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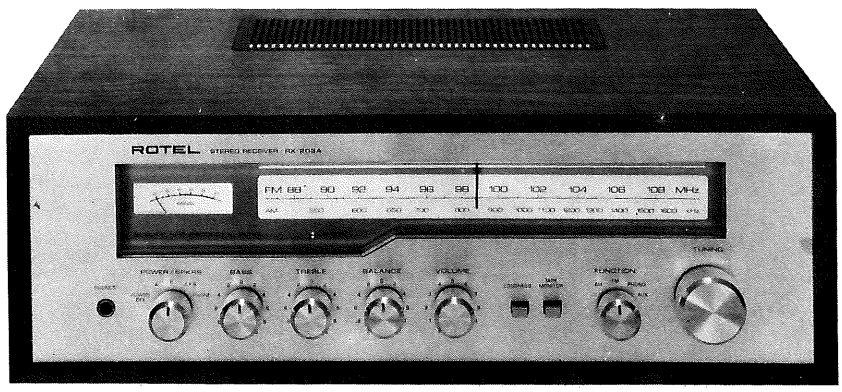
JAN. 17. 1979



AM/FM Stereo Receiver

RX-203A

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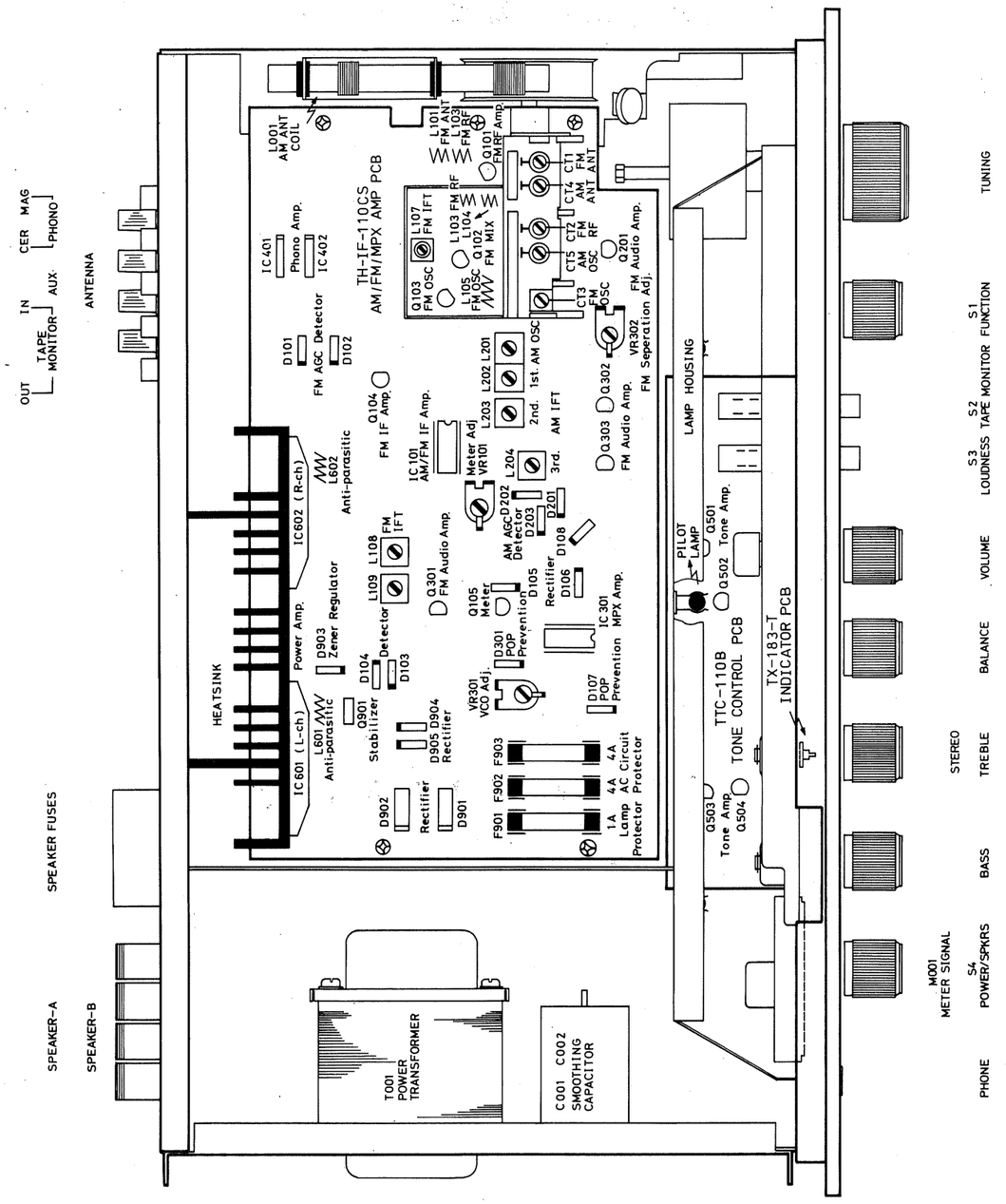
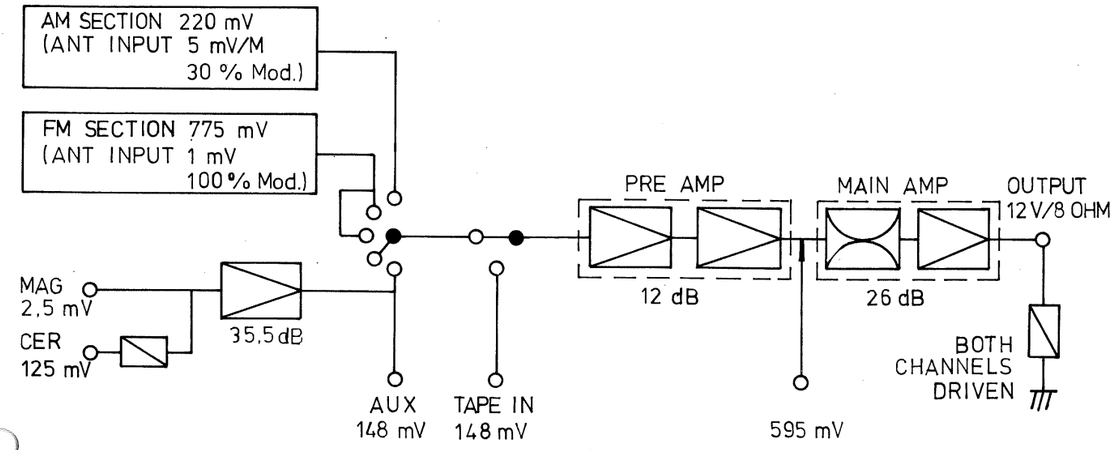
Technical Manual

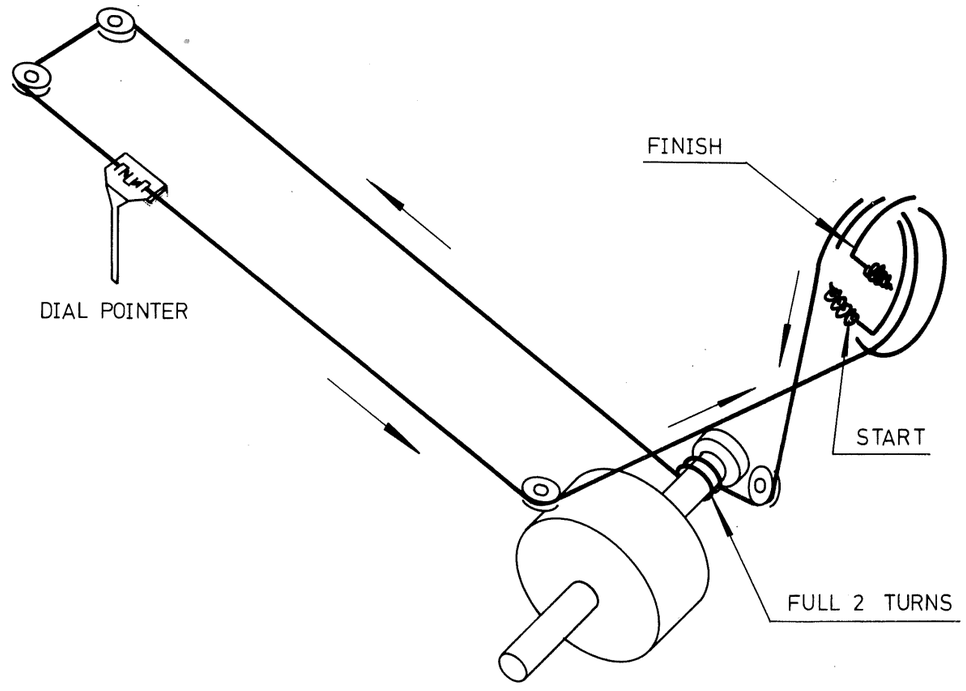
Chassis Layout (Top View)



Gain Diagram



Dial Stringing Diagram



Note: Carry out stringing with the front end set at VC maximum.

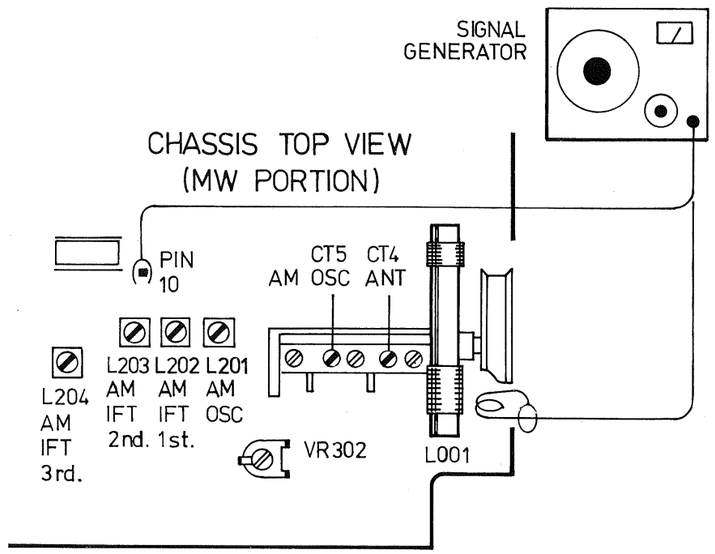
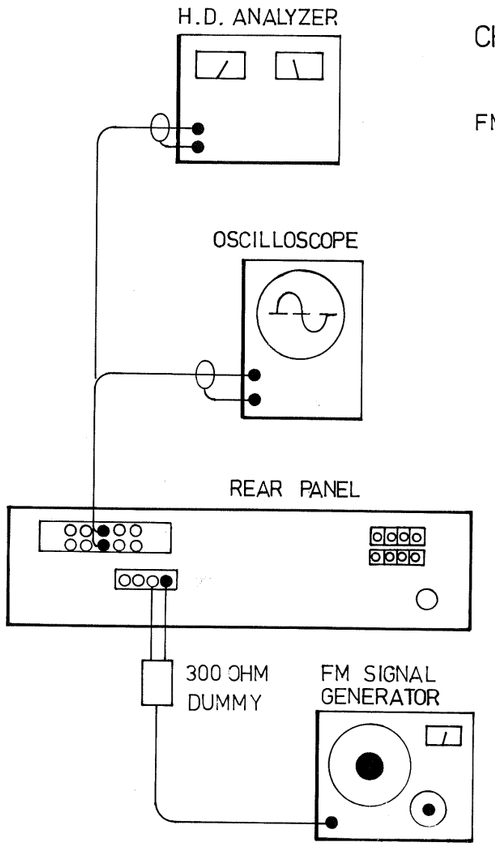


Fig. 1. AM IF and RF Alignment Hook-up



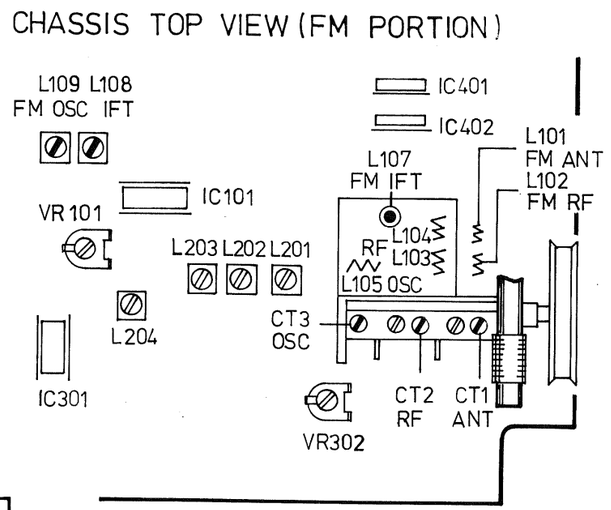


Fig. 2. FM IF and RF Alignment Hook-up

AM IF and RF Alignment Procedure

Instruments: AM Signal Generator and AC VTVM.
Notes: Set Function Selector to AM position. Input signal must be kept as low as possible to avid AVC action.

Step	Generator		Tuning Dial	Adjust	Adjust for
	Coupling	Frequency	Setting		
1	Pin No. 10 (on IF board). through a 0.01 mfd. capacitor.	455KHz (400Hz 30% Mod.)	No interfering at low end of scale.	L202, L203 and L204 (on IF board).	Maximum reading on AC VTVM.
2	Test Loop Radiate signal into ferrite loop-stick antenna	600KHz (400Hz 30% Mod.)	600KHz on dial scale.	L201 (OSC) and L001 (ANT coil)	
3		1400KHz (400Hz 30% Mod.)	1400KHz on dial scale.	CT5 (OSC) and CT4 (ANT) all on Front-end.	
4	Repeat step 2 and 3 unit no further improvement is noticed.				

FM IF and RF Alignment Procedure

Instruments: FM Signal Generator, H.D. Analyzer and Oscilloscope.

- Set Function Selector to FM position.
- Connect FM Signal Generator to FM antenna terminal.
- Connect Oscilloscope and H.D. Analyzer to TAPE OUT jack.

A. FM IF Alignment
1. Set Signal Generator frequency at 98MHz (400Hz 100% Mod.) and adjust the Tuning to Max. output. (The antenna terminal voltage should be 1mV, 60dB).
2. Tuning Signal Meter to obtain Max.
3. Adjust IF coil L108 and L109 set distortion to minimum lower then 0.3%

B. FM RF Alignment
1. Set Signal Generator frequency at 106MHz (400Hz 100%Mod.) and also tune receiver at 106MHz on the dial scale. Then adjust FM OSC trimmer CT3 (on Front-end) to obtain maximum deflection on Scope.
2. Set the receiver at 90MHz on the dial scale, and change the frequency of Signal Generator so that the output of the TAPE OUT becomes maximum. Then make sure Signal Generator frequency stays within 90MHz ± 150KHz.
3. Sensitivity on this alignment must be attempted at 106MHz by adjusing CT1 and CT2 to obtain maximum deflection on Scope and fine tune to balance sensitivity at 90 and 106MHz.
4. Adjust FM OSC coil L105 and FM RF coil L101, L102, L103 and L104 as discribed below only when tracking and sensitivity adjustments are not
   a. Fine tune Signal Generator and receiver to 90MHz, and adjust L107, L101 L102, L103 and L104.
   b. Fine tune Signal Generator and receiver to 106MHz, and adjust CT1, CT2 and CT3 so that maximum output is obtained.
   c. Repeat step a and b to obtain enough effect.

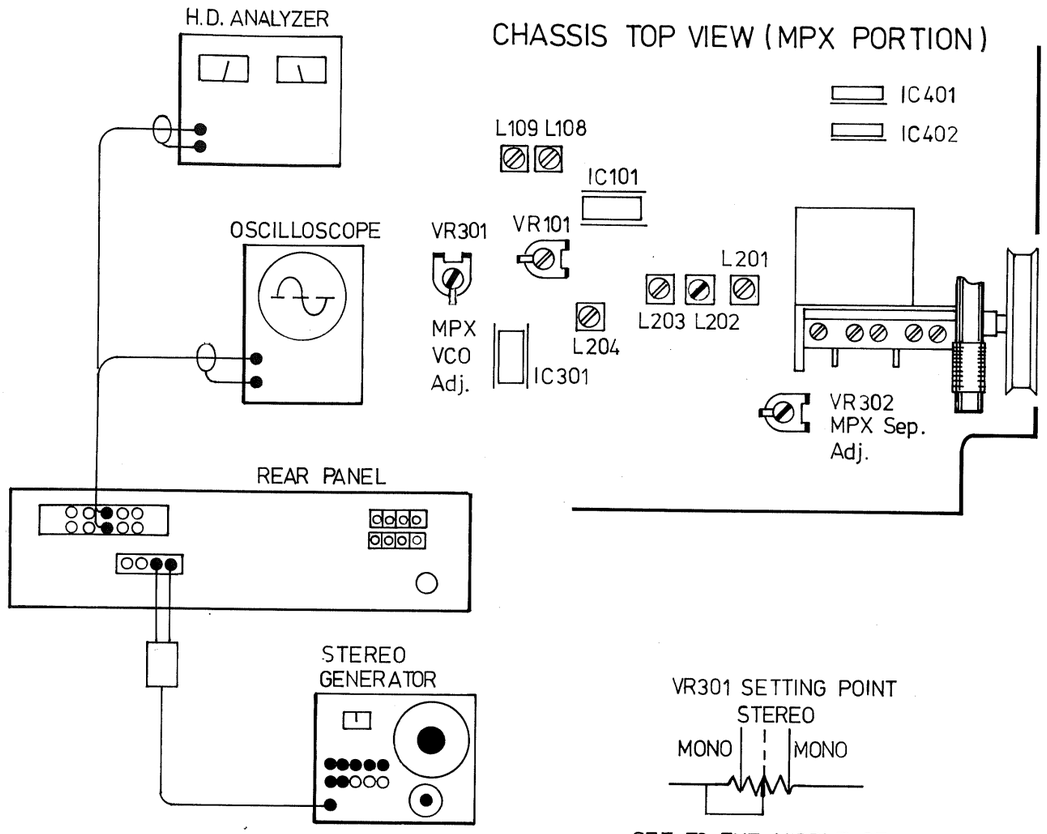


Fig. 3. FM MPX Alignment Hook-up

FM MPX Alignment Procedure

Instruments: FM Stereo Generator, AC VTVM and Oscilloscope.

Notes: The FM IF amplifier alignment must be completed before attempting this MPX alignment. Poor FM IF alignment will result in poor multiplex adjustment.

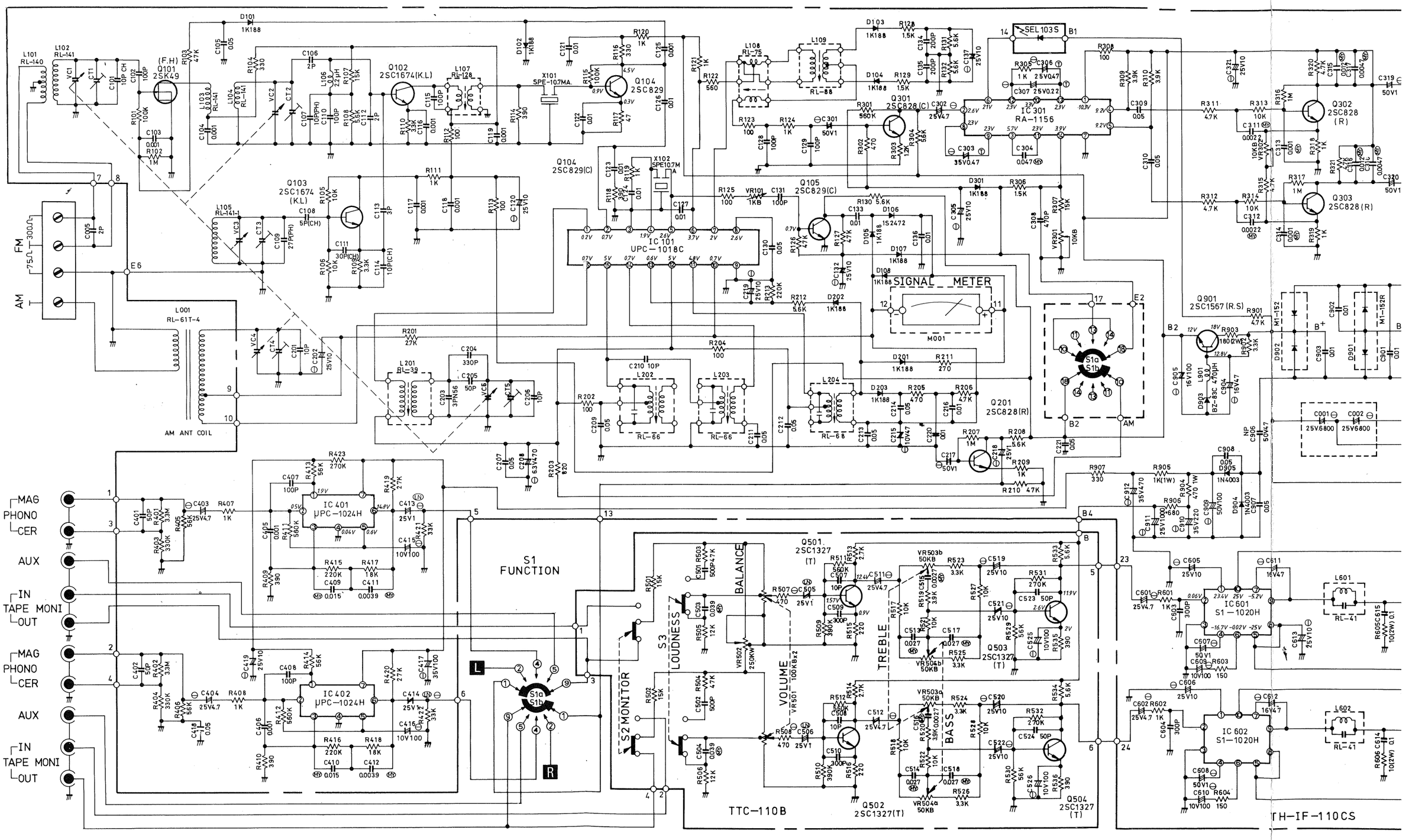
1. Set Function Selector to "FM" position.
2. Set VR301 at the middle of range in which Stereo indicator light up.
3. Connect FM Stereo Generator to FM antenna terminal and AC VTVM and Oscilloscope to TAPE OUT (L-ch).
4. Set the frequency at 98MHz (if adisturbing signal appears, select different frequency). Set FM Stereo Generator as follows:
   Pilot . . . 10%
   Modulation frequency 1KHz (L-ch, Signal) . . . 90%
5. Adjust VR301 so that the output signal on Oscillscope and AC VTVM is maximum, position of VR301 refer to Fig. 3
6. Then change the connections of the Scope and AC VTVM from L-ch to R-ch. At the same time, check that check that the leakage signal is minimum, if the difference in leakage signals between L-ch is large, Adjust the VR302 precisely so as to obtain equal levels between leakage signal.
7. Make sure the stereo can be operated normally even when the modulation degree of pilot signal of FM Stereo Generator is reduced from 10% to 6%.

Repair Parts List

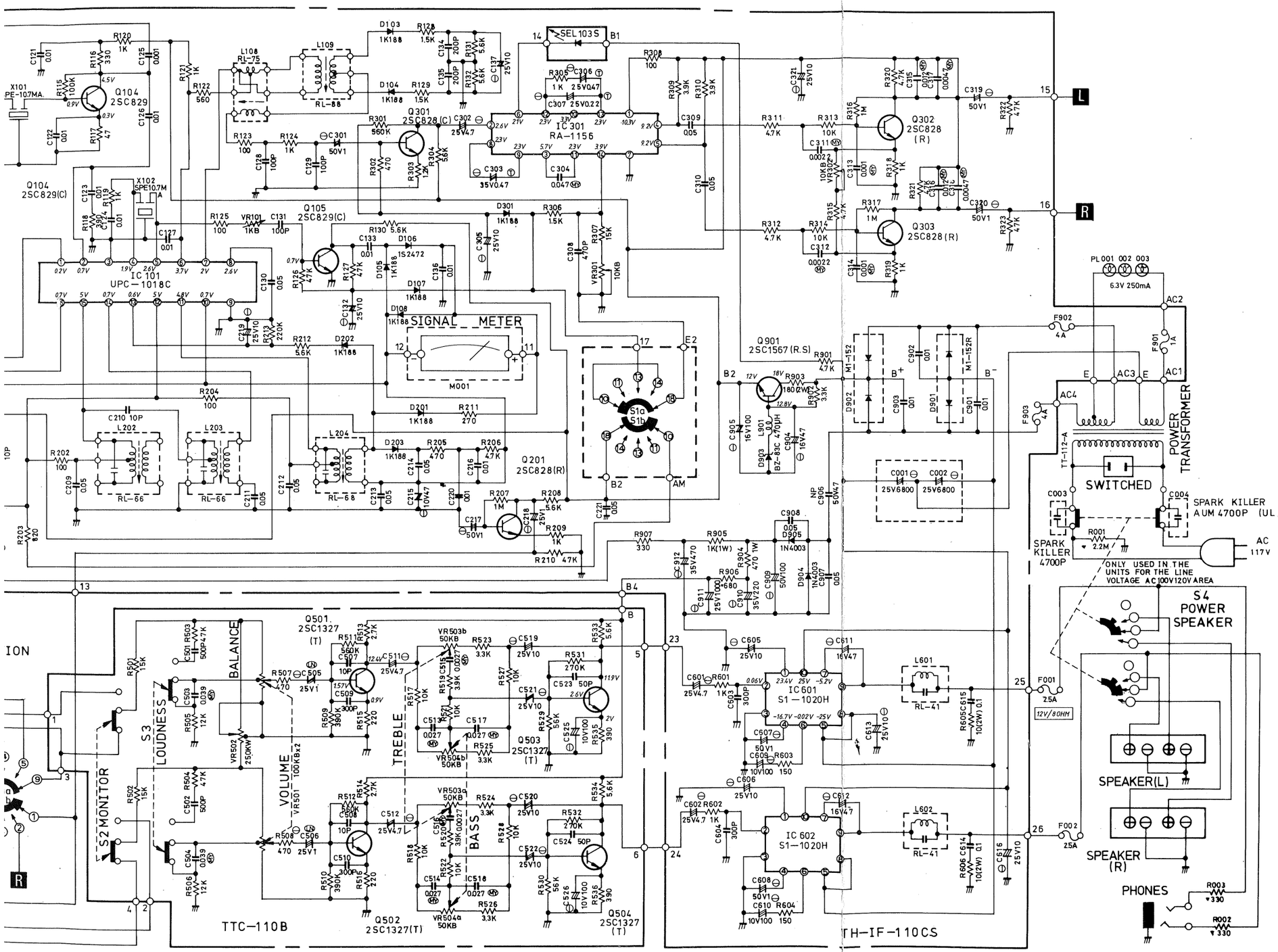
Schematic Location	Parts NO.	Description
TRANSISTORS. DIODES AND IC'S		
Q101	302001112	2SK49 (F. H), FM RF Amp.
Q102,103	301201163	2SC1674 (K. L), FM MIX, OSC Amp.
Q104,105	301201117	2SC829 (C), FM IF, Meter Amp.
Q201	301201115	2SC828 (R), AM Audio-Amp.
Q301-303	301201115	2SC828 (R), FM Audio-Amp.
Q501-504	301201134	2SC1327 (S. T), Pre-Amp.
Q901	301201150	2SC1567 (R, S), Stabilizer
D001	300414013	SEL-103S, Indicator
D101,102	300111008	1K188, FM AGC Detector
D103-105	300111008	1K188, Ratio Detector, Meter Rectifier etc.
D106	300111010	1N2473, Detector or
	305100001	1N2472, Detector
D107,108 301	300111008	1K188, POP Noise, Radiate Prevention
D201-203	300111008	1K188, AM AGC, Detector
D901	300919023	M1-152R, Rectifier
D902	300919022	M1-152, Rectifier
D903	300313023	BZX-83C, Zener Requlator 12V ½W.
D904,905	300919026	1N4003, Rectifier
IC101	303452170	μPC-1018C, AM/FM IF Amp.
IC301	303452162	RA-1156, MPX Amp. or
	303452177	TA-7157P, MPX Amp.
IC401,402	303452164	μPC-1024H, Phono Amp.
IC601,602	303452176	S1-1020H
COILS AND TRANSFORMER		
L001	222301213	AM ANT Coil
L101	226501131	FM ANT Coil
L102-104	226501132	FM RF Coil
L105	226501135	FM OSC
L106	226501143	FM IF Trap Coil
L107	225501131	FM IFT
L108	225501125	FM IFT
L109	225501127	FM IFT Quadrature Detector
L201	223301127	AM OSC
L202,203	225301131	AM IFT 1st. 2nd.
L204	225301133	AM IFT 3rd.
L601,602	228641105	Anti-Parasitic
L901	226501127	470μH, Choke Coil
T001	201001448	Transformer, Power Supply

Schematic Location	Parts No.	Description
VARIABLE RESISTORS, SWITCHES AND FUSES		
VR101	510502151	1KB, FM Meter Level Adj.
VR301	510502153	10KB, MPX VCO Adj.
VR302	510502153	10KB, FM Separation Adj.
VR501	515121124	250KW, Balance Control
VR502	525121138	100KBx2, Volume Control
VR503	525101142	50KBx2, Treble Control
VR504	525101142	50KBx2, Bass Control
S1	601011313	Switch, Function Selector
S2,3 (1 set)	614020422	Switch, Push 2-Key, Monitor and Lound.
S4	601011330	Switch, Power and Speaker Selector
F001,002	341242250	Fuse, 2.5A Speaker Protector (for UL)
	341222250	Fuse, 2.5A Speaker Protector (for CSA)
F003,004	341222300	Fuse, 3A Speaker Protector (CSA only)
F901	341242100	Fuse, 1A, Lamp Protector (for UL)
	341221100	Fuse, 1A, Lamp Protector (for CSA)
F902,903	341242400	Fuse, 4A, AC Circuit Protector (for UL)
	341221400	Fuse, 4A, AC Circuit Protector (for CSA)
OTHERS		
M001	231310082	Meter, Signal
J001	626110034	Jack, Headphone
C001,002	410680425	Smoothing Capacitor
C003,004	440471095	Spark Killer AUM 4700P
	141010143	AM/FM/MPX Amp. PCB Ass'y
	141710316	Tone Control PCB Ass'y
	112011356	Dial Board
	151691137	Dial Pointer
	116310207	Knob, 34φ (for Tuning)
	116310208	Knob, 20φ (for Function, Balance, Treble, Bass)
	116210040	Push Button
	111911428	Front Panel Ass'y
	649201115	Terminal, Screw 4P, Antenna
	642400111	Terminal, Push-4 Key, Speaker
	624101201	Jack, 10P
	131011329	Cabinet

Schematic Diagram (AM/FM)



Schematic Diagram (AM/FM)



ITEM	SCHEMATIC LOCATION(LAST)	
FM IF AMP	R132	C137
AM IF AMP	R213	C221
FM MPX AMP	R323	C321
EQUALIZER	R423	C419
TONE CONTROL	R536	C526
MAIN AMP	R606	C616
POWER SUPPLY	R907	C912
CHASSIS	R003	C005

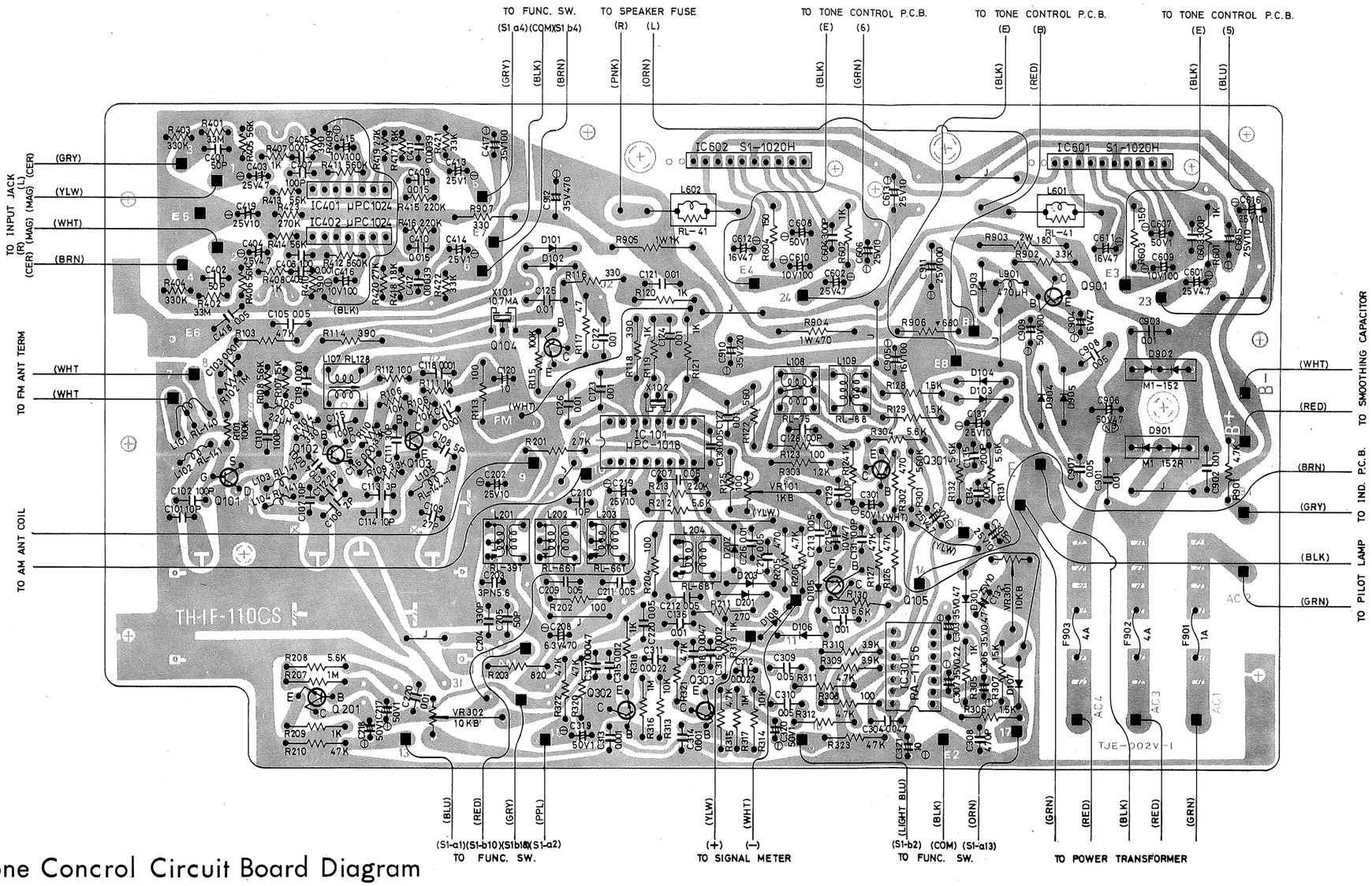
CAPACITOR

(LN)--LOW NOISE CAPACITOR
(MY)--MYLAR FILM CAPACITOR
(T)--TANTALUM CAPACITOR
--ELECTROLYTIC CAPACITOR
NON MARK ---- CERAMIC CAPACITOR
UNLESS OTHERWISE NOTED IN SCHEMATIC
ALL CAPACITANCE VALUES ARE EXPRESSED
IN MFD

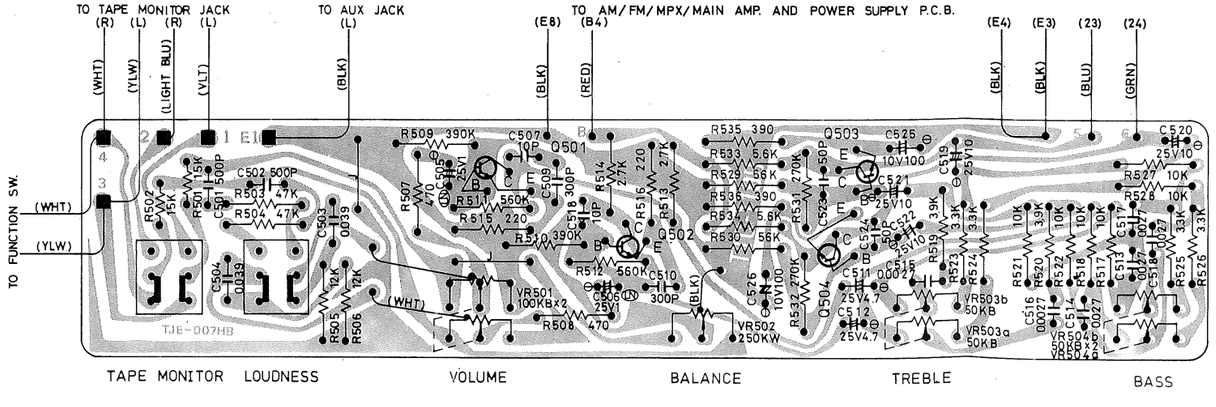
RESISTER

5%--TOLERANCE UNLESS OTHERWISE NOTED
K--- K.LO OHM
M--- MEGA OHM
▼---COMPOSITION RESISTER
RSU METAL OXIDE FILM RESISTER
NON MARK LOW TYPE CARBON RESISTER

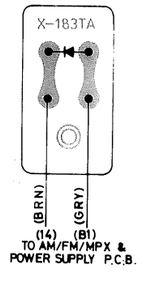
AM/FM/MPX Amp. and Main Amplifier Circuit Board Diagram



Tone Concrol Circuit Board Diagram



Indicator Circuit Board Diagram



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Troubleshooting Guide

Unit Inoperative

I. IF the polot does not light, check the follow at AC Outlet (if fitted)
   A. If no voltage across:
      1. The AC cord may be broken, or
      2. Connections in the power switch may be faulty.
   B. If there is proper voltage across, check the AC fuse and if the AC fuse is blown:
      1. Rectifier D902 or D903 may be shorted, or
      2. Capacitor C001 or C002 may be shorted, or
      3. Primary or secondary winding of the power transformer T001 may be shorted.

II. If the pilot lamp does light, measure voltage across B+ and B—
   A. If no voltage across:
      1. Rectifier D902 or D903 may be opened, or
      2. Secondary winding of the power transformer may be opened.
   B. If there is proper voltage across, check the speaker fuse and
      1. If the speaker fuse is blown:
         a. Output circuit (Including speaker system) may be shorted, or
         b. Speaker fuse may be worn out.
      2. If the speaker fuse is normal, check the minus "—" point of C601 (C602 for R-ch).
         a. If there is no signal
            1) Transformer Q501 or Q503 (Q502 or Q504 for R-ch) may be faulty, or,
            2) Capacitor C505, C511 or C601 (C506, C512 or C602 for R-ch) may be faulty.
         b. If there is a signal
            1) IC601 (IC602 for R-ch) may be faulty.

Only PHONO Section Inoperative

A. IC401 (IC402 for R-ch) may be faulty, or
B. Capacitor C403 or C413 (C404 or C414 for R-ch) may be faulty.

Hum and/or Noise

A. Hum and/or Noise produced with Volume Control set at minimum
   1. Transistor Q501 or Q503 (Q502 or Q504 for R-ch) may be faulty, or
   2. Capacitor C505, C511, C519 or C521 (C506, C512, C520 or C522 for R-ch) may be faulty.
B. Hum and/or Noise produced only in Phono
   1. IC401 (IC402 for R-ch) may be faulty, or
   2. Capacitor C403, C413 or C415 (C404, C414 or C416 for R-ch) and C417 may be faulty, or
   3. Resistor R411 or R415 (R412 or R416 for R-ch) may be faulty.

Radio Section Inoperative

I. AM is inoperative
   A. If there is proper voltage at B2
      a. IC101 may be faulty, or
      b. Antenna Coil L001 or Coil L201, L202, L203 or L204 may be faulty.
   B. If there is no proper voltage at B2
      a. Resistor R903 or Diode D902 may be faulty, or
      b. Capacitor C904 or C905 may be faulty, or
      c. Transistor Q901 may be faulty.

II. FM is inoperative
   A. If there is proper voltage at B2
      1. IC101 or IC301 may be faulty, or
      2. Coil L108 or L109 may be faulty, or
      3. Transistor Q102, Q103, Q104, Q105 and Q301, Q302 or Q303 may be faulty, or
      4. Transistor Q101 may be faulty, or
      5. Capacitor C302 may be faulty.
   B. If there is no proper voltage at B2
      1. Transistor Q901 or Diode D902 may be faulty, or
      2. Capacitor C904 or C905 may be faulty, or
      3. Resistor R903 may be faulty, or
      4. Coil L901 may be opened.
   C. At FM Stereo boardcast, the Reciver receives in Mono only
      1. VR301 may be miss aligned, or
      2. IC301 may be faulty, or
      3. Transistor Q301, Q302 or Q303 may be faulty.