SANYO

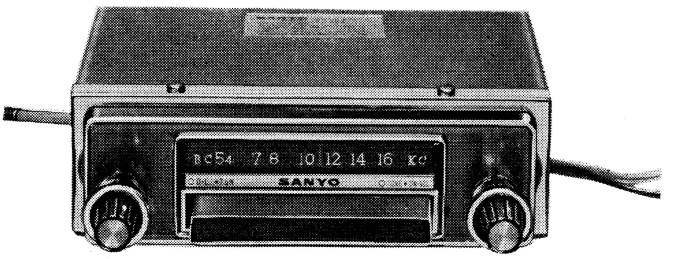
9-Transistor Car Rodio
ELECTRO TOUCH AUTOMATIC TUNING

MODEL F-8301

SERVICE MANUAL

SANYO ELECTRIC CO., LTD.

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

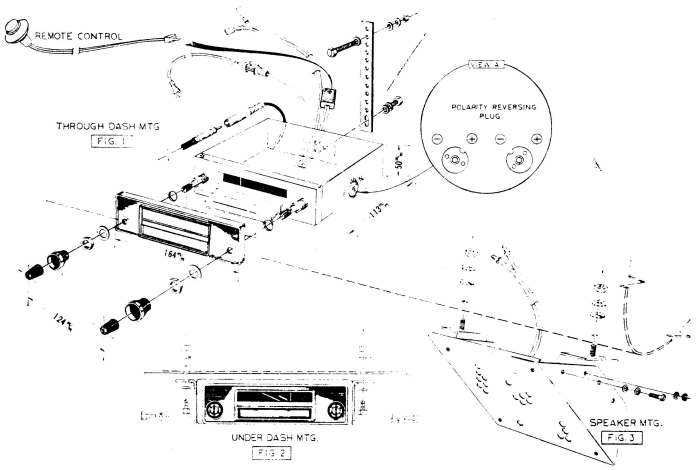


SPECIFICATIONS

CIRCUIT SYSTEM·····9 transistor plus 3 diode superheterodyne with RF amplifier and electro touch signal seeking circuit.
FREQUENCY RANGE ·····530 – 1605Kc
INTERMEDIATE FREQUENCY·····455Kc
SENSITIVITY·····20μV (for 500mW output)
SELECTIVITY ·····20dB (at 10Kc off-tuning from 1000KC)
SIGNAL TO NOISE RATIO ·····25dB (at 50μV signal input)
SIGNAL SEEKING SENSITIVITY
40μV (Switch in Distant position)
315μV (Switch in Local position)
FIDELITY ·····100cps –2 dB
400cps 0 dB
4000cps –20 dB
OUTPUT POWER ·····Undistorted 2.2 watts
Maximum 3.2 watts
POWER SUPPLY ·····12V (Reversable polarity)
CURRENT DRAIN ·····No signal 220 mA
Maximum output 540 mA
Seeking time 800 mA

LOUDSPEAKER ·····6½″ permanent dynamic
Voice coil impedance 8 ohms
TRANSISTORS ·····2SA322 RF Amp.
2SA322 Converter
2SA322 IF Amp.
2SB186 AF Amp.
2SB186 Driver
2SB254×2 power Amp. (Pushpull)
2SA202 Trigger IF Amp.
2SB22 DC Amp.
DIODES ·····1S188 Detector
1S188 AGC
1S188 Trigger Det.
THERMISTOR ·····SDT-02×2 Temp. Compensator
DIMENSIONS ·····Width 164mm (6½″)
Height 50mm (2″)
Depth 113mm (4½″)
SHAFT SPACING ·····124mm
(Distance between control shafts)
WEIGHT ·····1.7kg (3.1 lbs.)

CONSTRUCTIONS



STANDARD ACCESSORIES

Refference Number	Items	Ratings	Q'ty
1	Noise suppressor resistor	R-R7006	1
2	Noise suppressor capacitor	R-C4005	1
3	Spare fuse	R-S1044	1
4	Mounting metal (Perforated)	R-111685	1
5	Mounting angle	R-111663a	2
6	Speaker box mtg. angle	R-S8987	2
7	Remote control unit	AR-2	1
8	Hex bolt unit mtg.	5×8	3
9	Metal washer 〃 〃	5mm	3
10	Spring washer 〃 〃	5mm	3

Refference Number	Items	Ratings	Q'ty
11	Hex bolt unit mtg.	6×30	3
12	Hex nut 〃 〃	6mm	3
15	Metal washer 〃 〃	6mm	3
14	Spring waser 〃 〃	6mm	3
8	Hex bolt SP box mtg.	5×8	4
15	Hex nut 〃 〃	5mm	2
9	Metal washer 〃 〃	5mm	6
10	Spring washer 〃 〃	5mm	6
	Instruction booklet		1

PARTS LIST

Symbol No.	Stock No.	Description	Q'ty
Mechanical Parts			
	R-S8988	Speaker box -metal case	1
	R-112307a	Escutcheon panel -chrome plating	1
	R-39193	Trim panel -ABS chrome plating	1
	R-38071a	Dial plate	1
	R-26078	Brand plate -Al plate	1
	R-39194a	Knob -interior Knob	2
	R-39140	Knob DL select (Exterior)	1
	R-39217	Knob -tone control (Exterior)	1
	R-471056	Spec. sheet	1
	R-112303	Back screen	1
	R-38070	Push button	1
	R-112302	Push button angle	1
	R-35247	Insulator washer	1
	R-23765	Pointer	1
	R-261077	Heat sink -for power transistor	1
	R-112239	Lead clamp -for antenna lead	1
	R-44240	Rubber cushion -relay mtg.	2
	R-241008	Sleeve pipe -relay mtg.	2
Electrical Parts			
	R-S6377①	Speaker 6½″ P.D.S. 8 ohms	1
L1.L6	R-W1015	Choke coil 6μH	2
T1	R-W8145	Oscillator coil	1
T2	R-W5T151a	IF transformer 1st stage prim.	1
T3	R-W5T152	IF transformer 1st stage second.	1
T4	R-W5T153	IF transformer 2nd stage prim.	1
T5	R-W5T154	IF transformer 2nd stage second.	1
T7	R-W5T137	IF transformer -for trigger	1
T8	R-W5T136	IF transformer -for trigger	1
T9	R-W5T135	IF transformer -for trigger	1
CT3	R-C0028d	Trimmer 50pF	1
CT2	R-C0029d	Trimmer 65pF	1
CT1	R-C0047a	Trimmer 65pF	1
T6	R-W6258a	Input transformer	1
R13, 14	R-R124138a	Volume & tone control with switch	1
L8	R-W6195	Choke coil	1
R36	R-R11012	Variable resistor -max. 5K ohms	1
	R-S4297a	Relay	1
	R-S81166	Spark capacitors with angle	1
	R-S3138a	Speaker lead -from set	1
	R-S3139a	Speaker lead -from speaker	1
	R-S2116a	Antenna receptacle	1
	R-S1165a	Pilot lamp	1
	R-S2141	Pilot socket with angle	1
	R-S3063	Lug plate -for seeking switch	1
	R-S2098	Polarity reverse socket	1
	R-S1102	Polarity reverse plug	1
	R-S1204	Fuse holder	1
	R-23204	Lug plate -for transistor	2
	R-S2138	Remote control socket	1
	R-S4284a	Rotaly switch -for seeking sens. reverse	1
	R10-45	AT-2AU Tuner complete assembly	1
Transistor			
Tr1-3		2SA322	3
Tr4, 5		2SB186	2
Tr6, 7		2SB254	2
Tr8		2SA202	1
Tr9		2SB22	1
Diode			
D1-3		1S188	3
Thermistor			
Th1, 2		SDT-02	2

Symbol No.	Stock No.	Description		Q'ty
Electrolytic capacitor				
C17,18 20	R-C9060	10μF	10WV	3
C19	R-C9145	100μF	10WV	1
C21,22,24 47	R-C9146	200μF	10WV	4
C23	R-C9127a	500μF	15WV	1

Symbol No.	Description		
Fixed resistors (Carbon film ¼ watt)			
R1	10K	ohms	±10%
R2	560	〃	〃
R3	33K	〃	〃
R4	1K	〃	〃
R5	33K	〃	〃
R6	2.7K	〃	〃
R7	1K	〃	〃
R8	12K	〃	〃
R9	12K	〃	〃
R10	270K	〃	〃
R11	820	〃	〃
R12	15K	〃	〃
R15	330	〃	〃
R16	10K	〃	〃
R17	82K	〃	〃
R18	15K	〃	〃
R19	1K	〃	〃
R20	27	〃	〃
R21	2.2K	〃	〃
R22	4.7K	〃	〃
R23	1K	〃	〃
R24	39K	〃	〃
R25	100	〃	〃
R26	2.7K	〃	〃
R27	330	〃	〃
R28	390	〃	± 5%
R29	20	〃	〃
R30	390	〃	〃
R31	20	〃	〃
R32	270	〃	±10%
R34	10K	〃	〃
R35	1K	〃	〃
R37	1K	〃	〃
R38	18K	〃	± 5%
R39	2.8K	〃	±10%

Fixed capacitors					
C1	Mylar	0.04 μF	+30−20%	50WV	Square
C2	〃	0.04 〃	〃	〃	〃
C3	Ceramic	120 pF	±10%	150WV	Insulated
C4	Mylar	0.005 μF	+30−20%	50WV	Square
C5	〃	0.01 〃	〃	〃	〃
C6	〃	0.001 〃	〃	〃	〃
C7	Ceramic	60 pF	±10%	〃	Disc
C8	Styrol	160 〃	〃	250WV	〃
C9	Ceramic	6 〃	±0.5pF	50WV	Disc
C10	Mylar	0.04 μF	+30−20%	〃	Square
C11	〃	0.0015 μF	〃	〃	〃
C12	Ceramic	1.5 pF	±0.5pF	〃	Disc
C13	〃	100 〃	±10%	250WV	〃
C14	〃	8 〃	±0.5pF	50WV	〃
C15	Mylar	0.05 μF	±30−20%	〃	Square
C16	〃	0.04 〃	〃	〃	〃
C28	〃	0.02 〃	〃	〃	〃
C29	Ceramic	500 pF	±10%	〃	Disc
C30	〃	3 〃	±0.5%	〃	〃
C31	〃	7 〃	〃	〃	〃
C32	Mylar	0.04 μF	+30−20%	〃	Square
C33	Ceramic	18 pF	±10%	〃	Disc
C34	Mylar	0.04 μF	+30−20%	〃	Square
C35	〃	0.04 〃	〃	〃	〃
C37	M.P.	0.5 〃	±20%	150WV	〃
C39	Mylar	0.01 〃	+30−20%	50WV	Square
C41	〃	0.01 〃	〃	〃	〃
C43	〃	0.04 〃	〃	〃	〃
C46	〃	0.04 〃	〃	〃	〃

6-20055 Printed in Japan

POLARITY REVERSE

The polarity reversing plug must be positioned correctly before installing your radio or making any electrical connections to the radio.

Set the polarity plug to the positive position if the postive terminal of the battery is grounded to the car.

Set the polarity plug to the negative position if the positive terminal is grounded to the car.

Damage to the radio may result if polarity plug is not positioned correctly before operating
antenna fully extended,

ANTENNA TRIMMERAD JUSTMENT

With radio installed in car and tune antenna fully extended in a weak station near 1400kc and adjust CT1 for maximum output. (Fig. 4)

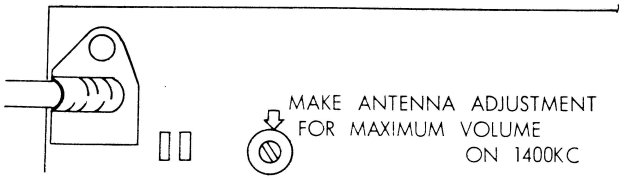


Fig. 4

ALIGNMENT PROCEDURES

Check power supply voltage (13.2V) and ground polarity.

Signal generator output:	Modualtion frequency 400cps Percentage modulation 30% Signal level just high enough to provide meter deflecton.
Signal supply inlet:	Antenna receptacle thru the dummy.
Ammeter connection:	As figure 7 while in processes of steps 1, 2 and 6.
Output meter connection:	As figure 6 while in processes of steps 3, 4 and 5.

STEP	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	ELEMENTS TO BE ADJUSTED	REMARKS
IF & TRIGGER ALIGNMENT				
1	455Kc	Lowest end	R36	For maximum current
2			T9 T8 T7 T5 T4 3T T2	For minimum current *Repeat this step
RF ALIGNMENT				
3	525Kc	Lowest end	T1	For maximum output *Repeat steps 3, 4 and 5
4	1630Kc	Highest end	CT3	
5	1400Kc	1400Kc	CT1 CT2	
RELAY				
6	1000Kc	1000KC	R36	5mA current to the relay.

NOTE: It is unnecessary to adjust tuner assembly because the assembly is completely line-uped:

ALIGNMENT CONNECTION

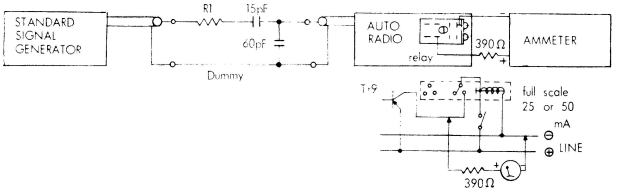


Fig. 5

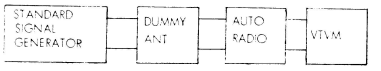


Fig. 6

PARTS LOCATION

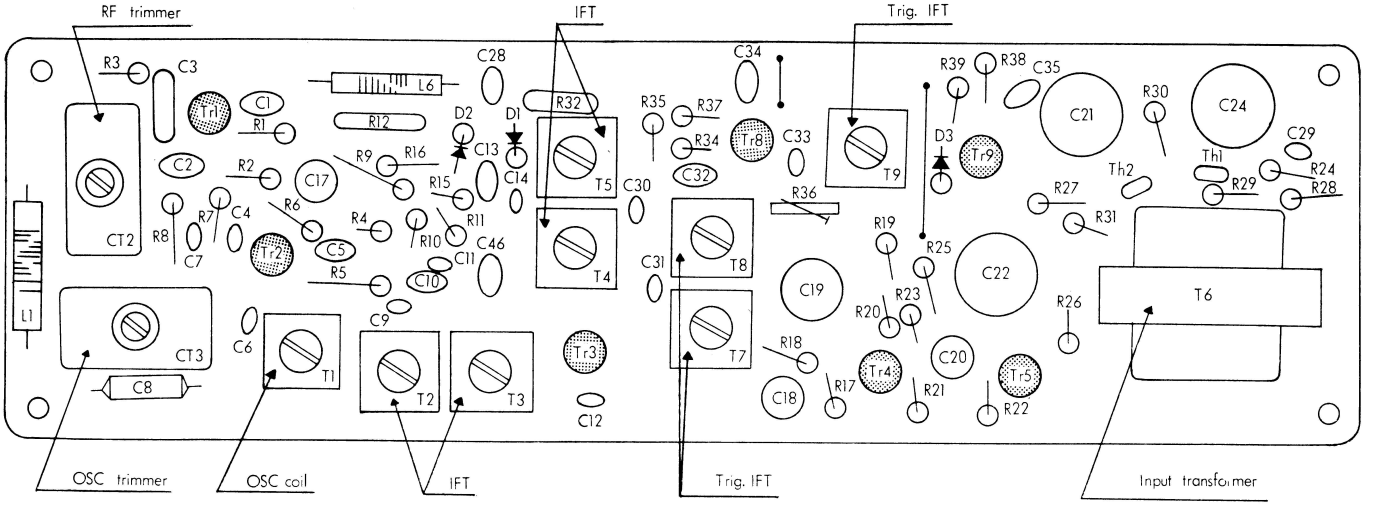


fig. 7

INNER PARTS LOCATION

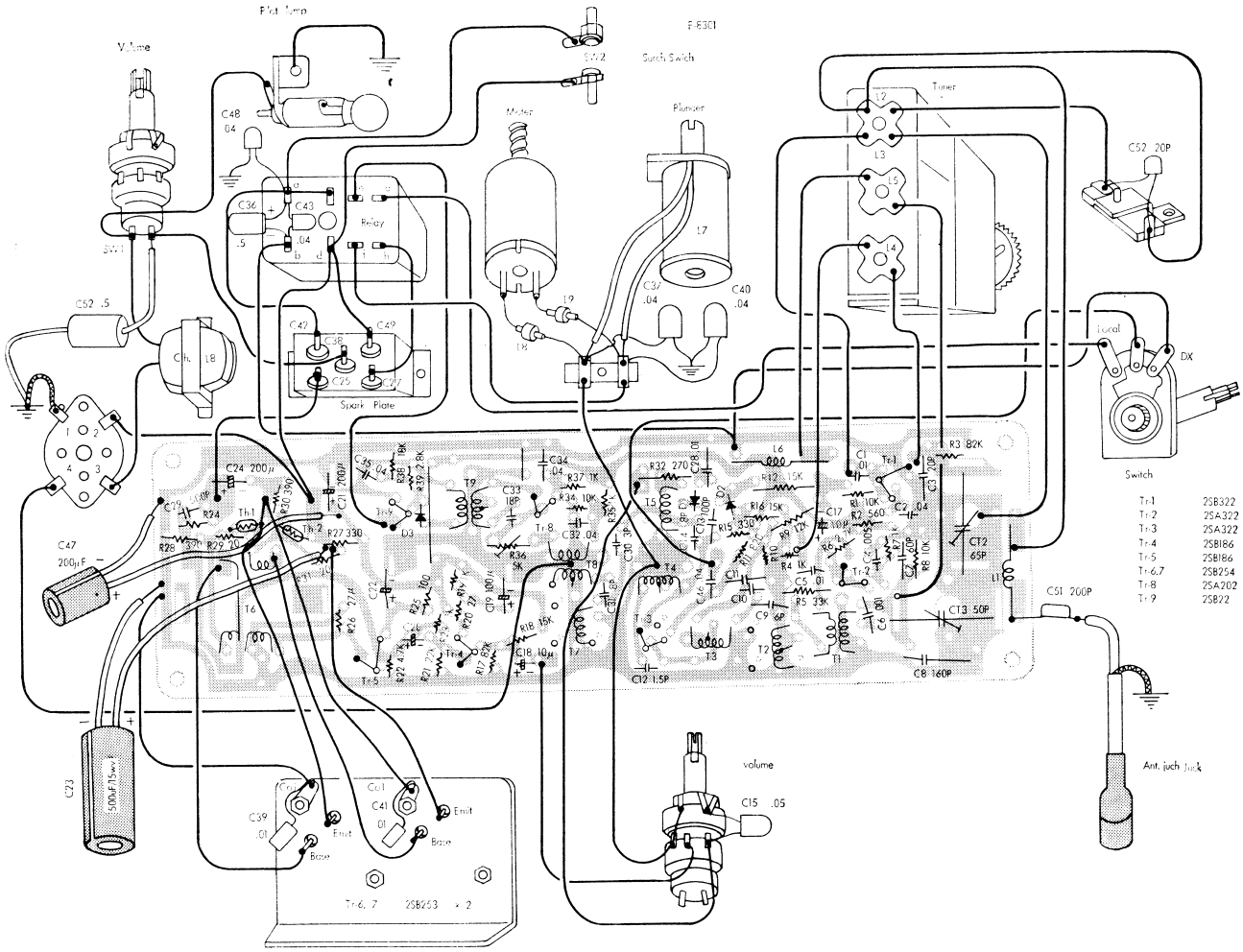


Fig. 8

CIRCUIT DIAGRAM

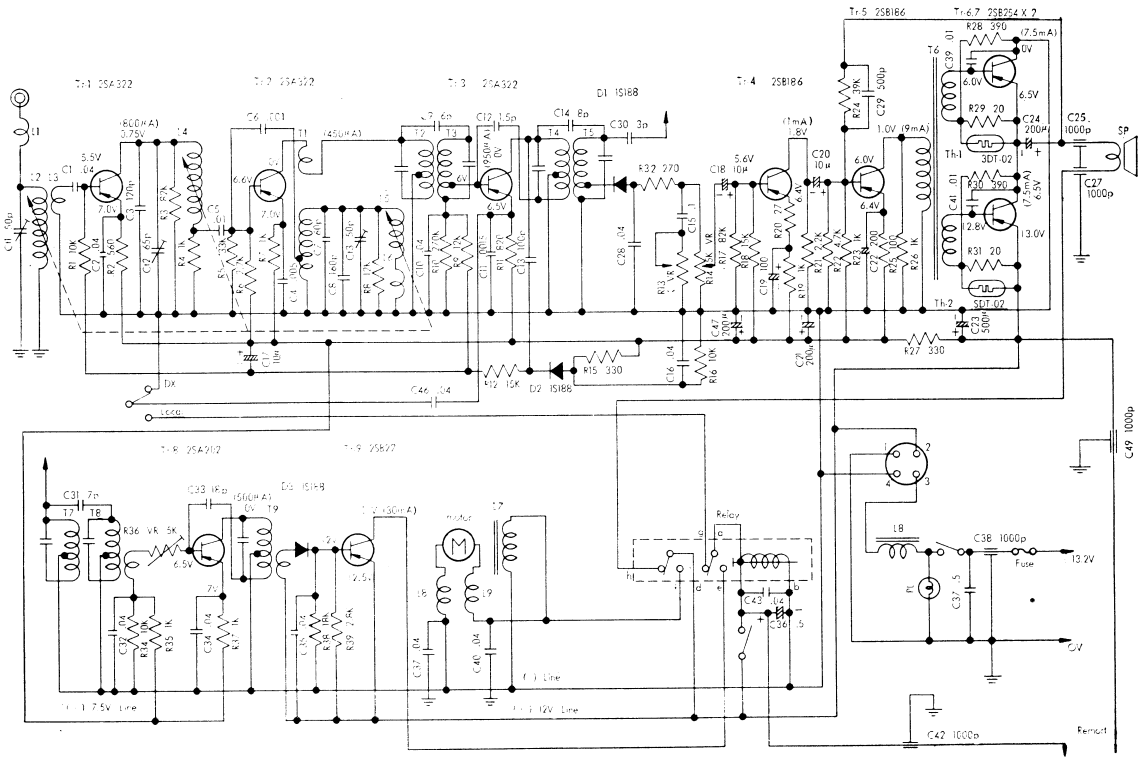


Fig. 9