SANYO

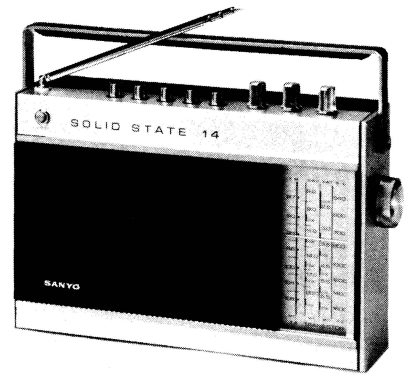
FM-AM 4-BAND SOLID STATE Portable Radio

MODEL 14H-636

SERVICE MANUAL

SANYO ELECTRIC CO., LTD.

INTERNATIONAL DIVISION: SANYO ELECTRIC TRADING CO., LTD.
OSAKA, JAPAN



SPECIFICATIONS

Frequency Range.....FM 87–108 MC
BC 530–1605 KC
SW1 2.3–7.3 MC
SW2 8.0–22 MC

Intermediate Frequency.....FM 10.7 MC
AM 455 KC

Transistors .....(1) 2SC668 FM RF Amplifier
(2) 2SC668 FM Converter
(3) 2SC545 FM 1st IF Amplifier
(4) 2SC545 FM 2nd IF Amplifier
(5) 2SC537 FM 3rd IF Amplifier
(6) 2SB185 1st Audio Amplifier
(7) 2SA222 AM Mixer
(8) 2SA222 AM Local Oscillator
(9) 2SA322 AM 1st IF Amplifier
(10) 2SA203 AM 2nd IF Amplifier
(11) 2SB185 2nd Audio Amplifier
(12) 2SB186 Driver
(13) 2SB272 Pushpull Power Amplifier
(14) 2SB272 Pushpull Power Amplifier

Diodes .....(1) 1S188 FM Dynamic Damper
(2) 1S188 FM Dynamic Damper
(3) 1S188×2 FM Discriminator
(4) 1S188 AM Detector
(5) 1S553 AFC

Output Power .....Maximum 1,000 mW
Undistorted 700 mW

Power Supply .....6 volts, 4×UM-1 (size "D" flashlite battery) or AC adaptor through DC 6V Jack

Current Drain .....No signal 20mA
Maximum 250mA

Speaker .....5″×7″ oval type permanent dynamic 8 ohm voice coil impedance

Cabinet Dimensions .....11″ (275mm) wide×7¼″ (180mm) high ×2¾″ (70mm) deep

Net Weight .....5 pounds (2.2 Kg.)

ALIGNMENT PROCEDURES

AM ALIGNMENTS

Sequence of Alignments	Dial Pointer	Signal Frequency	Coil Adjustment	Dial Pointer	Signal Frequency	Trimmer Adjustment	Indication
I.F.T. T9	1600 kc	455 kc					Max. output
I.F.T. T8	1600 kc	455 kc					Max. output
I.F.T. T7	1600 kc	455 kc					Max. output
Oscillator BC	600 kc	600 kc	L8	1400 kc	1400 kc	Ct6	Max. output
Antenna BC	600 kc	600 kc	L5	1400 kc	1400 kc	Ct3	Max. output
Oscillator SW1	2.5 Mc	2.5 Mc	L9	6.5 Mc	6.5 Mc	Ct7	Max. output
Antenna SW1	2.5 Mc	2.5 Mc	L6	6.5 Mc	6.5 Mc	Ct4	Max. output
Oscillator SW2	8.0 Mc	8.0 Mc	L10	22.0 Mc	22.0 Mc	Ct8	Max. output
Antenna SW2	8.0 Mc	8.0 Mc	L7	22.0 Mc	22.0 Mc	Ct5	Max. output

FM IF ALIGNMENTS

Sequence of Alignment		Alignment Frequency	Test Equipment Connection	Adjustment
1.	I.F.T. T5	10.7 Mc	Connect Sweep Generator to test point TP-1 and TP-5, Oscilloscope to test point TP-2 and TP-4.	Detune T6 and tune T5 for Max. gain and symmetry of responce curve.
2.	I.F.T. T4	10.7 Mc	Same as above connection.	Tune T4 for Max. gain and symmetry of response curve.
3.	I.F.T. T3	10.7 Mc	Same as above connection.	Tune T3 for Max. gain and symmetry of response curve.
4.	I.F.T. T2 T1	10.7 Mc	Same as above connection.	Tune T2 and T1 for Max. gain and symmetry of response curve.
5.	I.F.T. T6	10.7 Mc	Connect Sweep Generator to test points TP-1 and Oscilloscope to test point TP-3.	Tune T6 for Max. gain and symmetry of response curve.

FM RF ALIGNMENTS

Sequence of Alignment	Dial Pointer	Signal Frequency	Connect high side of Signal Generator to:	Coil Adjustment	Dial Pointer	Signal Frequency	Trimmer Adjustment	Indication
Oscillator	87.0 Mc	87.0 Mc	Signal Generator to TP-1	L4	104.0 Mc	104.0 Mc	Ct2	Max. output
Antenna	87.0 Mc	87.0 Mc	Signal Generator to Tp-1	L2 L3	104.0 Mc	104.0 Mc	Ct1	Max. output

ADJUSTMENT OF SEMI-FIXED RESISTOR

Adjust the semi-fixed resistor (SVR 100K) in order to make 600μA current circulation through the collector of transistor (Tr9 2SA322), which is measured and read 0.6 volt with a volt meter applied across the resistor (R39 1K).

PARTS LIST

PART NO.	DESCRIPTION	
MISCELLANEOUS		
R-S1297a	Telescopic Antenna	
R-S6222a	Earphone	
R-S2154	Jack	—EXT. POWER
R-S2180	Jack	—PHONO & EARPHONE
R-23676	Terminal Lug	—telescopic antenna
R-261193	Heat Sink	
R-25321	Spring Wire	—grounding of vari. cap.
R-S2155	Jack	—AUTO ANT
R-23855	Battery Terminal	—positive (+)
R-14257	Taper Spring	—negative terminal
R-S1254a ⑥	Pilot Lamp	
R-34192	Insulator Base	make Pilot Switch
R-25367	Spring Plate	make Pilot Switch
R-23594	Terminal	make Pilot Switch

SCHEMATIC LOCATION	PART NO.	DESCRIPTION		
FIXED VALUE CAPACITORS				
C1	R-CKD400K	Ceramic	40pF	±10%
C2 C4	R-CKD150K	〃	15pF	±10%
C3 C13 C22 C38 C46 C48 C50 C67 C74 C75 C76	R-CKD203Z	〃	0.02μF	+80%
C5 C11 C27 C28	R-CKD102Z	〃	0.001μF	〃
C6	R-CKD070K	〃	7pF	±0.5pF
C8 C25	R-CKD300K	〃	30pF	±10%
C9	R-CKD501M	〃	500pF	±20%
C10 C52 C78	R-CKD040K	〃	4pF	±0.5pF
C12	R-CKD080K	〃	8pF	〃
C14 C15 C19 C20 C23 C45 C64	R-CKD103Z	〃	0.01μF	+80%
C17 C24	R-CKD020K	〃	2pF	±0.25pF
C18	R-CKD100K	〃	10pF	±10%
C21 C49	R-CKD010M	〃	1pF	±0.25pF
C29 C43	R-CQS102M	Mylar	0.001μF	±20%
C34 C39 C40 C41 C53 C54	R-CQS103M	〃	0.01μF	〃
C35	R-CQT331K	Styrol	330pF	±10%
C36	R-CQT152K	〃	1500pF	〃
C37	R-CQT432K	〃	4300pF	〃
C42 C61 C62	R-CQS502M	Mylar	0.005μF	±20%
C44	R-CQT501K	Styrol	500pF	±10%
C51 C67	R-CKD403Z	Ceramic	0.04μF	+80%
C65	R-CKD030K	〃	3pF	±0.5pF
C69	R-CKD060K	〃	6pF	±10%
C70	R-CKD140K	〃	14pF	〃
C71	R-CKD101K	〃	100pF	〃
C72	R-CKD050K	〃	5pF	±10%
C77	R-CKD120K	〃	12pF	±10%

SCHEMATIC LOCATION	PART NO.	DESCRIPTION		
ELECTROLYTIC CAPACITORS				
C7 C26	R-C9131	5μF	6V	
C16 C31 C32 C58 C59	R-C9115	1μF	10V	
C33	R-C9137	30μF	6V	
C47	R-C9153	10μF	3V	
C55 C57 C63	R-C9143	200μF	6V	
C56 C60	R-C9136	100μF	6V	
FIXED VALUE RESISTORS				
R1 R34 R38	R-R333K	33K	ohms	
R2 R49	R-R222K	2.2K	〃	
R3	R-R221J	220	〃	±5%
R4	R-R330K	33	〃	
R5 R56	R-R152J	1.5K	〃	±5%
R6	R-R472J	4.7K	〃	〃
R7	R-R272J	2.7K	〃	〃
R8 R27	R-R683K	68K	〃	
R9 R14 R17	R-R472K	4.7K	〃	
R10 R49	R-R222K	2.2K	〃	
R11 R15 R18	R-R332K	3.3K	〃	
R12 R20	R-R151K	150	〃	
R13 R16 R19	R-R102K	1K	〃	
R21	R-R391K	390	〃	
R22 R23	R-R102J	1K	〃	±5%
R24 R25 R43	R-R562K	5.6K	〃	
R26 R33 R39	R-R102K	1K	〃	
R28 R45 R46	R-R104K	100K	〃	
R29	R-R472K	4.7K	〃	
R30	R-R563K	56K	〃	
R31 R53	R-R100K	10	〃	
R32 R71	R-R220K	22	〃	
R35	R-R183K	18K	〃	
R36	R-R472K	4.7K	〃	
R37	R-R122K	1.2K	〃	
R40	R-R393K	39K	〃	
R41 R47	R-R123K	12K	〃	
R42 R44	R-R102K	1K	〃	
R48 R63	R-R821K	820	〃	
R50	R-R153K	15K	〃	
R51	R-R273K	27K	〃	¼W
R52	R-R561K	560	〃	
R54 R70	R-R101K	100	〃	
R55	R-R680K	68	〃	
R57	R-R2N2J	2.2	〃	±5%
R58	R-R473K	47K	〃	
R59 R60 R62	R-R151K	150	〃	
R61	R-R221K	220	〃	
R64	R-R562K	5.6K	〃	
R65	R-R274K	270K	〃	
R66	R-R104K	100K	〃	
R67	R-R474K	470K	〃	
R68	R-R124K	120K	〃	

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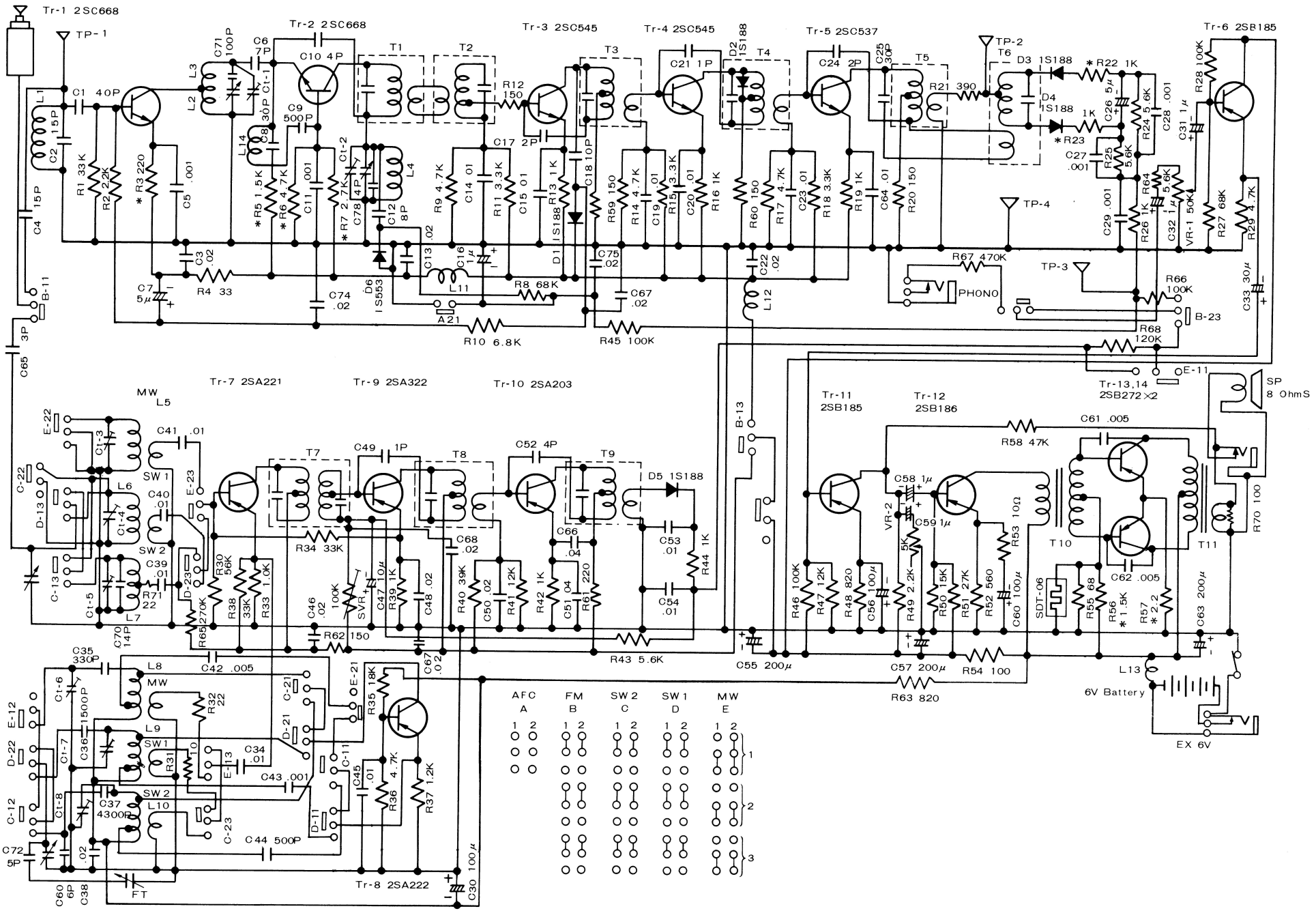
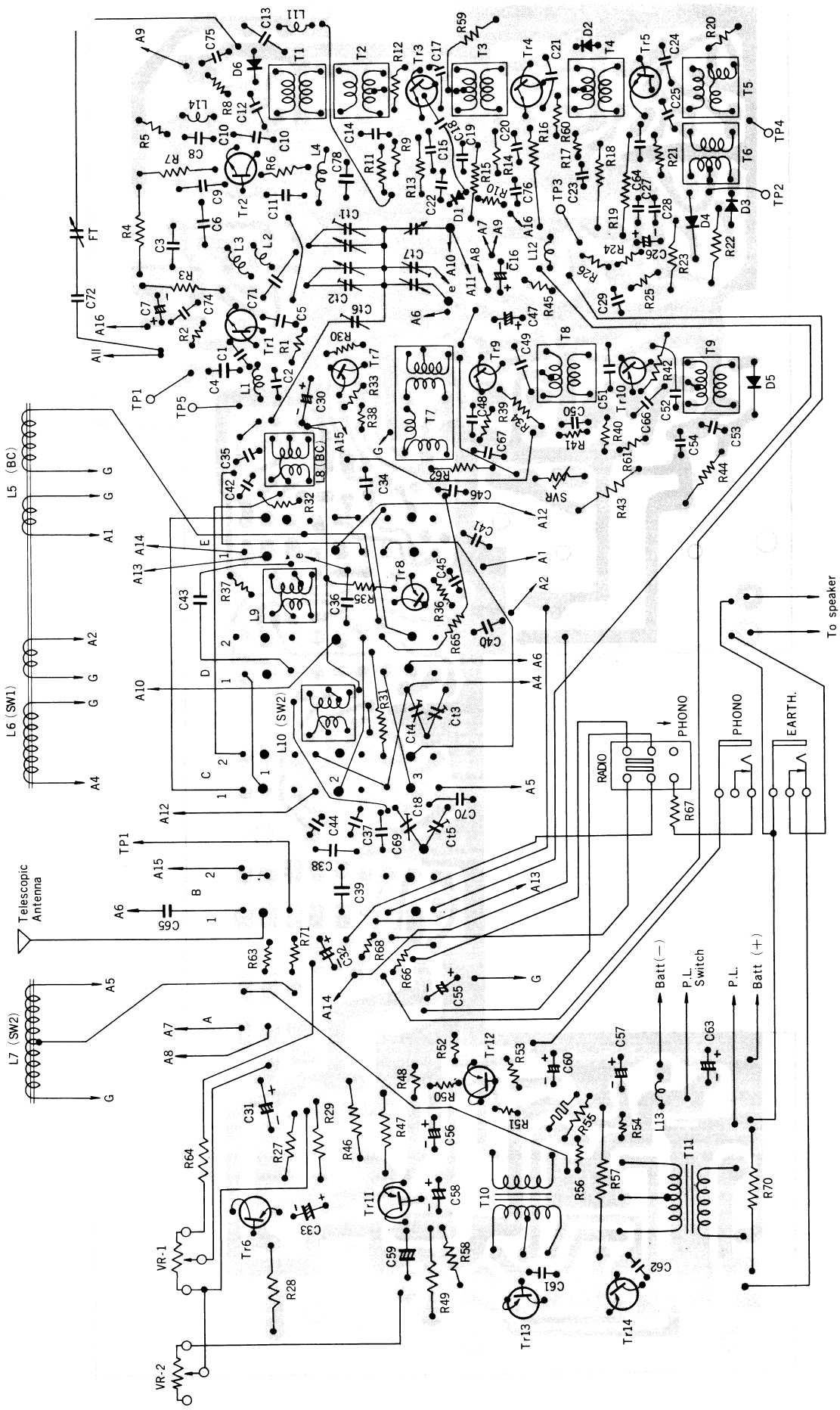
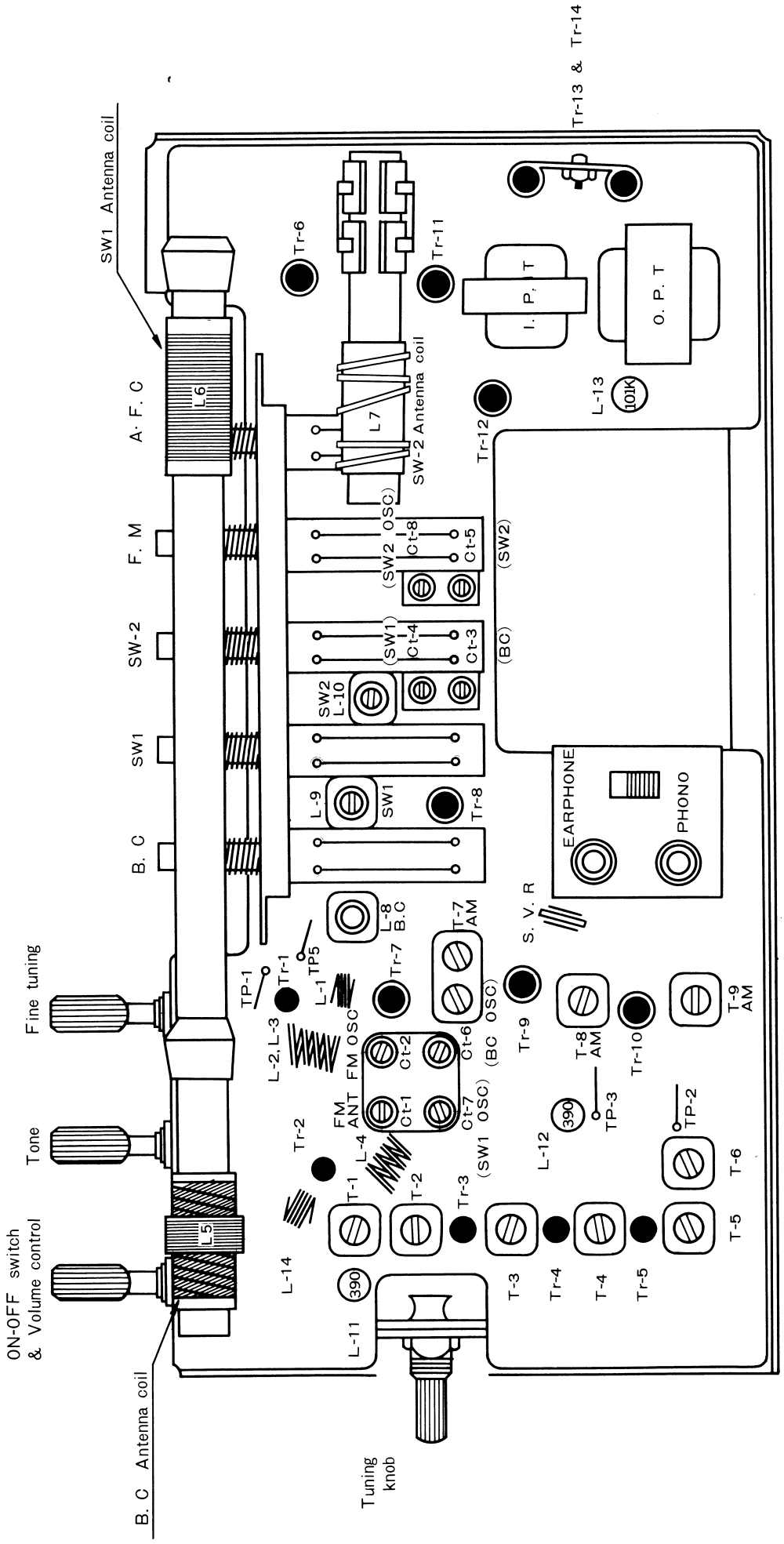

Tr-1 2SC668
Tr-2 2SC668
Tr-3 2SC545
Tr-4 2SC545
Tr-5 2SC537
Tr-6 2SB185
Tr-7 2SA221
Tr-8 2SA222
Tr-9 2SA322
Tr-10 2SA203
Tr-11 2SB185
Tr-12 2SB186
Tr-13,14 2SB272×2
TP-1
TP-2
TP-3
TP-4
PHONO
SP 8 OhmS
6V Battery
EX 6V
AFC
FM
SW 2
SW 1
MW

PARTS LIST

PART NO.	DESCRIPTION	Q'TY
HOUSING		
R-A14636	Housing Assembly —front & back	1
R-A31738f	Front Housing Assembly	1
R-31738f	Front Housing	1
R-38167	Dial Window Frame	1
R-261744a	Top Control Metal	1
R-261953a	Metal Strip —front lower edge	1
R-23854	Metal Strip —horizontal	2
R-261716	Badge —"SANYO"	1
R-261595	Side Metal —tuning control opening	1
R-261594	Side Metal —AUTO ANT opaning	1
R-31760	Plastic Sleeve —Telescopic Ant.	1
R-32722a	Plastic Sleeve —Pilot Switch	1
R-31809a	Plastic Trim —push button opening	1
R-31807	Plastic Trim —AUTO ANT Jack	1
R-A31739d	Back Housing Assembly	1
R-31739d	Back Housing	1
R-39392	Net	1
R-261943a	Marking Metal —EXT POWER 6 VOLTS	1
R-261596	Specification Sheet	1
R-31758	Battery Compartment Lid	1
R-S81417b	Hahdle Assembly	1
R-241371	Stud Screw —handle mtg	2
R-	Polyethylen Washer 12×6×0.5t —handle mtg	4
R-39414	Spacing Ring —handle mtg	2
R-S81419a	Tuning Knob	1
R-	Knob Washer 34×11.5×1t	1
R-S81420a	Knob	3
R-	Knob Washer 15×9×0.5t	3
R-31761a	Button —pilot light control	1
R-S81418b	Pointer	1
CHASSIS		
R-S81422 a	Tuning Shaft	1
R-S7090	Special Nut —tuning shaft mtg	1
R-111447	Special Washer —tuning shaft mtg	1
R-44065	Cushion —tuning capacitor mtg	1
R-39447	Drum	1
R-S7083	Special Screw —drum mtg	1
R-241416	Pulley Shaft —on P.C. Board	1
R-24344	Pulley Shaft	2
R-24793b	Pulley Shaft	2
R-27065	Pulley	5
R-15041	Tension Spring	2
R-	Dial Cord 0.5ϕtetron 830mm	1
R-27097	Stud Nut —dial scale mtg	1
R-261591a	Dial Scale	1
R-32698a	Push Button —band select	5
R-27093	Guide Shaft —push button mtg	6
R-15307a	Tension Spring —push button mtg	5
R-31762	Plastic Liaison —push button mtg	5
R-113070a	Stopper Metal —push button mtg	1

SCHEMATIC LOCATION	PART NO.	DESCRIPTION
TRANSISTORS & DIODES		
Tr1	2SC668E	Transistor
Tr2	2SC668D	〃
Tr3 Tr4	2SC545D	
Tr5	2SC537D	〃
Tr6 Tr11	2SB185	〃
Tr7 Tr8	2SA222	〃
Tr9	2SA322	〃
Tr10	2SA203B3	〃
Tr12	2SB186	〃
Tr13 Tr14	2SB272	〃 (yellow or green mark)
D1 D2 D5	1S188	Diode
D3 D4	1S188	〃 (FM Discriminator)
D6	1S553	〃 (Variable Capacitance) AFC
	SDT-06	Thermistor
COILS & TRANSFORMERS		
L1 L14	R-W9018	VHF Coil FM Ant. &
L2	R-W9001	〃 1½ turn FM RF
L3	R-W9003	〃 3½ turns FM RF
L4	R-W9058	〃 4½ turns FM Osc.
L11 L12	R-W1051	Choke Coil
L13	R-W1048	〃
L5 L6	R-S81431	Antenna Coil BC & SW1
L7	R-W2302	〃 SW2
L8	R-W8118b	Oscillator Coil BC
L9	R-W8215	〃 SW1
L10	R-W8161	〃 SW2
T1	R-W5T276	IF Transformer FM primary of 1st IF
T2 T3	R-W5T256	〃 FM
T4	R-W5T275	〃 〃
T5	R-W5T292	〃 〃
T6	R-W5T237	〃 〃
T7	R-W5W018	〃 AM
T8	R-W5T072	〃 〃
T9	R-W5T073	〃 〃
T10	R-W6312	Input Transformer
T11	R-W6333	Output Transformer
CONTROLS		
	R-C1130	Variable Capacitor —tuning capacitor
	R-C1132	〃 —fine tuning
Ct4, 5, 7, 8	R-C0056a	Trimmer Capacitor
VR1	R-R11673	Variable Resistor 50K D —volume control
VR2	R-R11672	〃 5K A —tone control
SVR	R-R11011	Semi-fixed Resistor 100K
	R-S4390	Push Switch —band select
	R-S4208	Slide Switch —radio/phono select
SPEAKER		
	R-S6423	Speaker 5″×7″ 8 ohms

INTER-PARTS WIRING ILLUSTRATION



MAIN PARTS IDENTIFICATION