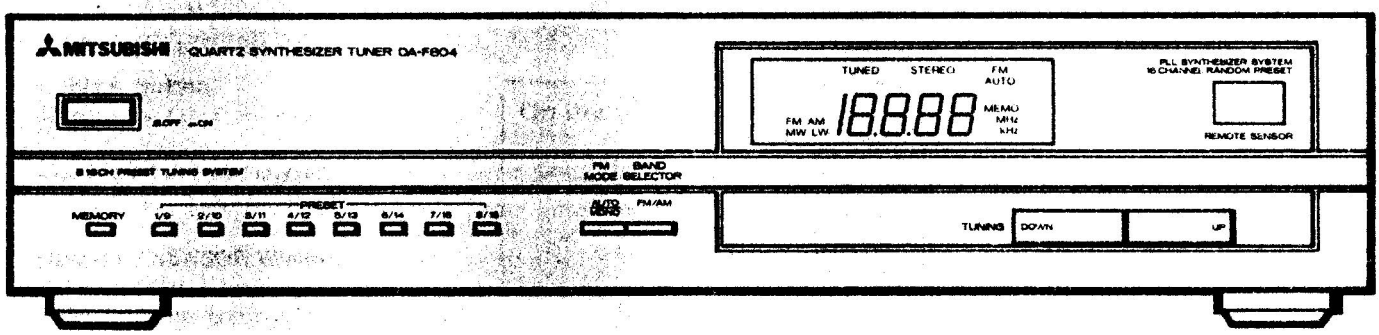
MITSUBISHI
AUDIO SYSTEMS

SERVICE MANUAL

QUARTZ SYNTHESIZER TUNER

DA-F804



CONTENTS

SPECIFICATIONS 2
FRONT PANEL TERMINOLOGY AND FUNCTIONS 3
DISASSEMBLY PROCEDURE 4
ADJUSTMENT PROCEDURE 5
INTERNAL DIAGRAMS AND PINOUT OF INTEGRATED CIRCUITS 7
WIRING DIAGRAM 11
SCHEMATIC DIAGRAM 13
PRINTED CIRCUIT BOARDS 15
EXPLODED VIEW OF CABINET 18
PARTS LIST 19
PACKING INSTRUCTION 22

MITSUBISHI ELECTRIC EUROPE GMBH

SPECIFICATIONS

FM section
- Tuning range . . . . . 87.5 ~108 MHz (50 KHz step)
- Usable sensitivity. . . 11.2 dBf
- Channel selectivity. . 65 dB
- S/N (IHF)
  - MONO . . . . . 70 dB
  - STEREO . . . . . 65 dB
- T.H.D. (1 KHz)
  - MONO 0.2%
  - STEREO 0.3%
- Frequency response . 30 ~15 KHz ± 1.5 dB
- Stereo separation
  - (1 KHz) . . . . . 40 dB

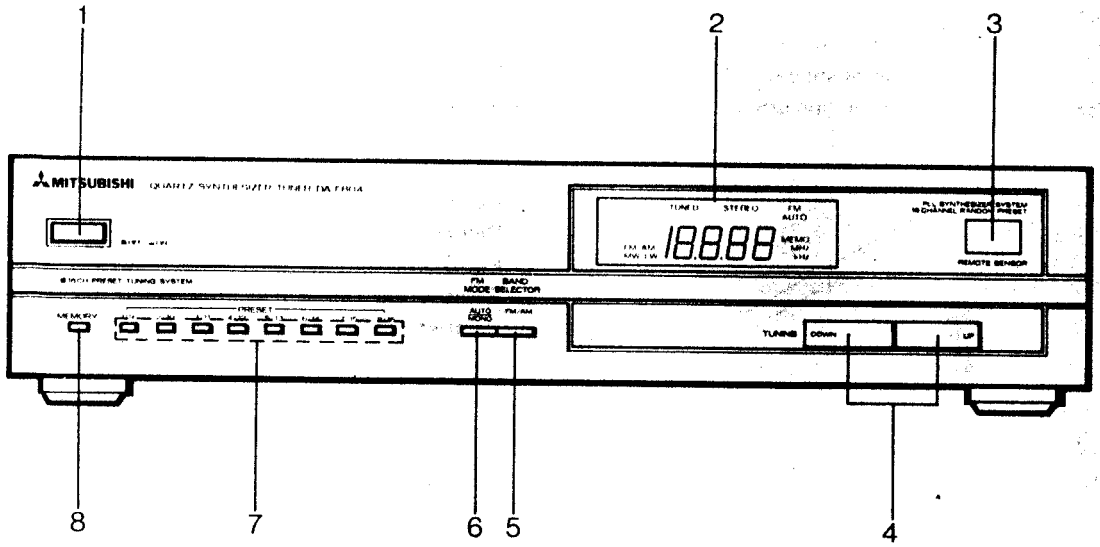
AM (MW) section
- Tuning range . . . . . 531 ~1602 KHz (9 KHz step)
- Sensitivity . . . . . 600 μV/m
- Selectivity . . . . . 35 dB
- S/N . . . . . 50 dB
- T.H.D. (400 Hz) . . . 0.3%

AM (LW) section
- Tuning range . . . . . 144 ~351 KHz (1 KHz step)
- Sensitivity . . . . . 1500 μV/m
- Selectivity . . . . . 30 dB
- S/N . . . . . 44 dB

Dimension (WxHxD) . . 350 x 80 x 355 mm
Weight . . . . . 2.8 Kg

Due to continuous improvements, specifications and design are subject to change without notice.

FRONT PANEL TERMINOLOGY AND FUNCTIONS



1. **POWER Button**
   To turn the power on and off.

2. **LC (Liquid Crystal) Display**
   Indicates the tuner mode.

3. **REMOTE SENSOR Window**
   Receives the signals from the A-804 remote control unit (included with the DA-U804).

4. **TUNING UP and DOWN Buttons**
   For tuning in stations manually.

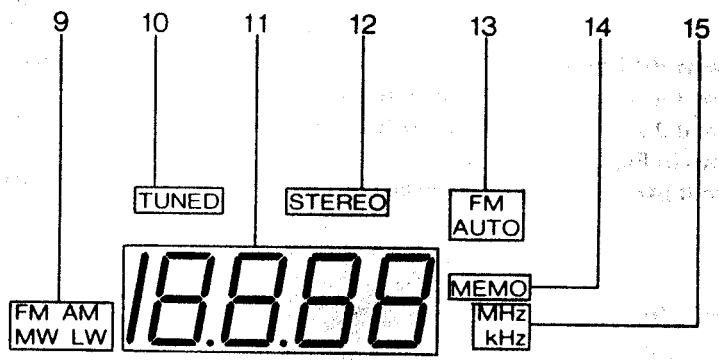
5. **BAND SELECTOR Button**
   To select the band (FM/AM).

6. **FM MODE Button**
   To select between stereo and monaural reception when tuning in FM stations.

7. **PRESET Buttons (1/9 to 8/16)**
   For memorizing stations and recalling memorized stations.

8. **MEMORY Button**
   Stores stations in the preset memory. Press the button once to preset stations at numbers 1 to 8, and twice to preset stations at numbers 9 to 16.

On the LC Display



9. **BAND Indicator (2-band AM/FM, 3-band LW/MW/FM)**
   This will indicate which band is selected.

10. **TUNED Indicator**
    This will indicate a station is properly tuned in.

11. **Digital display**
    This will indicate the tuned in frequency or the preset station number.

12. **STEREO Indicator**
    This will indicate the tuned in FM station is being broadcast in stereo.

13. **FM AUTO Indicator**
    This indicator will light up when the FM AUTO button is set to AUTO.

14. **MEMO Indicator**
    This will indicate the tuner is ready to store a station in the memory.

15. **Frequency Indicators (kHz/MHz)**
    This will indicate the unit of the tuning frequency.

DISASSEMBLY PROCEDURE

1. Removing the Top Cover

1) Remove the 4 screws (A) from both sides of the top cover and 1 screw (B) on the rear as shown in Fig. 1.
2) The top cover can be removed by lifting upwards.

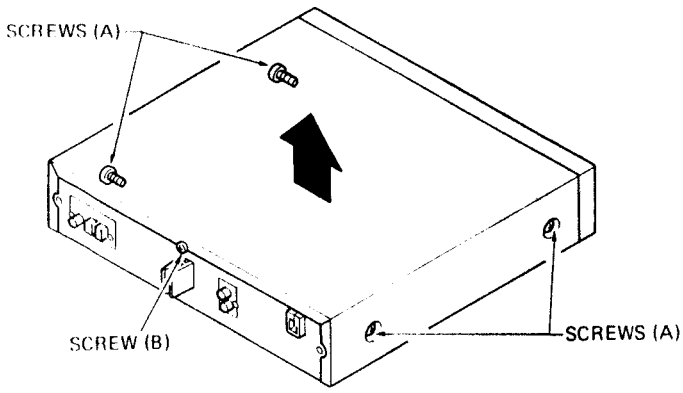


Fig. 1

2. Removing the Front Panel

1) Remove the 2 screws (C) from both sides of the front panel and 2 screws (D) and 1 screw (E) from the bottom as shown in Fig. 2.
2) The front panel can now be removed.

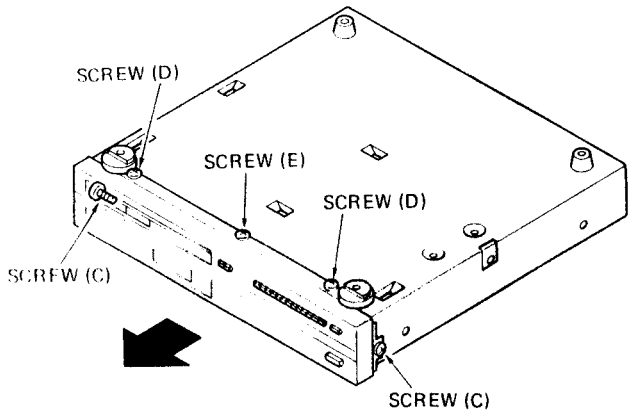


Fig. 2

3. Removing the Main P.C.B

1) Remove the 5 screws (F) on the main P.C.B as shown in Fig. 3.
2) Remove the 2 screws (G) on the power transformer.
3) The main P.C.B can now be removed.

4. Removing the other P.C.Bs

1) Remove the 1 screw (H) on the output P.C.B as shown in Fig. 3.
2) Remove the 2 screws (I) on the ANT. P.C.B.
3) Remove the 2 screws (J) on the remote control P.C.B.

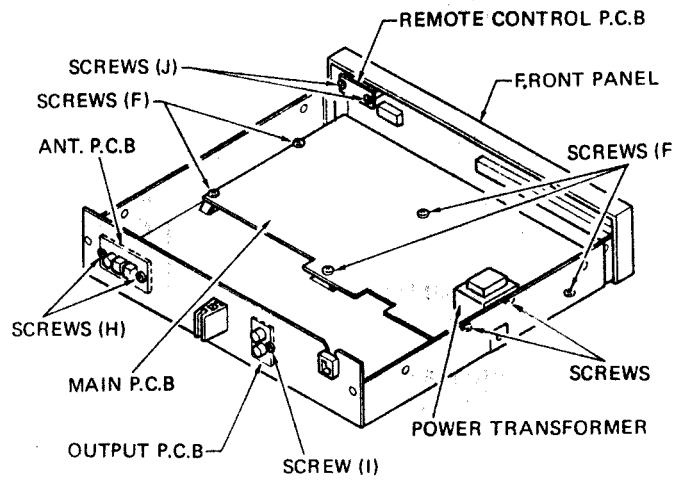


Fig. 3

ADJUSTMENT PROCEDURE

1. FM-IF adjustment

1) Set the frequency of the FM-SSG to 98 MHz, 1 kHz, 100% modulation, 65 dBf.
   Receive this signal and adjust T102 so that the voltage across both terminals of R131 (TEST Pin 3 – 4) is 0 ± 30 mV.
2) Receive the signal output from the FM-SSG the same as in item 1) and adjust T101 so that the distortion is minimum.
   When the specified voltage in item 1) is too high, repeat adjustment shown in item 1) again.

2. FM MPX adjustment

1) Set the frequency of the FM SSG to 98 MHz, unmodulation, 65 dBf.
2) Set the function to the FM stereo position and 98 MHz reception.
3) Connect the frequency counter to IC102 pin 9 and GND.
4) Adjust VR101 so that the frequency is 19 kHz ± 50 Hz.

3. FM stereo separation adjustment

1) Set the frequency of the FM-SSG to 98 MHz, 1 kHz, 100% modulation, 10% pilot, 45% L+R, 45% L–R.
2) Set the function to the FM stereo position and 98 MHz reception.
3) Connect the AC voltmeter to L and R output.
4) Adjust VR102 so that the L and R separation is maximum.

4. AM adjustment

1) Set the cores of VC101 as shown in Fig. 1 before adjustment.
2) Set the reading of the frequency counter to 531 kHz and adjust T201 so that the voltage across TEST Pin 12 and GND is 1.4 ± 0.1 V.
3) Set the reading of the frequency counter to 1,602 kHz and check the voltage across TEST Pin 12 and GND to less than 9.9 V.
4) Repeat items 2), 3) several times so that the voltage is as specified at each frequency.
5) Receive the 600 kHz, 400 Hz, 30% modulation signal and adjust T200 so that the sensitivity is maximum.
6) Receive the 1,400 kHz, 400 Hz, 30% modulation signal and adjust VC101 so that the output is maximum.
7) Receive the 600 kHz, 400 Hz, 30% modulation signal and adjust T202 so that the output is maximum.
8) Repeat items 5), 6) several times.

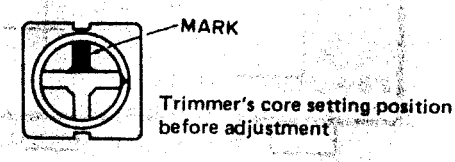
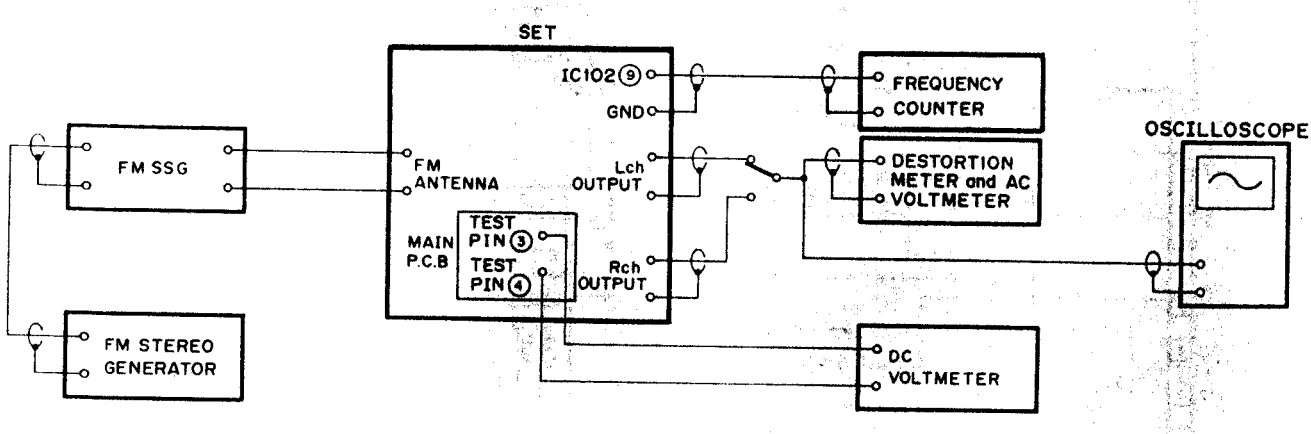


Fig. 1

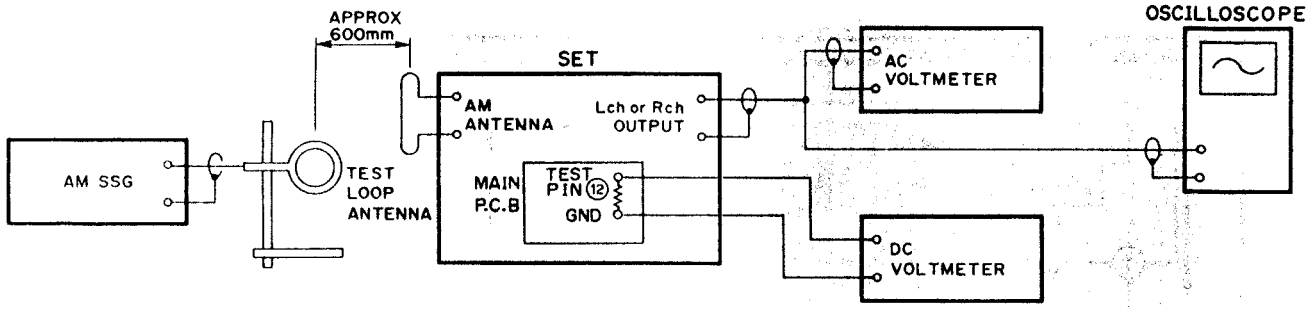
5. Check item

1) Check that AUTO STOP is performed and misoperation does not occur with an FM input of 35 dBf or more.

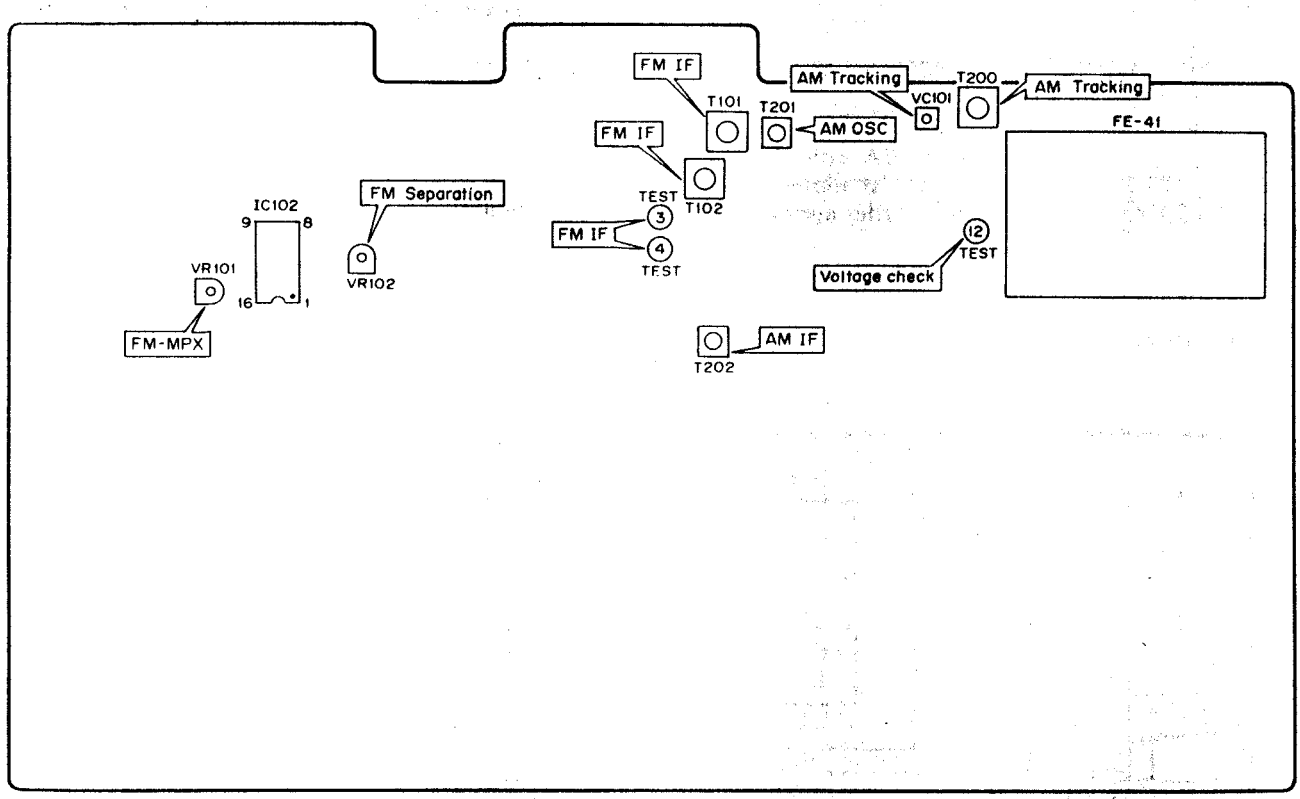
Connection diagram of FM adjustment



Connection diagram of AM adjustment

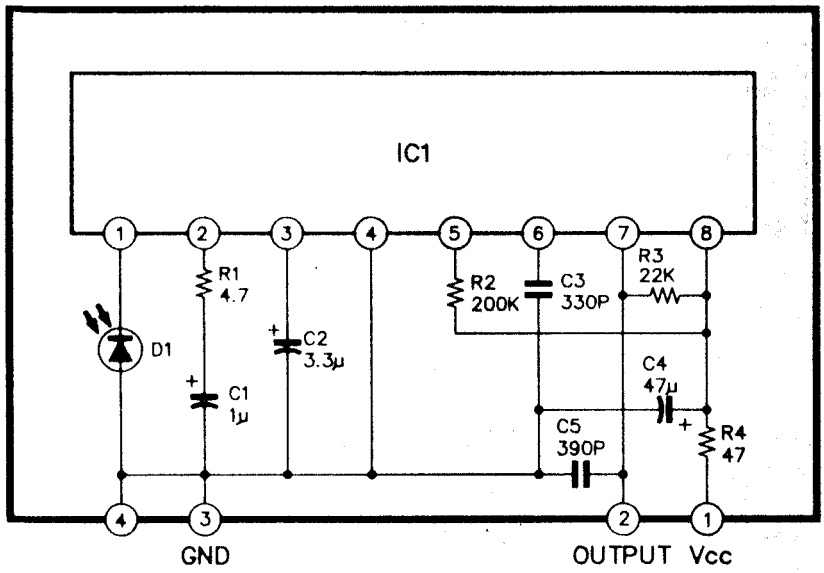


ADJUSTMENT POINT



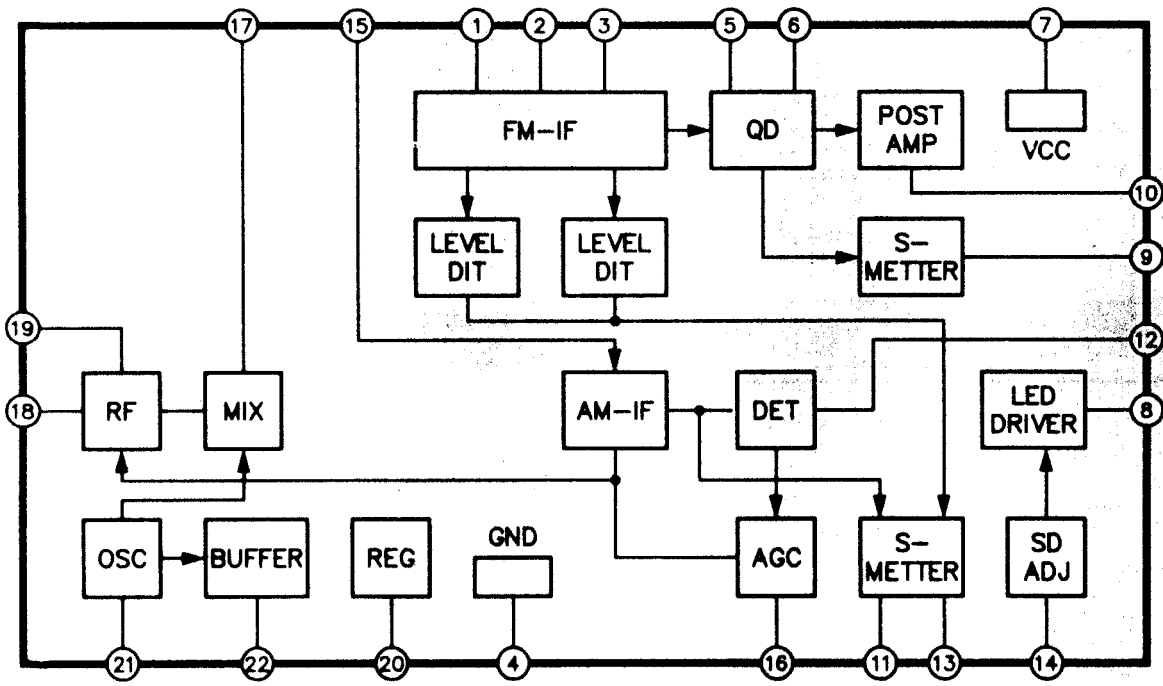
INTERNAL DIAGRAMS AND PINOUT OF INTEGRATED CIRCUIT

IC1: BX1407

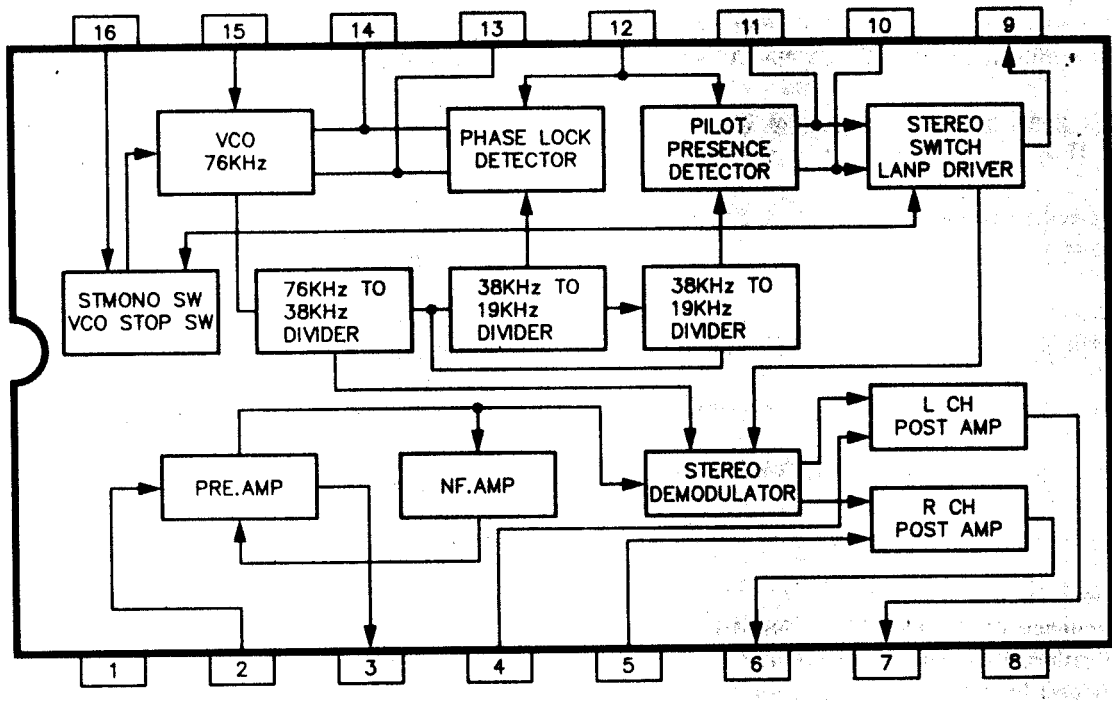


IC1:	CX20106A chip	C3,C5:	SL characteristic, ±5%
D1:	PIN photo diode	R2:	1/16W, ±1%
C1,C2,C4:	Electrolytic condenser	R(Other resistors):	1/16W, ±5%

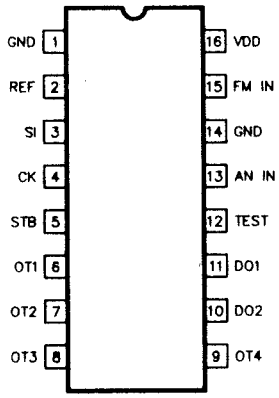
IC101: LA1265

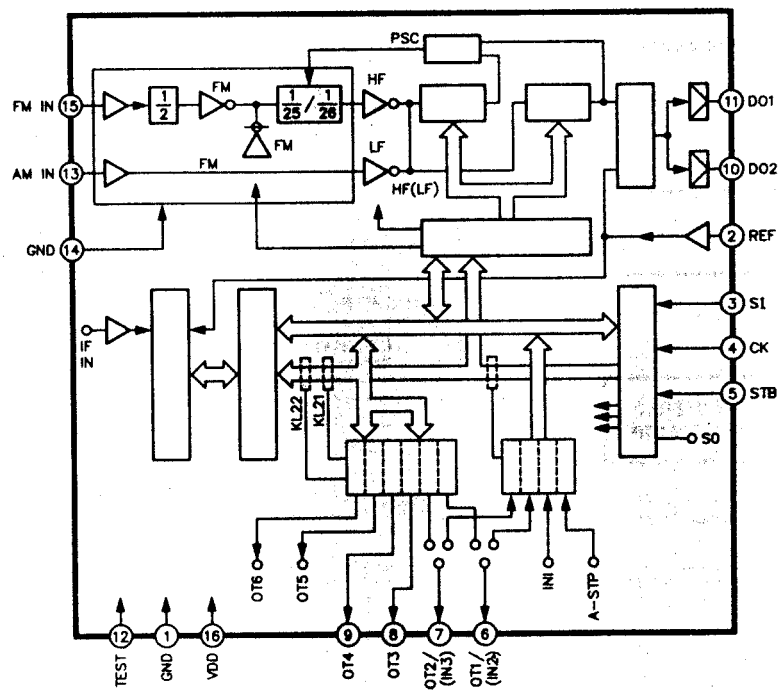


IC102: μPC1235C

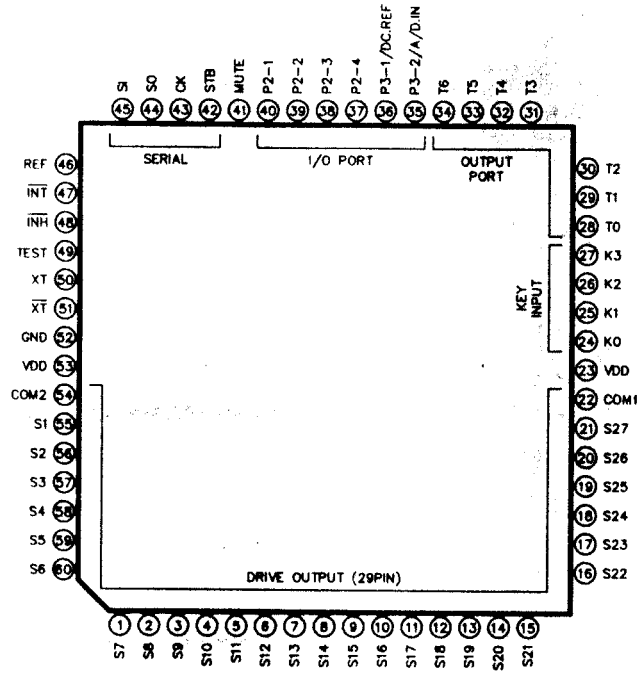


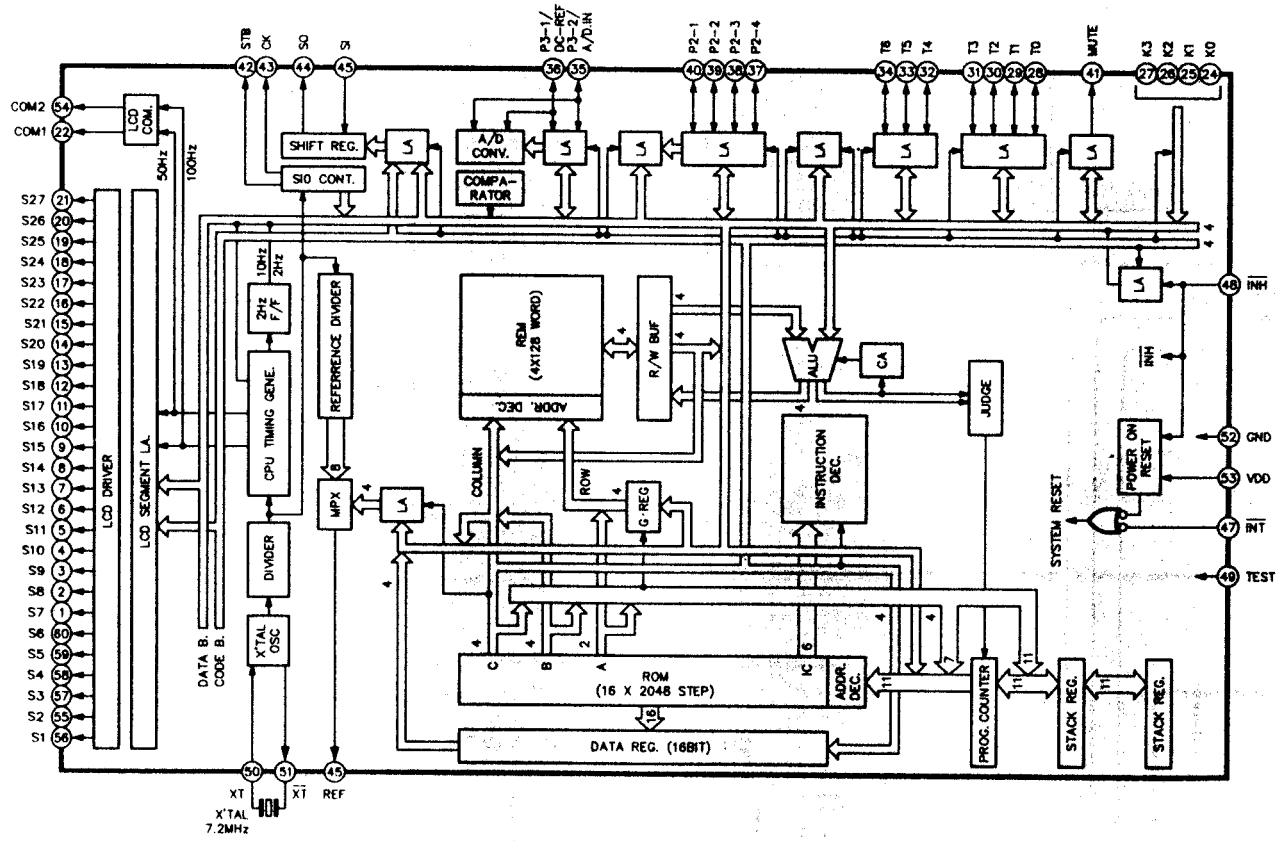
IC103: TC9172P



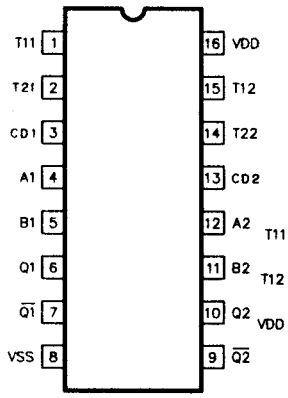


IC301: TC9306F



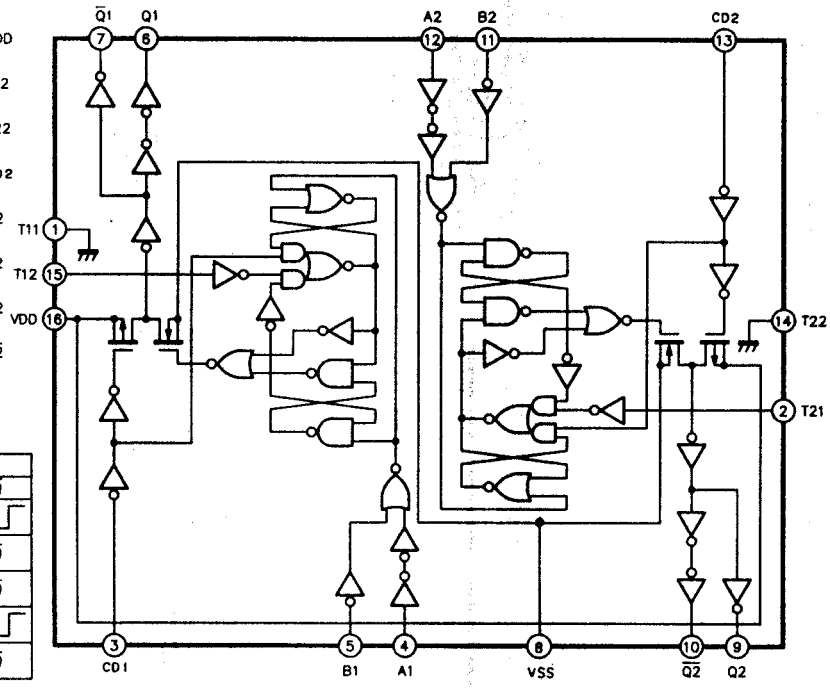


IC302: μPD4528

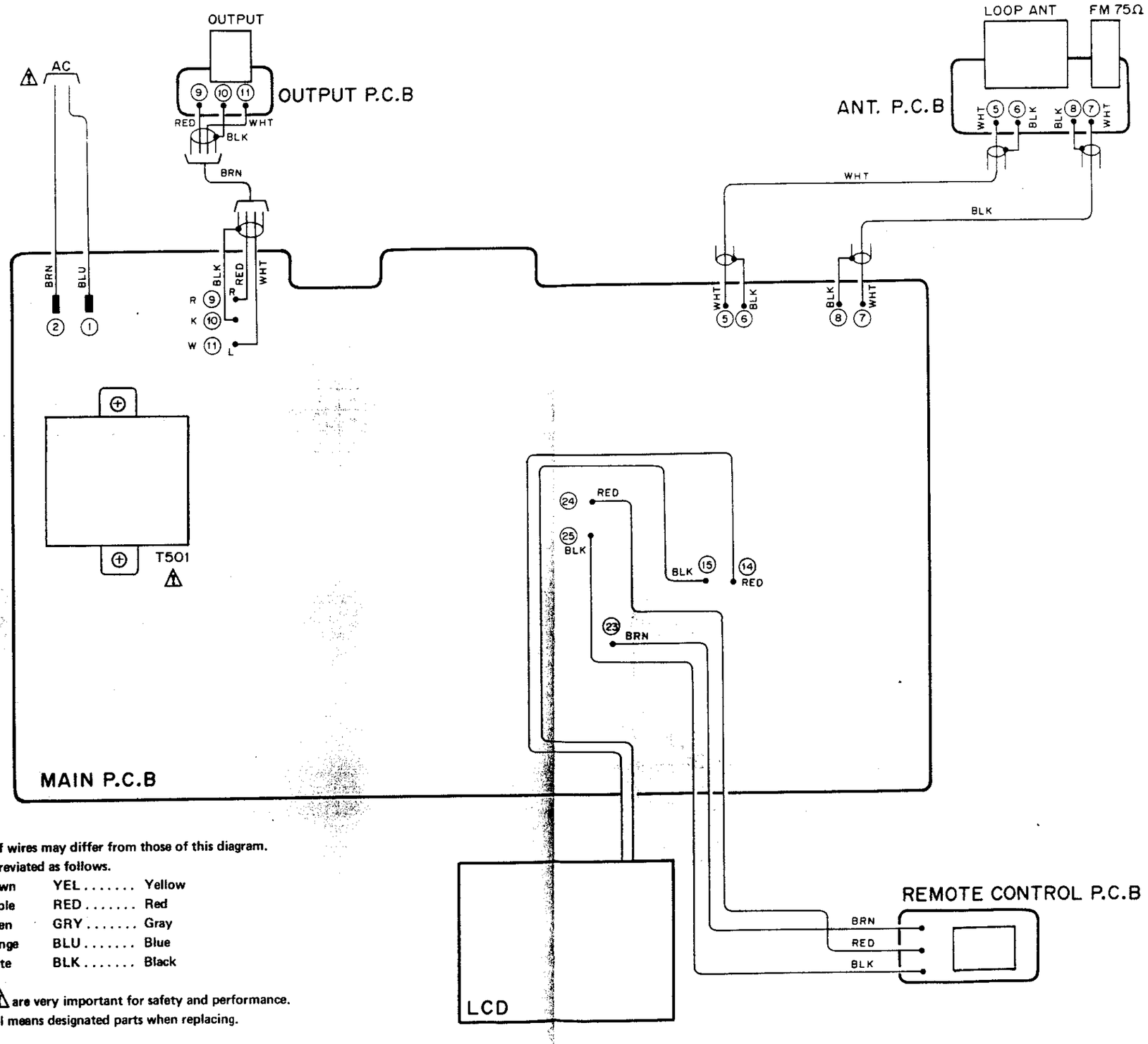


TRUTH TABLE

INPUT			OUTPUT	
A	B	CD	Q	Q̄
↑	H	H	⊓	⊔
↑	L	H	Q	Q̄
H	↓	H	Q	Q̄
L	↓	H	⊓	⊔
×	×	L	Q	Q̄



WIRING DIAGRAM



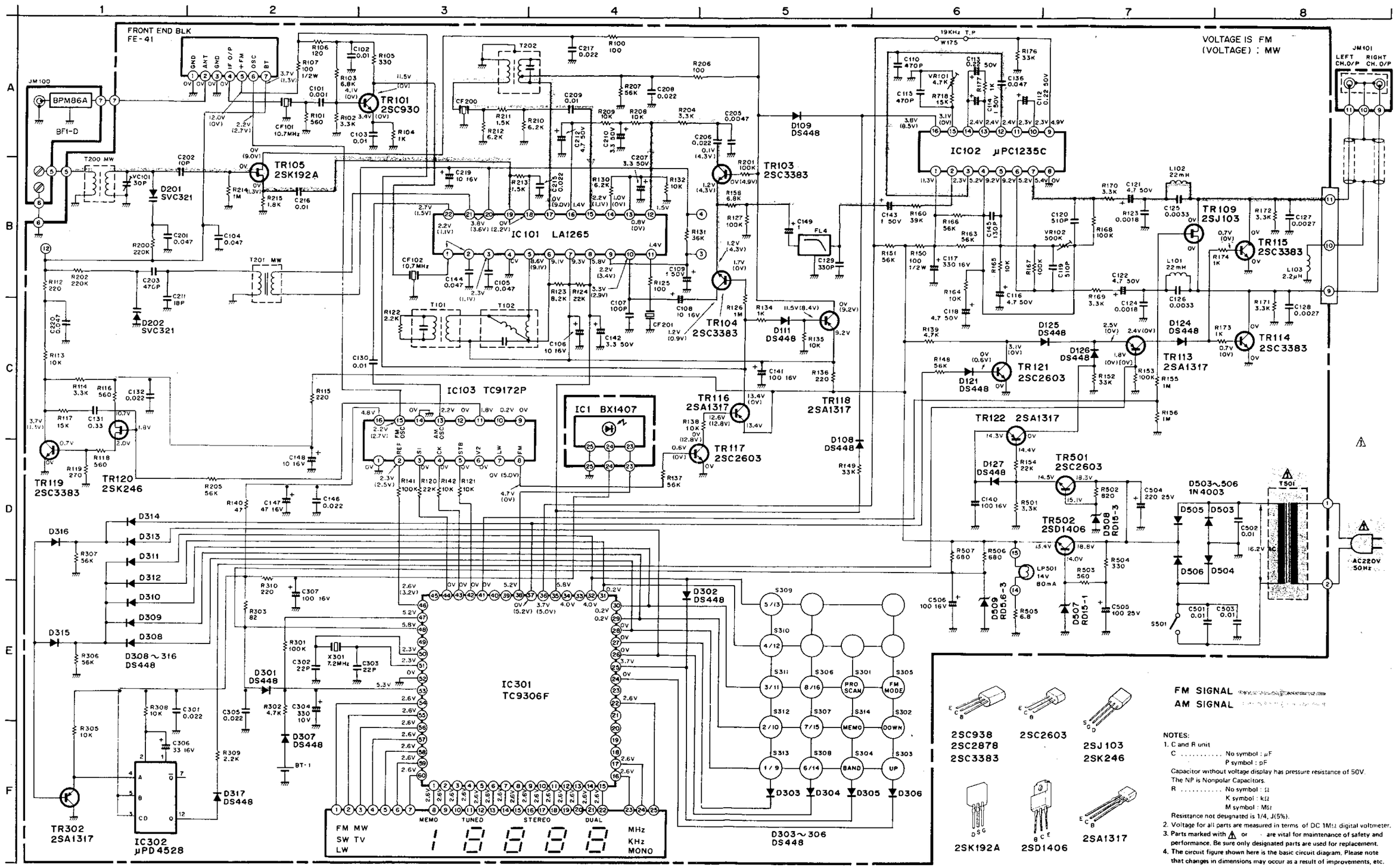
NOTE:

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

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

SCHEMATIC DIAGRAM



2SC938
2SC2878
2SC3383

2SC2603

2SJ103
2SK246

2SK192A

2SD1406

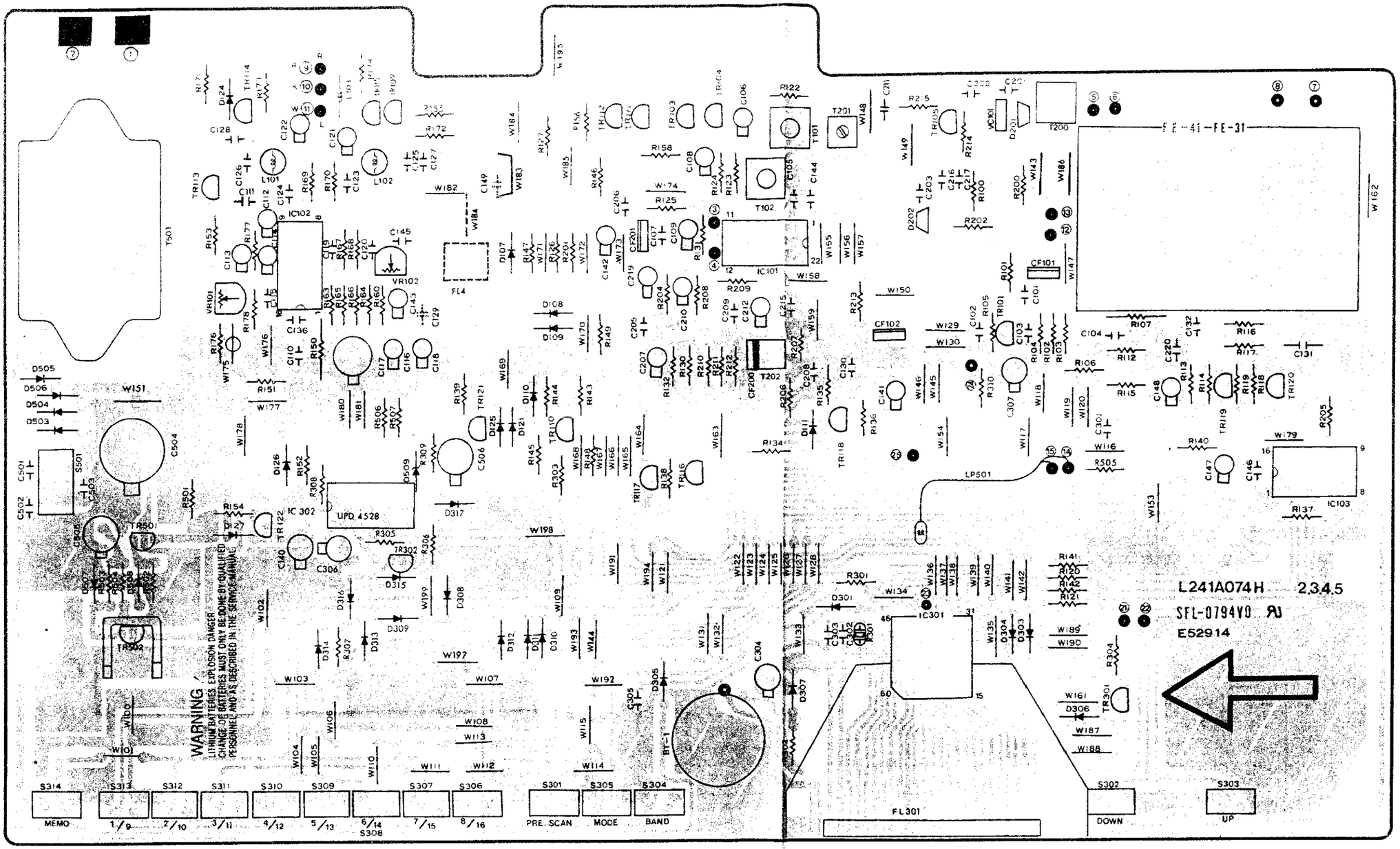
2SA1317

FM SIGNAL
AM SIGNAL

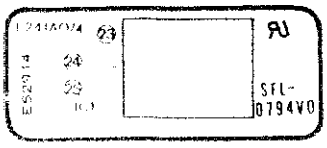
NOTES:
1. C and R unit
   C ..... No symbol : μF
   P symbol : pF
   Capacitor without voltage display has pressure resistance of 50V.
   The NP is Nonpolar Capacitors.
   R ..... No symbol : Ω
   K symbol : kΩ
   M symbol : MΩ
   Resistance not designated is 1/4, J(5%).
2. Voltage for all parts are measured in terms of DC 1MΩ digital voltmeter.
3. Parts marked with ⚠ or ▲ are vital for maintenance of safety and performance. Be sure only designated parts are used for replacement.
4. The circuit figure shown here is the basic circuit diagram. Please note that changes in dimensions may occur as a result of improvements, etc.

PRINTED CIRCUIT BOARDS

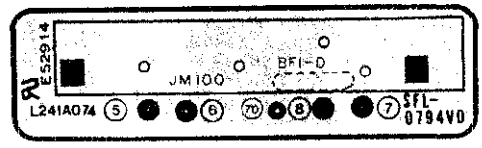
MAIN P.C.B



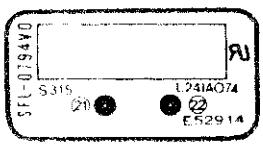
REMOTE CONTROL P.C.B



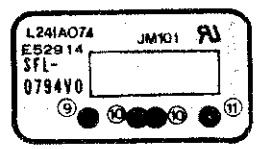
ANT. P.C.B



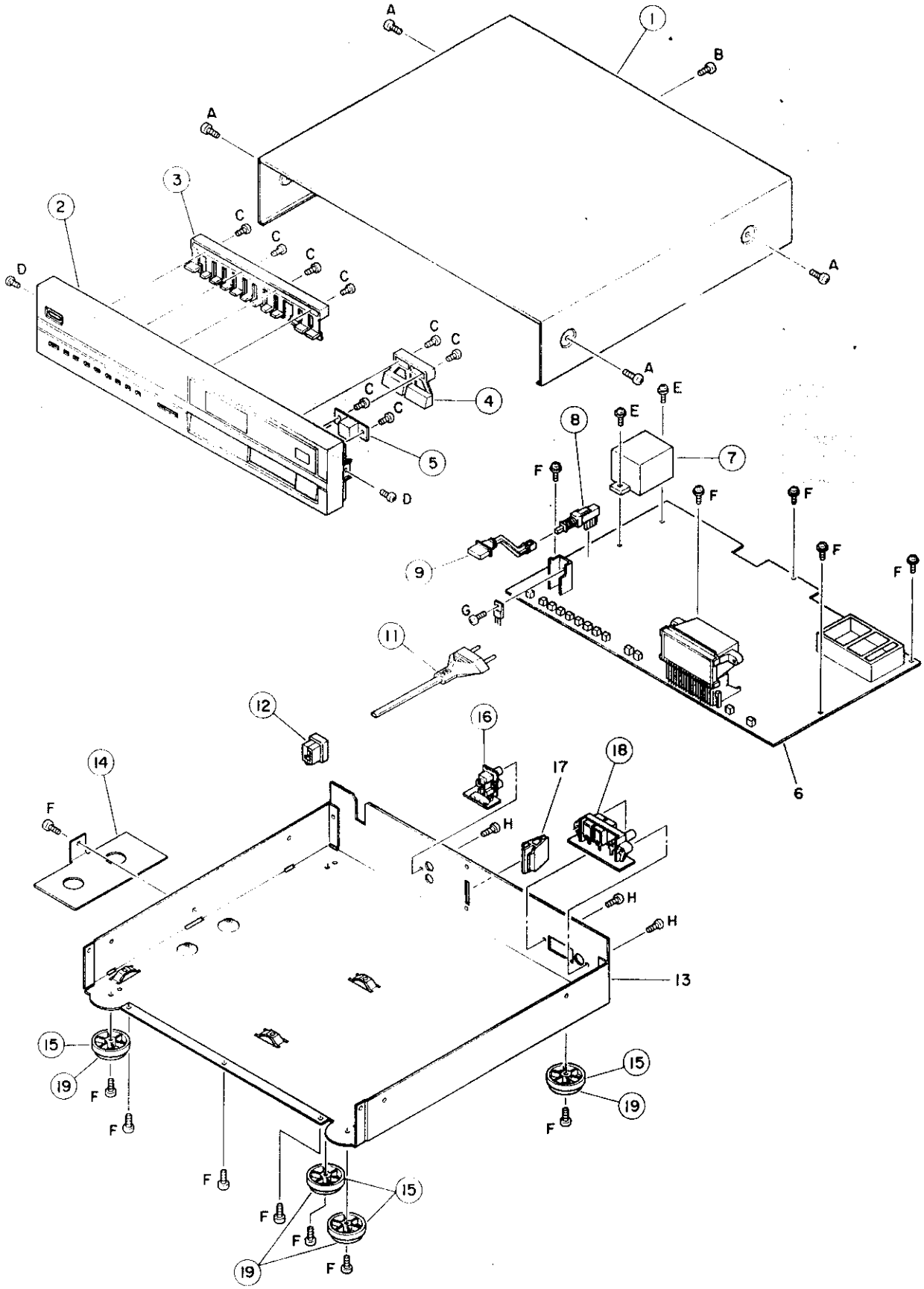
POWER SWITCH P.C.B



OUTPUT P.C.B



EXPLODED VIEW OF CABINET



PARTS LIST

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

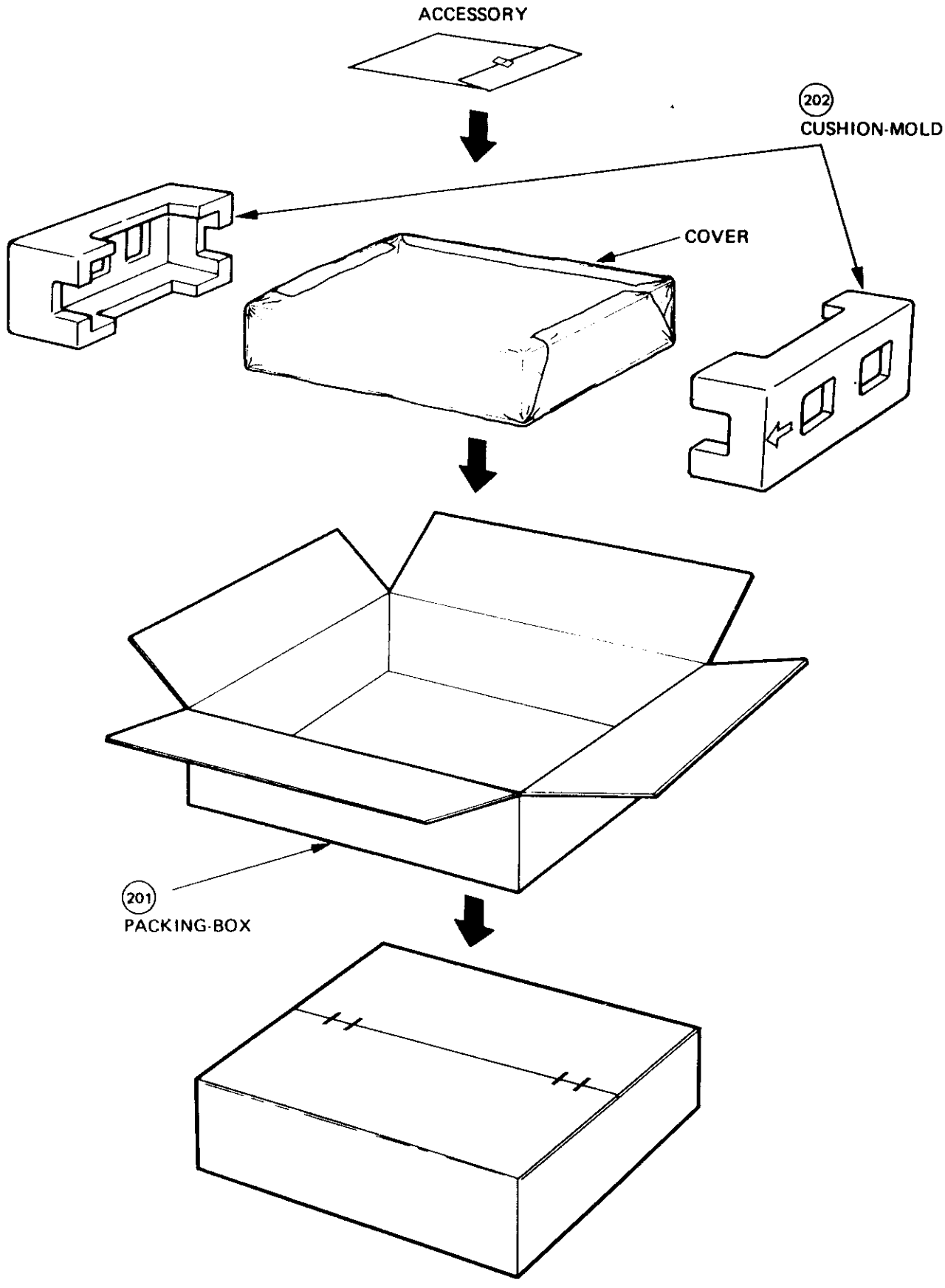
Symbol No.	Parts No.	Description
1	L561B015H01	CASE-TOP
2	L702B049G11	PANEL ASSY
3	L704D166G01	KNOB-ASSY (PRESET)
4	L704D167G11	KNOB-ASSY (TUNING)
5		REMOCON-PCB
6		PCB ASSY
7	**L350Y176H01**	**TRANS-POWER** ⚠
8	**L432Y075H01**	**SWITCH-PUSH** ⚠
9	L704D143H06	KNOB POWER
11	**L242Y027H01**	**POWER CORD 2M** ⚠
12		CORD-CLAMPER
13		CHASSIS
14		ISORATED SEAT
15	L771D021H03	LEG ABS
16	L451Y031H01	JACK (O/P) 2P
17		HOLDER-ANT
18	L440Y012H01	TERMINAL BOARD
19	L771D022H01	LEG RUBBER
A		SCREW-METAL 4*8
B		SCREW-METAL 3*6
C		T-SCREW 1-2.6*10
D		SCREW-METAL 3*6
E		SCREW-METAL 3*10
F		SCREW-METAL 3*6
G		T-SCREW 2-3*8
H		SCREW-METAL 3*8

Symbol No.	Parts No.	Description	
		DIODES	
D108	L264Y216H01	DS448BT	
D109	L264Y216H01	DS448BT	
D111	L264Y216H01	DS448BT	
D121	L264Y216H01	DS448BT	
D124	L264Y216H01	DS448BT	
D125	L264Y216H01	DS448BT	
D126	L264Y216H01	DS448BT	
D127	**L264Y216H01**	**DS448BT**	⚠
D201	L264Y019H01	SVC-321B (VERICAP)	
D202	L264Y019H01	SVC-321B (VERICAP)	
D301	L264Y216H01	DS448BT	
D303	L264Y216H01	DS448BT	
D304	L264Y216H01	DS448BT	
D305	L264Y216H01	DS448BT	
D306	L264Y216H01	DS448BT	
D307	L264Y216H01	DS448BT	
D308	**L264Y216H01**	**DS448BT**	⚠
D309	**L264Y216H01**	**DS448BT**	⚠
D310	**L264Y216H01**	**DS448BT**	⚠
D311	L264Y216H01	DS448BT	
D312	L264Y216H01	DS448BT	
D313	L264Y216H01	DS448BT	
D314	L264Y216H01	DS448BT	
D315	**L264Y216H01**	**DS448BT**	⚠
D316	**L264Y216H01**	**DS448BT**	⚠
D317	L264Y216H01	DS448BT	
D503	L264Y023H01	1N4003	
D504	L264Y023H01	1N4003	
D505	L264Y023H01	1N4003	
D506	L264Y023H01	1N4003	
D507	U264S013H57	RD15E-B1	
D508	U264S013H59	RD15E-B3	
D509	U264S013H28	RD5.6E-B3	
		TRANSISTORS	
TR101	L260Y209H05	2SC930(E,F)	
TR103	L260Y206H06	2SC3383(S,T)	
TR104	L260Y206H06	2SC3383(S,T)	
TR105	L260D026H01	2SK192(Y)	
TR109	L260Y039H01	2SJ103	
TR113	L260Y208H05	2SA1317(S,T,U)	
TR114	L260Y206H06	2SC3383(S,T)	
TR115	L260Y206H06	2SC3383(S,T)	
TR116	L260Y208H05	2SA1317(S,T,U)	
TR117	U260S505H03	2SC2603(F)	
TR118	L260Y208H05	2SA1317(S,T,U)	
TR119	L260Y206H06	2SC3383(S,T)	
TR120	L260Y204H04	2SK246(GR)	
TR121	U260S505H03	2SC2603(F)	

Symbol No.	Parts No.	Description	
		TRANSISTORS	
TR122	L260Y208H05	2SA1317(S,T,U)	
TR302	L260Y208H05	2SA1317(S,T,U)	
TR501	**U260S505H03**	**2SC2603(F)**	⚠
TR502	**L260Y017H04**	**2SD1406(O,Y)**	⚠
		ICs	
IC1	L262Y541H01	BX1407	
IC101	L262Y046H01	LA1265	
IC102	L262Y055H01	μPC1235C	
IC103	L262Y532H01	TC9172P	
IC301	L262Y090H01	TC9306F-022	
IC302	L262Y112H01	μPD4528BC	
		ELECTRICAL PARTS	
BF1	L351Y017H01	FILTER-LCBP BPMB6A	
BT-1	L283Y006H01	DRY-BATTERY	
CF101	L365Y007H01	CERAMIC-FILTER SFE10.7MS3GK-A	
CF102	L365Y007H01	CERAMIC-FILTER SFE10.7MS3GK-A	
CF200	U365Y016H01	CERAMIC-FILTER	
CF201	L365Y506H01	CERAMIC-FILTER	
FE41	L929Y005G01	FRONT END ASSY	
FL4	L351Y016H01	FILTER-LC LP	
FL301	L502Y003H01	L.C.D	
JM101	L451Y031H01	JACK (O/P) 2P	
L101	L351Y024H01	COIL	
L102	L351Y024H01	COIL	
L103	L351Y013H13	COIL 2.2M	
LP501	L253Y009H01	LAMP 12V-150MA	
S302	L432Y062H01	SW-PUSH	
S303	L432Y062H01	SW-PUSH	
S304	L432Y062H01	SW-PUSH	
S305	L432Y062H01	SW-PUSH	
S306	L432Y062H01	SW-PUSH	
S307	L432Y062H01	SW-PUSW	
S308	L432Y062H01	SW-PUSW	
S309	L432Y062H01	SW-PUSW	
S310	L432Y062H01	SW-PUSW	
S311	L432Y062H01	SW-PUSW	
S312	L432Y062H01	SW-PUSW	
S313	L432Y062H01	SW-PUSW	
S314	L432Y062H01	SW-PUSW	
S501	**L432Y075H01**	**SW-PUSH**	⚠
T101	L374D015H01	COIL-FM	
T102	L374D016H01	COIL-FM	
T200	L370D005H01	COIL-ANT (MW)	
T201	L373C008H01	COIL-OSC (MW)	
T202	L374Y007H01	TRANS-IF (AM)	
T501	L350Y176H01	TRANS-POWER	

Symbol No.	Parts No.	Description
	ELECTRICAL PARTS	
VC101	L202Y004H04	VC-TRIM CTC-6U-030 (ORANGE)
VR101	L127Y002H08	VR-SEMI B4.7K
VR102	L127Y002H18	VR-SEMI 500K
X301	L285Y006H01	CRYSTAL 7.2MHz
	PACKING	
201	L800B014H40	PACKING-BOX
202	L813A019H02	CUSHION-MOLD
	L871B004H12	IB 6-LANG
	L370Y040H01	LOOP ANTENNA
	L281Y008H01	FM ANTENNA

PACKING INSTRUCTIONS



MITSUBISHI ELECTRIC EUROPE GMBH
BRANDENBURGER STR40 4030 RATINGEN WEST GERMANY

DA-F804(WG)
L871C011H29
Printed in Taiwan