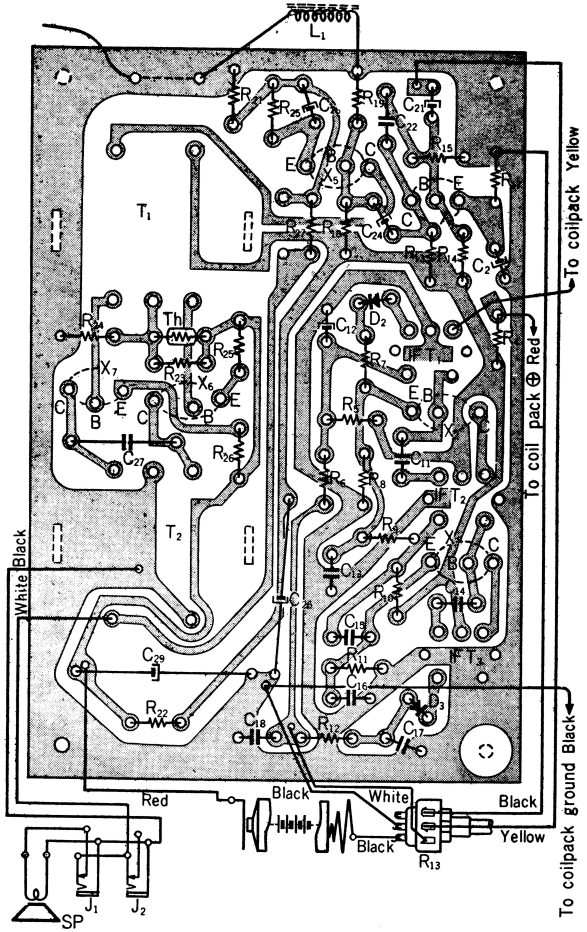
Parts list for TR-712 B

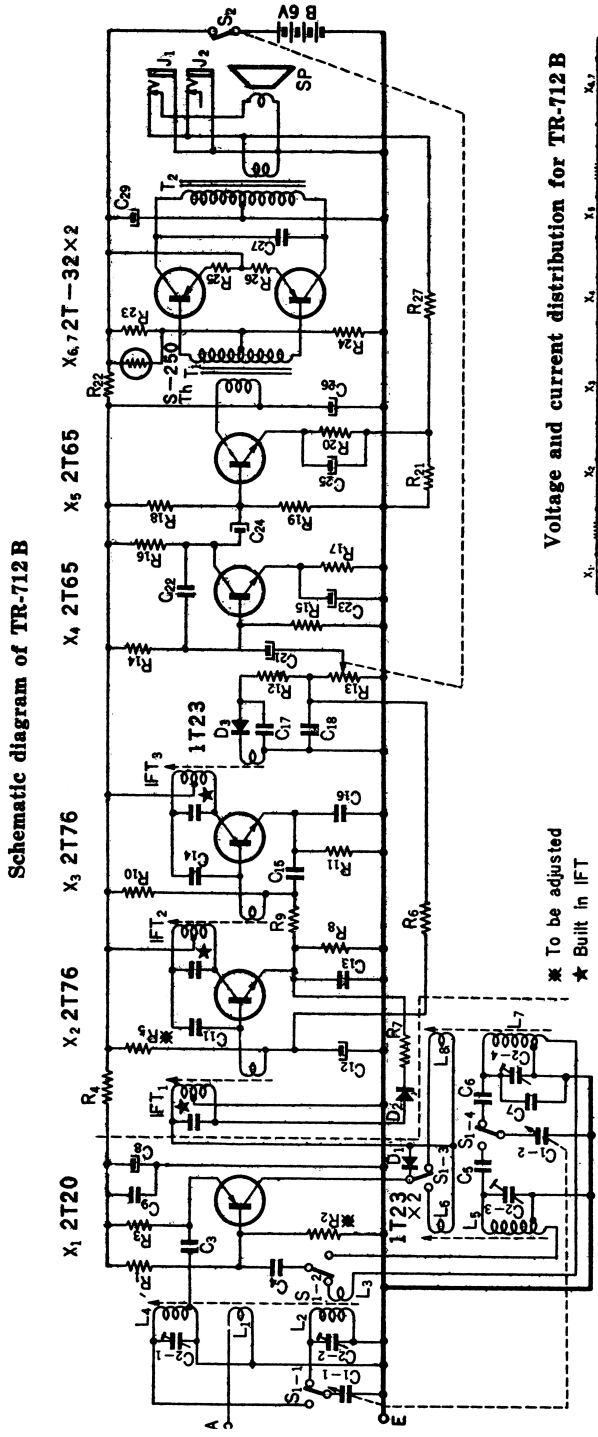
Symbol	Description
L_1	EXT. ANT. } (Ferrite bar antenna)
L_2 L_3	MW ANT. } (Ferrite bar antenna)
L_4	SW ANT. } (Ferrite bar antenna)
L_5 L_6	SW oscillator coil
L_7 L_8	MW 〃 〃
IFT_1	LI-020 AP
IFT_2	LI-008 BP
IFT_3	LI-008 CP
S_1	
S_2	Power switch
T_1	Input transformer
T_2	Output transformer
J_1	Earphone jack
J_2	〃 〃
SP	5″ 8 Ω
X_1	Mix. 2T20 (2SA122)
X_2	IF_1 2T76 (2SC76)
X_3	IF_2 2T76 (2SC76)
X_4	AF_1 2T65 (2SD65)
X_5	AF_2 2T65 (2SD65)
X_6	A Font 2T32 (2SB52)
X_7	A Font 2T32 (2SB52)
D_1	OSC comp. 1T23
D_2	AGC 1T23
D_3	DET 1T23
Th	Thermistor S-250
C_1	2 ganged variable condenser
C_2	4 ganged trimmer condenser
C_3	0.005 μF
C_4	0.01 μF
C_5	3000 PF (Styrol)
C_6	370 PF (〃)
C_7	10 PF (〃)
C_8	100 μF 6 V (Electrolytic)
C_9	0.01 μF
C_{11}	2 PF (Styrol)
C_{12}	10 μF 3 V (Electrolytic)
C_{13}	0.02 μF
C_{14}	2 PF (Styrol)
C_{15}	0.02 μF
C_{16}	0.02 μF
C_{17}	0.02 μF
C_{18}	0.02 μF
C_{21}	10 μF 3 V (Electrolytic)
C_{22}	0.005 μF
C_{23}	30 μF 3 V (Electrolytic)
C_{24}	10 μF 3 V (〃)
C_{25}	30 μF 3 V (〃)
C_{26}	100 μF 6 V (〃)
C_{27}	0.1 μF
C_{29}	100 μF 6 V (Electrolytic)
R_1	3.3 KΩ
$R_2$①	12 KΩ
R_3	2.2 KΩ
R_4	2.2 KΩ
$R_5$①	82 KΩ
R_6	5.6 KΩ
R_7	470 Ω
R_8	470 Ω
R_9	3.3 KΩ
R_{10}	27 KΩ
R_{11}	470 Ω
R_{12}	470 Ω
R_{13}②	5 KΩ
R_{14}	18 KΩ
R_{15}	5.6 KΩ
R_{16}	1 KΩ
R_{17}	1 KΩ
R_{18}	7.5 KΩ
R_{19}	3.3 KΩ
R_{20}	470 Ω
R_{21}	5.1 Ω
R_{22}	100 Ω
R_{23}	220 Ω
R_{24}	4.7 KΩ
R_{25}	5.1 Ω
R_{26}	5.1 Ω
R_{27}	100 Ω

① To be adjusted ② Volume control with switch

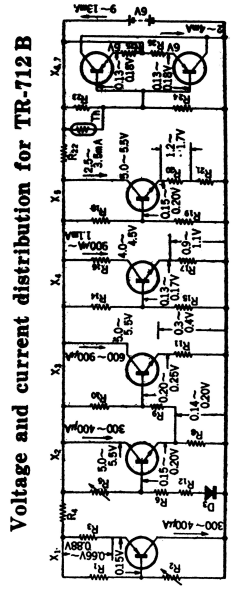
Mounting of TR-712 B (Printed side)



Schematic diagram of TR-712 B



Voltage and current distribution for TR-712 B



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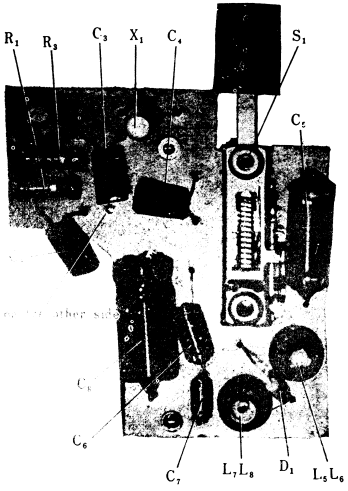
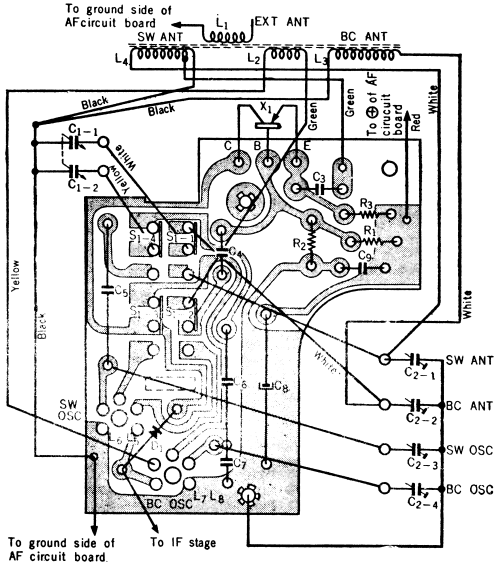
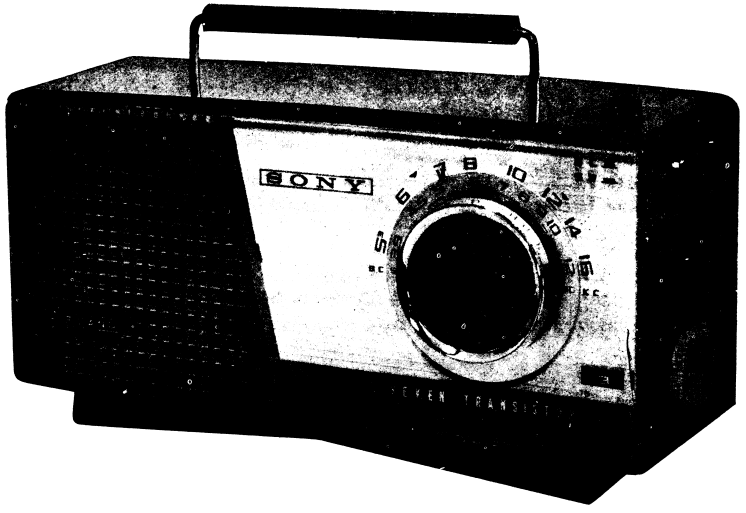
Coilpack of TR-712 B (Mounted side)

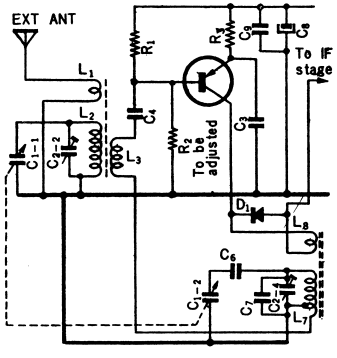


Coilpack of TR-712 B (Printed side)

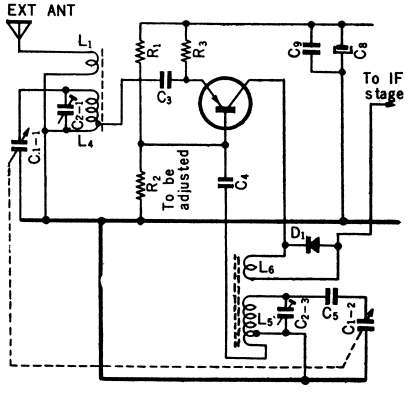




Converter circuit for MW band



Convertor circuit for SW band



Specifications for TR-712 B

Circuit	:	8 transistor superheterodyne
Covering range	:	MW 535—1,605 Kc SW 3.9—12 Mc
IF frequency	:	455 Kc
Sensitivity	:	MW 65 μV/m with built-in ferrite bar antenna SW 75 μV/m " " " " " MW, SW 5μV/m with external aerial of 5 m. effective height
Selectivity	:	15db (10 Kc off at 1,400 Kc)
Output power	:	200 mW (undistorted)
Speaker	:	5" PM dynamic speaker
Battery	:	Four size "D" flashlight batteries (6 volts)
Current drain	:	Approx. 11 mA. at 0 signal
Dimensions	:	11½" × 4" × 5¾" (290 × 100 × 145 mm)
Weight	:	Approx. 4.2 lbs. (1.86 Kg.)

How to remove Cabinet

(a) Take off Tuning knob and Volume control knob by pulling straight.
(b) Loosen and remove 5 screws designated ⊖ in the figure.

Checking and adjusting of voltage or current

Transistors used in this model are of NPN type except X_1, X_6 and X_7. Be careful to the polarity.

(a) During measurement the set must be avoided to be tuned to any station with the Volume control set at minimum.
(b) The transistor in wrong operation can be often found out by checking the voltage between the base and the emitter.
(c) Collector current can be known, by calculation, from the voltage drop across the resistor in the emitter circuit.
(d) When X_1 or X_3 is replaced, adjust the emitter voltage to obtain the value shown in the voltage and current distribution diagram, by replacing R_2 or R_5.

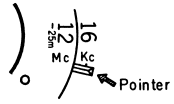
Tracking adjustment

MW band

(a) Set the variable condenser at maximum and adjust core of L_7 to receive 520 Kc.
(b) Set the variable condenser at minimum and adjust trimmer condenser C_{2-4} to receive 1,680 Kc.
(c) Repeat (a) and (b) for 2 or 3 times.
(d) Adjust position of L_2 and L_3 on ferrite bar to obtain maximum output for 620Kc.
(e) Adjust trimmer condenser C_{2-2} to obtain maximum output for 1,400 Kc.

SW band

(a) Set trimmer condensers C_{2-1} and C_{2-3} at approximately middle position.
(b) Set variable condenser at maximum and adjust core of L_5 to receive 3.8 Mc.
(c) Set variable condenser at minimum and adjust trimmer condenser C_{2-3} to receive 12.6 Mc.
(d) Adjust position of L_4 on the ferrite bar to obtain maximum output for 3.9 Mc.
(e) Adjust trimmer condenser C_{2-1} to obtain maximum output for 12.6 Mc.



Adjust tuning dial pointer as shown with the variable condenser set at minimum.

In this case the local oscillator frequency tends to be varied when the tuning circuit is adjusted, by Pulling effect. Therefore, C_{2-3} must be readjusted to find out proper point every time after C_{2-3} is adjusted.
When the tracking adjustment is accomplished, final positions of C_{2-1} and C_{2-3} will be usually approximately middle points. C_{2-1} at minimum and C_{2-3} at maximum will lead to unstable operation.
Be careful to "Image". For instance the Image frequency will be received at approximately 11.7 Mc when the signal generator is delivering 12.6 Mc. Adjustment must not be done for 11.7 Mc.

Convertor circuit

In the short wave reception, phase shift between input current in the base circuit and output current developed in the emitter circuit leeds to deteriorate the gain of the transistor, as the operating frequency is increased.
In the actual set the following circuit is emloyed for convertor to improve this deterioration, which has been developed by Sony's research group.

In the short wave operation, input signal is injected to the base of X_1, the convertor. Therefore X_1 is considered as a grounded emitter local oscillator having a circuit, connected in series with the emitter, whose resonance frequency is lower than that of the local oscillator by IF frequency (455Kc).
This resonance circuit shows capacitive characteristics so long as the local oscillator freqrency is concerned and this tendency becomes stronger for higher frequency. The leading current developed by this resonance circuit acts to increase base current to maintain oscillation uniformly throughout the whole frequency range. Thus the local oscillator operates satisfactorily in the higher frequency range as well as in the lower frequency.

AGC circuit with Shunting diode

The diode D_2 connected between IFT_1 and X_2 emitter serves to prevent distortion when extremely large signal is injected to X_2 in the following manner. Normally D_2 does not permit current to flow as it is reversely biased. When the set is tuned to extremely powerful station, voltage drop across R_8 dcreases because the collector current of X_2 decreases as the result of AGC action and this leads to decrease the reversed bias for D_2 which is, at the same time, partially cancelled by the increased output of IFT_1.
Accordingly D_2 conducts and R_7 (47 Ω) acts as a shunting resistor to decrease the input for X_2.
Thus the AGC action is promoted by the introdution of D_2.

Mounting of TR-712 B