



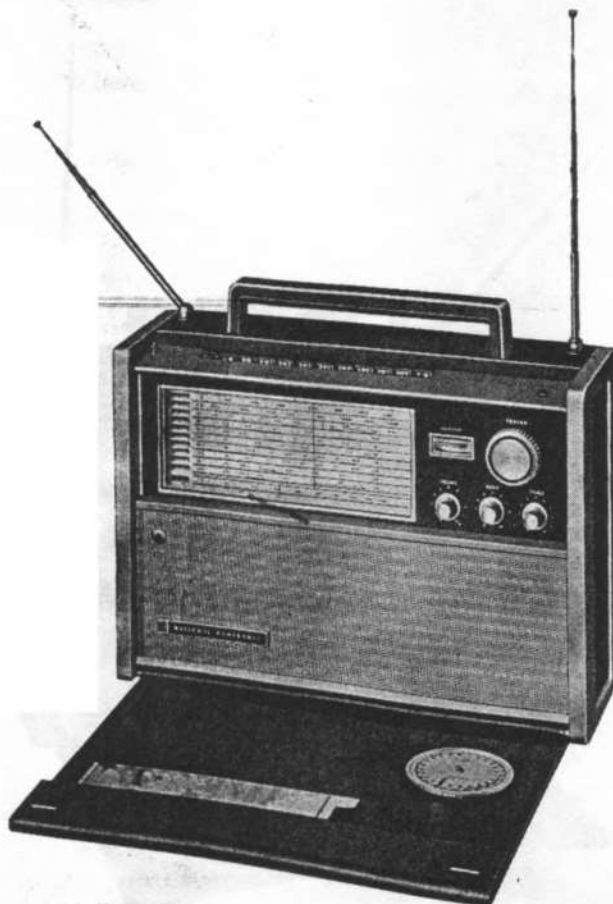
PANASONIC

SERVICE MANUAL

MODEL RF-5000A

THE WORLD'S MOST LUXURIOUS PORTABLE RADIO

WITH 11 BANDS AND 30 SOLID STATE DEVICES



MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.

Kadoma, Osaka, Japan

MATSUSHITA ELECTRIC CORPORATION OF AMERICA

Pan American Bldg., 200 Park Ave., New York, New York 10017

SPECIFICATIONS

Frequency Range :	FM 76 ~ 108 Mc/s
	LW 150 ~ 400kc/s
	MW 525~1605kc/s
	SW ₁ 1.6 ~ 4.5 Mc/s
	SW ₂ 4.5 ~ 6.5 Mc/s
	SW ₃ 6.5 ~ 9.0 Mc/s
	SW ₄ 9.0 ~ 12 Mc/s
	SW ₅ 12 ~ 16 Mc/s
	SW ₆ 16 ~ 20 Mc/s
	SW ₇ 20 ~ 25 Mc/s
	SW ₈ 25 ~ 30 Mc/s
Intermediate Frequency :	FM 10.7Mc/s
	AM 455kc/s
Transistors :	2SC429 FM RF Amplifier
	2SC469 FM Oscillator
	2SC185 FM Mixer
	2SC469 FM 1st IF Amplifier
	2SC469 FM 2nd IF Amplifier
	2SC469 FM 3rd IF Amplifier
	2SC469 FM 4th IF Amplifier
	2SC185 AM RF Amplifier
	2SC185 AM Oscillator
	2SC184 AM Mixer
	2SC183 AM 1st IF Amplifier
	2SC183 AM 2nd IF Amplifier
	2SB173 AF Pre-Amplifier
	2SB345 1st AF Amplifier
	2SB345 2nd AF Amplifier
	2SB345 3rd AF Amplifier
	2SB324 } Output (push-pull)
	2SB324 }
Diodes :	SC-15 FM AFC
	OA79 } FM Ratio Detector
	OA79 }
	OA90 FM D.AGC
	OA90 AM Detector & AGC
	1S1211 } AM D.AGC
	1S1211 }
	1S1211 } FM Operation Compensator
	1S1211 }
	1S1211 } AM Operation Compensator
	1S1211 }
	OA90 Detector for Tuning Indicator (FM)
Sensitivity :	FM 0.5 μ V for 50mW Output
	LW 70 μ V/m for 50mW Output
	MW 50 μ V/m for 50mW Output
	SW ₁ 20 μ V/m for 50mW Output
	SW ₂ 10 μ V for 50mW Output
	SW ₃ 10 μ V for 50mW Output
	SW ₄ 10 μ V for 50mW Output
	SW ₅ 10 μ V for 50mW Output
	SW ₆ 10 μ V for 50mW Output
	SW ₇ 10 μ V for 50mW Output
	SW ₈ 10 μ V for 50mW Output
Power Output :	1.2W Undistorted
	2 W Maximum
Batteries :	9V (six "D" size flashlight batteries).....Radio
	1.5V (One "D" size flashlight batteries).....Dial Light
Speakers :	7" x 5" Oval PM Dynamic Speaker &
	5" PM Dynamic Speaker
Cabinet Dimensions :	16 $\frac{3}{8}$ " (Wide) x 11 $\frac{1}{2}$ " (High) x 5 $\frac{3}{4}$ " (Deep)mm
Weight :	22 lb. 14 oz. with batteries & AC Adaptor

DISASSEMBLY INSTRUCTIONS

To Remove Chassis

1. Remove cabinet front cover.
2. Remove four (4) control knobs from cabinet.
3. Raise the frame antenna upwards.
4. Set cabinet back cover mounting screw to "OPEN", and open the battery compartment cover.
5. Remove two (2) red cabinet back cover mounting screws (Nos. 1~2) in Fig. 1.
6. Remove two (2) red adaptor mounting screws (Nos. 5 & 11) in Fig. 2.
7. Pull out plugs.
8. Remove seven (7) red chassis mounting screws (Nos. 1~4, & 6~8) in Fig. 2.
9. Remove two (2) red battery case mounting screws (Nos. 9~10) in Fig. 2.
10. Remove chassis cover from cabinet.
11. Pull out the telescoping whip antenna upwards.
12. Remove chassis from cabinet.
13. To reassemble, reverse the above procedure.



Fig. 1

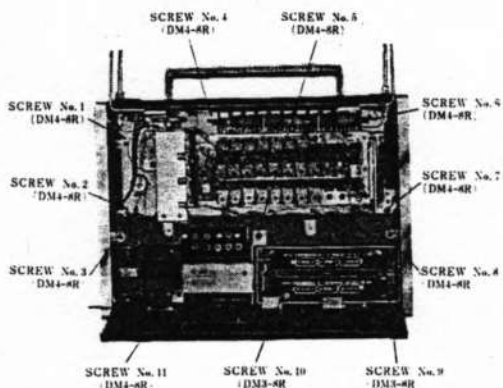


Fig. 2

To Remove Band Selector Switch

1. Remove screw ① (Fig. 3).
2. Remove stopper bracket ② (Fig. 3).
3. Pull buttons in the direction of arrow mark ③ (Fig. 3).
4. Remove the moving piece ④ (Fig. 4).
5. To reassemble, set moving contacts (shown in black) to upper terminal with pincette as illustrated in Fig. 5, and reverse the above procedure.

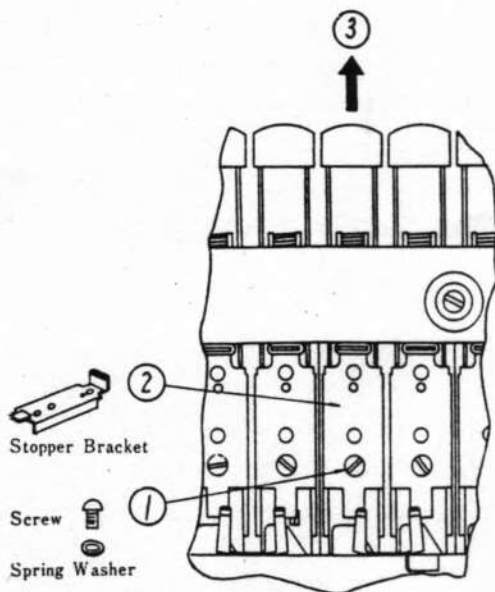


Fig. 3

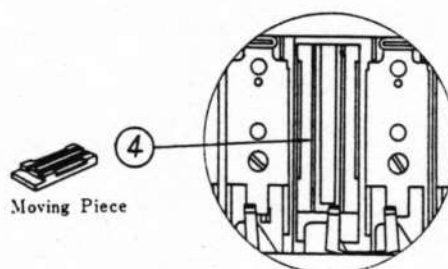


Fig. 4

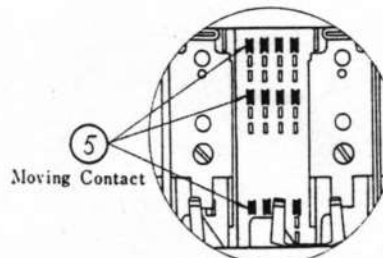
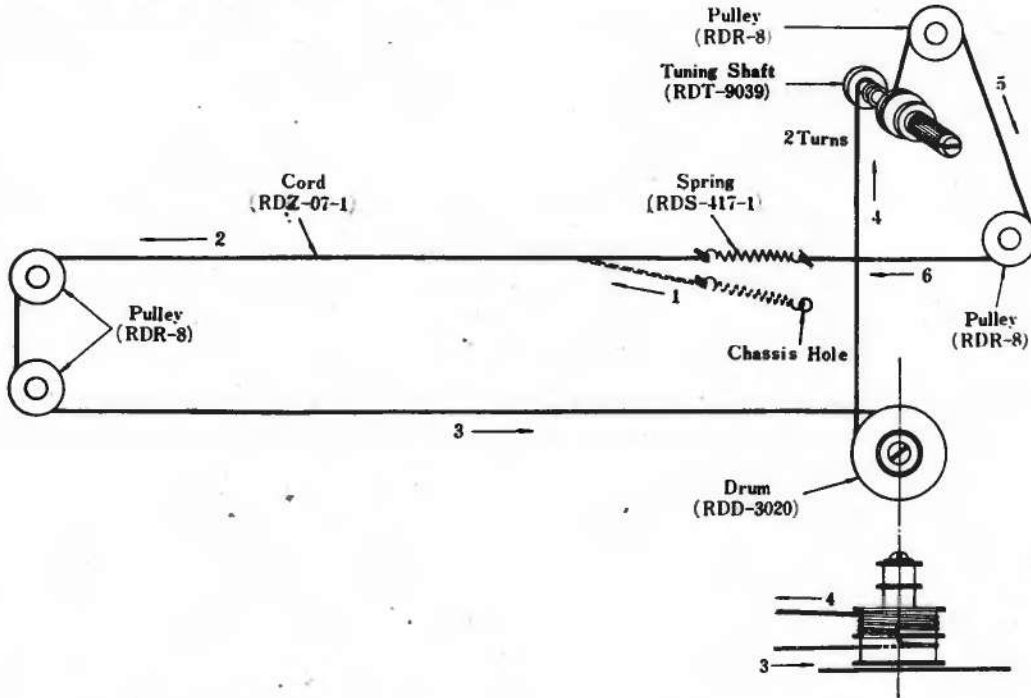


Fig. 5

Notes:

1. Dial cord length is $51\frac{3}{8}$ ".
2. Tuning gang is positioned at maximum capacity.
3. Fasten dial cord to one end of the tension spring and attach the other end of tension spring to the chassis hole. Start stringing in accordance with the numerical order (1~6) and fasten the dial cord end to the tension spring after removing the tension spring from the chassis hole.
4. Extend the tension spring to the length of approximately 1".
5. Cement dial cord ends with lacquer.



Notes:

1. Dial cord length is $27\frac{3}{8}$ ".
2. Tuning gang is positioned at maximum capacity.
3. Fasten cord to one end of tension spring ① and attach the other end of tension spring to hole ① of the drum. Start stringing in accordance with the numerical order (1~5) and fasten the end of cord to tension spring ②. Attach the other end of tension spring ② to hole ③ of the drum and replace tension spring ① from hole ① to ② of the drum.
4. Extend the tension spring to the length of approximately $\frac{1}{8}$ ".
5. Cement dial cord ends with lacquer.

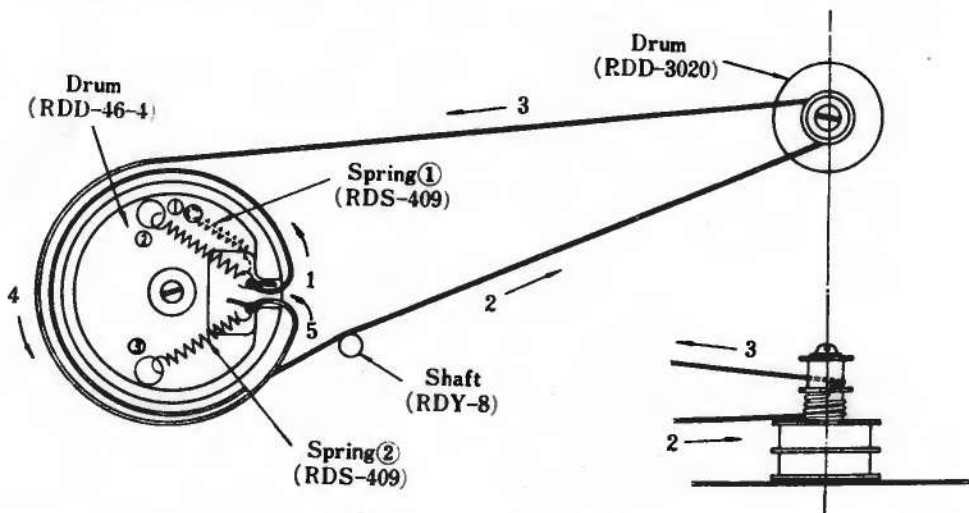


Fig. 6 Dial Cord Stringing Guide - FM Section.

ALIGNMENT INSTRUCTIONS

AM IF ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.
 Set Volume control to maximum.
 Set bass control to center.
 Set treble control to center.
 Set band selector to MW.
 Set power source voltage to 9 volt DC.

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1 Fashion loop of several turns of wire and radiate signal into loop of receiver.	455kc/s (400~ Mod.)	Point of non-interference. (on/about 600kc/s)	Output meter across voice coil.	T ₈ (3rd IFT) T ₇ (2nd IFT) T ₁₀ (1st IFT)	Adjust for maximum output.

FM IF & DETECTOR ALIGNMENT WITH OSCILLOSCOPE

OSCILLOSCOPE

Set sweep selector of oscilloscope to "External Sweep". Apply 60~ sweep signal from sweep generator to horizontal input terminals of oscilloscope.

EQUIPMENT REQUIRED

Signal generator that provides 10.7Mc/s marker.
 Sweep generator that provides 10.7Mc/s center frequency and 400kc/s sweep width.
 Set band selector switch to "FM".
 Set volume control to minimum.
 Set bass control to center.
 Set treble control to center.
 Set AFC switch to OFF.
 Set power source voltage to 9 volt DC.

Note: Unsolder lead between test point TP₂ and Point before alignment and resolder after alignment.

SWEEP GENERATOR COUPLING	SIGNAL GENERATOR COUPLING	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1 High side thru. .001mfd to point TP ₁ . Common to chassis.	High side thru. .001mfd to point TP ₁ . Common to chassis.	Point of non-interference (on/about 100Mc/s).	Connect vert. Amp. of scope to point TP ₂ . Common to chassis.	T ₁ (1st IFT) T ₂ (2nd IFT) T ₃ (3rd IFT) T ₄ (4th IFT)	Adjust for maximum amplitude and symmetrical curve. (Refer to Fig. 7)
2 "	"	"	Connect vert. amp. of scope to point TP ₃ . Common to chassis.	T ₅ (5th IFT) (Primary) T ₆ (5th IFT) (Secondary)	Adjust T ₅ for maximum amplitude & proper linearity between ±100kc/s markers. Adjust T ₆ so that 10.7Mc/s marker appears at the center. (Refer to Fig. 8)

Note: When aligning the Ratio Detector circuit, the wave form may appear as in Fig. 7 & 8 or upside-down.

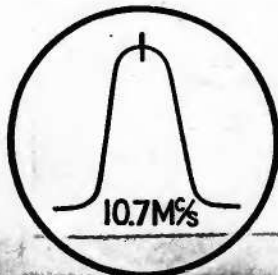


Fig. 7

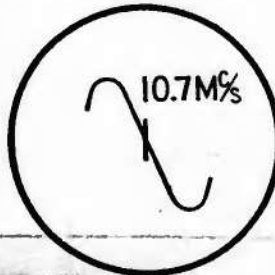
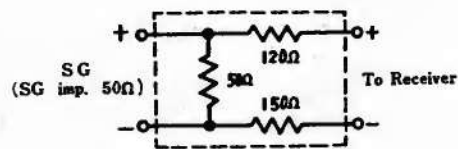


Fig. 8



FM Dummy Antenna

Fig. 9

FM RF ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.
 Set volume control to maximum.
 Set band selector switch to FM.
 Set bass control to Center.
 Set treble control to Center.
 Set AFC switch to OFF.
 Set power source voltage to 9 volt DC.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
3	Connect to twin lead wire through FM Dummy antenna. (Refer to Fig. 9)	76Mc/s (400~ Mod.)	76Mc/s	Output meter across voice coll.	L ₃ (FM OSC Coll) L ₂ (FM ANT Coll)	Adjust for maximum output.
4	"	106Mc/s (400~ Mod.)	106Mc/s	"	C ₁₃ (FM OSC Trimmer) C ₁₁ (FM ANT Trimmer)	Adjust for maximum output. Repeat steps (3) and (4).

Note: As three output responses will be present, proper tuning is the center frequency.

AM RF ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.
 Set volume control to maximum.
 Set bass control to center.
 Set treble control to center.
 Set power source voltage to 9 volt DC.

Band Switch Position	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1 LW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	150kc/s (400~ Mod.)	150kc/s	Output meter across voice coll.	L ₃₁ (OSC Coll) L ₁₃ (ANT Coll)	Adjust for maximum output by sliding coll (L ₁₃) along ferrite core.
		400kc/s (400~ Mod.)	400kc/s	"	C ₁₇₄ (OSC Trimmer) C ₁₁₄ (ANT Trimmer)	Adjust for maximum output. Repeat steps (1) and (2).
3 MW	"	550kc/s (400~ Mod.)	550kc/s	"	L ₃₂ (OSC Coll) L ₁₄ (ANT Coll)	Adjust for maximum output by sliding coll (L ₁₄) along ferrite core.
		1500kc/s (400~ Mod.)	1500kc/s	"	C ₁₇₅ (OSC Trimmer) C ₁₁₅ (ANT Trimmer)	Adjust for maximum output. Repeat steps (3) and (4).
5 SW ₁	"	1.6Mc/s (400~ Mod.)	1.6Mc/s	"	L ₃₃ (OSC Coll) L ₁₅ (ANT Coll) L ₂₃ (DET Coll)	Adjust for maximum output by sliding coll (L ₁₅) along ferrite core.
		4.5Mc/s (400~ Mod.)	4.5Mc/s	"	C ₁₇₆ (OSC Trimmer) C ₁₁₆ (ANT Trimmer) C ₁₃₇ (DET Trimmer)	Adjust for maximum output. Repeat steps (5) and (6).
7 SW ₂	Connect to AM EXT Antenna & Ground terminals thru. SW dummy antenna.	4.5Mc/s (400~ Mod.)	4.5Mc/s	"	L ₃₄ (OSC Coll) L ₁₆ (ANT Coll) L ₂₄ (DET Coll)	Adjust for maximum output.
		6.5Mc/s (400~ Mod.)	6.5Mc/s	"	C ₁₇₇ (OSC Trimmer) C ₁₁₇ (ANT Trimmer) C ₁₃₈ (DET Trimmer)	Adjust for maximum output. Repeat steps (7) and (8).

Band Switch Position	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
9	Connect to AM EXT Antenna & Ground terminals thru. SW dummy antenna.	6.5Mc/s (400~ Mod.)	6.5Mc/s	Output meter across voice coil.	L35(OSC Coll) L17(ANT Coll) L25(DET Coll)	Adjust for maximum output.
10		"	9Mc/s (400~ Mod.)	"	C178(OSC Trimmer) C118(ANT Trimmer) C139(DET Trimmer)	Adjust for maximum output. Repeat steps (9) and (10).
11	"	9Mc/s (400~ Mod.)	9Mc/s	"	L36(OSC Coll) L18(ANT Coll) L26(DET Coll)	Adjust for maximum output.
12		"	12Mc/s (400~ Mod.)	12Mc/s	"	C179(OSC Trimmer) C119(ANT Trimmer) C140(DET Trimmer)
13	"	12Mc/s (400~ Mod.)	12Mc/s	"	L37(OSC Coll) L19(ANT Coll) L27(DET Coll)	Adjust for maximum output.
14		"	16Mc/s (400~ Mod.)	16Mc/s	"	C180(OSC Trimmer) C120(ANT Trimmer) C141(DET Trimmer)
15	"	16Mc/s (400~ Mod.)	16Mc/s	"	L38(OSC Coll) L20(ANT Coll) L28(DET Coll)	Adjust for maximum output.
16		"	20Mc/s (400~ Mod.)	20Mc/s	"	C181(OSC Trimmer) C121(ANT Trimmer) C142(DET Trimmer)
17	"	20Mc/s (400~ Mod.)	20Mc/s	"	L39(OSC Coll) L21(ANT Coll) L29(DET Coll)	Adjust for maximum output.
18		"	25Mc/s (400~ Mod.)	25Mc/s	"	C182(OSC Trimmer) C122(ANT Trimmer) C143(DET Trimmer)
19	"	25Mc/s (400~ Mod.)	25Mc/s	"	L40(OSC Coll) L22(ANT Coll) L30(DET Coll)	Adjust for maximum output.
20		"	30Mc/s (400~ Mod.)	30Mc/s	"	C183(OSC Trimmer) C123(ANT Trimmer) C144(DET Trimmer)

- Notes:**
1. Cement antenna bobbin with wax after completing alignment.
 2. Two signals may be received while adjusting oscillator coils. To adjust oscillator coil to the correct signal, set the core by turning downwards for SW₁~SW₄. Conversely, set the core by turning upwards for SW₅~SW₈.

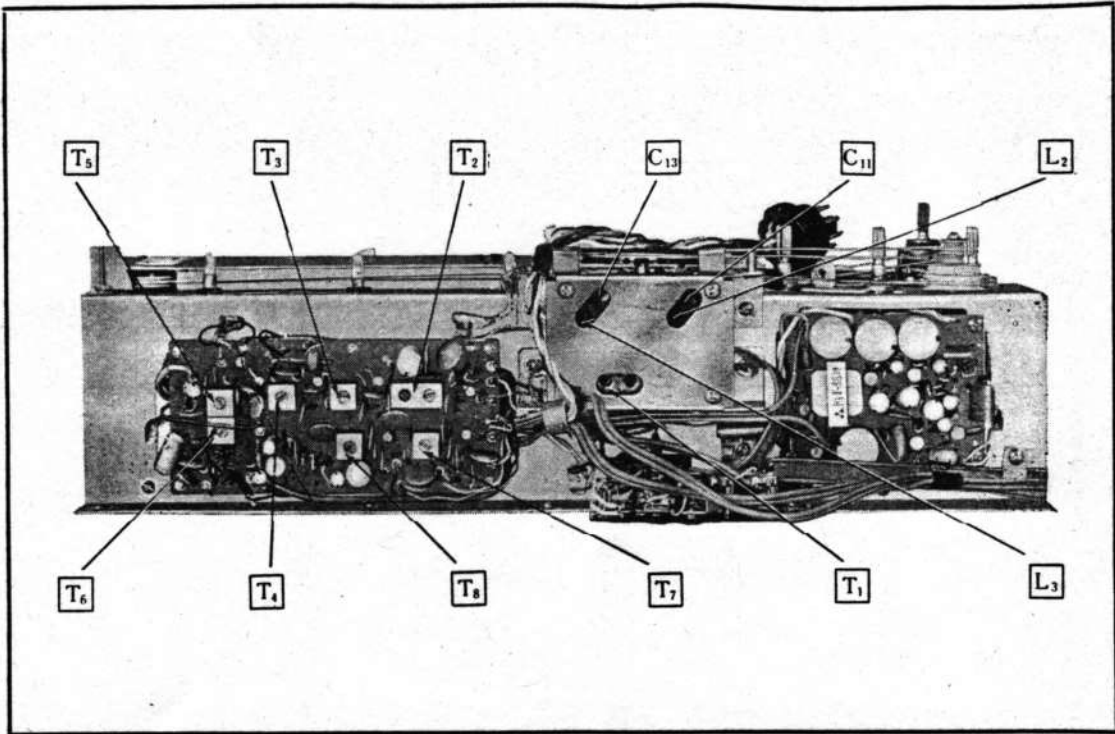


Fig. 11 Bottom View - Alignment Points, IF & FM RF Section.

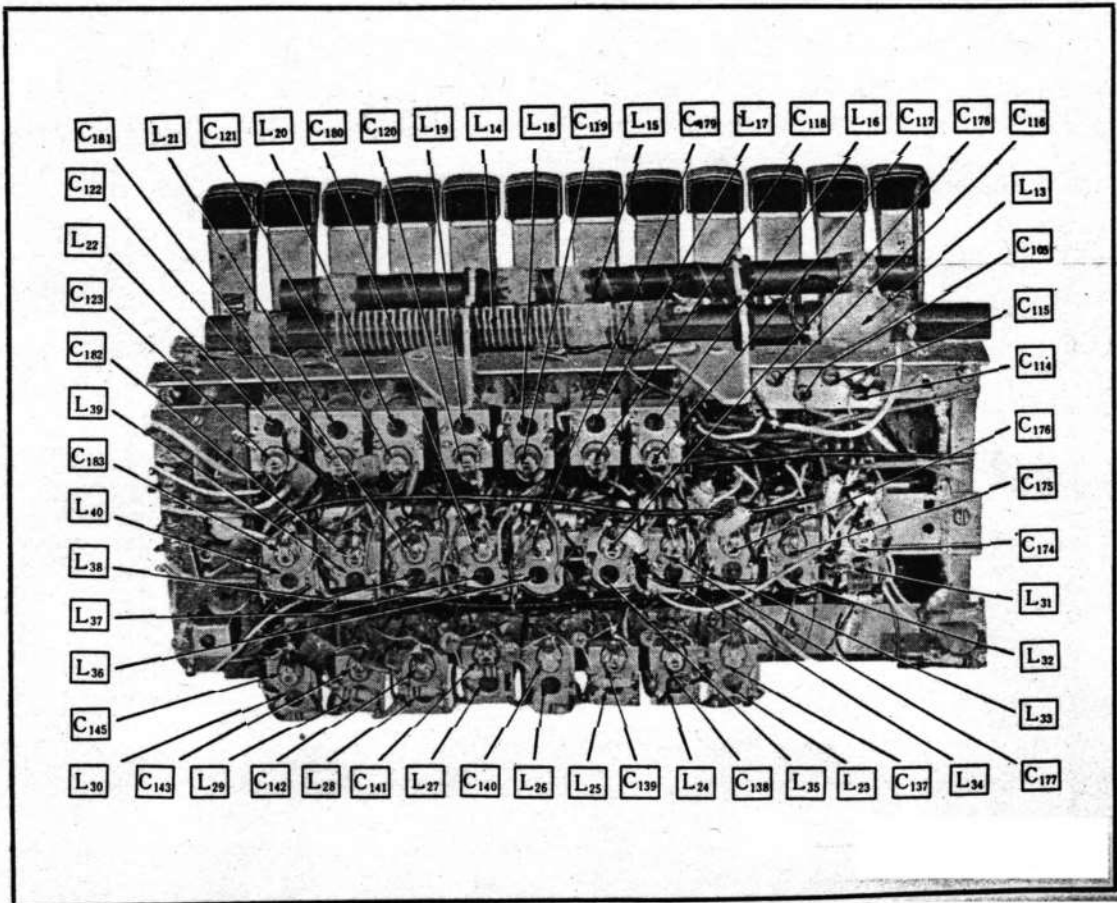
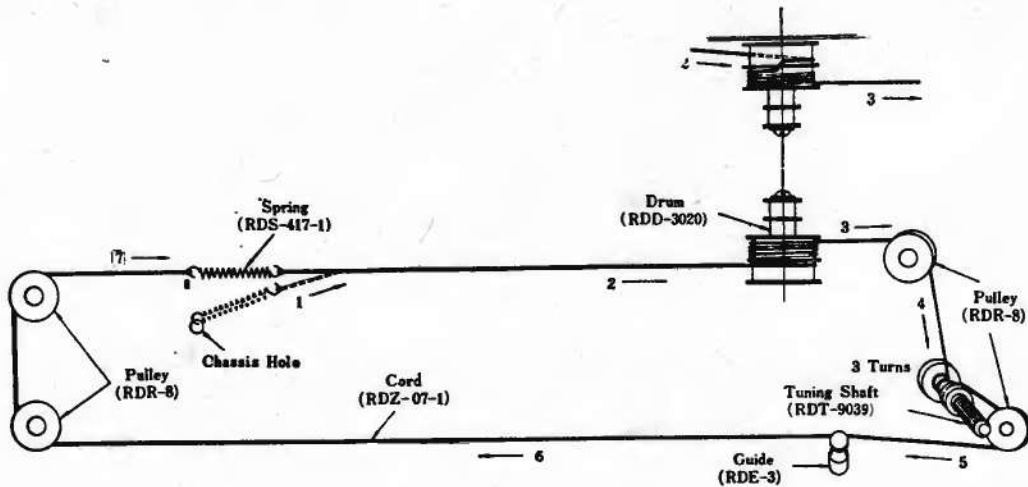


Fig. 12 Top View - Alignment Points, AM RF Section.

Notes:

1. Dial cord length is $51\frac{3}{8}$ ".
2. Tuning gang is positioned at maximum capacity.
3. Fasten dial cord to one end of the tension spring and attach the other end of tension spring to the chassis hole. Start stringing in accordance with the numerical order (1~7) and fasten the dial cord end to the tension spring after removing the tension spring from the chassis hole.
4. Extend the tension spring to the length of approximately 1".
5. Cement dial cord ends with lacquer.



Notes:

1. Dial cord length is 20".
2. Tuning gang is positioned at maximum capacity.
3. Fasten cord to one end of tension spring ① and attach the other end of tension spring to hole ① of the drum. Start stringing in accordance with the numerical order (1~6) and fasten the end of cord to tension spring ③. Attach the other end of tension spring ② to hole ③ of the drum and replace tension spring ① from hole ① to ② of the drum.
4. Extend the tension spring to the length of approximately $\frac{1}{8}$ ".
5. Cement dial cord ends with lacquer.

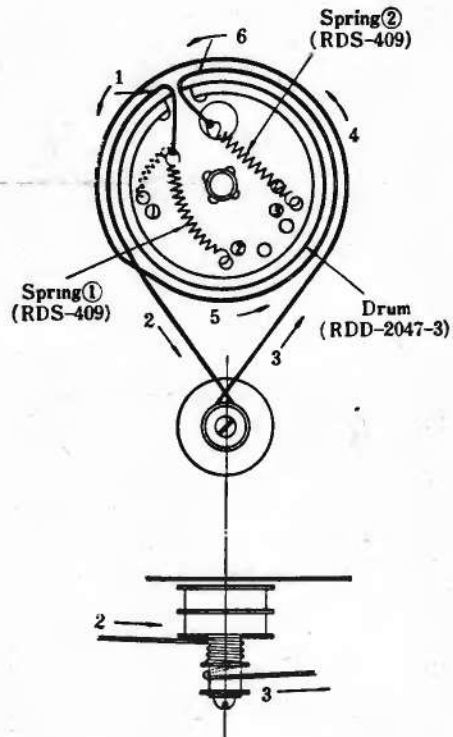


Fig. 14 Dial Cord Stringing Guide - AM Section.

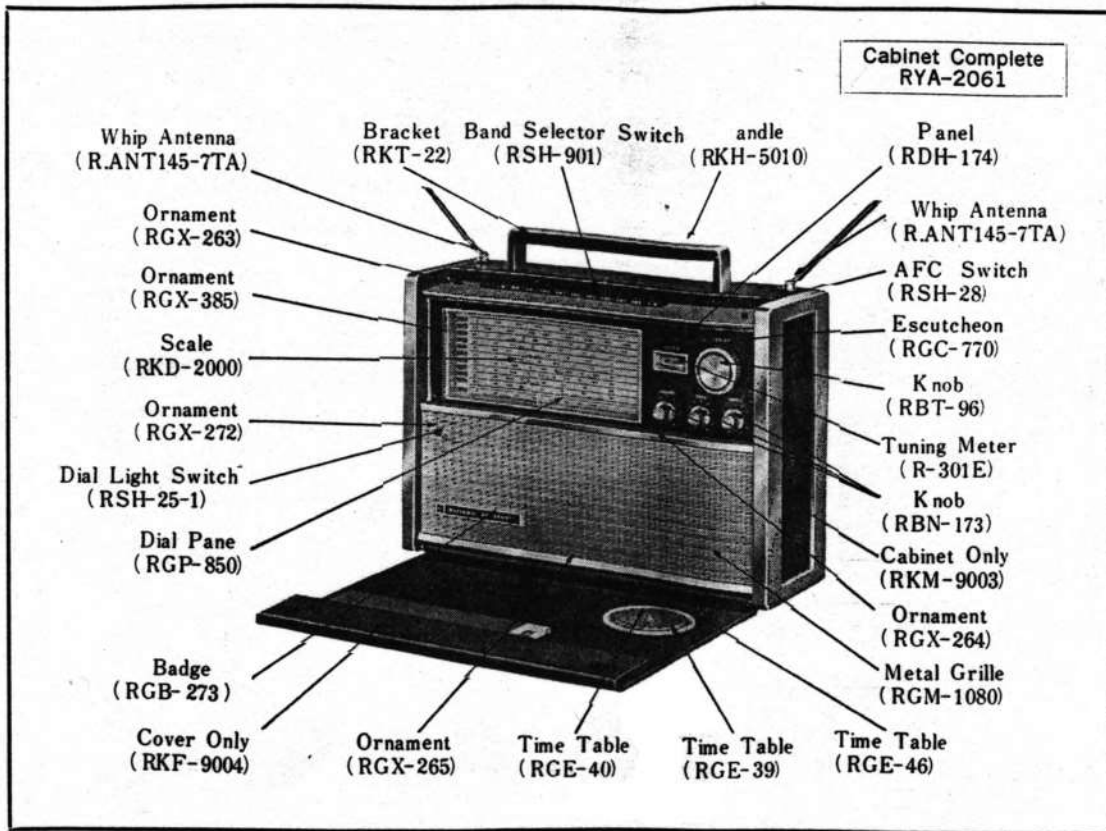


Fig. 15 Cabinet & Appearance - Parts Identification.

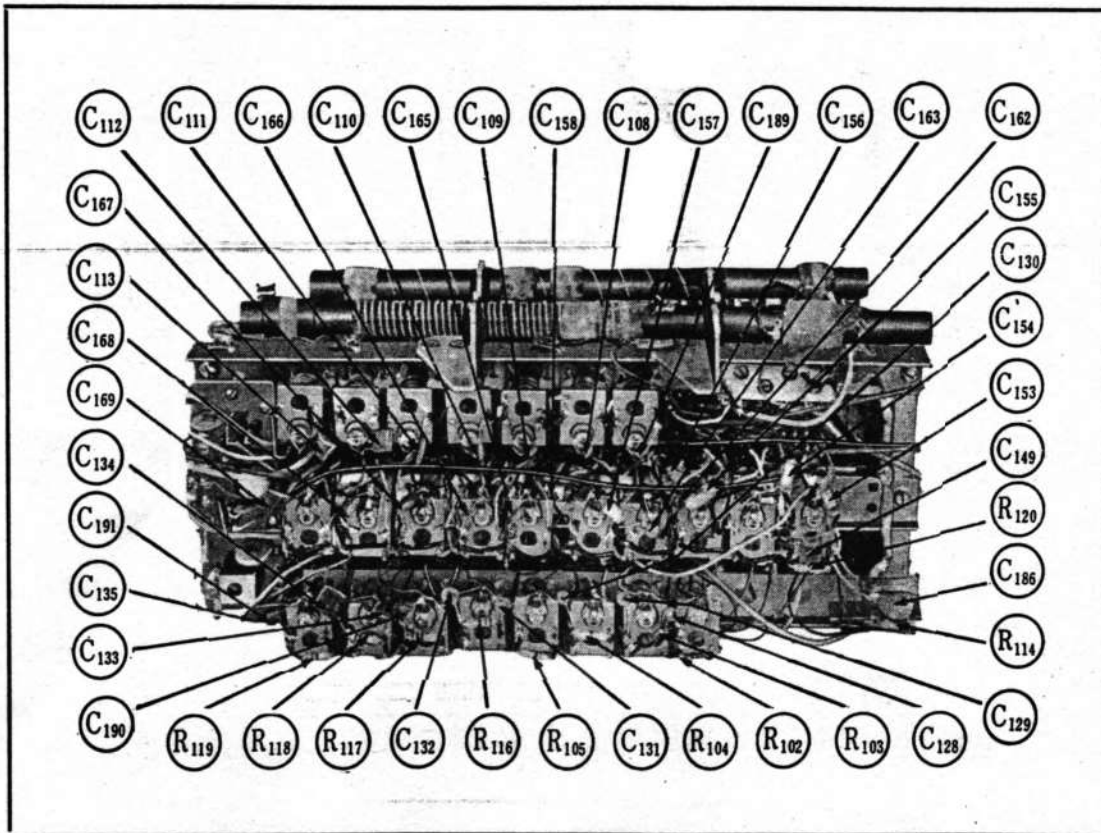


Fig. 16 Top View - Chassis Parts Identification.

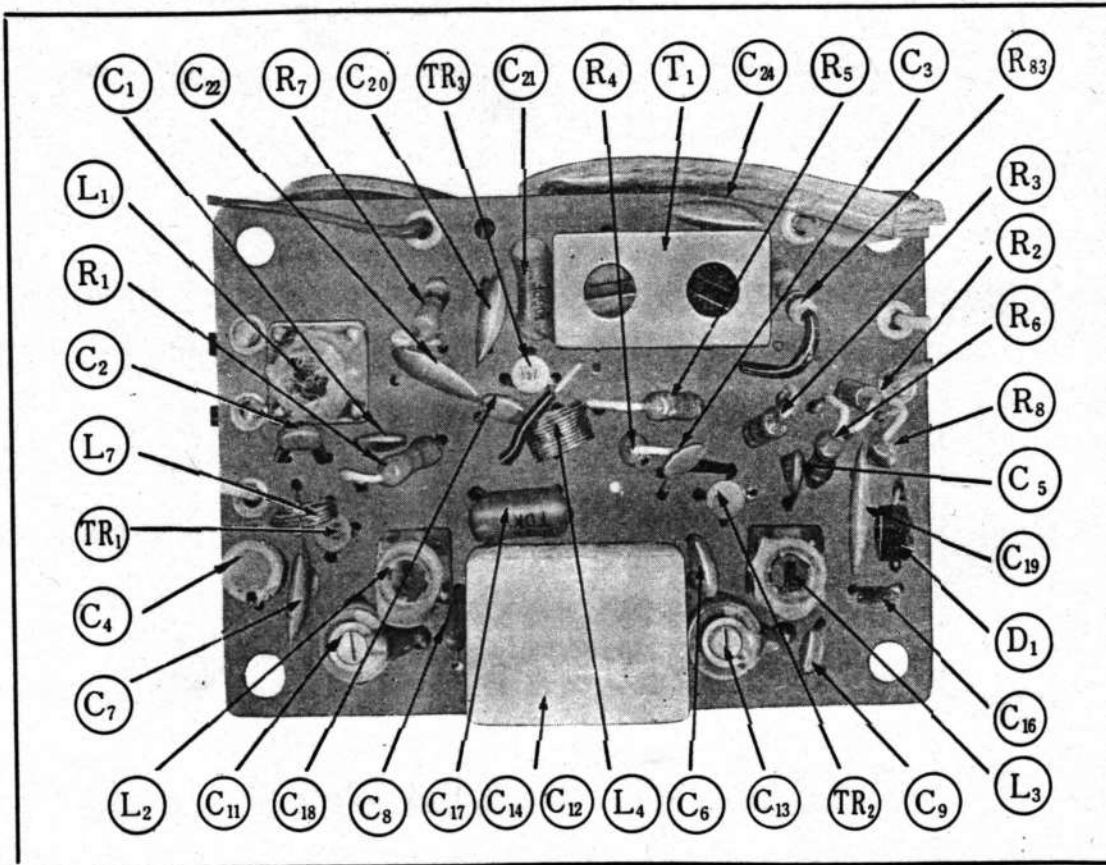


Fig. 17 Component View - Parts Identification, FM RF Section.

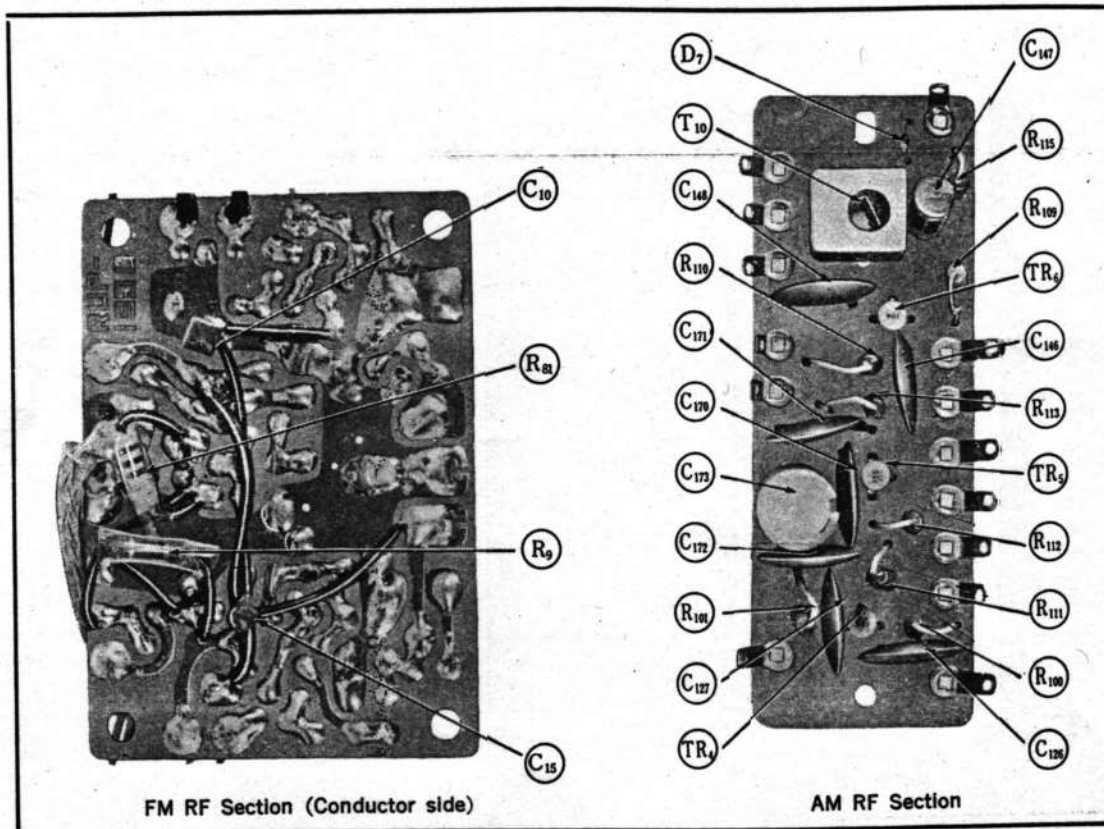


Fig. 18 Component View - Parts Identification, FM & AM RF Section.

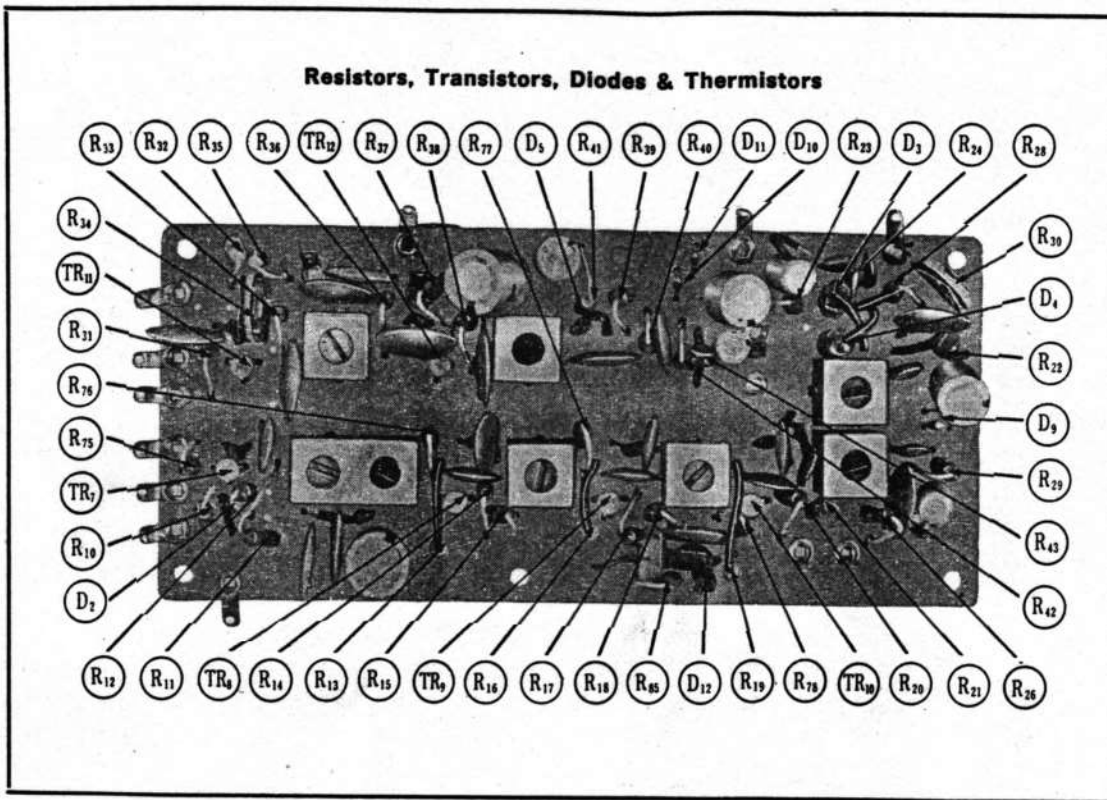


Fig. 19 Component View - Parts Identification, IF Section.

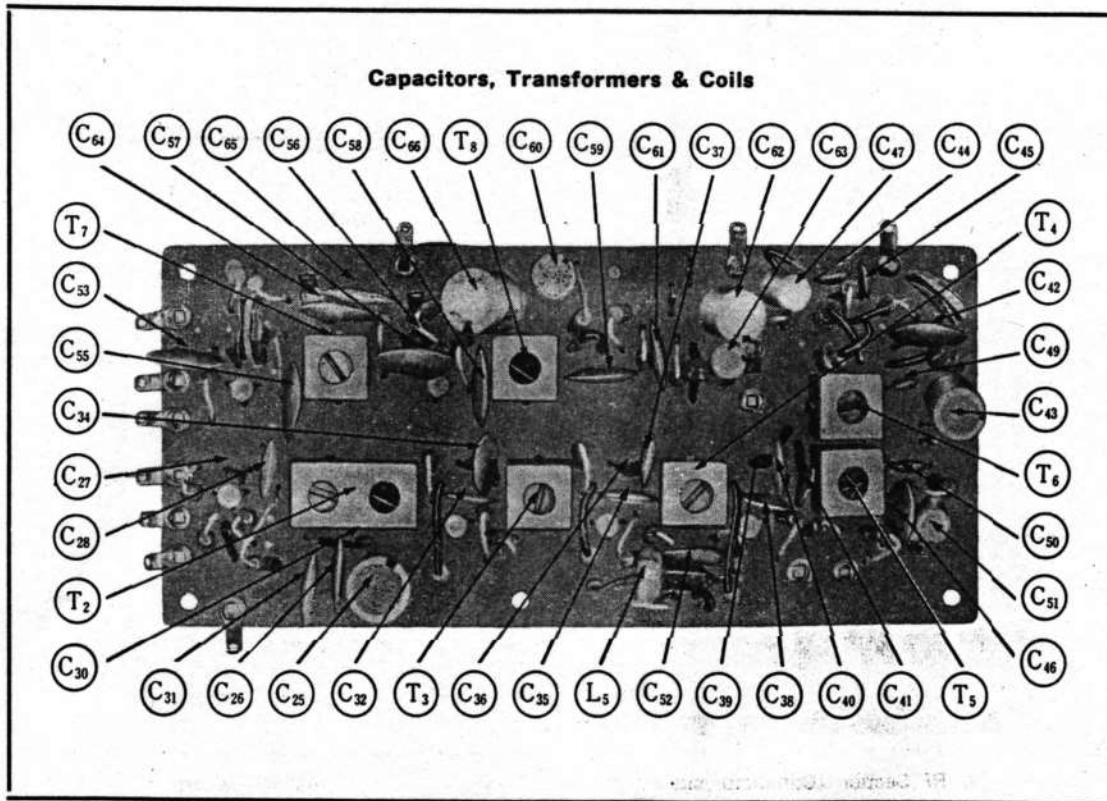


Fig. 20 Component View-Parts Identification, IF Section.

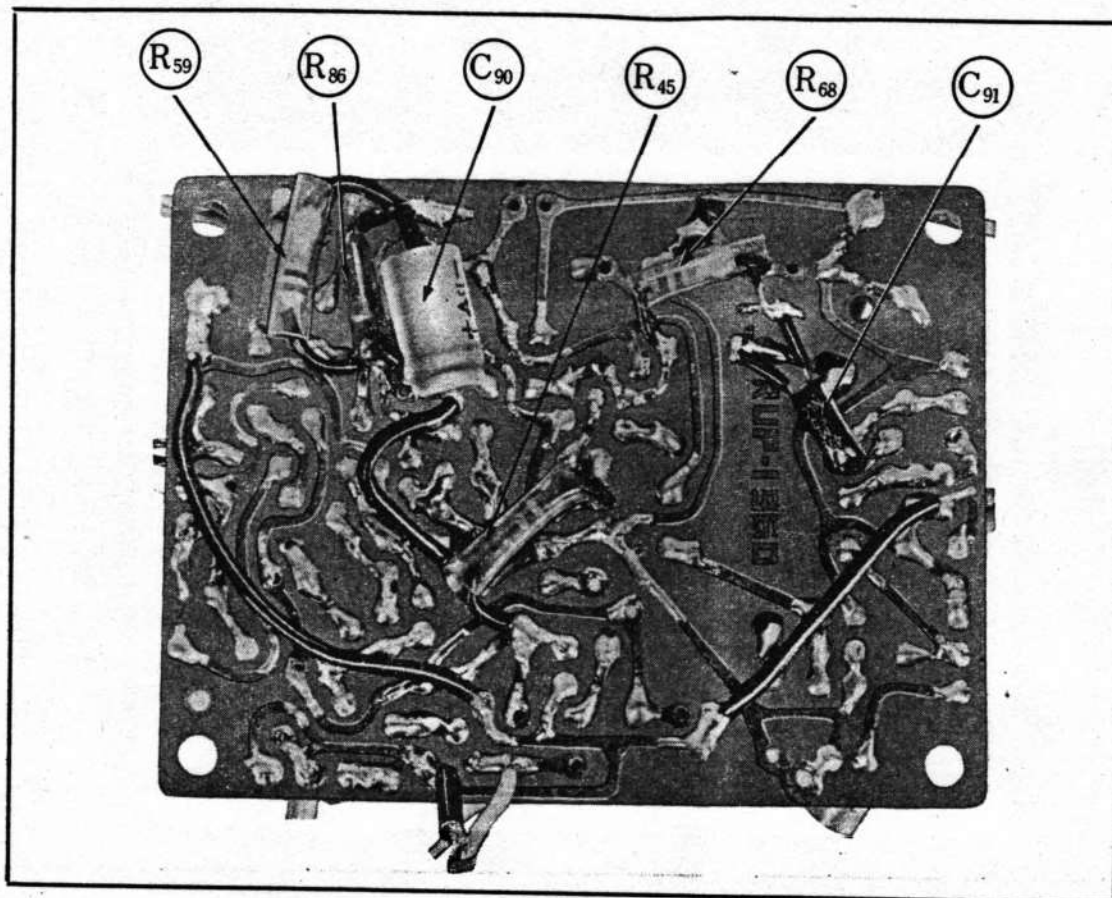


Fig. 23 Conductor View-Parts Identification, Audio Section.

REPLACEMENT PARTS LIST

Ref. No.	Stock No.	Description
TRANSISTORS AND DIODES		
TR1	2SC429	FM RF Amplifier
TR2	2SC469	FM Oscillator
TR3	2SC185	FM Mixer
TR4	2SC185	AM RF Amplifier
TR5	2SC185	AM Oscillator
TR6	2SC184	AM Mixer
TR7	2SC469	FM 1st IF Amplifier
TR8	2SC469	FM 2nd IF Amplifier
TR9	2SC469	FM 3rd IF Amplifier
TR10	2SC469	FM 4th IF Amplifier
TR11	2SC183	AM 1st IF Amplifier
TR12	2SC183	FM 2nd IF Amplifier
TR13	2SB173	AF Pre Amplifier
TR14	2SB345	1st AF Amplifier
TR15	2SB345	2nd AF Amplifier
TR16	2SB345	3rd AF Amplifier
TR17, TR18	2SB324	Output (push-pull)
D1	SC-15	FM AFC
D2	OA90	FM D.AGC
D3, D4	OA79	FM Ratio Detector
D5	OA90	AM Detector & AGC
D6, D7	1S1211	AM D.AGC
D8, D9	1S1211	FM Operation Compensator
D10, D11	1S1211	AM Operation Compensator
D12	OA90	Indicator Detector

Ref. No.	Stock No.	Description
THRMISTORS		
Th1, Th2 Th3, Th4	MT-10K MT-080	Temperature Compensator, FM Temperature Compensator, AM
CAPACITORS		
C33	ECC-U05181K	180mmf, ±10%, Styrol
C9, C10, C16	ECM-S5050C-H	5mmf, ±0.25mmf, Mlca
C8, C194, C195 } C197, C198, C199 }	ECM-S5070D-H	7mmf, ±0.5mmf, Mica
C190, C191, C196, C200 C112, C149, C167, C168 C113, C133 C134, C169 C135	ECM-S5100K-H	10mmf, ±10%, Mica
C27, C36, C54, C56 C18, C23 C30, C39 C102, C103 C129 C101	ECM-S5150K-H	15mmf, ±10%, Mica
C18, C161, C163, } C189, C193 } C5, C104 C108 C109, C128, C130 } C162, C164 } C1, C3, C106, C166 C2 C131, C110, C165 C111, C132 C41 C21 C17 C44, C45, C49, C50 C6, C88	ECM-S5470K-H	47mmf, ±10%, Mica
C151 C59, C61, C150, C17 C7, C20, C22, C24, C28, C32, C34, C35, } C37, C38, C40 } C19, C26, C31, C42, C46, C52, C53, C55, C57, C58, C64, C68, C77, C89, C126, C127, C146, C148, C170, C172, C186, C192, } C75 C73 C83, C84 C76 C91 C67, C74 C153 C154 C156 C147, C155 C157 C158 C159 C152 C60 C4, C51, C63, C68, } C69, C72, C78 } C47 C43, C62, C71, C80, C81, C25, C66, C173 C85, C86 C70, C82 C90 C79 C12, C14 C124, C125, C136 } C144, C184, C185 } C114, C115, C116 C11, C13 C87	ECM-S5560K-H	56mmf, ±10%, Mica
	ECM-S5680K-H	68mmf, ±10%, Mica
	ECM-S5820K-H	82mmf, ±10%, Mica
	ECC-D05010C	1mmf, ±0.25mmf, Ceramic
	ECC-D051R5C	1.5mmf, ±0.25mmf, Ceramic
	ECC-D05020C	2mmf, ±0.25mmf, Ceramic
	ECC-D05030C	3mmf, ±0.25mmf, Ceramic
	ECC-D05050C	5mmf, ±0.25mmf, Ceramic
	ECC-D05070D	7mmf, ±0.5mmf, Ceramic
	ECC-D05100K	10mmf, ±10%, Ceramic
	ECC-D05120K	12mmf, ±10%, Ceramic
	ECC-D05150K	15mmf, ±10%, Ceramic
	ECC-D05180K	18mmf, ±10%, Ceramic
	ECC-D05220K	22mmf, ±10%, Ceramic
	ECC-D05270K	27mmf, ±10%, Ceramic
	ECC-D05330K	33mmf, ±10%, Ceramic
	ECC-D05390K	39mmf, ±10%, Ceramic
	ECC-D05470K	47mmf, ±10%, Ceramic
	ECC-U05101K	100mmf, ±10%, Ceramic
	ECC-U05331K	330mmf, ±10%, Ceramic
	ECK-D05102MY	0.001mfd, 50WV, ±20%, Ceramic Disc
	ECK-D05102P	0.001mfd, 50WV, +100%, Ceramic - 0%, Disc
	ECK-D05472MY	0.0047mfd, 50WV, ±20%, Ceramic Disc
	ECK-D05103MY	0.01mfd, 50WV, ±20%, Ceramic Disc
	ECK-D05103P	0.01mfd, 50WV, +100%, Ceramic - 0%, Disc
	ECK-D05333P	0.033mfd, 50WV, +100%, Ceramic - 0%, Disc
	ECQ-M05332MZ	0.0033mfd, 50WV, ±20%, Polyester
	ECQ-M05103MZ	0.01mfd, 50WV, ±20%, Polyester
	ECQ-M05153MZ	0.015mfd, 50WV, ±20%, Polyester
	ECQ-M05333MZ	0.033mfd, 50WV, ±20%, Polyester
	ECQ-M05472MZ	0.0047mfd, 50WV, ±20%, Polyester
	ECQ-M05104MZ	0.1mfd, 50WV, ±20%, Polyester
	ECQ-S1181JZ	180mmf, ± 5%, Styrol
	ECQ-S1471JZ	470mmf, ± 5%, Styrol
	ECQ-S02102KZ	1000mmf, ±10%, Styrol
	ECQ-S02152KZ	1500mmf, ±10%, Styrol
	ECQ-S02172KZ	1700mmf, ±10%, Styrol
	ECQ-S02272KZ	2700mmf, ±10%, Styrol
	ECQ-S02332KZ	3300mmf, ±10%, Styrol
	ECQ-S02152K	1500mmf, ±10%, Styrol
	ECE-A15V10	10mfd, 15WV, Electrolytic
	ECE-A25V1	1mmf, 25WV, Electrolytic
	ECE-A15V5	5mfd, 15WV, Electrolytic
	ECE-A6V100	100mfd, 6WV, Electrolytic
	ECE-A10V100	100mfd, 10WV, Electrolytic
	ECE-A6V500	500mfd, 6WV, Electrolytic
	ECE-A10V500	500mfd, 10WV, Electrolytic
	ECE-B10V30	30mfd, 10WV, Electrolytic
	ECE-A6V10	10mfd, 6WV, Electrolytic
	PVC-2W20-2	Tuning Gang, FM
	ECV-6FD43A26	Tuning Gang, AM
	ECV-4RW12W11	Trimmer, LW, MW & SW Antenna
	ECV-1ZW10P12	Trimmer, FM
	ECE-B6V500	500mfd, 6WV, Electrolytic

Ref. No.	Stock No.	Description
RESISTORS		
R73, R74	ERW-12RR47	0.47 Ω , $\frac{1}{2}$ Watt, $\pm 10\%$, Carbon
R65	ERD-14VK220	22 Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R61, R79	ERD-14VK470	47 Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R51, R67, R75, R76, R77, R78	ERD-14VK101	100 Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R71, R72	ERD-14VK121	120 Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R12, R15, R18, R21	ERD-14VK331	330 Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R20, R37, R40	ERD-14VK471	470 Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R7, R11, R17, R35, R36	ERD-14VK561	560 Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R14	ERD-14VK681	680 Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R10, R23, R24, R29, R36, R110, R112	ERD-14VK102	1K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R101, R113	ERD-14VK122	1.2K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R32, R55, R69, R70	ERD-14VK152	1.5K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R52, R62	ERD-14VK182	1.8K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R2	ERD-14VK222	2.2K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R115	ERD-14VK272	2.7K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R39, R56, R64, R100, R49, R58	ERD-14VK332	3.3K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R41, R60	ERD-14VK392	3.9K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R5, R28	ERD-14VK472	4.7K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R50	ERD-14VK562	5.6K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R109	ERD-14VK682	6.8K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R1, R4, R46, R85	ERD-14VK822	8.2K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R3, R42, R63	ERD-14VK103	10K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R53, R111	ERD-14VK153	15K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R48	ERD-14VK183	18K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R38	ERD-14VK563	56K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R6, R8, R26	ERD-14VK104	100K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R33	ERD-14VK154	150K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R31, R84	ERD-14VK334	330K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R81, R117, R122	ERD-14TK101	100 Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R9, R102, R120	ERD-14TK102	1K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R13, R19, R103, R16	ERD-14TK122	1.2K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R59, R83, R114	ERD-14TK103	10K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R22	ERD-14TK272	2.7K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R44	ERD-14TK824	820K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R86	ERD-14TK222	2.2K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R54, R57	EVC-BOAL26A54	50K Ω A, Bass & Treble Control
R47	EVC-BOAL26D53	5K Ω D, Volume Control
R30	EVL-TOAA00B53	5K Ω B, FM Tuning Meter
R34	EVL-TOAA00B13	1K Ω B, AM Tuning Meter
R121	ERD-14TK271	270 Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R116, R118,	ERD-14TK151	150 Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R119	ERD-14TK221	220 Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R104	ERD-14TK331	330 Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R123	ERD-14TK561	560 Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R80	ERD-14TK333	33K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R27	ERD-14TK472	4.7K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R45	ERD-14TK184	180K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R43	ERD-14TK562	5.6K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R105	ERD-14TK471	470 Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
R68	ERD-14TK273	27K Ω , $\frac{1}{4}$ Watt, $\pm 10\%$, Carbon
COILS AND TRANSFORMERS		
L13, L14	RLF-6H1	LW MW Antenna Coll
L15	RLF-3G2	SW1 Antenna Coll
L16	RLA-3Q46	SW2 Antenna Coll
L17	RLA-3Q47	SW3 Antenna Coll
L18	RLA-3Q48	SW4 Antenna Coll
L19	RLA-3Q49	SW5 Antenna Coll
L20	RLA-3Q50	SW6 Antenna Coll
L21	RLA-3Q51	SW7 Antenna Coll
L22	RLA-3Q52	SW8 Antenna Coll
L1	RLA-4P2	FM Antenna Coll
L31	RLO-1Q6	LW Oscillator Coll
L32	RLO-2Q37	MW Oscillator Coll
L33	RLO-3Q84	SW1 Oscillator Coll
L34, L36	RLO-3Q85	SW2, SW4 Oscillator Coll
L35	RLO-3Q86	SW3 Oscillator Coll
L37	RLO-3Q88	SW5 Oscillator Coll
L38	RLO-3Q89	SW6 Oscillator Coll
L39	RLO-3Q90	SW7 Oscillator Coll
L40	RLO-3Q91	SW8 Oscillator Coll
L3	RLO-4N9	FM Oscillator Coll
L23	RLD-3Q3	SW1 Detector Coll
L24	RLD-3Q4	SW2 Detector Coll

Ref. No.	Stock No.	Description
COILS AND TRANSFORMERS		
L25	RLD-3Q5	SW ₃ Detector Coil
L26	RLD-3Q6	SW ₄ Detector Coil
L27	RLD-3Q7	SW ₅ Detector Coil
L28	RLD-3Q8	SW ₆ Detector Coil
L29	RLD-3Q9	SW ₇ Detector Coil
L30	RLD-3Q10	SW ₈ Detector Coil
L2	RLD-4N6	FM Detector Coil
L5	RLQ-X121-1	Choke Coil
L7	RLQ-Y16S-1	FM Choke Coil
L4	RLQ-Y72S-1	FM Coupling Choke Coil
L11	RLQ-Q14G-1	SW ₅ Antenna Shunt Coil
L10	RLQ-Q46S-1	SW ₈ Antenna Shunt Coil
T ₁	RLI-4D101	FM 1st IF Transformer
T ₂	RLI-4D201	FM 2nd IF Transformer
T ₃ , T ₄	RLI-4C204	FM 3rd, 4th IF Transformer
T ₅	RLI-4C504	FM 5th IF Transformer (Primary)
T ₆	RLI-4C505	FM 5th IF Transformer (Secondary)
T ₁₀	RLI-7C3-T	AM 1st IF Transformer
T ₇	RLI-2C211-1	AM 2nd IF Transformer
T ₈	RLI-2C450-T	AM 3rd IF Transformer
T ₉	RLT-3G19	Input Transformer, 3K Ω : 400 Ω
SPEAKERS AND EARPHONE		
SP ₁	EAS-18D28S	7" x 5" Oval PM Dynamic Speaker, 16 Ω
SP ₂	EAS-12P16SC	5" PM Dynamic Speaker, 16 Ω
EP	EAE-1MB	Magnetic Earphone, 8 Ω
SWITCHSES		
S ₁ ~S ₄ } S ₅ , S ₆ } S ₇ S ₈	RSH-901	Band Selector Switch
	RSH-28	Power Source Switch
	RSH-25-1	AFC Switch Dial Light Switch
MISCELLANEOUS		
	RVL-206	Dial Light, 1.5V 0.10A (15 Req'd)
	RVL-407	Neon Lamp
	RJP-3-1	Plug, PU, Recorder & EXT Speaker
	RJP-6	Plug, EXT FM Antenna
	RJP-6-2	Plug, EXT FM Ground
	RJP-11	Plug, EXT AM Antenna
	RJP-11-2	Plug, EXT AM Ground
	RJP-18	Plug, Connector
	RJP-67	Plug, Battery
	RJJ-13-1	Jack, PU
	RJJ-25	Jack, Earphone & Recorder
	RJS-25-1	Socket, Battery
	RJV-4801	Socket, Connector
	RJF-3104	Jack, EXT FM Antenna
	RJF-3406	Jack, EXT AM Antenna
	RJK-1102-1	Case, Battery, Dial Light
	RJK-5304	Tube, Battery (2 Req'd)
	RJC-102	Terminal, Battery, \oplus Side (2 Req'd)
	RJC-601	Spring, Battery, \ominus Side (2 Req'd)
	RJB-1003-3	Case, Battery
	RUV-233	Cover, Chassis
	RUS-60	Spring, Cabinet Front Cover M'tg. Bracket (2 Req'd)
	RUS-71	Spring, Time Table
	RMA-190	Bracket, Core Antenna (2 Req'd)
	RMA-194	Bracket, Frame Antenna, Small (2 Req'd)
	RMA-195	Bracket, Frame Antenna, Large (2 Req'd)
	RMP-79	Rubber Cushion, Dial Light M'tg.
	RMC-57	Shield Cover, Printed Circuit Board (FM RF Section)
	RMX-96-1	Cover, Trimmer
	RMY-22	Heat Sink Transistor
	RMZ-30	Cover, Panel Light (RGL-36) (6 Req'd)
	RMZ-35	Cover, Panel Light
	RMZ-36	Cover, Dial Light (11 Req'd)
	RDT-9039	Shaft, Tuning
	RDX-41	Shaft, Drum (2 Req'd)
	RDD-3020	Drum, Dial, Small (2 Req'd)
	RDD-46-4	Drum, Dial, Plastic
	RDD-2047-3	Drum, Dial, Metal

Ref. No.	Stock No.	Description
MISCELLANEOUS		
	RDR-8 RDY-2 RDY-8 RDY-2-1 RDS-409 RDS-417-1 RDZ-07-1 RDE-3-1 RDE-3 RDE-23 RDE-24 RDE-25 RBH-4001 RGE-39 RGE-40 RGE-46 RGL-42 RNE-913 RGZ-23 RHG-107-1 RHG-202 RHG-5-1 RNE-418 ⊕B3-8V DM4-8R DM3-8R L3-5.5	Pulley, Dial Cord (8 Req'd) Shaft, Pulley, Short (8 Req'd) Shaft, Pulley, Long (2 Req'd) Shaft, Dial Scale Spring, Dial, Short (4 Req'd) Spring, Dial, Long (2 Req'd) Cord, Dial, 150" Shaft, Dial Scale Guide, Dial Cord Clutch, Dial Drive Mechanism Pin, Dial Drive Mechanism Shaft, Dial Drive Mechanism Hing, Battery Compartment Cover (2 Req'd) Time Table, Outside Time Table, Inside Time Table, Center Panel Light, Battery Compartment Cover Lock Washer, Battery Compartment Cover Escutcheon, Badge (RGB-228) Rubber Cushion, Core Antenna (4 Req'd) Rubber Cushion, Dial Light (4 Req'd) Rubber Cushion, Tuning Gang M'tg. (5 Req'd) Red Nut, Dial Light Switch M'tg. Screw, Handle M'tg. (2 Req'd) Red Screw, Chassis M'tg. (6 Req'd) Red Screw, Cabinet Back Cover & Battery Case M'tg. (4 Req'd) Screw, Dial Drum (RDD-2047-3) M'tg. (2 Req'd)
APPEARANCE		
	RYA-2061 RKM-9003 RYF-270 RKF-9004 RYU-120 RKU-9013 RKF-1480 RDH-174 RDP-152 RGP-850 RGM-1080 RGB-273 RGT-965 RGB-274 RGL-36 RGL-37 RKH-5010 RKT-22 RKD-2000 RGX-272 RGX-263 RGX-264 RGX-265 RBN-173 RBT-96 RGC-770 RGX-385 RANT145-7TA RSA-22 R-301E RDP-153	Cabinet Complete Cabinet Only Cover Complete, Cabinet Front Cover Only, Cabinet Front Cover Complete, Cabinet Back Cover Only, Cabinet Back Cover Only, Battery Compartment Panel Pointer, Dial, FM Panel, Dial Metal Grille Badge, PANASONIC Mark Name Plate, Battery Cover Badge, PANASONIC Mark Panel Light (6 Req'd) Panel Light (5 Req'd) Handle, Cabinet Bracket, Handle Scale, Dial Ornament, Dial Light Switch Ornament, Upper Side of Cabinet Ornament, Upper Side of Metal Grille Ornament, Lower Side of Metal Grille Knob, Volume, Bass & Treble Knob, Tuning Escutcheon, Tuning Meter Ornament, Dial Panel (2 Req'd) Whip Antenna (2 Req'd) Frame Antenna Tuning Meter Pointer, Dial, AM

MODEL RD-9451

AC ADAPTOR FOR RADIO MODEL RF-5000A

SPECIFICATIONS

Input Voltage :	AC 117V 50 or 60c/s
Output Voltage :	DC 9V
Maximum Current :	400mA
Power Consumption :	12VA
Dimension :	4 $\frac{1}{8}$ " (Wide) x 2 $\frac{1}{2}$ " (High) x 3 $\frac{3}{8}$ " (Deep)
Weight :	1lb. 12 $\frac{1}{2}$ oz.

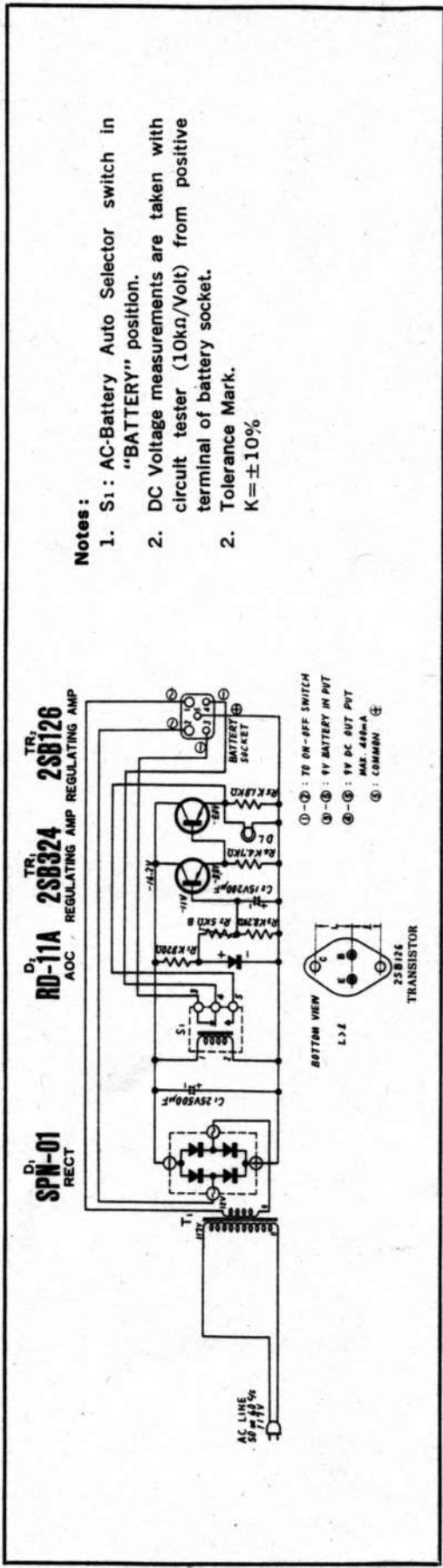


Fig. 24 Schematic Diagram.

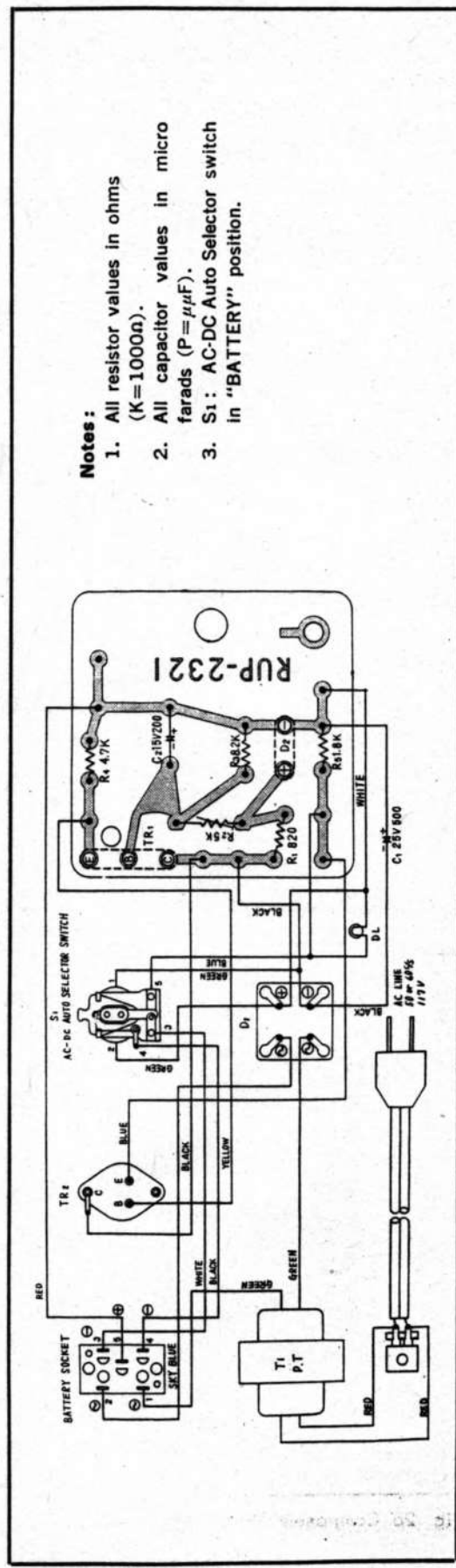


Fig. 25 Circuit Board Wiring View (Conductor Side).

Operation of AC Adaptor

(Refer to Figs. 10 & 24)

- ① When the radio is connected to the AC adaptor, terminals ① & ② is connected.
- ② Then, the voltage is applied across the field coil of the relay (S₁) and causes the relay contact to close its terminals ④ and ⑤.
- ③ Thus, the DC voltage is obtained across terminals ④ and ⑤ of the battery socket.
- ④ When AC power is off or the plug is not inserted in the AC outlet, the relay contact closes terminals ③ and ④, and the radio is automatically operated by the built-in battery.

VOLTAGE ADJUSTMENT

PROCEDURE (Refer to Fig. 24)

Apply the AC voltage to the adaptor.

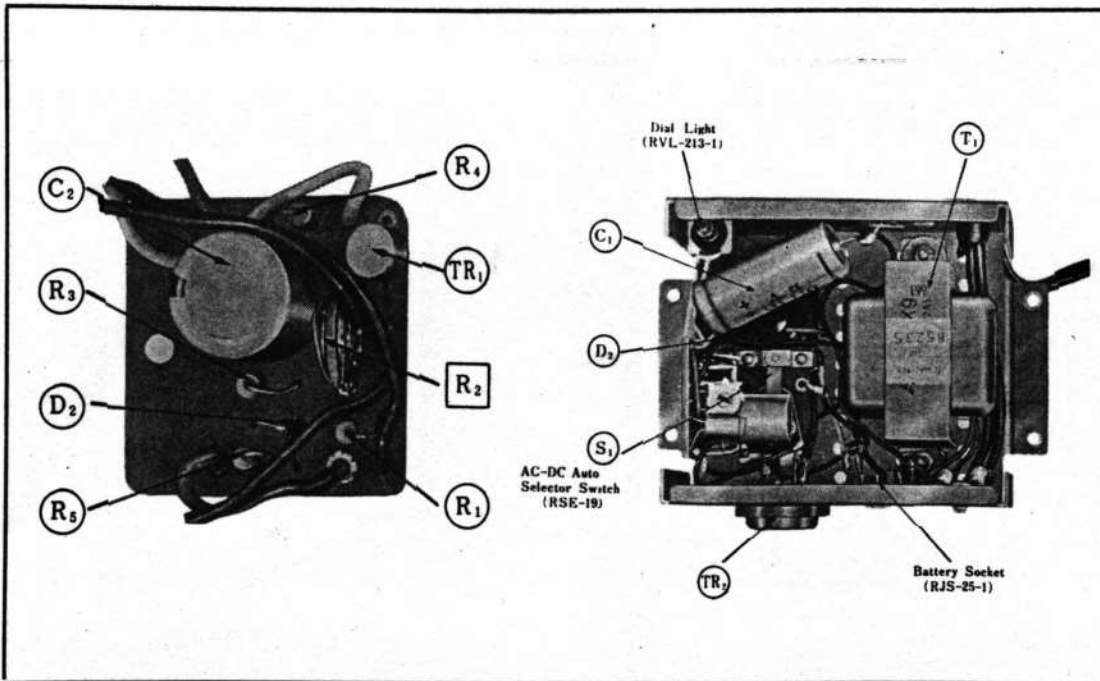
INDICATOR

Connect ⊕ side of DC voltmeter to terminal No. 5 of battery socket, and ⊖ side of DC voltmeter to terminal No. 4 of battery socket.

Note: Short terminal ① & ② of battery socket.

ADJUSTMENT

Adjust R₂ for 9V DC voltmeter reading.



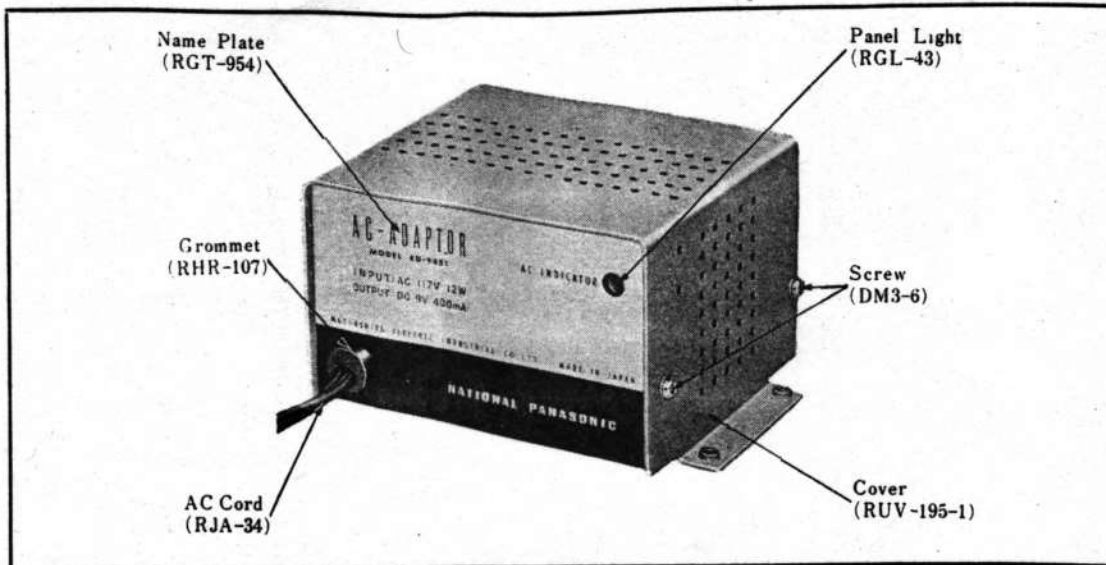
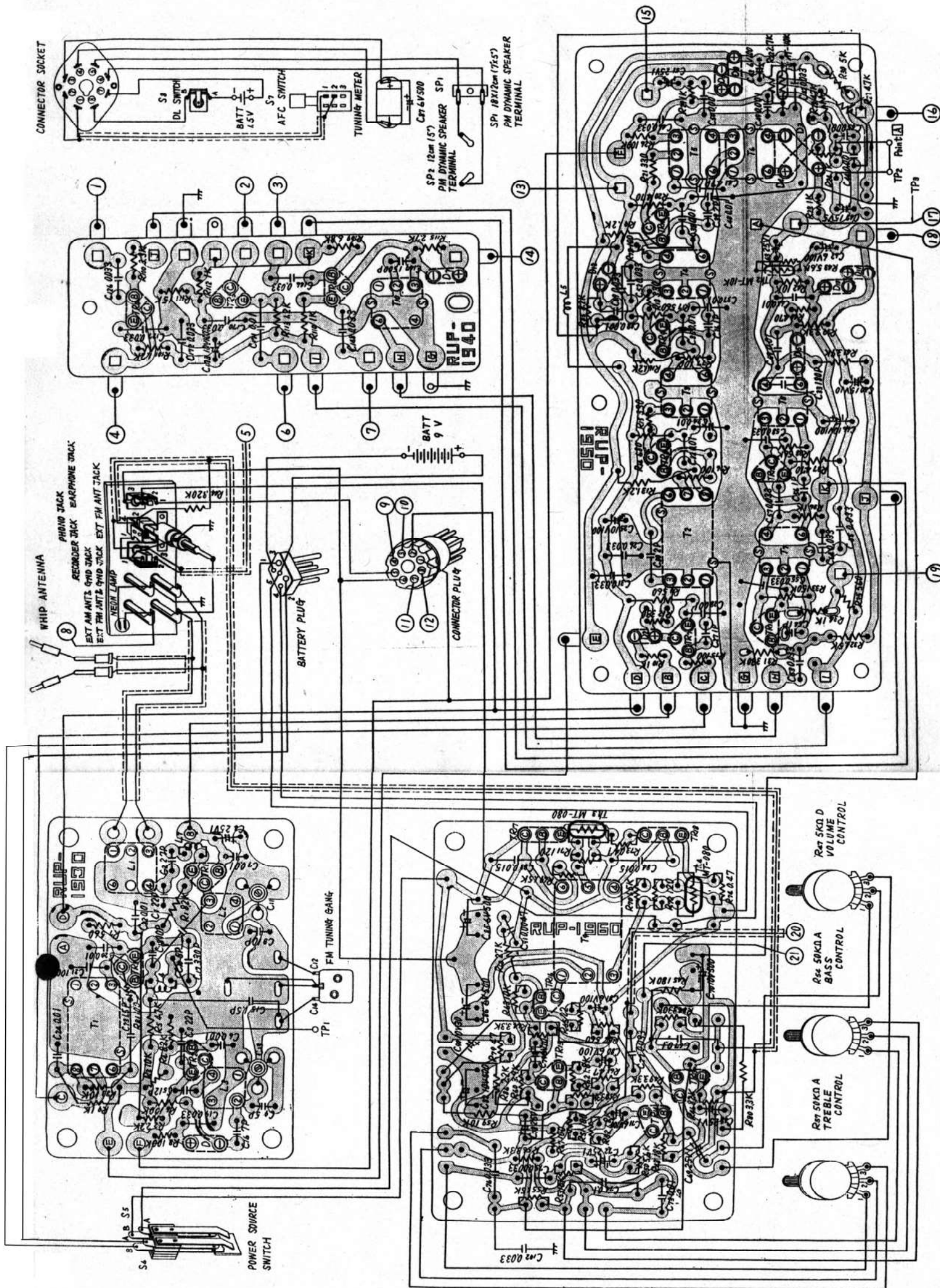


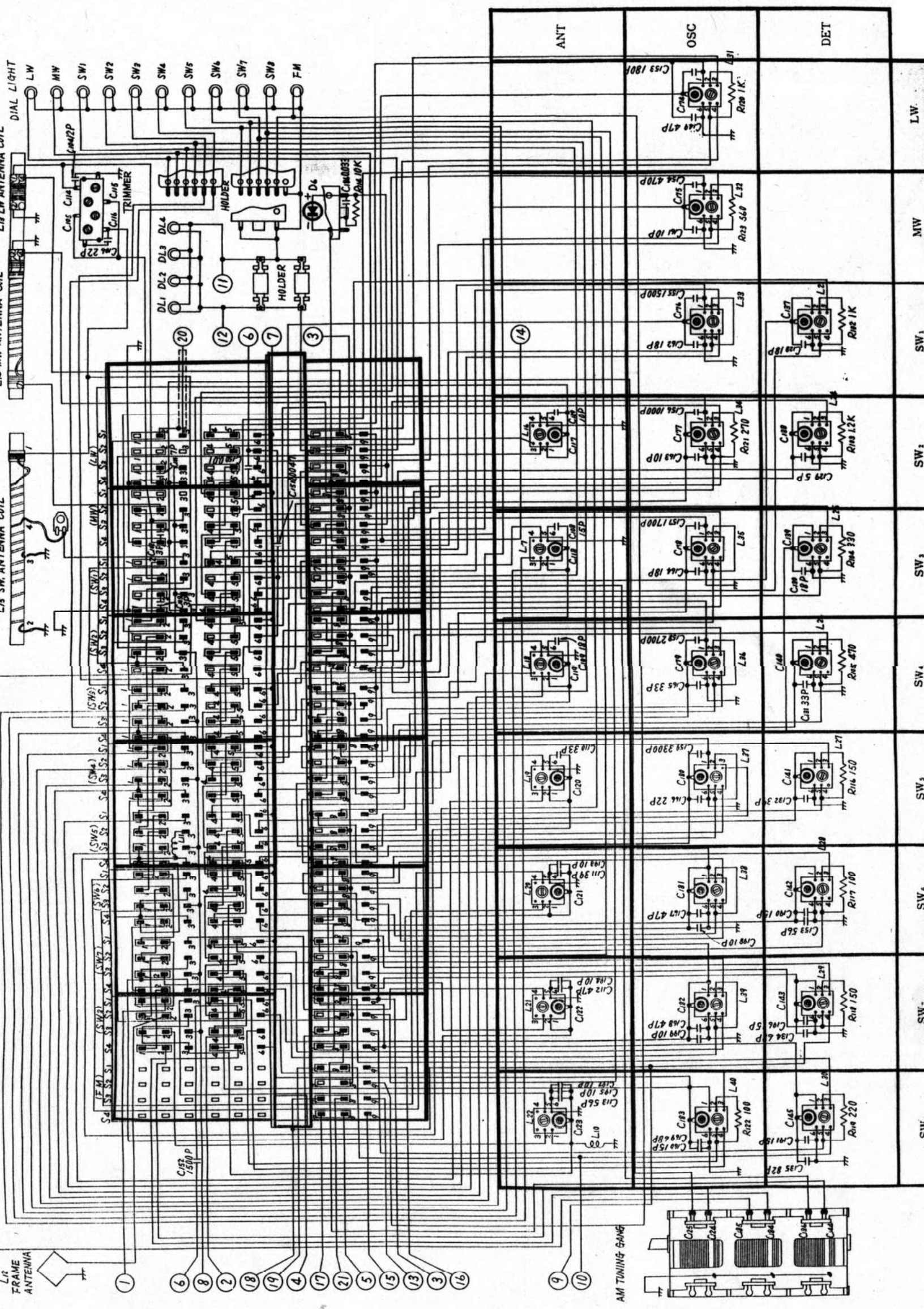
Fig. 28 Appearance - Parts Identification.

REPLACEMENT PARTS LIST

Ref. No.	Stock No.	Description
TRANSISTORS AND DIODES		
TR ₁	2SB324	Regulating Amplifier
TR ₂	2SB126	Regulating Amplifier
D ₁	SPN-01	Rectifier
D ₂	RD-11A	Temperature Compensator
CAPACITORS		
C ₁	ECE-B25V500H	500mfd, 25WV, Electrolytic
C ₂	ECE-A15V200H	200mfd, 15WV, Electrolytic
RESISTORS		
R ₁	ERD-14VK 821	820Ω, 1/4Watt, ±10%, Carbon
R ₅	ERD-14VK 182	1.8KΩ, 1/4Watt, ±10%, Carbon
R ₄	ERD-14VK 472	4.7KΩ, 1/4Watt, ±10%, Carbon
R ₃	ERD-14VK 822	8.2KΩ, 1/4Watt, ±10%, Carbon
R ₂	EVL-TOA00B53	5KΩ B, voltage Adjustment
TRANSFORMER		
T ₁	RLT-5K9	Power Transformer
SWITCH		
S ₁	RSE-19	AC-Battery Auto Selector Switch
MISCELLANEOUS		
	RJS-25-1	Socket, Battery
	RJA-34	AC Cord
	RUP-2321	Printed Circuit Board
	RGT-954	Name Plate, Specification Mark
	RUV-195-1	Cover, Chassis
	RHR-107	Grommet, AC Cord
	DM3-6	Screw, Chassis Cover M'tg. (4 Req'd)
	RUL-122	Bracket, AC Adaptor, Small
	RUL-123	Bracket, AC Adaptor, Big
	DM4-8R	Red Screw, Adaptor M'tg. (2 Req'd)
	RGL-43	Panel Light
	RVL-213-1	Dial Light



- Notes:**
1. All resistor values in ohms (K=1000Ω).
 2. All capacitor values in micro farads (P=μF).
 3. S1 ~ S4: Band selector switch in "OFF" position.
 4. S5, S6: Power source switch in "OFF" position.
 5. S7 : AFC switch in "ON" position.
 6. S8 : Dial light switch in "OFF" position.



DIAL LIGHT

LW

MW

SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

FM

LW

MW

SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

SW9

FM

LW

MW

SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

SW9

FM

LW

MW

SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

SW9

FM

LW

MW

SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

SW9

FM

LW

MW

SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

SW9

FM

LW

MW

SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

SW9

FM

LW

MW

SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

SW9

FM

LW

MW

SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

SW9

FM

LW

MW

SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

SW9

FM

LW

MW

SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

SW9

FM

LW

MW

SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

SW9

FM

LW

MW

SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

SW9

FM

LW

MW

SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

SW9

FM

LW

MW

SW1

SW2

SW3

SW4

SW5

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SW9

FM

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SW1

SW2

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SW6

SW7

SW8

SW9

FM

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MW

SW1

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FM

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FM

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SW8

SW9

FM

LW

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SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

SW9

FM

LW

MW

SW1

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SW8

SW9

FM

LW

MW

SW1

SW2

SW3

SW4

SW5

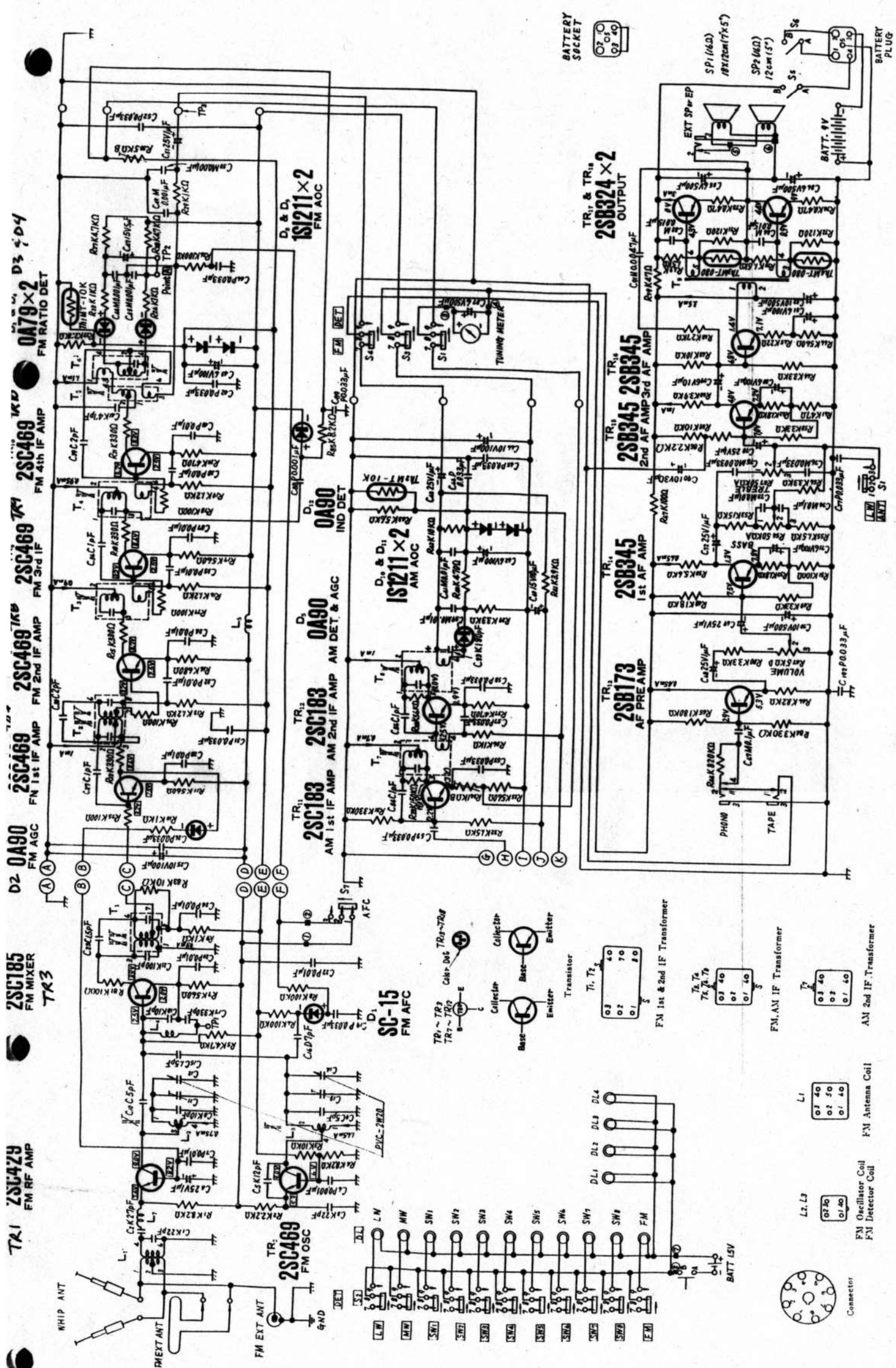
SW6

SW7

SW8

SW9

FM



show allowable tolerance of resistors and capacitors as follows:

C = ±0.25PF D = ±0.5PF J = ±5% K = ±10%
M = ±20% P = +100% 0%
7. Battery current: No signal FM, AM..... 20ma
Maximum output FM, AM.....250ma
8. PF = pico farad = mmf
μF = micro farad = MF

- Notes:**
- S1~S4: Band selector switch in "OFF" position.
 - S5, S6: Power source switch in "OFF" position.
 - S7: AFC switch in "ON" position.
 - S8: Dial light switch in "OFF" position.
 - DC Voltage measurements are taken with circuit tester 10KΩ/Volt from negative terminal of battery.
 - Capital letters (C, D, J, K, M, P) in the circuit diagram

