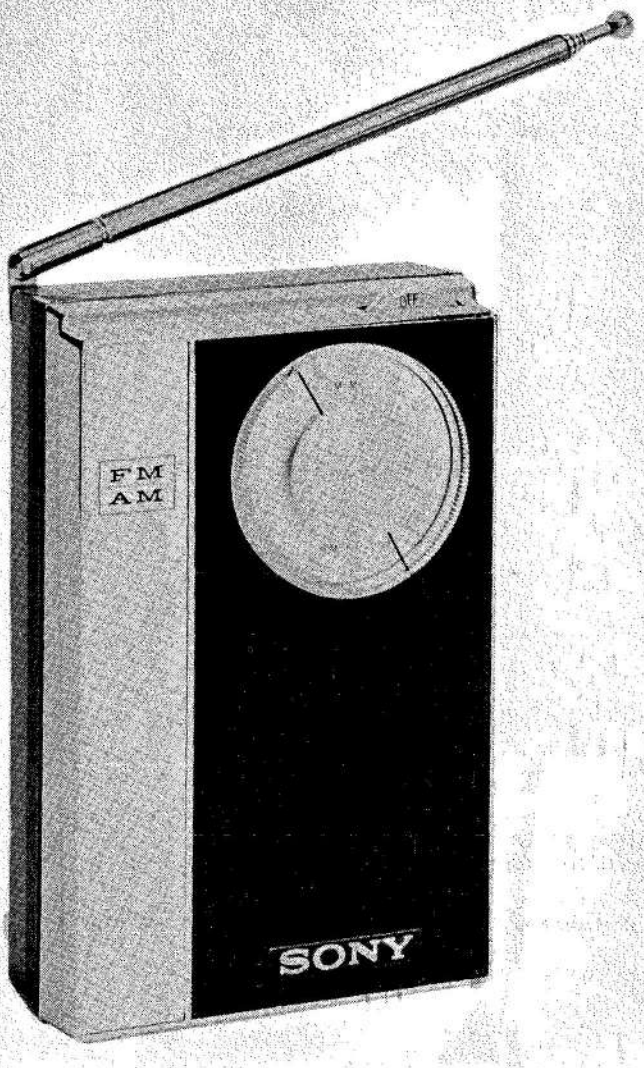
TFM-850W



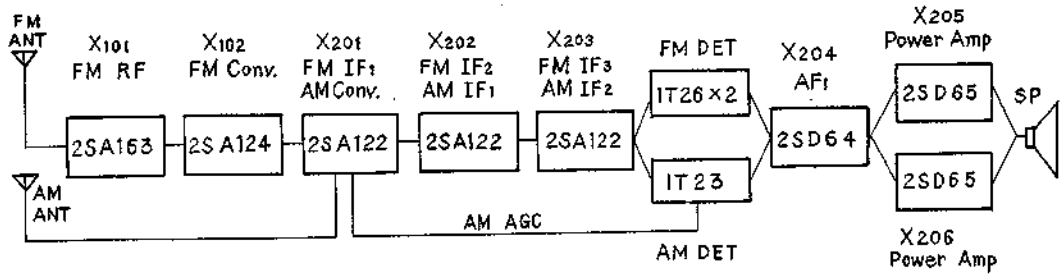
Specifications

Circuit :	8 Transistor Superheterodyne
Frequency Coverage :	FM 86.5 ~ 108 Mc (35.3 ~ 2.87 m) MW 530 ~ 1,605 Kc (566 ~ 187 m)
Intermediate Frequency :	FM 10.7 Mc MW 455 Kc
Antenna System :	FM Built-in Telescopic Antenna MW Built-in Ferrite Bar Antenna
Maximum Sensitivity : (at 10 mW output)	FM 5.6μV/m (15 dB) MW 125μV/m (42 dB)
Selectivity :	23 dB at 10 Kc off resonance, at 1,400 Kc
Output Power :	120 mW (undistorted)
Current Drain :	7 mA (MW), 10 mA (FM) at zero signal, 32 mA at 120 mW output
Speaker :	3″×2″ (7.5×5 cm) PM dynamic, 8Ω
Power Source :	9 V Battery (006P, Eveready 216 or Equivalent)
Dimensions :	4-7/16″×2-7/8″×1-3/8″ (113×73×35 mm)
Weight :	9.2 ozs. (0.26 Kg)

SONY®

SERVICING GUIDE

Block Diagram



Removal of Chassis

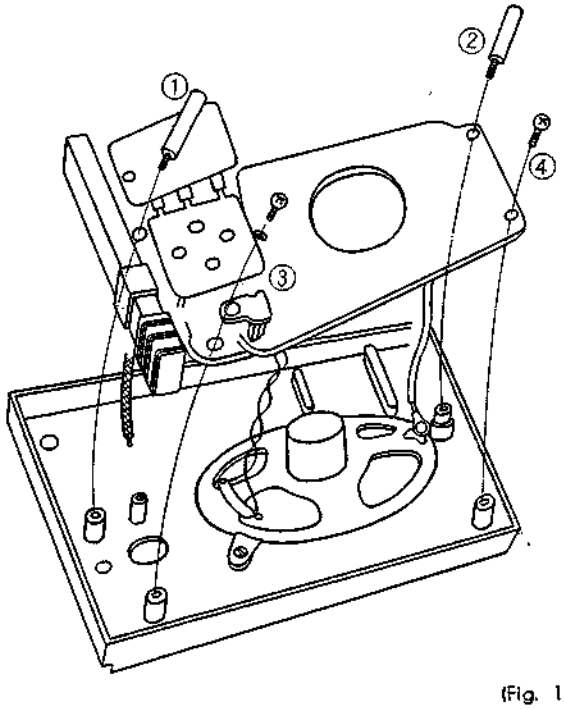
1. Remove two back cover holding screws. (⊕RK2×5)
2. Open the back cover gently.
3. Remove two hexagonal studs and two screws. (① to ④ in Fig. 1)
4. Remove the chassis from the cabinet taking care not to cut the lead wires.

Removal of Tuner Circuit Board

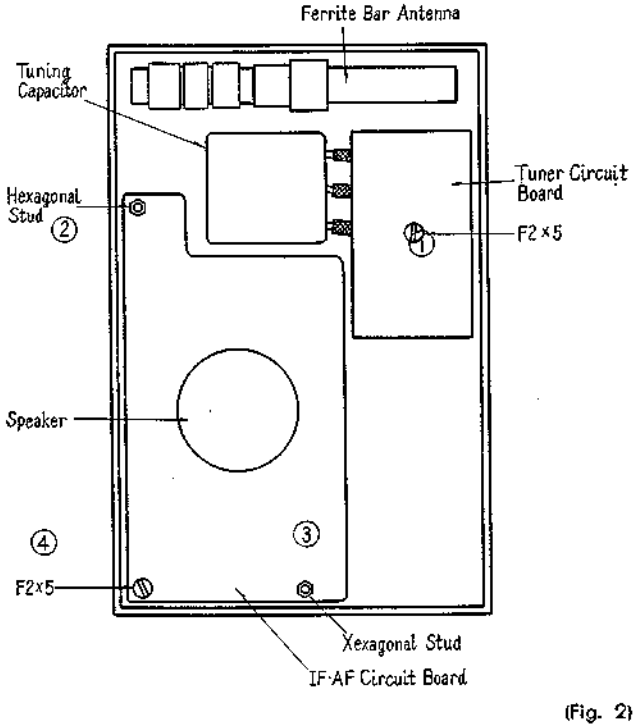
1. Remove one tuner circuit board holding screw. (① in Fig. 2)
2. Unsolder three braided wires soldered to the tuning capacitor at its terminals.
3. The tuner circuit board can now be removed.

Removal of IF • AF Circuit Board

1. Remove two hexagonal studs and one screw. (②, ③ and ④ in Fig. 2)
2. The IF•AF circuit board can now be removed.



(Fig. 1)



(Fig. 2)

Frequency Coverage and Tracking Adjustment

AM Band

Preparation for Adjustments

☆ Receiver to be adjusted

Power source voltage :	Keep 9 Volts during the adjustments.
Load for output :	Connect 8Ω resistor instead of Speaker.
Volume control setting :	Maximum
Band switch setting :	MW
☆ Signal source :	Use SSG (Standard Signal Generator) which can deliver RF signals modulated at 30% with 1,000 c/s.
☆ Output meter :	Connect across the load resistor 8Ω. (VTVM can be used also)
☆ Radiating antenna :	Use loop type

Frequency Coverage Adjustment

(1) Deliver 520 Kc signal from the SSG.

(2) Set the Tuning Capacitor at the maximum capacitance position by turning the Tuning Knob of the Receiver counter-clockwise.

(3) Adjust the core of the OSC Coil (L_{202}) to tune to the signal.

(4) Set the Tuning Capacitor at the minimum capacitance position by turning the Tuning Knob of the Receiver clockwise.

(5) Deliver 1,680 Kc signal from the SSG.

(6) Adjust the OSC Trimmer Capacitor (C_{204}) to tune to the signal.

(7) Repeat the above procedures (1～6) until the frequency range between 520 Kc and 1,680 Kc is fully covered.

Tracking Adjustment

(1) Deliver 620 Kc signal from the SSG.

(2) Tune to the signal by turning the Tuning Knob of the Receiver.

(3) Adjust the position of the ANT Coil (L_{201}) along the Ferrite Bar to obtain the maximum output.

(4) Deliver 1,400 Kc signal from the SSG.

(5) Tune to the signal by turning the Tuning Knob of the Receiver.

(6) Adjust the ANT Trimmer Capacitor (C_{202}) to obtain the maximum output.

(7) Repeat the above procedures (1～6) until the maximum output is obtained.

FM Band

Preparation for Adjustments

☆ Receiver to be adjusted

Power source voltage :	Keep 9 Volts during the adjustments.
Band switch setting :	FM
Load for output :	Connect 8Ω resistor instead of Speaker.
Volume control setting :	Maximum
☆ Output meter :	Connect across the load resistor 8Ω. (VTVM can be used also)
☆ Signal source :	Use SSG (Standard Signal Generator) which can deliver RF signals modulated at 30% with 1,000 c/s.
☆ Dummy antenna :	Unsolder the lead wire (White) at the Telescopic Antenna terminal. Connect the SSG to the telescopic antenna lead and ground of the receiver through the Dummy Antenna as shown in Fig. 4.

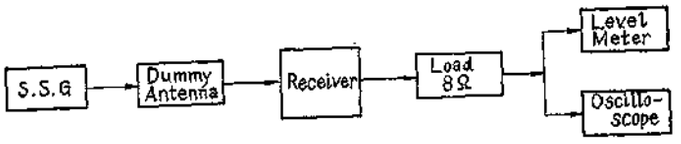
* Nominal input impedance of the receiver is 450Ω.

* R is then calculated as follows :

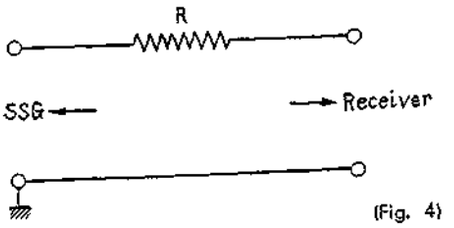
$R = 450 - Rs\ [\Omega]$

where Rs is output impedance of the SSG which is usually 50Ω or 75Ω.

Arrangement of Test Equipments



(Fig. 3)



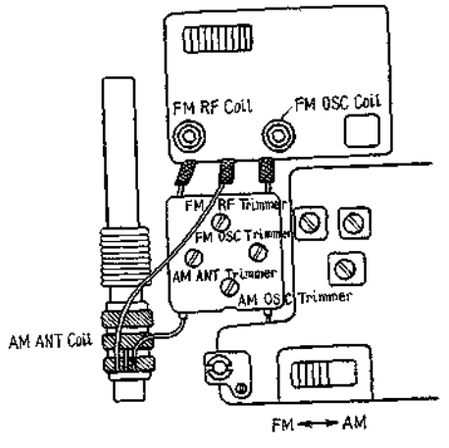
(Fig. 4)

1. Frequency Coverage Adjustment

1) Set the modulation of the SSG to " AM ".
2) Deliver 86.5 Mc signal from the SSG.
3) Set the Tuning Capacitor at the maximum capacitance position by turning the Tuning Knob of the Receiver counter-clockwise.
4) Adjust the core and gap of the FM OSC Coil (L_{104}) to tune to the signal.
5) Deliver 108 Mc signal from the SSG.
6) Set the Tuning Capacitor at the minimum capacitance position by turning the Tuning Knob of the Receiver clockwise.
7) Adjust the FM OSC Trimmer Capacitor (C_{104}) to tune to the signal.
8) Repeat the above procedures (2~7) until the frequency range between 86.5 Mc and 108 Mc is fully covered.

2. Tracking Adjustment

1) Set the modulation of the SSG to " AM ".
2) Deliver 86.5 Mc signal from the SSG.
3) Tune to the signal correctly by turning the Tuning Knob of the Receiver.
4) Change the modulation of the SSG to " FM ".
5) Adjust the FM RF Coil (L_{102}) for the maximum reading on the Output Meter.
6) Change the modulation of the SSG to " AM ".
7) Deliver 108 Mc signal from the SSG.
8) Tune to the signal correctly by turning the Tuning Knob of the Receiver.
9) Change the modulation of the SSG to " FM ".
10) Adjust the FM RF Trimmer Capacitor (C_{102}) to obtain the maximum output.
11) Repeat the above procedures (1~10) until the maximum output is obtained.



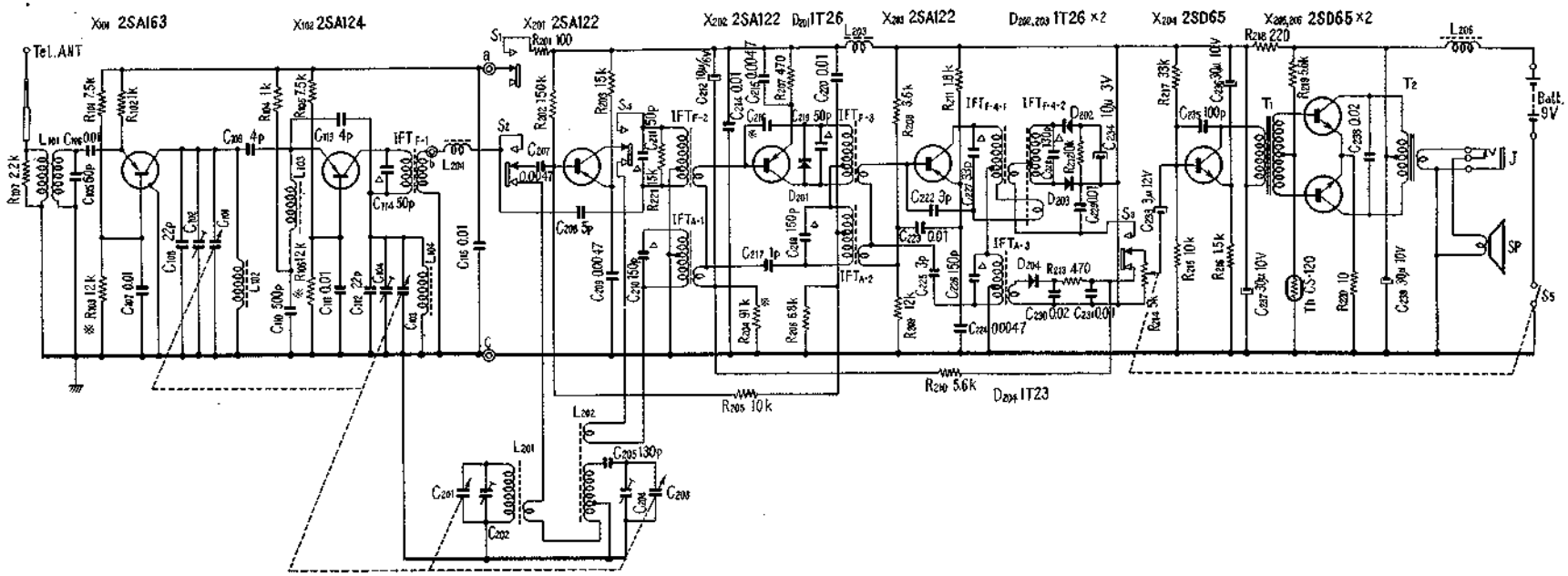
(Fig. 5)

Electronic Parts List

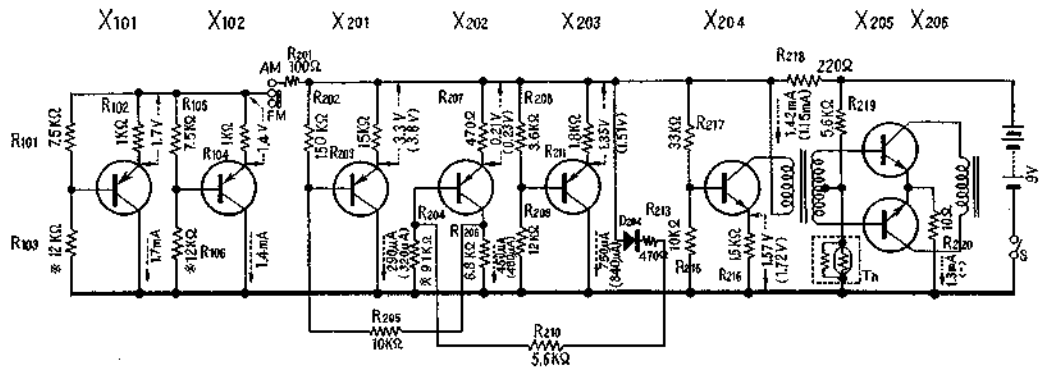
Part No.	Symbol	Description
1-501-059-11	Tel. ANT	Telescopic Antenna
1-401-165-12	L_{101}	FM, Antenna Coil
1-425-046-11	L_{102}	FM, RF Coil
1-409-025-11	L_{103}	FM, IF Trap Coil
1-405-244-11	L_{104}	FM, OSC Coil
1-401-164-16	L_{201}	AM, Ferrite Bar Antenna
1-405-054-12	L_{202}	AM, OSC Coil
1-407-029-11	L_{203}	Micro Inductor (47 μH)
-034-11	L_{204}	// (1 μH)
	L_{205}	—deleted—
1-407-029-11	L_{206}	Micro Inductor (47 μH)
1-403-231-11	IFT_{F-1}	FM, IF Transformer
-232-11	IFT_{F-2}	//
-233-11	IFT_{F-3}	//
-234-11	IFT_{F-4-1}	FM, Discriminator
-234-21	IFT_{F-4-2}	//
-026-02	IFT_{A-1}	AM, IF Transformer
-026-02	IFT_{A-2}	//
-027-02	IFT_{A-3}	//
1-423-062-11	T_1	Driver Transformer
1-427-090-11	T_2	Output Transformer
1-514-105-11	S_{1-4}	Band Setting Switch
	S_5	Power Switch (built in R_{214})
1-502-090-12	SP	Speaker
1-507-038-02	J	Earphone Jack
1-528-006-00	Batt.	Battery (9 V)
	X_{101}	Transistor 2SA16
	X_{102}	// 2SA124
	X_{201}	// 2SA122
	X_{202}	// 2SA122
	X_{203}	// 2SA122
	X_{204}	// 2SD65
	X_{205}	// 2SD65
	X_{206}	// 2SD65
	D_{201}	Diode 1T26
	D_{202}	// 1T26
	D_{203}	// 1T26
	D_{204}	// 1T23
	Th	Thermistor CS-120
		Resistor
1-203-426-00	R_{101}	7.5 KΩ 1/16W Carbon
-421-00	R_{102}	1 KΩ // //
-439-00	*R_{103}	12 KΩ // //
-421-00	R_{104}	1 KΩ // //
-426-00	R_{105}	7.5 KΩ // //
-439-00	*R_{106}	12 KΩ // //
-423-00	R_{107}	2.2 KΩ // //
-594-00	R_{201}	100 Ω // //
-617-00	R_{202}	150 KΩ // //
-629-00	R_{203}	15 KΩ // //
-618-00	*R_{204}	91 KΩ // //
-427-00	R_{205}	10 KΩ // //
-438-00	R_{206}	6.8 KΩ // //
-420-00	R_{207}	470 Ω // //
-997-00	R_{208}	3.6 KΩ // //
-439-00	R_{209}	12 KΩ // //
-425-00	R_{210}	5.6 KΩ // //
-339-00	R_{211}	1.8 KΩ // //
-427-00	R_{212}	10 KΩ // //
1-203-420-00	R_{213}	470 Ω 1/16W Carbon
1-221-381-11	R_{214}	5 KΩ, Volume Control
1-203-427-00	R_{215}	10 KΩ 1/16W Carbon
-422-00	R_{216}	1.5 KΩ // //
-634-00	R_{217}	33 KΩ // //
-419-00	R_{218}	220 Ω // //
-425-00	R_{219}	5.6 KΩ // //
-418-00	R_{220}	10 Ω // //
-629-00	R_{221}	15 KΩ // //
		Capacitor
1-151-066-11	$C_{101, 103}$	Tuning Capacitor, 4 gang
	$C_{102, 104}$	Trimmer Capacitor, 4 unit
1-101-097-11	C_{105}	60 PF Ceramic
-072-14	C_{106}	0.01 μF //
-072-14	C_{107}	0.01 μF //
-530-11	C_{108}	22 PF //
-048-11	C_{109}	4 PF //
1-103-058-12	C_{110}	500 PF Styrol
1-101-072-14	C_{111}	0.01 μF Ceramic
-530-11	C_{112}	22 PF //
-048-11	C_{113}	4 PF //
	C_{114}	50 PF (built in IFT_{F-1})
-072-14	C_{115}	0.01 μF Ceramic
1-151-066-11	$C_{201, 203}$	Tuning Capacitor, 4 gang
	$C_{202, 204}$	Trimmer Capacitor, 4 unit
1-103-024-11	C_{205}	130 PF Styrol
	C_{206}	—deleted—
1-105-829-11	C_{207}	0.0047 μF Mylar
1-101-012-11	C_{208}	5 PF Ceramic
1-105-829-11	C_{209}	0.0047 μF Mylar
	C_{210}	150 PF (built in IFT_{A-1})
	C_{211}	50 PF (built in IFT_{F-2})
1-121-104-05	C_{212}	10 μF 6 V Electrolytic
	C_{213}	—deleted—
1-101-072-14	C_{214}	0.01 μF Ceramic
1-105-829-11	C_{215}	0.0047 μF Mylar
	C_{216}	—deleted—
1-101-009-11	C_{217}	1 PF Ceramic
	C_{218}	150 PF (built in IFT_{A-2})
	C_{219}	50 PF (built in IFT_{F-3})
1-101-072-14	C_{220}	0.01 μF Ceramic
	C_{221}	—deleted—
-011-11	C_{222}	3 PF Ceramic
-072-14	C_{223}	0.01 μF //
1-105-829-11	C_{224}	0.0047 μF Mylar
1-101-011-11	C_{225}	3 PF Ceramic
	C_{226}	150 PF (built in IFT_{A-3})
	C_{227}	33 PF (built in IFT_{F-4})
	C_{228}	130 PF (built in IFT_{F-4})
1-101-072-14	C_{229}	0.01 μF Ceramic
-073-14	C_{230}	0.02 μF //
-072-14	C_{231}	0.01 μF //
	C_{232}	—deleted—
1-121-178-05	C_{233}	3 μF 12 V Electrolytic
-112-05	C_{234}	10 μF 3 V //
1-103-217-12	C_{235}	100 PF Styrol
1-121-110-05	C_{236}	30 μF 10 V Electrolytic
-110-05	C_{237}	30 μF 10 V //
1-101-073-14	C_{238}	0.02 μF Ceramic
1-121-110-00	C_{239}	30 μF 10 V Electrolytic

* To be adjusted

Schematic Diagram



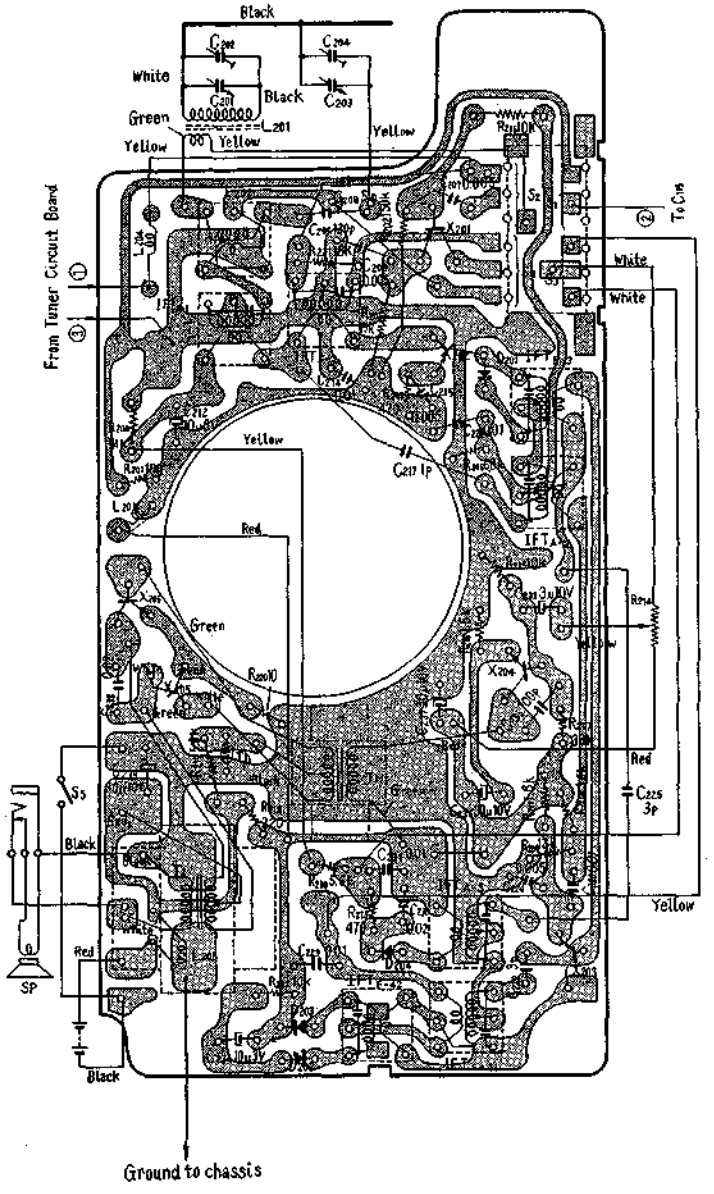
Voltage and Current Distribution Chart at Zero Signal



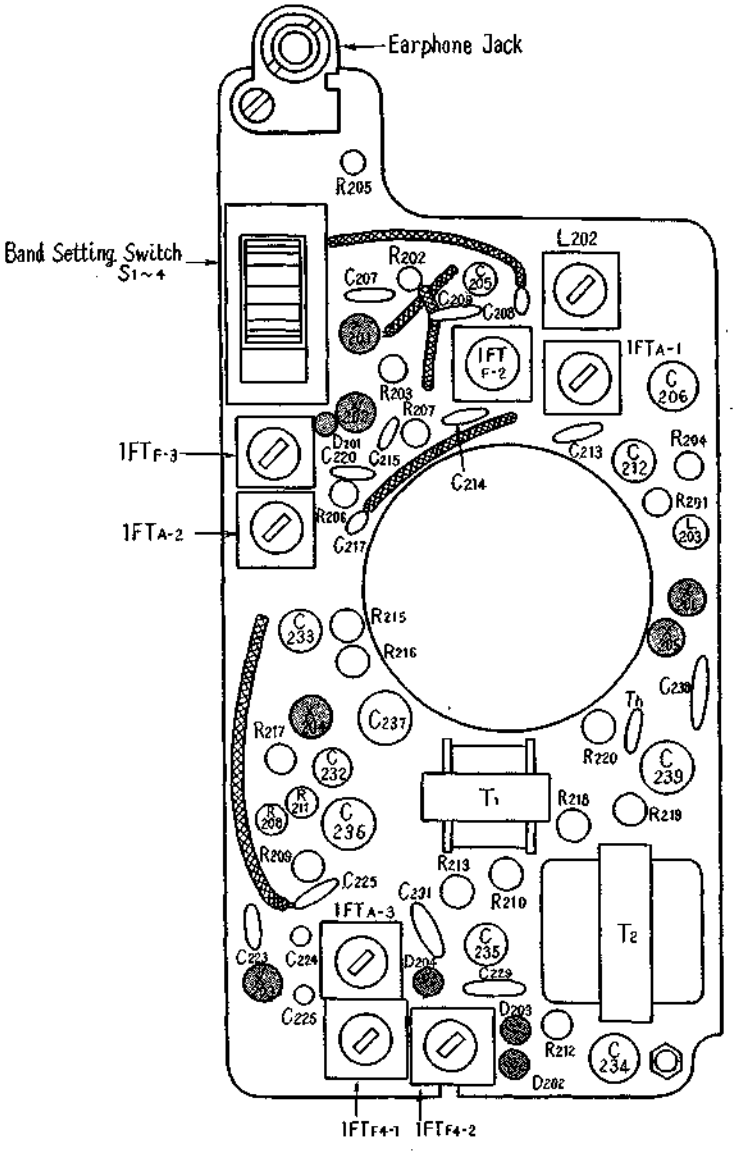
Mounting Diagram

IF·AF Section

—Printed Side—

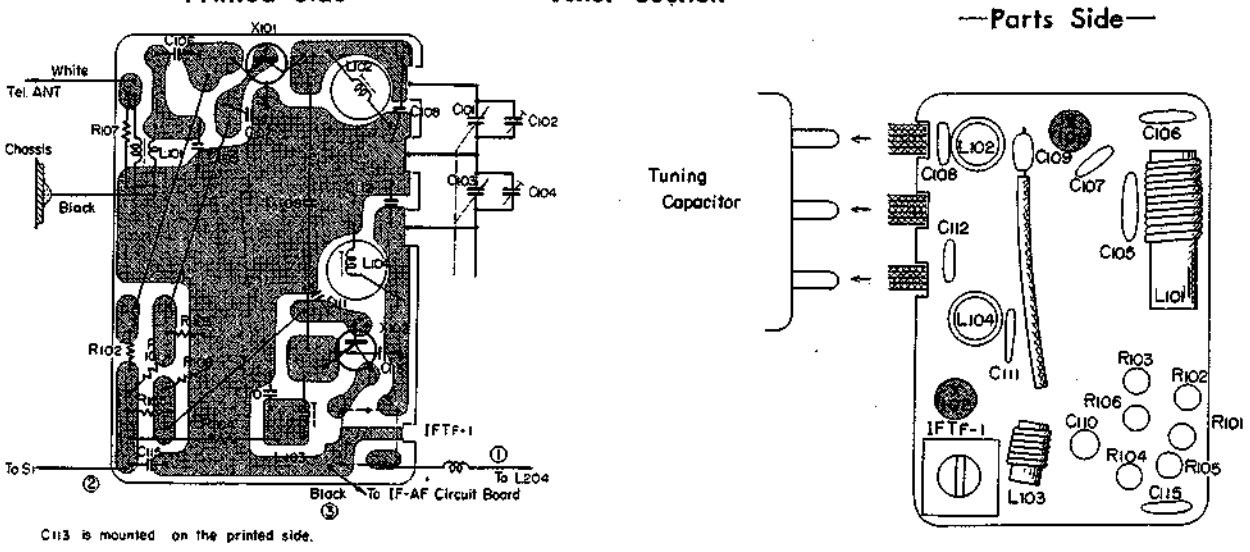


—Parts Side—



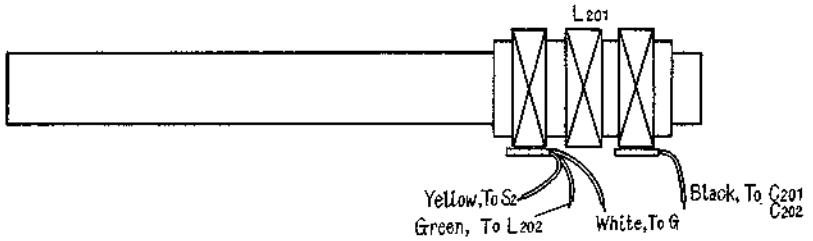
Mounting Diagram

—Printed Side— **Tuner Section** **—Parts Side—**

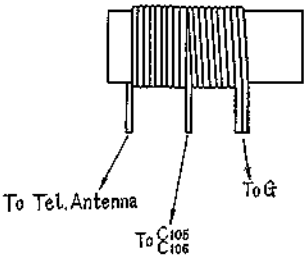


C113 is mounted on the printed side.

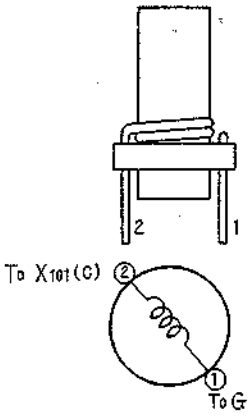
L201 Ferrite Bar Antenna



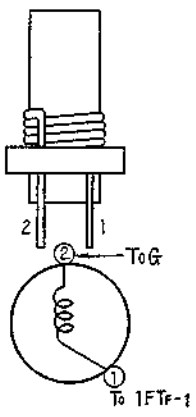
L101 FM ANT Coil



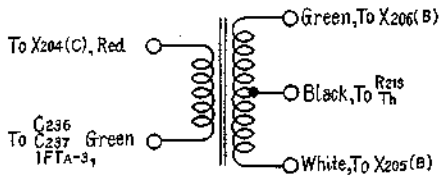
L102 FM RF Coil



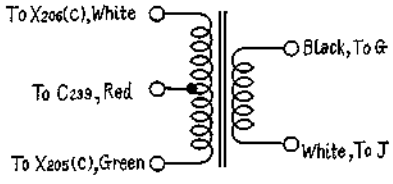
L104 FM OSC Coil



T1 Driver Transformer



T2 Output Transformer



T_1 Driver Transformer

	Impedance	DC Resistance
Primary	3.9 kΩ	330 Ω
Secondary	1.8 kΩ	180 Ω

T_2 Output Transformer

	Impedance	DC Resistance
Primary	820 Ω	105 Ω
Secondary	8 Ω	1.1 Ω

SONY CORPORATION