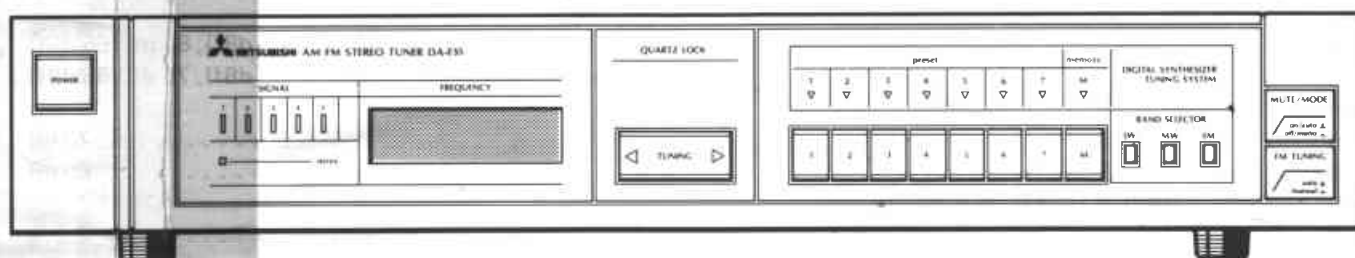


SERVICE MANUAL
AM/FM STEREO TUNER
MODEL DA-F55



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SPECIFICATIONS

FM section

Tuning range	87.5 MHz to 108 MHz (50 kHz step)
Usable sensitivity (IHF)	
75 ohms	0.9 μ V (10.8 dBf)
300 ohms	1.9 μ V (10.8 dBf)
50 dB quieting sensitivity	
MONO	3.6 μ V (16.4 dBf)
STEREO	41 μ V (37.3 dBf)
Image response ratio	45 dB
IF response ratio	80 dB
Spurious response ratio	70 dB
AM suppression ratio	50 dB
Capture ratio (IHF)	1.5 dB
Alternate channel selectivity (IHF), ± 400 kHz	60 dB
Selectivity (DIN, ± 300 kHz)	55 dB
Signal to noise ratio (IHF)	
MONO	81 dB (85 dBf), 80 dB (65 dBf)
STEREO	78 dB (85 dBf), 75 dB (65 dBf)
Signal to noise ratio (DIN, Weighted)	
MONO	70 dB
STEREO	65 dB
Total harmonic distortion (75 kHz deviation)	
MONO	0.2 %
STEREO	0.3 %
Stereo separation	
1 kHz	40 dB
10 kHz	35 dB
Frequency response	± 1 dB, 30 Hz to 15 kHz
Subcarrier product ratio (IHF)	35 dB

MW section

Tuning range	522 kHz to 1,611 kHz (9 kHz step)
Usable sensitivity (IHF)	300 μ V/m
Sensitivity (S/N = 26 dB)	600 μ V/m
Selectivity	35 dB
Signal to noise ratio	50 dB
Image response ratio	30 dB
IF response ratio	40 dB
Distortion	0.8 %

LW section

Tuning range	155 kHz to 353 kHz (9 kHz step)
Sensitivity (S/N = 26 dB)	1 mV/m
Signal to noise ratio	40 dB
Image response ratio	35 dB

GENERAL

Power consumption	10 W
Dimensions (W x H x D)	424 x 76 x 273 mm (16-11/16 x 3 x 10-3/4")
Weight	3.0 kg (6 lb 10 oz)

Design and specification are subject to change without notice for improvement.

ADJUSTMENT PROCEDURE

1. FM FRONT END adjustment

- 1) Set trimmers TC11, TC12, TC13 to their center positions as shown in Fig. 3.



Fig. 3

- 2) Set the frequency reading to 87.5 MHz and adjust L13 so that the voltage across both ends of C312 is $8 \pm 1.0V$.
- 3) Set the frequency reading to 108 MHz and adjust TC13 so that the voltage across both ends of C312 is $22 \pm 1.0V$.
- 4) Repeat items 2), 3) several times to adjust so that the voltage at each frequency is as specified.
- 5) Adjust L11, L12, T11 so that the "U" curve of the Q101 collector is maximum when the frequency is as shown in item 2).
- 6) Adjust TC11, TC12 so that the "U" curve of the Q101 collector is maximum when the frequency is as shown in item 3).

2. FM-IF adjustment

- 1) Set the frequency of the FM-SG to 98.0 MHz, and the output, to 1 kHz, 100%, modulation 65 dBf. Receive this signal and adjust the primary (IC101 side) core of T101 so that the voltage across both terminals of R108 is $0 \pm 50 mV$.
- 2) Receive the signal output from the FM-SG the same as in item 1) and adjust the secondary core of T101 so that the distortion is minimum. When the specified voltage in item 1) is too high, repeat adjustment shown in item 1) again.

3. FM-MPX adjustment

- 1) Set the frequency of the FM-SG to 98.0 MHz and the output, to non-modulation 65 dBf. Receive this signal and adjust VR101 so that the reading of the frequency counter is $19 \pm 0.05 kHz$ at TP1 pin 6.

Note: Always monitor the oscillation frequency of the FM-SG and keep the accuracy within $\pm 5 kHz$.

4. MW adjustment

- 1) Set trimmers TC201, TC202 to their center positions as shown in Fig. 3.
- 2) Set the reading of the frequency counter to 522 kHz and adjust T201 so that the voltage across both terminals of C312 is $1 \pm 0.1 V$.

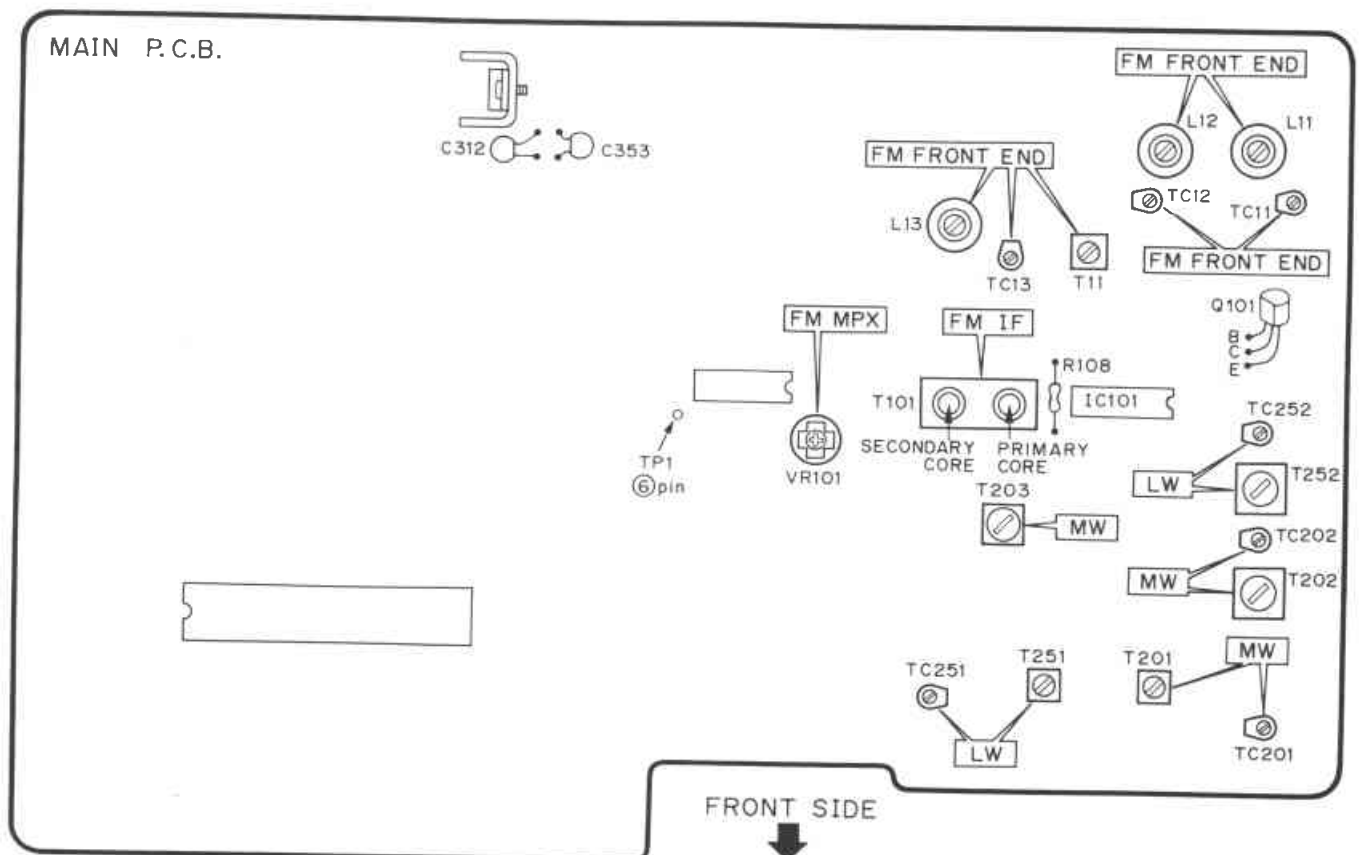


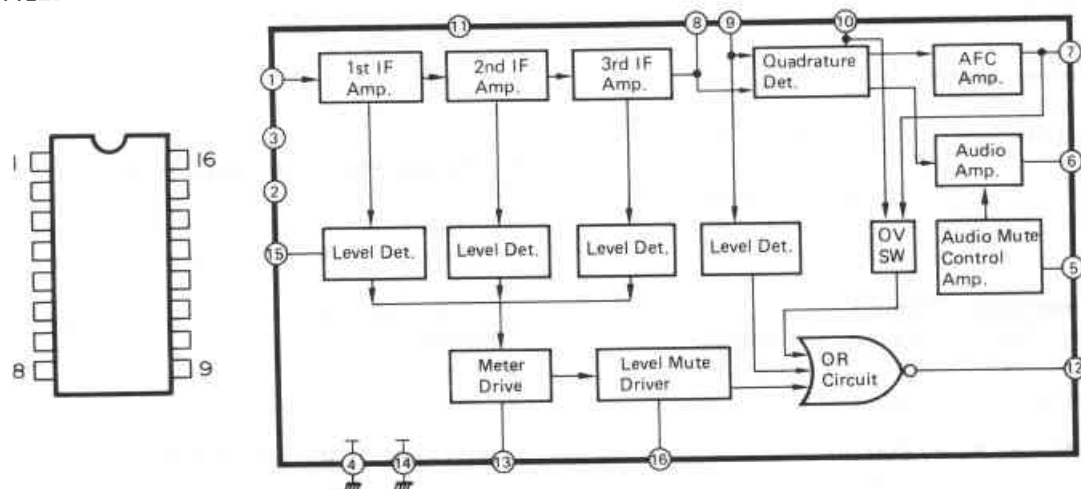
Fig. 4

- 1) Set trimmers TC251, TC252 to their center positions as shown in Fig. . . .
- 2) Set the reading of the frequency counter to 155 kHz and adjust T251 so that the voltage across both terminals of C353 is 1.8 ± 0.1 V.

- 3) Set the reading of the frequency counter to 353 kHz and adjust TC251 so that the voltage across both terminals of C353 is 21 ± 1.0 V.
- 4) Repeat items 2), 3) several times to adjust so that the voltage is as specified at each frequency.
- 5) Receive the 155 kHz signal and adjust T252 so that the output is maximum.
- 6) Receive the 353 kHz signal and adjust TC252 so that the output is maximum.
- 7) Repeat items 5), 6) several times to adjust.

- 1) Receive the FM stereo signal and check that "HI-BLEND" is set to ON when the 5th signal LED is not lit.
- 2) Receive the AM signal and check that "HI-CUT" is set to ON when the 5th signal LED is not lit.
- 3) Check that both "HI-BLEND" and "HI-CUT" are set to OFF when the 5th signal LED is lit.

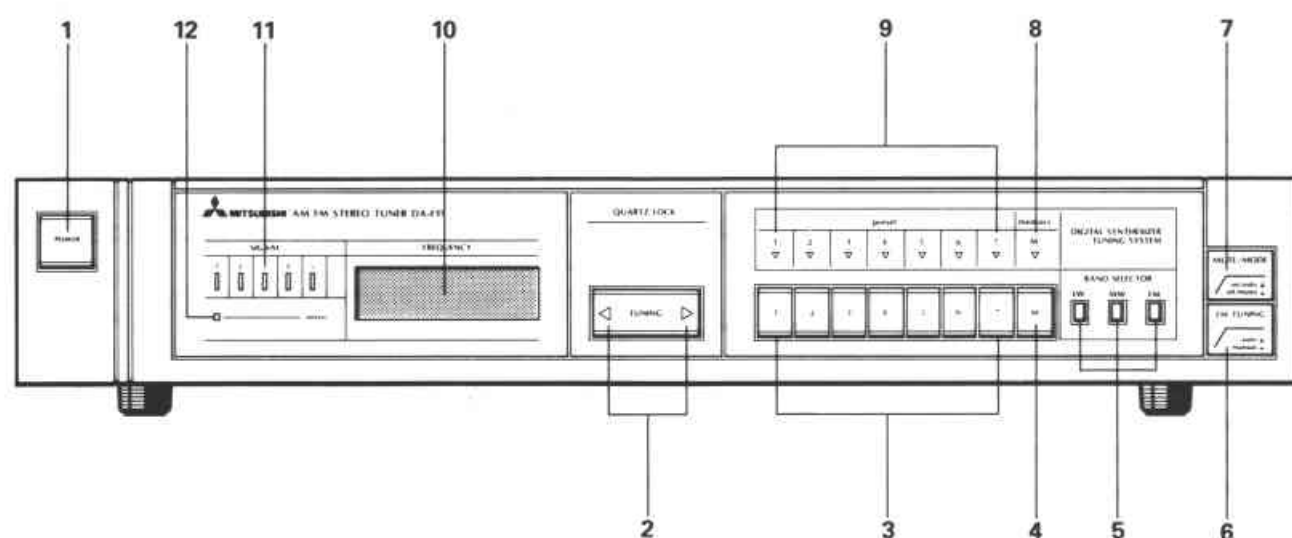
IC101 : HA11225



The block diagram illustrates the PLL circuit for the TDA16748. It features two phase detectors, PD-1 and PD-2, which are connected to a DC amplifier (DCAMP) and a VCO. The VCO output is divided by 19 KHz to produce a 90-degree phase shift. The decoder outputs 38 KHz, 19 KHz, and 19 KHz signals. The circuit is connected to a 76 KHz reference and a 38 KHz reference. The output of the VCO is divided by 19 KHz to produce a 90-degree phase shift. The decoder outputs 38 KHz, 19 KHz, and 19 KHz signals.

Pin \ MODE		AUTO		MANUAL / MONO	AM
No.	NAME	STEREO	MONO		
⑥	STEREO	L	H	H	H
⑩	TP-1	19KHz	VCO Free Running		
⑭	VCO	VCO Freq. Adj			

FRONT PANEL TERMINOLOGY AND FUNCTIONS

**1. POWER (Power Switch)**

This switch is for turning this unit on and off.

CAUTION

The POWER switch on the front panel does not separate in off-position completely from the mains.

2. TUNING (Tuning Control)

Depress ◀ when tuning a station with a frequency lower than that indicated on the FREQUENCY display.

Depress ▶ when tuning a station with a frequency higher than that indicated on the FREQUENCY display.

3. PRESET (Preset Station Buttons)

7 FM, 4 MW and 3 LW stations can be memorized. When a preset tuning button is pushed, the corresponding station will be immediately tuned in.

4. MEMORY (Memory Ready Button)

This button is used to preset frequencies into the programmable memory.

7 FM stations can be memorized by operating the PRESET station buttons 1 through 7.

4 MW stations can be memorized by operating the PRESET station buttons 1 through 4.

3 LW stations can be memorized by operating the PRESET station buttons 5 through 7.

Simply depress the MEMORY switch when storing the desired frequency and this operation will cause the MEMORY indicator to light up for a period of about 5 seconds. Depress the PRESET station button while this indicator is still on.

The frequency of the broadcast station indicated on the FREQUENCY display will then be stored by the switch.

NOTE:

A capacitor back-up system is used for the memory power supply. It operates even when the power switch is set to off. Disconnect the power cord when you do not intend to use the tuner for a long period of time. If the power cord is disconnected for three days or longer, the stations stored in the memory will be erased.

5. LW, MW, FM (Band Selector Buttons)

These switches are for selecting LW, MW and FM band reception. The LW, MW and FM indicator next to the digital display shows the selected band.

6. FM TUNING (Auto/Manual FM Tuning Selector Switch)

- auto For automatic tuning operations.
- ▲ manual For manual tuning operations.

7. MUTE/MODE (Muting Mode Selection Switch)

This switch is for selecting the mode of FM reception required.

on/auto For FM stereo broadcast reception. In this position both interstation noise and stations too weak for good stereo reception are muted while tuning.

off/mono For receiving FM broadcasts (including stereo broadcasts) monaurally. Muting is off, and both the interstation noise and the weaker stations will be heard.

8. MEMORY (Memory Indicator)

This indicator shows that the memory is ready in standby mode.

DISASSEMBLY INSTRUCTIONS

9. PRESET (Preset Station Indicator)

When a preset station button is pushed, the corresponding indicator is illuminated.

10. FREQUENCY (Frequency Digital Display)

This display expresses the numerical value of the receiving frequency.

11. SIGNAL (Signal Strength Meter)

This meter shows the signal strength level of LW, MW and FM broadcasts. Sufficient signal to noise ratio for monaural reception is obtained when three or more indicator lamps are illuminated. For stereo reception, when four or more indicator lamps are illuminated.

12. STEREO (Stereo Indicator)

This indicator illuminated when a FM stereo broadcast is being received. If the MUTE/MODE switch is in the "off/mono" position, this indicator will not illuminate even when a stereo station is tuned.

1. REMOVING TOP LID

Remove seven screws shown Fig. 1 to remove the top lid.

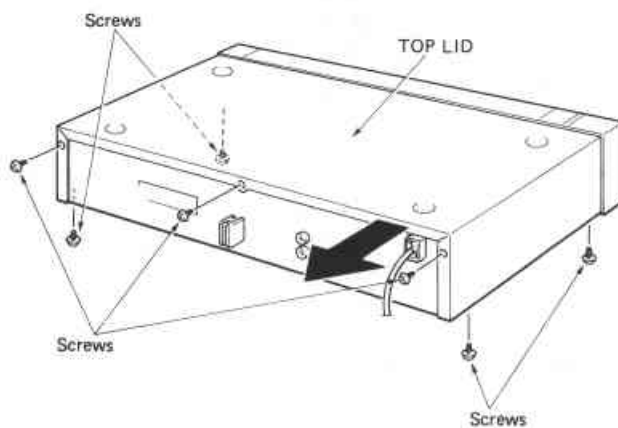


Fig. 1

2. REMOVING FRONT PANEL

Remove five screws shown Fig. 2 to remove the front panel.

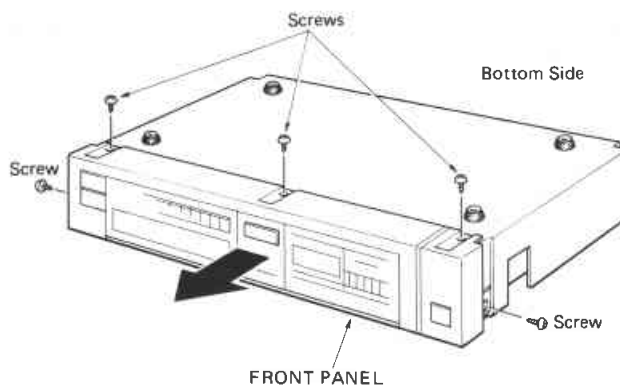
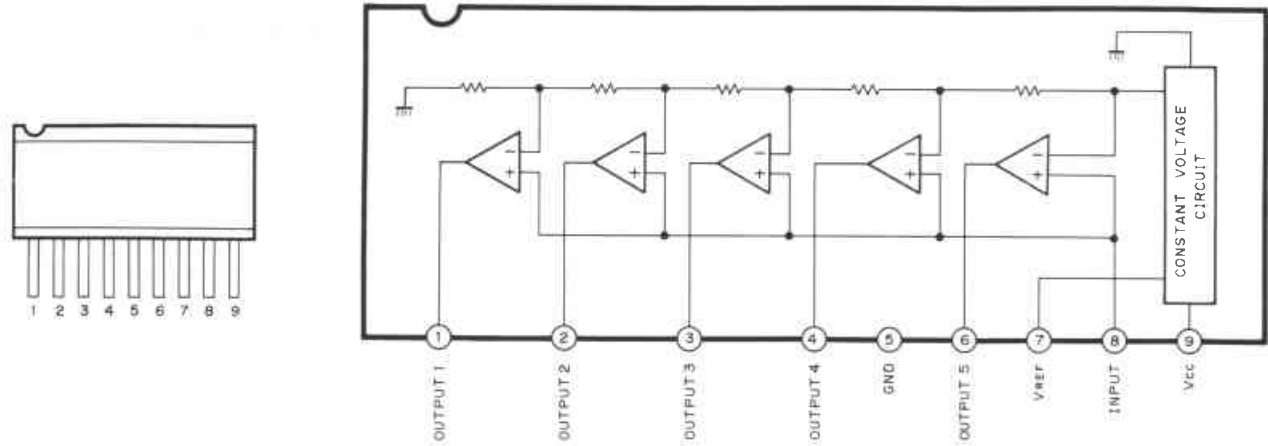
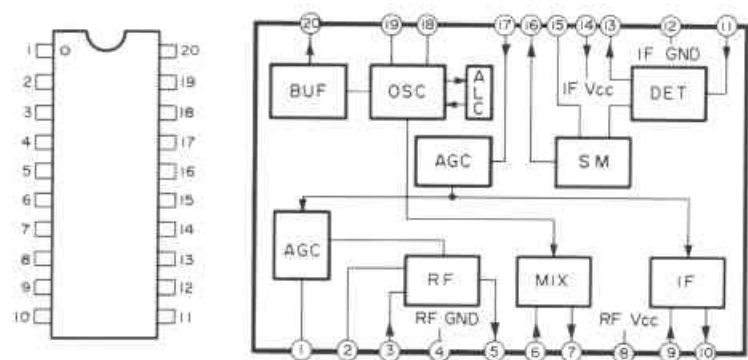


Fig. 2

IC103 : BA6104



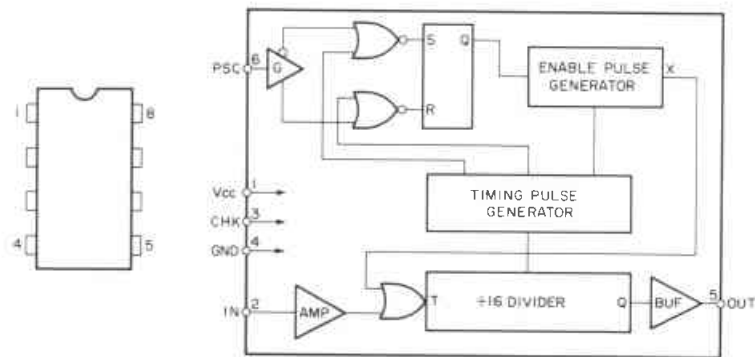
IC201 : LA1245



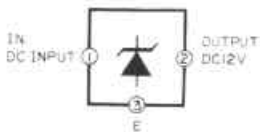
CONTROL PIN FUNCTION

Pin No.	MODE NAME	A M		F M
		Strong	Weak	
⑭	VCC	10.6 V		0
⑯	METER	high	low	

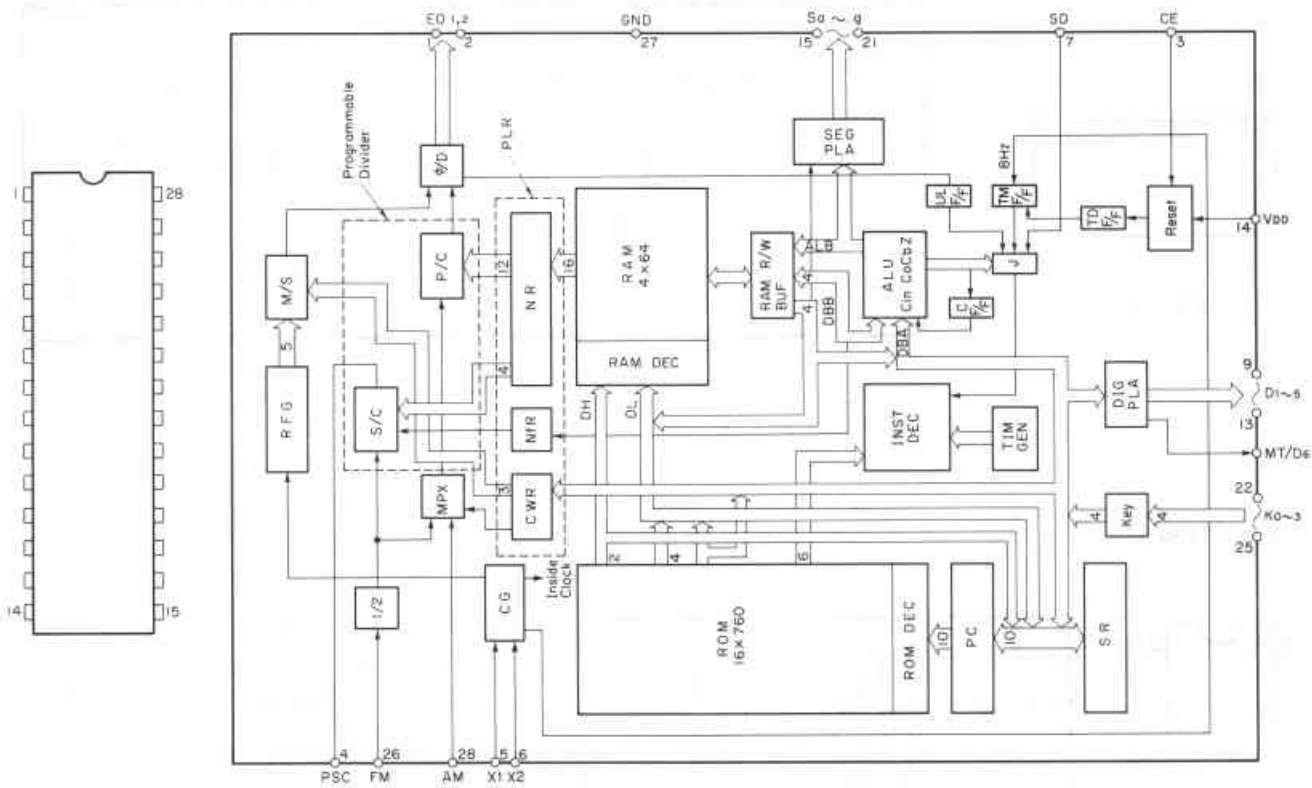
IC301 : μ PB553AC



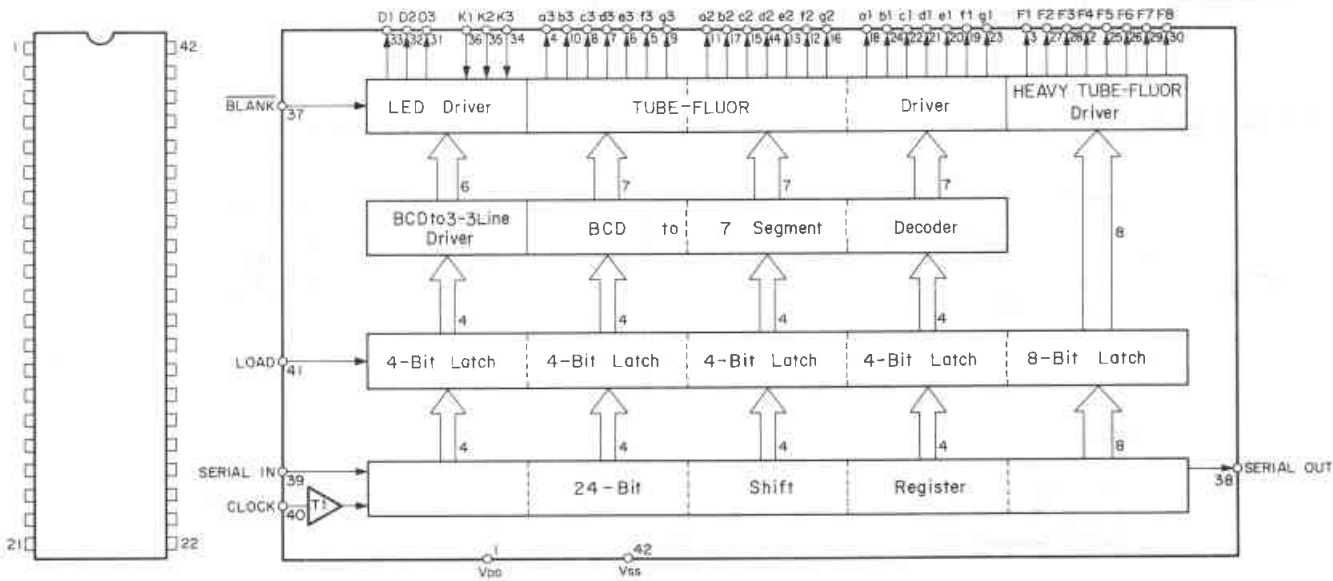
IC501 : IC Ass'y



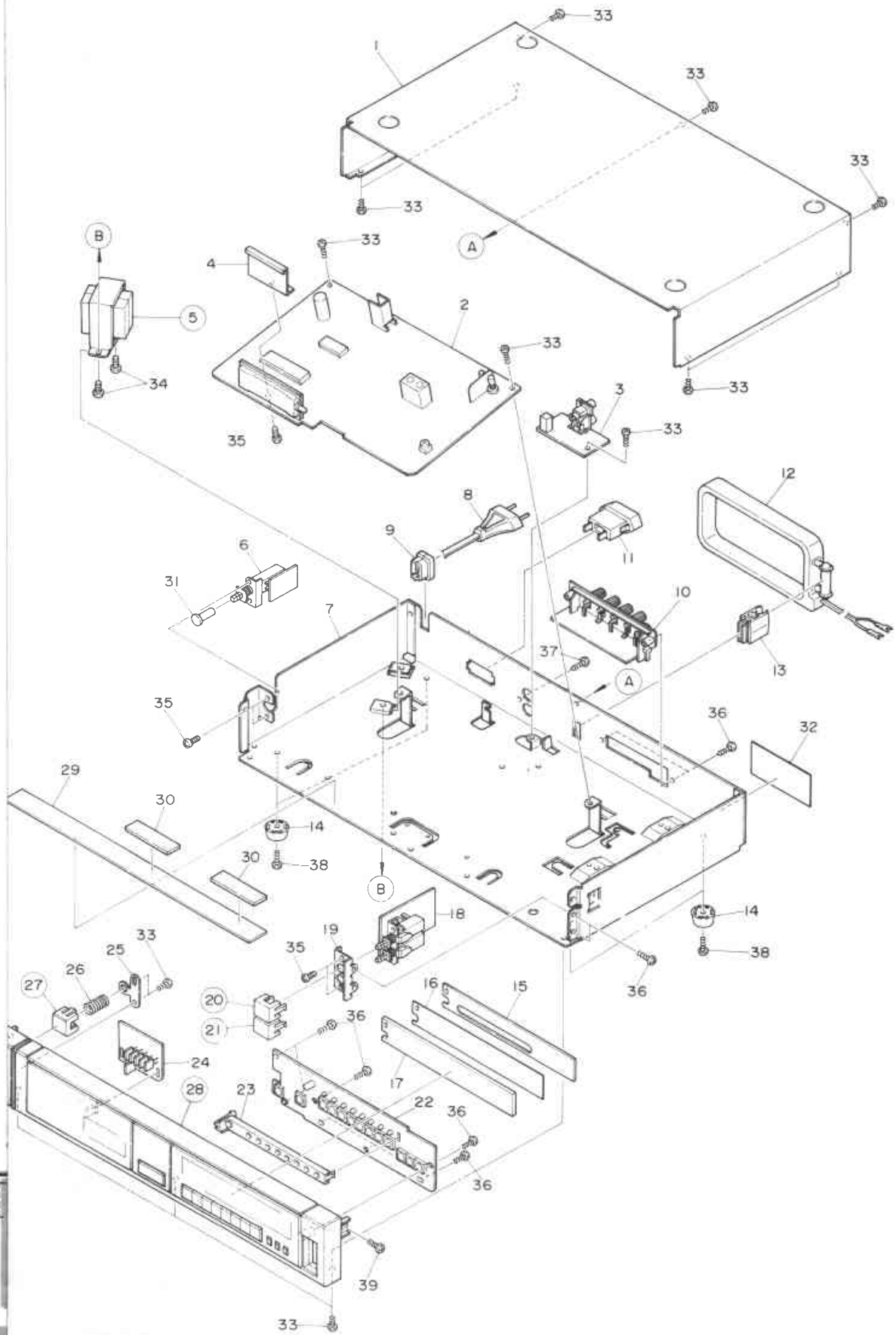
IC302 : μ PD1703



IC303 : MSM58282RS



PRINTEDCLODED VIEW



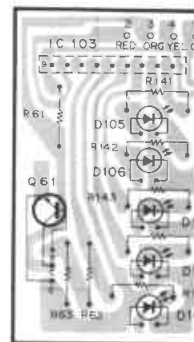
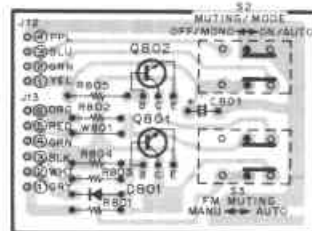
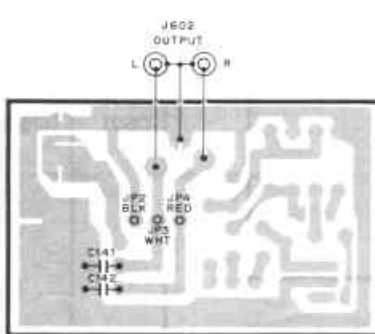
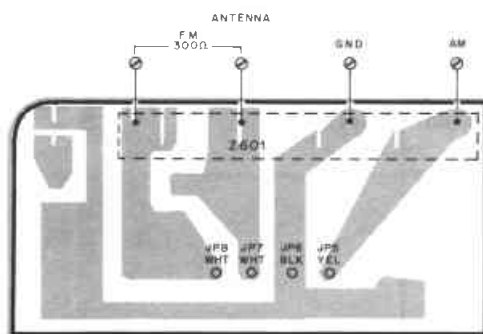
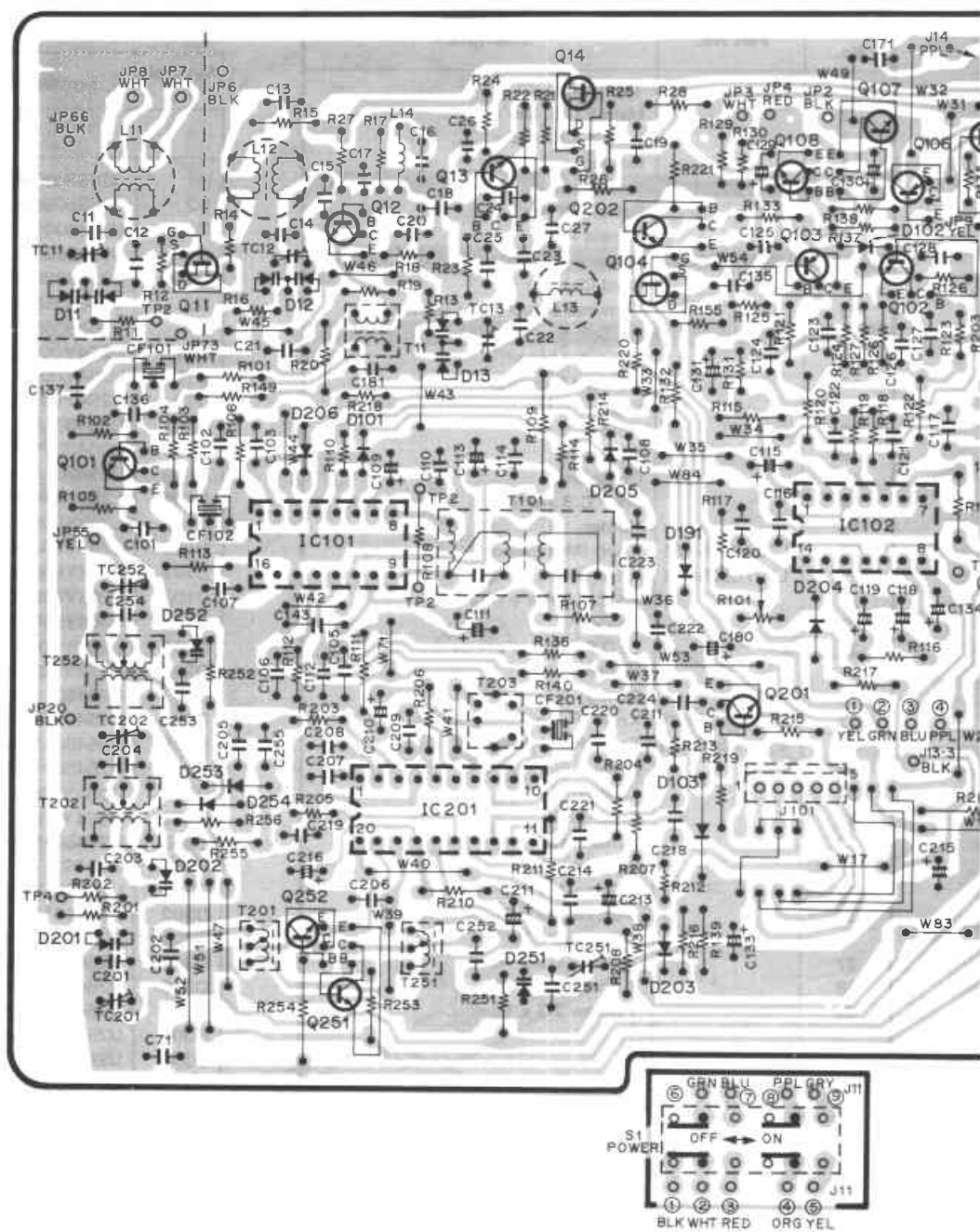
PARTS LIST

Symbol No.	Part No.	Description
1		Top Cover
2		Main P.C.B. Ass'y
3		Jack P.C.B. Ass'y
4		Holder
5	L350C508H01	Trans-Power △
6		Power SW-Ass'y
7		Chassis Ass'y
8	L242D505G02	Power Cord Ass'y △
9		Cord Clamper
10		Terminal Board Ass'y (Antenna)
11		AC Scket △
12		Loop Antenna
13		Holder (Antenna)
14		Leg
15		Holder
16		Ornament
17		Ornament
18		SW P.C.B Ass'y
19		Holder
20	L707C505H61	Knob (Mute/Mode)
21	L707C505H71	Knob (FM-Tuning)
22		SW P.C.B Ass'y (Pre Set)
23		Holder
24		LED P.C.B Ass'y
25		Holder
26		Spring
27	L704C506H01	Knob (Power)
28	L702A512H01	Front Panel Ass'y
29		Sheet
30		Cushion
31		Knob-Link
32		Name-Plate
33		Screw 3 x 6
34		B-Screw M4 x 5
35		B-Screw M3 x 6
36		B-Screw 3 x 10
37		T-Screw 1-3 x 10
38		T-Screw 2-3 x 14
39		T-Screw 2-3 x 16

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

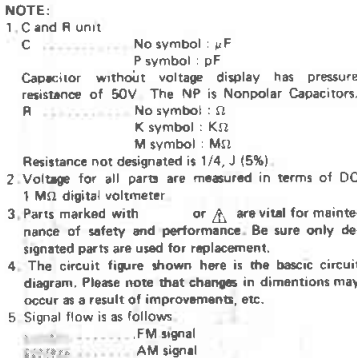
Symbol No.	Part No.	Description
Diodes		
D1	U268S086H01	SEL-2310G (LED)
D2	U268S086H01	SEL-2310G (LED)
D3	U268S086H01	SEL-2310G (LED)
D4	U268S086H01	SEL-2310G (LED)
D5	U268S086H01	SEL-2310G (LED)
D6	U268S086H01	SEL-2310G (LED)
D7	U268S086H01	SEL-2310G (LED)
D11	U264Y009H01	KV1320
D12	U264Y009H01	KV1320
D13	U264Y009H01	KV1320
D101	U264S011H01	DS442
D102	U264S011H01	DS442
D103	U264S011H01	DS442
D104	L268Y006H01	LT3213 (LED)
D105	L268Y005H01	LT3233G (LED)
D106	L268Y005H01	LT3233G (LED)
D107	L268Y005H01	LT3233G (LED)
D108	L268Y005H01	LT3233G (LED)
D109	L268Y005H01	LT3233G (LED)
D201	U264Y002H01	KV1226Y
D202	U264Y002H01	KV1226Y
D203	U264S011H01	DS442
D204	U264S011H01	DS442
D205	U264S011H01	DS442
D206	U264S011H01	DS442
D251	U264Y002H01	KV1226Y
D252	U264Y002H01	KV1226Y
D253	U264S011H01	DS442
D254	U264S011H01	DS442
D301	U264S012H01	DS446
D302	U264S011H01	DS442
D303	U264S011H01	DS442
D304	U264S011H01	DS442
D305	U264S011H01	DS442
D306	U264S011H01	DS442
D307	U264S011H01	DS442
D308	U264S011H01	DS442
D310	U264S011H01	DS442
D311	U264S011H01	DS442
D312	U264S011H01	DS442
D351	U264S011H01	DS442
D354	U264S011H01	DS442
D355	U264S011H01	DS442
D356	U264S011H01	DS442
D501	U264S013H30	10E1
D502	U264S013H30	10E1
D503	U264S013H30	10E1
D504	U264S012H01	DS446
D505	U264S012H01	DS446
D506	U264S012H01	DS446
D507	U264S013H30	DS6.2E-B2
D508	U264S013H30	DS6.2E-B2
D801	U264S011H01	DS442

PRINTED CIRCUIT BOARDS

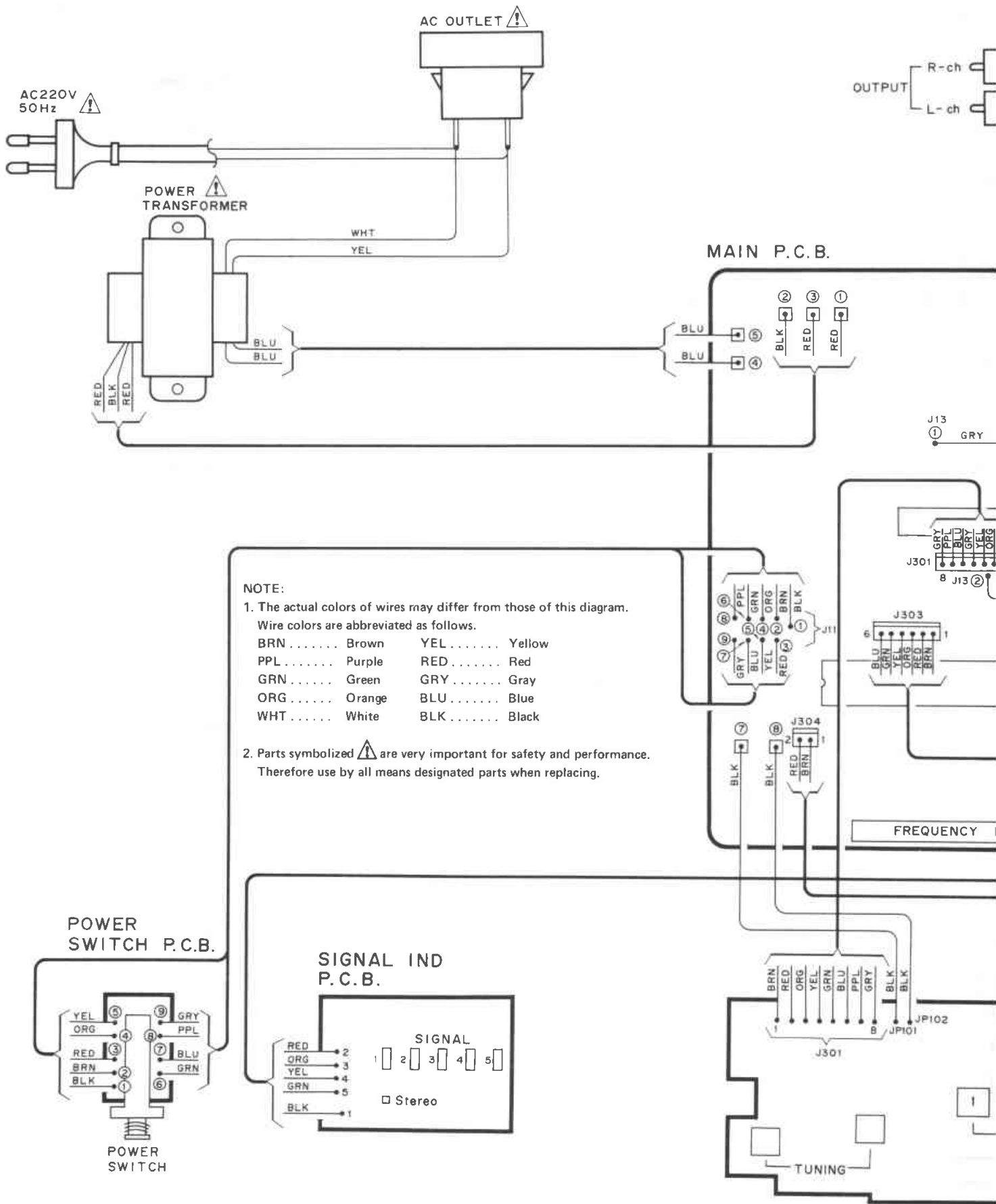








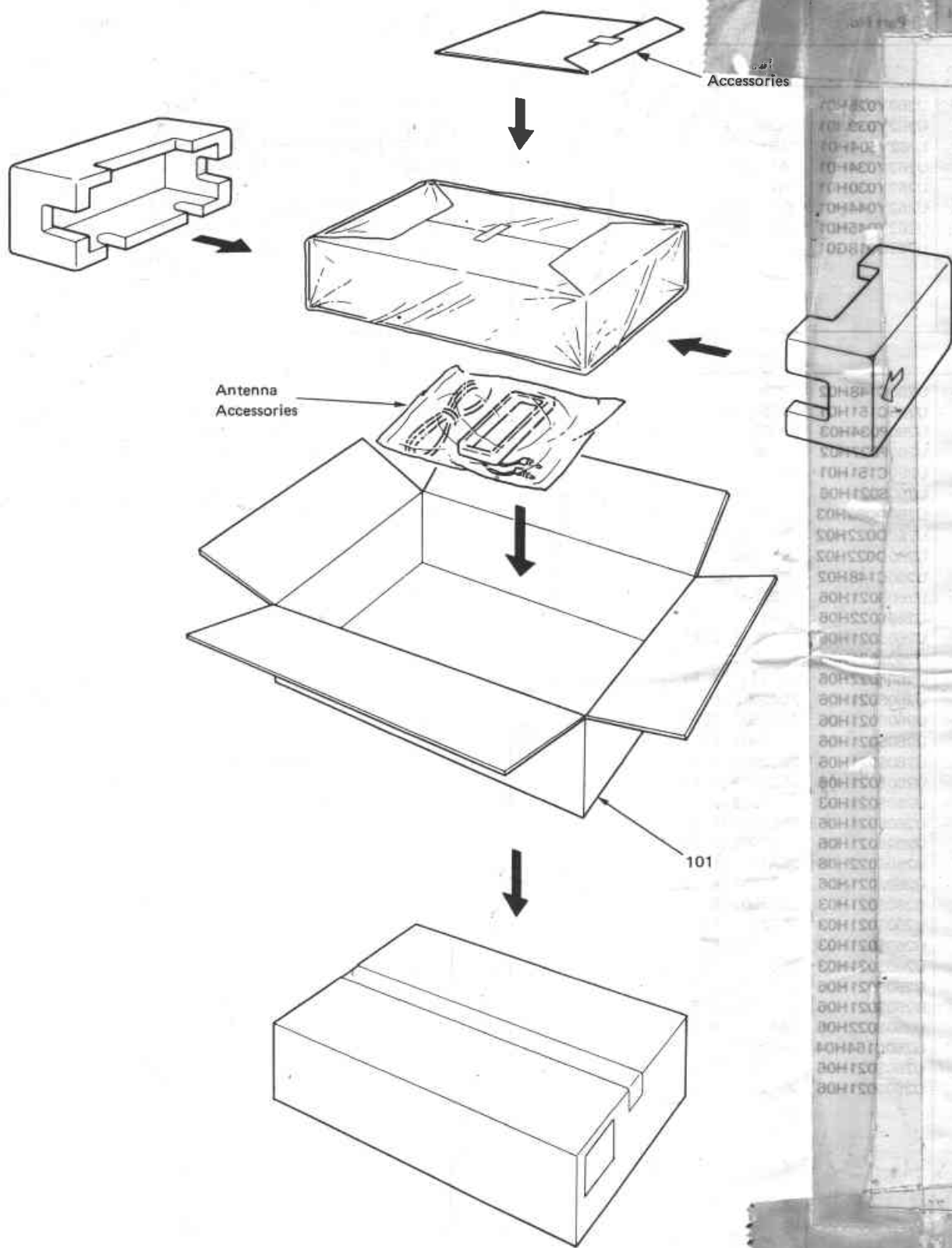
WIRING DIAGRAM



Symbol No.	Part No.	Description
ICs		
IC101	U262Y026H01	HA11225
IC102	U262Y039H01	μPC587C2
IC103	L262Y504H01	BA6104
IC201	U262Y034H01	LA1245
IC301	U262Y030H01	μPB553
IC302	U262Y044H01	μPD1703-01
IC303	U262Y045H01	MSM58282RS
IC501	U262D018G01	IC-Ass'y (V-REG.)
Transistors		
Q001	U260C148H02	2SC2603 (E, F)
Q11	U260C151H01	2SK55 (D)
Q12	U260P034H03	2SC535 (C)
Q13	U260P027H02	2SC461 (B)
Q14	U260C151H01	2SK55 (D)
Q61	U260S021H06	2SC2603 (E, F)
Q101	U260D080H03	2SC710 (D)
Q102	U260D022H02	2SA1115 (E)
Q103	U260D022H02	2SA1115 (E)
Q104	U260C148H02	2SK68A (L)
Q105	U260S021H06	2SC2603 (E, F)
Q106	U260S022H06	2SA1115 (E, F)
Q107	U260S021H06	2SC2603 (E, F)
Q108	U260S021H06	2SC2603 (E, F)
Q109	U260S022H06	2SA1115 (E, F)
Q201	U260S021H06	2SC2603 (E, F)
Q202	U260S021H06	2SC2603 (E, F)
Q251	U260S021H06	2SC2603 (E, F)
Q252	U260S021H06	2SC2603 (E, F)
Q301	U260S021H06	2SC2603 (E, F)
Q302	U260S021H03	2SC2603 (F)
Q303	U260S021H06	2SC2603 (E, F)
Q304	U260S021H06	2SC2603 (E, F)
Q305	U260S022H06	2SA1115 (E, F)
Q306	U260S021H06	2SC2603 (E, F)
Q307	U260S021H03	2SC2603 (F)
Q308	U260S021H03	2SC2603 (F)
Q351	U260S021H03	2SC2603 (F)
Q352	U260S021H03	2SC2603 (F)
Q353	U260S021H06	2SC2603 (E, F)
Q354	U260S021H06	2SC2603 (E, F)
Q355	U260S022H06	2SA1115 (E, F)
Q502	U260C164H04	2SD571 (L, K)
Q801	U260S021H06	2SC2603 (E, F)
Q802	U260S021H06	2SC2603 (E, F)

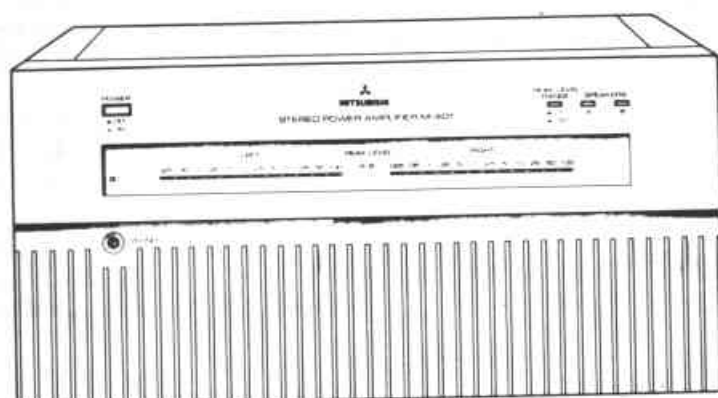
Symbol No.	Part No.	Description
Electrical Parts		
CF101	U365Y009H01	Ceramic-Filter
CF102	U365Y009H01	Ceramic-Filter
CF201	U365Y016H01	Ceramic-Filter
FL301	U251Y018H01	Tube-Fluor
PL1	L253C501H01	Lamp
S1	U432S112H01	SW-Push (POWER)
S2	L432Y509H01	SW-Push (MUTING/MODE)
S3	L432Y509H01	SW-Push (FM MUTING)
S101	U432S066H01	SW-Push (1)
S102	U432S066H01	SW-Push (2)
S103	U432S066H01	SW-Push (3)
S104	U432S066H01	SW-Push (4)
S105	U432S066H01	SW-Push (5)
S106	U432S066H01	SW-Push (6)
S107	U432S066H01	SW-Push (7)
S108	U432S066H01	SW-Push (M)
S109	U432S066H01	SW-Push (UP)
S110	U432S066H01	SW-Push (DOWN)
S111	U432S066H01	SW-Push (FM)
S112	U432S066H01	SW-Push (MW)
S113	U432S066H01	SW-Push (LW)
T001	U351C046H01	Filter
T11	U364C032H01	Trans-IF
T101	U364C034H01	Trans-IF
T201	U373Y004H01	Coil-OSC
T202	U370C054H01	Coil-ANT
T203	U374Y020H01	Trans-IF
T251	U371Y005H01	Coil-OSC
T252	U370C055H01	Coil-ANT
T601	L350C508H01	Trans-Power ▲
VR101	U127P001H08	VR-SEMI-4.7K (B)
X301	U285D007H01	Crystal
Z601	U440C080H01	Terminal Board
Packing		
101	L800B504H12	Packing-Box

PACKING INSTRUCTIONS



SERVICE MANUAL

STEREO POWER AMPLIFIER
MODEL M-A01



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SPECIFICATIONS

Power output	.70W continuous power per channel, both channels driven into 8 ohms from 15 Hz to 20kHz, with 0.01% THD	Input sensitivity/impedance	1 V/50 kohms
	85W continuous power per channel, both channels driven into 4 ohms from 15 Hz to 20kHz, 0.02% THD	Damping factor	.100 from 20Hz to 20kHz, 8 ohms
Total harmonic distortion .	0.004% at 30W per channel, both channels driven into 8 ohms 15 Hz to 20kHz	Hum and noise	.80 μ V (unweighted, closed circuit)
	0.006% at 1W per channel, both channels driven into 8 ohms from 15 Hz to 20kHz	Signal to noise ratio	109 dB (unweighted, closed circuit)
Intermodulation distortion .	0.008% at rated power, 8 ohms (70Hz and 7kHz 4:1)	(at rated power)	123 dB (IHF, A network, closed circuit)
Power bandwidth (IHF) . .	.10 Hz to 60kHz at 0.05% THD, 8 ohms		109 dB (DIN, 47 kohms/250 pF terminated)
Frequency response	± 0.1 dB from 20 Hz to 20kHz at rated power, 8 ohms	Slew rate	.30 V/ μ S
	0 ~ -1 dB from 20 Hz to 20kHz at 0.5W per channel, 8 ohms	Power consumption	.220W (IEC nominal) 200W (UL nominal) 260VA (CSA nominal)
		Matching impedance	.4 to 16 ohms
		Headphone output	.01 W/8 ohms
		Output systems	A, B, A-B
		Semiconductors	.9 ICs, 2 FETs, 37 Transistors 65 Diodes
		Dimensions (W x H x D) . .	.270 x .130 x .243 mm (10-5/8" x 6-11/16" x 9-9/16")
		Weight	.10 kg (22 lb)
		(Supplied with RCA audio cable)	

* Design and specifications are subject to change without notice for improvements.