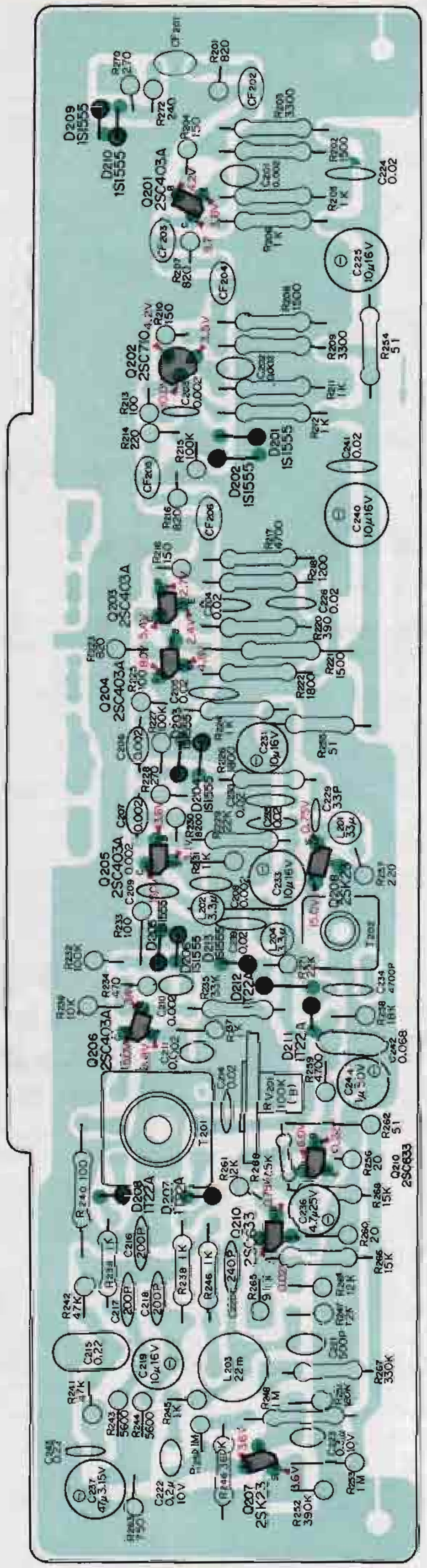


5-3. MOUNTING DIAGRAM — I-f Board —

— Conductor Side —

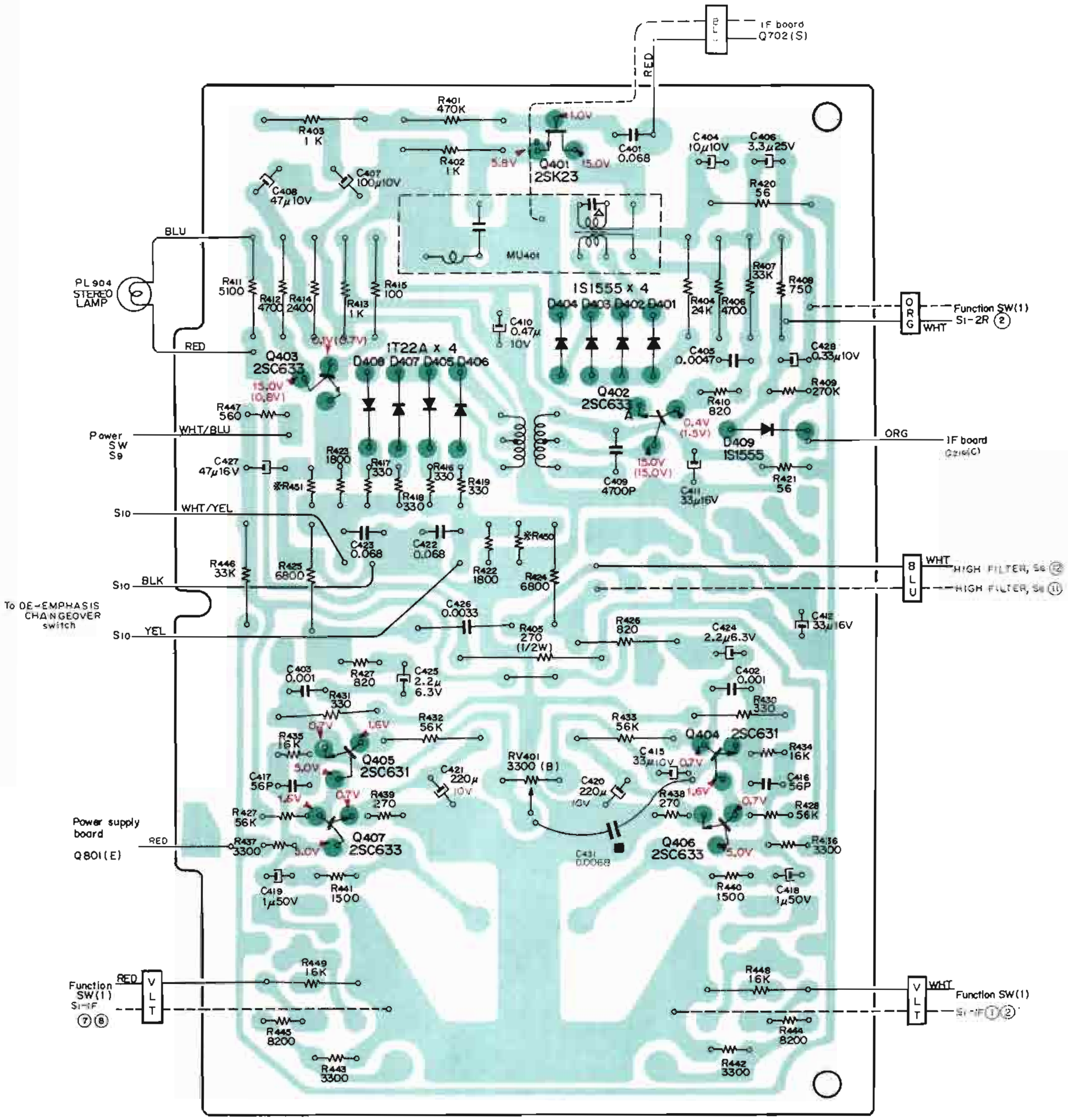


– *Component Side* –



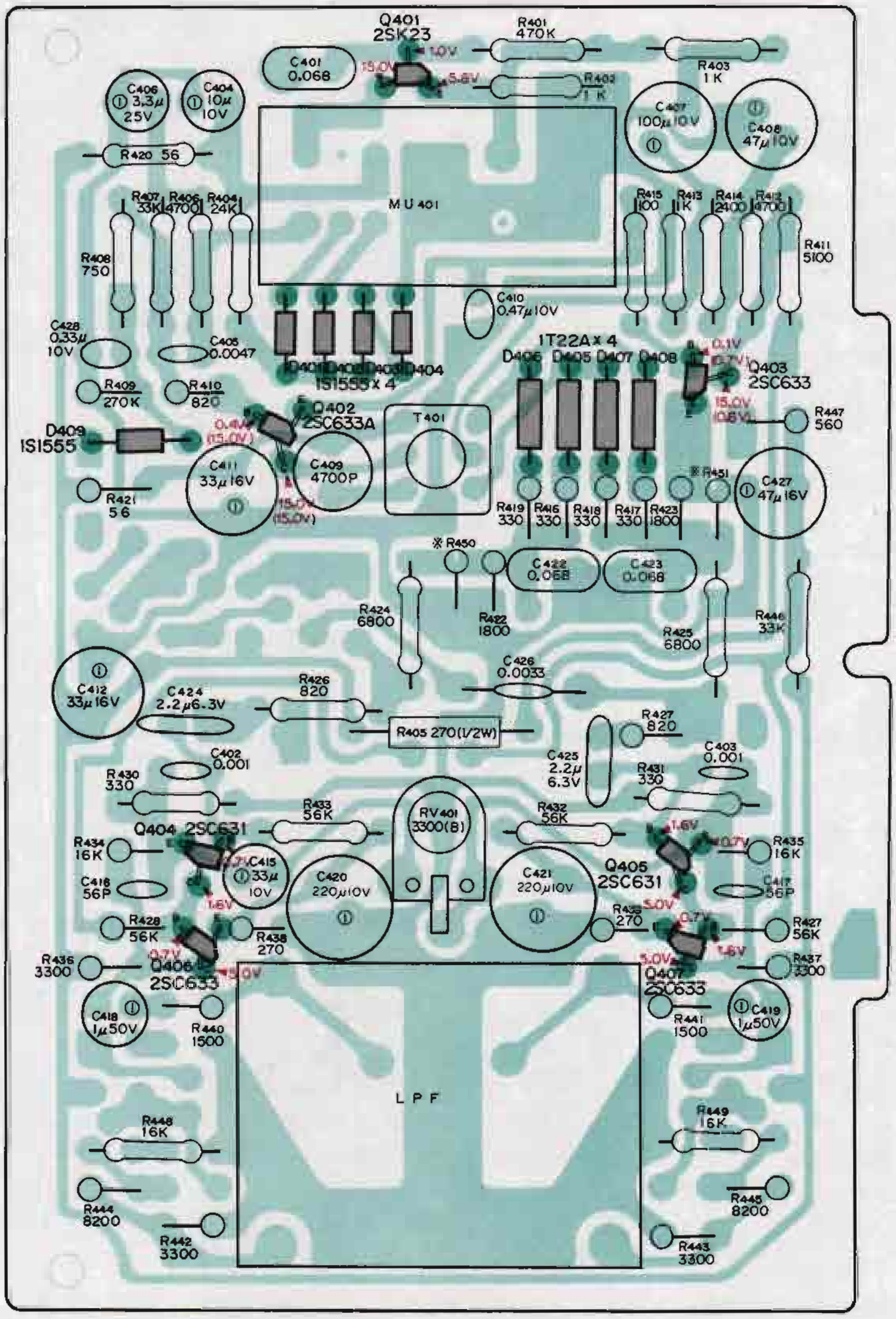
5-4. MOUNTING DIAGRAM – MPX Board –

– Conductor Side –



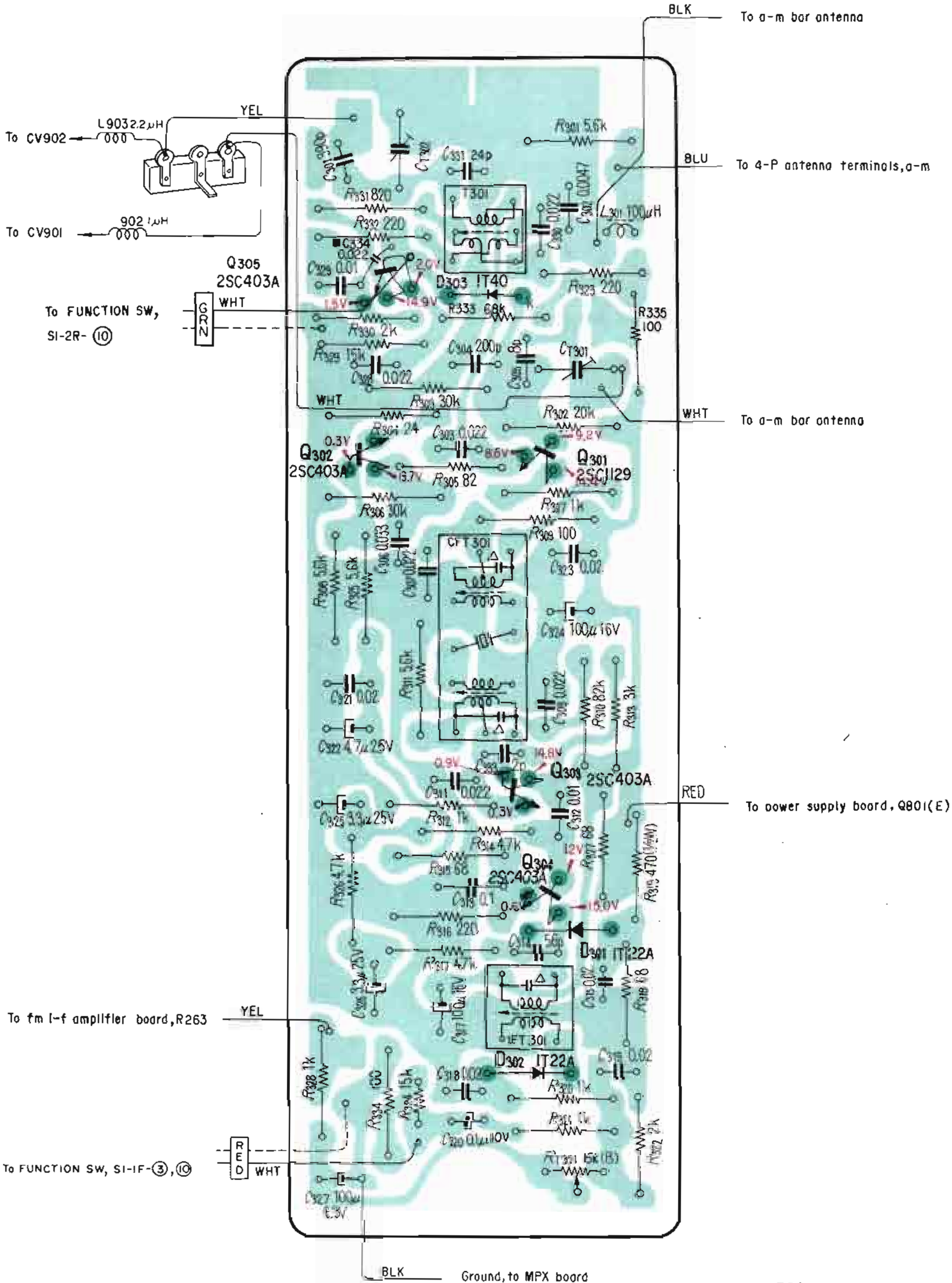
Note: ■ C431 is mounted on conductor side.

– Component Side –



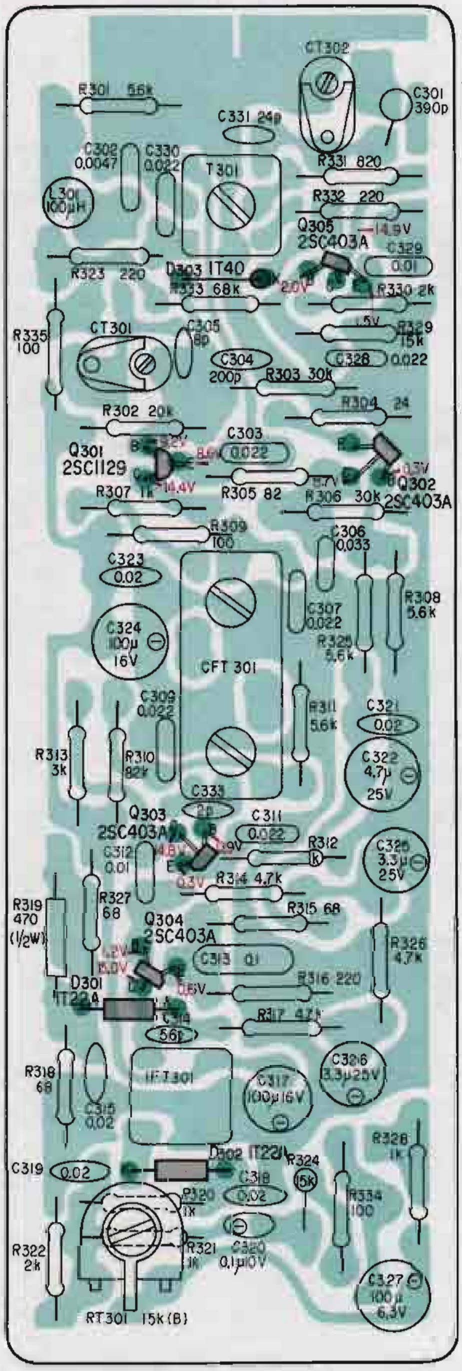
5-5. MOUNTING DIAGRAM – A-m I-f Board –

– Conductor Side –



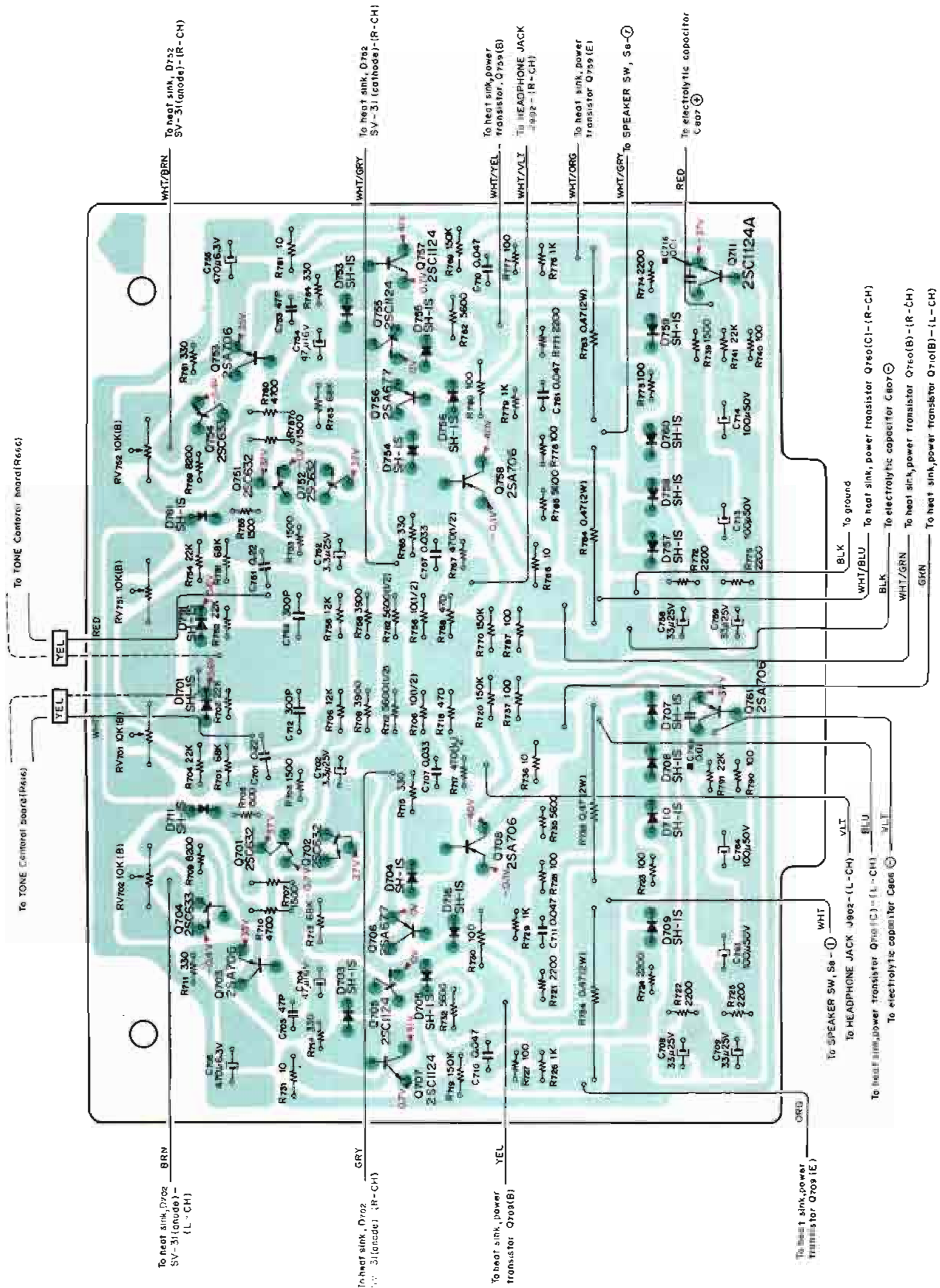
Note: ■ C334 is mounted on conductor side.

– Component Side –



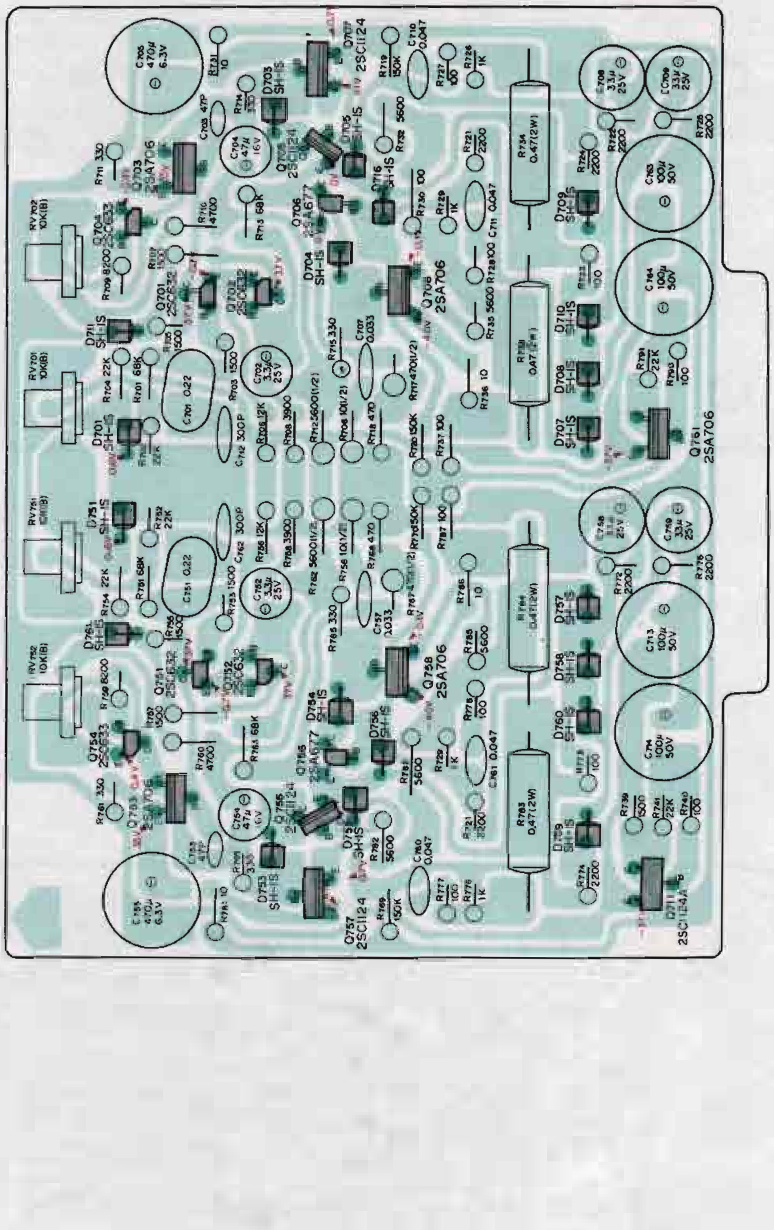
5-6. MOUNTING DIAGRAM — Power Amplifier Board —

— Conductor Side —



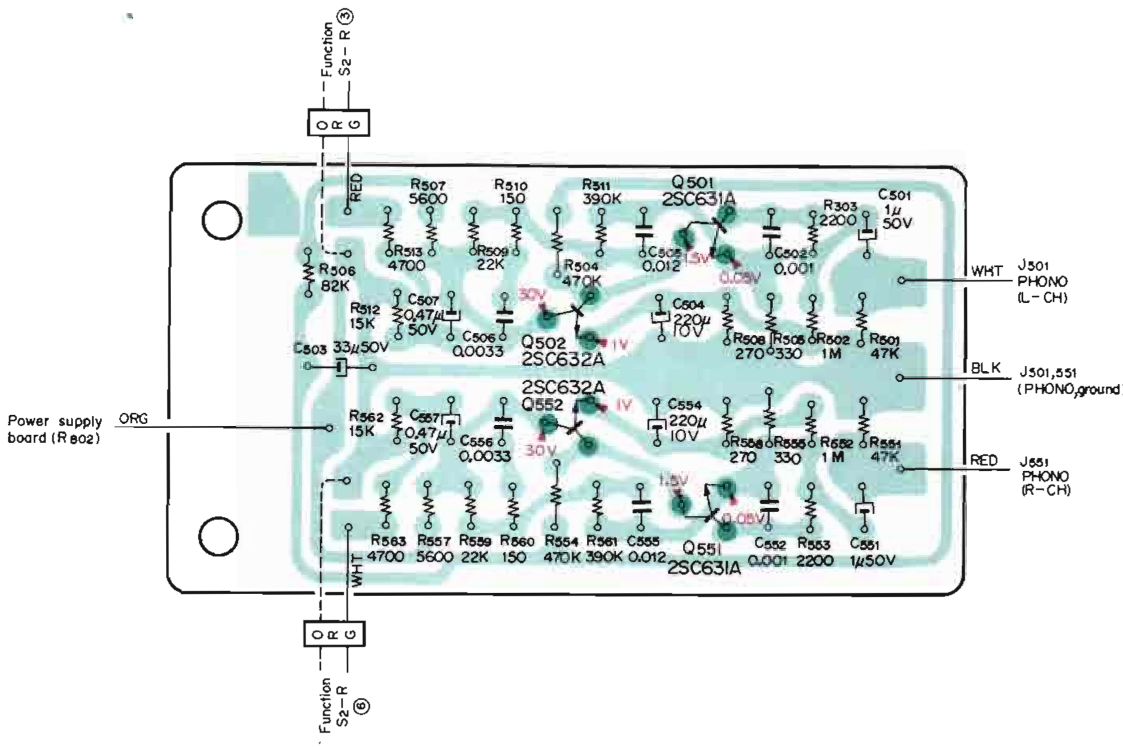
Note: ■ C716(C766) is mounted on conductor side.

– Component Side –

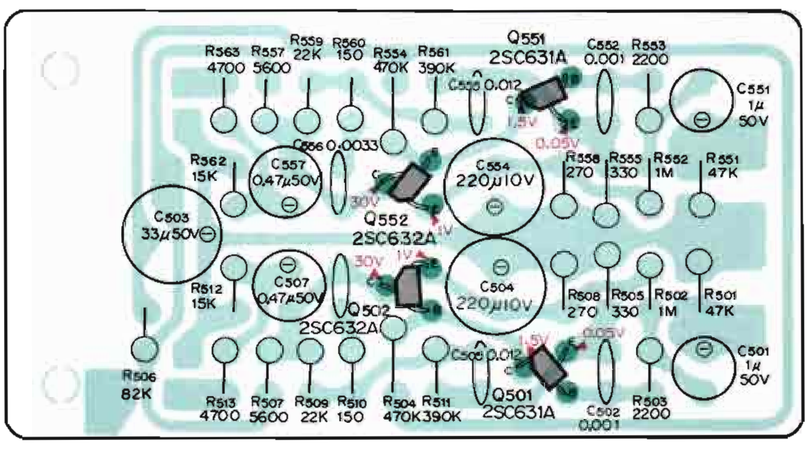


5-7. MOUNTING DIAGRAM — Equalizer Board —

— Conductor Side —

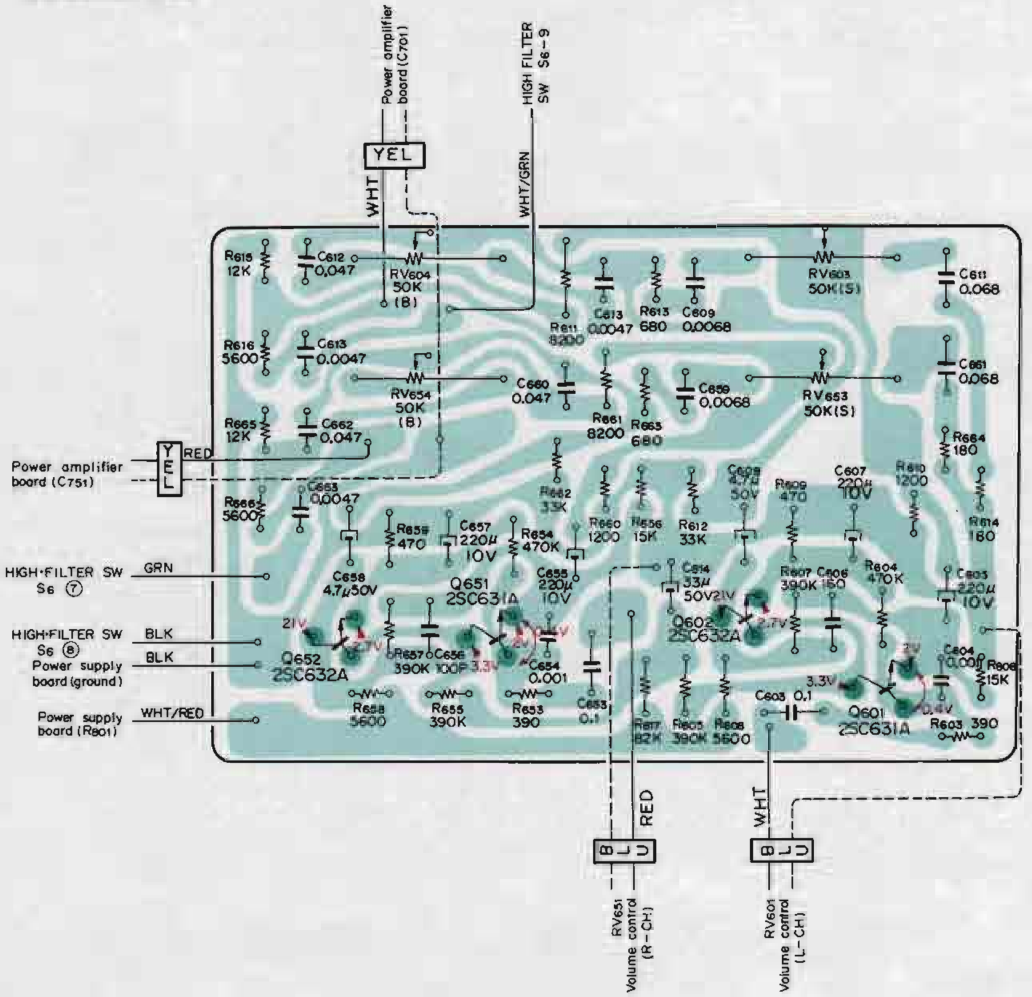


— Component Side —

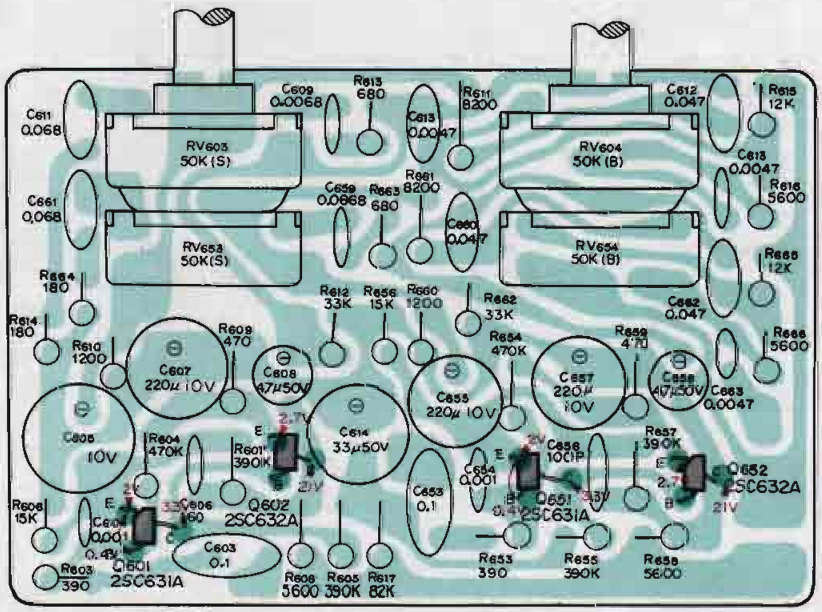


5-8. MOUNTING DIAGRAM – Tone Control Board –

– Conductor Side –

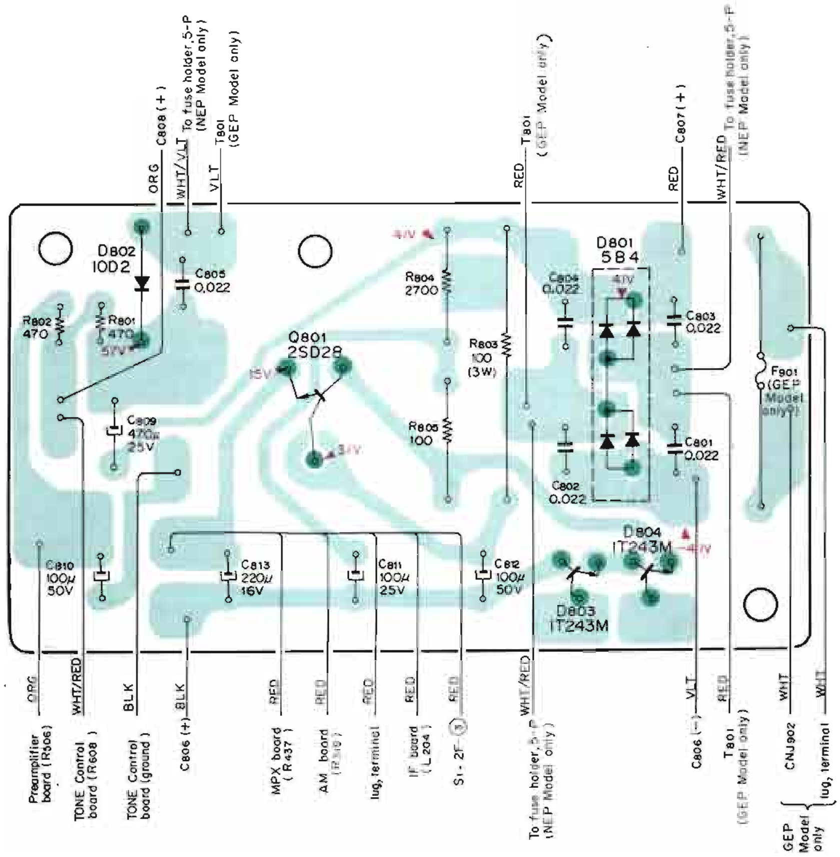


– Component Side –

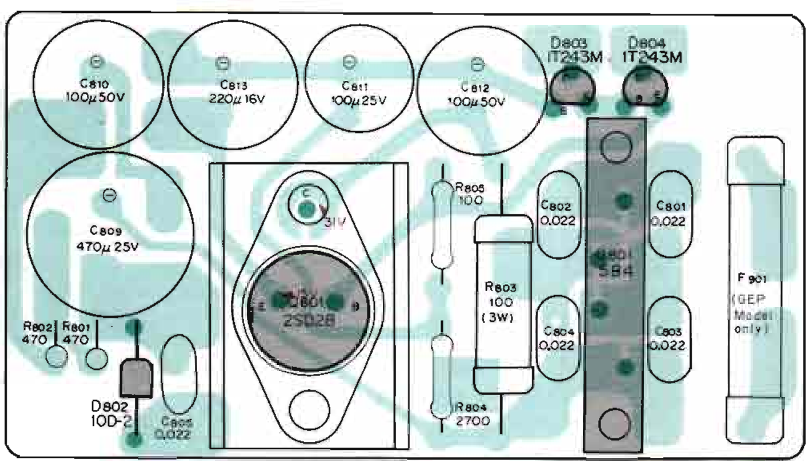


5-9. MOUNTING DIAGRAM – Power Supply Board –

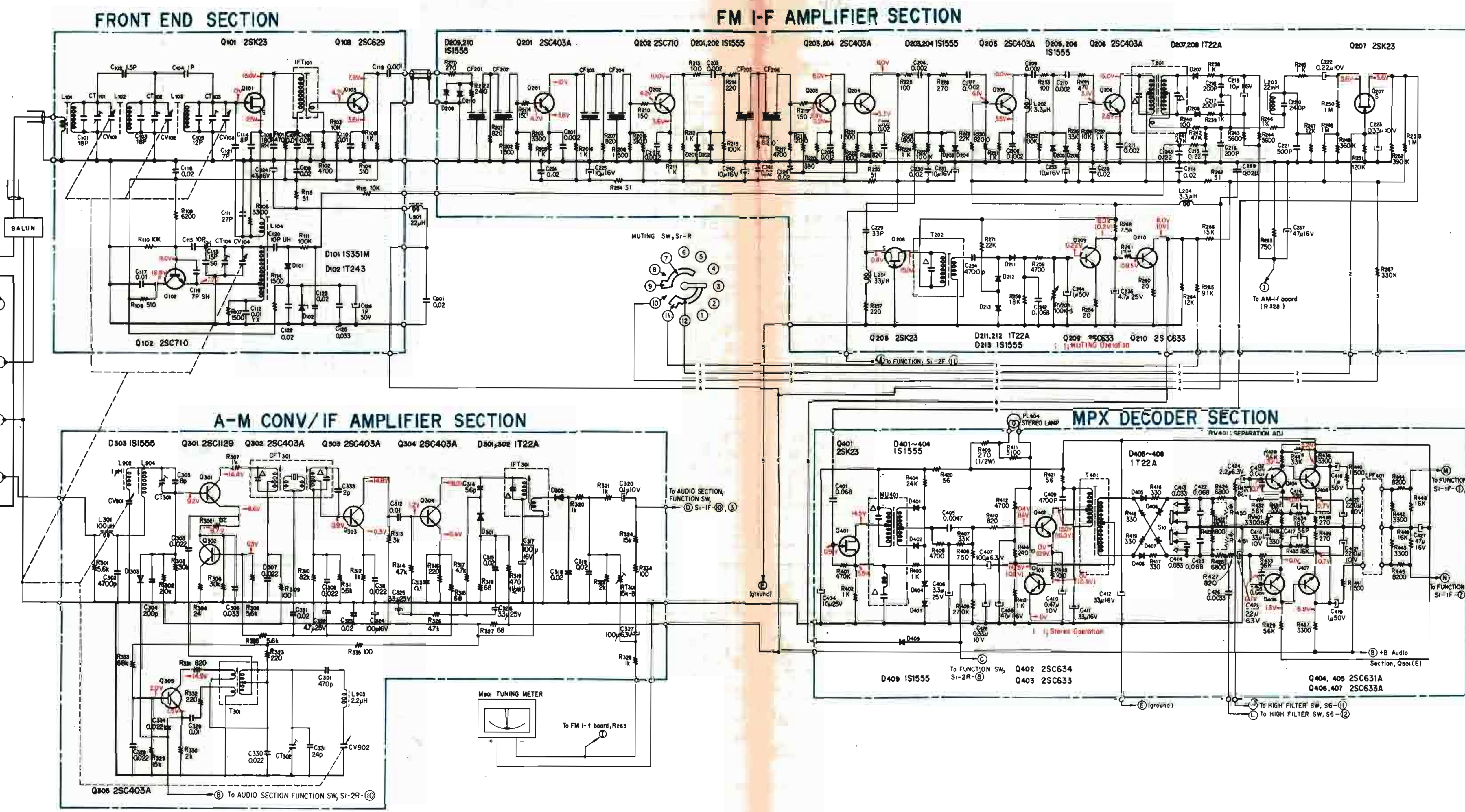
– Conductor Side –



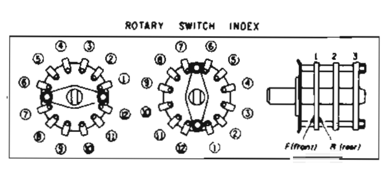
– Component Side –

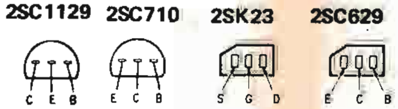


5-10. SCHEMATIC DIAGRAM – Tuner Section –



Ref. No.	Function	Position
S7	MUTING SW	ON





Note:

All resistance values are in ohms. k = 1,000, M = 1,000k

All capacitance values are in μF except as indicated with p, which means μμF

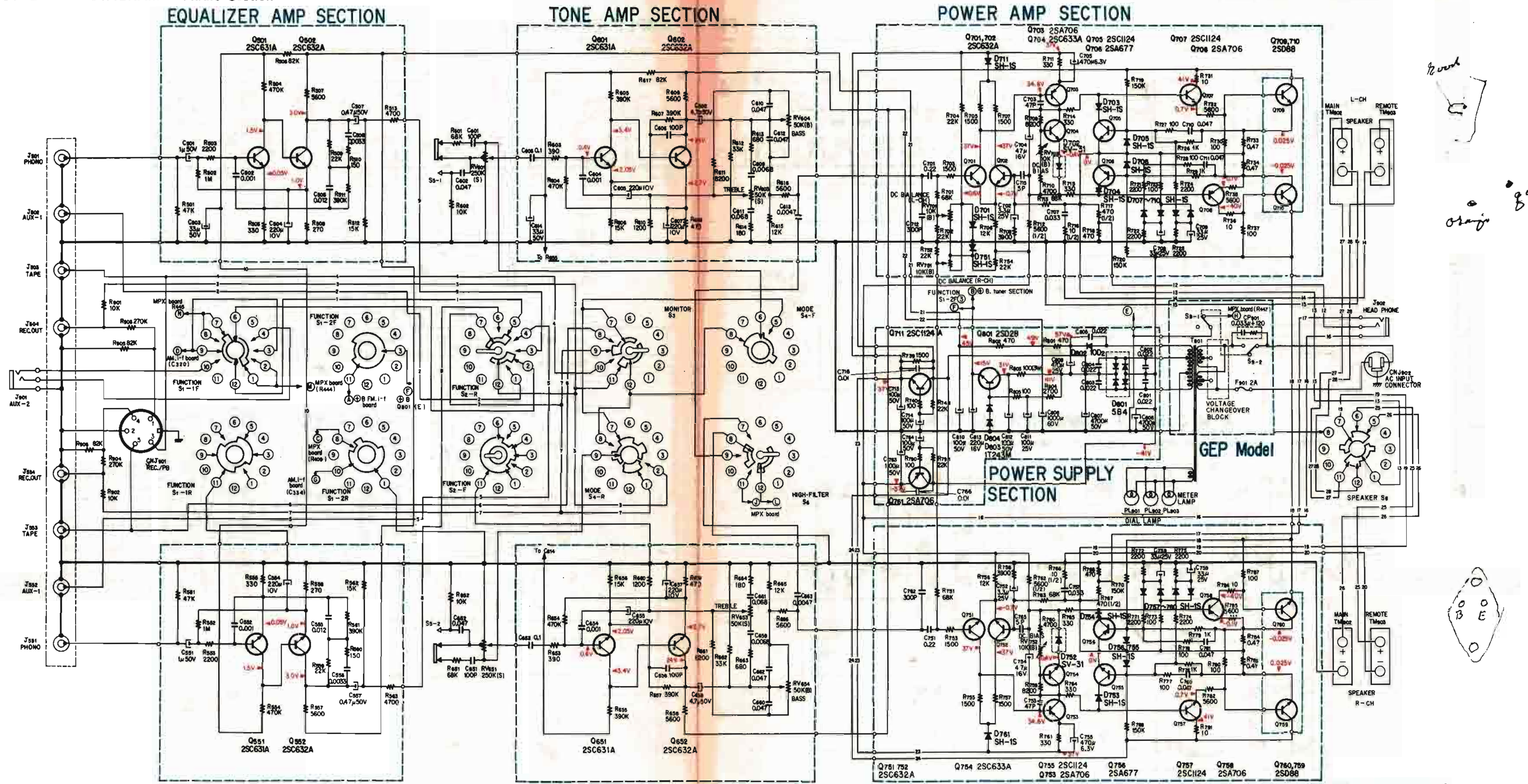
All voltages represent an average value and should hold within ±20%.

All voltages are dc measured with a VOM which has an input impedance of 20k ohms/volt. No signal in.

SONY

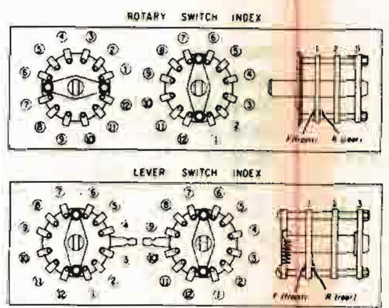
STR-6055

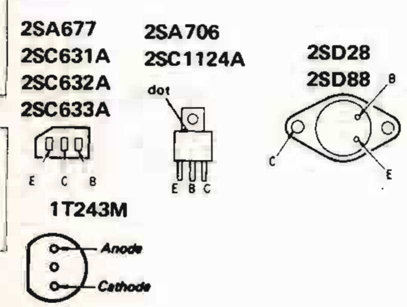
5-11. SCHEMATIC DIAGRAM — Audio Section —



Ref. No.	Function	Position
S1	FUNCTION (1) (AUTO STEREO - MONO - AM - AUX-2)	AUTO STEREO
S2	FUNCTION (2) SW (AUX-1 - FUNCTION (1) - PHONO)	FUNCTION (1)
S3	MONITOR SW (SOURCE - TAPE)	SOURCE
S4	MODE SW (REVERSE - STEREO - L+R - LEFT - RIGHT)	STEREO
S5	LOUDNESS SW	ON

Ref. No.	Function	Position
S6	HIGH FILTER	OFF
S7	MUTING SW	ON
S8	SPEAKER SW (REMOTE - OFF - MAIN - BOTH)	BOTH
S9	POWER SW	OFF
S10	DE-EMPHASIS CHANGEOVER SW (75μs - 50μs)	75μs





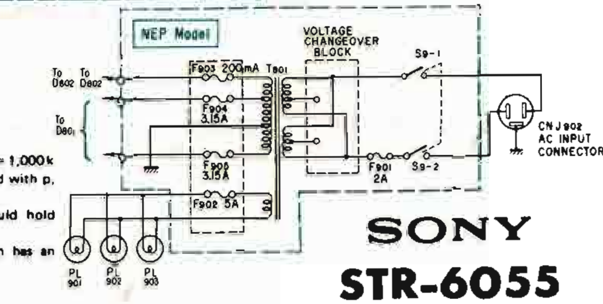
Note:

All resistance values are in ohms. k = 1,000, M = 1,000k

All capacitance values are in μF except as indicated with p, which means μμF

All voltages represent an average value and should hold within ±20%.

All voltages are dc measured with a VOM which has an input impedance of 20k ohms/volt. No signal in.

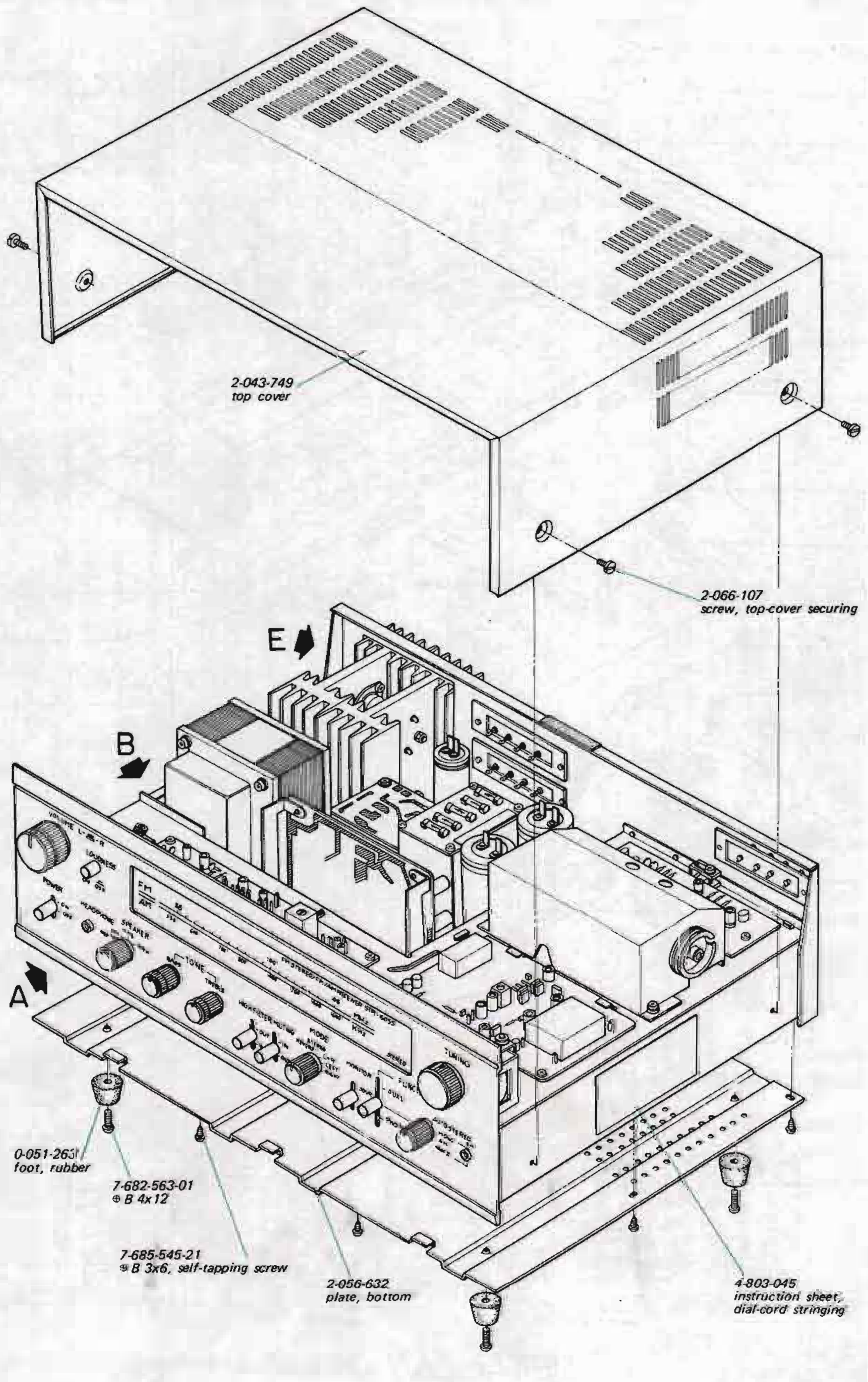


SONY

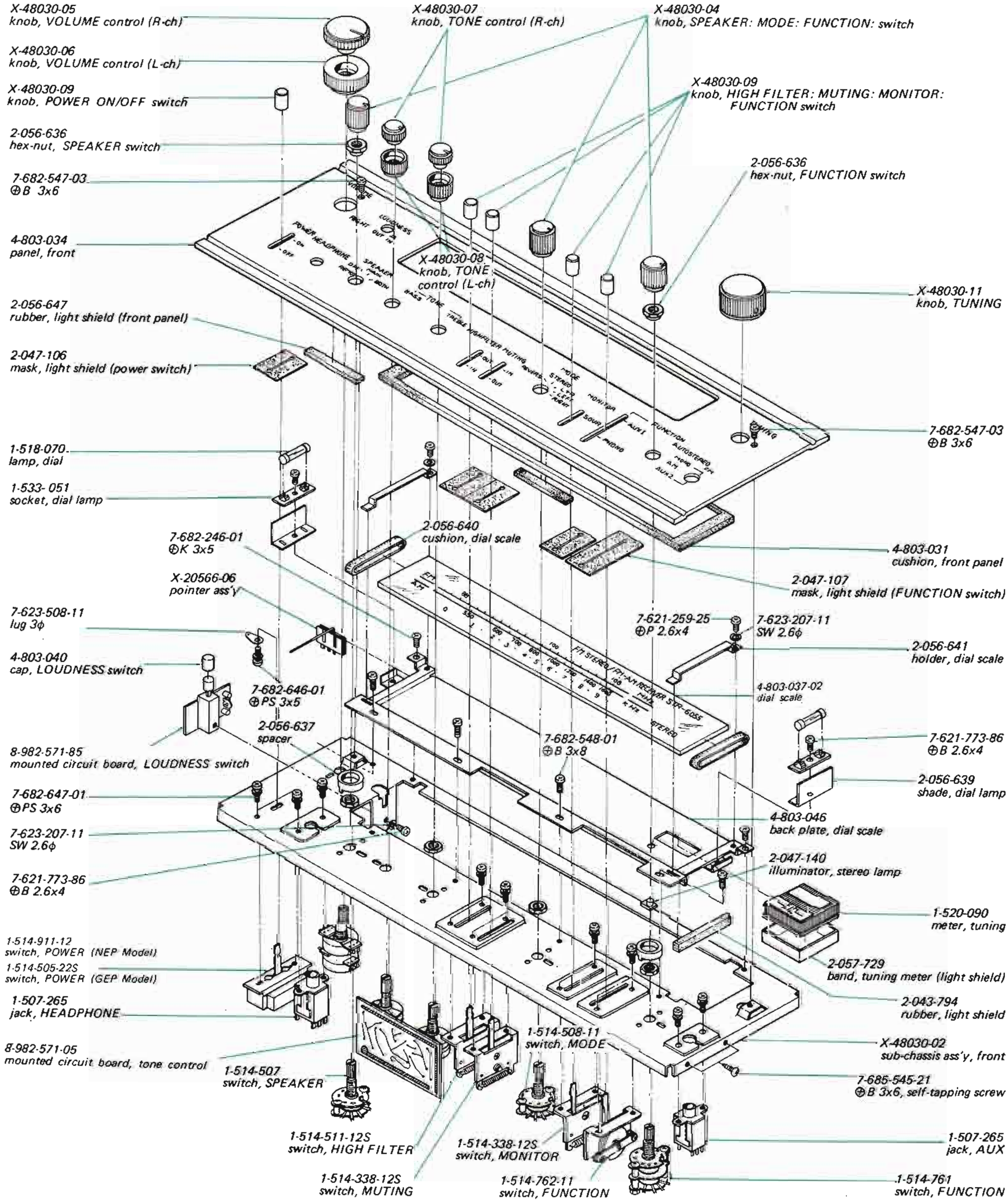
STR-6055

SECTION 6
EXPLODED VIEW

6-1.

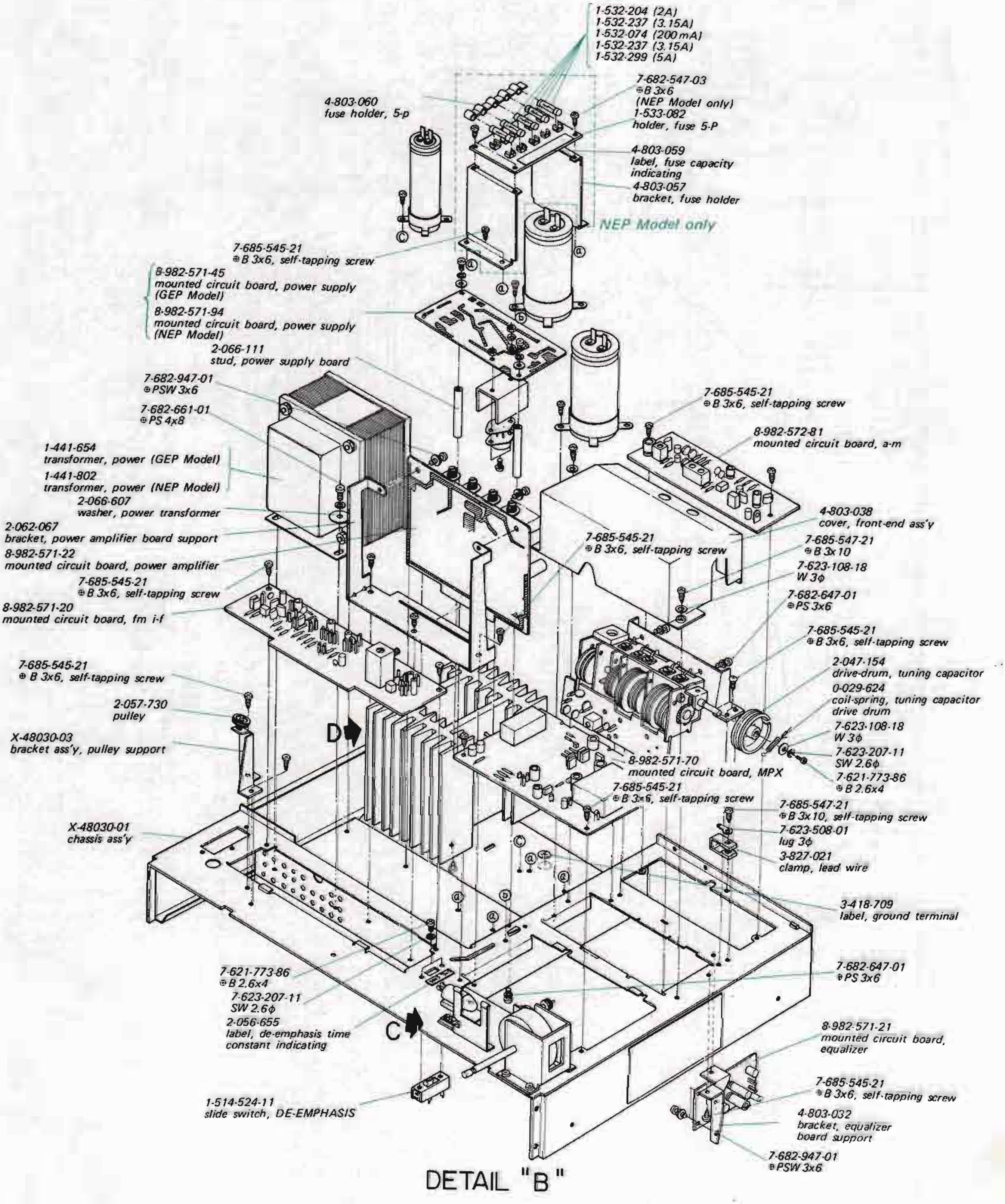


6-2.



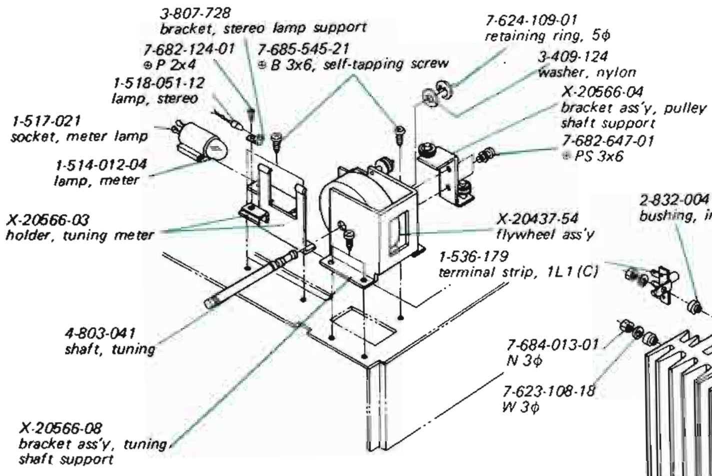
DETAIL "A" (TURN CLOCKWISE 90°)

6-3.

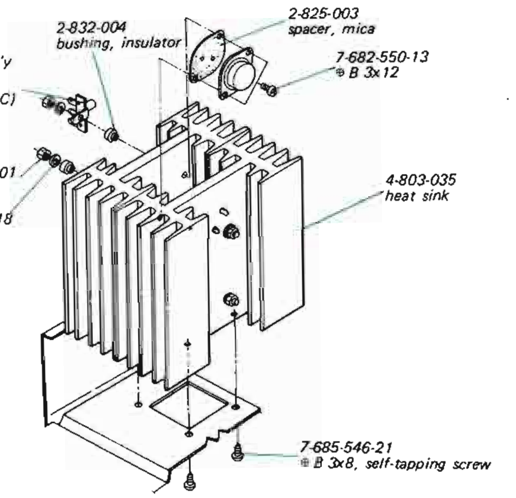

1-532-204 (2A)
1-532-237 (3.15A)
1-532-074 (200 mA)
1-532-237 (3.15A)
1-532-299 (5A)
7-682-547-03
⊕B 3x6
(NEP Model only)
1-533-082
holder, fuse 5-P
4-803-060
fuse holder, 5-p
4-803-059
label, fuse capacity indicating
4-803-057
bracket, fuse holder
NEP Model only
7-685-545-21
⊕B 3x6, self-tapping screw
8-982-571-45
mounted circuit board, power supply (GEP Model)
8-982-571-94
mounted circuit board, power supply (NEP Model)
2-066-111
stud, power supply board
7-682-947-01
⊕PSW 3x6
7-682-661-01
⊕PS 4x8
1-441-654
transformer, power (GEP Model)
1-441-802
transformer, power (NEP Model)
2-066-607
washer, power transformer
2-062-067
bracket, power amplifier board support
8-982-571-22
mounted circuit board, power amplifier
7-685-545-21
⊕B 3x6, self-tapping screw
8-982-571-20
mounted circuit board, fm i-f
7-685-545-21
⊕B 3x6, self-tapping screw
8-982-572-81
mounted circuit board, a-m
4-803-038
cover, front-end ass'y
7-685-545-21
⊕B 3x6, self-tapping screw
7-685-547-21
⊕B 3x10
7-623-108-18
W 3ϕ
7-682-647-01
⊕PS 3x6
7-685-545-21
⊕B 3x6, self-tapping screw
2-047-154
drive-drum, tuning capacitor
0-029-624
coil-spring, tuning capacitor drive drum
7-623-108-18
W 3ϕ
7-623-207-11
SW 2.6ϕ
7-621-773-86
⊕B 2.6x4
7-685-545-21
⊕ B 3x6, self-tapping screw
2-057-730
pulley
X-48030-03
bracket ass'y, pulley support
D
8-982-571-70
mounted circuit board, MPX
7-685-545-21
⊕B 3x6, self-tapping screw
7-685-547-21
⊕B 3x10, self-tapping screw
7-623-508-01
lug 3ϕ
3-827-021
clamp, lead wire
X-48030-01
chassis ass'y
3-418-709
label, ground terminal
7-621-773-86
⊕B 2.6x4
7-623-207-11
SW 2.6ϕ
2-056-655
label, de-emphasis time constant indicating
C
7-682-647-01
⊕PS 3x6
8-982-571-21
mounted circuit board, equalizer
7-685-545-21
⊕B 3x6, self-tapping screw
4-803-032
bracket, equalizer board support
7-682-947-01
⊕PSW 3x6
1-514-524-11
slide switch, DE-EMPHASIS

DETAIL "B"

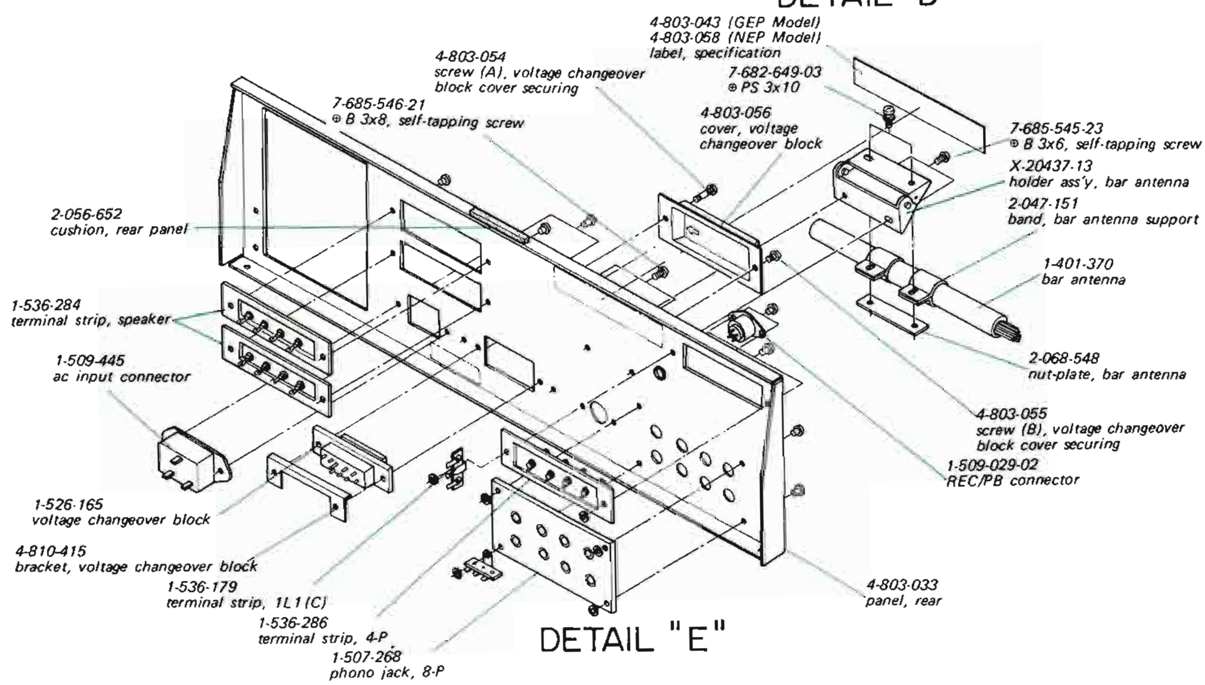
6-4.



DETAIL "C"



DETAIL "D"



DETAIL "E"

SECTION 7
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
		MOUNTED CIRCUIT BOARDS
	8-982-571-05	tone control board
	8-982-571-10	front-end ass'y
	8-982-571-20	fm i-f board
	8-982-571-21	equalizer amplifier board
	8-982-571-22	power amplifier board
	8-982-571-45	power supply board (GEP Model)
	8-982-571-94	power supply board (NEP Model)
	8-982-571-70	MPX board
	8-982-572-81	a-m board
	8-982-571-85	loudness control board
		SEMICONDUCTORS
D101		diode, 1S351
D102		diode. 1T243M
D201		diode, 1S1555
D202		diode, 1S1555
D203		diode, 1S1555
D204		diode, 1S1555
D205		diode, 1S1555
D206		diode, 1S1555
D207		diode, 1T22A
D208		diode, 1T22A
D209		diode, 1S1555
D210		diode, 1S1555
D211		diode, 1T22A
D212		diode, 1T22A
D213		diode, 1S1555
D301		diode, 1T22A
D302		diode, 1T22A
D303		diode, 1S1555
D401		diode, 1S1555
D402		diode, 1S1555
D403		diode, 1S1555
D404		diode, 1S1555
D405		diode, 1T22A
D406		diode, 1T22A
D407		diode, 1T22A
D408		diode, 1T22A
D409		diode, 1S1555
D701 (D751)		diode, SH1S
D702 (D752)		diode, SV31
D703 (D753)		diode, SH1S
D704 (D754)		diode, SH1S
D705 (D755)		diode, SH1S
D706 (D756)		diode, SH1S
D707 (D757)		diode, SH1S
D708 (D758)		diode, SH1S
D709 (D759)		diode, SH1S
D710 (D760)		diode, SH1S
D711 (D761)		diode, SH1S
D801		diode, 5B4
D802		diode, 10D2
D803		diode, 1T243M
D804		diode, 1T243M
Q101		FET, 2SK23
Q102		transistor, 2SC710
Q103		transistor, 2SC629
Q201		transistor, 2SC403A
Q202		transistor, 2SC710
Q203		transistor, 2SC403A
Q204		transistor, 2SC403A
Q205		transistor, 2SC403A
Q206		transistor, 2SC403A
Q207		FET, 2SK23
Q208		FET, 2SK23
Q209		transistor, 2SC633A
Q210		transistor, 2SC633A
Q301		transistor, 2SC1129
Q302		transistor, 2SC403A
Q303		transistor, 2SC403A
Q304		transistor, 2SC403A
Q305		transistor, 2SC403A
Q401		FET, 2SK23
Q402		transistor, 2SC633A
Q403		transistor, 2SC633A
Q404		transistor, 2SC631A
Q405		transistor, 2SC631A
Q406		transistor, 2SC633A
Q407		transistor, 2SC633A
Q501 (Q551)		transistor, 2SC631A
Q502 (Q552)		transistor, 2SC632A
Q601 (Q651)		transistor, 2SC631A
Q602 (Q652)		transistor, 2SC632A
Q701 (Q751)		transistor, 2SC632A
Q702 (Q752)		transistor, 2SC632A
Q703 (Q753)		transistor, 2SA706
Q704 (Q754)		transistor, 2SC633A
Q705 (Q755)		transistor, 2SC1124
Q706 (Q756)		transistor, 2SA677
Q707 (Q757)		transistor, 2SC1124
Q708 (Q758)		transistor, 2SA706
Q709 (Q759)		transistor, 2SD88
Q710 (Q760)		transistor, 2SD88
Q711		transistor, 2SC1124A
Q761		transistor, 2SA706
Q801		transistor, 2SD28
		TRANSFORMERS, COILS AND INDUCTORS
B901	1-417-014	balun
IFT101	1-403-295	IFT, fm 10.7 MHz
IFT301	1-403-149	IFT, a-m 455 kHz

Ref. No.	Part No.	Description
CFT301	1-403-150	CFT, a-m 455 kHz
L101	1-401-351	coil, fm antenna
L102	1-425-446	coil, fm rf
L103	1-425-446	coil, fm rf
L104	1-405-377	coil, fm osc
L201	1-407-163	inductor, micro 33μH
L202	1-407-184	inductor, micro 3.3μH
L203	1-407-408	inductor, micro 22 mH
L204	1-407-184	inductor, micro 3.3μH
L301	1-407-169	inductor, micro 100μH
L901	1-407-161	inductor, micro 22μH
L902	1-407-178	inductor, micro 1μH
L903	1-407-182	inductor, micro 2.2μH
L904	1-401-439	bar antenna, a-m
MU401	1-425-548	MPX unit
T201	1-403-291	transformer, discriminator 10.7 MHz
T202	1-403-299	IFT, fm 10.7 MHz
T301	1-405-459	coil, a-m osc
T401	1-425-260	transformer, switching 38 kHz
T801	1-441-654	transformer, power (GEP Model)
	1-441-802	transformer, power (NEP Model)

CAPACITORS

All capacitance values are in μF except as indicated with p, which means μμF.

Ref. No.	Part No.	Value	Tolerance	Voltage	Type
C101	1-101-862	18p	±5%	50V	ceramic
C102	1-101-938	1.5p	±10%	500V	ceramic
C103	1-101-862	18p	±5%	50V	ceramic
C104	1-101-937	1p	±10%	500V	ceramic
C105	1-101-961	12p	±5%	50V	ceramic
C106	1-102-985	180p	±5%	50V	ceramic
C107	1-101-072	0.01	$^{+80}_{-20}$%	50V	ceramic
C108	1-101-073	0.02	$^{+80}_{-20}$%	25V	ceramic
C109	1-101-072	0.01	$^{+80}_{-20}$%	25V	ceramic
C110	1-101-072	0.01	$^{+80}_{-20}$%	25V	ceramic
C111	1-101-869	27p	±5%	50V	ceramic
C112	1-102-077	0.01	±20%	50V	ceramic
C113	1-101-873	15p	±5%	50V	ceramic
C114	1-101-958	8p	±0.5p	50V	ceramic
C115	1-101-978	10p	±5%	50V	ceramic
C116	1-102-875	7p	±5%	50V	ceramic
C117	1-101-072	0.01	$^{+80}_{-20}$%	25V	ceramic
C118	1-101-073	0.02	$^{+80}_{-20}$%	25V	ceramic
C119	1-101-918	0.001	$^{+80}_{-20}$%	25V	ceramic
C120	1-101-978	10p	±5%	50V	ceramic
C121	1-101-957	7p	±0.5p	50V	ceramic
C122	1-101-073	0.02	$^{+80}_{-20}$%	25V	ceramic
C123	1-101-073	0.02	$^{+80}_{-20}$%	25V	ceramic
C124	1-121-353	47	$^{+100}_{-10}$%	16V	electrolytic
C125	1-105-679-12	0.033	±10%	50V	mylar
C126	1-121-391	1	$^{+150}_{-10}$%	50V	electrolytic
C201	1-101-919	0.002	$^{+80}_{-20}$%	25V	ceramic
C202	1-101-919	0.002	$^{+80}_{-20}$%	25V	ceramic
C203	1-101-919	0.002	$^{+80}_{-20}$%	25V	ceramic
C204	1-101-073	0.02	$^{+80}_{-20}$%	25V	ceramic
C205	1-101-073	0.02	$^{+80}_{-20}$%	25V	ceramic
C206	1-101-919	0.002	$^{+80}_{-20}$%	25V	ceramic
C207	1-101-919	0.002	$^{+80}_{-20}$%	25V	ceramic
C208	1-101-919	0.002	$^{+80}_{-20}$%	25V	ceramic
C209	1-101-919	0.002	$^{+80}_{-20}$%	25V	ceramic
C210	1-101-919	0.002	$^{+80}_{-20}$%	25V	ceramic
C211	1-101-919	0.002	$^{+80}_{-20}$%	25V	ceramic
C212, C213		included in T201			
C214	1-101-073	0.02	$^{+80}_{-20}$%	25V	ceramic
C215	1-105-689-12	0.22	±10%	50V	mylar
C216	1-101-030	200p	±5%	50V	ceramic
C217	1-101-030	200p	±5%	50V	ceramic
C218	1-101-030	200p	±5%	50V	ceramic
C219	1-121-471	10	$^{+100}_{-10}$%	16V	electrolytic
C220	1-107-140	240p	±10%	50V	silvered mica
C221	1-101-424	500p	±20%	250V	ceramic
C222	1-127-020	0.22	±20%	10V	solid, aluminum
C223	1-127-021	0.33	±20%	10V	solid, aluminum
C224	1-101-073	0.02	$^{+80}_{-20}$%	25V	ceramic
C225	1-121-471	10	$^{+100}_{-10}$%	16V	electrolytic
C226	1-101-073	0.02	$^{+80}_{-20}$%	25V	ceramic
C229	1-101-872	33p	±5%	50V	ceramic
C230	1-101-073	0.02	$^{+80}_{-20}$%	25V	ceramic
C231	1-121-471	10	$^{+100}_{-10}$%	16V	electrolytic
C232		included in T202			
C233	1-121-471	10	$^{+100}_{-10}$%	16V	electrolytic
C234	1-101-922	4,700p	$^{+80}_{-20}$%	50V	ceramic
C235	1-101-073	0.02	$^{+80}_{-20}$%	25V	ceramic
C236	1-121-395	4.7	$^{+150}_{-10}$%	25V	electrolytic
C237	1-121-409	47	$^{+100}_{-10}$%	16V	electrolytic
C239	1-101-073	0.02	$^{+80}_{-20}$%	25V	ceramic
C240	1-121-471	10	$^{+100}_{-10}$%	16V	electrolytic
C241	1-101-073	0.02	$^{+80}_{-20}$%	25V	ceramic
C242	1-105-683-12	0.068	±10%	50V	mylar
C243	1-105-689-12	0.22	±20%	50V	mylar
C244	1-121-391	1	$^{+150}_{-10}$%	50V	electrolytic
C301	1-103-617	470p	±5%	50V	styrol
C302	1-105-829-12	0.047	±20%	50V	mylar
C303	1-105-837-12	0.022	±20%	50V	mylar
C304	1-102-977	200p	±5%	50V	ceramic
C305	1-102-945	8p	±5%	50V	ceramic
C306	1-105-679-12	0.033	±20%	50V	mylar
C307	1-105-837-12	0.022	±20%	50V	mylar
C308		included in CFT301			
C309	1-105-837-12	0.022	±20%	50V	mylar
C310		included in CFT301			
C311	1-105-837-12	0.022	±20%	50V	mylar
C312	1-105-673-12	0.01	±20%	50V	mylar
C313	1-105-685-12	0.1	±20%	50V	mylar
C314	1-101-884	56p	±5%	50V	ceramic
C315	1-101-073	0.02	$^{+80}_{-20}$%	25V	ceramic
C316		included in IFT301			
C317	1-121-415	100	$^{+100}_{-10}$%	16V	electrolytic
C318	1-101-073	0.02	$^{+80}_{-20}$%	25V	ceramic

Ref. No.	*Part No.*	*Description*			
C319	1-101-073	0.02	$\pm^{80}_{20}$%	25 V	ceramic
C320	1-127-019	0.1	±20%	10V	solid, aluminum
C321	1-102-073	0.02	$\pm^{80}_{20}$%	50 V	ceramic
C322	1-121-395	4.7	$\pm^{100}_{10}$%	25 V	electrolytic
C323	1-101-073	0.02	$\pm^{80}_{20}$%	25 V	ceramic
C324	1-121-415	100	$\pm^{100}_{10}$%	16 V	electrolytic
C325	1-121-456	3.3	$\pm^{100}_{10}$%	25 V	electrolytic
C326	1-121-456	3.3	$\pm^{100}_{10}$%	25 V	electrolytic
C327	1-121-413	100	$\pm^{100}_{10}$%	6.3 V	electrolytic
C328	1-105-837-12	0.022	±20%	50 V	mylar
C329	1-105-673-12	0.01	±20%	50 V	mylar
C330	1-105-837-12	0.022	±20%	50 V	mylar
C331	1-102-960	24 p	±5%	50 V	ceramic
C332		– deleted –			
C333	1-102-935	2 p	±0.25 p	50 V	ceramic
C334	1-105-837-12	0.022	±20%	50 V	mylar
C401	1-105-683-12	0.068	±10%	50 V	mylar
C402	1-105-661-12	0.001	±10%	50 V	mylar
C403	1-105-661-12	0.001	±10%	50 V	mylar
C404	1-121-398	10	$\pm^{100}_{10}$%	25 V	electrolytic
C405	1-105-669-12	0.0047	±10%	50 V	mylar
C406	1-121-344	3.3	$\pm^{150}_{10}$%	25 V	electrolytic
C407	1-121-413	100	$\pm^{100}_{10}$%	6.3 V	electrolytic
C408	1-121-409	47	$\pm^{100}_{10}$%	16 V	electrolytic
C409	1-103-575	4,700 p	±5%	50 V	styrol
C410	1-127-022	0.47	±20%	10 V	solid, aluminum
C411	1-121-403	33	$\pm^{100}_{10}$%	16 V	electrolytic
C412	1-121-403	33	$\pm^{100}_{10}$%	16 V	electrolytic
C413	1-105-679-12	0.033	±10%	50 V	mylar
C414	1-105-679-12	0.033	±10%	50 V	mylar
C415	1-121-402	33	$\pm^{100}_{10}$%	10 V	electrolytic
C416	1-101-884	56 p	±5%	50 V	ceramic
C417	1-101-884	56 p	±5%	50 V	ceramic
C418	1-121-391	1	$\pm^{150}_{10}$%	50 V	electrolytic
C419	1-121-391	1	$\pm^{150}_{10}$%	50 V	electrolytic
C420	1-121-420	220	$\pm^{100}_{10}$%	10 V	electrolytic
C421	1-121-420	220	$\pm^{100}_{10}$%	10 V	electrolytic
C422	1-105-683-12	0.068	±10%	50 V	mylar
C423	1-105-683-12	0.068	±10%	50 V	mylar
C424	1-127-013	2.2	±20%	6.3 V	solid, aluminum
C425	1-127-013	2.2	±20%	6.3 V	solid, aluminum
C426	1-105-667-12	0.0033	±10%	50 V	mylar
C427	1-121-409	47	$\pm^{100}_{10}$%	16 V	electrolytic
C428	1-127-021	0.33	±20%	10 V	solid, aluminum
C431	1-105-671-12	0.0068	±10%	50 V	mylar
C501 (C551)	1-121-391	1	$\pm^{150}_{10}$%	50 V	electrolytic
C502 (C552)	1-105-661-12	0.001	±10%	50 V	mylar
C503	1-121-405	33	$\pm^{100}_{10}$%	50 V	electrolytic
C504 (C554)	1-121-420	220	$\pm^{100}_{10}$%	10 V	electrolytic
C505 (C555)	1-105-674-12	0.012	±10%	50 V	mylar
C506 (C556)	1-105-667-12	0.0033	±10%	50 V	mylar
C507 (C557)	1-121-726	0.47	$\pm^{150}_{10}$%	50 V	electrolytic
C601 (C651)	1-107-131	100 p	±10%	50 V	silvered mica
C602 (C652)	1-105-681-12	0.047	±10%	50 V	mylar
C603 (C653)	1-105-685-12	0.1	±10%	50 V	mylar
C604 (C654)	1-105-661-12	0.001	±10%	50 V	mylar
C605 (C655)	1-121-420	220	$\pm^{100}_{10}$%	10 V	electrolytic
C606 (C656)	1-107-131	100 p	±10%	50 V	silvered mica
C607 (C657)	1-121-420	220	$\pm^{100}_{10}$%	10 V	electrolytic
C608 (C658)	1-121-396	4.7	$\pm^{150}_{10}$%	50 V	electrolytic
C609 (C659)	1-105-671-12	0.0068	±10%	50 V	mylar
C610 (C660)	1-105-681-12	0.047	±10%	50 V	mylar
C611 (C661)	1-105-683-12	0.068	±10%	50 V	mylar
C612 (C662)	1-105-681-12	0.047	±10%	50 V	mylar
C613 (C663)	1-105-669-12	0.0047	±10%	50 V	mylar
C614	1-121-405	33	$\pm^{100}_{10}$%	50 V	electrolytic
C701 (C751)	1-105-689-12	0.22	±10%	50 V	mylar
C702 (C752)	1-121-344	3.3	$\pm^{150}_{10}$%	25 V	electrolytic
C703 (C753)	1-107-123	47 p	±10%	50 V	silvered mica
C704 (C754)	1-121-409	47	$\pm^{100}_{10}$%	16 V	electrolytic
C705 (C755)	1-121-425	470	$\pm^{100}_{10}$%	10 V	electrolytic
C707 (C757)	1-105-679-12	0.033	±10%	50 V	mylar
C708 (C758)	1-121-404	33	$\pm^{100}_{10}$%	25 V	electrolytic
C709 (C759)	1-121-404	33	$\pm^{100}_{10}$%	25 V	electrolytic
C710 (C760)	1-105-681-12	0.047	±10%	50 V	mylar
C711 (C761)	1-105-681-12	0.047	±10%	50 V	mylar
C712 (C762)	1-107-142	300 p	±10%	50 V	silvered mica
C713 (C763)	1-121-417	100	$\pm^{100}_{10}$%	50 V	electrolytic
C714 (C764)	1-121-417	100	$\pm^{100}_{10}$%	50 V	electrolytic
C715 (C765)	1-102-942	5 p	±0.5 p	50 V	ceramic
C716 (C766)	1-105-673-12	0.01	±10%	50 V	mylar
C801	1-105-917-12	0.022	±20%	200 V	mylar
C802	1-105-917-12	0.022	±20%	200 V	mylar
C803	1-105-917-12	0.022	±20%	200 V	mylar
C804	1-105-917-12	0.022	±20%	200 V	mylar
C805	1-105-917-12	0.022	±20%	200 V	mylar
C806	1-121-815	4,700	$\pm^{100}_{10}$%	50 V	electrolytic
C807	1-121-815	4,700	$\pm^{100}_{10}$%	50 V	electorlytic
C808	1-121-330	1,000	$\pm^{100}_{10}$%	63 V	electrolytic
C809	1-121-733	470	$\pm^{100}_{10}$%	50 V	electrolytic
C810	1-121-417	100	$\pm^{100}_{10}$%	50 V	electrolytic
C811	1-121-416	100	$\pm^{100}_{10}$%	25 V	electrolytic
C812	1-121-417	100	$\pm^{100}_{10}$%	50 V	electrolytic
C813	1-121-358	220	$\pm^{100}_{10}$%	16 V	electrolytic
C901	1-101-073	0.02	$\pm^{80}_{20}$%	25 V	ceramic
CT301, CT302	1-141-095	capacitor, trimmer			
CV101, CV102, CV103, CV104, CV901, CV902	1-151-193	capacitor, tuning			

Ref. No.	Part No.	Description

RESISTORS

All resistance values are in ohms, ±5%, ¼W and carbon type unless otherwise indicated.

Ref. No.	Part No.	Description			
R101	1-244-665	470			
R102	1-244-689	4.7 k			
R103	1-244-697	10 k			
R104	1-244-666	510			
R105	1-244-673	1 k			
R106	1-244-685	3.3 k			
R107	1-244-677	1.5 k			
R108	1-244-666	510			
R109	1-244-692	6.2 k			
R110	1-244-697	10 k			
R111	1-244-721	100 k			
R112		– deleted –			
R113	1-244-642	51			
R114	1-244-677	1.5 k			
R115	1-244-697	10 k			
R201	1-242-671	820			
R202	1-244-677	1.5 k			
R203	1-244-685	3.3 k			
R204	1-242-653	150			
R205	1-244-673	1 k			
R206	1-244-673	1 k			
R207	1-242-671	820			
R208	1-244-677	1.5 k			
R209	1-244-685	3.3 k			
R210	1-242-653	150			
R211	1-244-673	1 k			
R212	1-244-673	1 k			
R213	1-242-649	100			
R214	1-242-657	220			
R215	1-242-721	100 k			
R216	1-242-671	820			
R217	1-244-689	4.7 k			
R218	1-244-675	1.2 k			
R219	1-242-653	150			
R220	1-244-663	390			
R221	1-244-677	1.5 k			
R222	1-244-679	1.8 k			
R223	1-242-671	820			
R224	1-244-673	1 k			
R225	1-242-649	100			
R226	1-244-679	1.8 k			
R227	1-242-721	100 k			
R228	1-242-659	270			
R229	1-244-705	22 k			
R230	1-242-695	8.2 k			
R231	1-242-673	1 k			
R232	1-242-721	100 k			
R233	1-242-649	100			
R234	1-242-665	470			
R235	1-244-709	33 k			
R236	1-242-697	10 k			
R237	1-242-673	1 k			
R238	1-244-673	1 k			
R239	1-244-673	1 k			
R240	1-244-649	100			
R241	1-242-713	47 k			
R242	1-242-713	47 k			
R243	1-242-691	5.6 k			
R244	1-242-691	5.6 k			
R245	1-242-673	1 k			
R246	1-244-673	1 k			
R247	1-242-699	12 k			
R248	1-244-745	1 M			
R249	1-244-734	360 k			
R250	1-242-745	1 M			
R251	1-242-723	120 k			
R252	1-242-735	390 k			
R253	1-242-745	1 M			
R254	1-244-642	51			
R255	1-244-642	51			
R256	1-242-632	20			
R257	1-242-657	220			
R258	1-242-703	18 k			
R259	1-242-689	4.7 k			
R260	1-242-632	20			
R261	1-242-699	12 k			
R262	1-242-642	51			
R263	1-242-670	750			
R264	1-242-699	12 k			
R265	1-242-720	91 k			
R266	1-244-701	15 k			
R267	1-244-733	330 k			
R268	1-244-694	7.5 k			
R270	1-242-659	270			
R271	1-244-705	22 k			
R272	1-242-658	240			
R301	1-244-691	5.6 k			
R302	1-244-704	20 k			
R303	1-244-708	30 k			
R304	1-244-634	24			
R305	1-244-647	82			
R306	1-244-708	30 k			
R307	1-244-673	1 k			
R308	1-244-691	5.6 k			
R309	1-244-649	100			
R310	1-244-719	82 k			
R311	1-244-691	5.6 k			
R312	1-244-673	1 k			
R313	1-244-684	3 k			
R314	1-244-689	4.7 k			
R315	1-244-645	68			
R316	1-244-657	220			
R317	1-244-689	4.7 k			
R318	1-244-645	68			
R319	1-202-565	470	±10%	½W	composition
R320	1-244-673	1 k			
R321	1-244-673	1 k			
R322	1-244-680	2 k			
R323	1-242-657	220			
R324	1-242-701	15 k			
R325	1-244-691	5.6 k			

Ref. No.	Part No.	Description			
R326	1-244-689	4.7 k			
R327	1-244-645	68			
R328	1-244-673	1 k			
R329	1-244-701	15 k			
R330	1-244-680	2 k			
R331	1-244-671	820			
R332	1-244-657	220			
R333	1-244-717	68 k			
R334	1-244-649	100			
R335	1-244-649	100			
R401	1-244-737	470 k			
R402	1-244-673	1 k			
R403	1-244-673	1 k			
R404	1-244-706	24 k			
R405	1-202-559	270	±10%	½W	composition
R406	1-244-689	4.7 k			
R407	1-244-709	33 k			
R408	1-244-670	750			
R409	1-242-731	270 k			
R410	1-242-671	820			
R411	1-244-690	5.1 k			
R412	1-244-689	4.7 k			
R413	1-244-673	1 k			
R414	1-244-682	2.4 k			
R415	1-244-649	100			
R416	1-242-661	330			
R417	1-242-661	330			
R418	1-242-661	330			
R419	1-242-661	330			
R420	1-244-643	56			
R421	1-242-643	56			
R422	1-242-679	1.8 k			
R423	1-242-679	1.8 k			
R424	1-244-693	6.8 k			
R425	1-244-693	6.8 k			
R426	1-244-671	820			
R427	1-242-671	820			
R428	1-242-715	56 k			
R429	1-242-715	56 k			
R430	1-244-661	330			
R431	1-244-661	330			
R432	1-244-715	56 k			
R433	1-244-715	56 k			
R434	1-242-702	16 k			
R435	1-242-702	16 k			
R436	1-242-685	3.3 k			
R437	1-242-685	3.3 k			
R438	1-242-659	270			
R439	1-242-659	270			
R440	1-242-677	1.5 k			
R441	1-242-677	1.5 k			
R442	1-242-685	3.3 k			
R443	1-242-685	3.3 k			
R444	1-242-695	8.2 k			
R445	1-242-695	8.2 k			
R446	1-244-709	33 k			
R447	1-244-667	560			

Ref. No.	Part No.	Description			
R448	1-244-702	16 k			
R449	1-244-702	16 k			
R501 (R551)	1-242-713	47 k			
R502 (R552)	1-242-745	1 M			
R503 (R553)	1-242-681	2.2 k			
R504 (R554)	1-242-737	470 k			
R505 (R555)	1-242-661	330			
R506	1-242-719	82 k			
R507 (R557)	1-242-691	5.6 k			
R508 (R558)	1-242-659	270			
R509 (R559)	1-242-705	22 k			
R510 (R560)	1-242-653	150			
R511 (R561)	1-242-735	390 k			
R512 (R562)	1-242-701	15 k			
R513 (R563)	1-242-689	4.7 k			
R601 (R651)	1-244-717	68 k			
R602 (R652)	1-244-697	10 k			
R603 (R653)	1-242-663	390			
R604 (R654)	1-242-737	470 k			
R605 (R655)	1-242-735	390 k			
R606 (R656)	1-242-701	15 k			
R607 (R657)	1-242-735	390 k			
R608 (R658)	1-242-691	5.6 k			
R609 (R659)	1-242-665	470			
R610 (R660)	1-242-675	1.2 k			
R611 (R661)	1-242-695	8.2 k			
R612 (R662)	1-242-709	33 k			
R613 (R663)	1-242-669	680			
R614 (R664)	1-242-655	180			
R615 (R665)	1-242-699	12 k			
R616 (R666)	1-242-691	5.6 k			
R617	1-242-719	82 k			
R701 (R751)	1-242-717	68 k			
R702 (R752)	1-242-705	22 k			
R703 (R753)	1-242-677	1.5 k			
R704 (R754)	1-242-705	22 k			
R705 (R755)	1-242-677	1.5 k			
R706 (R756)	1-242-699	12 k			
R707 (R757)	1-242-677	1.5 k			
R708 (R758)	1-242-687	3.9 k			
R709 (R759)	1-242-695	8.2 k			
R710 (R760)	1-242-689	4.7 k			
R711 (R761)	1-242-661	330			
R712 (R762)	1-202-591	5.6 k	±10%	½W	composition
R713 (R763)	1-242-717	68 k			
R714 (R764)	1-242-661	330			
R715 (R765)	1-242-661	330			
R716 (R766)	1-202-525	10	±10%	½W	composition
R717 (R767)	1-202-565	470	±10%	½W	composition
R718 (R768)	1-242-665	470			
R719 (R769)	1-242-725	150 k			
R720 (R770)	1-242-725	150 k			
R721 (R771)	1-242-681	2.2 k			
R722 (R772)	1-242-681	2.2 k			
R723 (R773)	1-242-649	100			

Ref. No.	Part No.	Description			
R724 (R774)	1-242-681	2.2 k			
R725 (R775)	1-242-681	2.2 k			
R726 (R776)	1-242-673	1 k			
R727 (R777)	1-242-649	100			
R728 (R778)	1-242-649	100			
R729 (R779)	1-242-673	1 k			
R730 (R780)	1-242-649	100			
R731 (R781)	1-242-625	10			
R732 (R782)	1-242-619	5.6			
R733 (R783)	1-205-802	0.47	±10%	2 W	wire-wound
R734 (R784)	1-205-802	0.47	±10%	2 W	wire-wound
R735 (R785)	1-242-619	5.6			
R736 (R786)	1-242-625	10			
R737 (R787)	1-242-649	100			
R739	1-242-677	1.5 k			
R740 (R790)	1-242-649	100			
R741 (R791)	1-242-705	22 k			
R801	1-242-665	470			
R802	1-242-665	470			
R803	1-206-147	100	±10%	3 W	metal-oxide
R804	1-244-683	2.7 k			
R805	1-244-649	100			
R901	1-244-697	10 k			
R902	1-244-697	10 k			
R903	1-244-739	560 k			
R904	1-244-739	560 k			
R905	1-244-719	82 k			
R906	1-244-719	82 k			
RV201	1-221-966	100 k (B), semi-fixed			
RV401	1-222-948	3.3 k (B), semi-fixed			
RV601 (RV651)	1-222-375	250 k, variable (volume control)			
RV603 (RV653)	1-222-373	50 k, variable (tone control)			
RV604 (RV654)	1-222-374	50 k, variable (tone control)			
RV701 (RV751)	1-222-981	10 k (B), semi-fixed			
RV702 (RV752)	1-222-981	10 k (B), semi-fixed			
RT301	1-222-952	15 k (B), semi-fixed			

SWITCHES

Ref. No.	Part No.	Description
S1	1-514-761	switch, rotary (FUNCTION 1)
S2	1-514-762	switch, lever (FUNCTION 2)
S3	1-513-338	switch, lever (MONITOR)
S4	1-514-508	switch, rotary (MODE)
S5	1-513-149	switch, push (LOUDNESS)
S6	1-514-511	switch, lever (HIGH FILTER)
S7	1-513-338	switch, lever (MUTING)
S8	1-514-507	switch, rotary (SPEAKER)
S9	1-514-505	switch, lever (POWER) (GEP Model)
	1-514-911	switch, lever (POWER) (NEP Model)
S10	1-514-524	switch, slide (DE-EMPHASIS)

FILTERS

Ref. No.	Part No.	Description	(Color)	(Specified Center Freq.)
CF201 CF202	1-403-562-11	fm i-f, ceramic	red	10.70 MHz
CF203	1-403-562-21	fm i-f, ceramic	black	10.66 MHz
CF204	1-403-562-31	fm i-f, ceramic	white	10.74 MHz
CF205	1-403-562-41	fm i-f, ceramic	green	10.62 MHz
CF206	1-403-562-51	fm i-f, ceramic	yellow	10.78 MHz
LPF401	1-231-088	filter, low-pass		

MISCELLANEOUS

Ref. No.	Part No.	Description	
CNJ902	1-509-445	ac input connector	
CP901	1-231-057-12	encapsulated component, 120 Ω + 0.033 μF (GEP Model only)	
J902	1-507-265	jack, HEADPHONE & AUX	
	1-507-268	phono jack, 8-p	
CNJ901	1-509-029	REC/PB connector	
	1-517-021	socket, meter lamp	
PL903	1-518-012-04	lamp, meter 8 V 0.15 A	
PL904	1-518-051-12	lamp, stereo 4.5 V 40 mA	
PL901, PL902	1-518-070	lamp, dial 8 V 0.3 A	
M901	1-520-090	meter, tuning	
	1-526-165	voltage changeover block	
F903	1-532-074	fuse 200 mA	NEP Model only (Mounted on 5-p fuse holder)
F901	1-532-204	fuse 2 A	NEP Model only (Mounted on 5-p fuse holder)
F904, F905	1-532-237	fuse 3.15 A	NEP Model only (Mounted on 5-p fuse holder)
F902	1-532-299	fuse 5 A	NEP Model only (Mounted on 5-p fuse holder)
F901	1-532-250	fuse 1.6 A (GEP Model only) (Mounted on power supply P.C.B.)	
	1-533-051	socket, dial lamp	
	1-536-179	terminal strip, 1L1 (C)	
	1-536-181	terminal strip, 2L1 (C)	
	1-536-284	terminal strip, 4-p	

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