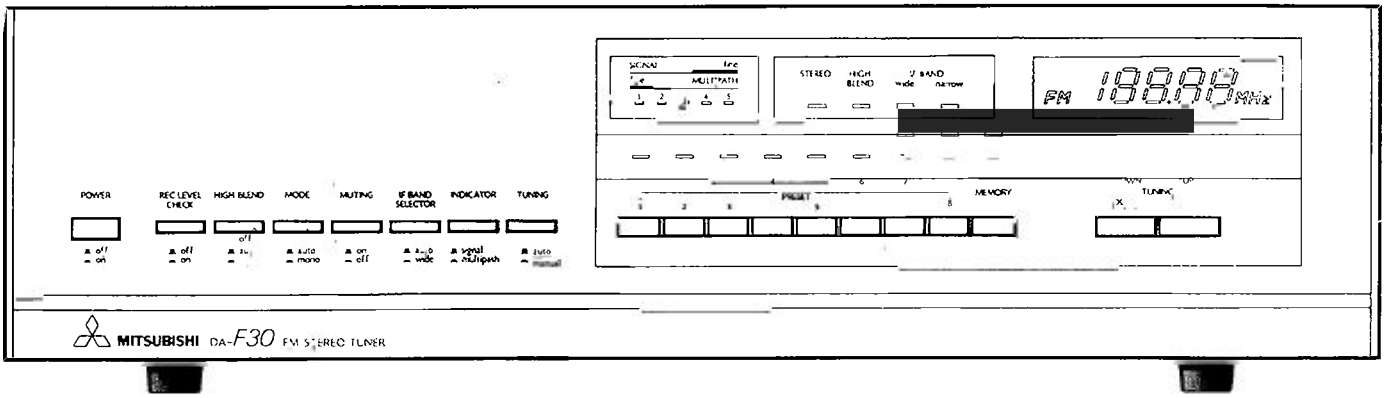
MITSUBISHI AUDIO SYSTEMS

SERVICE MANUAL

FM STEREO TUNER

MODEL DA-F30



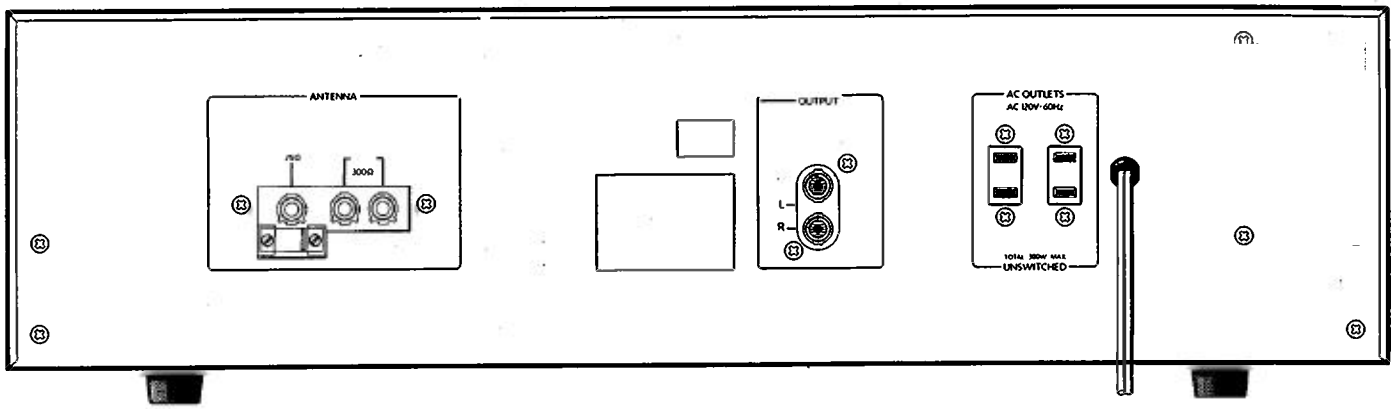
SPECIFICATIONS

Tuning range . . . . . 87.9~107.9 MHz
Usable sensitivity . . . . . 10.3 dBf (1.8 μV)
50 dB quieting sensitivity
MONO . . . . . 16.1 dBf (3.5 μV)
STEREO . . . . . 37.3 dBf (40 μV)
Alternate channel selectivity (±400kHz)
. . . . . WIDE 45 dB
NARROW 75 dB
Signal to noise ratio (85 dBf)
MONO . . . . . WIDE 84 dB
NARROW 84 dB
STEREO . . . . . WIDE 78 dB
NARROW 78 dB
Signal to noise ratio (65 dBf)
MONO . . . . . WIDE 82 dB
NARROW 82 dB
STEREO . . . . . WIDE 74 dB
NARROW 74 dB
Total harmonic distortion (1 KHz, 65 dBf)
MONO . . . . . WIDE 0.05%
NARROW 0.15%
STEREO . . . . . WIDE 0.08%
NARROW 0.25%

Stereo separation
100 Hz . . . . . WIDE 42 dB
NARROW 40 dB
1 KHz . . . . . WIDE 50 dB
NARROW 42 dB
10 KHz . . . . . WIDE 43 dB
NARROW 36 dB
Stereo separation with Hi-blend on
100 Hz . . . . . 35 dB
1 KHz . . . . . 20 dB
Frequency response . . . . . $^{+0.5}_{-1}$ dB, 30Hz ~ 16kHz
±0.5 dB, 50 Hz~15 KHz
Image response ratio . . . . . 100 dB
IF response ratio . . . . . 100 dB
Spurious response ratio . . . . . 100 dB
AM suppression ratio . . . . . WIDE 55 dB
NARROW 50 dB
Capture ratio . . . . . WIDE 1.0 dB
NARROW1.5 dB
Subcarrier product ratio . . . . . 70 dB
SCA rejection ratio . . . . . 75 dB
Output level/impedance . . . . . 600 mV/1K Ohms
Power consumption . . . . . 14 W
Dimension (W x H x D) . . . . . 470 x 135 x260 mm
(8-1/2 x 5-3/8 x 10-1/4 ")
Weight . . . . . .5 Kg (11 lbs)
Disign and specifications are subject to change without notice for improvement.

MITSUBISHI ELECTRIC SALES AMERICA, INC.
3030 East Victoria Street Compton, California 90221

BACK PANEL



SEMBLY PROCEDURES

il of Top Cover
ove the 2 screws from both sides (total of 4 screws).

il of Base
ove the 9 screws shown in Fig. 1.

il of Front Panel
ove the 3 screws in the top of the front panel.

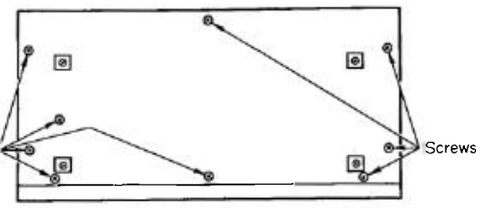


Fig. 1

ON !

replacing the 3KS45 transistor and MPD1704 IC, the following precautions in order to prevernt de-on due to static electricity.

not wear gloves when handling these components avoid touching the terminals with your hands as h as possible.

keep away from work clothes, etc. which tend to tain a certain amount of static electricity.

a sheet of metal on the work bench and connect it round.

a soldering iron with a tip that is preferably connect-o ground.

ADJUSTMENTS

1. FM-IF

1. Set all of the S2 ~ S7 switches to the out position (▂) and press S8 into the manual position (▬). Press either the UP or DOWN switch to obtain a frequency display of 98.10MHz, and leave the SSG output at a low level (no signal applied).
2. Connect a voltmeter across both ends of R136, and adjust T101 primary coil to obtain a voltage reading of 0V (within ±50mV) when no signal is applied.
3. Set the SSG output to 55dBF, apply a 1kHz 100% (MONO) modulation signal, and then adjust VR101 to light up all 5 signal strength indicator lamps.
4. Reset the SSG output to 20dBF, and adjust VR102 until an output is obtained from the receiver.

2. MPX

Set the SSG output to 65dBF and connect a frequency counter to the link between R181 and VR104. Adjust VR104 until the counter reads 76kHz (±60Ohz).

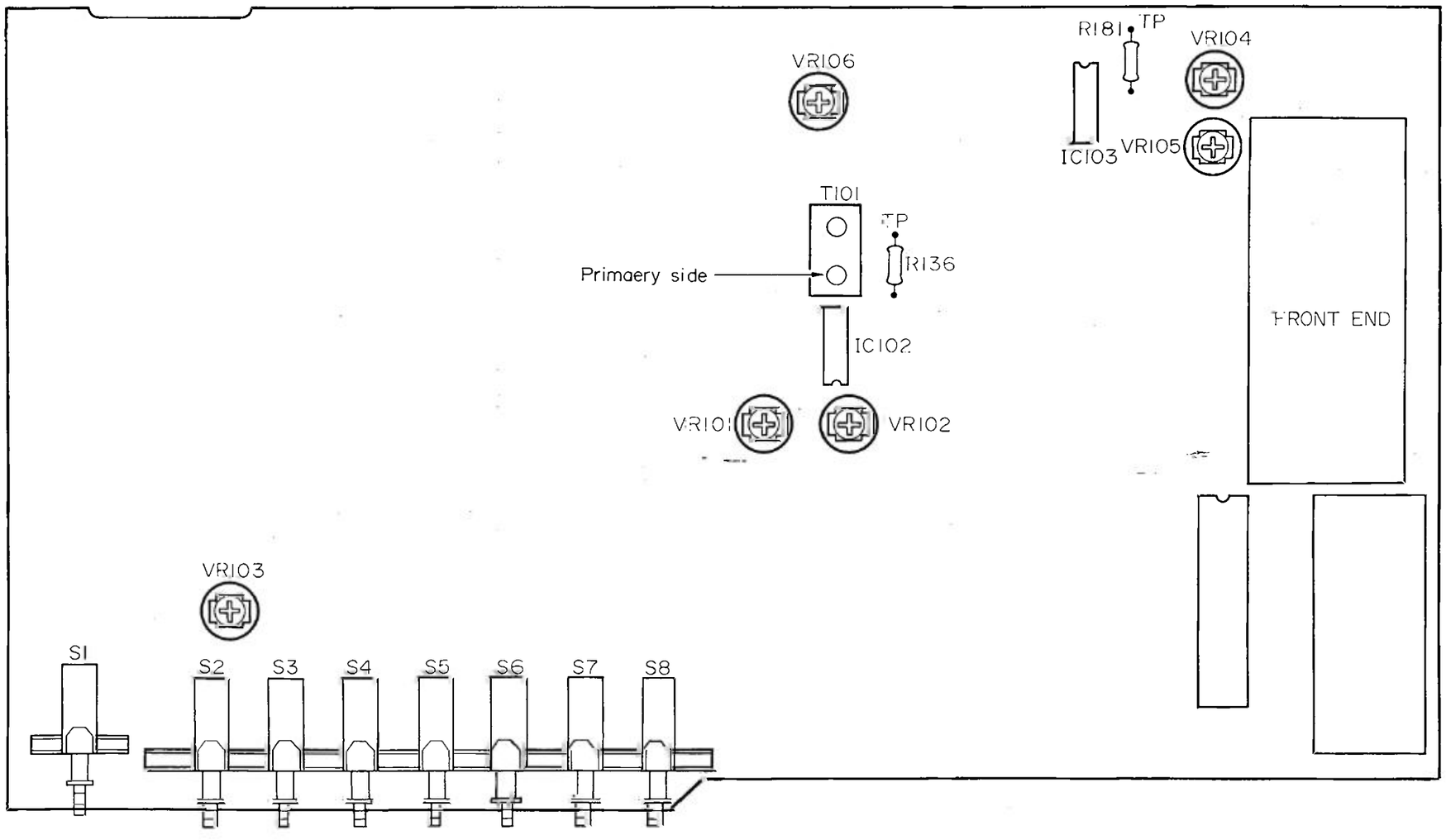
2. Adjust the secondary coil of T101 until the receiver output distortion reaches a minimum.
3. With the pilot signal as the only modulated signal, adjust VR105 until the 19kHz audio frequency output component reaches a minimum.
4. Then decode a stereo signal at 1kHz, and adjust VR106 to obtain maximum stereo separation and equal output levels in left and right channels.

Note: If the secondary coil adjustment step (2) above results in a change in the primary coil voltage adjusted in step 1–(2), it will be necessary to repeat the adjustment procedure from step (1).

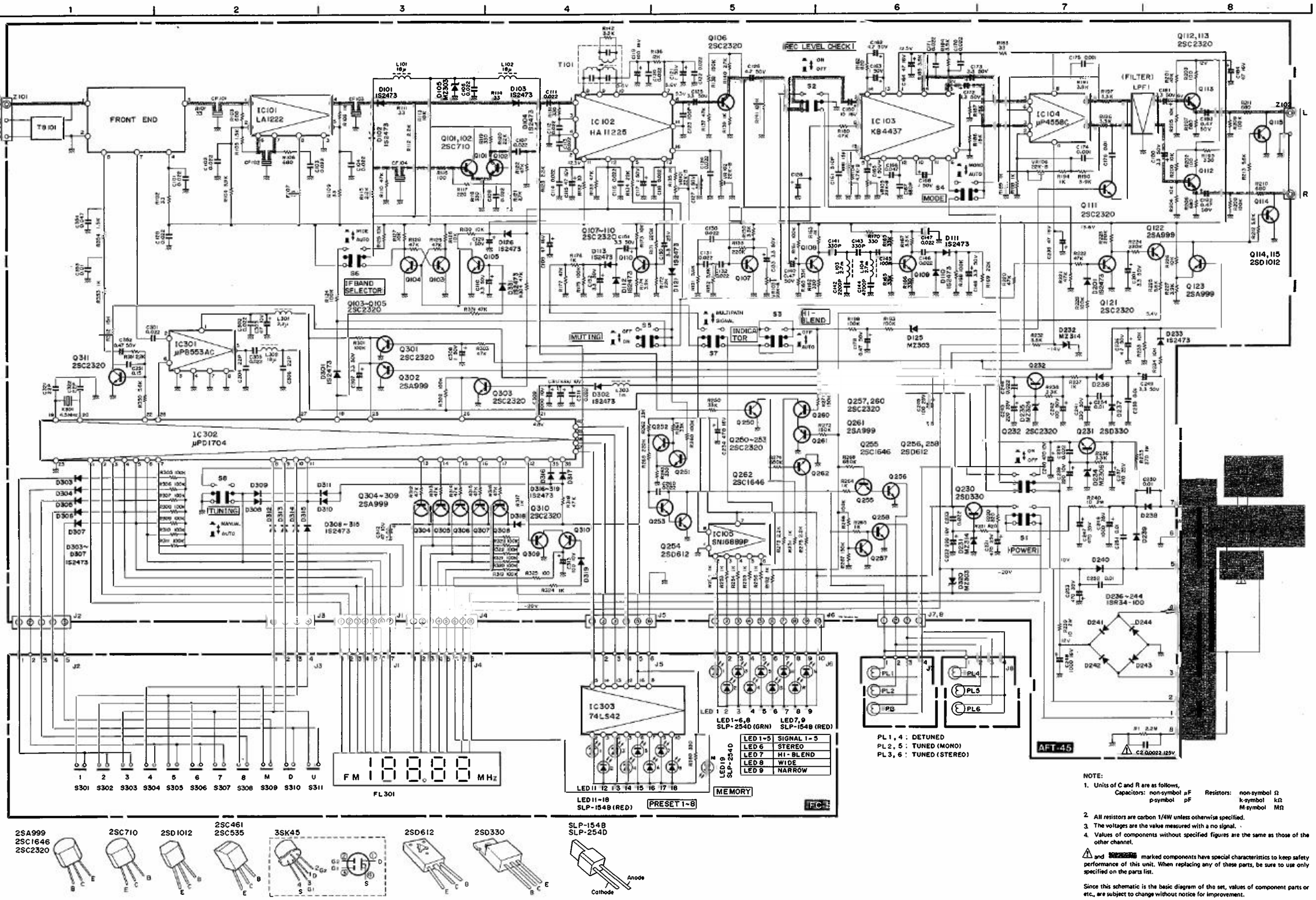
3. Air-Check

1. With the SSG output at 65dBF and modulation level at 1kHz 100% (MONO), read the receiver output level (A level).
2. Switch S2 on, and adjust VR103 to obtain an output level 6dB lower than the A level.

ADJUSTING POINTS



IATIC DIAGRAM



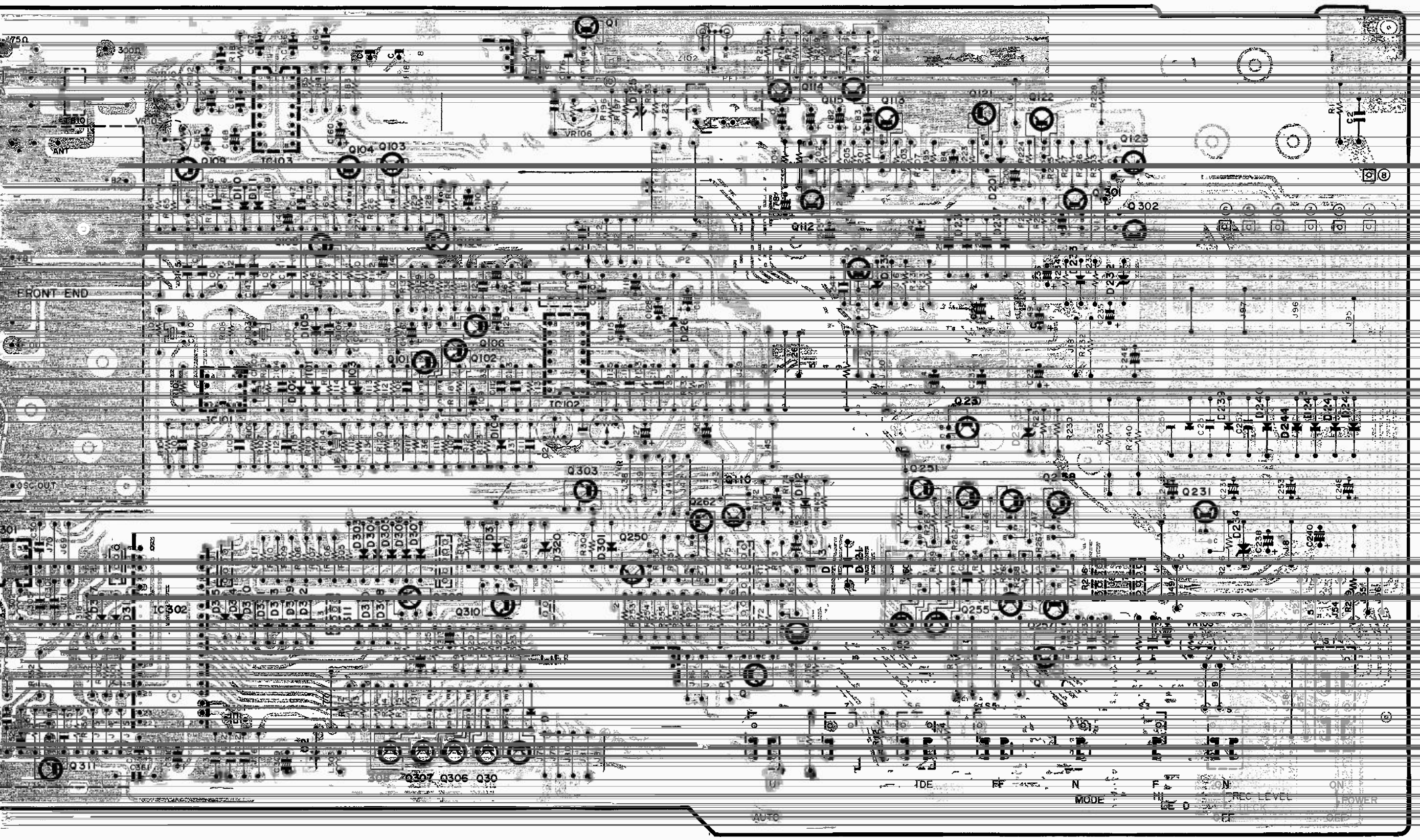
NOTE:

1. Units of C and R are as follows,
   Capacitors: non-symbol μF, p-symbol pF; Resistors: non-symbol Ω, k-symbol kΩ, M-symbol MΩ
2. All resistors are carbon 1/4W unless otherwise specified.
3. The voltages are the value measured with a no signal.
4. Values of components without specified figures are the same as those of the other channel.

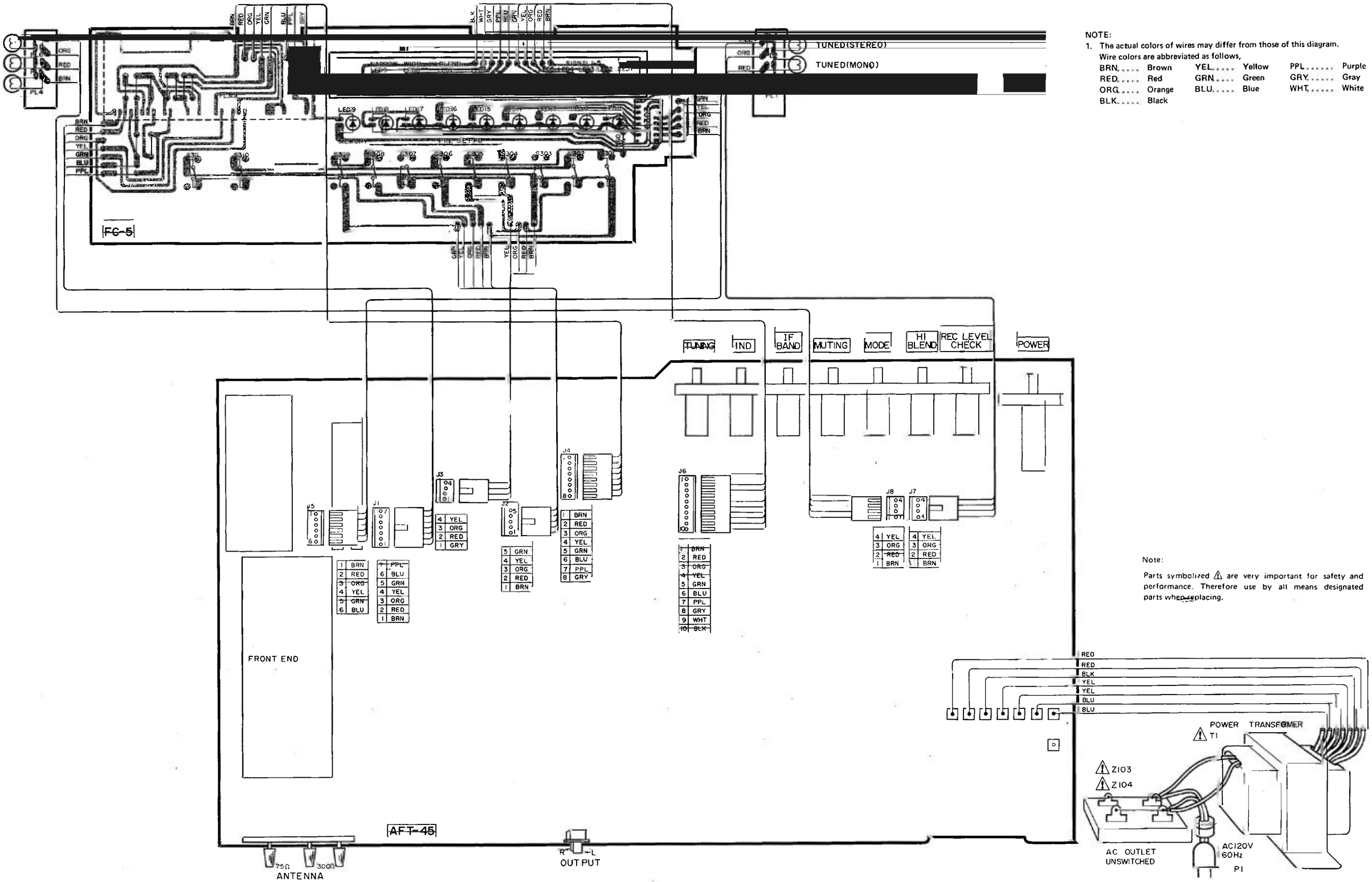
⚠ and [redacted] marked components have special characteristics to keep safety performance of this unit. When replacing any of these parts, be sure to use only specified on the parts list.

Since this schematic is the basic diagram of the set, values of component parts or etc., are subject to change without notice for improvement.

ED CIRCUIT BOARDS



G DIAGRAM



NOTE:

1. The actual colors of wires may differ from those of this diagram.
   Wire colors are abbreviated as follows,

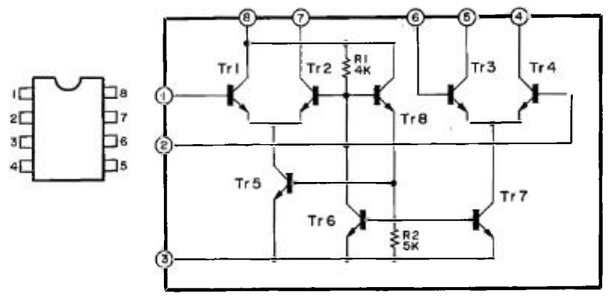
BRN.....	Brown	YEL.....	Yellow	PPL.....	Purple
RED.....	Red	GRN.....	Green	GRY.....	Gray
ORG.....	Orange	BLU.....	Blue	WHT.....	White
BLK.....	Black				

Note:

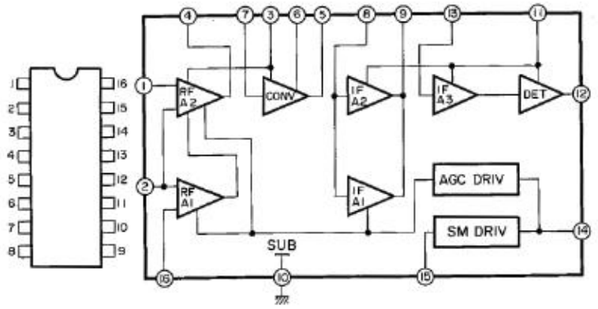
Parts symbolized ⚠ are very important for safety and performance. Therefore use by all means designated parts when replacing.

INTERNAL DIAGRAMS AND PIN OUT OF INTEGRATED CIRCUITS

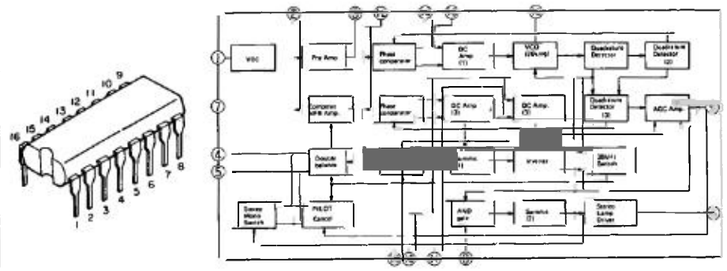
LA1222



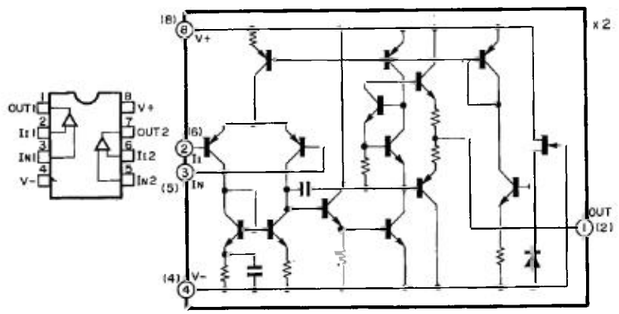
HA11225



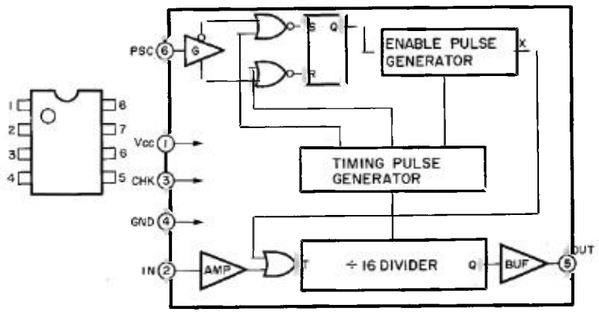
KB4437



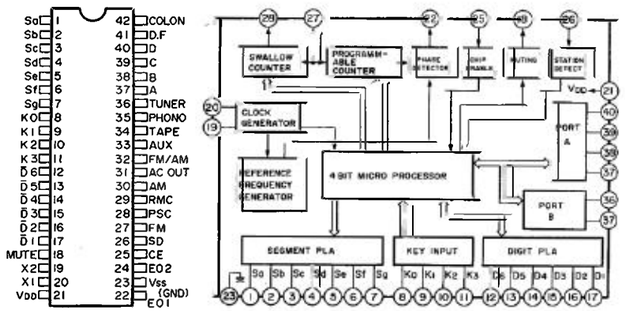
MPC4558C



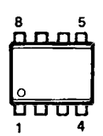
MPB553



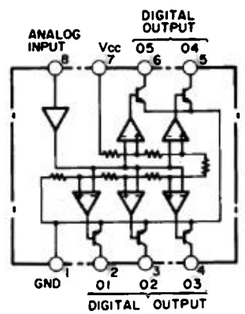
MPD1704



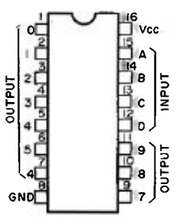
SN16889P



INPUT	OUTPUT				
A	01	02	03	04	05
< 200mV	H	H	H	H	H
≥ 200mV	L	H	H	H	H
≥ 400mV	L	L	H	H	H
≥ 600mV	L	L	L	H	H
≥ 800mV	L	L	L	L	H
≥ 1000mV	L	L	L	L	L

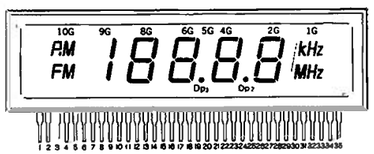


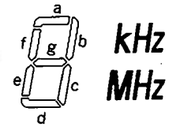
74LS42



NO	D	C	B	A	0	1	2	3	4	5	6	7	8	9
0	L	L	L	L	L	H	H	H	H	H	H	H	H	H
1	L	L	L	H	H	L	H	H	H	H	H	H	H	H
2	L	L	H	L	H	H	L	H	H	H	H	H	H	H
3	L	L	H	H	H	H	H	L	H	H	H	H	H	H
4	L	H	L	L	H	H	H	H	L	H	H	H	H	H
5	L	H	L	H	H	H	H	H	H	L	H	H	H	H
6	L	H	H	L	H	H	H	H	H	H	L	H	H	H
7	L	H	H	H	H	H	H	H	H	H	H	L	H	H
8	H	L	L	L	H	H	H	H	H	H	H	H	L	H
9	H	L	L	H	H	H	H	H	H	H	H	H	H	L
10	H	L	H	L	H	H	H	H	H	H	H	H	H	H
11	H	L	H	H	H	H	H	H	H	H	H	H	H	H
12	H	H	L	L	H	H	H	H	H	H	H	H	H	H
13	H	H	L	H	H	H	H	H	H	H	H	H	H	H
14	H	H	H	L	H	H	H	H	H	H	H	H	H	H
15	H	H	H	H	H	H	H	H	H	H	H	H	H	H

TUBE-FLOUR FIP7A13A



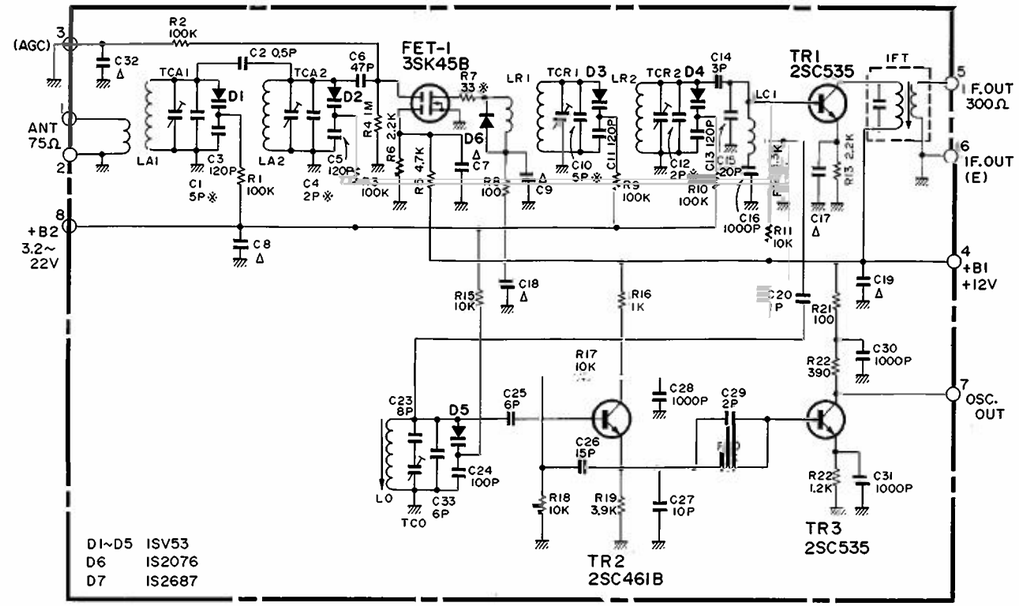


The a~g segment of 9G section show as b5 and C5.

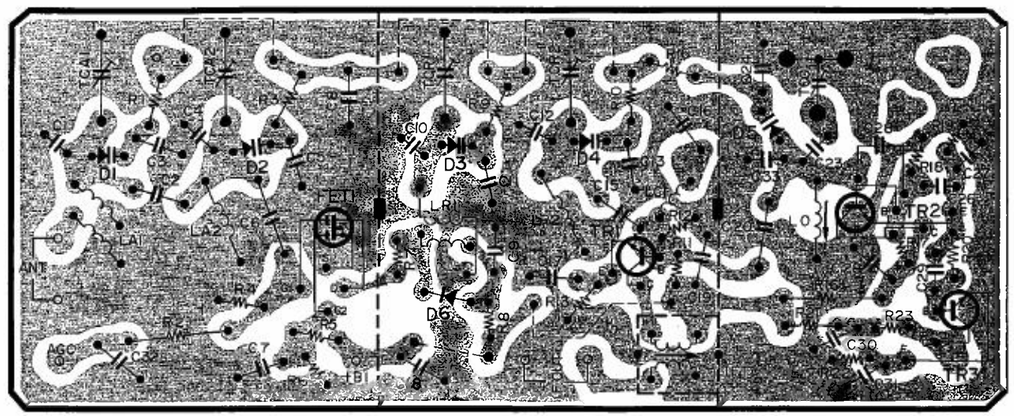
Connection

Pin No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Pin Name	F	P(as)	P(fs)	P(x)	10G	P(y)	P(bs, Ws, Ts)	9G	P(gs)	P(es)	P(ds)	P(cs, Ls)	8G	P(e)	7G	P(d)	6G	P(ca)
Pin No	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Pin Name	NC	5G	NC	4G	NC	3G	P(g)	2G	P(bs, Ws, Ts)	P(g)	P(bs, Le1)	1G	P(a1, Cd)	P(f)	P(bs, Le1)	P(a)	F	

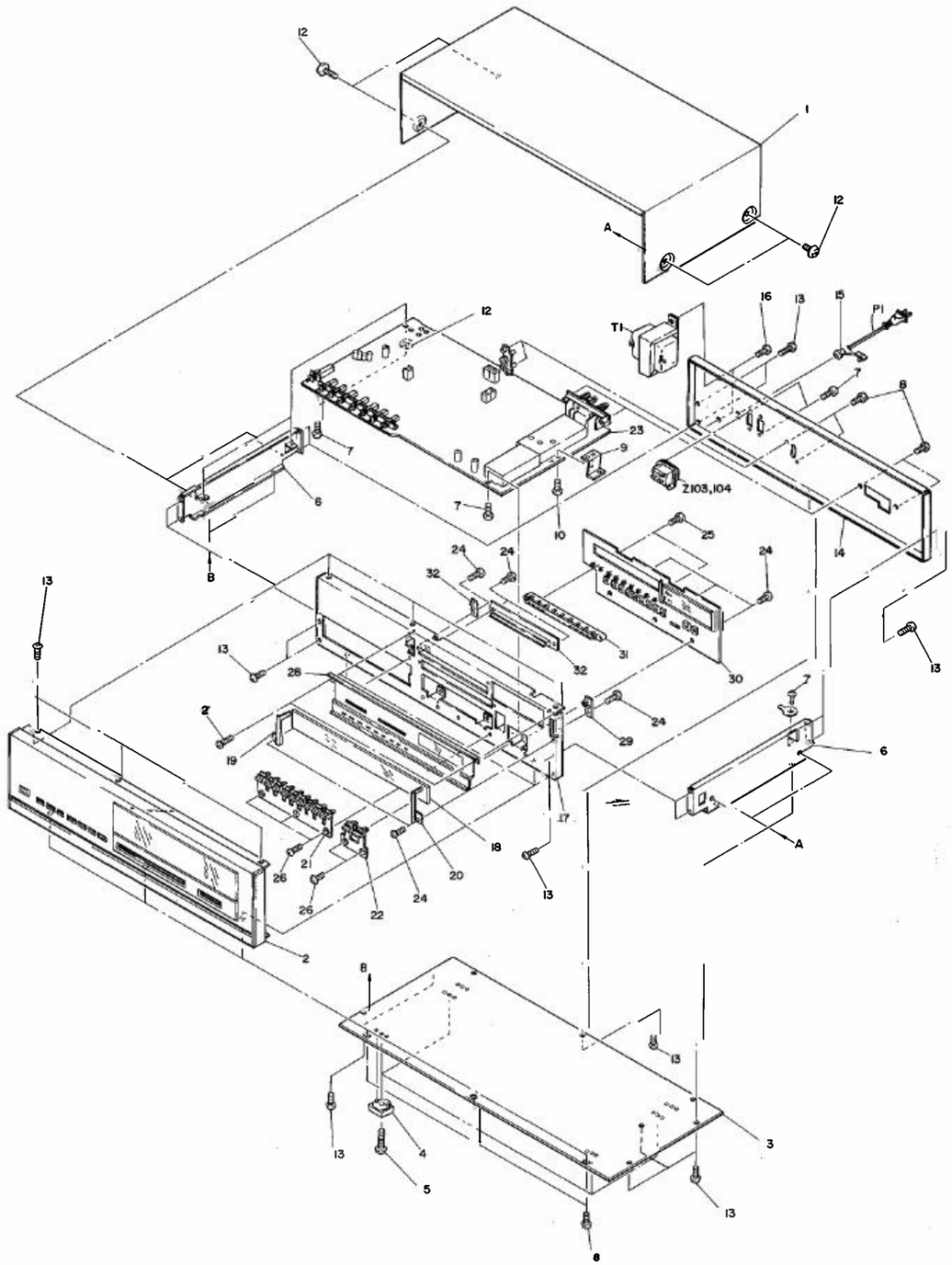
SCHEMATIC DIAGRAM & PRINTED CIRCUIT BOARD OF FRONT END ASSY



- Capacitors marked are all 0.01μF.
- Since the elements marked are for compensation they may not be used in all units.



EXPLODED VIEW



MECHANICAL PARTS LIST

No.	Part No.	Description
1	M07510104	CASE-ASSY
2	M07510100	PANEL-ASSY (FRONT)
3	M07510106	BASE
4	M05104140	LEG
5		SCREW-METAL
6		HOLDER-U
7		SCREW
8		SCREW
9		HOLDER-Z
10		SCREW-B M3 x 6
11		WASHER
12	M07139778	SCREW-METAL
13		SCREW-METAL
14	M07510102	PANEL BACK
15	M07510060	CLAMPER
16		SCREW-B M3 x 8
17		PANEL FRONT
18		DIAL
19		HOLDER-U
20		HOLDER-U
21	M07510200	KNOB
22	M07510201	KNOB
23		PCB-ASSY (AFT-45)
24		T-SCREW 2-3 x 8
25		T-SCREW 1-3 x 10
26		T-SCREW 2-2.6 x 8
27		T-SCREW 2-3 x 6
28		INLAY-ASSY
29		PCB-ASSY (FC-5, L1, 2, 3)
30		PCB-ASSY (FC-5)
31		HOLDER
32		PCB-ASSY (FC-5)
33		PCB-ASSY (FC-5, L4, 5, 6)

PARTS LIST

NOTE: ⚠ and ▨ marked components on the parts list have special characteristics to maintain the safety performance of this unit. When replacing any of these parts, be sure to use only the specified parts.

Symbol No.	Part No.	Description
		Diodes
D1	M07510320	1SV53F2 (FM FRONTEND)
D2	M07510320	1SV53F2
D3	M07510320	1SV53F2
D4	M07510320	1SV53F2
D5	M07510320	1SV53F2
D6	M07510321	1S2076
D101	M05200320	1S2473
D102	M05200320	1S2473
D103	M05200320	1S2473
D104	M05200320	1S2473
D105	M07520320	MZ303
D110	M05200320	1S2473
D111	M05200320	1S2473
D112	M05200320	1S2473
D113	M05200320	1S2473
D121	M05200320	1S2473
D125	M07520320	MZ303
D126	M05200320	1S2473
D201	M05200320	1S2473
D231	M07514321	MZ314
D232	M07514321	MZ314
D233	M05200320	1S2473
D234	M07492320	MZ306
D235	M07288320	MZ324
D236	M07391320	1SR34-100
D237	M07391320	1SR34-100
D238	M07391320	1SR34-100
D239	M07391320	1SR34-100
D240	M07391320	1SR34-100
D241	M07391320	1SR34-100
D242	M07391320	1SR34-100
D243	M07391320	1SR34-100
D244	M07391320	1SR34-100
D301	M05200320	1S2473
D302	M05200320	1S2473
D303	M05200320	1S2473
D304	M05200320	1S2473
D305	M05200320	1S2473
D306	M05200320	1S2473
D307	M05200320	1S2473
D308	M05200320	1S2473
D309	M05200320	1S2473
D310	M05200320	1S2473
D311	M05200320	1S2473
D312	M05200320	1S2473
D313	M05200320	1S2473
D314	M05200320	1S2473

characteristics to maintain the safety performance of this unit. When replacing any of these parts, be sure to use only the specified parts.

Symbol No.	Part No.	Description
D315	M05200320	1S2473
D316	M05200320	1S2473
D317	M05200320	1S2473
D318	M05200320	1S2473
D319	M05200320	1S2473
D320	M07520320	MZ303
D331	M05200320	1S2473
LED1	M07510325	SLP-254D (GREEN)
LED2	M07510325	SLP-254D (GREEN)
LED3	M07510325	SLP-254D (GREEN)
LED4	M07510325	SLP-254D (GREEN)
LED5	M07510325	SLP-254D (GREEN)
LED6	M07510325	SLP-254D (GREEN)
LED7	M07444320	SLP-154B (RED)
LED8	M07510325	SLP-254D (GREEN)
LED9	M07444320	SLP-154B (RED)
LED11	M07444320	SLP-154B (RED)
LED12	M07444320	SLP-154B (RED)
LED13	M07444320	SLP-154B (RED)
LED14	M07444320	SLP-154B (RED)
LED16	M07444320	SLP-154B (RED)
LED17	M07444320	SLP-154B (RED)
LED18	M07444320	SLP-154B (RED)
LED19	M07510325	SLP-254D (GREEN)
Transistors		
TR1	M04070303	2SC535
TR2	M04066313	2SC461 FM
TR3	M04070303	2SC535 FRONTEND
FET1	M07085303	3SK45 MOS
Q101	M04070304	2SC710
Q102	M04070304	2SC710
Q103	M07390303	2SC2320

Symbol No.	Part No.	Description
Q230	M07061304	2SD330
Q231	M07061304	2SD330
Q232	M07390303	2SC2320
Q250	M07390303	2SC2320
Q251	M07390303	2SC2320
Q252	M07390303	2SC2320
Q253	M07390303	2SC2320
Q254	M05131311	2SD612K
Q255	M05104314	2SC1646
Q256	M05131311	2SD612K
Q257	M07390303	2SC2320
Q258	M05131311	2SD612K
Q260	M07390303	2SC2320
Q261	M07390304	2SA999
Q262	M05104314	2SC1646
Q301	M07390303	2SC2320
Q302	M07390304	2SA999
Q303	M07390303	2SC2320
Q304	M07390304	2SA999
Q305	M07390304	2SA999
Q306	M07390304	2SA999
Q307	M07390304	2SA999
Q308	M07390304	2SA999
Q309	M07390304	2SA999
Q310	M07390303	2SC2320
Q311	M07390303	2SC2320
ICs		
IC101	M07115343	LA1222
IC102	M07465343	HA11225
IC103	M07461345	KB4437

NOTE: ⚠ and [illegible] marked components on the parts list have special characteristics to maintain the safety performance of this unit. When replacing any of these parts, be sure to use only the specified parts.

Symbol No.	Part No.	Description
C246	M07502360	C-ELECT-35V 1000 MFD
CF101 ~ 104	M07510445	CERAMIC-FILTER-ASSY
FL301	M07520555	TUBE-FLUOR
L101	M07132530	COIL
L102	M07132530	COIL
L103	M07510510	COIL-272J
L104	M07510510	COIL-272J
L301	M07510511	COIL (2.2μH)
L302	M07132530	COIL
L303	M04167536	COIL-102J
LPF1	M07441381	FILTER
[illegible]	[illegible]	POWERCORD ⚠
PL1	M04162254	LAMP (YELLOW)
PL2	M04162252	LAMP (BLUE)
PL3	M04162251	LAMP (GREEN)
PL4	M04162254	LAMP (YELLOW)
PL5	M04162252	LAMP (BLUE)
PL6	M04162251	LAMP (GREEN)
RF	M07510541	FRONT END
S1	M07520453	SW-PUSH (POWER) ⚠
S2	M07510350	SW-PUSH (SELECTOR)
S3	M07510350	SW-PUSH (SELECTOR)
S4	M07510350	SW-PUSH (SELECTOR)
S5	M07510350	SW-PUSH (SELECTOR)
S6	M07510350	SW-PUSH (SELECTOR)
S7	M07510350	SW-PUSH (SELECTOR)
S8	M07510350	SW-PUSH (SELECTOR)
S301	M07520454	SW-PUSH (PRESET 1)
S302	M07520454	SW-PUSH (PRESET 2)
S303	M07520454	SW-PUSH (PRESET 3)
S304	M07520454	SW-PUSH (PRESET 4)
S305	M07520454	SW-PUSH (PRESET 5)
S306	M07520454	SW-PUSH (PRESET 6)
S307	M07520454	SW-PUSH (PRESET 7)
S308	M07520454	SW-PUSH (PRESET 8)
S309	M07520454	SW-PUSH (MEMORY)
S310	M07520454	SW-PUSH (DOWN)
S311	M07520454	SW-PUSH (UP)
[illegible]	[illegible]	TRANS-POWER ⚠
T101	M07514510	TEANS-IF
TB101	M07085500	TRANS-BALUN
VR101	M07141351	VR-SEMI-B22K
VR102	M07141351	VR-SEMI-B22K
VR103	M07141351	VR-SEMI-B22K
VR104	M07115352	VR-SEMI-B4.7K
VR105	M07141351	VR-SEMI-B22K

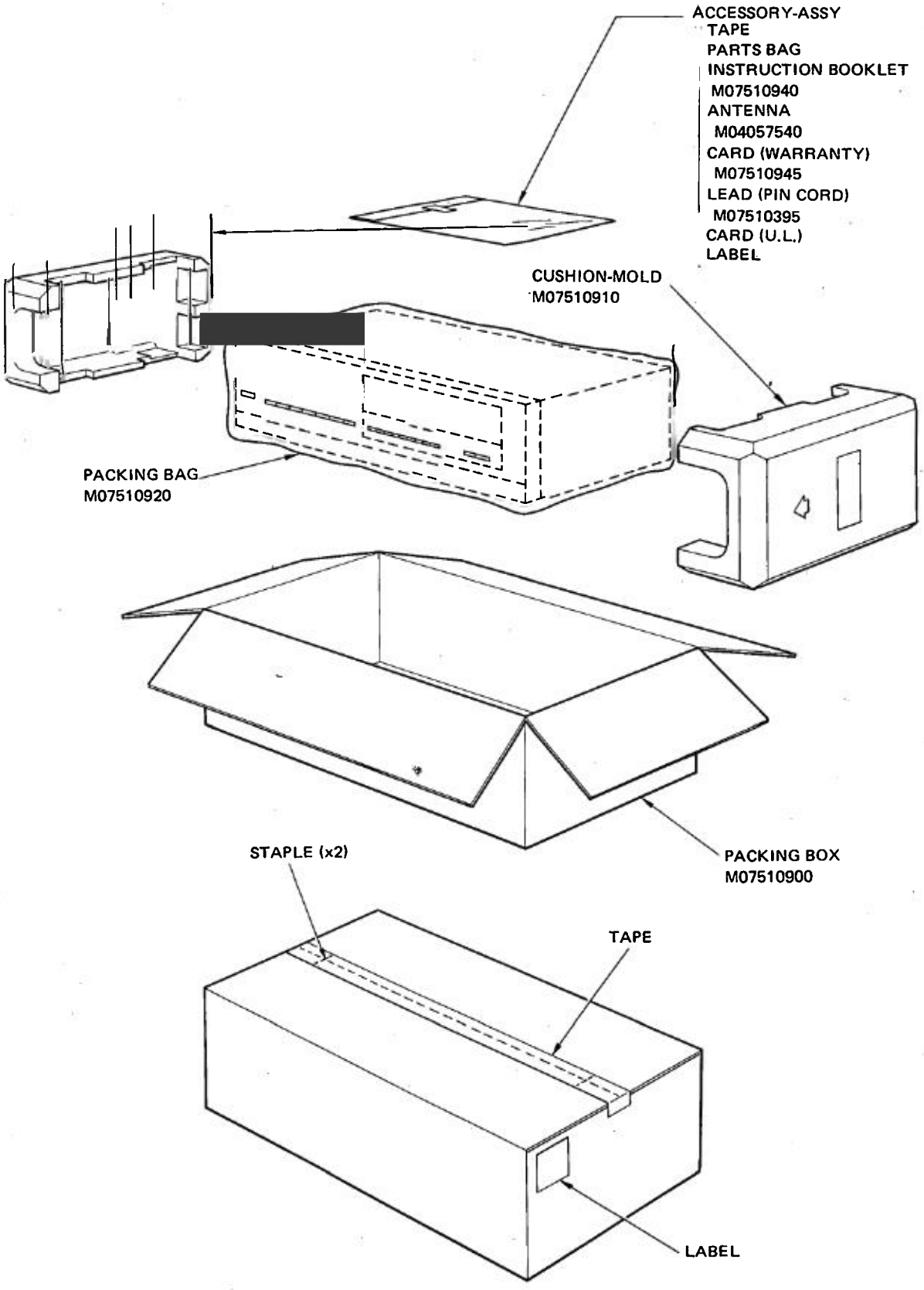
Symbol No.	Part No.	Description
VR106	M07141351	VR-SEMI-B22K
X301	M07510345	CRYSTAL
Z101	M07510480	TERMINAL-BOARD (ANTENNA)
Z102	M07510475	PIN-JACK (OUTPUT)
Z103	M07510465	SOCKET (AC OUTLET)
Z104	M07510465	SOCKET (AC OUTLET)

NOTE:

Parts marked MOS must be protected against electrostatic discharge. These parts must be handled with care.

1. Do not use gloove.
2. Do not touch the leads if possible.
3. Clothing made of Nylon or other static generating material should not come in contact with these parts.
4. Work benches should have conductive tops which are grounded to an earth ground.
5. Soldering irons should be free of leakage current. Grounding is highly recommended.

PACKAGING INSTRUCTIONS:



MITSUBISHI ELECTRIC SALES AMERICA, INC.
3030 East Victoria Street, Compton, California 90221, U.S.A.
Tel. : (213) 537-7132, Telex : 0673278
Toll Free : (800) 421-1140 (Outside of California)

DA-F30-US
SM-0078
Printed in Japan