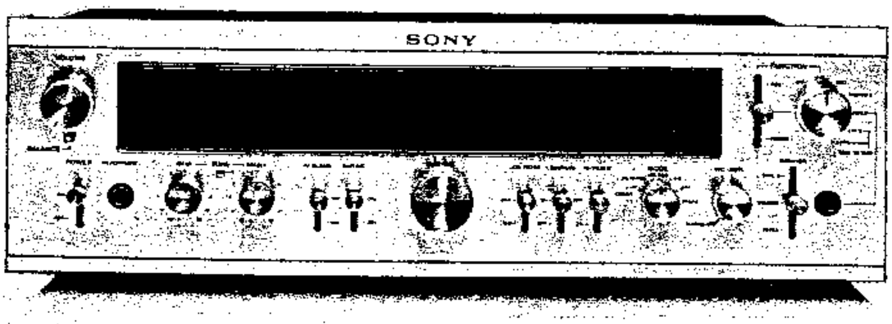
STC-7000

US Model

FM STEREO/FM-AM INTEGRATED TUNER



SONY®

SERVICE MANUAL

TABLE OF CONTENTS

SERVICING NOTES

1. Cautions on handling IC's

a. Too much heat applied to the IC may cause its destruction. Therefore, never reinstall a removed IC.

b. Check the related components for defects before to replace on IC.

c. Take care when installing new IC's not to apply too much heat. Solder quickly while holding a wet rag against the heat-sink tab shown in Fig. A.

d. Take care not to short the adjacent IC leads when performing electrical checks. This might damage the IC.

e. Never fail to solder the heat sink of an IC to the printed circuit board. Otherwise the IC might be damaged.

2. Coated Resistor Replacement

Newly developed coated resistors are employed in this set. To replace a defective one, proceed as follows:

CAUTION

Do not try to remove the coated resistor with a cutter alone. This may break the conductor pattern on the printed circuit board.

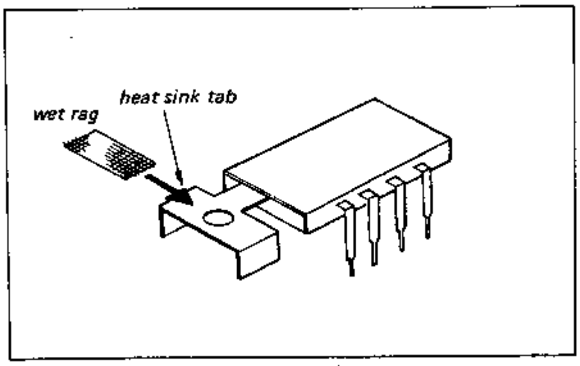


Fig. A. IC installation

a. Remove the coatings on both sides with a cutter as shown in Fig. B.

b. Apply additional solder to both sides of defective resistor. This makes its removal easy.

c. Touch the tip of the soldering iron to the resistor as shown in Fig. C and then wait for 5 to 6 seconds.

d. Pry out the defective resistor, and then install a conventional carbon resistor.

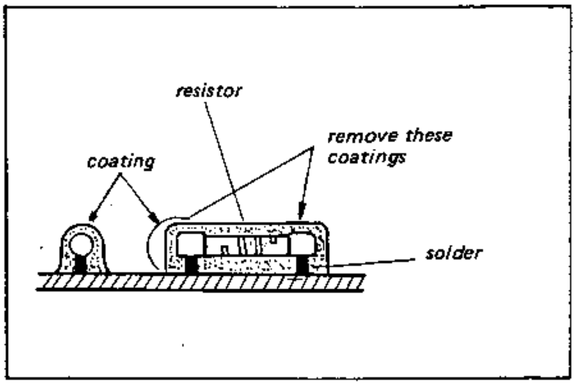


Fig. B. Detail of coated resistor on PCB

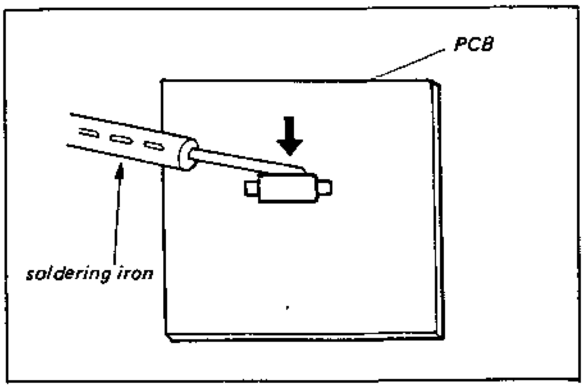


Fig. C. Coated resistor removal

SECTION 1
TECHNICAL DESCRIPTION

1-1. TECHNICAL SPECIFICATIONS

Technical specifications for the STC-7000 are given in Table 1-1.

TABLE 1-1. TECHNICAL SPECIFICATIONS

FM Tuner Section

Antenna:	300 ohms balanced 75 ohms unbalanced
Tuning range:	87.5 MHz to 108 MHz
Sensitivity:	1.7 μV, IHF 1.5 μV, S/N = 30 dB
S/N ratio:	70 dB
Capture ratio:	1.0 dB
Selectivity:	100 dB
Image rejection:	90 dB
I-f rejection:	100 dB
Spurious rejection:	100 dB
A-m suppression:	60 dB
Frequency response:	30 Hz to 15 kHz ± 1 dB
Stereo Separation:	40 dB at 400 Hz
Harmonic distortion:	Mono 0.3 % at 400 Hz, 100 % modulation Stereo 0.5 % at 400 Hz, 100 % modulation
19 kHz, 38 kHz suppression:	60 dB
SCA suppression:	65 dB
Muting level:	Approx. 3 μV

A-m Tuner Section

Antenna:	Built-in ferrite bar antenna with external antenna terminal
Tuning range:	530 kHz to 1,605 kHz
Sensitivity:	53 dB/m, built-in antenna 30 μV, external antenna
I-f rejection:	41 dB at 1,000 kHz
Harmonic distortion:	0.8 % at 50 mV/m
Image rejection:	45 dB at 1,000 kHz
S/N ratio:	50 dB

Preamplifier Section

Inputs:

	* Sensitivity	Maximum input capability	Impedance	S/N
PHONO 1-2	2 mV	100 mV	50 kΩ	67 dB
MIC	0.63 mV	2,000 mV	50 kΩ	52 dB
AUX 1-2 TAPE 1-2 REC/PB (input)	200 mV		50 kΩ	90 dB

* The sensitivities of the MIC, AUX 1 and TAPE 1 inputs are adjustable.

Outputs:

	Output voltage	Impedance
REC OUT 1-2	250 mV (max. 10 V)	10 kΩ
Preamp OUTPUT 1-2	2 V (max. 7 V)	2 kΩ
CENTER channel output	2 V (max. 2.5 V)	2.5 kΩ
HEADPHONE	0.45 V/8 Ω headphone 6 V/10 kΩ headphone	82 Ω
REC/PB (output)	30 mV (max. 1.2 V)	82 kΩ

Voltage amplification (at 1 kHz):

Inputs \ Outputs	REC OUT	Preamp OUTPUT	CENTER channel output	HEAD-PHONE	REC/PB
PHONO 1-2	40 dB	60 dB	60 dB	65 dB	22 dB
MIC	50 dB	70 dB	70 dB	75 dB	32 dB
AUX 1-2 TAPE 1-2 REC/PB (input)	0 dB	20 dB	20 dB	25 dB	-18 dB

Harmonic distortion:	Less than 0.1 % at rated output, 1 kHz
IM distortion: (60 Hz : 7 kHz = 4 : 1)	Less than 0.1 % at rated output

Frequency response:	PHONO 1-2:	RIAA equalization curve ± 0.5 dB
	MIC:	30 Hz ~ 30 kHz $^{+0}_{-2}$ dB
	AUX 1-2, TAPE 1-2, REC/PB (input)	10 Hz — 100 kHz $^{+0}_{-2}$ dB
TONE controls: (11 steps, each 2 dB)	BASS	± 10 dB at 100 Hz
	TREBLE	± 10 dB at 10 kHz
Filters:	LOW	12 dB/oct. below 50 Hz
	HIGH	12 dB/oct. above 9 kHz
Loudness control:	+ 10 dB at 50 Hz + 4 dB at 10 kHz (Att. −30 dB)	

General

System:	Fm stereo, fm/a-m superheterodyne integrated tuner
Semiconductors:	13 IC's 2 FET's + 4 transistors for reception 2 FET's + 19 transistors for auxiliary circuit 18 diodes
Power requirements:	120 volts, 60 Hz ac
Power consumption:	32 watts
AC outlets:	1 unswitched, 3 switched Total 400 watts
Dimensions:	480 mm (width) x 144 mm (height) x 340 mm (depth) 18-13/16" (width) x 5-9/16" (height) x 13-9/16" (depth)
Net weight:	10.3 kg (22 lb 11 oz)
Shipping weight:	13.8 kg (30 lb 6 oz)

1-2. CIRCUIT DESCRIPTION DIGEST

The following description of newly-adapted or complicated circuits might help you in your repair work. Since stages are listed by transistor or IC reference designation, refer to the block diagram and the schematic diagram on page 12 and 37 to 39.

1. Front End Section

(RF Amp)

Input signal is coupled to the rf amplifier Q101 through antenna tank circuit. MOS FET is employed in this stage as it has a low noise figure, wide dynamic range and large input impedance.

A triple-tuned circuit is employed between the rf amplifier and mixer. This passive coupling circuit contains no active amplifiers, so it is perfectly linear and cannot produce distortion and overload components.

(Mixer)

Rf signals and local-oscillator voltage are heterodyned in Q102 to produce the 10.7 MHz i-f output signal. A dual-gate MOS FET is well suited for this job, since gate-1 and gate-2 are isolated each other.

Input signal is applied to the gate-2, while the injection voltage of local oscillator is applied to the gate-1. As a result the effect upon local oscillator due to strong input signal is eliminated while the mixer operates at its highest conversion point of operation.

Notice that gate-1 and gate-2 are biased nearly zero volt. Transformer IFT101 and capacitors C114 and C115 form a high "C" pi-network bandpass filter, which passes the i-f output and provides a path to ground for the other heterodyne products and oscillator harmonics.

(I-f preamplifier/limiter)

Q105 and Q106 act as an i-f preamplifier but also achieve a limiter circuit which is equivalent to 15 V peak-to-peak limiter.

Notice that the Q106 is an emitter follower and has little effect upon following ceramic filter's operation. This stage achieves a favorable signal-to-noise ratio before application to the filters in the i-f strip.

(Local Oscillator)

Q103, Q104 and oscillator tank circuit form a modified Colpitts oscillator circuit and supplies heterodying voltage to the mixer through C113.

Fig. 1-1 shows the simplified circuit and operates as follows:

Q1 accepts restored signal at the tank circuit T with high-input impedance and delivers it to the Q2 (grounded base circuit) with low output impedance while Q2 performs phase inversion and some amplifi-

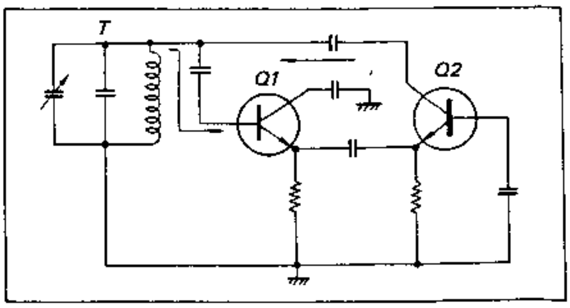


Fig. 1-1. Partial oscillator circuit

cation, and then its output is fed back to the tank circuit T. Thus Q1 and Q2 form a positive feedback chain oscillating stable and clean signal. Note that its initial frequency drift is 10 kHz or less.

An automatic frequency control circuit is also incorporated in the oscillator circuit to eliminate frequency drift completely and the difficulty of exact tuning. Referring to Fig. 1-2, the principle of afc operation is as follows:

When the tuner is correctly tuned, the intermediate frequency is 10.7 MHz and no dc component is produced by the ratio detector as shown in the "S" curve response. So the voltage applied to diode D102 is determined solely by the positive fixed reverse bias voltage supplied by zener diode D101.

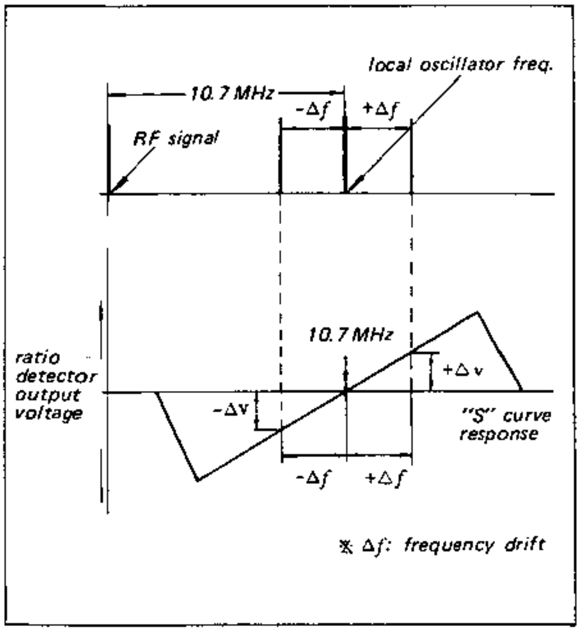


Fig. 1-2. Local oscillator's frequency drift and afc voltage relationship

Now, assume that the local oscillator frequency changes by +Δf. This means that the new intermediate frequency is 10.7 MHz +Δf. See Fig. 1-2.

As the result, a positive dc component is fed back to the anode of D102, decreasing the reverse voltage to it, and making D102's barrier capacitance increase.

This decreases the local oscillator's frequency, since the series circuit composed of C124 and D102 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 D102 increasing the local oscillator frequency.

2. FM I-F STRIP

(I-f Amp IC201, IC202 and IC203)

These amplifiers amplify the only selected signals which have been passed by ceramic filters and provides power to drive the ratio detector.

This also have buffer amplifier function for muting circuit. Detailed IC diagram is shown in Fig. 1-3. Note that CX-0411 and CX-0412 have been developed for fm i-f amp or wide band amp use.

(MUTING circuit)

Notice that CX-0441 has been developed for MUTING and meter amp use.

Detailed IC block diagram is shown in Fig. 1-4.

The i-f signal is extracted from the terminal ④ of IC203 and fed to the terminal ⑬ of IC205 through R254, C260, and RT202. This amplifier amplifies the extracted i-f signal large enough through tuned transformer T203.

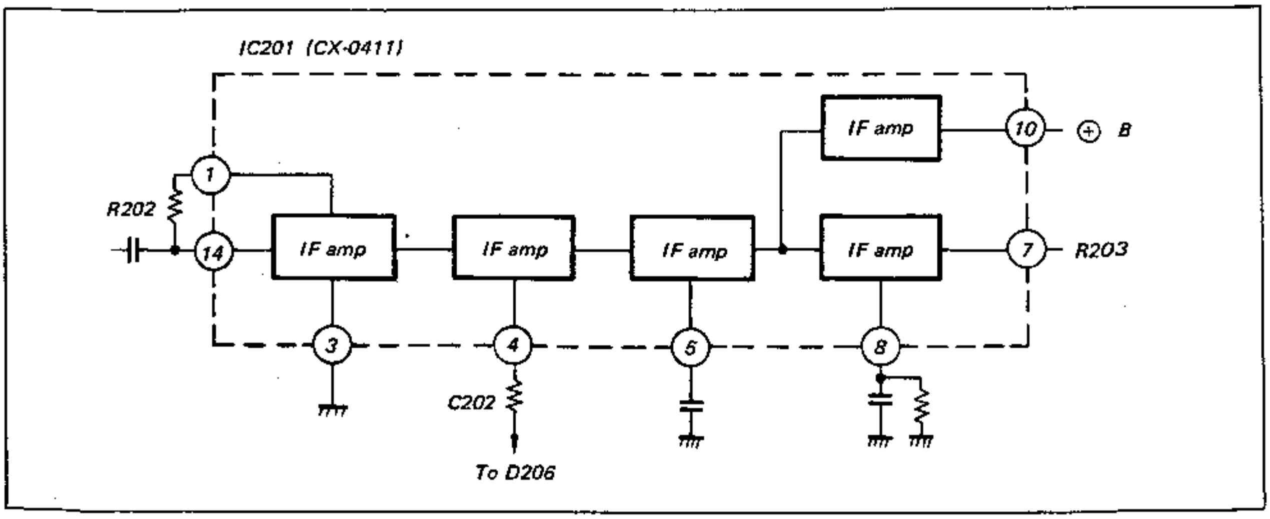


Fig. 1-3. Detailed IC (CX–0411) diagram

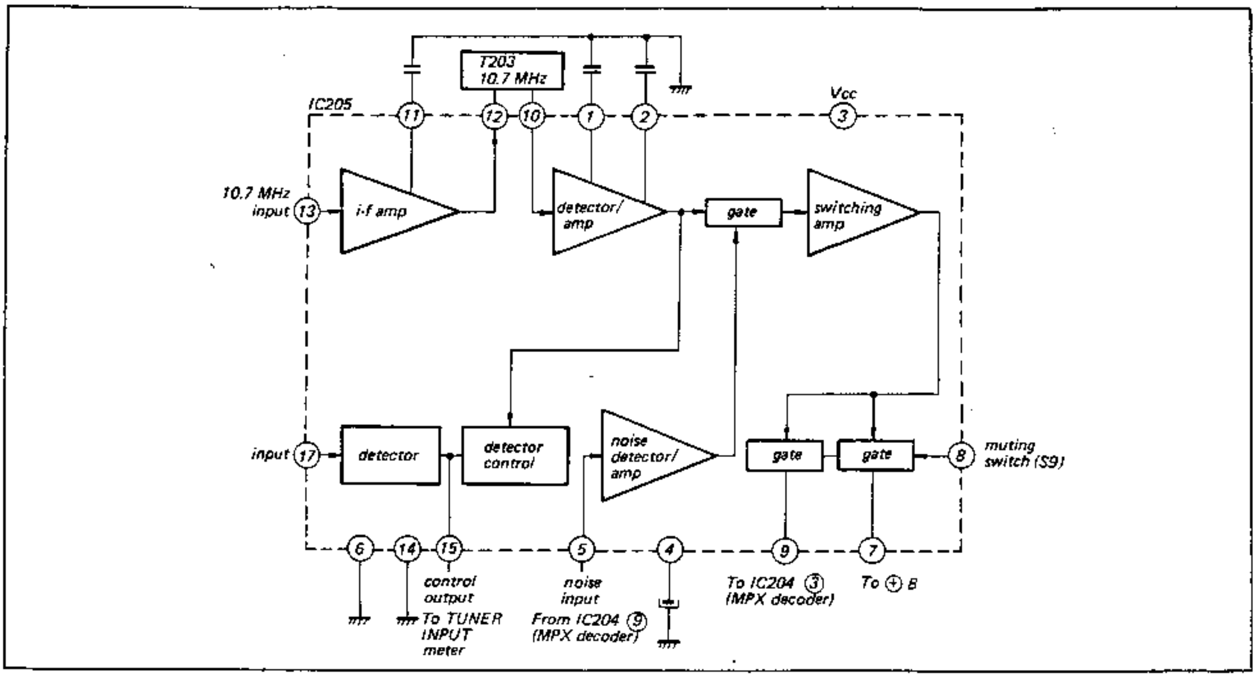


Fig. 1-4. Detailed IC (CX-0441) diagram

T203 determines the bandwidth (about 150 kHz) necessary to control the muting circuit without generating interstation noise.
IC205 contains a switching circuit which drives the switching transistor Q201 (Q202).

The dc output voltage of IC205 determines the muting circuit operation.

FET Q201 (Q202) acts as an electronic switch which is inserted between the MPX decoder and the audio amp, and is controlled by applied gate voltage.

With the MUTING switch ON, fm signals of average strength causes Q201 (Q202) to conduct and maintains normal operation. Weak stations and interstation noise can not produce sufficient voltage on the gate of Q201 (Q202). As a result, Q201 (Q202) turns OFF.
Accordingly, the audio output is muted. With the MUTING switch OFF, Q201 (Q202) is kept conducting regardless of the input signal since a positive bias is applied to its gate. RT202 adjusts the muting level.
Additional muting switches are provided for eliminating the "pop" or "hissing" noises produced at fm i-f and audio sections just after turning the power switch to ON or OFF. These switches are employed at ratio detector output (Q203), input and output circuit of Headphone Amplifier (Q661, Q761 and Q666) and operate as follows: (Refer to Fig. 1-5.)
The base circuit of Q203, Q661, Q761 and Q666 are connected to the collector circuit of Q667, while the base of Q667 is connected to an RC network (R682, R683, R684, R685 and C669) with a long time constant. At the instant the power switch is turned on, Q667 is off due to the long time constant (about 2 seconds) of the bias circuit, while all the muting switches are forward biased by positive power supply route, shorting the signals to ground.
After 2 seconds, Q667 is gradually on, supplying negative voltage superior to positive voltage to all base circuit of muting switch, cutting off them. The latter results in the cessation of muting. On the other hand, when the power switch is turned off, C669 is discharged through the S11-1, quickly removing the forward bias from Q667. This operates muting switches again permitting noiseless shut off.

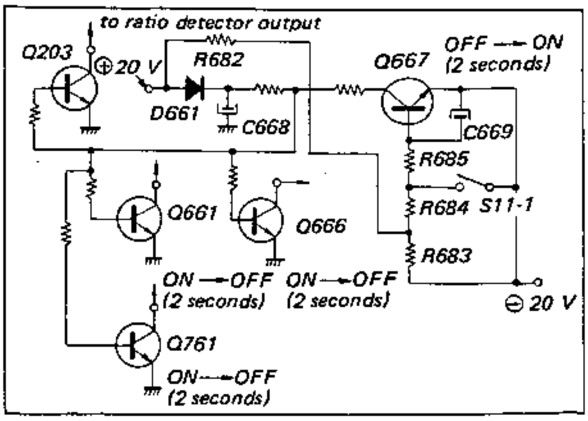


Fig. 1-5. Muting circuit

(TUNER INPUT meter)

The i-f signal is fed to the terminal ⑬ of IC205 as described in MUTING circuit.

DC output signal detected by IC205 is used to drive TUNER INPUT meter as it is proportional to the r-f signal strength for all but very-strong input signals. RT203 calibrates the TUNER INPUT meter.

(Fm TUNING Meter)

A center-zero meter assures correct tuning by utilizing the ratio detector's dc output characteristic.

As indicated in Fig. 1-2, no dc voltage is produced at the junction R214 and C220, when the tuner is correctly tuned. Deflection on the meter indicates the amount of deviation from the carrier frequency. Note that the meter will also indicate zero-reading when the tuner is not receiving any off-the-air signal.

3. MULTIPATH OUTPUT

Multipath reception will be displayed on the CRT connecting the conventional oscilloscope or multipath indicator to these outputs. Multipath reception causes the increase in back-ground noise level, distortion at high frequency or stereo separation reduction. The a-m component of fm i-f signal detected by voltage doublers is extracted, and then applied to the VERTICAL terminal, while the audio signal is extracted from the ratio detector output and fed to the HORIZONTAL terminal. Fig. 1-6 shows typical CRT displays.

Multipath reception will be corrected by using a directional fm antenna or coaxial cable. Rotating the antenna is very effective.

4. MPX DECODER SECTION

The newly developed IC (CX-0431) for multiplex demodulation operation has been employed. Detailed IC diagram is shown in Fig. 1-8.

The composite stereo signal is applied to the terminal ⑥ which is the input circuit of pilot/composite separator. The composite signal is directed to the switching demodulator circuit, it is also fed to doubler/19-kHz tuned amp circuit which generates 38 kHz pulses. 38 kHz pulses are wave-shaped by 38 kHz tuned amplifier and supplied to the switching

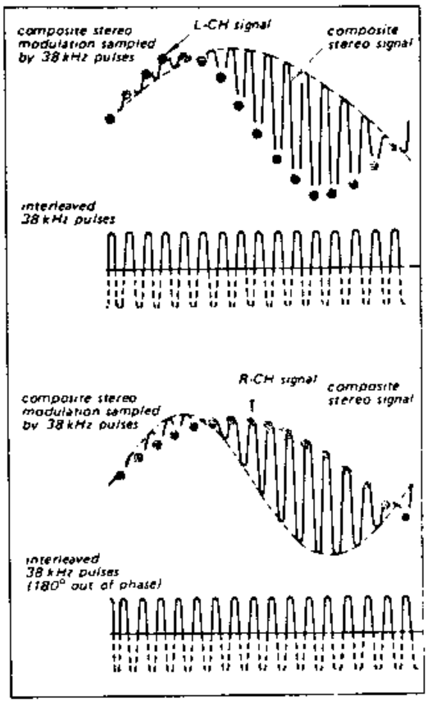


Fig. 1-7. Stereo demodulation operation

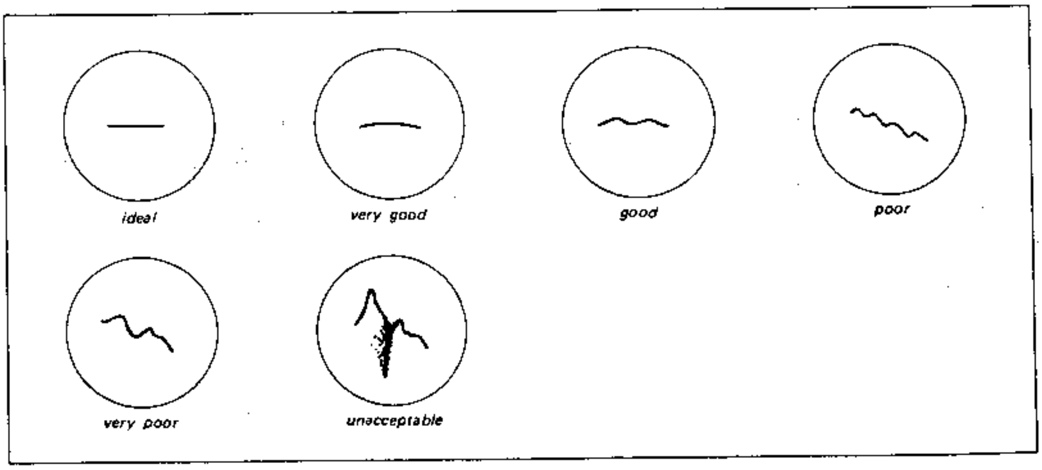


Fig. 1-6. Typical multipath display

circuit through limiter for sampling drive operation. "L" and "R" components are developed at the switching circuit and supplied to the terminals ⑪ and ⑫ respectively. Stereo demodulation principle is shown in Fig. 1-7. RT201 controls separation.

The stereo lamp lights when a stereo composite signal exists. The doubler's output is fed to the stereo/mono changeover and misoperation proof circuit. The circuit actuates the stereo lamp switch, lighting the STEREO lamp. This also controls the operation of switching circuit. In monaural signal, this circuit forces the switching circuit into small resistance circuit enabling the monaural signal operation. Notice that the doubler's output and muting circuit form an OR circuit. This means that the weak stereo signals are forced into mono mode. The hiss and noise caused by weak stereo station can be eliminated by forcing decoder's operation into mono mode.

5. AUDIO PREAMPLIFIER IC206

Demodulated L and R signals are amplified by this stage to the level required at the input of the following stages.

Note that (CX-0462) contains two identical low noise amplifier chains and regulated power supply circuit. This requires two power supplies which are identical but oppositely poled.

An IC block diagram is shown in Fig. 1-9.

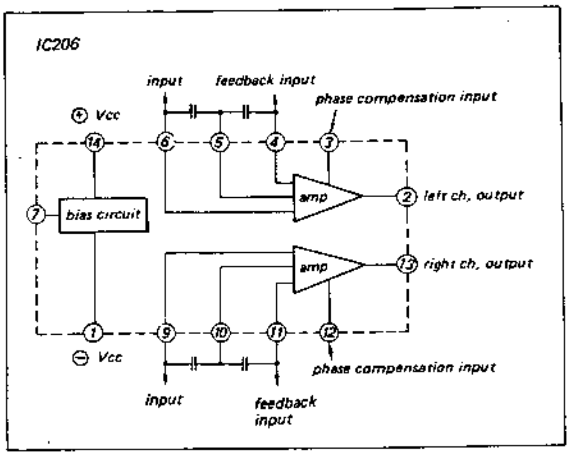


Fig. 1-9. Detailed IC (CX-0461, CX-0462) diagram

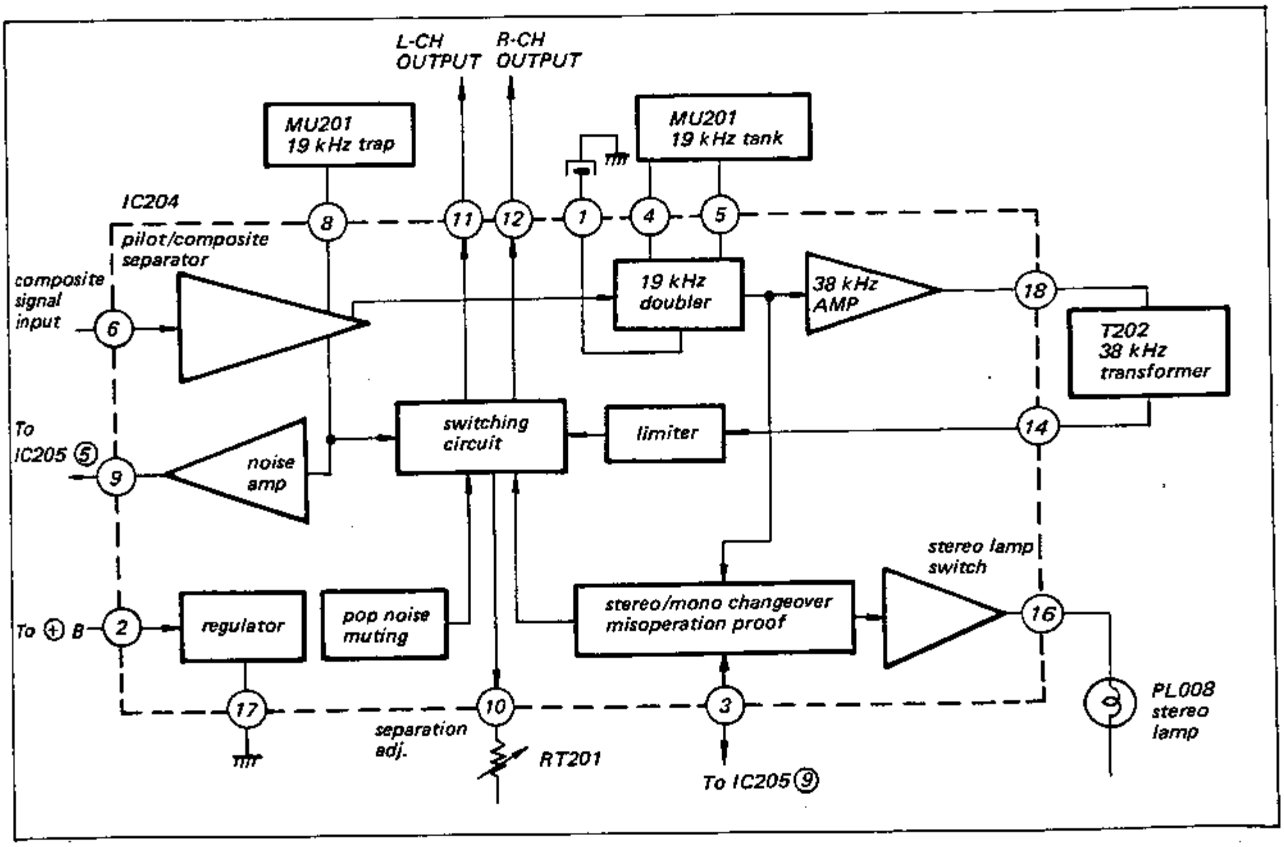


Fig. 1-8. Detailed IC (CX-0431) diagram

6. A-M TUNER SECTION

All functions required for a-m signal reception are included in IC301 (CX-0451), such as frequency converter, i-f amplifier, detector, meter drive circuit and agc circuit.
Detailed IC diagram is shown in Fig. 1-10.

(A-m I-f Strip)

The CFT (combination IFT with ceramic filter) has a sharp selectivity causing superior spurious response. Note that no adjustment is required on CFT in the field even if it is replaced.

(AGC Circuit)

There are two feedback loops ensuring proper agc operation. One is applied on mixer stage and the other is supplied on antenna tank circuit. They work as follows:

The a-m i-f signal is detected and fed back to the mixer stage through filter and agc time lag compensator circuits. The output of detector is a positive dc voltage roughly proportional (not exactly due to agc action) to the carrier levels of the input signal.
The feedback dc voltage controls the gain at mixer stage while it is applied to the shunting circuit of antenna tank circuit.

Normally, voltage applied to the shunting circuit makes it a large value of resistance. When a strong signal is received, the shunting circuit resistance decreases. As a result, the a-m antenna tank circuit is shunted by the low resistance. This reduces the effective "Q" of the tank circuit, and a-m tuner's overall gain. RT301 calibrates the TUNER INPUT meter.

7. PHONO AMP SECTION

Phono Amp IC401

This amplifier amplifies the small signal provided by the phono cartridge to the level required at the input of the following stages.
Note that CX-0461 (IC401) is basically identical with CX-0462 (IC206). An IC block diagram is shown in Fig. 1-9.

Equalization circuit

RIAA equalization is achieved by the negative-feedback loop consisting of R406, R407, R409, C406 and C408. C403 and C404 prevent rf interference.

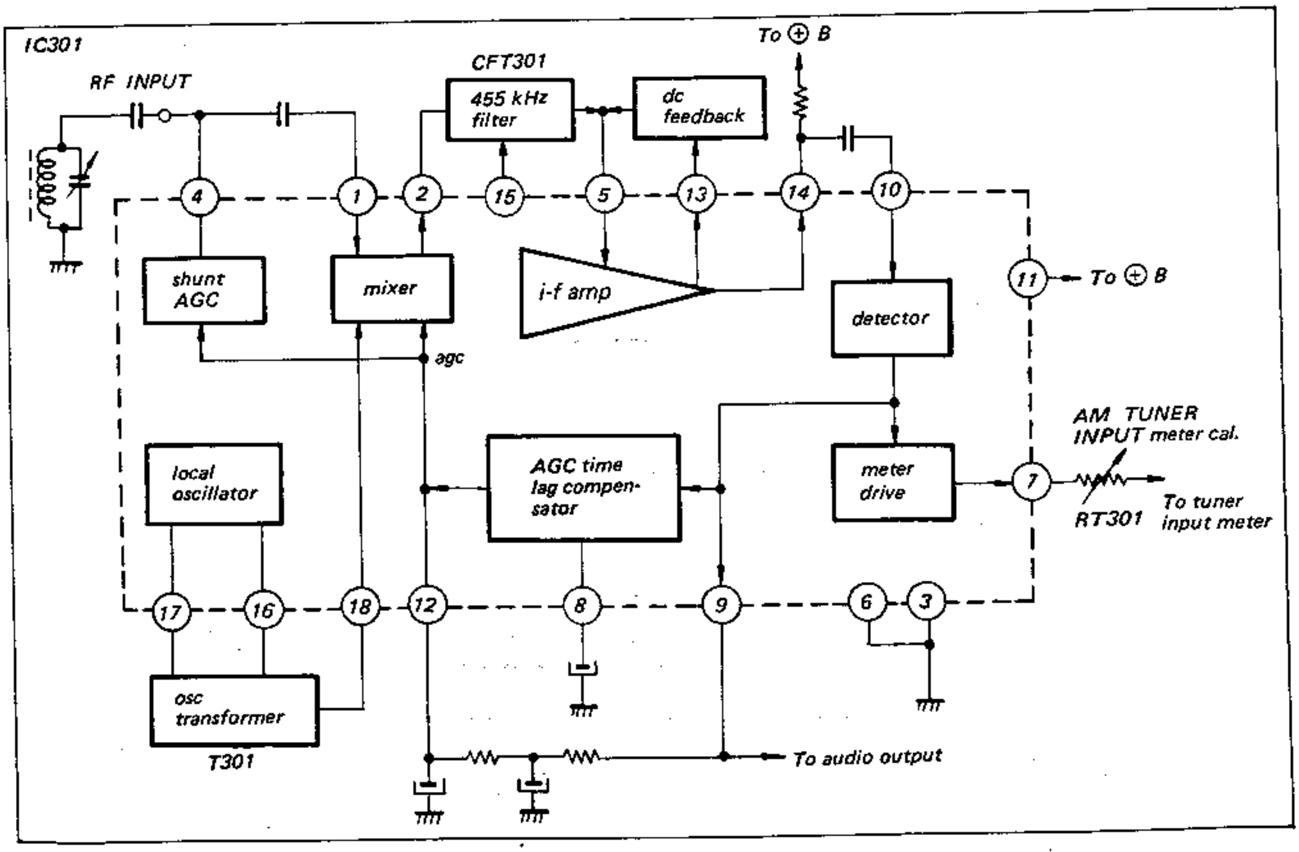


Fig. 1-10. Detailed IC (CX-0451) diagram

8. MIC AMP IC403

IC403's operation is the same as described in phono amp section. Note that R447 permits feedback for flat response. The output signal from IC403 can be sufficiently attenuated by means of MIC LEVEL control R806 (R906) to the proper level.

9. MIXING AMP IC404

IC404's operation is the same as described in mic amp section. The output signal of MIC amp and another program sources are fed to this inputs simultaneously. The mixed signal of those are developed at output circuit (R466). The microphone level can be controlled by the MIC LEVEL control while the overall volume of mixed signals can be controlled by the VOLUME control.

10. FUNCTION switch S1, S2

Input signals applied to the AUX-1, TAPE-1 input terminals are controlled respectively by means of R801 (R901) and R802 (R902).
All input signals are routed to FUNCTION-1 and FUNCTION-2 switches. Note that the TAPE-TO-TAPE positions in the FUNCTION-1 switch are provided for tape duplicating as shown in Table 1-1.

TABLE 1-1.

FUNCTION-1 switch	Tape Recorder 1 —— Tape Recorder 2
TAPE-TO-TAPE 1→2	Playback ——→ Recording
TAPE-TO-TAPE 2→1	Recording ←—— Playback

11. MODE switch S5

Selects the desired mode of operation. This switch may also be used for test purposes. The relation between the positions of the MODE switch and outputs of the set are summarized in Table 1-2 and 1-3.

TABLE 1-2.

MODE Switch Setting	Input	OUTPUT -1,-2 HEADPHONE	Use
CHECK L	L (left) R (right)	L R	For checking left channel output
CHECK R	L R	L R	For checking right channel output
REVERSE	L R	L R	To reverse right and left stereo sound
STEREO	L R	L R	Normal stereo sound
L + R	L R	L R	For recording with a monaural tape recorder For balancing right and left channel sound levels For listening to any input program monophonically
LEFT	L R	L R	To amplify a monaural input source
RIGHT	L R	L R	To amplify a monaural input source

The CENTER channel output, REC OUT-1,-2 jacks and DIN 5-pin connector (output) provides as follows:

TABLE 1-3.

Outputs / MODE switch setting	CENTER channel output	REC OUT -1,-2, REC/PB B Left output	REC OUT -1,-2, REC/PB B Right output
CHECK L	L + R	L + R (L)	L + R (R)
CHECK R	L + R	L + R (L)	L + R (R)
REVERSE	L + R	L	R
STEREO	L + R	L	R
L + R	L + R	L + R	L + R
LEFT	L	L	R
RIGHT	R	L	R

When the MONITOR switch is set to TAPE-1 or TAPE-2, the REC OUT -1, -2 jacks or DIN 5-pin connector provide the signal shown in parenthesis.

12. LOUDNESS switch S6

This switch and R821, R822, C822 and C821 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 3 dB at 10 kHz with reference to the level at 1 kHz

13. Buffer amplifier IC601

IC601 acts as a buffer amplifier between the volume control and the tone control circuits. This eliminates interaction between volume and tone controls since it provided high input impedance and low output impedance.

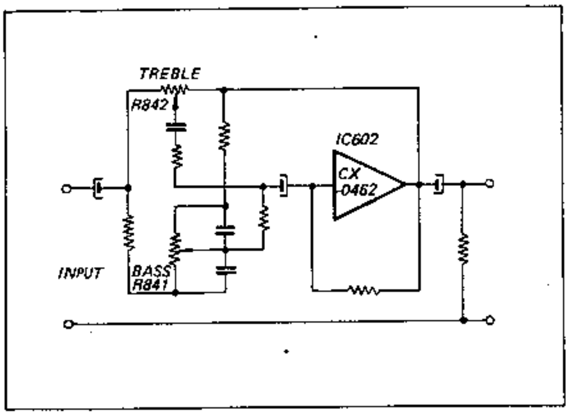


Fig. 1-11. Simplified tone control circuit

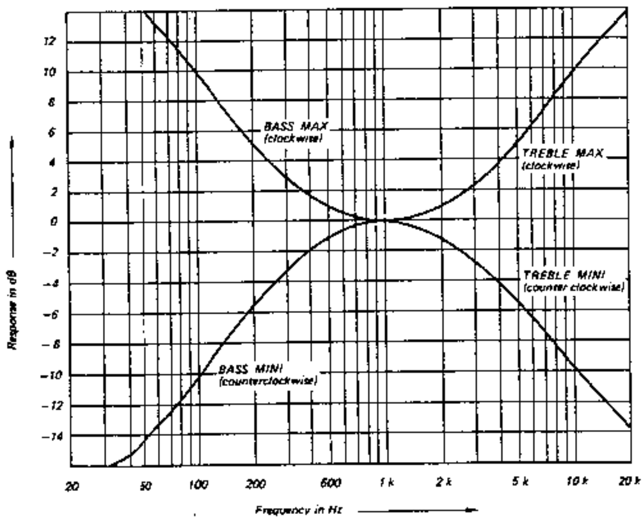


Fig. 1-12. Tone control frequency response

Note:

Input jack:	AUX-1
Output level:	2 V at OUTPUT-1 jack
VOLUME control:	maximum (clockwise)

14. Tone-control circuit IC602

Fig. 1-11 shows the simplified circuit of the tone control. This circuit is a modified negative-feedback type tone control. Note that the output of IC602 is fed back to the input circuit of IC602 through the treble and bass tone-control network.

15. HI-FILTER switch S8

The high-cut filter (R644, R645, R647, C644, C645) cut out unwanted high frequency components (5 kHz and higher) from the input signal when this switch is ON. Refer to Fig. 1-13.

16. LOW-FILTER switch S7

The low-cut filter (C641, C642, R642, R643) eliminates unwanted low-frequency components (100 Hz and lower) from the input signal when this switch is ON. Refer to Fig. 1-13.

17. Flat amp IC603

This amplifier amplifies the signal provided by the tone amp to the level required at the input of the following stage.
The IC's operation is the same as described in MIC amp section (IC403).

18. HEADPHONE AMPLIFIER Q662, Q663, Q664, Q665

Predriver amplifier Q662 is a preamplifier which increases the input signal to the level required at the following driver stage.

Driver amplifier Q663

Though this stage is a conventional flat amplifier, it determines the output voltage swings because the following stage is basically in the emitter-follower

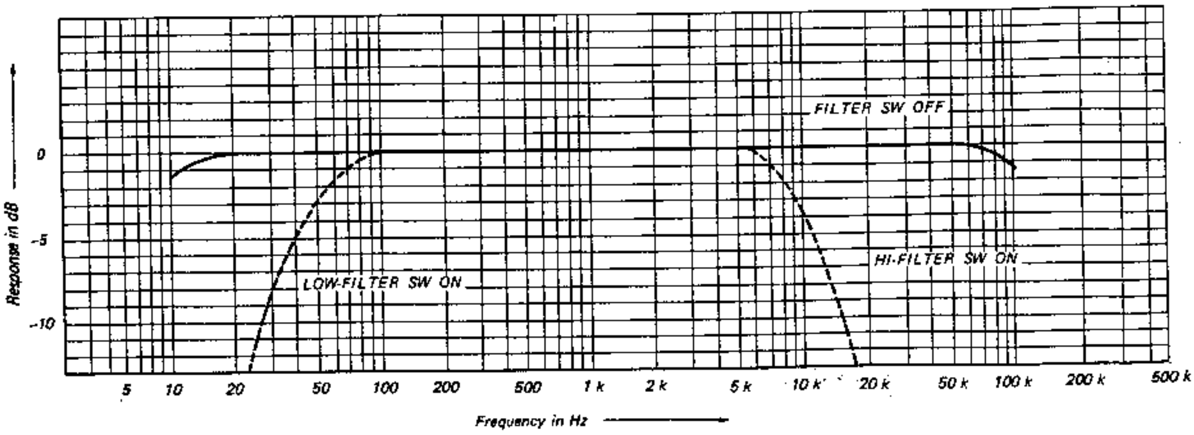


Fig. 1-13. Filter response

configuration. The ac load resistor for this stage is R672 and R673 in the collector circuit.

Power amplifiers Q664, Q665

(Complementary stage)

These transistors operate as emitter-followers to provide the current swings required and also perform the necessary phase inversion to drive the load in push-pull. Phase inversion is performed by using PNP and NPN type transistors. Q664 supplies power during the positive-going half cycle, while Q665 supplies power during the negative-going half cycle. The output is fed to the HEADPHONE jack through coupling capacitor C667 (C767).

19. CENTER CHANNEL OUTPUT jack

It also supplied to the CENTER CHANNEL output jack through R676 for use in center-woofer systems. Note that the left-and right-channel signals are mixed at this jack.

(Muting circuit)

Refer to additional muting section as described in MUTING circuit on page 5.

20. POWER SUPPLY Circuit

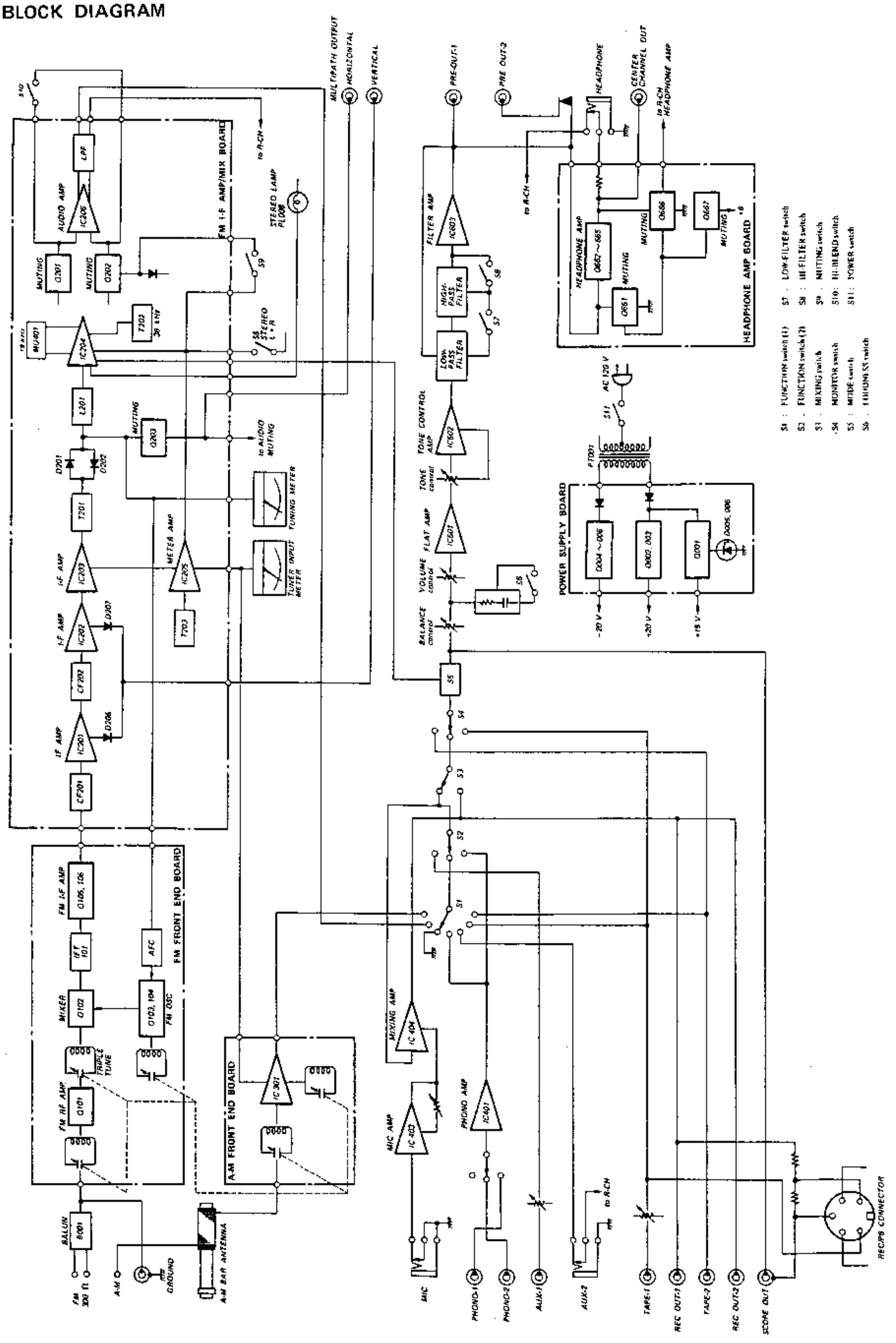
Three independent regulated power supplies are employed to obtain stable operation. These are ± 20 V for audio circuit and + 15 V for front-end circuit.

The bias voltage of zener diodes D005, D006 is applied from the emitter of Q002. Since the voltage at the base of Q001 is kept constant by means of zener diodes D005 and D006, the emitter voltage remains constant regardless of load or line-voltage variations. Therefore, stable + 15 V voltage is supplied to front-end section.

The transistor Q003 compares a sample of the output voltage, picked off the junction of R009 and R010 with a reference voltage supplied by transistor Q002. A change in output voltage, is detected by Q003, amplified and applied to Q002 in a manner that offset the original voltage shift. + 20 V voltage is therefore extremely stable.

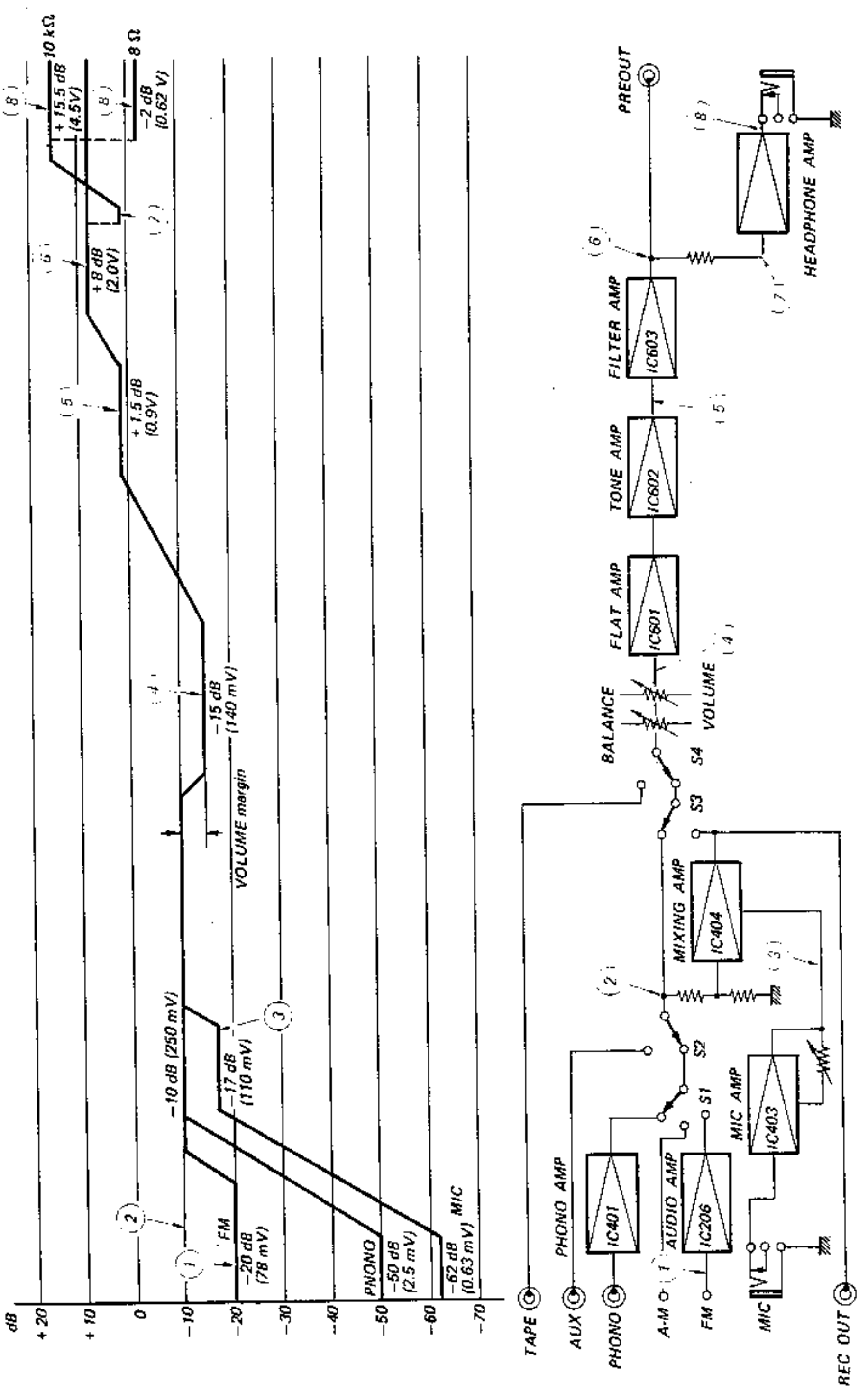
The negative regulated power supply operation is basically same as positive one.

1-3. BLOCK DIAGRAM



1-4. LEVEL DIAGRAM

Note: Signal voltages are measured with an ac VTVM and expressed in dB referred to 0.775 V, 1 kHz.



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 STC-7000.

1. Screwdriver, Phillips-head
2. Screwdriver, 3 mm (1/8") blade
3. Electric drill (rivet removal)
4. Diagonal cutters (rivet removal)
5. Prick punch (rivet removal)
6. Hammer, ball-peen (rivet removal)
7. Solder, rosin core
8. Soldering iron, 40 to 50 watts
9. Cement, contact
10. Cement solvent

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 STC-7000 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.

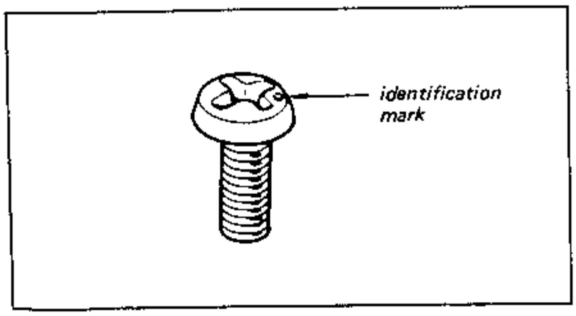


Fig. 2-1. ISO screw

— Hardware Nomenclature —

P	Pan Head Screw
PS	Pan Head Screw with Spring Washer
K	Flat Countersunk Head Screw
B	Binding Head Screw
SC	Set Screw
E	Retaining Ring (E Washer)
W	Washer
SW	Spring Washer
LW	Lock Washer
N	Nut

– Example –

⊕ P 3x10

- Type of Slot
- Length in mm (L)
- Diameter in mm (D)
- Type of Head

2-3. TOP COVER AND BOTTOM PLATE REMOVAL

1. The top cover can be freed by removing two machine screws at both sides.
2. The bottom plate can be freed by removing the ten self-tapping screws as shown in Fig. 2-2.

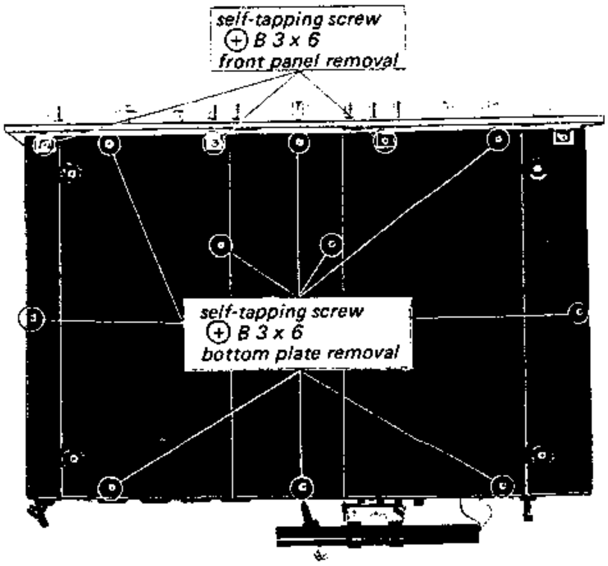


Fig. 2-2. Bottom plate and front panel removal

2-4. FRONT PANEL REMOVAL

1. Remove the all the lever switch, VOLUME control, BALANCE control and TONE control (R-CH) knobs by pulling them off.
2. Remove the TUNING, MODE, MIC LEVEL, FUNCTION and TONE control (L-CH) knobs by loosening their set screws.
3. Remove the four self-tapping screws at the front bottom of the chassis as shown in Fig. 2-2.
4. Remove the three screws from front edge of the subchassis as shown in Fig. 2-3.

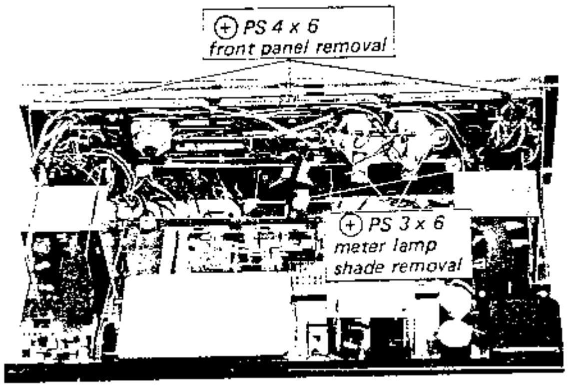


Fig. 2-3. Front panel and meter lamp shade removal

2-5. DIAL GLASS REPLACEMENT

1. Remove the front panel as described in Procedure 2-4.
2. Remove the five screws as shown in Fig. 2-4.
3. Install a new one.

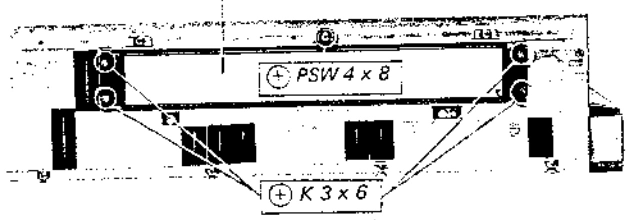


Fig. 2-4. Dial glass replacement

2-6. DIAL CORD RESTRINGING

Preparation:

1. Cut a 1,700 mm (70 inch) length of 0.3 mm (1/64 inch) diameter dial cord.
2. Hook the spring to the stud of the tuning-capacitor drive drum as shown in Fig. 2-5.
3. Rotate the tuning-capacitor shaft fully clockwise (minimum capacitance position).
4. Install the drum as shown in Fig. 2-5.

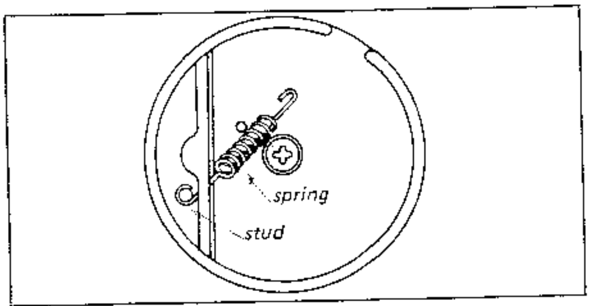


Fig. 2-5. Tension spring installation

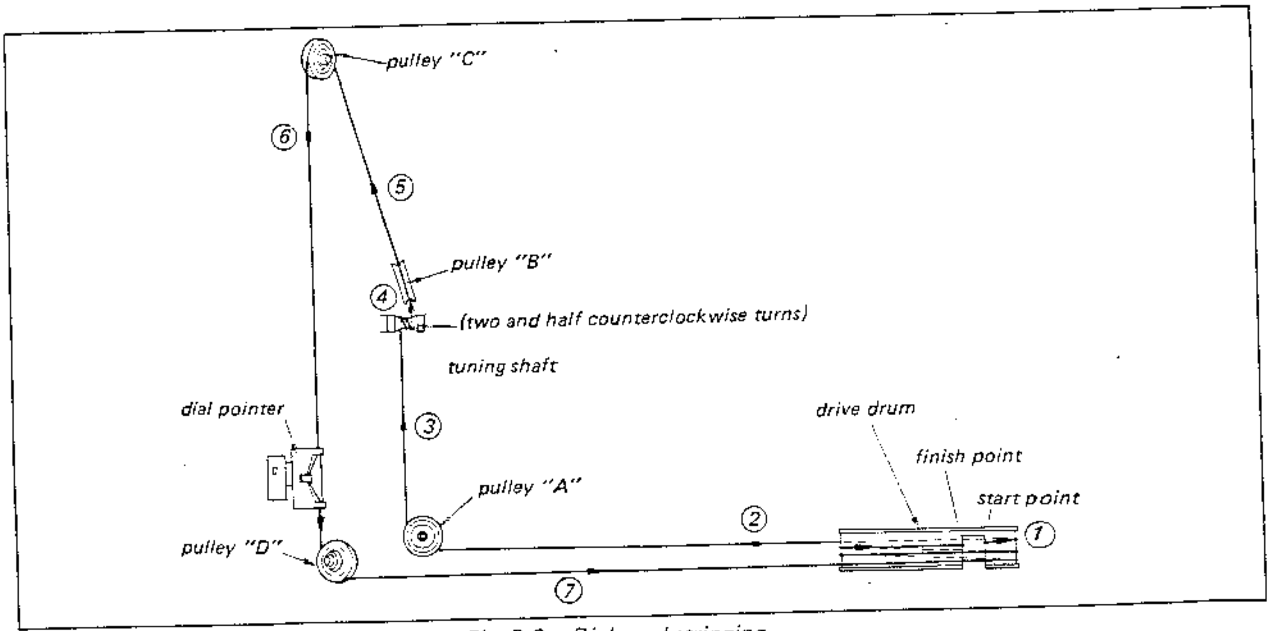


Fig. 2-6. Dial cord stringing

Procedure:

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

1. Tie one end of the cord to the tension spring as shown in Fig. 2-7.

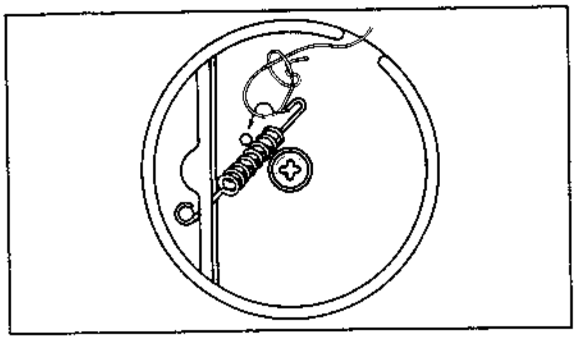


Fig. 2-7. Tying square knot in the tension spring

2. Run the cord through the slot in the rim of the drum and wrap half clockwise turn as shown in Fig. 2-6.
3. Run the cord over pulley "A", and then wrap two and half counterclockwise turns around the tuning shaft.
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. 2-6.
5. Pass the doubled end of the cord through the eyelet (See Fig. 2-8), then hook it to the spring as shown in Fig. 2-9.
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. See Fig. 2-8.

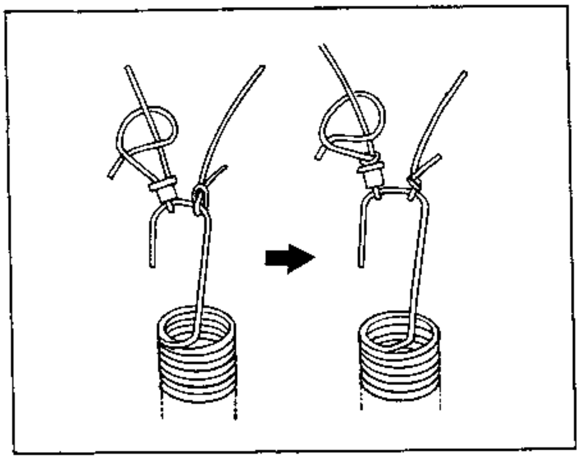


Fig. 2-8. Detail of dial cord finish

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.
8. Put the dial pointer on the cord as shown in Fig. 2-10, and then tune the set to the local fm station. Move the dial pointer to the position where the dial indication coincide with the local station's carrier frequency. Apply a drop of contact cement to it.

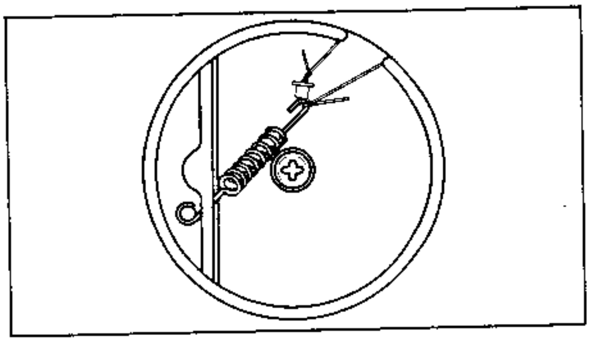


Fig. 2-9. End of dial cord stringing

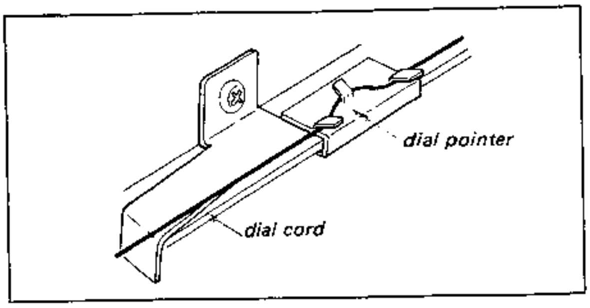


Fig. 2-10. Dial pointer installation

2-7. DIAL LAMP REPLACEMENT

1. Remove the front panel as described in Procedure 2-4.
2. Pry out the defective lamp, and then install a new one.

2-8. DIAL SCALE REPLACEMENT

1. Remove the front panel as described in Procedure 2-4.
2. Remove the two screws securing the dial scale holder at both sides of the front subchassis as shown in Fig. 2-11. This frees the dial scale.
3. Install a new one.

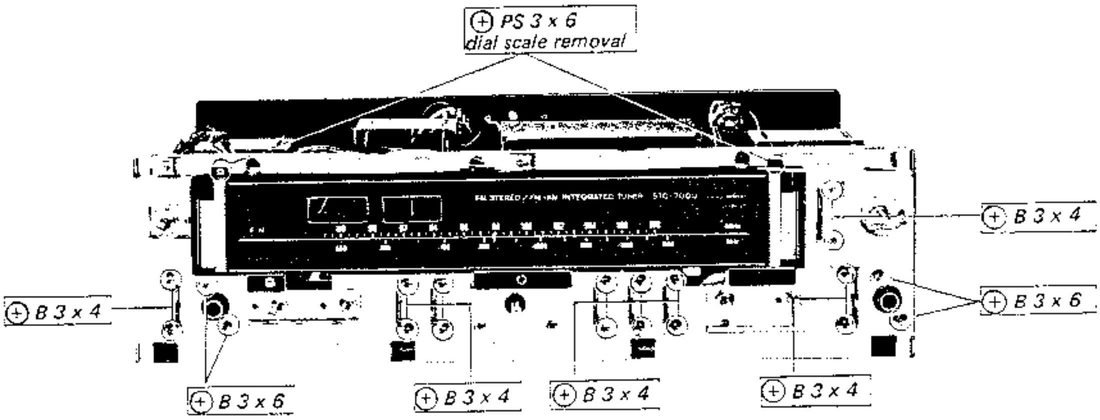


Fig. 2-11. Dial scale, control, switch and jack removal

2-9. METER REPLACEMENT

1. Remove the two screws securing the meter lamp shade as shown in Fig. 2-3. This frees the shade and the meters.
2. Unsolder the lead wires from the defective meter, and then install a new one.

2-10. LOUDNESS CIRCUIT BOARD REMOVAL

1. Remove the front panel as described in Procedure 2-4.
2. Remove the nut securing the volume control to the front subchassis.

2-11. CONTROL AND SWITCH REPLACEMENT

Remove the screws or nuts securing each component to the front subchassis. See Fig. 2-11.

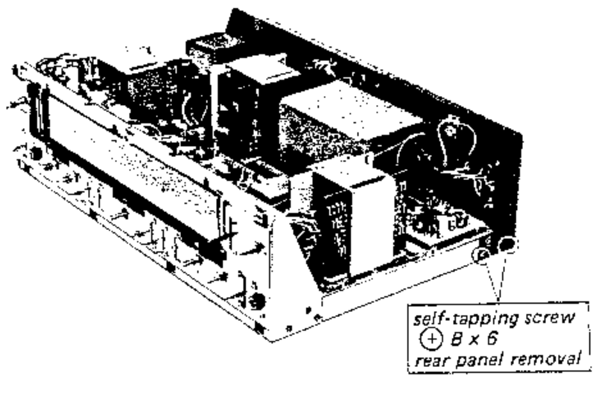


Fig. 2-12. Rear panel removal

2-12. AC OUTLET REPLACEMENT

1. Remove the two self-tapping screws at both sides as shown in Fig. 2-12. Remove the three screws securing the rear panel to the chassis as shown in Fig. 2-13. This frees the rear panel.
2. Pry out the outlet retaining clip with a screwdriver as shown in Fig. 2-14.
3. Install a new one.

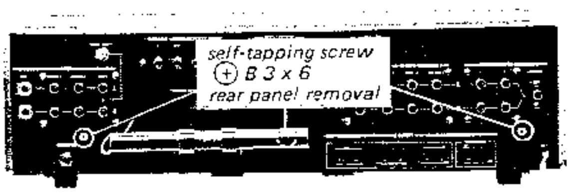


Fig. 2-13. Rear panel removal

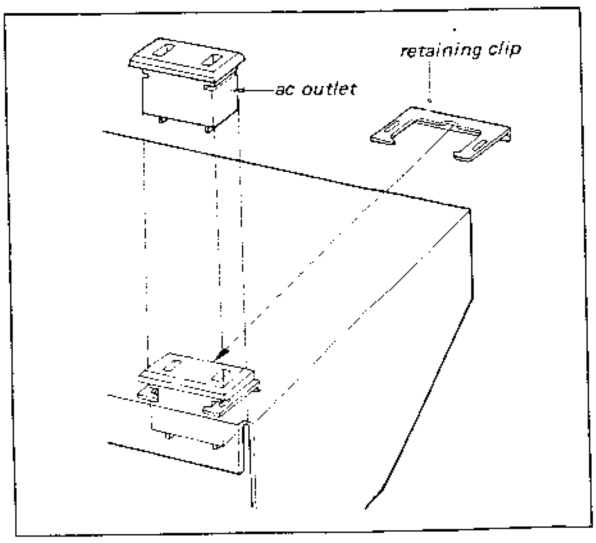


Fig. 2-14. AC outlet replacement

2-13. REPLACEMENT OF PHONO-JACK AND ANTENNA-TERMINAL SECURED TO THE REAR PANEL BY RIVETS

1. Remove the rear panel as described in Procedure 2-12.
2. Bore out the rivets using a drill bit slightly larger in diameter than the rivet. See Fig. 2-15.
3. Punch out the remainder of the rivet with a nail set or prick punch.
4. Remove the defective component, and then install a new one.
5. Secure the new component with a suitable screw and nut or a repair rivet screw (part number 3-701-402-00).

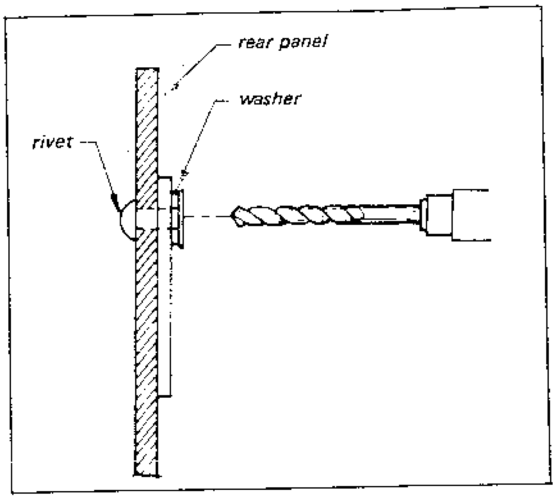
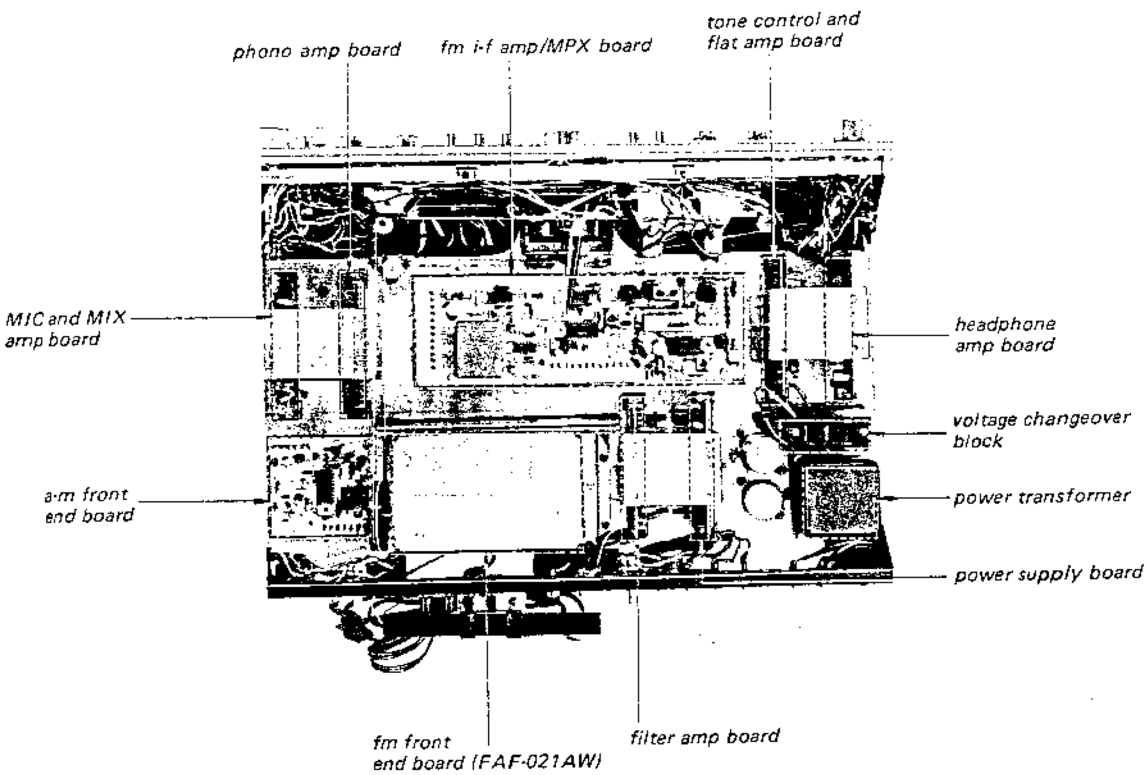


Fig. 2-15. Rivet removal

2-14. CHASSIS LAYOUT



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.
1-231-197-11	red	10.70 MHz
1-231-197-12	black	10.66 MHz
1-231-197-13	white	10.74 MHz
1-231-197-14	green	10.62 MHz
1-231-197-15	yellow	10.78 MHz

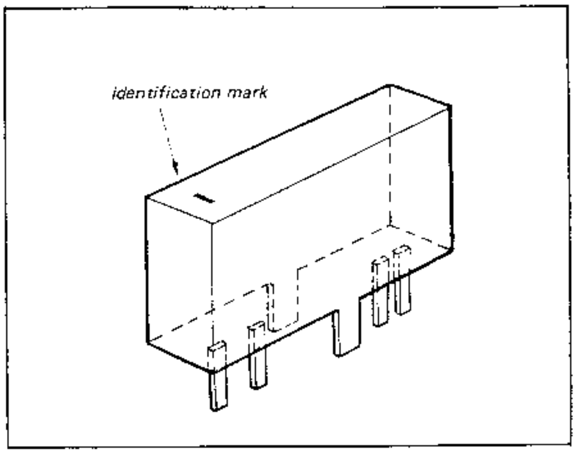


Fig. 3-1. Identification mark on ceramic filter

Test Equipment Required

1. Standard fm signal generator (FM SSG)
2. AC VTVM
3. Oscilloscope
4. Alignment tools

Preparation

1. Short the pin (H225) to the ground as shown in Fig. 3-2.

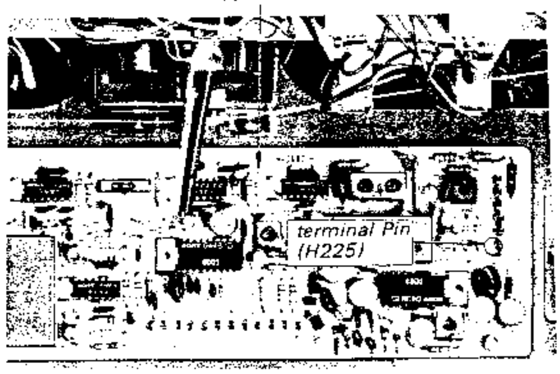


Fig. 3-2. Interruption of AFC circuit

Procedure

* **Note:** All signal generator output levels specified in this section are for terminated outputs.

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, 30 % (22.5 kHz)
   * Output level 30 μV (30 dB) terminated

2. Set the receiver's controls as follows:

   FUNCTION (1) switch . . FM
   FUNCTION (2) switch . . FUNCTION (1)
   MODE switch . . . . STEREO
   VOLUME control . . . . . . minimum

3. Precisely tune the receiver to the SSG carrier frequency by tuning for zero center on the TUNING meter. Adjust IFT101 for maximum deflection on the TUNER INPUT meter. Carefully adjust this slug so that maximum reading on the TUNER INPUT meter always coincides with zero center on the TUNING meter (Rock the TUNING control while observing the two meters and make the adjustment). Adjust the primary side (see page 29) of T201 (See Fig. 3-13) for maximum output on the VTVM. Then precisely adjust it so that the AC VTVM indication falls as the set is detuned in either direction (maximum output corresponds to zero center on the TUNING meter).

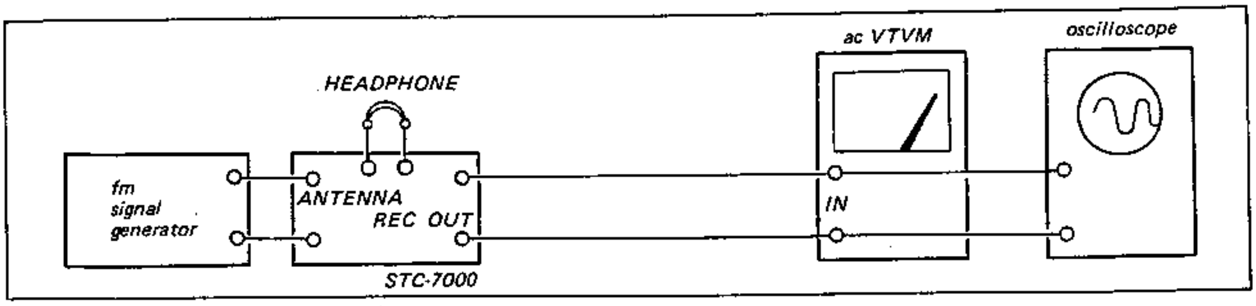


Fig. 3-3. Fm i-f, discriminator, muting and front end alignment test setup

3-2. FM DISCRIMINATOR ALIGNMENT

Note: 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. Disconnect the AFC circuit by pulling off the terminal pin (H225), coming from the fm front end board, on the fm i-f amp/MPX board as shown in Fig. 3-2.

Procedure

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

   FUNCTION (1) switch .. FM
   FUNCTION (2) switch .. FUNCTION (1)
   MODE switch .... STEREO
   VOLUME control ...... minimum
   MUTING switch .... OFF

2. Tune the receiver to a vacant spot in the band (no signal input). Listen to the headphone and watch the oscilloscope to confirm that the tuner is not receiving any off-the-air signal. See Fig. 3-4.

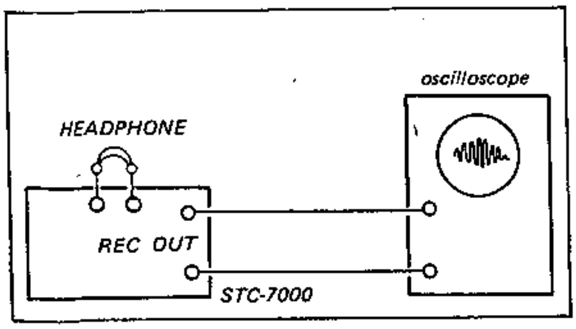


Fig. 3-4. Discriminator alignment test setup

3. Turn the secondary side (see page 29) of T201 discriminator transformer (See Fig. 3-13) with an 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.

4. Repeat the above mentioned steps and fm i-f strip alignment (procedure 3-1) alternately two or three times.

3-3. MUTING ADJUSTMENT

Two methods of muting adjustment are avaiable, signal generator adjustment and adjustment by using an off-the-air signal. You can use either of them.

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

Signal Generator Adjustment

Test Equipment Required

1. Standard fm signal generator
2. Ac VTVM or oscilloscope
3. Screwdriver with 3 mm (1/8") blade

Preparation

1. Short the pin (H225) to the ground as shown in Fig. 3-2.

Procedure

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

   Carrier frequency ...... 98 MHz
   Modulation .... Fm, 400 Hz, 30 %

※ Output level .... 1000 μV (60 dB) terminated
FUNCTION (1) switch .. FM
FUNCTION((2) switch .. FUNCTION (1)
MUTING switch .... ON
VOLUME control ..... minimum

2. Turn RT202 (See Fig.3-13) fully clockwise on the fm i-f amp/MPX board.

3. Tune the receiver to the SSG frequency, then adjust T202 (See Fig.3-13) for proper muting operation. Muting should begin at points equidistant from zero center.

Off-the-Air Signal Adjustment

Accurate muting adjustment can also be performed by utilizing an off-the-air local fm signal instead of the fm SSG. 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 changes 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 it 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.

Test Equipment Required

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

Preparation

1. Short the pin (H225) to the ground as shown in Fig. 3-2.
2. Connect the equipment as shown in Fig. 3-3.
3. Set the receiver's controls as follows:

FUNCTION (1) switch .. FM
FUNCTION (2) switch .. FUNCTION (1)
MODE switch .... STEREO
VOLUME control ...... minimum

Generator Alignment

Follow the procedures given in Table 3-2 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.

TABEL 3-2. FM FREQUENCY COVERAGE ALIGNMENT

Step	Coupling Between Front End and SSG	SSG Frequency and Output Level (terminated)	Tuner Dial Indication	Scope Connection	Adjust	Indication
1	Direct coupling	87.5 MHz 400 Hz 30 % Mod. 30 μV (30 dB)	87.5 MHz	REC OUT Jack	OSC coil L105 See Fig.3-12.	Maximum VTVM reading
2	Same as above	108 MHz 400 Hz 30 % Mod. 30 μV (30 dB)	108 MHz	Same as above	OSC trimmer CT105 See Fig.3-12.	Same as above

Procedure

1. Tune the receiver to the lowest-frequency station.
2. Check the dial scale for a calibration accuracy of ± 100 kHz from the carrier frequency of the station. If the dial-accuracy deviation exceeds this limit, turn the local-oscillator coil L105 slightly as shown in Fig. 3-12. until optimum dial calibration is obtained.
3. Tune the receiver to the highest-frequency station in your locality. If the dial-calibration error is excessive, adjust local-oscillator trimmer CT105 (See Fig.3-12) to obtain maximum calibration accuracy.

3-5. FM STEREO SEPARATION ADJUSTMENT

Test Equipment Required

1. Fm stereo signal generator
2. Ac VTVM
3. Oscilloscope
4. MPX generator
5. Audio oscillator
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 controls as follows:

MAIN CHANNEL . . . . . OFF
SUB CHANNEL. . . . . . . ON
PILOT (19 kHz). . . . . . . OFF
AUDIO OSCILLATOR
OUTPUT. . . . . 400 Hz, 250 mV

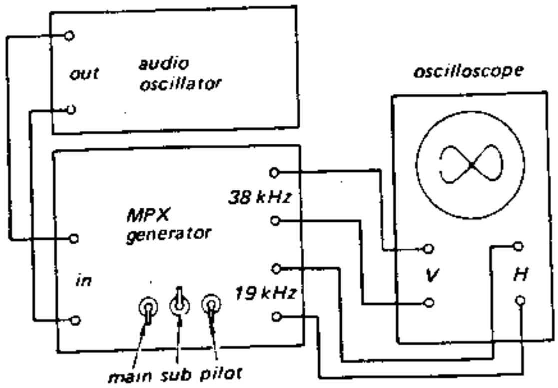


Fig. 3-6. MPX generator preadjustment

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. 3-7. Lissajous pattern

Procedure

1. Connect the equipment as shown in Fig. 3-5. 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 %)

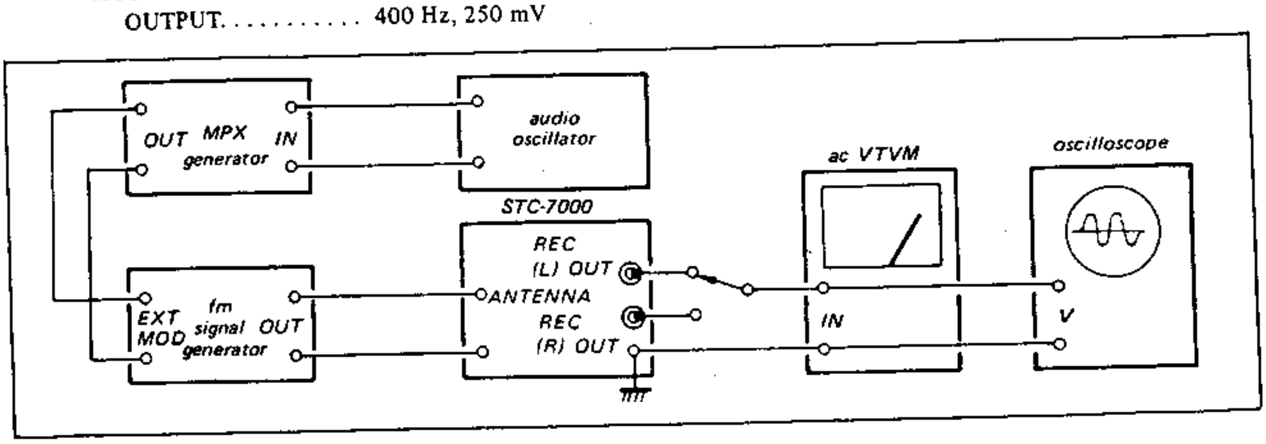


Fig. 3-5. Fm stereo separation adjustment test setup

The previously mentioned modulation levels can be set as follows:

(a) With the equipment connected as shown in Fig. 3-5. 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.

2. Precisely tune the set to the SSG's carrier frequency, then turn the top core of switching transformer T202, to obtain maximum output at left channel. See Fig. 3-13. Note that this adjustment has a close relationship with stereo distortion.

3. Record the output level of the left channel when the stereo generator input selector is set to the left channel.

4. Switch the generator 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 RT201 (See Fig. 3-13) for minimum residual level. Check the right channel for separation. Usually, about an 8 to 9 dB difference in channel separation exists. Readjust RT201 for minimum difference between left-and right-channel separation. While doing this, remember that the output level also changes according to the setting of RT201.

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

Note: The i-f transformers (CFT301 and T302 See Fig. 3-12) in the a-m i-f amplifier circuit are adjusted at the factory, so very little adjustment is necessary in the field even if replacing any of these i-f transformers.

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

Signal Generator Alignment

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. 3-8, follow the procedures given in Tables and when performing this alignment with an a-m signal generator.

Off-the Air Signal Alignment

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.

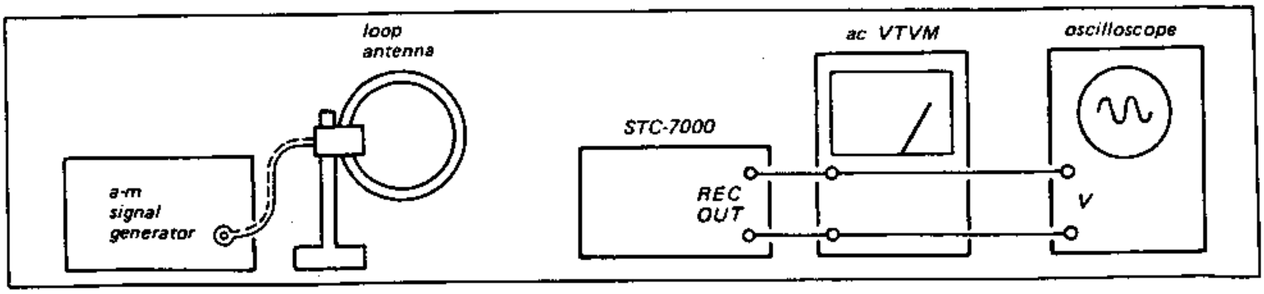


Fig. 3-8. A-m frequency coverage and tracking alignment test setup

TABLE 3-4. A-M FREQUENCY COVERAGE AND TRACKING ALIGNMENT

Step	Coupling Between Tuner and SSG	SSG Frequency and Output Level	Tuner Dial Indication	Adjust	Indication
Frequency Coverage					
1	Loop antenna	550 kHz (400 Hz, 30 % mod) 1,000 μV (60 dB)	550 kHz	OSC coil T301 See Fig. 3-12.	Maximum VTVM reading
2	Same as above	1,600 kHz Same as above	1,600 kHz	OSC trimmer CT 301 See Fig. 3-12.	Same as above
Tracking					
1	Loop antenna	600 kHz (400 Hz, 30 % mod) Output level as low as possible	Tune to the SSG signal	Antenna coil L001	Maximum VTVM reading
2	Same as above	1,400 kHz Same as above	Tune to the SSG signal	Antenna trimmer CT302 See Fig. 3-12.	Same as above

3-8. TUNER INPUT METER CALIBRATION

Test Equipment Required

1. Standard signal generator (SSG)
2. Ac VTVM
3. Loop antenna
4. Alignment tools

Preparation

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

Procedure

a. FM

1. Connect the test equipments as shown in Fig.3-9.
2. Set the fm signal generator and receiver's controls as follows:

   Carrier frequency . . . . . . 98 MHz
   Output level . . . . 60 dB
   Modulation (400 Hz). . . . 100 % (75 kHz)
   VOLUME control . . . . . . Minimum
   FUNCTION switch . . . . . FM
   MODE switch . . . . MONO
   MONITOR switch . . . . . . SOURCE

3. Precisely tune to the signal and adjust RT203 (See Fig. 3-13) to obtain the meter pointer within 1 mm (3/64") left of its maximum indication as shown in Fig. 3-10.

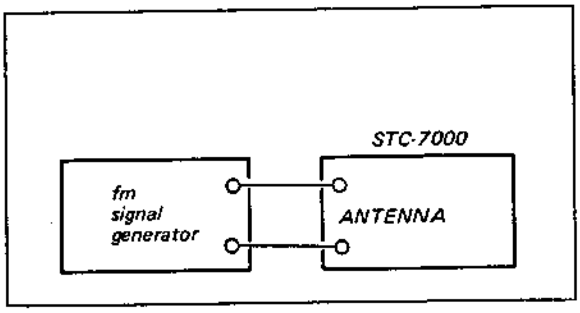


Fig. 3-9. Tuner input meter calibration test setup (Fm)

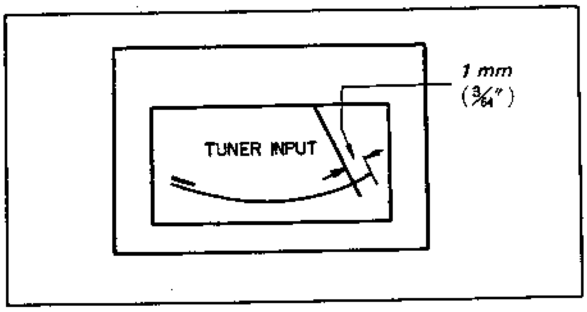


Fig. 3-10. TUNER INPUT meter calibration

b. A-M

1. Connect the test equipments as shown in Fig. 3-11.
2. Set the a-m signal generator and receiver's controls as follows:

Carrier frequency ...... 1,000 kHz
Output level .... 104 dB/m at AM antenna terminal
Modulation (400 Hz) ... 30 %
VOLUME control ...... Minimum
FUNCTION switch ..... AM
MODE switch .... MONO
MONITOR switch...... SOURCE

3. Precisely tune to the signal and adjust RT301 (See Fig. 3-12) to obtain the meter pointer within 1 mm (3/64") left of its maximum indication as shown in Fig. 3-10.

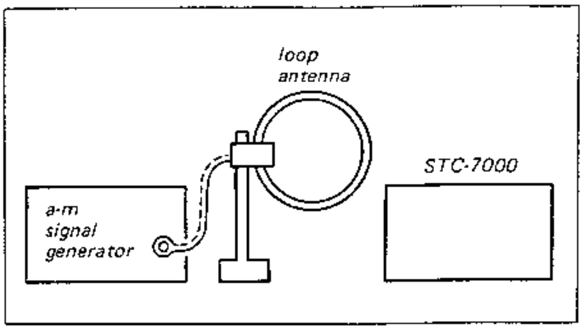


Fig. 3-11. Tuner input meter calibration test setup (A-m)

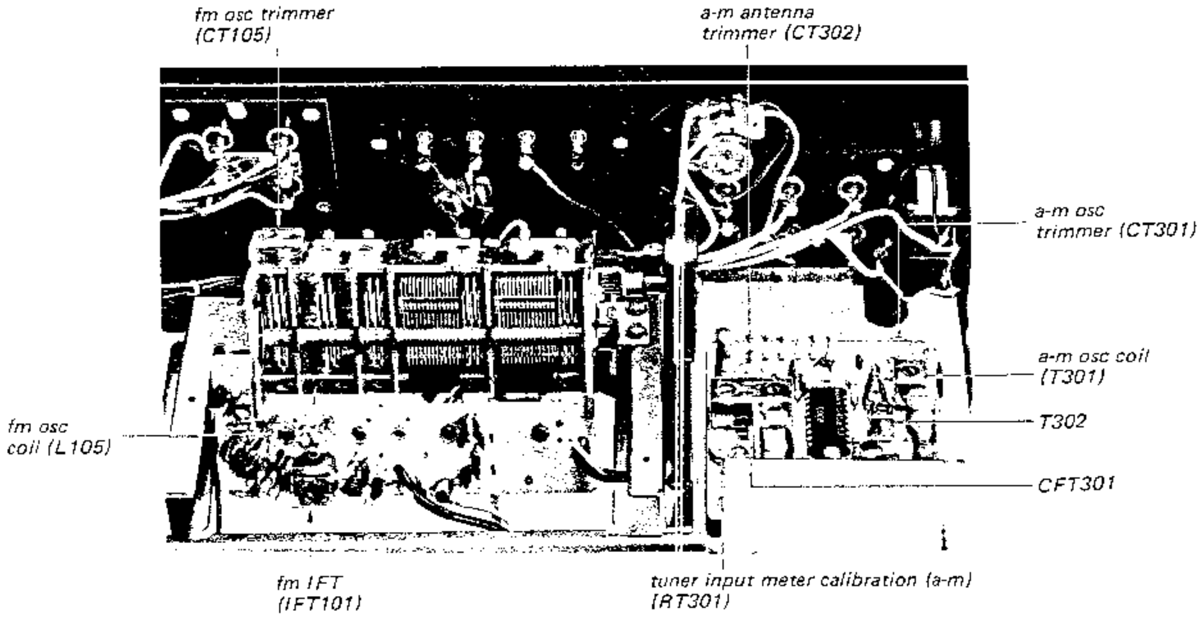


Fig. 3-12. Adjustment parts location (1)

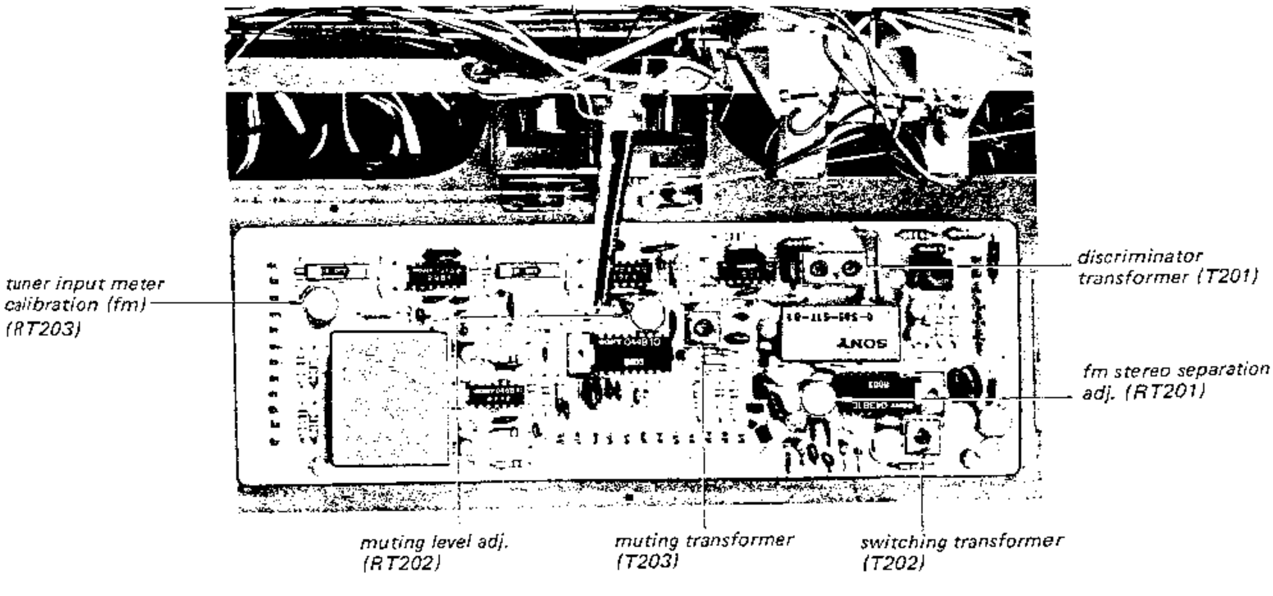


Fig. 3-13. Adjustment parts location (2)

SECTION 4
REPACKING

The STC-7000's original shipping carton and packing materials are the ideal containers for shipping the unit. However to secure the maximum protection, the STC-7000 must be repacked in these materials precisely as before. The proper repacking procedures are shown in Fig. 4-1.

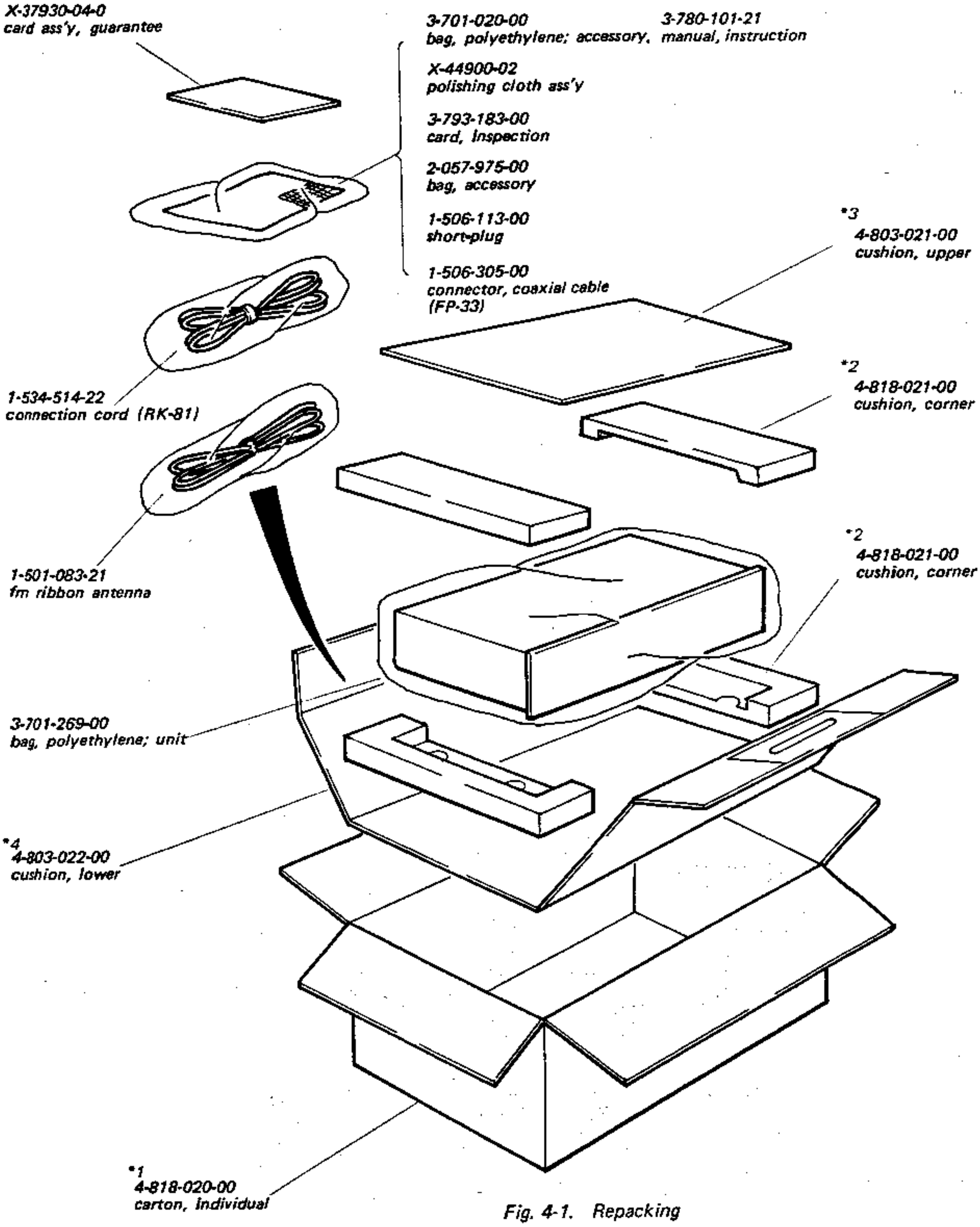
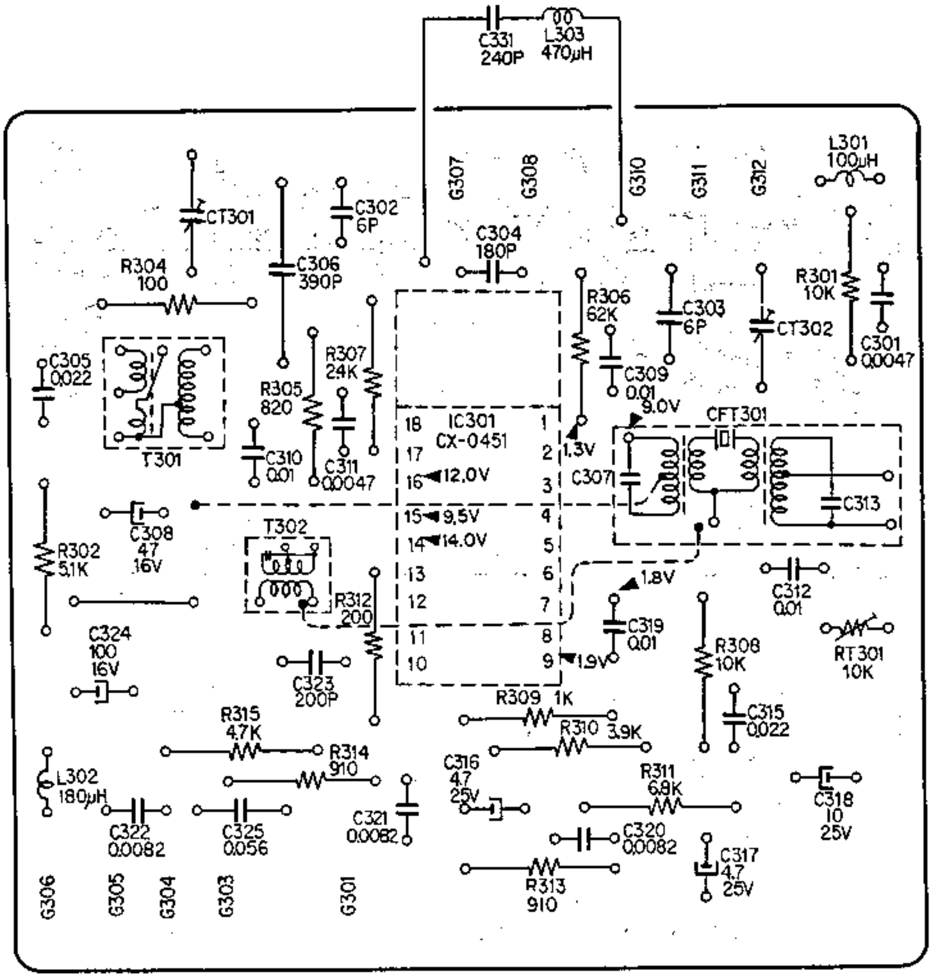


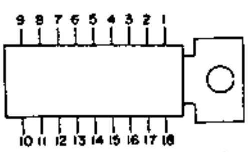
Fig. 4-1. Repacking

* 1～4 carton ass'y (X48180-12-0) includes all the parts marked with *

SECTION 5
DIAGRAMS

5-1. MOUNTING DIAGRAM – A-m Front End Board –
– Conductor Side –



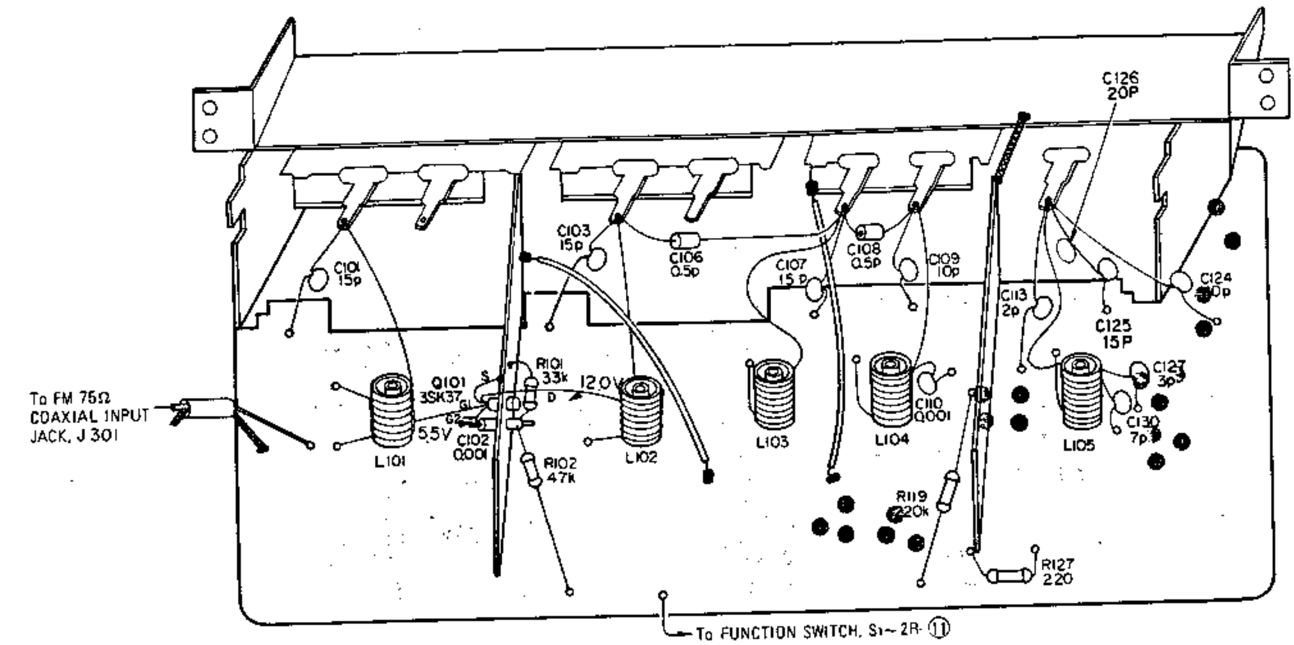


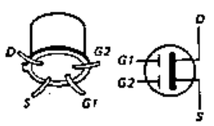
(Top View)

CX-0451

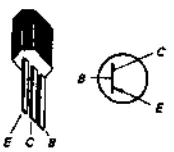
5-2. MOUNTING DIAGRAM – Fm Front End Board –

– Conductor Side –

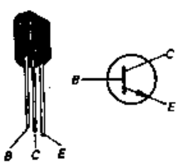




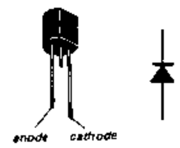
3SK37



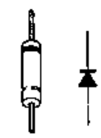
2SA677



2SC710

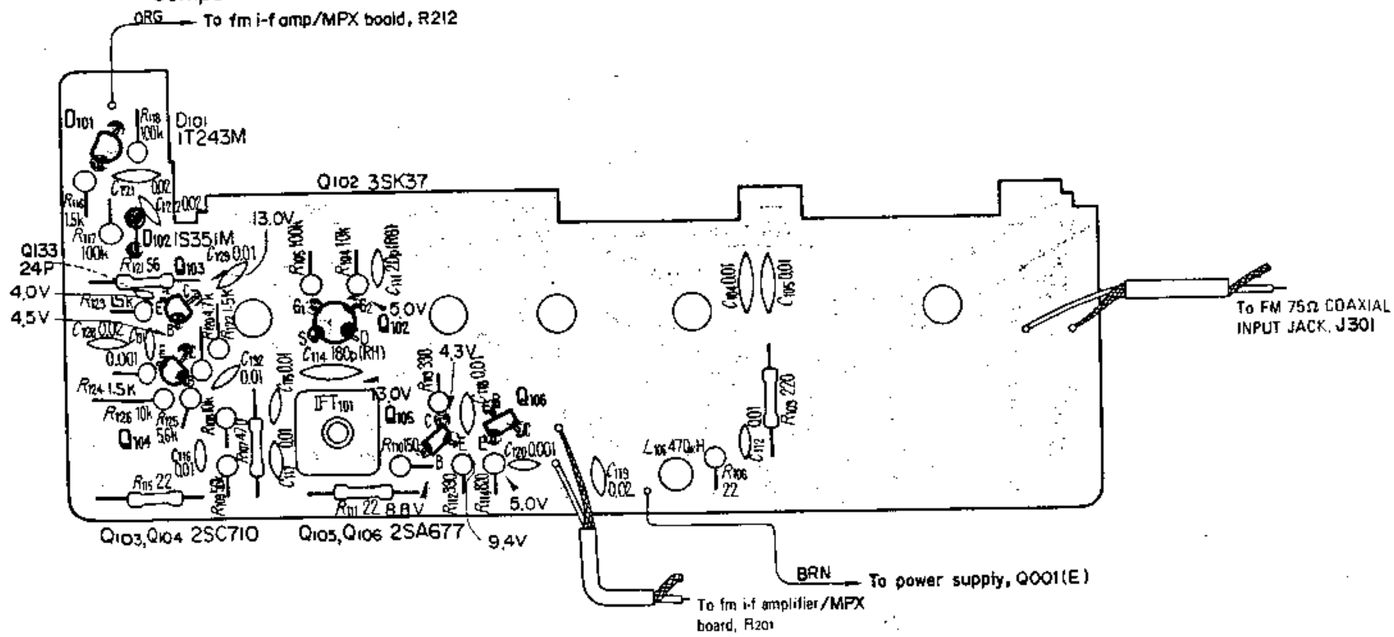


1T243M



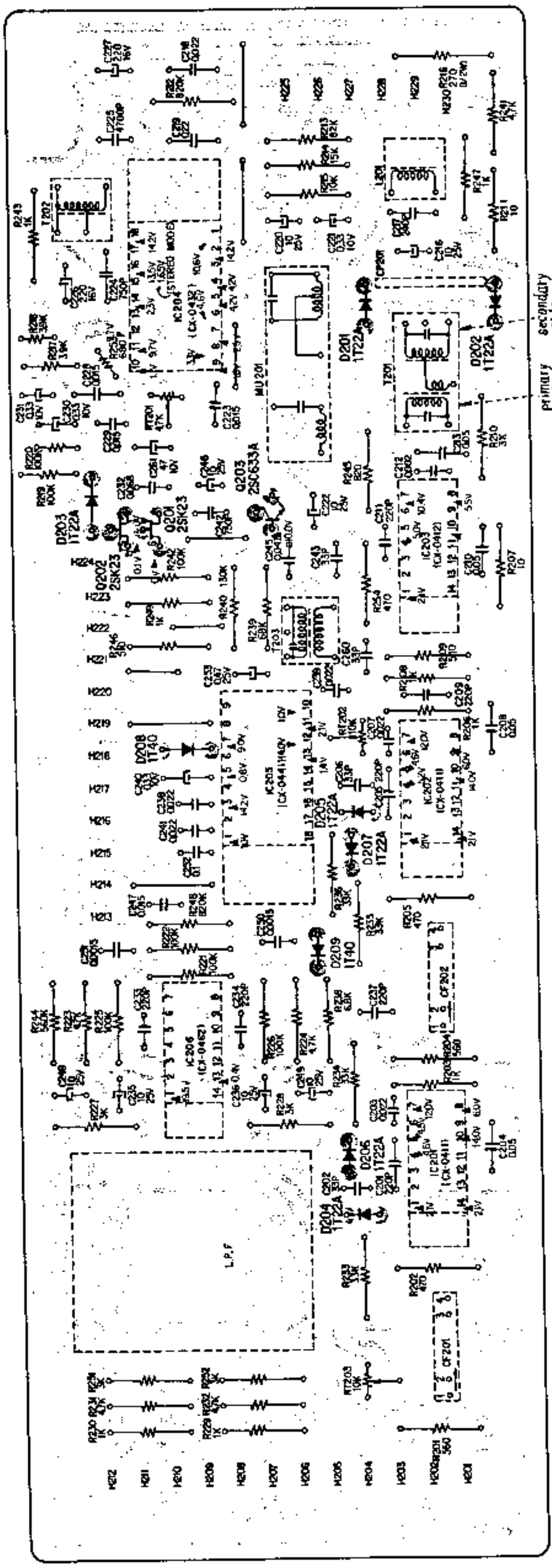
1S351M

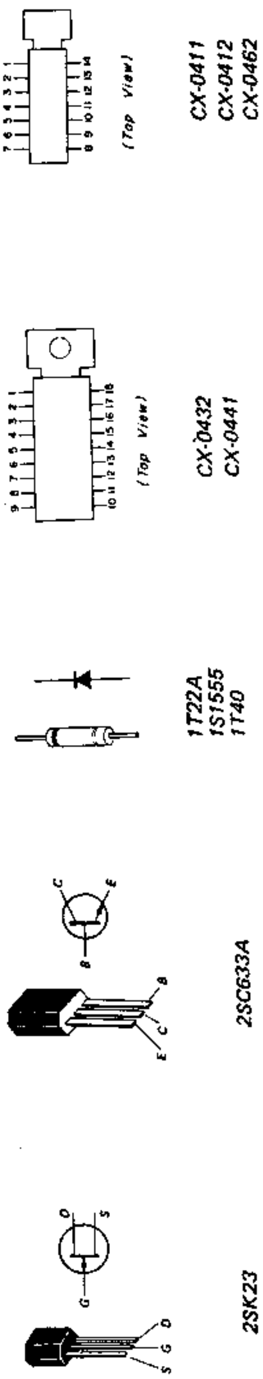
– Component Side –



5-3. MOUNTING DIAGRAM – Fm I-f Amp/MPX Board –

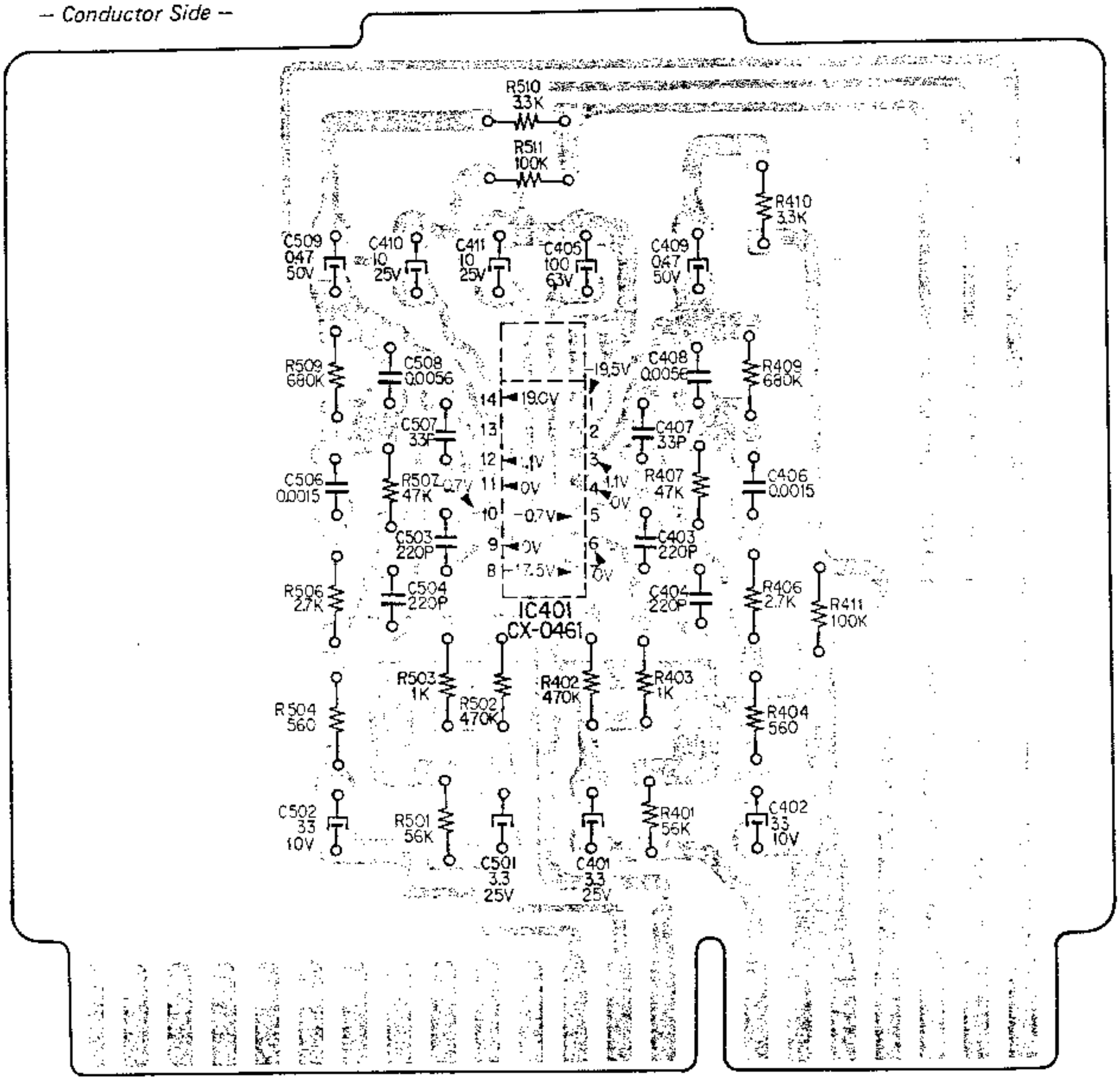
– Conductor Side –

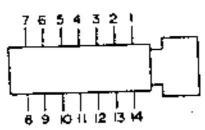




5-4. MOUNTING DIAGRAM – Phono Amp Board –

– Conductor Side –



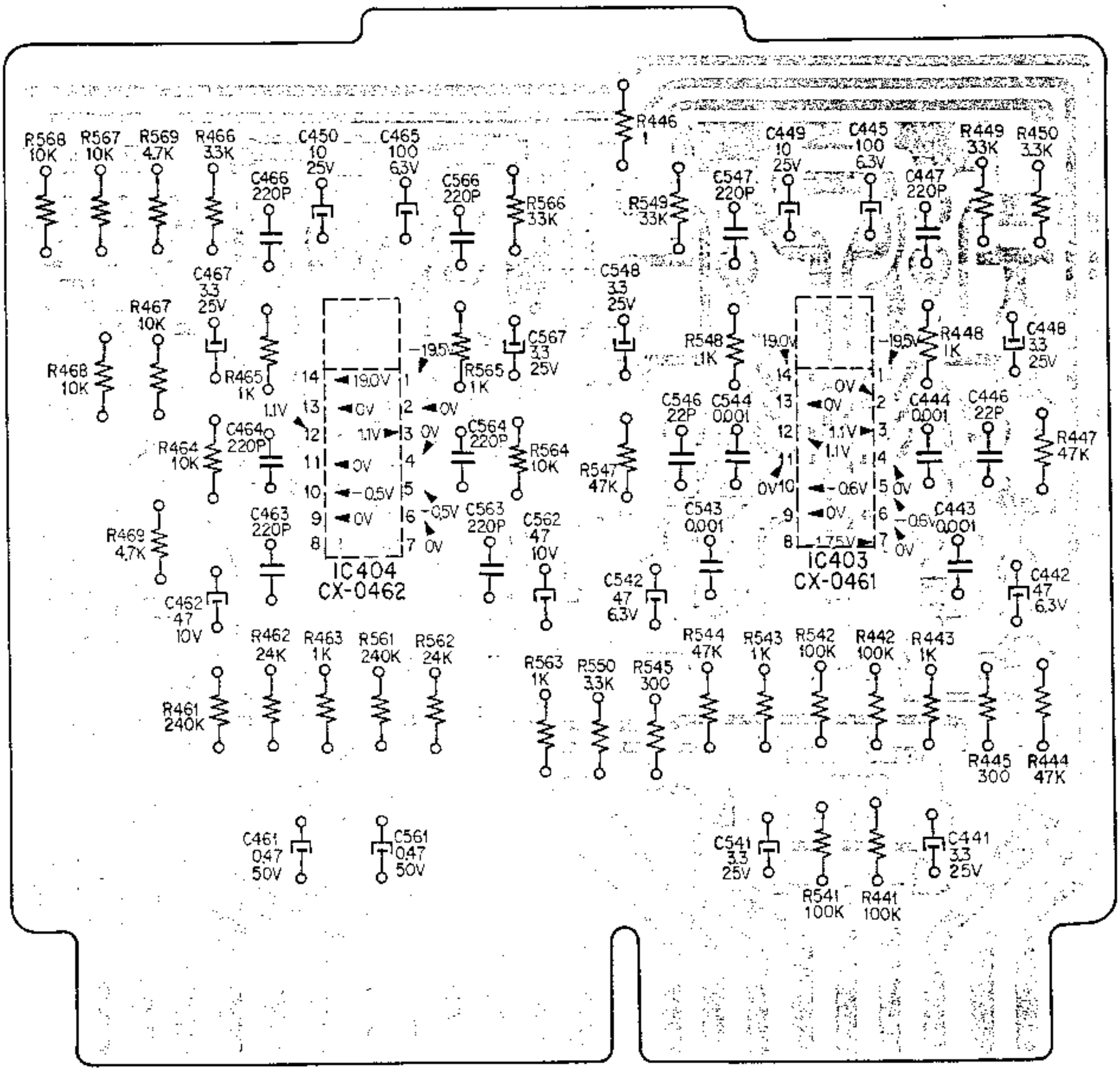


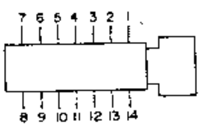
(Top View)

CX-0461

5-5. MOUNTING DIAGRAM – MIC and MIX Amp Board –

– Conductor Side –



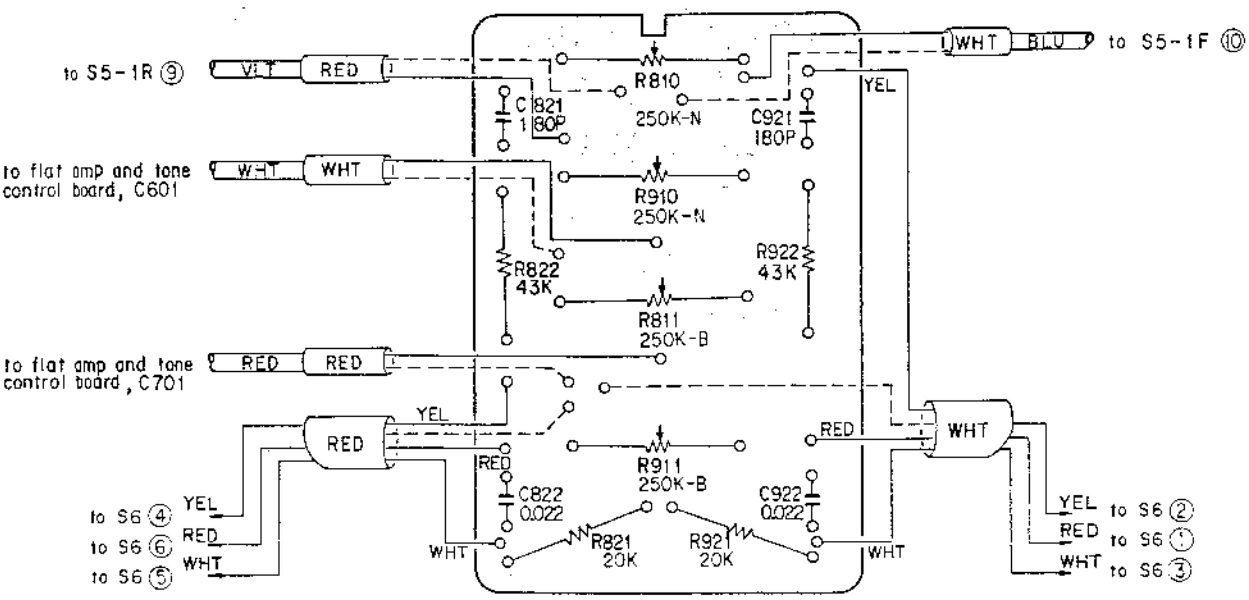


(Top View)

CX-0461
CX-0462

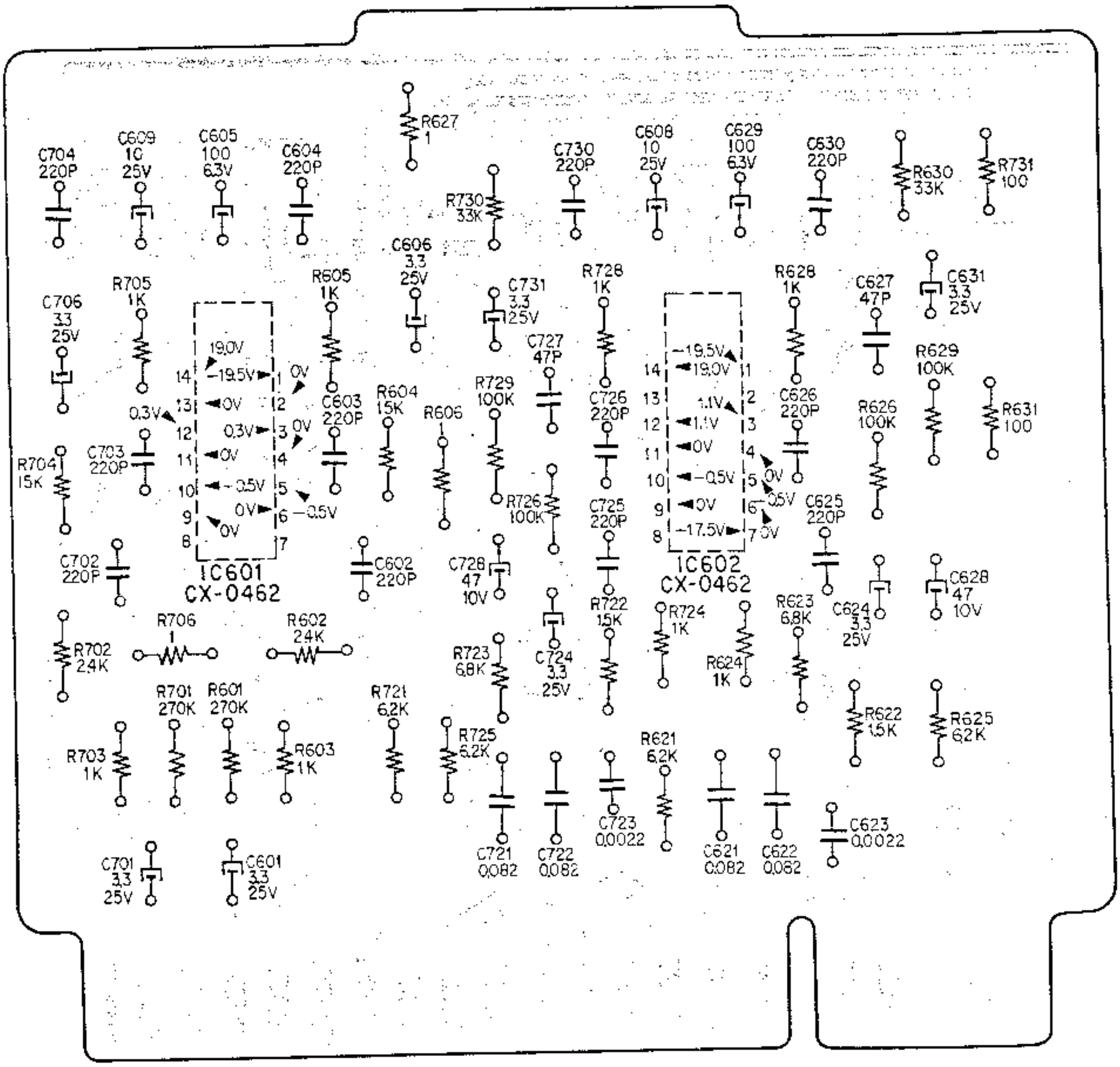
5-6. MOUNTING DIAGRAM – LOUDNESS Board –

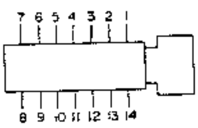
– Conductor Side –



5-7. MOUNTING DIAGRAM – Tone Control and Flat Amp Board –

– Conductor Side –



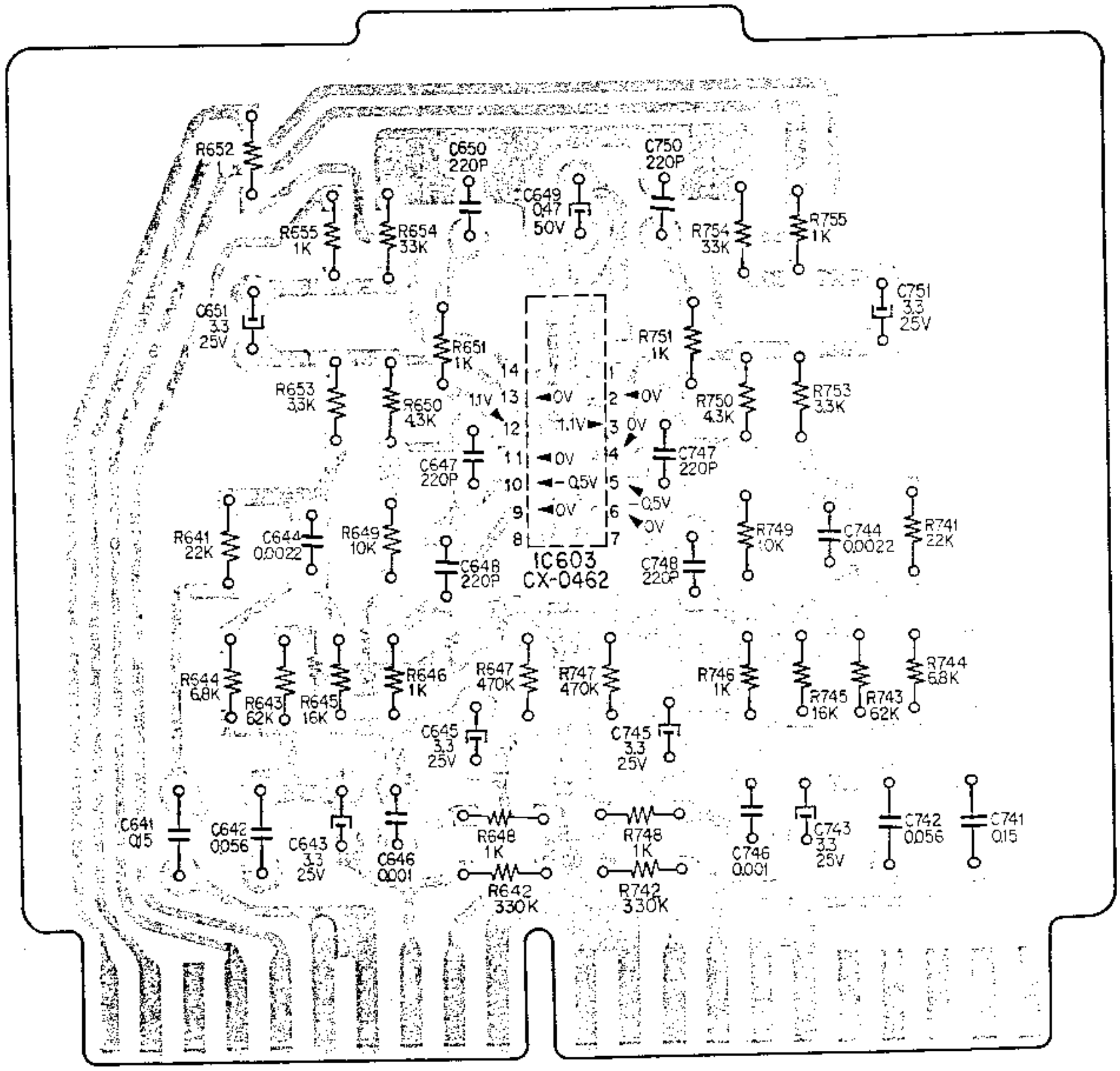


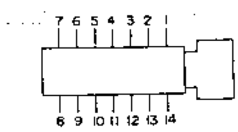
(Top View)

CX-0462

5-8. MOUNTING DIAGRAM – Filter Amp Board –

– Conductor Side –



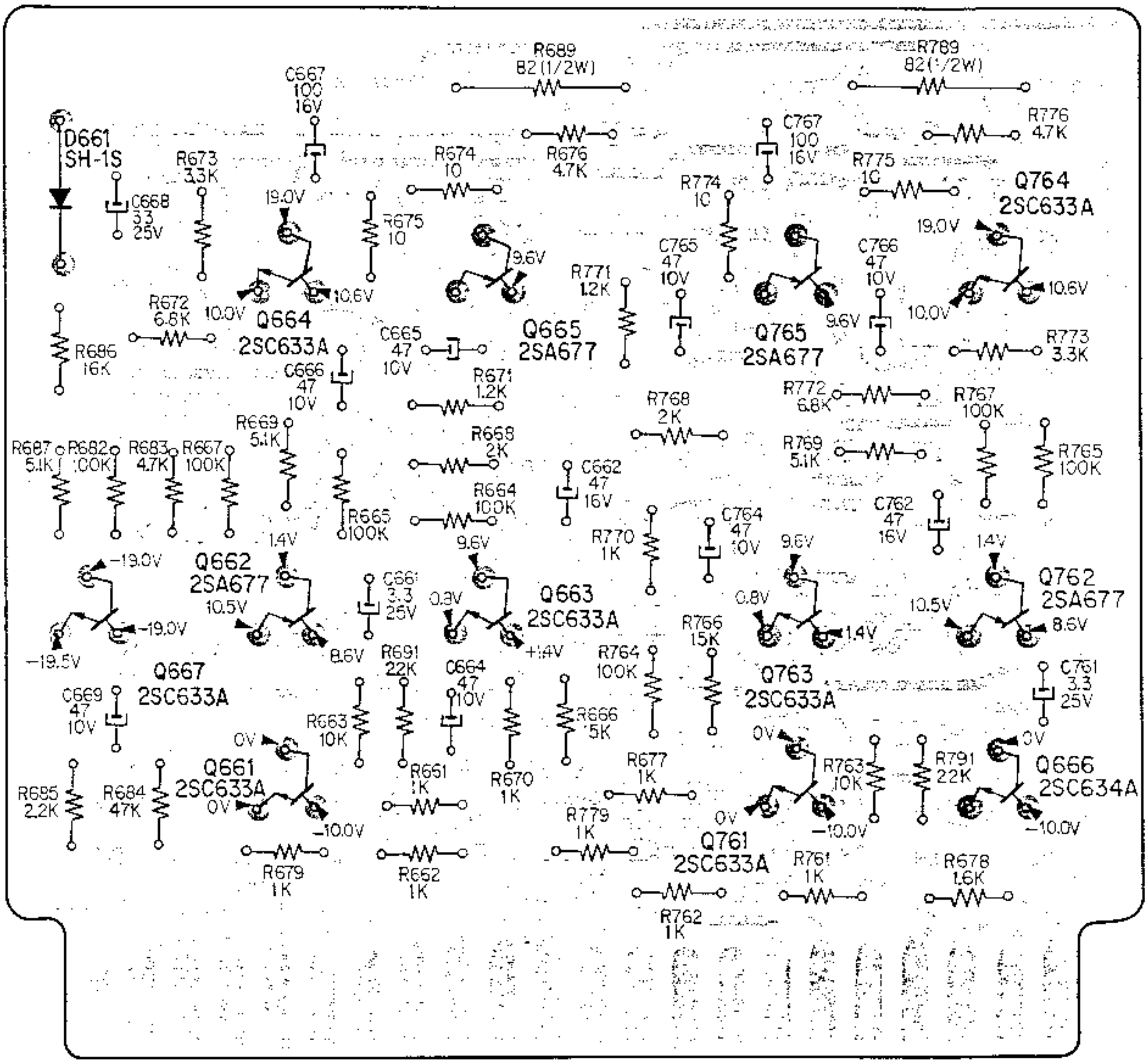


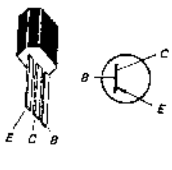
(Top View)

CX-0462

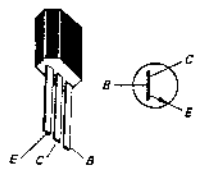
5-9. MOUNTING DIAGRAM – Headphone Amp Board –

– Conductor Side –

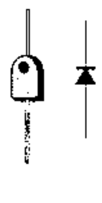




2SA677



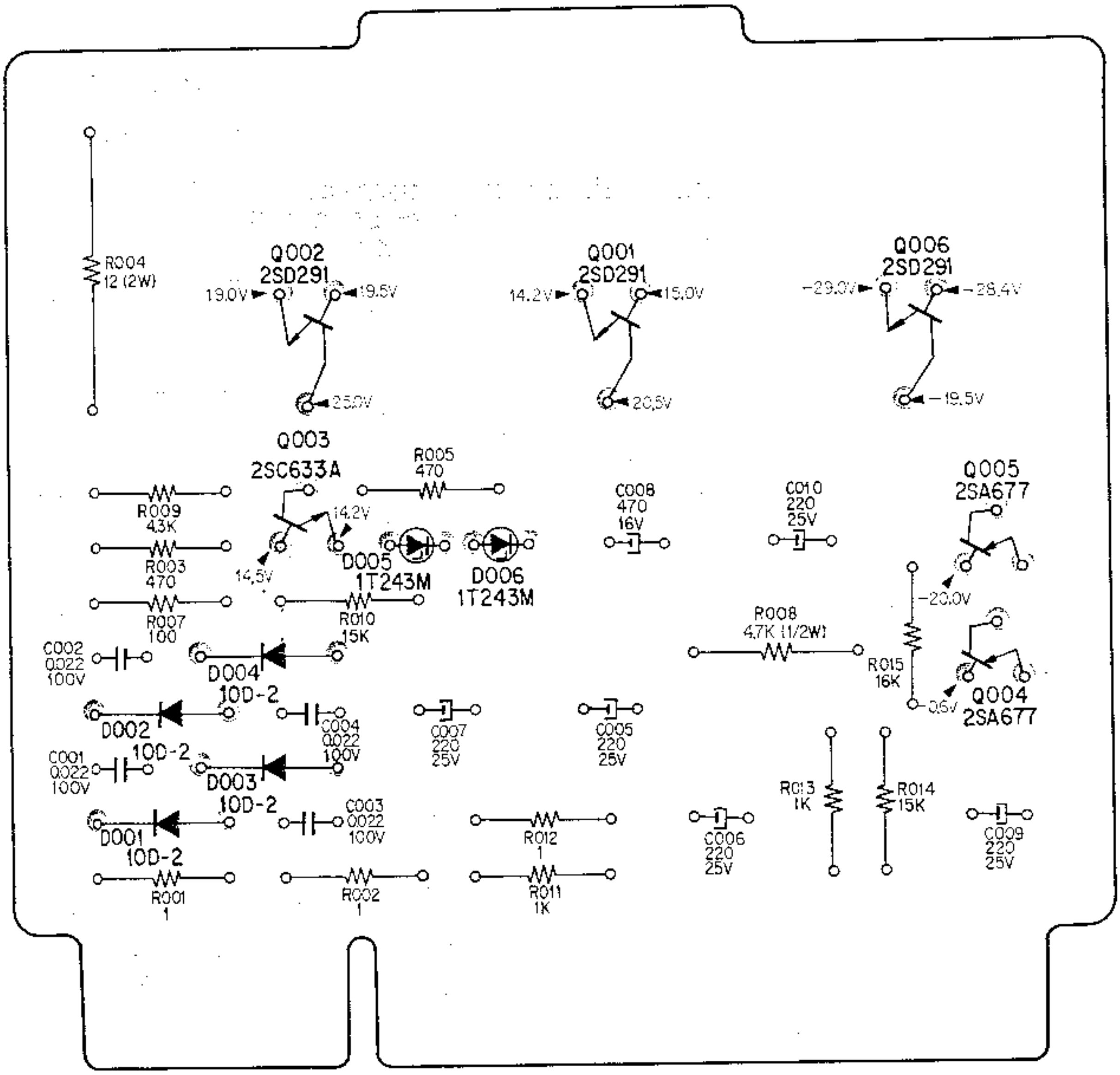
2SC633A
2SC634A

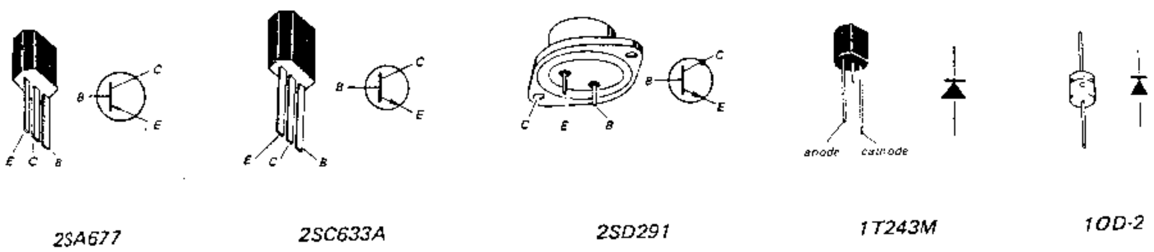


SH-1S

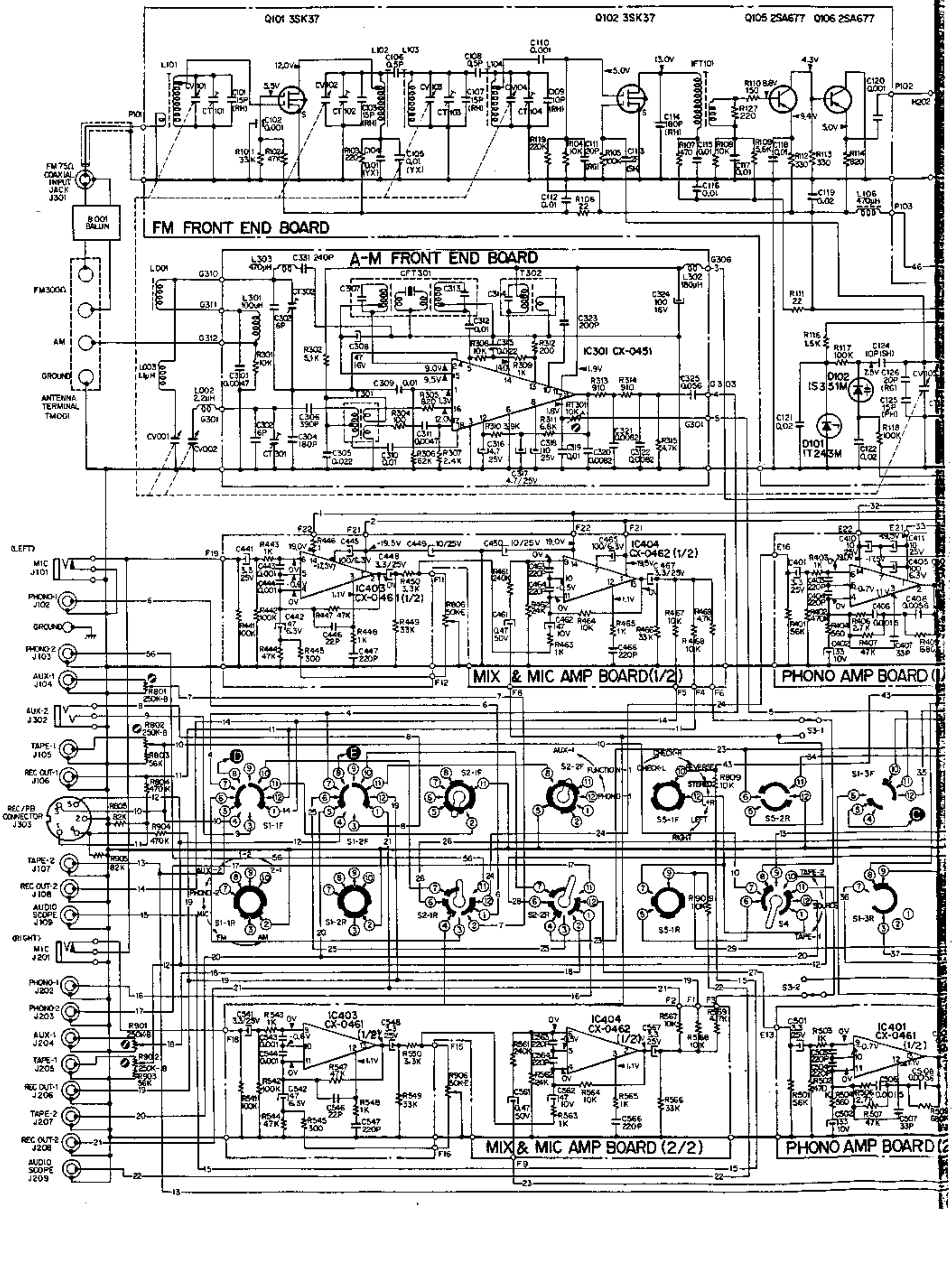
5-10. MOUNTING DIAGRAM – Power Supply Board –

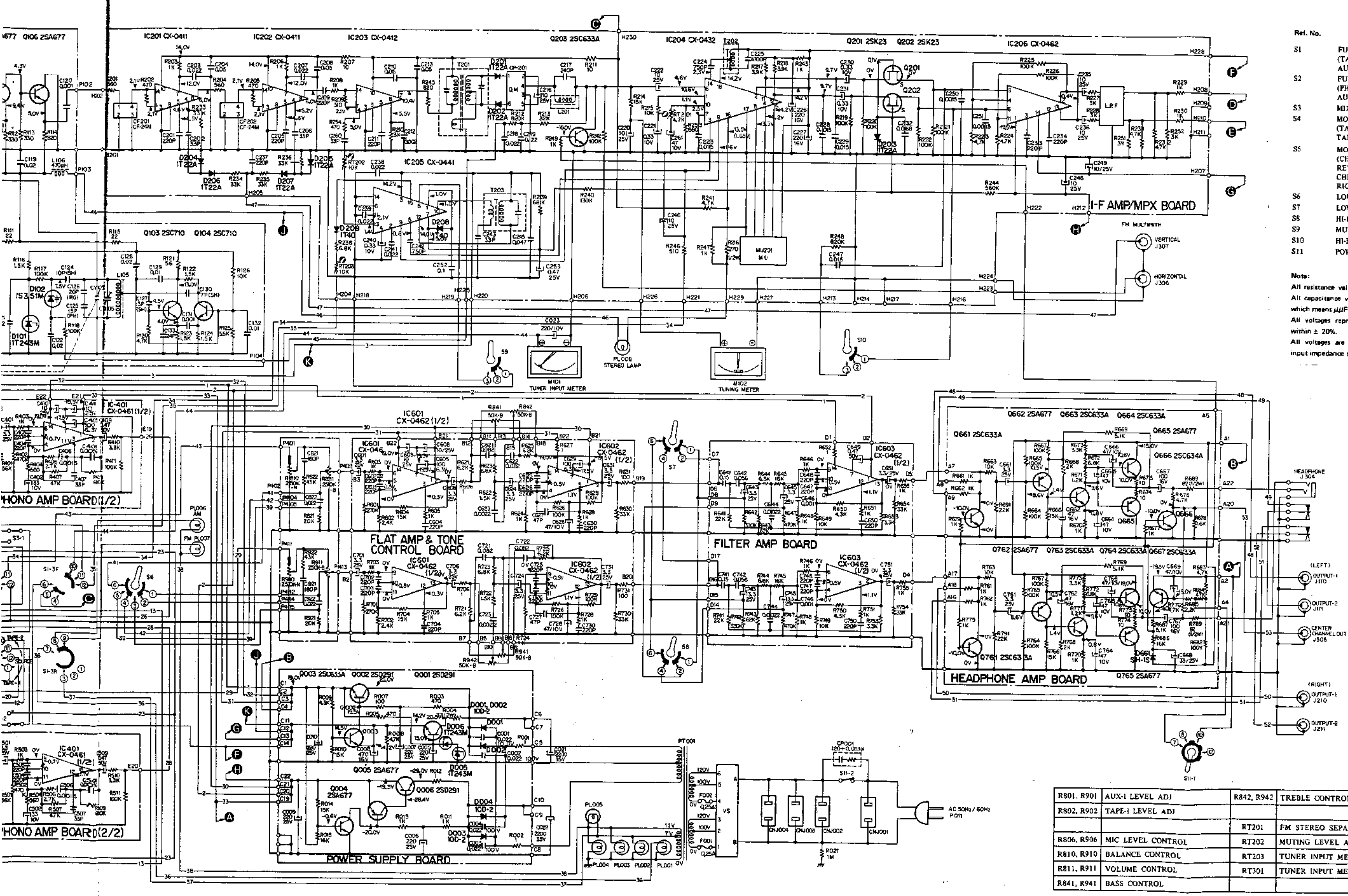
– Conductor Side –





5-11. SCHEMATIC DIAGRAM





Ref. No.	Description	Position
S1	FUNCTION switch (1) (TAPE 2→1 - TAPE 1→2 - AUX 2-PHONO 2-MIC-FM-AM)	TAPE 2→1
S2	FUNCTION switch (2) (PHONO 1 - FUNCTION 1 - AUX 1)	PHONO 1
S3	MIXING switch	ON
S4	MONITOR switch (TAPE 1 - SOURCE - TAPE 2)	SOURCE
S5	MODE switch (CHECK-L - CHECK-R - REVERSE - STEREO CHECK-L - L + R – LEFT - RIGHT)	CHECK-L
S6	LOUDNESS switch	ON
S7	LOW FILTER switch	OFF
S8	HI-FILTER switch	OFF
S9	MUTING switch	ON
S10	HI-BLEND switch	OFF
S11	POWER switch	ON

Note:

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

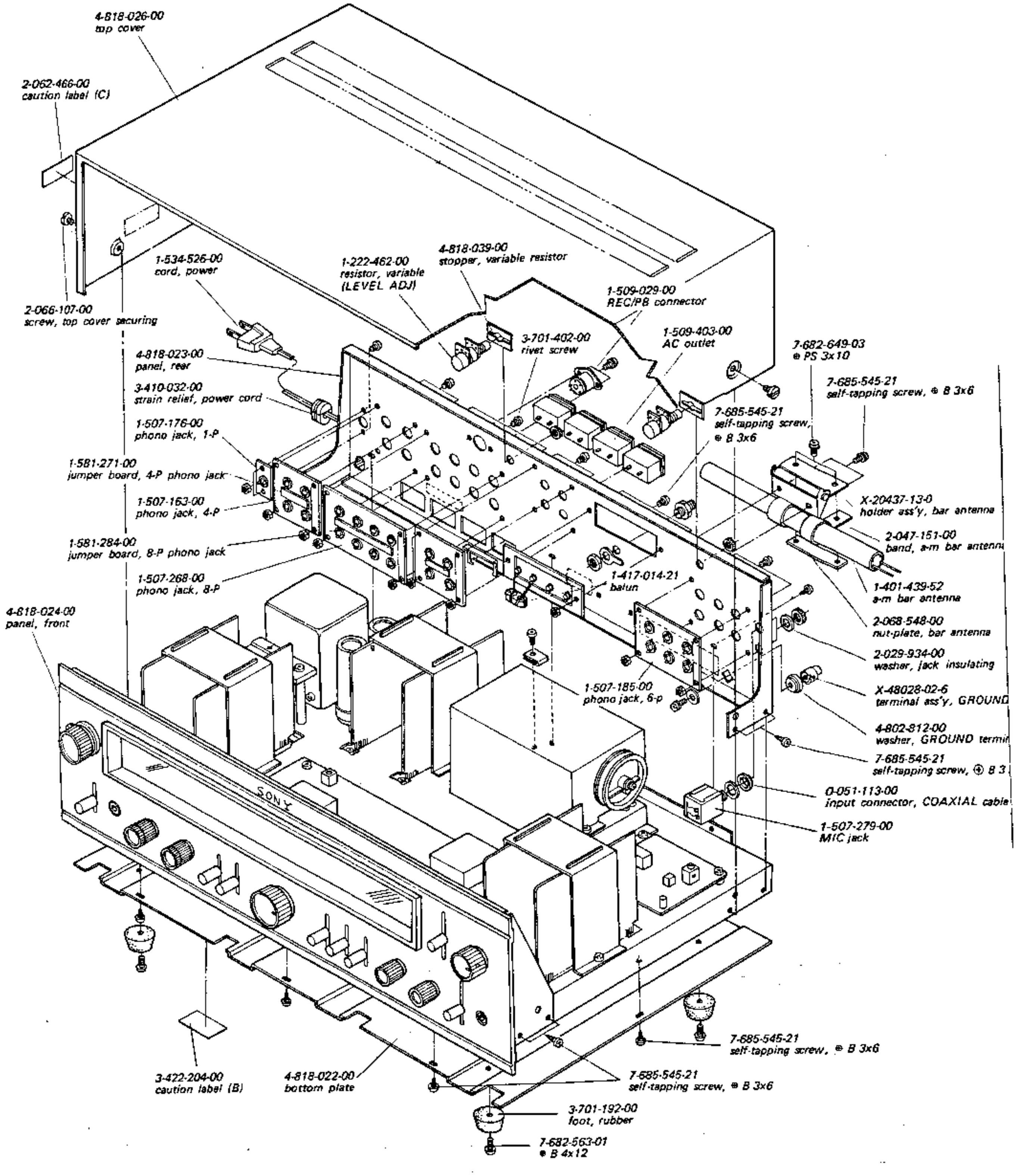
All capacitance values are in μF except as indicated wtih p, which means μμF.

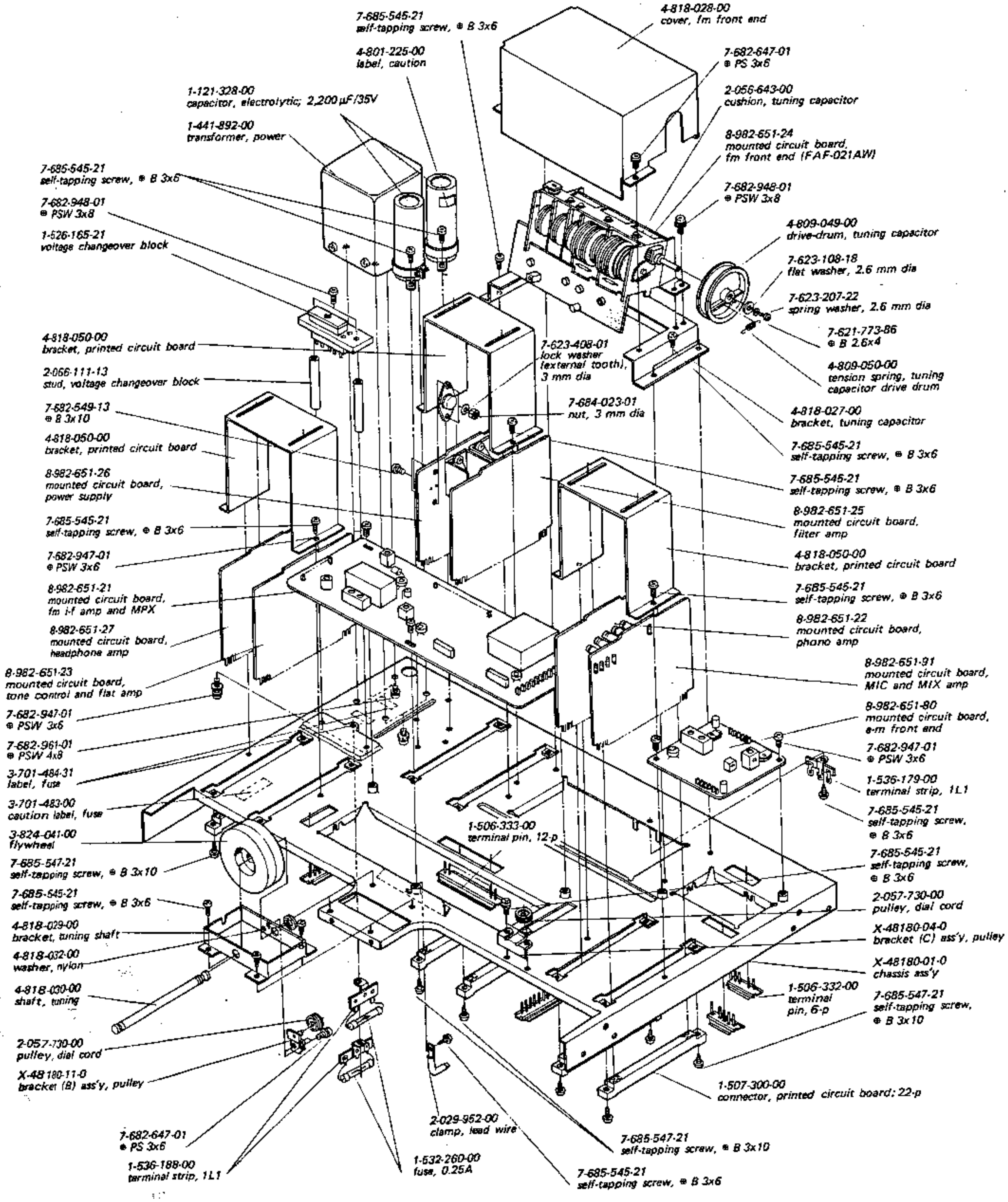
All voltages represent an average value and should hold within ± 20%.

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

R801, R901	AUX-1 LEVEL ADJ	R842, R942	TREBLE CONTROL
R802, R902	TAPE-1 LEVEL ADJ		
		RT201	FM STEREO SEPARATION ADJ
R806, R906	MIC LEVEL CONTROL	RT202	MUTING LEVEL ADJ
R810, R910	BALANCE CONTROL	RT203	TUNER INPUT METER ADJ (FM)
R811, R911	VOLUME CONTROL	RT301	TUNER INPUT METER ADJ (A-M)
R841, R941	BASS CONTROL		

SECTION 6
EXPLODED VIEWS





7-685-545-21
self-tapping screw, ⊕ B 3x6
4-818-028-00
cover, fm front end
4-801-225-00
label, caution
7-682-647-01
⊕ PS 3x6
1-121-328-00
capacitor, electrolytic; 2,200μF/35V
2-056-643-00
cushion, tuning capacitor
1-441-892-00
transformer, power
8-982-651-24
mounted circuit board,
fm front end (FAF-021AW)
7-685-545-21
self-tapping screw, ⊕ B 3x6
7-682-948-01
⊕ PSW 3x8
7-682-948-01
⊕ PSW 3x8
4-809-049-00
drive-drum, tuning capacitor
1-526-165-21
voltage changeover block
7-623-108-18
flat washer, 2.6 mm dia
7-623-207-22
spring washer, 2.6 mm dia
7-621-773-86
⊕ B 2.6x4
4-818-050-00
bracket, printed circuit board
7-623-408-01
lock washer
(external tooth),
3 mm dia
4-809-050-00
tension spring, tuning
capacitor drive drum
2-066-111-13
stud, voltage changeover block
7-684-023-01
nut, 3 mm dia
7-682-549-13
⊕ B 3x10
4-818-027-00
bracket, tuning capacitor
4-818-050-00
bracket, printed circuit board
7-685-545-21
self-tapping screw, ⊕ B 3x6
8-982-651-26
mounted circuit board,
power supply
7-685-545-21
self-tapping screw, ⊕ B 3x6
8-982-651-25
mounted circuit board,
filter amp
7-685-545-21
self-tapping screw, ⊕ B 3x6
4-818-050-00
bracket, printed circuit board
7-682-947-01
⊕ PSW 3x6
7-685-545-21
self-tapping screw, ⊕ B 3x6
8-982-651-21
mounted circuit board,
fm i-f amp and MPX
8-982-651-22
mounted circuit board,
phono amp
8-982-651-27
mounted circuit board,
headphone amp
8-982-651-23
mounted circuit board,
tone control and flat amp
8-982-651-91
mounted circuit board,
MIC and MIX amp
7-682-947-01
⊕ PSW 3x6
8-982-651-80
mounted circuit board,
a-m front end
7-682-961-01
⊕ PSW 4x8
7-682-947-01
⊕ PSW 3x6
3-701-484-31
label, fuse
1-536-179-00
terminal strip, 1L1
3-701-483-00
caution label, fuse
7-685-545-21
self-tapping screw,
⊕ B 3x6
3-824-041-00
flywheel
1-506-333-00
terminal pin, 12-p
7-685-547-21
self-tapping screw, ⊕ B 3x10
7-685-545-21
self-tapping screw,
⊕ B 3x6
7-685-545-21
self-tapping screw, ⊕ B 3x6
2-057-730-00
pulley, dial cord
4-818-029-00
bracket, tuning shaft
X-48180-04-0
bracket (C) ass'y, pulley
4-818-032-00
washer, nylon
X-48180-01-0
chassis ass'y
4-818-030-00
shaft, tuning
1-506-332-00
terminal
pin, 6-p
7-685-547-21
self-tapping screw,
⊕ B 3x10
2-057-730-00
pulley, dial cord
X-48180-11-0
bracket (B) ass'y, pulley
1-507-300-00
connector, printed circuit board; 22-p
2-029-952-00
clamp, lead wire
7-682-647-01
⊕ PS 3x6
7-685-547-21
self-tapping screw, ⊕ B 3x10
1-536-188-00
terminal strip, 1L1
1-532-260-00
fuse, 0.25A
7-685-545-21
self-tapping screw, ⊕ B 3x6

SECTION 7
ELECTRICAL PARTS LIST

Ref.No.	Part No.	Description	

MOUNTED CIRCUIT BOARD

Ref.No.	Part No.	Description
	8-982-651-21	fm i-f amp and MPX circuit board
	8-982-651-22	phono amplifier circuit board
	8-982-651-23	tone control and flat amplifier circuit board
	8-982-651-24	fm front-end circuit board (FAF-021 AW)
	8-982-651-25	filter amplifier circuit board
	8-982-651-26	power supply circuit board
	8-982-651-27	headphone amplifier circuit board
	8-982-651-80	a-m front-end circuit board
	8-982-651-85	LOUDNESS circuit board
	8-982-651-91	MIC and MIX amp circuit board

SEMICONDUCTORS

Ref.No.	Part No.	Description	
D001		diode	10D-2
D002		diode	10D-2
D003		diode	10D-2
D004		diode	10D-2
D005		diode	1T243M
D006		diode	1T243M
D101		diode	1T243M
D102		diode	1S351M
D201		diode	1T22A
D202		diode	1T22A
D203		diode	1T22A
D204		diode	1T22A
D205		diode	1T22A
D206		diode	1T22A
D207		diode	1T22A
D208		diode	1T40
D209		diode	1T40
D661		diode	SH-1S
IC201		IC	CX-0411
IC202		IC	CX-0411
IC203		IC	CX-0412
IC204		IC	CX-0432
IC205		IC	CX-0441
IC206		IC	CX-0462
IC301		IC	CX-0451
IC401		IC	CX-0461
IC403		IC	CX-0461
IC404		IC	CX-0462
IC601		IC	CX-0462
IC602		IC	CX-0462
IC603		IC	CX-0462
Q001		transistor	2SD291
Q002		transistor	2SD291
Q003		transistor	2SC633A
Q004		transistor	2SA677
Q005		transistor	2SA677
Q006		transistor	2SD291
Q101		FET	3SK37
Q102		FET	3SK37
Q103		transistor	2SC710
Q104		transistor	2SC710
Q105		transistor	2SA677
Q106		transistor	2SA677
Q201		FET	2SK23
Q202		FET	2SK23
Q203		transistor	2SC633A
Q661 (Q761)		transistor	2SC634A
Q662 (Q762)		transistor	2SA677
Q663 (Q763)		transistor	2SC633A
Q664 (Q764)		transistor	2SC633A
Q665 (Q765)		transistor	2SA677
Q666		transistor	2SC634A
Q667		transistor	2SC633A

TRANSFORMERS, COILS AND INDUCTORS

Ref.No.	Part No.	Description
B001	1-417-014-21	balun
CFT301	1-403-150-00	CFT, a-m
IFT101	1-403-295-00	IFT, fm
L001	1-401-439-52	bar antenna, a-m
L002	1-407-182-00	inductor, micro 2.2 μH
L003	1-407-178-00	inductor, micro 1.1 μH
L101	1-401-483-00	coil, fm antenna
L102	1-425-712-00	coil, fm (RF 1)
L103	1-425-676-00	coil, fm (RF 2)
L104	1-425-713-00	coil, fm (RF 3)
L105	1-425-505-00	coil, fm osc
L106	1-407-177-00	inductor, micro 470 μH
L201	1-407-418-00	trap coil, SCA
L301	1-407-169-00	inductor, micro 100 μH
L302	1-407-172-00	inductor, micro 180 μH
MU201	1-464-009-00	MPX unit
PT001	1-441-892-00	transformer, power
T201	1-403-849-00	transformer, discriminator 10.7 MHz
T202	1-425-729-00	transformer, switching 38 kHz
T203	1-403-850-00	transformer, muting
T301	1-405-459-00	coil, mw osc
T302	1-403-128-00	IFT, a-m

CAPACITORS

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

Ref.No.	Part No.	Description		
C001	1-105-877-12	0.022 ±20%	100V	mylar
C002	1-105-877-12	0.022 ±20%	100V	mylar
C003	1-105-877-12	0.022 ±20%	100V	mylar

Ref. No.	Part No.	Description			
C004	1-105-877-12	0.022	± 20 %	100V	mylar
C005	1-121-422-00	220	$\pm^{100}_{10}$ %	25V	electrolytic
C006	1-121-422-00	220	$\pm^{100}_{10}$ %	25V	electrolytic
C007	1-121-422-00	220	$\pm^{100}_{10}$ %	25V	electrolytic
C008	1-121-426-00	470	$\pm^{100}_{10}$ %	16V	electrolytic
C009	1-121-422-00	220	$\pm^{100}_{10}$ %	25V	electrolytic
C010	1-121-422-00	220	$\pm^{100}_{10}$ %	25V	electrolytic
C021	1-121-328-00	2200	$\pm^{250}_{10}$ %	35V	electrolytic
C022	1-121-328-00	2200	$\pm^{250}_{10}$ %	35V	electrolytic
C023	1-121-420-00	220	$\pm^{100}_{10}$ %	10V	electrolytic
C101	1-102-668-00	15 p	± 5 %	50V	ceramic
C102	1-102-217-00	0.001	$\pm^{100}_{0}$ %	50V	ceramic
C103	1-102-668-00	15 p	± 5 %	50V	ceramic
C104	1-101-118-00	0.01	± 20 %	50V	ceramic
C105	1-101-118-00	0.01	± 20 %	50V	ceramic
C106	1-101-936-00	0.5 p	± 10 %	500V	ceramic
C107	1-102-668-00	15 p	± 5 %	50V	ceramic
C108	1-101-936-00	0.5 p	± 10 %	500V	ceramic
C109	1-102-858-00	10 p	± 5 %	50V	ceramic
C110	1-101-918-00	0.001	$\pm^{80}_{20}$ %	25V	ceramic
C111	1-102-991-00	20 p	± 5 %	50V	ceramic
C112	1-101-923-00	0.01	$\pm^{80}_{20}$ %	25V	ceramic
C113	1-102-023-00	2 p	±0.25 p	50V	ceramic
C114	1-102-848-00	180 p	± 5 %	50V	ceramic
C115	1-101-923-00	0.01	$\pm^{80}_{20}$ %	25V	ceramic
C116	1-101-923-00	0.01	$\pm^{80}_{20}$ %	25V	ceramic
C117	1-101-923-00	0.01	$\pm^{80}_{20}$ %	25V	ceramic
C118	1-101-923-00	0.01	$\pm^{80}_{20}$ %	25V	ceramic
C119	1-101-924-00	0.02	$\pm^{80}_{20}$ %	25V	ceramic
C120	1-101-918-00	0.001	$\pm^{80}_{20}$ %	25V	ceramic
C121	1-101-924-00	0.02	$\pm^{80}_{20}$ %	25V	ceramic
C122	1-101-924-00	0.02	$\pm^{80}_{20}$ %	25V	ceramic
C124	1-101-978-00	10 p	± 5 %	50V	ceramic
C125	1-102-855-00	15 p	± 5 %	50V	ceramic
C126	1-102-991-00	20 p	±0.25 p	50V	ceramic
C127	1-102-011-00	3 p	±0.25 p	50V	ceramic
C128	1-101-924-00	0.02	$\pm^{80}_{20}$ %	25V	ceramic
C129	1-101-923-00	0.01	$\pm^{80}_{20}$ %	25V	ceramic
C130	1-102-875-00	7 p	± 0.5 p	50V	ceramic
C131	1-101-918-00	0.001	$\pm^{80}_{20}$ %	25V	ceramic
C132	1-101-923-00	0.01	$\pm^{80}_{20}$ %	25V	ceramic
C133	1-102-672-00	24 p	± 5 %	50V	ceramic
C201	1-102-110-00	220 p	± 5 %	50V	ceramic
C202	1-102-963-00	33 p	± 5 %	50V	ceramic
C203	1-101-924-00	0.022	$\pm^{80}_{20}$ %	25V	ceramic
C204	1-101-926-00	0.05	$\pm^{80}_{20}$ %	25V	ceramic
C205	1-102-110-00	220 p	± 5 %	50V	ceramic
C206	1-102-963-00	33 p	± 5 %	50V	ceramic
C207	1-101-924-00	0.022	$\pm^{80}_{20}$ %	25V	ceramic
C208	1-101-926-00	0.05	$\pm^{80}_{20}$ %	25V	ceramic
C209	1-102-110-00	220 p	± 5 %	50V	ceramic
C210	1-101-926-00	0.05	$\pm^{80}_{20}$ %	25V	ceramic
C211	1-102-110-00	220 p	± 5 %	50V	ceramic
C212	1-101-919-00	0.002	$\pm^{80}_{20}$ %	25V	ceramic
C213	1-101-926-00	0.05	$\pm^{80}_{20}$ %	25V	ceramic
C216	1-121-398-00	10	$\pm^{100}_{10}$ %	25V	electrolytic
C217	1-107-140-00	240 p	± 5 %	50V	silvered mica
C218	1-105-677-12	0.022	± 10 %	50V	mylar
C219	1-105-529-12	0.22	± 5 %	50V	mylar
C220	1-121-398-00	10	$\pm^{100}_{10}$ %	25V	electrolytic
C221	1-127-021-00	0.33	± 20 %	10V	solid aluminum
C222	1-121-398-00	10	$\pm^{100}_{10}$ %	25V	electrolytic
C223	1-105-515-12	0.015	± 5 %	50V	mylar
C224	1-103-722-00	750 p	± 5 %	50V	styrol
C225	1-103-575-00	4700 p	± 5 %	50V	styrol
C226	1-121-421-00	220	$\pm^{100}_{10}$ %	16V	electrolytic
C227	1-121-421-00	220	$\pm^{100}_{10}$ %	16V	electrolytic
C228	1-105-515-12	0.015	± 5 %	50V	mylar
C229	1-105-515-12	0.015	± 5 %	50V	mylar
C230	1-127-021-00	0.33	± 20 %	10V	solid aluminum
C231	1-127-021-00	0.33	± 20 %	10V	solid aluminum
C232	1-105-683-12	0.068	± 10 %	50V	mylar
C233	1-102-110-00	220 p	± 5 %	50V	ceramic
C234	1-102-110-00	220 p	± 5 %	50V	ceramic
C235	1-121-398-00	10	$\pm^{100}_{10}$ %	25V	electrolytic
C236	1-121-398-00	10	$\pm^{100}_{10}$ %	25V	electrolytic
C237	1-102-110-00	220 p	± 5 %	50V	ceramic
C238	1-101-924-00	0.022	$\pm^{80}_{20}$ %	25V	ceramic
C239	1-101-924-00	0.022	$\pm^{80}_{20}$ %	25V	ceramic
C240	1-127-021-00	0.33	± 20 %	10V	solid aluminum
C241	1-101-924-00	0.022	$\pm^{80}_{20}$ %	25V	ceramic
C242	1-103-722-00	750 p	± 5 %	50V	styrol
C243	1-102-963-00	33 p	± 5 %	50V	ceramic
C244		---------------			
C245	1-106-041-12	0.047	± 5 %	50V	mylar
C246	1-121-398-00	10	$\pm^{100}_{10}$ %	25V	electrolytic
C247	1-105-515-12	0.015	± 5 %	50V	mylar
C248	1-121-398-00	10	$\pm^{100}_{10}$ %	25V	electrolytic
C249	1-121-398-00	10	$\pm^{100}_{10}$ %	25V	electrolytic
C250	1-105-503-12	0.0015	± 5 %	50V	mylar
C251	1-105-503-12	0.0015	± 5 %	50V	mylar
C252	1-105-685-12	0.1	± 10 %	50V	mylar
C253	1-121-726-00	0.47	$\pm^{150}_{10}$ %	25V	electrolytic
C260	1-102-963-00	33 p	± 5 %	50V	ceramic
C261	1-121-927-00	47	$\pm^{100}_{10}$ %	10V	electrolytic
C301	1-105-669-12	0.0047	± 10 %	50V	mylar
C302	1-102-943-00	6 p	± 0.5 %	50V	ceramic
C303	1-102-943-00	6 p	± 0.5 %	50V	ceramic
C304	1-102-976-00	180 p	± 5 %	50V	ceramic
C305	1-105-677-12	0.022	± 10 %	50V	mylar
C306	1-103-715-00	390 p	± 5 %	50V	styrol
C307		---------------			
C308	1-121-409-00	47	$\pm^{50}_{10}$ %	16V	electrolytic
C309	1-105-673-12	0.01	± 10 %	50V	mylar
C310	1-105-673-12	0.01	± 10 %	50V	mylar
C311	1-105-669-12	0.0047	± 10 %	50V	mylar

Ref. No.	*Part No.*	*Description*	
C312	1-105-673-12	0.01 ± 10 % 50V	mylar
C313		---------------	
C314		---------------	
C315	1-105-677-12	0.022 ± 10 % 50V	mylar
C316	1-121-395-00	4.7 $\pm{}^{150}_{10}$ % 25V	electrolytic
C317	1-121-395-00	4.7 $\pm{}^{150}_{10}$ % 25V	electrolytic
C318	1-121-398-00	10 $\pm{}^{100}_{10}$ % 25V	electrolytic
C319	1-105-673-12	0.01 ± 10 % 50V	mylar
C320	1-105-512-12	0.0082± 5 % 50V	mylar
C321	1-105-512-12	0.0082± 5 % 50V	mylar
C322	1-105-512-12	0.0082± 5 % 50V	mylar
C323	1-102-977-00	200 p ± 5 % 50V	ceramic
C324	1-121-415-00	100 $\pm{}^{100}_{10}$ % 16V	electrolytic
C325	1-105-522-12	0.056 ± 5 % 50V	mylar
C401 (C501)	1-121-392-00	3.3 $\pm{}^{150}_{10}$ % 25V	electrolytic
C402 (C502)	1-121-402-00	33 $\pm{}^{100}_{10}$ % 10V	electrolytic
C403 (C503)	1-102-110-00	220 p ± 5 % 50V	ceramic
C404 (C504)	1-102-110-00	220 p ± 5 % 50V	ceramic
C405	1-121-413-00	100 $\pm{}^{100}_{10}$ % 6.3V	electrolytic
C406 (C506)	1-105-503-12	0.0015± 5 % 50V	mylar
C407 (C507)	1-102-963-00	33 p ± 5 % 50V	ceramic
C408 (C508)	1-105-510-12	0.0056± 5 % 50 V	mylar
C409 (C509)	1-121-726-00	0.47 $\pm{}^{150}_{10}$ % 50V	electrolytic
C410	1-121-398-00	10 $\pm{}^{100}_{10}$ % 25V	electrolytic
C411	1-121-398-00	10 $\pm{}^{100}_{10}$ % 25V	electrolytic
C441 (C541)	1-121-392-00	3.3 $\pm{}^{150}_{10}$ % 25V	electrolytic
C442 (C542)	1-121-352-00	47 $\pm{}^{100}_{10}$ % 10V	electrolytic
C443 (C543)	1-105-661-12	0.001 ± 10 % 50V	mylar
C444 (C544)	1-105-661-12	0.001 ± 10 % 50V	mylar
C445	1-121-413-00	100 $\pm{}^{100}_{10}$ % 6.3V	electrolytic
C446 (C546)	1-102-959-00	22 p ± 5 % 50V	ceramic
C447 (C547)	1-102-110-00	220 p ± 5 % 50V	ceramic
C448 (C548)	1-121-392-00	3.3 $\pm{}^{150}_{10}$ % 25V	electrolytic
C449	1-121-398-00	10 $\pm{}^{100}_{10}$ % 25V	electrolytic
C450	1-121-398-00	10 $\pm{}^{100}_{10}$ % 25V	electrolytic
C461 (C561)	1-121-726-00	0.47 $\pm{}^{100}_{10}$ % 50V	electrolytic
C462 (C562)	1-121-352-00	47 $\pm{}^{100}_{10}$ % 10V	electrolytic
C463 (C563)	1-102-110-00	220 p ± 5 % 50V	ceramic
C464 (C564)	1-102-110-00	220 p ± 5 % 50V	ceramic
C465	1-121-413-00	100 $\pm{}^{100}_{10}$ % 6.3V	electrolytic
C466 (C566)	1-102-110-00	220 p ± 5 % 50V	ceramic
C467 (C567)	1-121-392-00	3.3 $\pm{}^{150}_{10}$ % 25V	electrolytic
C601 (C701)	1-121-392-00	3.3 $\pm{}^{150}_{10}$ % 25V	electrolytic
C602 (C702)	1-102-110-00	220 p ± 5 % 50V	ceramic
C603 (C703)	1-102-110-00	220 p ± 5 % 50V	ceramic
C604 (C704)	1-102-110-00	220 p ± 5 % 50V	ceramic
C605	1-121-413-00	100 $\pm{}^{100}_{10}$ % 6.3V	electrolytic
C606 (C706)	1-121-392-00	3.3 $\pm{}^{150}_{10}$ % 25V	electrolytic
C607		---------------	
C608	1-121-398-00	10 $\pm{}^{100}_{10}$ % 25V	electrolytic
C609	1-121-398-00	10 $\pm{}^{100}_{10}$ % 25V	electrolytic
C621 (C721)	1-105-684-12	0.082 ± 10 % 50V	mylar
C622 (C722)	1-105-684-12	0.082 ± 10 % 50V	mylar

Ref. No.	*Part No.*	*Description*	
C623 (C723)	1-105-665-12	0.0022± 10 % 50V	mylar
C624 (C724)	1-121-392-00	3.3 $\pm{}^{150}_{10}$ % 25V	electrolytic
C625 (C725)	1-102-110-00	220 p ± 5 % 50V	ceramic
C626 (C726)	1-102-110-00	220 p ± 5 % 50V	ceramic
C627 (C727)	1-102-852-00	47 p ± 5 % 50V	ceramic
C628 (C728)	1-121-352-00	47 $\pm{}^{100}_{10}$ % 10V	electrolytic
C629	1-121-413-00	100 $\pm{}^{100}_{10}$ % 6.3V	electrolytic
C630 (C730)	1-102-110-00	220 p ± 5 % 50V	ceramic
C631 (C731)	1-121-392-00	3.3 $\pm{}^{150}_{10}$ % 25V	electrolytic
C641 (C741)	1-105-687-12	0.15 ± 10 % 50V	mylar
C642 (C742)	1-105-670-12	0.056 ± 10 % 50V	mylar
C643 (C743)	1-121-392-00	3.3 $\pm{}^{150}_{10}$ % 25V	electrolytic
C644 (C744)	1-105-665-12	0.0022± 10 % 50V	mylar
C645 (C745)	1-121-392-00	3.3 $\pm{}^{150}_{10}$ % 25V	electrolytic
C646 (C746)	1-105-661-12	0.001 ± 10 % 50V	mylar
C647 (C747)	1-102-110-00	220 p ± 5 % 50V	ceramic
C648 (C748)	1-102-110-00	220 p ± 5 % 50V	ceramic
C649	1-121-434-00	0.47 $\pm{}^{150}_{10}$ % 50V	electrolytic
C650 (C750)	1-102-110-00	220 p ± 5 % 50V	ceramic
C651(C751)	1-121-392-00	3.3 $\pm{}^{150}_{10}$ % 25V	electrolytic
C661 (C761)	1-121-392-00	3.3 $\pm{}^{150}_{10}$ % 25V	electrolytic
C662 (C762)	1-121-409-00	47 $\pm{}^{100}_{10}$ % 16V	electrolytic
C663 (C763)		---------------	
C664 (C764)	1-121-352-00	47 $\pm{}^{100}_{10}$ % 10V	electrolytic
C665 (C765)	1-121-352-00	47 $\pm{}^{100}_{10}$ % 10V	electrolytic
C666 (C766)	1-121-352-00	47 $\pm{}^{100}_{10}$ % 10V	electrolytic
C667 (C767)	1-121-415-00	100 $\pm{}^{50}_{10}$ % 16V	electrolytic
C668	1-121-404-00	33 $\pm{}^{100}_{10}$ % 25V	electrolytic
C669	1-121-352-00	47 $\pm{}^{100}_{10}$ % 10V	electrolytic
C821 (C921)	1-107-137-00	180 p ± 10 % 50V	silvered mica
C822 (C922)	1-105-677-12	0.022 ± 10 % 50V	mylar
CT301, 302	1-141-095-00	1.5 p ~ 16 p	trimmer

RESISTORS

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

R001	1-244-601-00	1	
R002	1-244-601-00	1	
R003	1-244-665-00	470	
R004	1-207-735-00	12 ± 10 % 2W	wire-wound
R005	1-244-665-00	470	
R006		---------------	
R007	1-244-649-00	100	
R008	1-202-589-00	4.7 k ± 10 % ½W	composition
R009	1-244-688-00	4.3 k	
R010	1-244-701-00	15 k	
R011	1-244-673-00	1 k	
R012	1-244-601-00	1	
R013	1-244-673-00	1 k	
R014	1-244-701-00	15 k	
R015	1-244-702-00	16 k	

Ref. No.	Part No.	Description		
R021	1-202-645-00	1 M	± 10 % ½W	composition
R101	1-244-709-00	33 k		
R102	1-244-713-00	47 k		
R103	1-244-657-00	220		
R104	1-242-697-00	10 k		
R105	1-242-721-00	100 k		
R106	1-242-633-00	22		
R107	1-244-665-00	470		
R108	1-242-697-00	10 k		
R109	1-242-691-00	5.6 k		
R110	1-242-653-00	150		
R111	1-244-633-00	22		
R112	1-242-661-00	330		
R113	1-242-661-00	330		
R114	1-242-671-00	820		
R115	1-244-633-00	22		
R116	1-242-677-00	1.5 k		
R117	1-242-721-00	100 k		
R118	1-242-721-00	100 k		
R119	1-244-729-00	220 k		
R120	1-242-689-00	4.7 k		
R121	1-244-643-00	56		
R122	1-242-677-00	1.5 k		
R123	1-242-677-00	1.5 k		
R124	1-242-677-00	1.5 k		
R125	1-242-691-00	5.6 k		
R126	1-242-697-00	10 k		
R127	1-244-657-00	220		
R201	1-244-667-00	560		
R202	1-244-665-00	470		
R203	1-244-673-00	1 k		
R204	1-244-667-00	560		
R205	1-244-665-00	470		
R206	1-244-673-00	1 k		
R207	1-244-625-00	10		
R208	1-244-673-00	1 k		
R209	1-244-666-00	510		
R210	1-244-684-00	3 k		
R211	1-244-625-00	10		
R212	1-244-743-00	820 k		
R213	1-244-719-00	82 k		
R214	1-244-701-00	15 k		
R215	1-244-697-00	10 k		
R216	1-202-559-00	270	± 10 % ½W	composition
R217	1-242-687-00	3.9 k		
R218	1-242-687-00	3.9 k		
R219	1-242-721-00	100 k		
R220	1-242-721-00	100 k		
R221	1-244-721-00	100 k		
R222	1-244-721-00	100 k		
R223	1-244-689-00	4.7 k		
R224	1-244-689-00	4.7 k		
R225	1-244-721-00	100 k		

Ref. No.	Part No.	Description
R226	1-244-721-00	100 k
R227	1-244-684-00	3 k
R228	1-244-684-00	3 k
R229	1-244-673-00	1 k
R230	1-244-673-00	1 k
R231	1-244-689-00	4.7 k
R232	1-244-689-00	4.7 k
R233	1-244-709-00	33 k
R234	1-244-709-00	33 k
R235	1-244-709-00	33 k
R236	1-244-709-00	33 k
R237		---------------
R238	1-244-693-00	6.8 k
R239	1-244-717-00	68 k
R240	1-244-724-00	130 k
R241	1-244-689-00	4.7 k
R242	1-244-721-00	100 k
R243	1-244-673-00	1 k
R244	1-244-739-00	560 k
R245	1-244-671-00	820
R246	1-244-666-00	510
R247	1-244-673-00	1 k
R248	1-244-743-00	820 k
R249	1-244-673-00	1 k
R250		---------------
R251	1-244-684-00	3 k
R252	1-244-684-00	3 k
R253	1-242-669-00	680
R254	1-244-665-00	470
R301	1-244-697-00	10 k
R302	1-244-690-00	5.1 k
R303		---------------
R304	1-244-649-00	100
R305	1-244-671-00	820
R306	1-244-716-00	62 k
R307	1-244-682-00	2.4 k
R308	1-244-697-00	10 k
R309	1-244-673-00	1 k
R310	1-244-687-00	3.9 k
R311	1-244-693-00	6.8 k
R312	1-244-656-00	200
R313	1-244-670-00	910
R314	1-244-670-00	910
R315	1-244-689-00	4.7 k
R401 (R501)	1-244-715-00	56 k
R402 (R502)	1-244-737-00	470 k
R403 (R503)	1-244-673-00	1 k
R404 (R504)	1-244-667-00	560
R405 (R505)		---------------
R406 (R506)	1-244-683-00	2.7 k
R407 (R507)	1-244-713-00	47 k
R408 (R508)		---------------
R409 (R509)	1-244-741-00	680 k

Ref. No.	Part No.	Description
R410 (R510)	1-244-685-00	3.3 k
R411 (R511)	1-244-721-00	100 k
R441 (R541)	1-244-721-00	100 k
R442 (R542)	1-244-721-00	100 k
R443 (R543)	1-244-673-00	1 k
R444 (R544)	1-244-713-00	47 k
R445 (R545)	1-244-660-00	300
R446	1-244-601-00	1 ± 20 %
R447 (R547)	1-244-713-00	47 k
R448 (R548)	1-244-673-00	1 k
R449 (R549)	1-244-709-00	33 k
R450 (R550)	1-244-685-00	3.3 k
R461 (R561)	1-244-730-00	240 k
R462 (R562)	1-244-706-00	24 k
R463 (R563)	1-244-673-00	1 k
R464 (R564)	1-244-697-00	10 k
R465 (R565)	1-244-673-00	1 k
R466 (R566)	1-244-709-00	33 k
R467 (R567)	1-244-697-00	10 k
R468 (R568)	1-244-697-00	10 k
R469 (R569)	1-244-689-00	4.7 k
R601 (R701)	1-244-731-00	270 k
R602 (R702)	1-244-682-00	2.4 k
R603 (R703)	1-244-673-00	1 k
R604 (R704)	1-244-701-00	15 k
R605 (R705)	1-244-673-00	1 k
R606 (R706)	1-244-601-00	1
R621 (R721)	1-244-692-00	6.2 k
R622 (R722)	1-244-677-00	1.5 k
R623 (R723)	1-244-693-00	6.8 k
R624 (R724)	1-244-673-00	1 k
R625 (R725)	1-244-692-00	6.2 k
R626 (R726)	1-244-721-00	100 k
R627	1-244-601-00	1
R628 (R728)	1-244-673-00	1 k
R629 (R729)	1-244-721-00	100 k
R630 (R730)	1-244-709-00	33 k
R631 (R731)	1-244-649-00	100
R641 (R741)	1-244-705-00	22 k
R642 (R742)	1-244-733-00	330 k
R643 (R743)	1-244-716-00	62 k
R644 (R744)	1-244-693-00	6.8 k
R645 (R745)	1-244-702-00	16 k
R646 (R746)	1-244-673-00	1 k
R647 (R747)	1-244-737-00	470 k
R648 (R748)	1-244-673-00	1 k
R649 (R749)	1-244-697-00	10 k
R650 (R750)	1-244-688-00	4.3 k
R651 (R751)	1-244-673-00	1 k
R652	1-244-601-00	1
R653 (R753)	1-244-685-00	3.3 k
R654 (R754)	1-244-709-00	33 k
R655 (R755)	1-244-673-00	1 k

Ref. No.	Part No.	Description
R661 (R761)	1-244-673-00	1 k
R662 (R762)	1-244-673-00	1 k
R663 (R763)	1-244-697-00	10 k
R664 (R764)	1-244-721-00	100 k
R665 (R765)	1-244-721-00	100 k
R666 (R766)	1-244-701-00	15 k
R667 (R767)	1-244-721-00	100 k
R668 (R768)	1-244-680-00	2 k
R669 (R769)	1-244-690-00	5.1 k
R670 (R770)	1-244-673-00	1 k
R671 (R771)	1-244-675-00	1.2 k
R672 (R772)	1-244-693-00	6.8 k
R673 (R773)	1-244-685-00	3.3 k
R674 (R774)	1-244-625-00	10
R675 (R775)	1-244-625-00	10
R676 (R776)	1-244-689-00	4.7 k
R677	1-244-673-00	1 k
R678	1-244-678-00	1.6 k
R679 (R779)	1-244-673-00	1 k
R680		--------------
R681		--------------
R682	1-244-721-00	100 k
R683	1-244-689-00	4.7 k
R684	1-244-713-00	47 k
R685	1-244-681-00	2.2 k
R686	1-244-702-00	16 k
R687	1-244-690-00	5.1 k
R689 (R789)	1-202-547-00	82 ± 10 % ½W composition
R690 (R790)		--------------
R691 (R791)	1-244-701-00	12 k
R801 (R901)	1-222-462-00	250 k (B)/250 k (B) variable (AUX-1 level)
R802 (R902)	1-222-462-00	250 k (B)/250 k (B) variable (TAPE-1 level)
R803 (R903)	1-244-715-00	56 k
R804 (R904)	1-244-737-00	470 k
R805 (R905)	1-244-719-00	82 k
R806 (R906)	1-222-700-00	50 k (E)/50 k (E) variable (MIC level control)
R807 (R907)		--------------
R808 (R908)		--------------
R809 (R909)	1-244-697-00	10 k
R810 (R910)	1-222-392-00	250 k (N)/250 k (N) variable (BALANCE control)
R811 (R911)	1-222-392-00	250 k (B)/250 k (B) variable (VOLUME control)
R821 (R921)	1-244-704-00	20 k
R822 (R922)	1-244-712-00	43 k
R841 (R941)	1-224-001-00	50 k (B)/50 k (B) variable (BASS control)
R842 (R942)	1-224-001-00	50 k (B)/50 k (B) variable (TREBLE control)
RT201	1-222-978-00	4.7 k ± 25 % adjustable (SEPARATION)

Ref. No.	Part No.	Description
RT202	1-222-701-00	10 k ± 25 % adjustable (MUTING)
RT203	1-222-701-00	10 k ± 25 % adjustable (METER level)
RT301	1-222-701-00	10 k ± 25 % adjustable (METER level)

SWITCHES

Ref. No.	Part No.	Description
S1	1-516-051-00	switch, rotary (FUNCTION 1)
S2	1-516-049-00	switch, lever (FUNCTION 2)
S3	1-222-700-00	switch, MIC level (built in R806, R906)
S4	1-514-910-00	switch, lever (MONITOR)
S5	1-516-050-00	switch, rotary (MODE)
S6	1-514-888-11	switch, lever (LOUDNESS)
S7	1-514-888-11	switch, lever (MUTING)
S8	1-514-888-11	switch, lever (HI - BLEND)
S9	1-514-888-11	switch, lever (LOW - FILTER)
S10	1-514-888-11	switch, lever (HI-FILTER)
S11	1-516-007-00	switch, lever (POWER)

FILTERS

Ref. No.	Part No.	Description
CF201, 202	1-231-197-11	filter, ceramic 10.70 MHz (red)
CF201, 202	1-231-197-12	filter, ceramic 10.66 MHz (black)
CF201, 202	1-231-197-13	filter, ceramic 10.74 MHz (white)
CF201, 202	1-231-197-14	filter, ceramic 10.62 MHz (green)
CF201, 202	1-231-197-15	filter, ceramic 10.78 MHz (yellow)
LPF	1-231-088-00	filter, low-pass

MISCELLANEOUS

Ref. No.	Part No.	Description
CP001	1-231-057-00	encapsulated component, 120 Ω + 0.033 μF
	1-506-332-00	terminal post, 6-p
	1-506-333-00	terminal post, 12-p
J101, 201	1-507-279-00	MIC jack
	1-507-300-00	connector, printed circuit board
J109 ~ 111, J209 ~ 211, J306, 307	1-507-163-00	phono jack, 4-p
J102 ~ 104, J202 ~ 204	1-507-185-00	phono jack, 6-p
J302	1-507-260-00	jack, phone (AUX-2)
J304	1-507-190-12	jack, phone (HEADPHONE)
J105 ~ 108, J205 ~ 208	1-507-268-00	phono jack, 8-p
J301	1-508-170-00	coaxial cable, fm input
J303	1-509-029-00	REC/PB connector
J305	1-507-176-00	phono jack, 1-p
CNJ001 ~ 004	1-509-403-00	AC outlet
G301 ~ 312, H201 ~ 230	1-509-487-00	receptacle, module
	1-517-021-00	socket, meter lamp
PL001, 002	1-518-017-03	lamp, meter 8 V/0.15 A
PL003, 004	1-518-116-00	lamp, pilot lamp 12 V/0.36 A
PL005	1-518-136-00	dial pointer lamp
PL006	1-518-121-32	lamp, a-m 4 V/0.04 A
PL007	1-518-121-32	lamp, fm 4 V/0.04 A
PL008	1-518-121-32	lamp, stereo 4 V/0.04 A
M101	1-520-123-00	meter, TUNER INPUT
M102	1-520-122-00	meter, TUNING
VS	1-526-165-21	voltage changeover block
F001, 002	1-532-260-00	fuse, 0.25 A
	1-533-090-00	socket, dial lamp
P001	1-534-526-00	cord, power
	1-536-179-00	terminal strip (C), 1L1
	1-536-182-00	terminal strip (C), 2L2
	1-536-188-00	terminal strip (B), 1L1
TM001	1-536-286-00	terminal strip, 4-p
	1-581-271-00	jumper board, 4-p phono jack
	1-581-284-00	jumper board, 8-p phono jack

FM STEREO/FM-AM INTEGRATED TUNER

STC-7000

US Model

SUPPLEMENT

No. 1
January, 1975

Subject: Partial Modification of A-m Front-End Circuit

File this supplement with the service manual.

Applicable Serial Number . . . 800,901 and later

Changed Parts List

Description	Former Part No.	New Part No.
A-m Front-End Circuit Board	8-982-651-80	X-48180-28-2
A-m Bar Antenna	1-401-439-52	1-401-558-41
C303	1-102-943-00 6p ±5% 50 V, ceramic	– deleted –
C304	1-102-976-00 180p ±5% 50 V, ceramic	– deleted –
C331	1-103-610-11 240p ±5% 50 V, styrol	– deleted –
L303	1-407-477-00 inductor, micro 470 μH	– deleted –

Note: The former and new a-m front-end circuit boards and a-m bar antennas are not interchangeable.

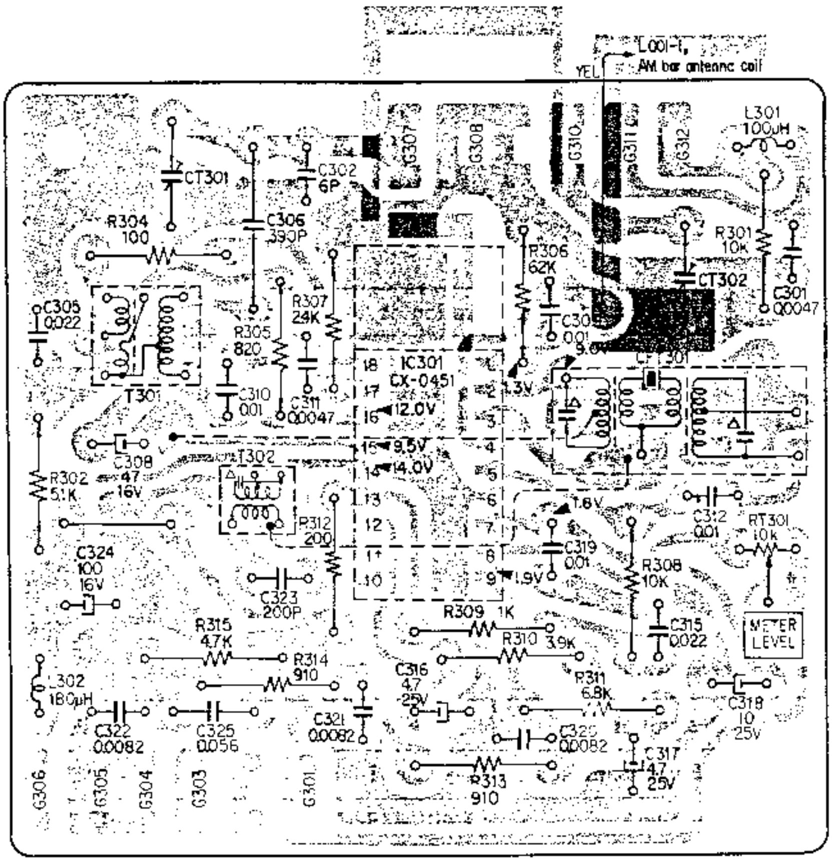
SONY®
SERVICE MANUAL

Applicable Serial Number . . . 800,901 and later.

1. MOUNTING DIAGRAM – A-m Front-End Board –

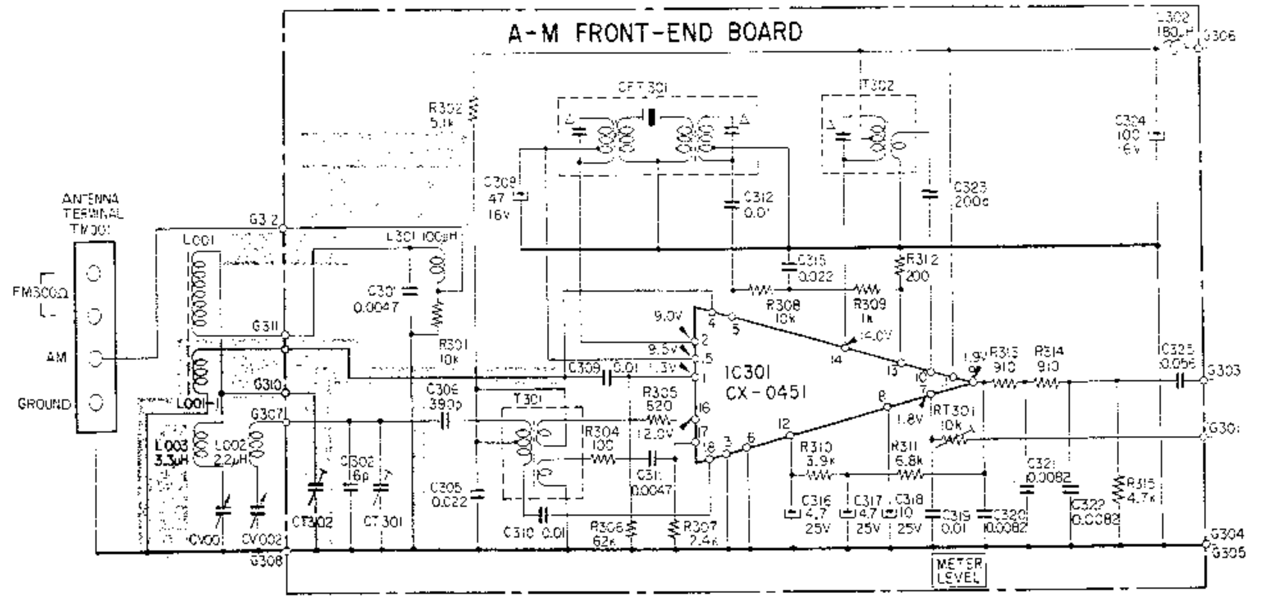
– *Conductor Side* –

Note: ▒ shows changed portion.



14

2. SCHEMATIC DIAGRAM – A-m Front-End Section –



Sony Corporation

© 1975

77H0505-3

Printed in Japan

9-958-038-81