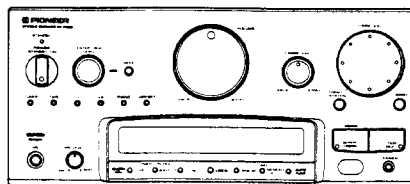


Service Manual

PIONEER®
The Art of Entertainment



ORDER NO.
ARP2628

STEREO RECEIVER

SX-P930

SX-P930 HAS THE FOLLOWING :

Type	Power Requirement	Remarks
HE	AC220V-230V, 240V (Switchable)*	
HB	AC220V-230V, 240V (Switchable)*	
HEWZI	AC220V-230V, 240V (Switchable)*	
SD	AC110V, 120-127V, 220V, 240V (Switchable)	
SL	AC110V, 120V, 220V, 240V (Switchable)	

* Change the connection of the power transformer's primary wiring.

● This manual is applicable to SX-P930/HE and HB.

● For HB type, refer to page 46.

● For HEWZI, SD and SL types, refer to the service manual ARP2629.

● This product is a system (s) component.

This product does not function properly when independent ; to avoid malfunctions, be sure to connect it to the prescribed system component (s), otherwise damage may result.

This product's accessories etc. are packed with its related component (s).

CONTENTS

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DFG DEC. 1992 Printed in Japan

1. SPECIFICATIONS

- Front amplifier

Continuous power output (DIN) 50 W + 50 W
(1 kHz, T.H.D 1%, 8 ohms)

Continuous power output (RMS) 60 W + 60 W
(1 kHz, T.H.D 5%, 8 ohms)

Music power (DIN) 85 W + 85 W
(1 kHz, T.H.D 1%, 8 ohms)

Total harmonic distortion,

1 kHz, 25 W, 8 ohms 0.1% *

- Rear amplifier

Continuous power output (RMS) 12 W
(1 kHz, T.H.D. 5%, 16 ohms, two speakers in use)

- Center amplifier

Continuous power output (RMS) 12 W
(1 kHz, T.H.D 5%, 8 ohms)

European models:

- *Above specifications are for when power supply is 230 V.*

Electrical Section, Other

Power requirements

U.K. models AC 240 V, 50/60 Hz

European models AC 220-230 V, 50/60 Hz

Power consumption

U.K. models 336 W

European models 336 W

External dimensions

260 (W) × 177 (H) × 264 (D) mm

Weight 5.3 kg

* Measured with audio spectrum analyzer.

FM Tuner Section

Reception frequency range 87.5–108.0 MHz

Usable Sensitivity (IHF) MONO: 12.8 dBf
(1.2 μ V/75 ohms)

Sensitivity (DIN)

MONO (S/N 26 dB) 1 μ V/75 ohms

STEREO (S/N 46 dB) 50 μ V/75 ohms

Signal-to-Noise Ratio

(IHF, 85 dBf Input) MONO: 77 dB

Signal-to-Noise Ratio (DIN) MONO: 66 dB
STEREO: 60 dB

Distortion STEREO: 0.5%, 1 kHz

Antenna input 75 ohms unbalanced

AM Tuner Section

Frequency range 531 kHz to 1,602 kHz

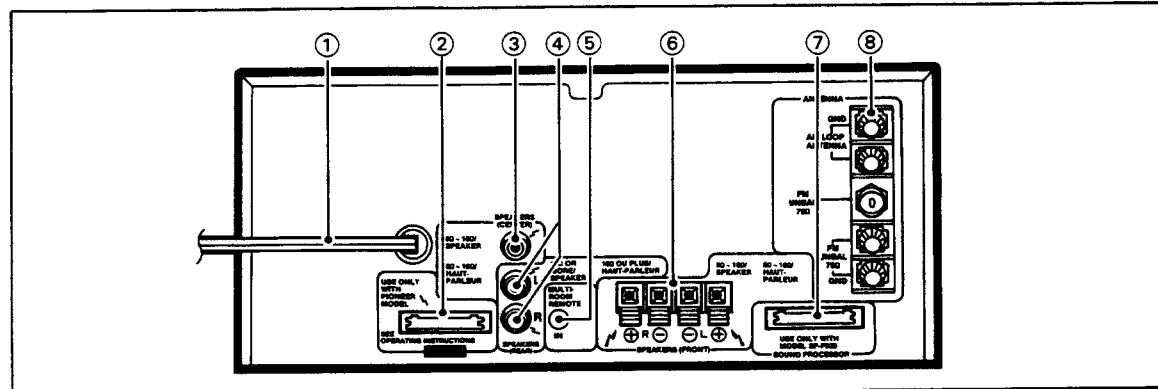
Sensitivity (IHF, Loop antenna) 350 μ V/m

Antenna Loop Antenna

NOTE:

The specifications and design of this product are subject to change without notice, due to improvements.

2. PANEL FACILITIES



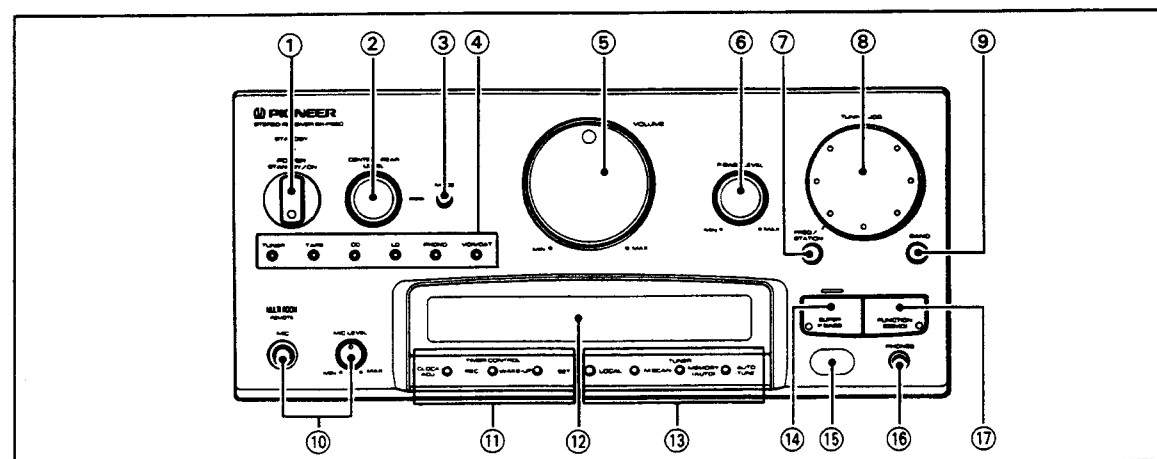
- ① **Power cord**
Connect this to the AC wall socket.
- ② **SYSTEM jack**
Connect the system cable here.
- ③ **SPEAKER (CENTER) jack**
Connect the center speaker to this jack

NOTE:
Connect a speaker system with a nominal impedance ranging from 8 Ω to 16 Ω .
- ④ **SPEAKERS (REAR) jack**
Connect the surround speaker systems.

NOTE:
Connect a speaker system with a nominal impedance of 16 Ω or more.
- ⑤ **MULTI-ROOM REMOTE IN jack**
Connect the adaptor (MR-100, sold separately) to this MULTI-ROOM REMOTE IN jack. You can operate the unit by remote control via the adaptor. It is convenient when the unit is located in a separate room.

- ⑥ **SPEAKERS (FRONT) terminals**
L: Connect the left speaker system as seen from the listening position.
R: Connect the right speaker system as seen from the listening position.

NOTE:
Do not allow any of the cord's conductors to protrude from the terminals or touch any other conductors. Mal-functioning or breakdowns may occur when conductors come into contact with each other.
Use a center speaker of impedance 8 Ω — 16 Ω .
- ⑦ **SOUND PROCESSOR jack**
Connect the SOUND FIELD PROCESSOR system cable here.
- ⑧ **FM/AM ANTENNA terminals**
Antennas must be connected to these terminals: otherwise station reception is not possible.



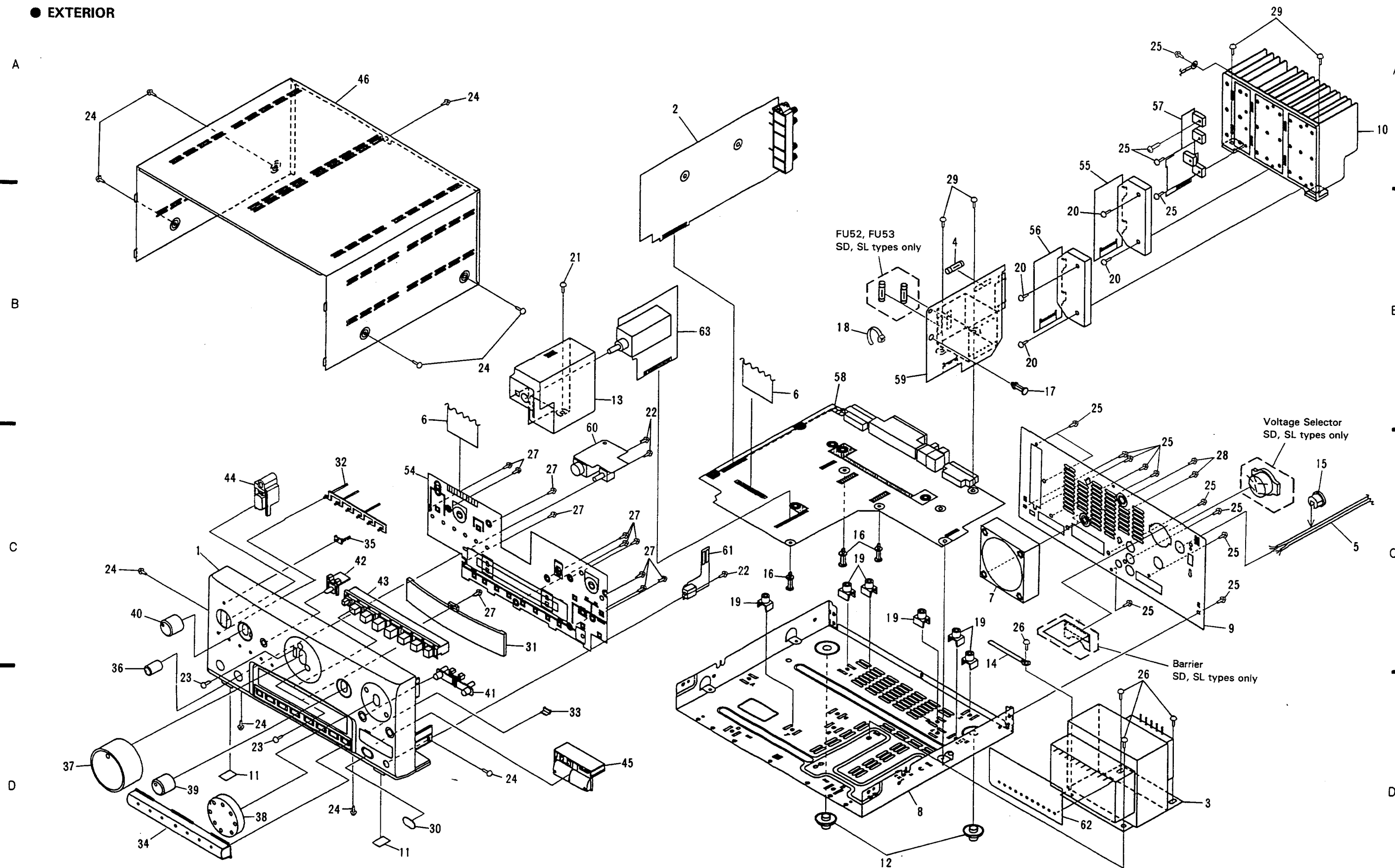
- ① **POWER STANDBY/ON switch**
This is the switch for electric power.
ON: When set to the ON position, power is supplied and the unit becomes operational.
STANDBY: When set to the STANDBY position, the main power flow is cut and the unit is no longer fully operational. A minute flow of power feeds the unit to maintain operation readiness.
The receiver section display indicates only the time.
- ② **Center/rear level adjustment knob (CENTER/REAR LEVEL)**
The sound level of the center and surround speakers can be adjusted with this knob.
The rear or center level can be adjusted by the mode selector button ③.
Center level (CENTER) →
Rear level (REAR) ←
- ③ **Mode selector button (MODE)**
Use to adjust the center and rear level.
Each time this button is pressed, one of the settings will be selected in the following order.
Center level (CENTER) →
Rear level (REAR) ←
- ④ **Function indicator (TUNER, TAPE, CD, LD, PHONO, VCR/DAT)**
- ⑤ **VOLUME control**
- ⑥ **P.BASS LEVEL control**
P.BASS stands for Proper Bass Active Supply System, and refers to the built-in system for emphasizing low sound ranges.
This unit is equipped with the super P.BASS to allow you to select two kinds of bass reproduction, depending on the kind of music source and your own preference. This knob can be used to adjust the super P.BASS level when the SUPER P.BASS button is set to ON.
- ⑦ **FREQ/STATION button**
Use to select the display mode (frequency mode or station mode).
• **Frequency mode:** Display indicates the frequency of the tuned station, and the current time.
• **Station mode:** Display indicates the frequency of the tuned station together with the recorded station number assigned to that station.
- ⑧ **TUNING JOG control**
Use to set the time and tune the receiver's reception frequency.
- ⑨ **BAND button**
Use to select FM or AM bands.
- ⑩ **MIC (microphone) jack and MIC LEVEL (microphone level) control**

- ⑪ **TIMER CONTROL buttons (CLOCK ADJ, REC, WAKE-UP, SET)**
Use these buttons to set the current clock time and the timer for timed recording and playback.
- ⑫ **Display**
- ⑬ **TUNER buttons**
 - **LOCAL button:** Set to ON only when receiving very close FM stations (the strong signals may otherwise produce high levels of static).
 - **M.SCAN (memory scan) button:** Automatically scans (for about five seconds each) each of the stations stored in the station memory.
 - **MEMORY (AUTO) button:** Use to save broadcasting stations in the station memory.
 - **AUTO-TUNE button:** If this button is set ON, the frequency changes automatically and the tuning stops at the first station that is received.
- ⑭ **SUPER P.BASS button**
Use this button to select from among the two types of super P.BASS effect desired, then use the P.BASS level control to adjust the level as desired.
- ⑮ **Remote sensor window**
- ⑯ **Headphone jack (PHONES)**
- ⑰ **FUNCTION (DEMO) button**
Use this button to select the desired source.
The settings change as follows each time this button is pressed.
TUNER → TAPE → CD → LD
VCR/DAT ← PHONO ←

If this button is pressed when the power is off, the DEMO (demonstration) mode is set and the power goes ON.
In the DEMO mode, the functions included in the variety setting of this system are displayed on the panel.

3. EXPLODED VIEWS, PACKING AND PARTS LIST

● EXTERIOR



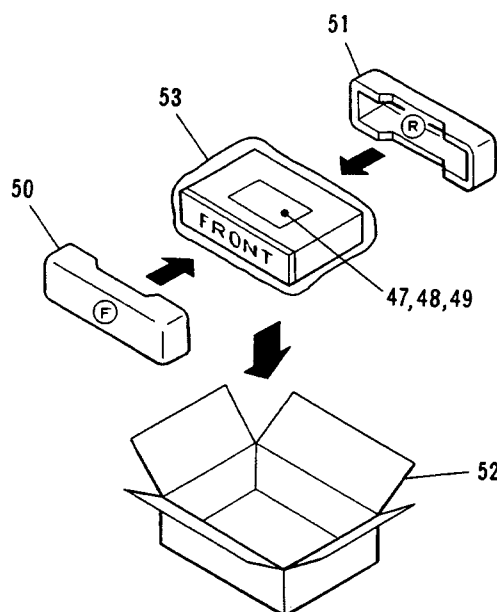
NOTE : Screws adjacent to ▼ mark on the product are used for disassembly.

NOTES:

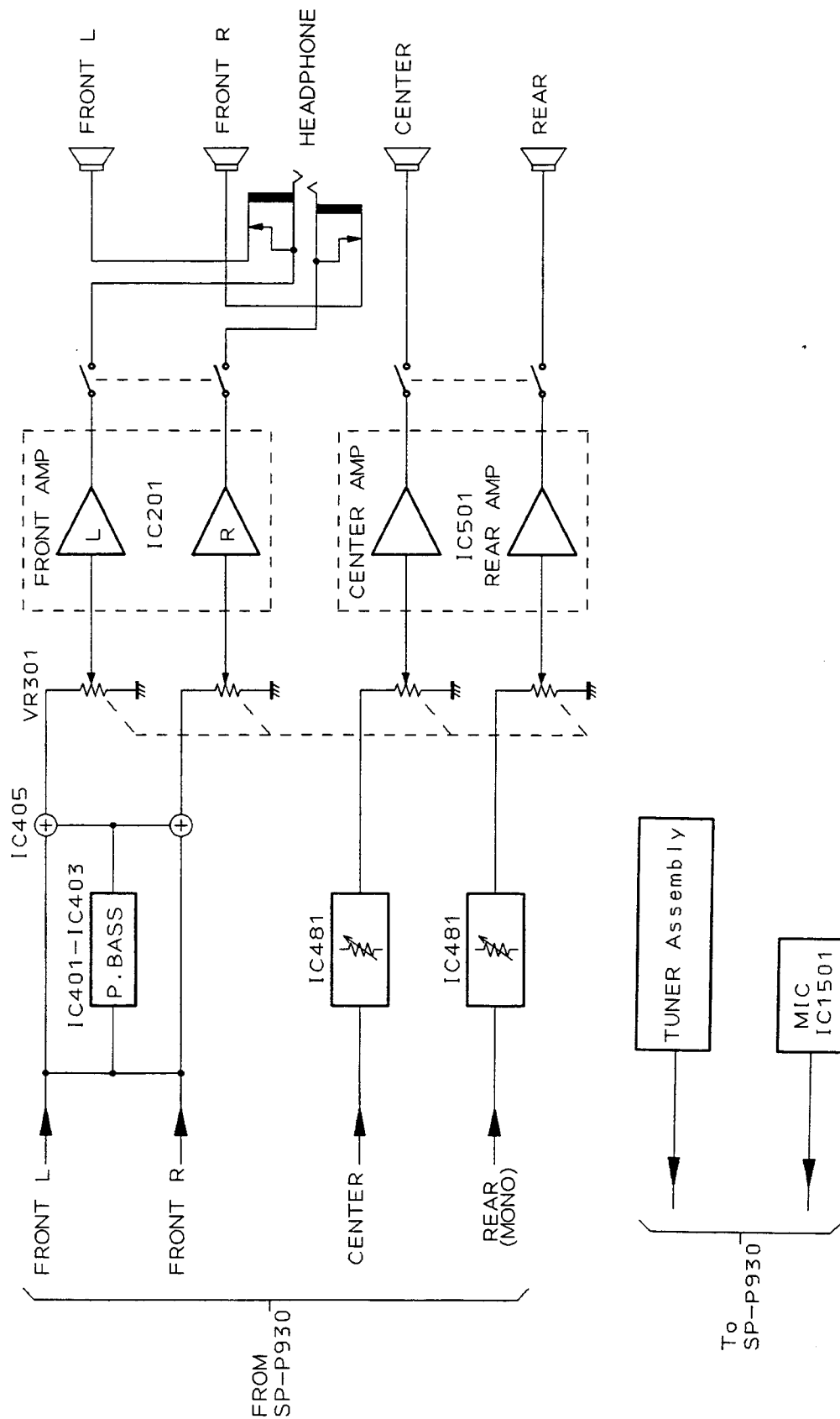
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts list of Exterior and Packing

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	1	FRONT PANEL (PLS)	AMB2039		46	BONNET	ANE1309
	2	TUNER ASSEMBLY	AWE1261		47	OPERATING INSTRUCTIONS	ARC1377
Δ	3	POWER TRANSFORMER (T1)	ATS1440		48	OPERATING INSTRUCTIONS	ARE1250
Δ	4	FUSE (T2A/250V, FU51)	AEK-511		49	OPERATING INSTRUCTIONS	ARE1275
Δ	5	AC POWER CORD	ADG1049			(Dutch, Swedish, Spanish, Portuguese)	
	6	CABLE (J27)	ADD1100		50	FRONT PAD	AHA1567
Δ	7	FAN MOTOR	AXM1013		51	REAR PAD	AHA1568
NSP	8	CHASSIS	ANA1155		52	PACKING CASE	AHD2362
NSP	9	REAR PANEL (MET)	ANC1934		53	PACKING SHEET	AHG1093
NSP	10	HEAT SINK	ANH1352	●	54	DISPLAY ASSEMBLY	AWZ4330
	11	STOPPER	AEB1111	●	55	FRONT AMP ASSEMBLY	AWZ4338
	12	LEG ASSEMBLY	REC-434	●	56	REAR AMP ASSEMBLY	AWZ4344
NSP	13	SHIELD BOX	ANK1179	●	57	REGULATOR ASSEMBLY	AWZ4346
NSP	14	BINDER	AEC-826	●	58	MAIN ASSEMBLY	AWZ4353
	15	STRAIN RELIEF	AEC-882	●	59	SUB POWER ASSEMBLY	AWZ4362
NSP	16	PCB SPACER (3×8)	AEC1371	NSP	60	MIC ASSEMBLY	AWZ4374
NSP	17	PCB SPACER (3×12)	AEC1372	NSP	61	HEAD P. ASSEMBLY	AWZ4377
NSP	18	BINDER	AEC1384	●	62	CONNECTOR ASSEMBLY	AWZ4380
NSP	19	PCB MOLD	AMR2115	●	63	VR ASSEMBLY	AWZ4992
	20	SCREW	ABA-258				
	21	SCREW (3×14)	ABA1024				
	22	SCREW (2.6×8)	ABA1095				
	23	SCREW	BBZ26P080FMC				
	24	SCREW	BBZ30P060FZK				
	25	SCREW	BBZ30P080FZK				
	26	SCREW	BBZ40P060FZK				
	27	SCREW	BPZ26P080FMC				
	28	SCREW	PPZ50P100FZK				
	29	SCREW	VBZ30P160FMC				
	30	REMOCON FILTER	AAK2208				
	31	DECORATIVE PLATE (TUNER)	AAK2319				
	32	FUNCTION LENS (PLS)	AAK2320				
	33	P-BASS LENS (PLS)	AAK2321				
	34	PANEL SHEET (PLS)	AAK2373				
	35	POWER LENS (PLS)	AAK2442				
	36	KNOB	AAB1253				
	37	VOL KNOB (PLS)	AAB1292				
	38	JOG KNOB (PLS)	AAB1293				
	39	P-BASS KNOB (PLS)	AAB1311				
	40	LEVEL KNOB (PLS)	AAB1312				
	41	BAND BUTTON (PLS)	AAD2291				
	42	MODE BUTTON (PLS)	AAD2293				
	43	HINGE BUTTON (PLS)	AAD2294				
	44	POWER BUTTON (PLS)	AAD2343				
	45	P-BASS BUTTON (PLS)	AAD2344				

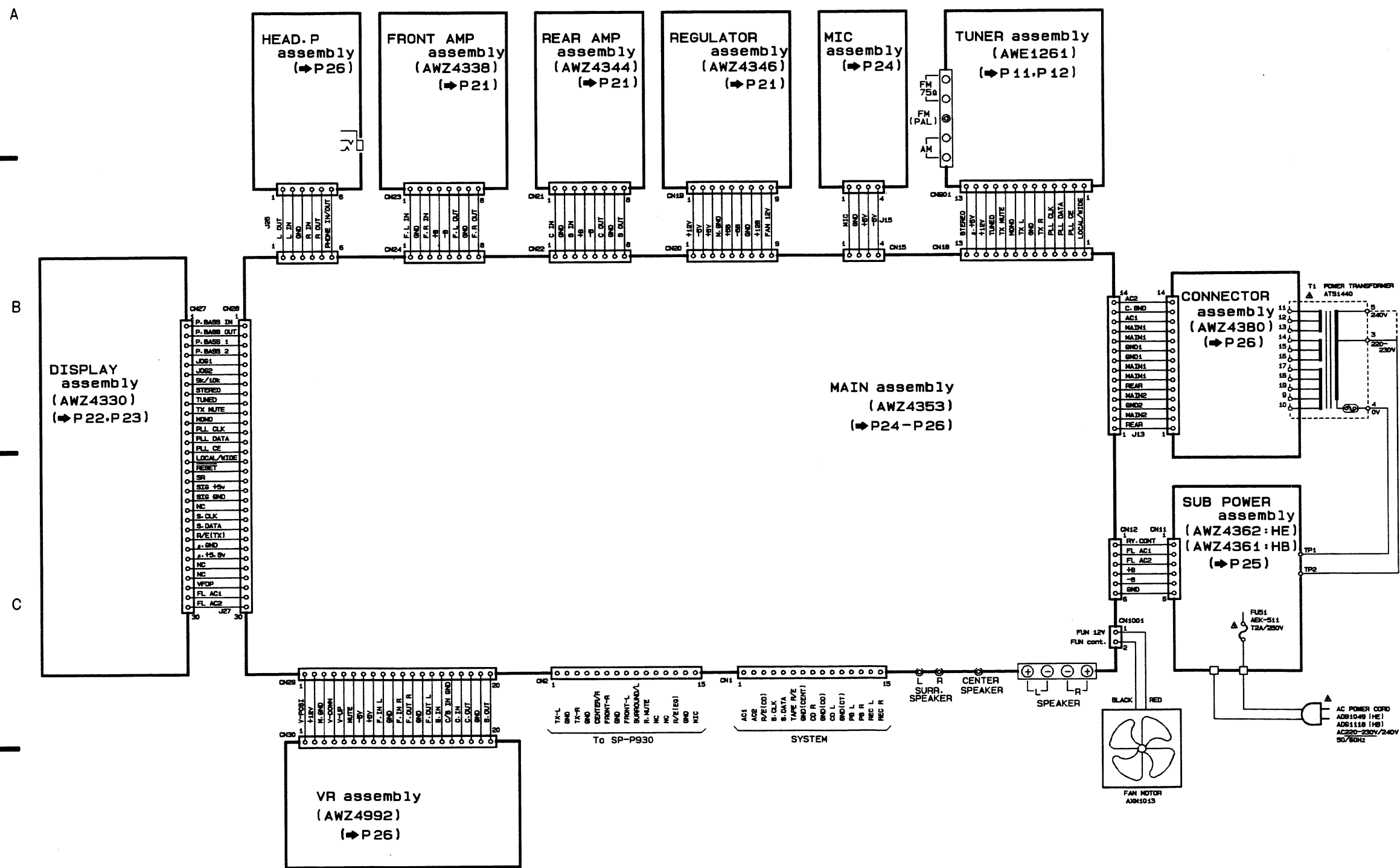
● PACKING


4. BLOCK DIAGRAM



5. SCHEMATIC AND PCB CONNECTION DIAGRAMS

5.1 OVERALL SCHEMATIC DIAGRAM

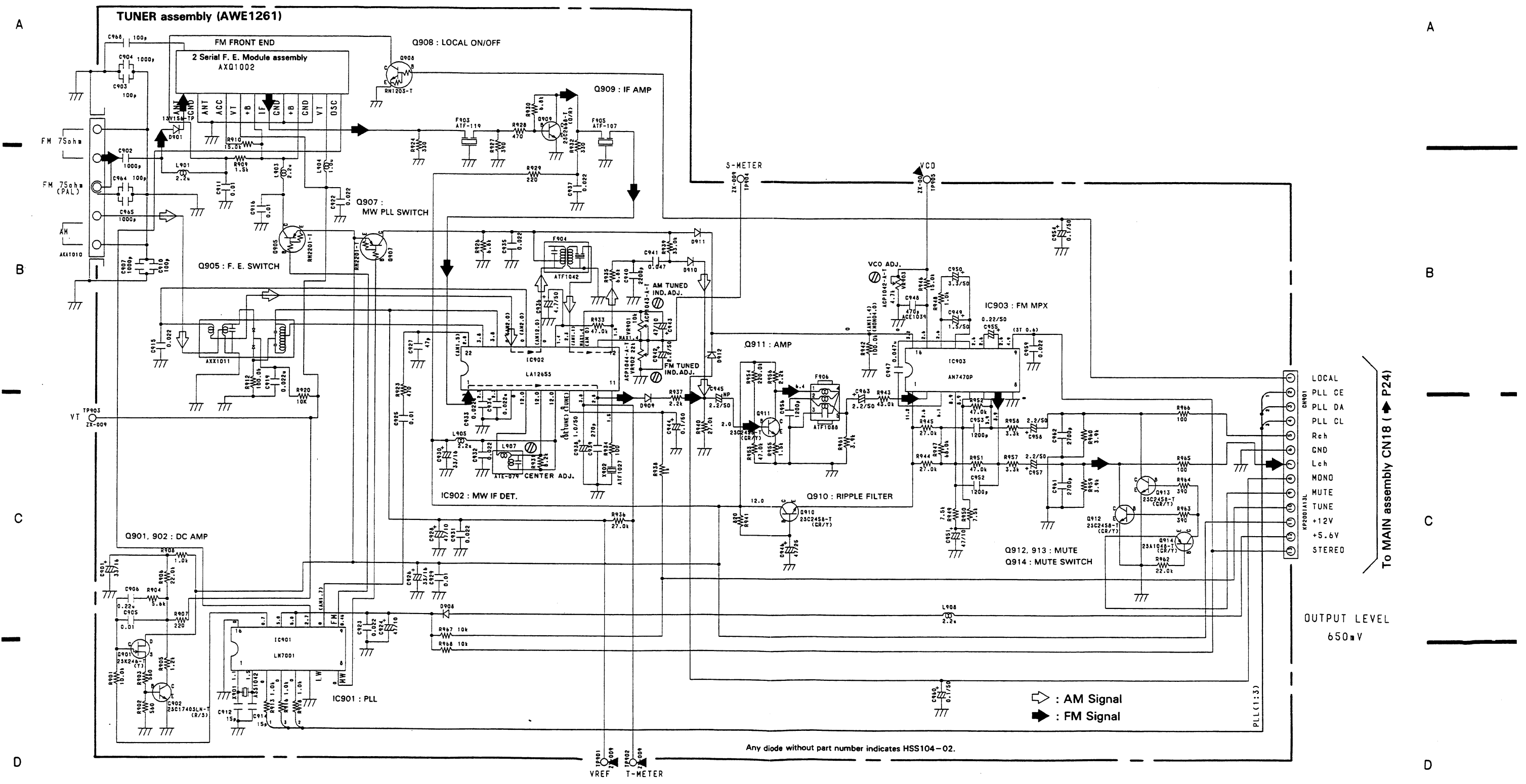


- Note: Type 1
- When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".
 - Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.
 - RESISTORS:**
Unit: k: kΩ, M: MΩ, or Ω unless otherwise noted.
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
 - CAPACITORS:**
Unit: p: pF or μF unless otherwise noted.
Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
Rated voltage: 50V except for electrolytic capacitors.
 - COILS:**
Unit: m: mH or μH unless otherwise noted.
 - VOLTAGE AND CURRENT:**
V: Signal voltage at rated output.
V: DC voltage (V) at no input signal unless otherwise noted.
Value in () is DC voltage at rated power.
mV: Signal voltage at FM 1kHz, 100% MOD.
mA or - mA: DC current at no input signal unless otherwise noted.

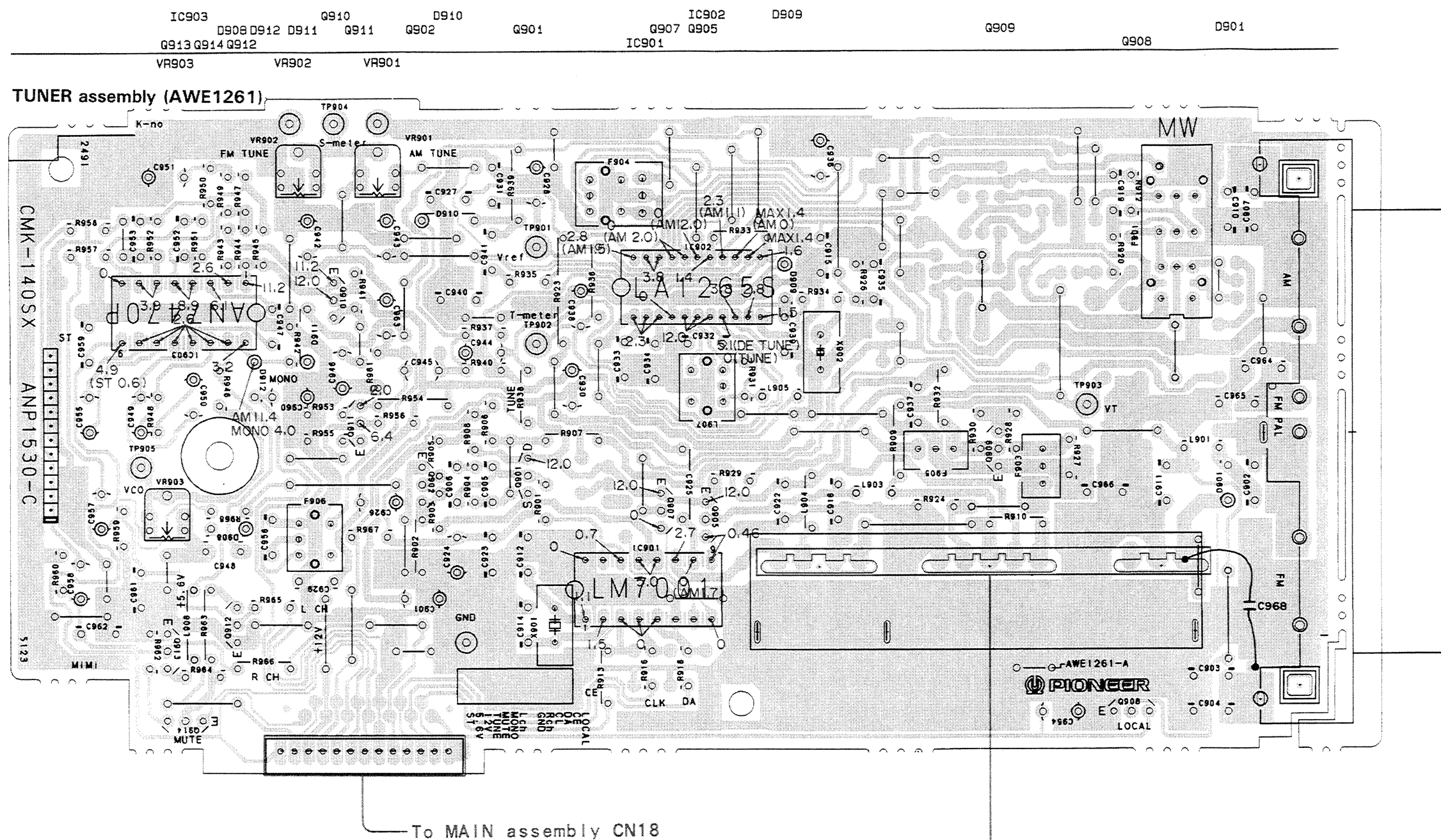
- OTHERS:**
 - Signal route.
 - Adjusting point.
 - (Red): Measurement point.
 - The Δ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
- SWITCHES** (Underline indicates switch position):

- DISPLAY assembly**
- S1001 CLOCK ADJ.
 - S1002 REC
 - S1003 WAKE-UP
 - S1004 SET
 - S1005 NARROW/LOCAL
 - S1006 M. SCAN
 - S1007 MEMORY (AUTO)
 - S1008 AUTO TUNE
 - S1009 FUNCTION
 - S1010 SUPER P. BASS
 - S1011 FREQ/STATION
 - S1012 BAND
 - S1013 POWER STANDBY/ON
 - S1014 MODE
 - S1030 TUNING JOG
 - S1040 CENTER/REAR JOG

5.2 TUNER ASSEMBLY

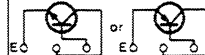
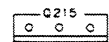
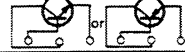
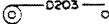
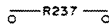
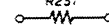


This P. C. B connection diagram is viewed from the parts mounted side.



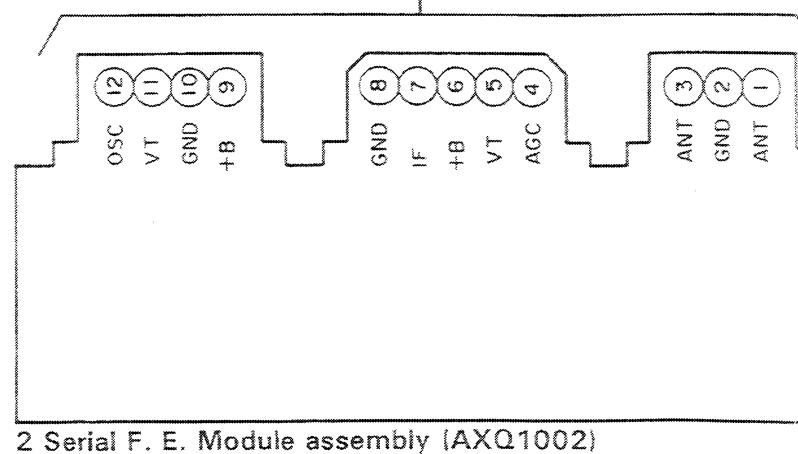
NOTE

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

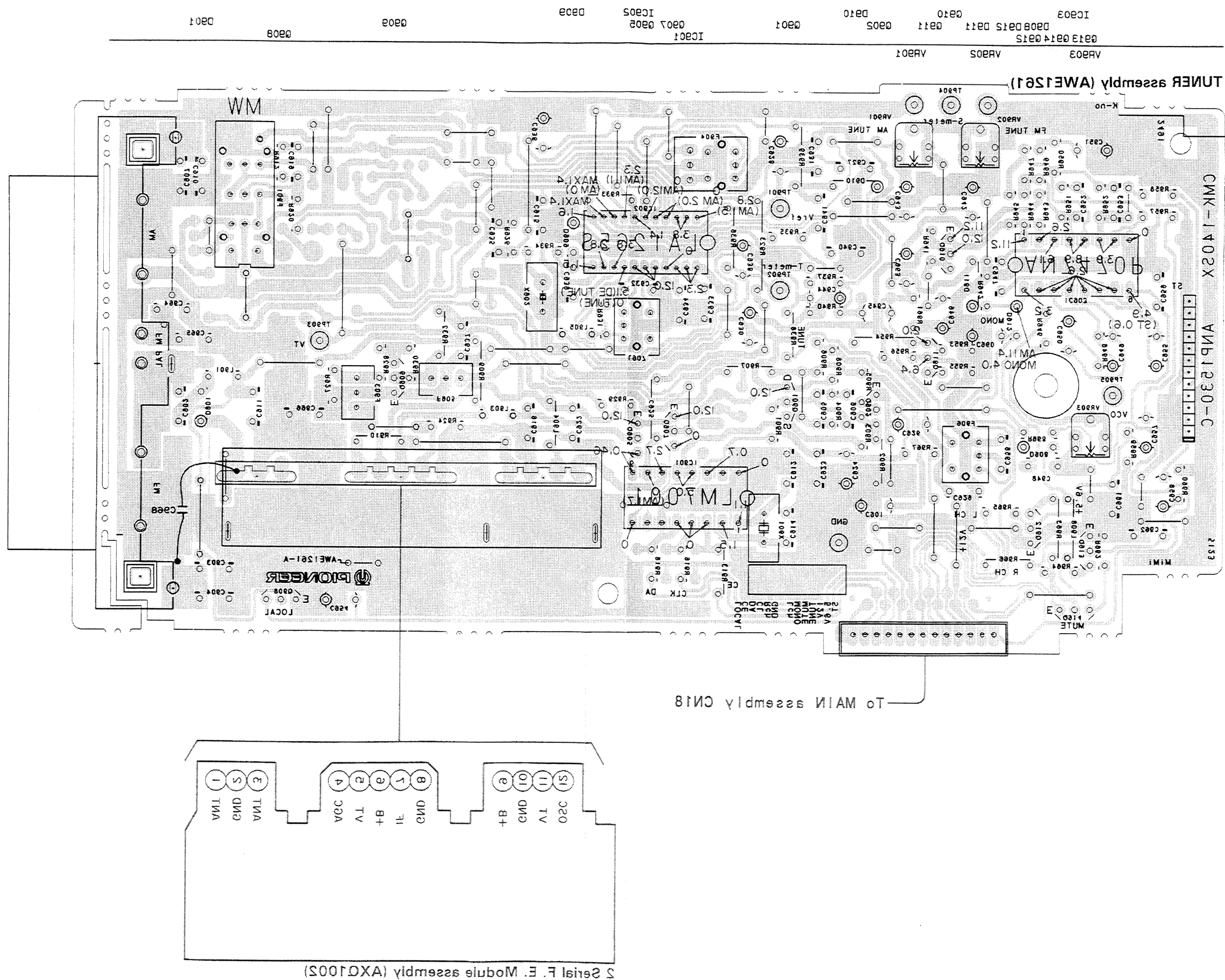
P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
		Transistor
		Radiator type transistor
		Diode
		Resistor
		Capacitor (Polarized)
		Capacitor (Non-polarized)

Others	
P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capacitor terminal marked with $\odot$ (double circles) shows negative terminal.
4. The diode terminal marked with $\odot$ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

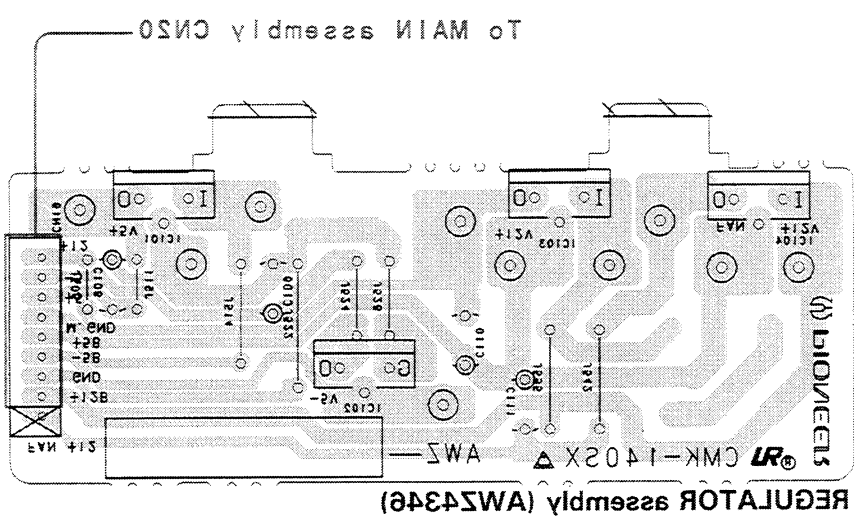
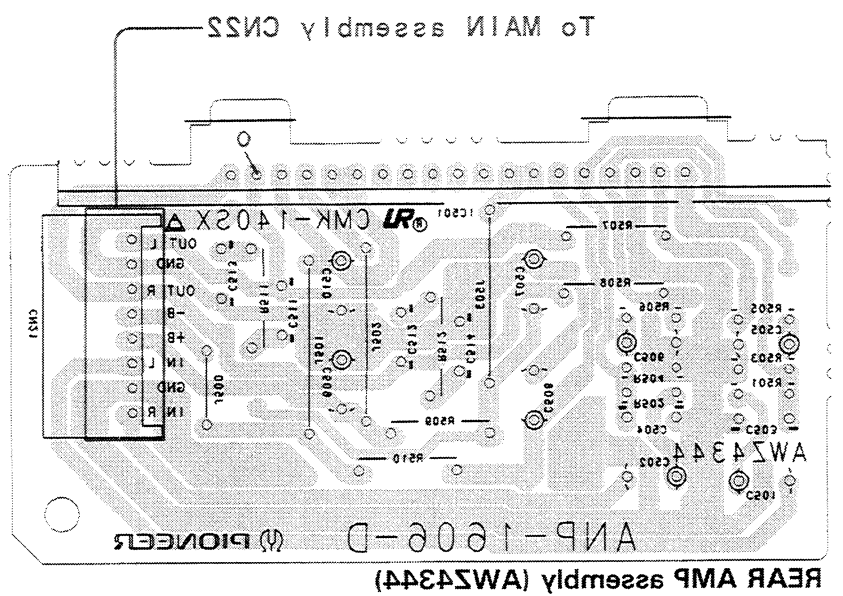
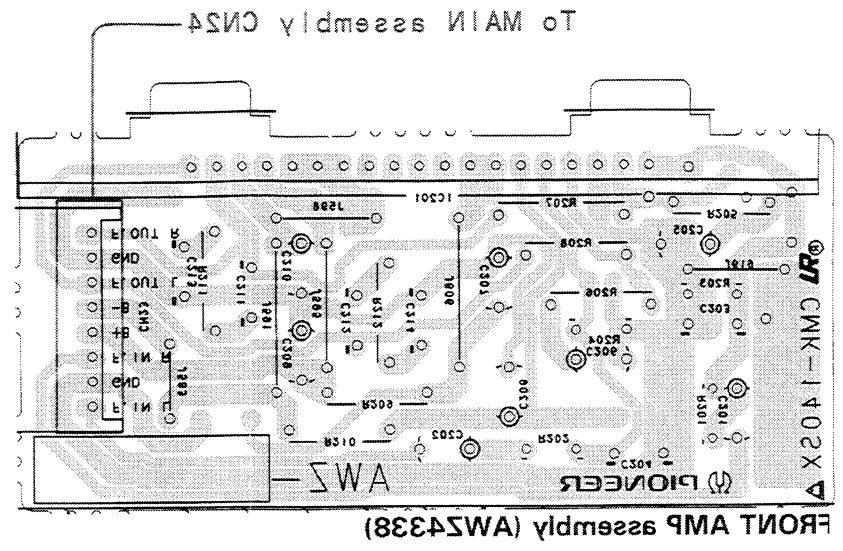


This PCB connection diagram is viwed from the foil side.

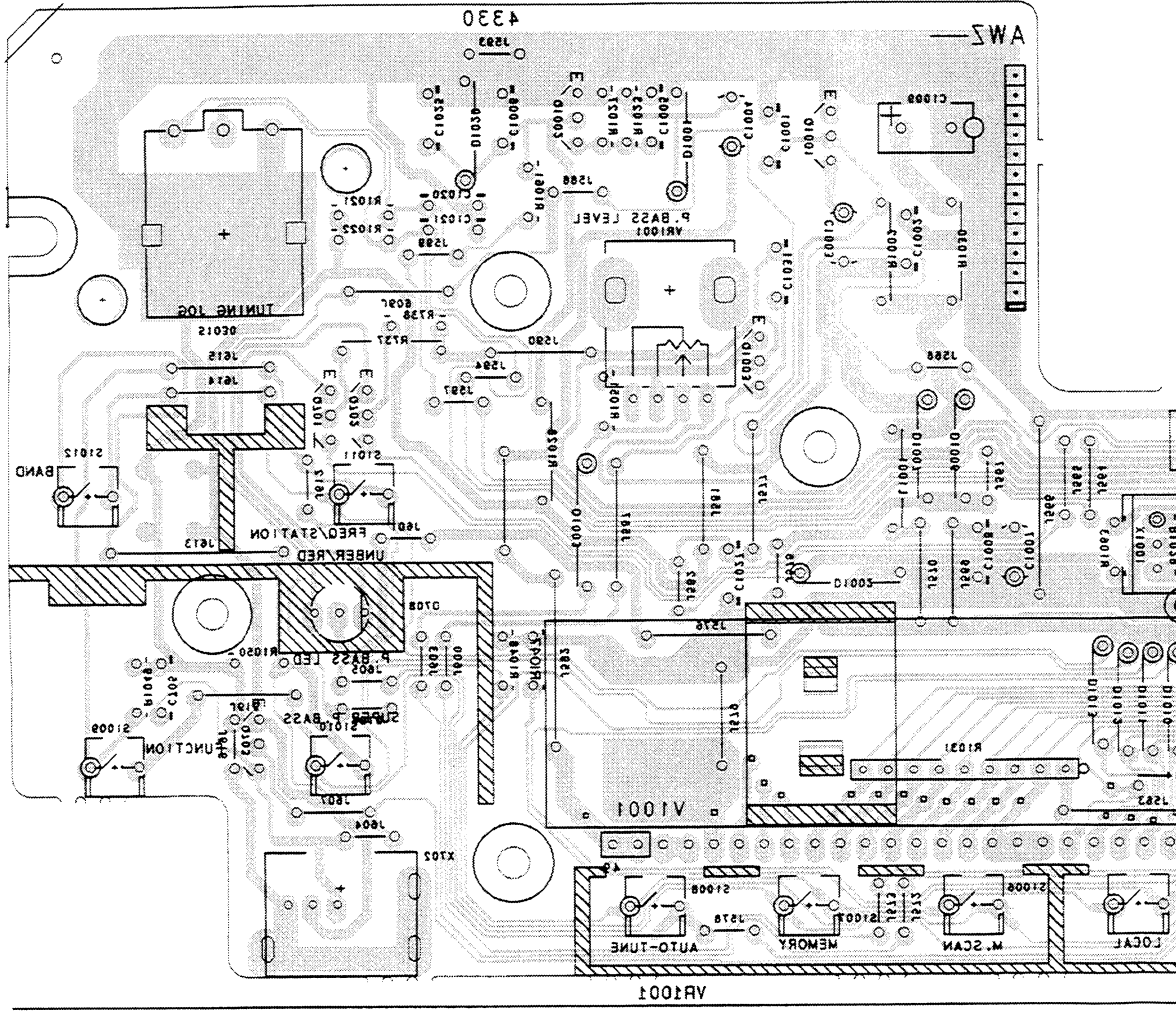
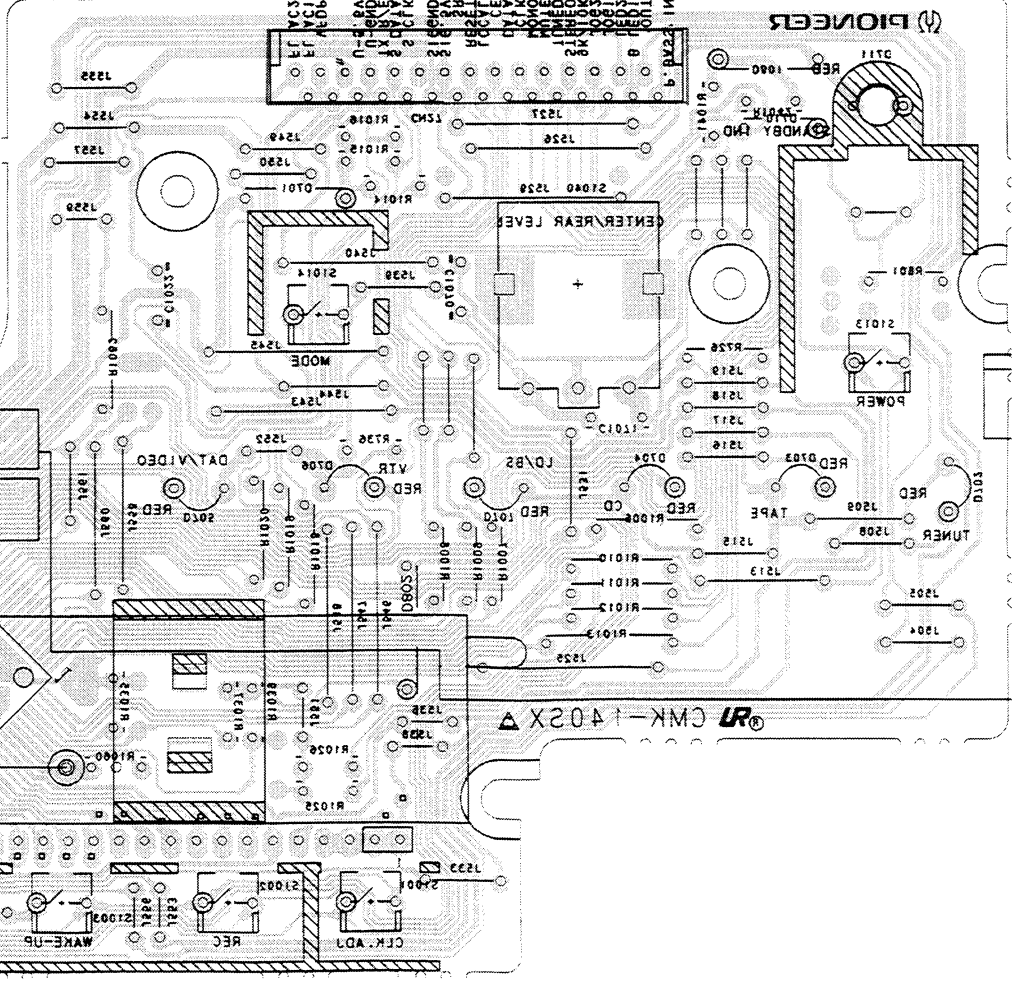


5.3 DISPLAY ASSEMBLY, FRONT AMP ASSEMBLY, REAR AMP ASSEMBLY AND
REGULATOR ASSEMBLY

This PCB connection diagram is viewed from the foil side.

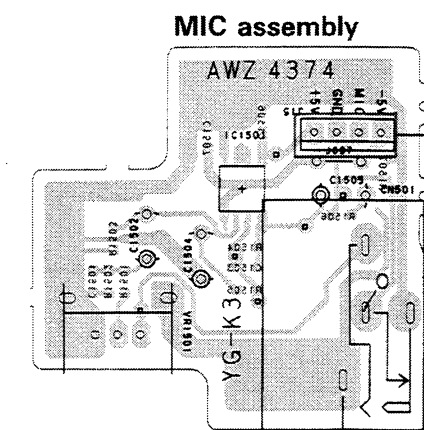


DISPLAY assembly (AW2430)



- D205
- D203
- D204
- D207
- D805 D208
- D701
- D202
- IC1001
- D1010-D1014
- D1005
- D1003
- D1002
- D1001
- D1003
- D1007
- D1008
- D1009
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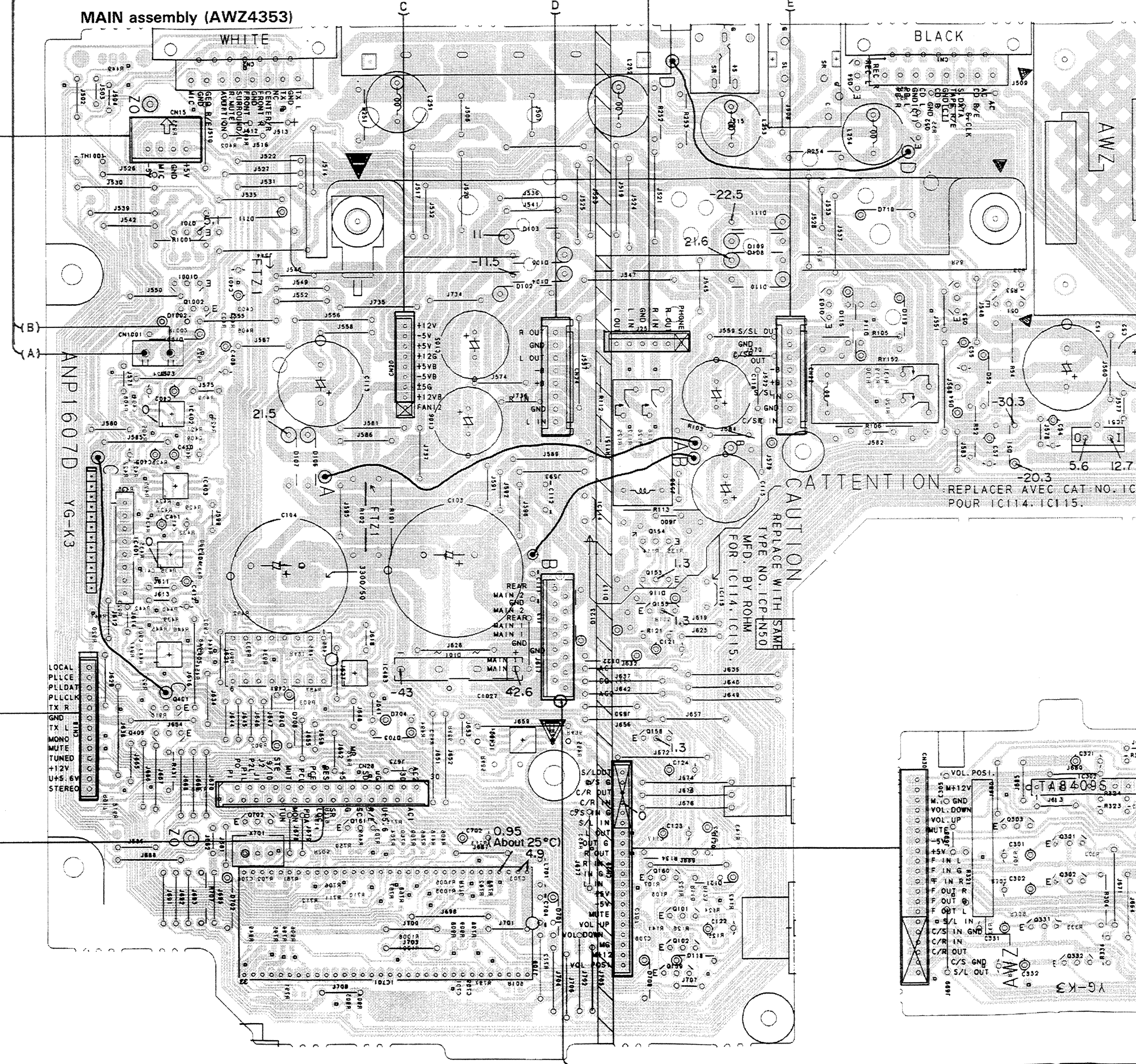
This PCB connection diagram is viewed from the parts mounted side.



- | | | | |
|-------|-------|------|------|
| Q54 | | | |
| Q52 | | | |
| D711 | D111 | D710 | |
| Q701 | D103 | D109 | |
| | D105 | D108 | |
| Q1001 | D104 | D110 | |
| Q1002 | D102 | | |
| D1001 | | | |
| | Q51 | | |
| | Q53 | | |
| | Q103 | | |
| | D119 | | |
| | D115 | | |
| | D114 | | |
| IC402 | D52 | | |
| | D54 | | |
| D107 | | D51 | IC51 |
| D401 | | | |
| IC403 | D106 | | |
| | | | |
| IC401 | IC114 | | |
| IC404 | | | |
| | Q154 | | |
| | Q153 | | |
| | D116 | | |
| | IC115 | | |
| | Q155 | | |
| | D117 | | |
| IC405 | D705 | D123 | |
| IC481 | D101 | D122 | |
| | IC483 | | |
| Q401 | | | |
| D708 | | | |
| D707 | D704 | | |
| Q405 | D703 | Q158 | |
| | IC482 | | |
| Q702 | | | |
| | Q151 | | |
| | | D120 | |
| | | | |
| D702 | Q160 | | |
| | D121 | | |
| | | | |
| D701 | Q101 | | |
| | | | |
| | Q102 | | |
| IC701 | D118 | | |
| | | | |
| | Q159 | | |
| | D709 | | |

To TUNER assembly CN901

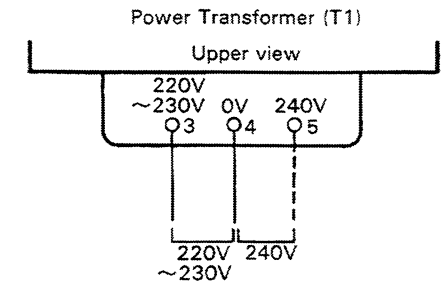
To DISPLAY assembly CN27



Line Voltage Selection

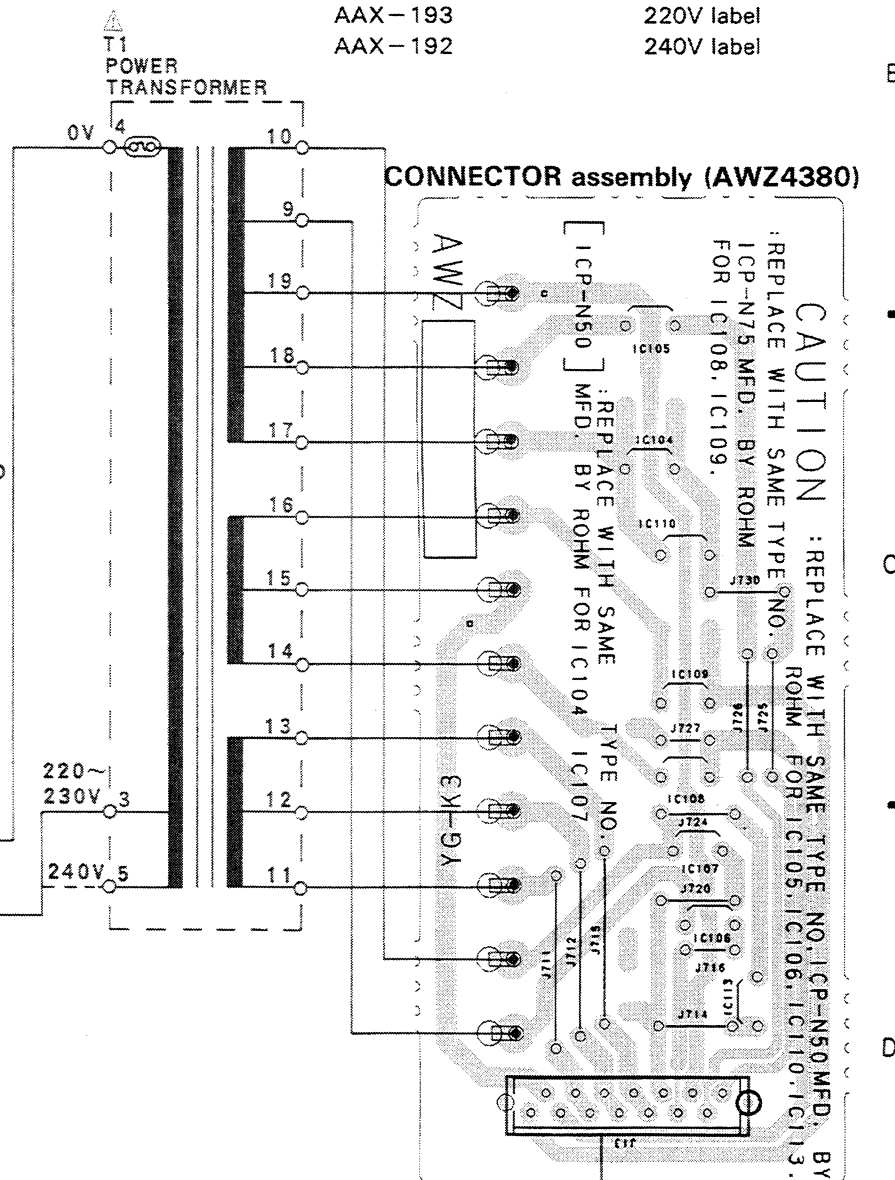
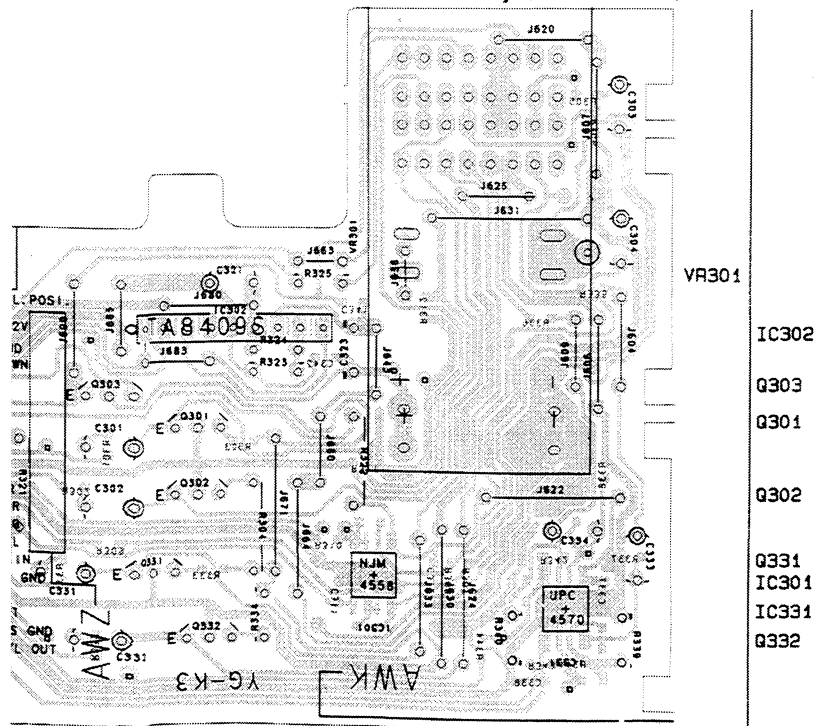
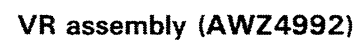
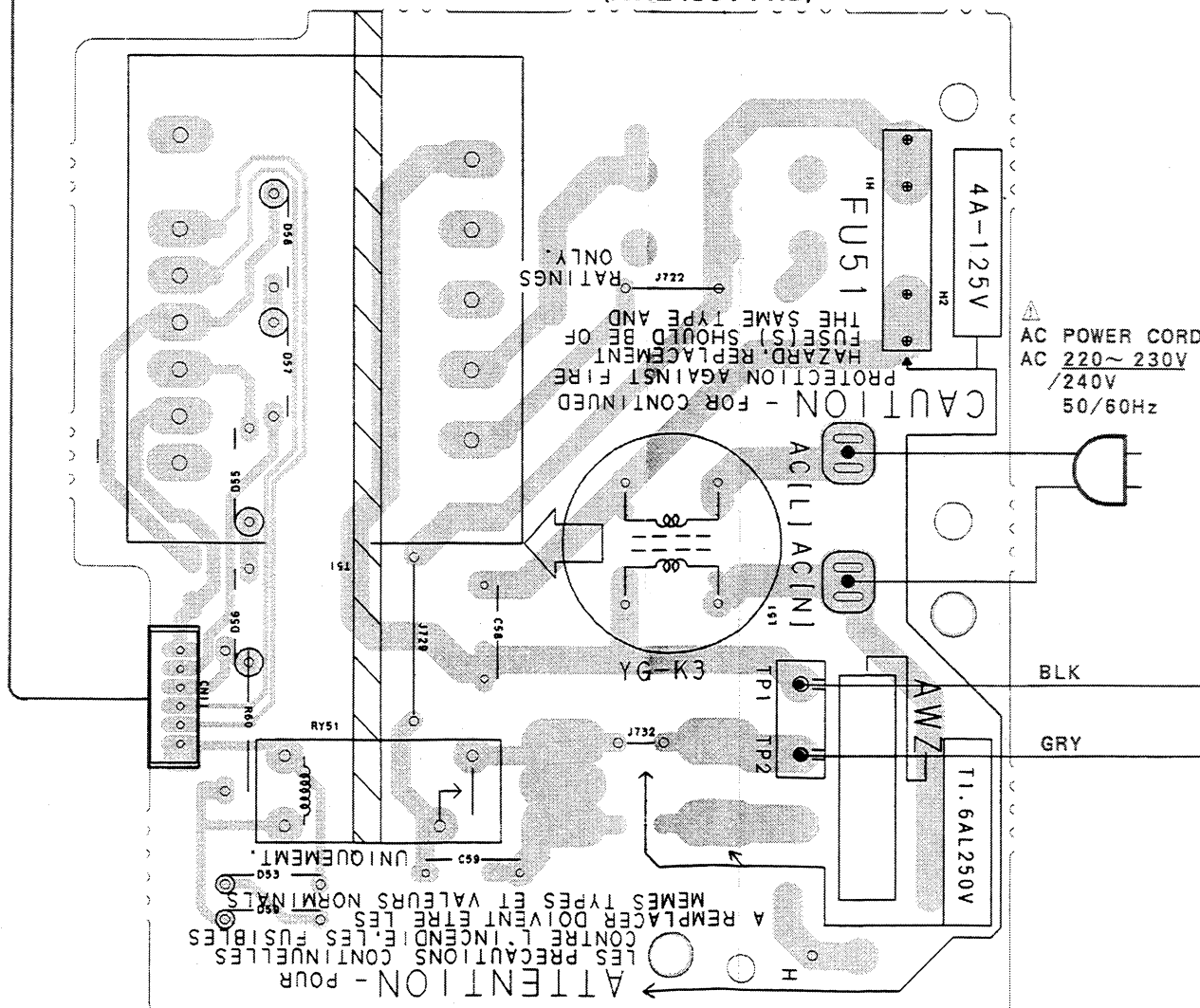
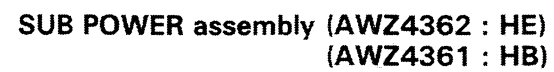
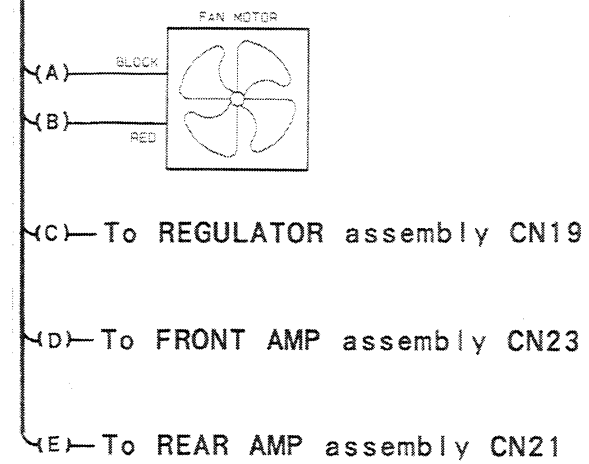
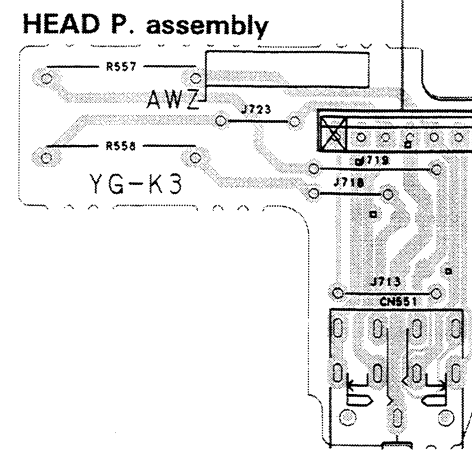
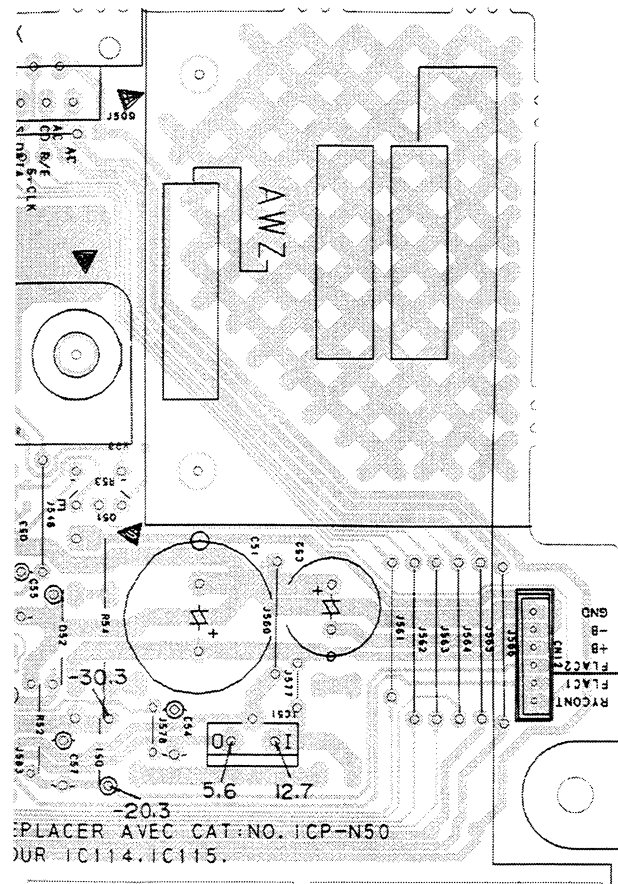
Line voltage can be changed with the following steps.

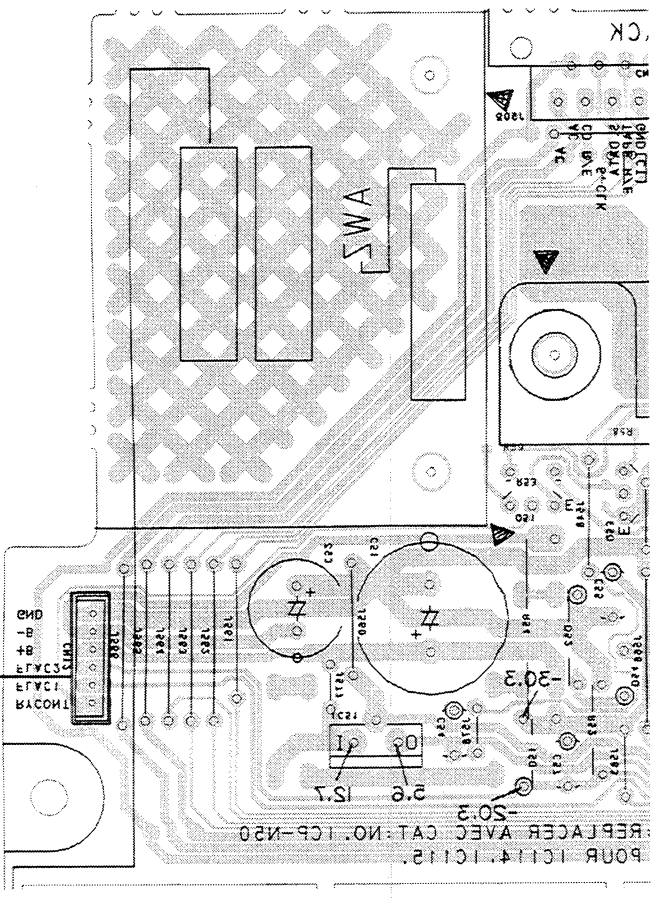
1. Disconnect the AC Power cord.
2. Remove the top cover.
3. Change the connection with the power transformer (T1) primary taps.



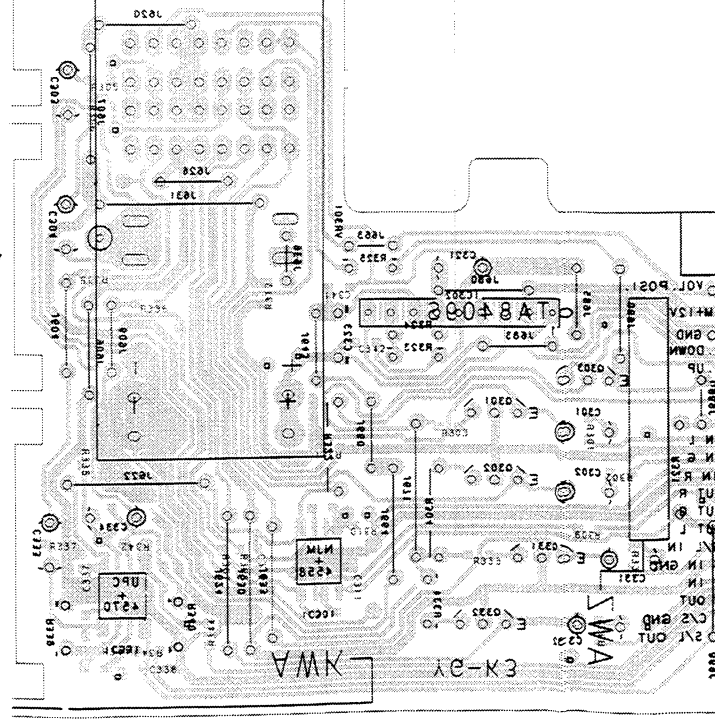
4. Stick the line voltage label on the rear panel.

Part No.	Description
AAX-193	220V label
AAX-192	240V label

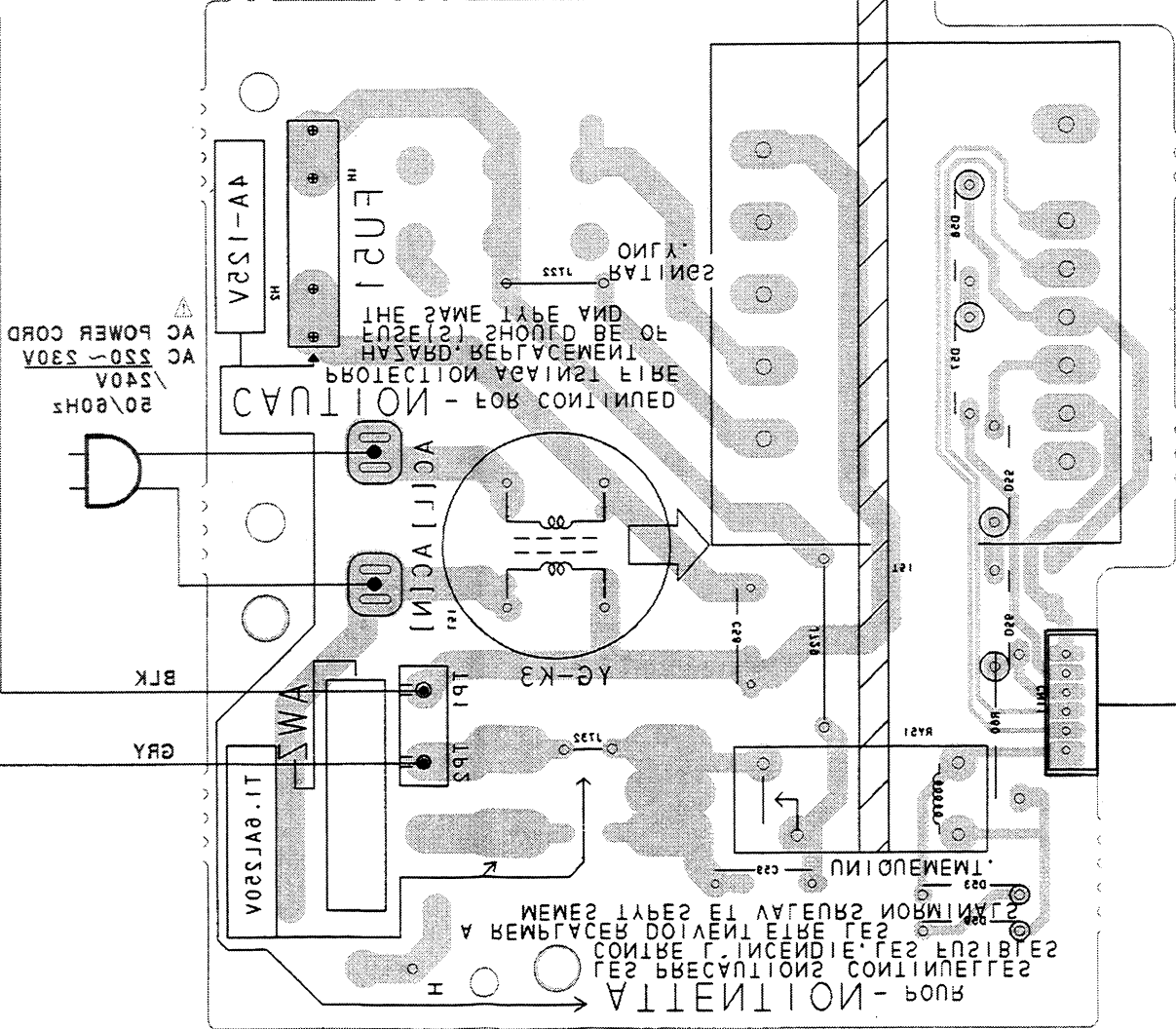




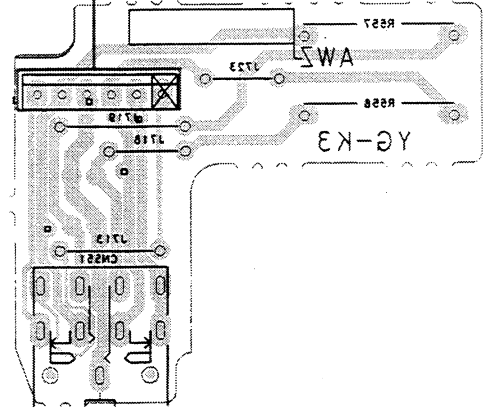
VR assembly (AW24362)



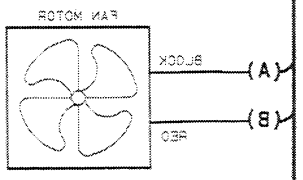
SUB POWER assembly (AW24361 : HB)
(AW24361 : HE)



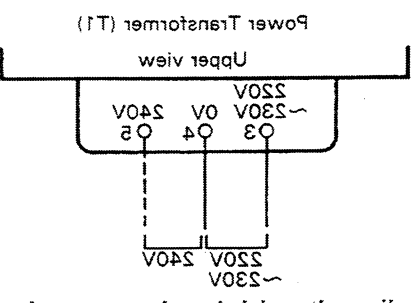
HEAD P. assembly



TO REAR AMP assembly CN21
TO FRONT AMP assembly CN23
TO REGULATOR assembly CN19

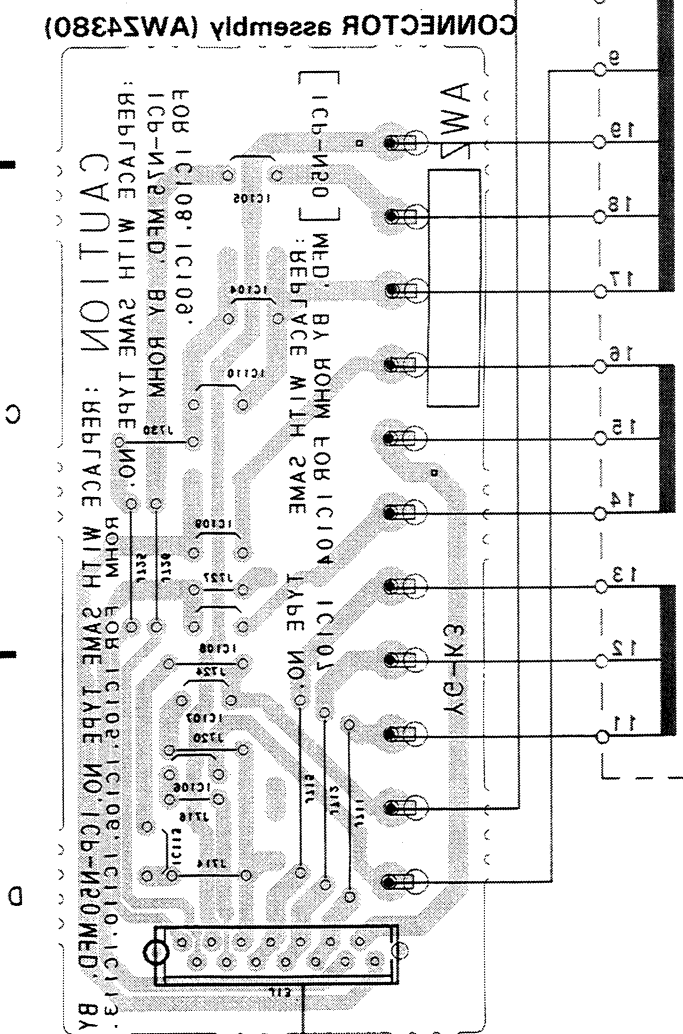


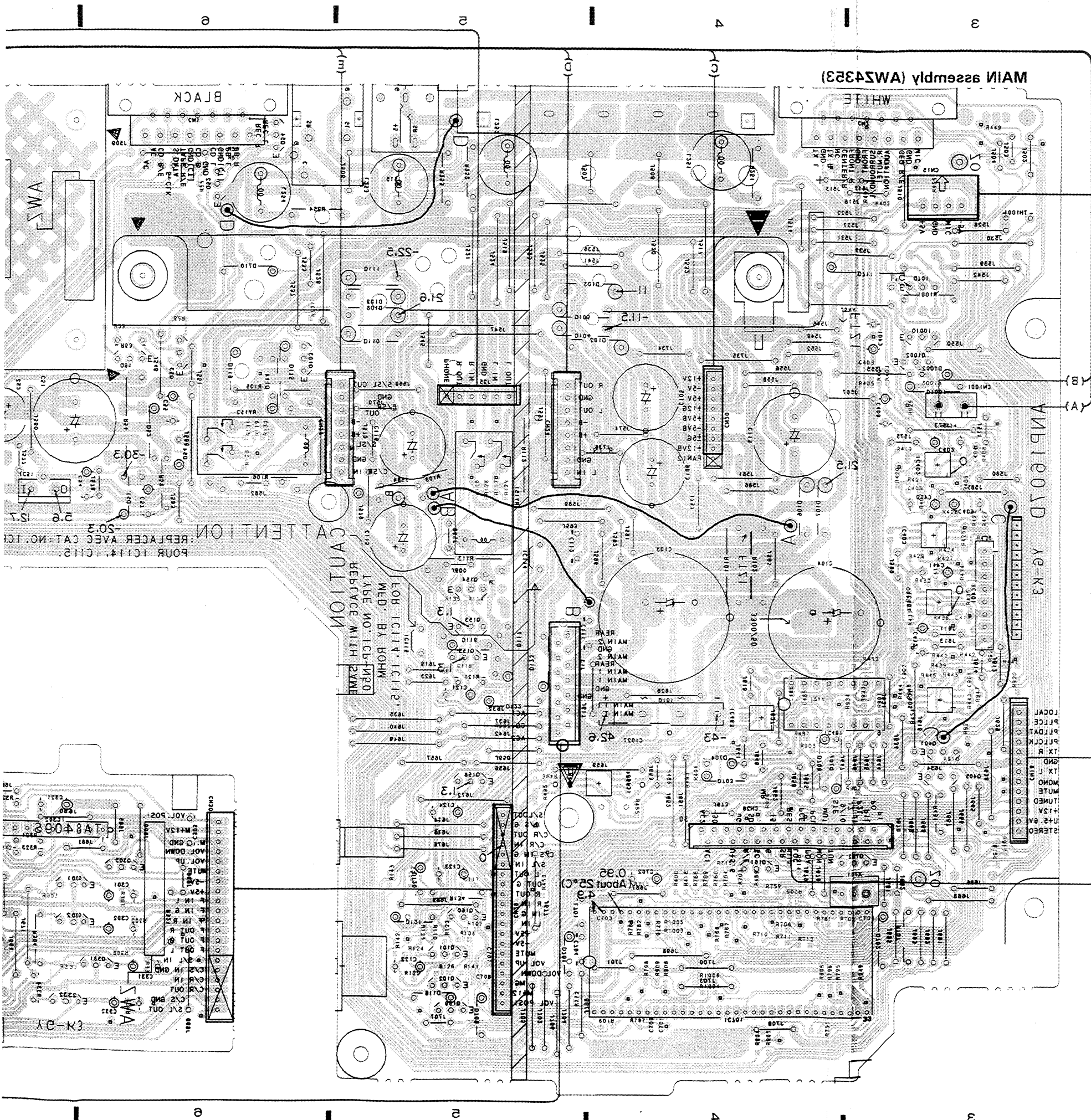
Line Voltage Selection
Line voltage can be changed with the following steps.
1. Disconnect the AC Power cord.
2. Remove the top cover.
3. Change the connection with the power transformer (T1) primary taps.



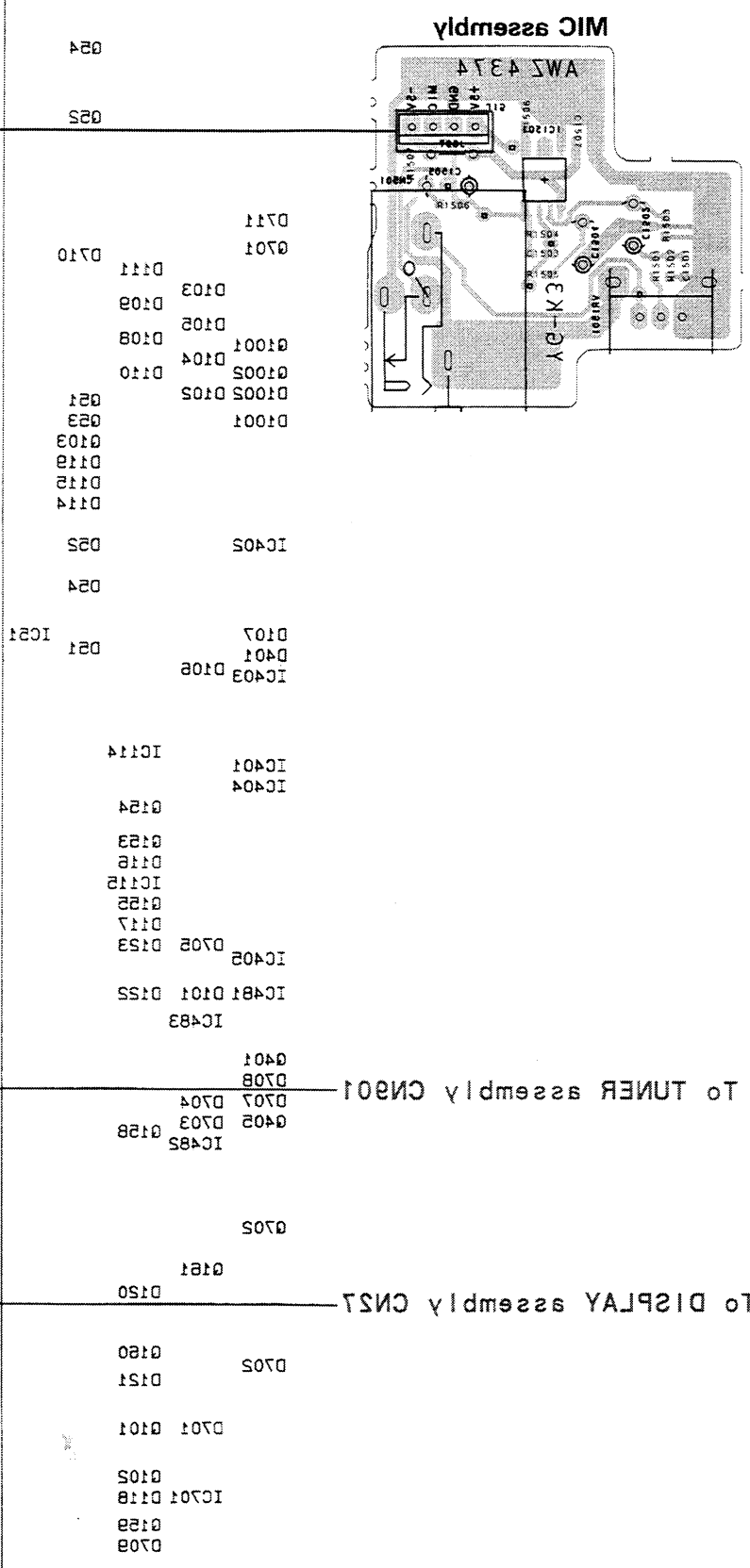
4. Stick the line voltage label on the rear panel.

Part No.	Description
AAX-193	230V label
AAX-192	240V label





This PCB connection diagram is viewed from the foil side.



A
B
C
D

A

B

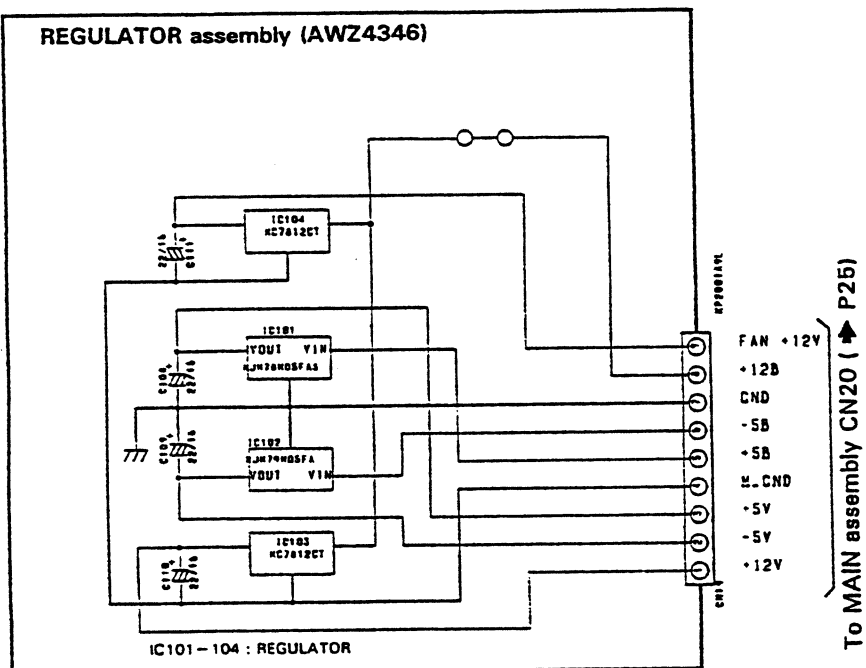
C

D

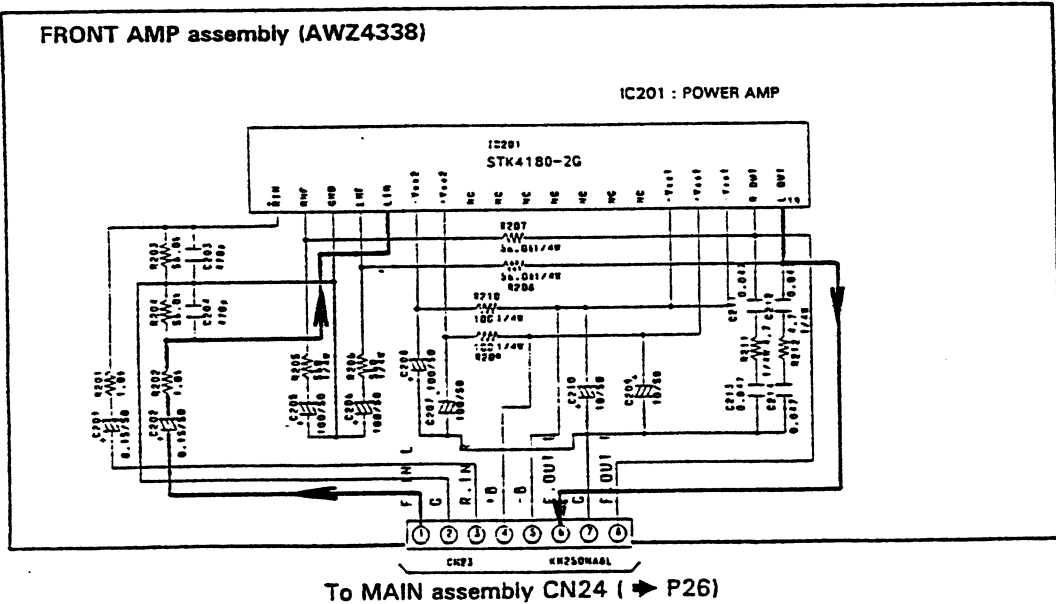
E

F

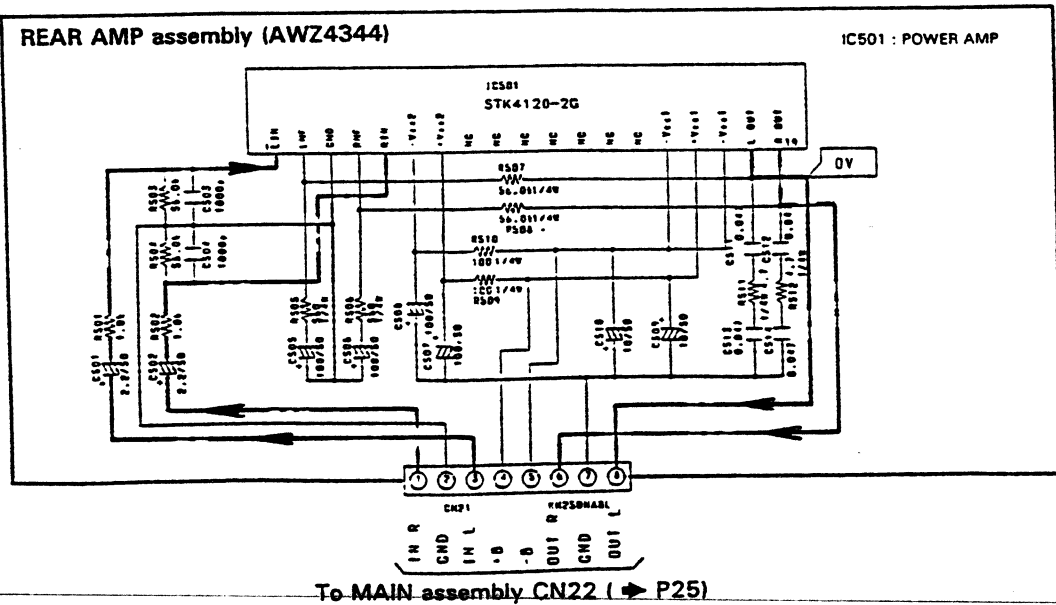
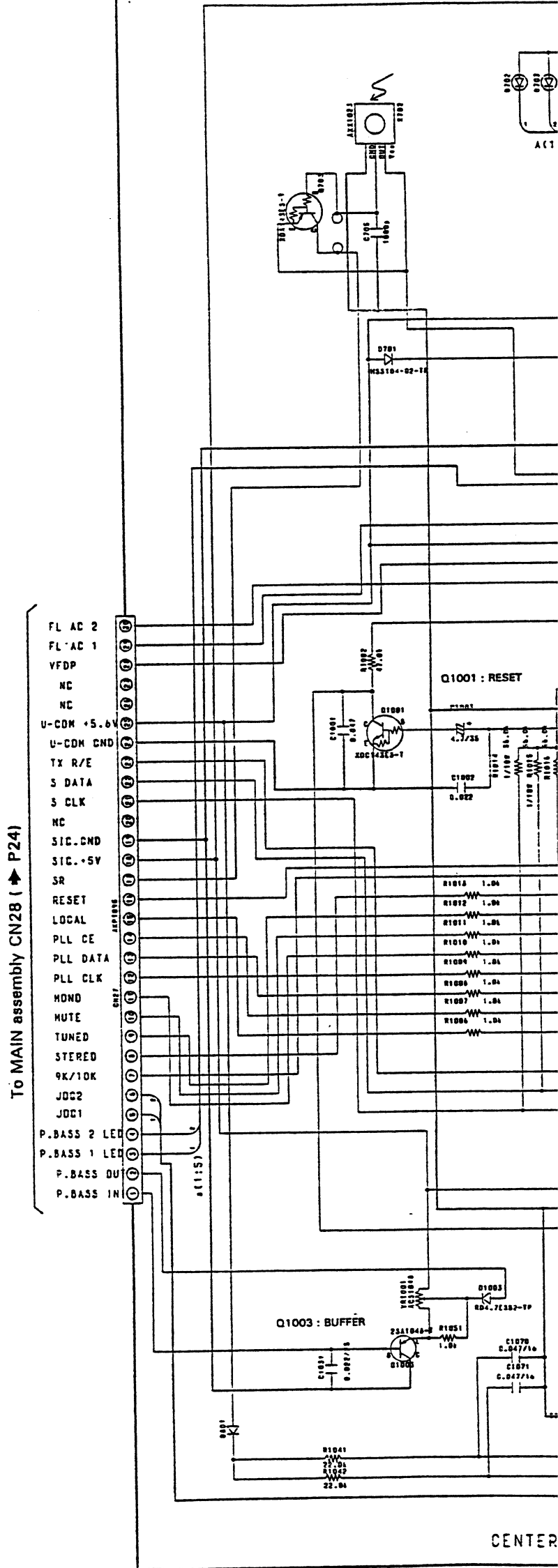
REGULATOR assembly (AWZ4346)



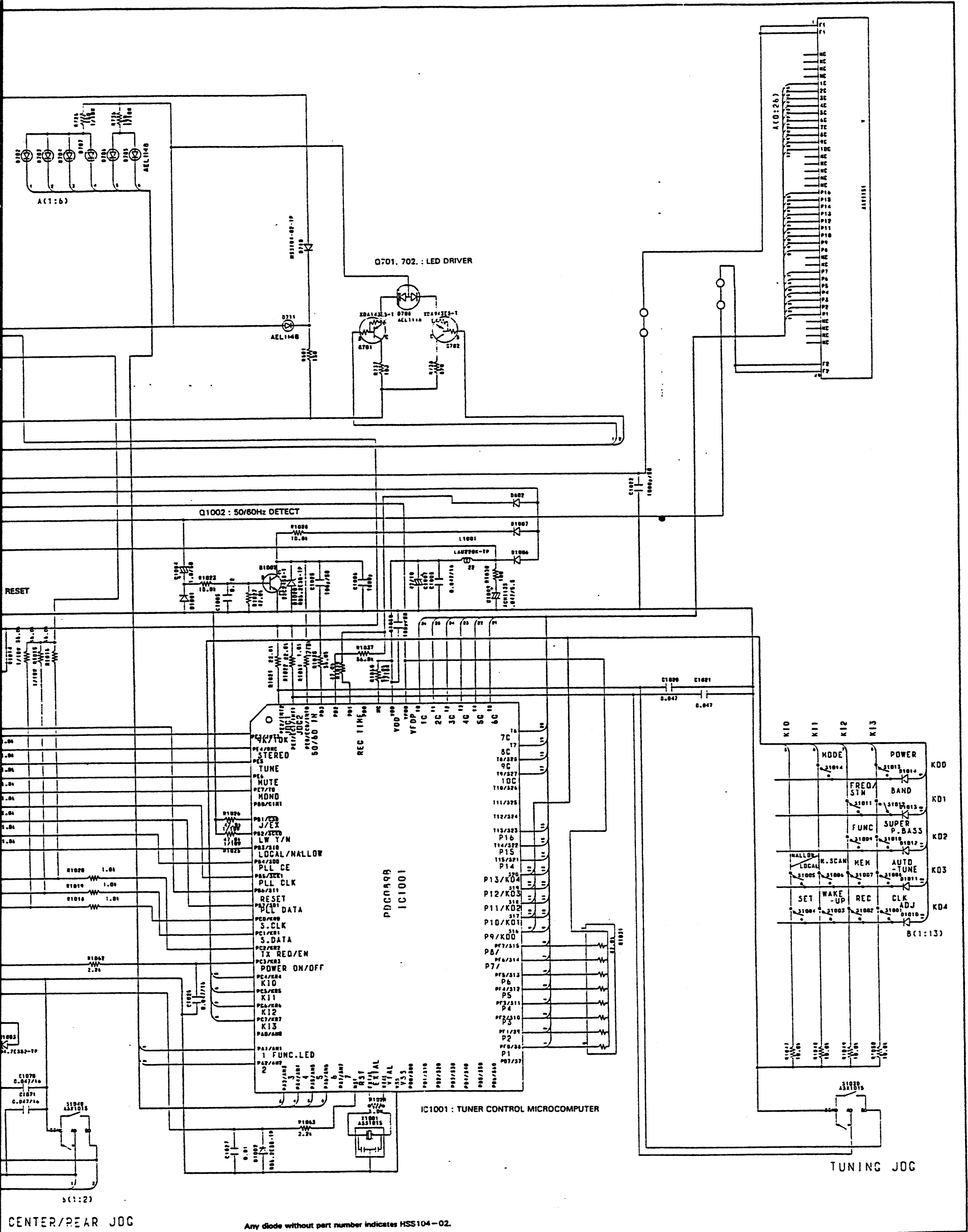
FRONT AMP assembly (AWZ4338)



REAR AMP assembly (AWZ4344)

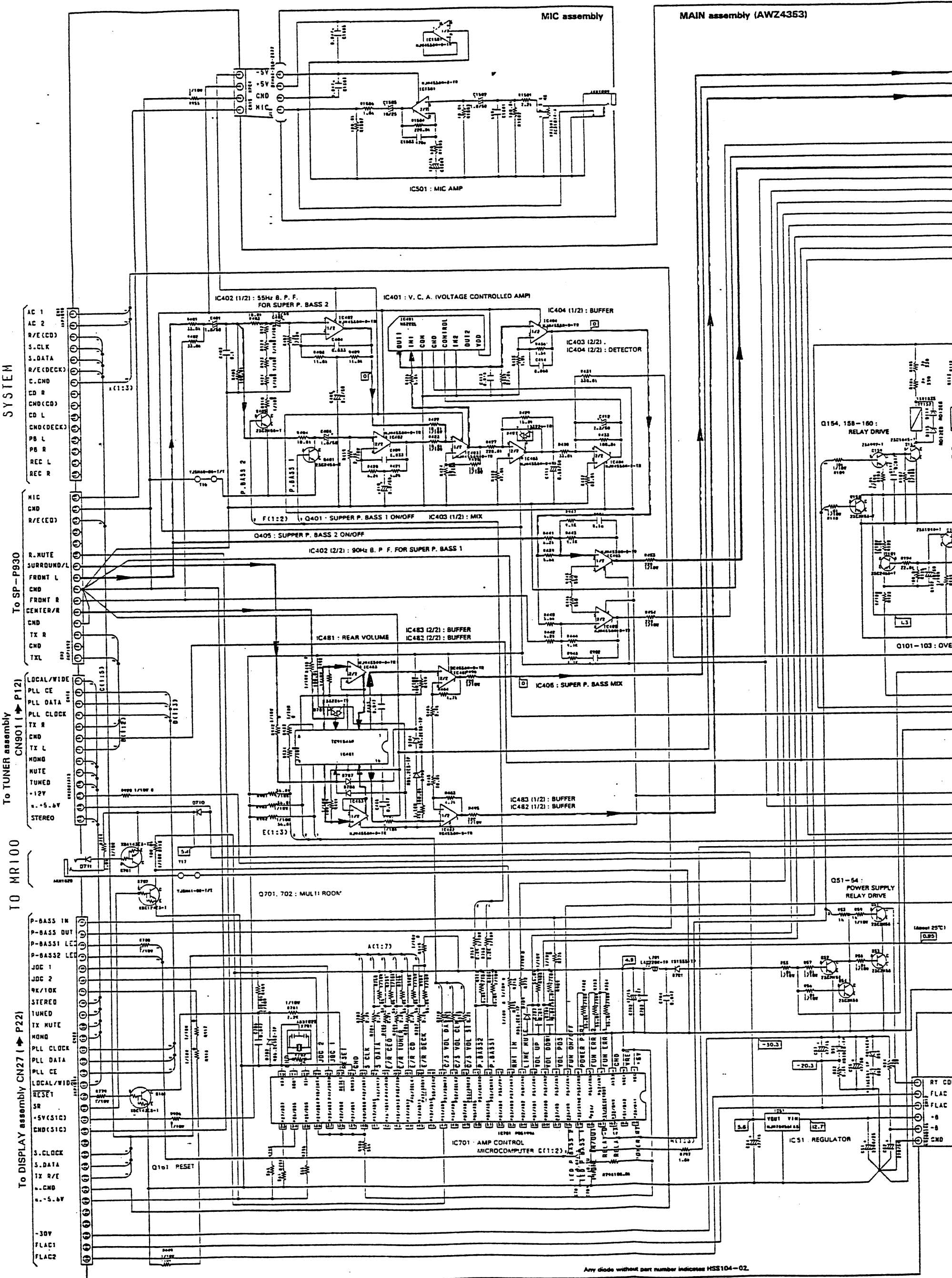
**DISPLAY assembly (AWZ4330)**

_____ : MAIN (TUNER FM/AM) SIGNAL
 _____ . _____ : SURROUND L
 _____ .. _____ : CENTER R



Any diode without part number indicates HSS104-02.

5.4 MAIN ASSEMBLY, SUB POWER ASSEMBLY, MIC ASSEMBLY, HEAD P. ASSEMBLY, CONNECTOR ASSEMBLY AND VR ASSEMBLY





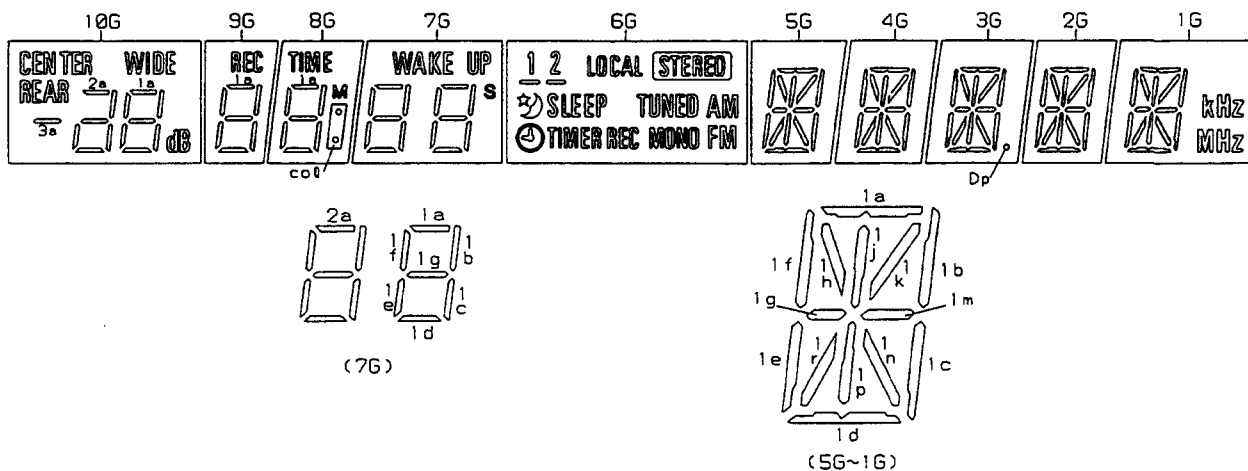
C

Q

1

■ **AAV1151 (DISPLAY ASSEMBLY : V1001)**

- **FL Tube**
- **Grid Assignment**



- **Pin Connection**

PIN NO.	1	2	3	4	5	6	7	8	9	0	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4					
CONNECTION	F	F	N	N	N	N	N	N	1	2	3	4	5	6	7	8	9	0	N	N	N	N	N	P	P	P	P	P	P	1	1	P	P	N	N	P	P	P	P	P	P	N	N	N	N	F	F	F	F

NOTE 1) F1,F2 --- Filament
2) NP ----- No pin
3) NC ----- No connection
4) 1G~10G --- Grid

- **Anode Connection**

	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	1a	1a	1a	1a	-	1a	1a	1a	1a	1a
P2	1b	1b	1b	1b	(1)	1b	1b	1b	1b	1b
P3	1c	1c	1c	1c	(2)	1c	1c	1c	1c	1c
P4	1d	1d	1d	1d	LOCAL	1d	1d	1d	1d	1d
P5	1e	1e	1e	1e	STEREO	1e	1e	1e	1e	1e
P6	1f	1f	1f	1f	SLEEP	1f	1f	1f	1f	1f
P7	1g	1g	1g	1g	TIMER	1g	1g	1g	1g	1g
P8	CENTER	-	TIME	S	REC	1h	1h	1h	1h	1h
P9	REAR	-	M	2a	TUNED	1j	1j	1j	1j	1j
P10	WIDE	-	col	2b	MONO	1k	1k	1k	1k	1k
P11	dB	REC	-	2c	AM	1m	1m	1m	1m	1m
P12	2b	-	-	2d	FM	1n	1n	1n	1n	1n
P13	2c	-	-	2e	-	1p	1p	1p	1p	1p
P14	2e	-	-	2f	-	1r	1r	1r	1r	1r
P15	2a, 2d, 2g	-	-	2g	-	-	-	Op	-	kHz
P16	3a	-	-	WAKE UP	1 2	-	-	-	-	MHz

6. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560 Ω $\rightarrow$ 56 $\times$ 10¹ $\rightarrow$ 561 RD1/8PM $\square$ $\square$ $\square$ J

47k Ω $\rightarrow$ 47 $\times$ 10³ $\rightarrow$ 473 RD1/4PS $\square$ $\square$ $\square$ J

0.5 Ω $\rightarrow$ 0R5 RN2H $\square$ $\square$ $\square$ K

1 Ω $\rightarrow$ 010 RS1P $\square$ $\square$ $\square$ K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω $\rightarrow$ 562 $\times$ 10¹ $\rightarrow$ 5621 RN1/4PC $\square$ $\square$ $\square$ $\square$ F

Mark	No.	Description	Parts No.
------	-----	-------------	-----------

LIST OF ASSEMBLIES

●	TUNER ASSEMBLY	AWE1261
●	DISPLAY ASSEMBLY	AWZ4330
●	FRONT AMP ASSEMBLY	AWZ4338
●	REAR AMP ASSEMBLY	AWZ4344
●	REGULATOR ASSEMBLY	AWZ4346
●	MAIN ASSEMBLY	AWZ4353
●	SUB POWER ASSEMBLY	AWZ4362
NSP	MIC ASSEMBLY	AWZ4374
NSP	HEAD P. ASSEMBLY	AWZ4377
●	CONNECTOR ASSEMBLY	AWZ4380
●	VR ASSEMBLY	AWZ4992

TUNER ASSEMBLY

SEMICONDUCTORS

IC903	AN7470P
IC902	LA1265S
IC901	LM7001
Q914	2SA1048
Q902	2SC1740SLN
Q910-Q913	2SC2458
Q909	2SC2668
Q901	2SK246
Q908	RN1203
Q905, Q907	RN2201
D901	1SV156
D908-D912	HSS104-02

COILS

L907	ATE-079
F905	ATF-107
F903	ATF-119
F904	ATF1042
F906	ATF1088
L904	LAU010K
L901, L903, L905, L908	LAU2R2K

Mark	No.	Description	Parts No.
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CAPACITORS

C948 (470p/50V)	ACE1039
C912, C914	CCDCH150J50
C968	CCDSL101J50
C939	CCDSL271J50
C927	CCDSL470J50
C945	CEANP2R2M50
C938	CEAS010M50
C944, C954, C960	CEAS0R1M50
C949	CEAS1R5M50
C942, C957, C958, C963	CEAS2R2M50
C901, C926, C930	CEAS330M16
C950	CEAS3R3M50
C924, C928, C943, C951	CEAS470M10
C946	CEAS470M25
C936	CEAS4R7M50
C955	CEASR22M50
C905	CFTXA103J50
C906	CFTXA224J50
C952, C953, C956	CKDYB122K50
C940	CKDYB222K50
C961, C962	CKDYB272K50
C902	CKDYF102Z50
C915, C919, C922, C932-C935, C937	CKDYF223Z50
C941, C947	CKDYF473Z50
C903, C910, C964	CKPUYB101K50
C904, C907, C965	CKPUYB102K50
C911, C916, C925, C929	CKPUYF103Z25
C923, C931, C959	CKPUYF223Z25

RESISTORS

VR903 (4.7k)	ACP1042
VR901 (10k)	ACP1043
VR902 (22k)	ACP1044
Other Resistors	RD1/8PM $\square$ $\square$ $\square$ J

Mark	No.	Description	Parts No.
OTHERS			
	X901 (7.200MHz)		ASS1042
	X902		ATF1027
	4P ANTENNA TERMINAL WITH PAL		AKA1010
	AM RF TUNING BLOCK		AXX1011
	2 SERIAL F. E. MODULE ASSEMBLY		AXQ1002
<i>Note :</i> <i>2 Serial F. E. module assembly has no service part.</i>			
DISPLAY ASSEMBLY			
SEMICONDUCTORS			
	IC1001		PDG089B
	Q1003		2SA1048
	Q1002		2SC2458
	Q701-Q703		XDA143ES
	Q1001		XDC143ES
	D702-D707, D711		AEL1148
	D708		AEL1115
	D701, D710, D801, D802, D1001, D1006, D1007, D1010-D1014		HSS104-02
	D1003		RD4.7ESB2
	D1002, D1020		RD6.2ESB
SWITCHES			
	S1001-S1014		ASG1034
	S1030, S1040		ASX1015
COILS			
	L1001		LAU220K
CAPACITORS			
	C1009		ACH1135
	C1004		CEAS010M50
	C1003		CEAS4R7M50
	C1007		CEJA470M10
	C1005		CFTXA224J50
	C1006		CKDYB102K50
	C1002		CKDYF223Z50
	C705, C1025, C1050		CKPUYB101K50
	C1022		CKPUYB102K50
	C1027		CKPUYF103Z25
	C1031		CKPUYF223Z25
	C1001, C1008, C1020, C1021, C1026, C1070, C1071		CKPUYF473Z16
RESISTORS			
	VR1001 (10k-B)		ACS1048
	R1031		RA8S473J
	Other Resistors		RD1/8PM□□□J

Mark	No.	Description	Parts No.
OTHERS			
	CN27 30P SOCKET		AKP1095
	V1001 FL TUBE		AAV1151
	X1001 (8.00MHz) REMOTE SENSOR UNIT		ASS1015 AXX1023
FRONT AMP ASSEMBLY			
SEMICONDUCTORS			
	IC201		STK4180-2G
CAPACITORS			
	C209, C210		CEAS100M50
	C205-C208		CEAS01M50
	C201, C202		CEASR15M50
	C203, C204		CQMA471J50
	C211-C214		CQMA473J50
RESISTORS			
	R211, R212		RD1/4PM4R7J
	R209, R210		RD1/4PMFL101J
	R205, R206		RDR14PM561J
	R207, R208		RDR14PM563J
	Other Resistors		RD1/8PM□□□J
REAR AMP ASSEMBLY			
SEMICONDUCTORS			
	IC501		STK4120-2G
CAPACITORS			
	C509, C510		CEAS00M50
	C505-C508		CEAS01M50
	C501, C502		CEASR2M50
	C511-C514		CKCY1473Z50
	C503, C504		CKMY3102K50
RESISTORS			
	R511, R512		RD1/4PM4R7J
	R507, R508		RD1/4PM563J
	R509, R510		RD1/4PMFL101J
	Other Resistors		RD1/8PM□□□J
REGULATOR ASSEMBLY			
SEMICONDUCTORS			
	IC103, IC104		MC7812CT
	IC101		NJM78M105FAS
	IC102		NJM78M105FA
CAPACITORS			
	C109-C111		CEAS20M16
	C108		CEJA20M16

Mark	No.	Description	Parts No.
MAIN ASSEMBLY			
SEMICONDUCTORS			
	IC114, IC115		ICP-N50
	IC401		M5222L
	IC402-IC405, IC482, IC483		NJM4558M-D
	IC51		NJM78M56FAS
	IC701		PD5199A
	IC481		TC9154AP
	Q102, Q103		2SA1048
	Q159		2SA992
	Q154, Q160		2SC1845
	Q51-Q54, Q101, Q153, Q155, Q158, Q401, Q405, Q1002		2SC2458
	Q701		XDA143ES
	Q702		XDC124ES
	Q161, Q1001		XDC143ES
	D701, D1001		1S1555
	D401, D705		1SS226
	D101		D3SBA20 (A)
	D118-D120, D707, D708, D710, D711, D1002		HSS104-02
	D51		RD10EB
	D116, D117		RD11EB
	D114, D115		RD12EB
	D54		RD16ESB
	D52		RD16ESB1
	D121, D703, D709		RD6.2EB
	D704		RD6.2ESB
	D702		RD6.2ESB2
	D102-D111, D122, D123		S5566
	TH1001		NTH2218F
RELAIRES			
	RY151, RY152		ASR1035
COILS			
	L251-L254		ATH-133
	L701		LAU220K
CAPACITORS			
	C103, C104 (5600/50V)		ACH1145
	C401, C402, C408		CEAS010M50
	C122		CEAS100M50
	C105, C106, C115, C116		CEAS102M35
	C121, C123		CEAS221M16
	C52		CEAS221M50
	C51		CEAS222M25
	C113		CEAS222M35
	C405, C410		CEAS2R2M50
	C124		CEAS330M50
	C702		CEAS470M16
	C54, C57		CEHAQ470M16
	C55		CEHAQ470M50

Mark	No.	Description	Parts No.
	C412		CEJA2R2M50
	C411		CEJAR68M50
	C111, C112		CKCYF103Z50
	C704		CKCYF473Z50
	C413		CKSQYB183K50
	C404, C409		CKSQYB333K50
	C403, C709, C901, C902		CKSQYF104Z50
	C117, C485, C486, C701, C703, C706-C708		CKSQYF473Z50
	C414		CKSQYF683Z50
	C1027		CQMA104K250
RESISTORS			
	R134		RD1/2PM182J
	R251-R524		RD1/4PMFL100J
	R1001		RN1/4PC3601F
	R123, R135, R141-R143, R487, R490, R715, R716, R772, R776, R779, R780, R910, R917, R918, R920, R921, R923-R926, R933, R934, R942, R949, R955, R999, R1003-R1006		RS1/10S000J
	R55-R59, R108, R110, R114, R435, R449, R714, R797		RS1/10S102J
	R109, R117-R120, R122, R403, R404, R422-R425		RS1/10S103J
	R125, R405, R433, R491-R494, R713, R798		RS1/10S104J
	R702		RS1/10S105J
	R126, R127		RS1/10S112J
	R408, R409		RS1/10S113J
	R436		RS1/10S152J
	R429		RS1/10S153J
	R1002		RS1/10S182J
	R485		RS1/10S183J
	R309, R310, R343, R344, R453, R454, R495, R496		RS1/10S221J
	R419, R703-R706, R709-R712, R767, R768, R781		RS1/10S222J
	R124		RS1/10S223J
	R427		RS1/10S224J
	R486		RS1/10S242J
	R407		RS1/10S272J
	R434		RS1/10S273J
	R401, R402, R430		RS1/10S333J
	R489		RS1/10S334J
	R130, R131		RS1/10S393J
	R132, R133, R483, R484		RS1/10S472J
	R107, R115, R428		RS1/10S473J
	R445, R446		RS1/10S561J
	R406, R418, R439, R440		RS1/10S562J
	R759, R760, R766, R782, R783, R791, R795, R796,		
	R901-R906, R908, R909		RS1/10S563J
	R420, R421, R441, R442		RS1/10S622J
	R426		RS1/10S682J
	R128, R129, R432		RS1/10S823J

Mark	No.	Description	Parts No.
	R443, R444, R947, R948		RS1/10S912J
	R105, R112 R106, R113 R101-R103 R54		RS2LMF331J RS2LMF391J RS2LMFR22J RS3LMF821J
	Other Resistors		RD1/8PM□□□J

OTHERS

X701 (4.00MHz)	ASS1025
3P PIN JACK	AKB1120
4P SPEAKER TERMINAL	AKE-109
MINI JACK	AKN1020
CN1 15P SOCKET	AKP1090
CN2 15P SOCKET	AKP1092
CN28 30P SOCKET	AKP1094
CN15 4P JUMPER CONNECTOR	KPC4

SUB POWER ASSEMBLY
SEMICONDUCTORS

D53, D59	RD5.6ESB
D55-D58	S5566

RELAY

RY51	ASR1027
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COIL & TRANSFORMER

L51	ATF-151
T51	ATT1221

CAPACITORS

C58, C59 (0.01/400V)	ACG1003
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RESISTORS

R60	RS2LMF390J
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MIC ASSEMBLY
SEMICONDUCTORS

IC1501	NJM4558M-D
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CAPACITORS

C1502	CEJA010M50
C1504, C1505	CEJA100M16
C1503	CKSQYB471K50
C1501	CKSQYB681K50
C1506, C1507	CKSQYF473Z50

RESISTORS

VR1501 (10k-B)	ACS1074
R1506	RS1/10S102J
R1503	RS1/10S103J
R1502, R1507	RS1/10S104J
R1501	RS1/10S222J

Mark	No.	Description	Parts No.
	R1504 R1505		RS1/10S224J RS1/10S681J
OTHERS			
	MIC JACK		AKN1009

HEAD P. ASSEMBLY
RESISTORS

R557, R558	RS2LMF331J
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OTHERS

CN551 MINI JACK	AKN1029
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CONNECTOR ASSEMBLY
SEMICONDUCTORS

IC104-IC107, IC110, IC113	ICP-N50
IC108, IC109	ICP-N75

VR ASSEMBLY
SEMICONDUCTORS

IC302	TA4409S
IC301, IC331	UPC4570G2

Q301, Q302, Q331, Q332	2SC2878
Q303	RN2203

CAPACITORS

C321	CEAS101M16
C331, C332	CEAS2R2M50
C333, C334	CEJA2R2M50
C301, C302	CEJA2R2M50
C303, C304	CEJA2R2M50

C323	CKCYX104M16
C305	CKFUJYF223Z25
C341, C342	CKSQYF104Z50
C311, C312, C337, C338	CKSQYF473Z50

RESISTORS

VR301 (100k-4B×4 50k-6B)	AC11063
R321, R322	RD1/4PM390J
R311, R312	RS110S000J
R305, R306, R335, R336	RS110S102J
R307, R308, R337, R338	RS110S104J
R301-R303, R331-R333, R341, R342	RS110S472J
Other Resistors	RD1/8PM□□□J

7. ADJUSTMENTS

7.1 ADJUSTMENT OF THE FM TUNER SECTION

- Set the mode selector to FM BAND.
- Connect the wiring as shown in Fig. 7-1.

Step No.	Adjustment Title	FM SG (1kHz $\pm$ 75kHz dev.)		Reception Frequency Display	Adjustment Location	Specifications
		Frequency (MHz)	Level (dB μ V)			
1	Center Adjustment	98	80	98.0MHz	L907	Adjust so that the DC voltage between the TP901 (Vref) and TP902 (T-meter) becomes 0V $\pm$ 50mV.
2	VCO Adjustment	Non modulation	80	98.0MHz	VR903	Adjust so that the output of the TP905 (VCO) becomes 76kHz $\pm$ 0.5kHz.
3	TUNED IND. Lighting Level	98 *1 (Stereo modulation)	18 ($\pm$ 3dB)	98.0MHz	VR902	Adjust so that the indicators of TUNED, STEREO IND. start to light up.

Note :

Perform steps 1 and 3 when the 2 serial F. E. module assembly is replaced.

Confirm VCO (step 2) and adjust if improper.

*1 Stereo modulation : Main 1kHz L+R $\pm$ 68.25kHz dev.
Pilot 19kHz $\pm$ 6.75kHz dev.

7.2 ADJUSTMENT OF AM (MW) TUNER SECTION

- Set the mode selector to AM (MW) BAND.
- Connect the wiring as shown in Fig. 7-2.

Step No.	Adjustment Title	AM SG (400Hz 30% Mod.)		Reception Frequency Display	Adjustment Location	Specifications
		Frequency (kHz)	Level (dB μ V/m)			
1	TUNED IND. Lighting level	999	55 ($\pm$ 5dB)	999kHz	VR901	Adjust so that the indicators of TUNED IND. start to light up.

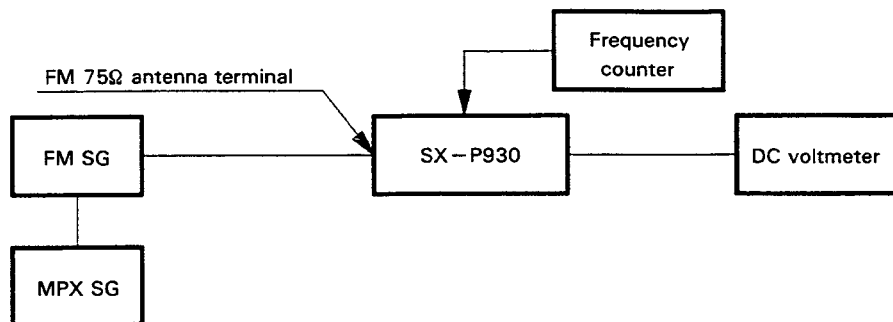


Fig. 7-1 FM Adjustment Connection Diagram

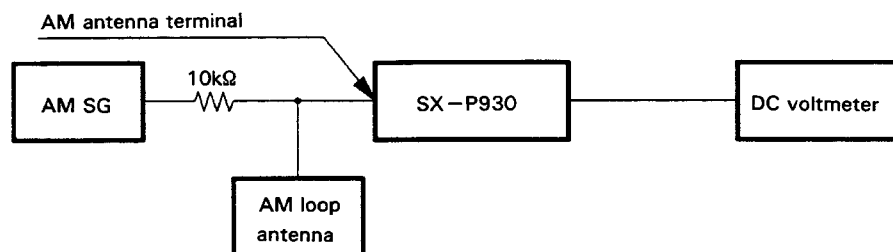


Fig. 7-2 AM (MW) Adjustment Connection Diagram

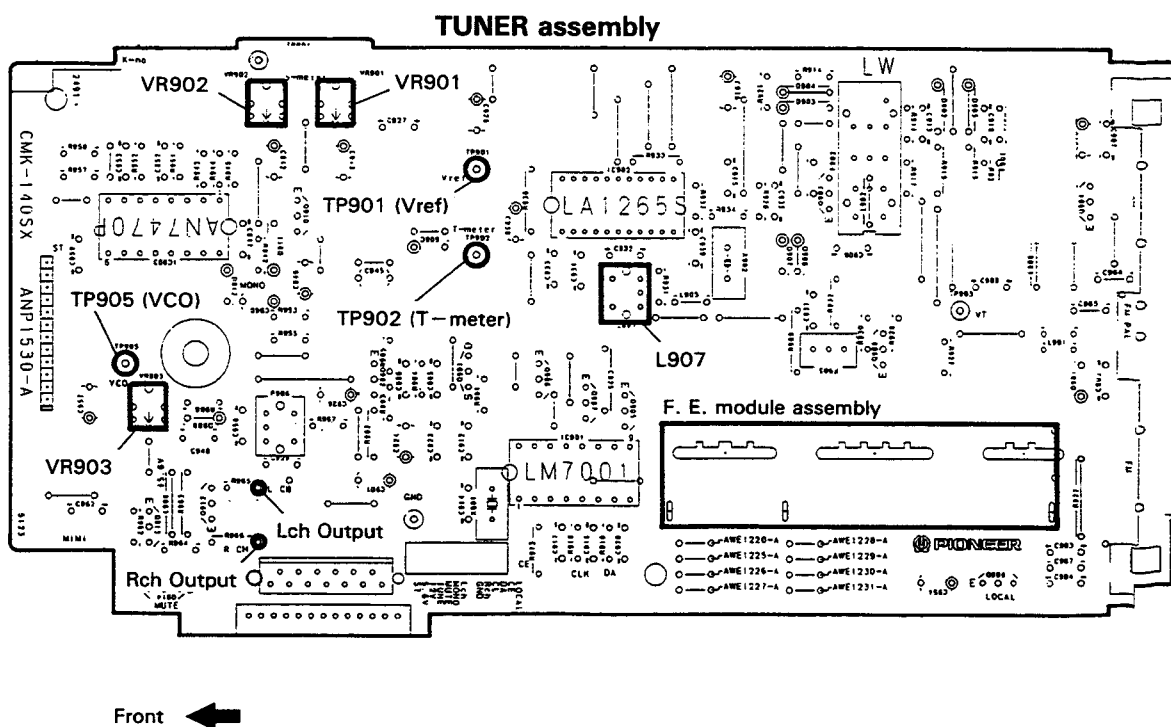


Fig. 7-3 Adjustment Points

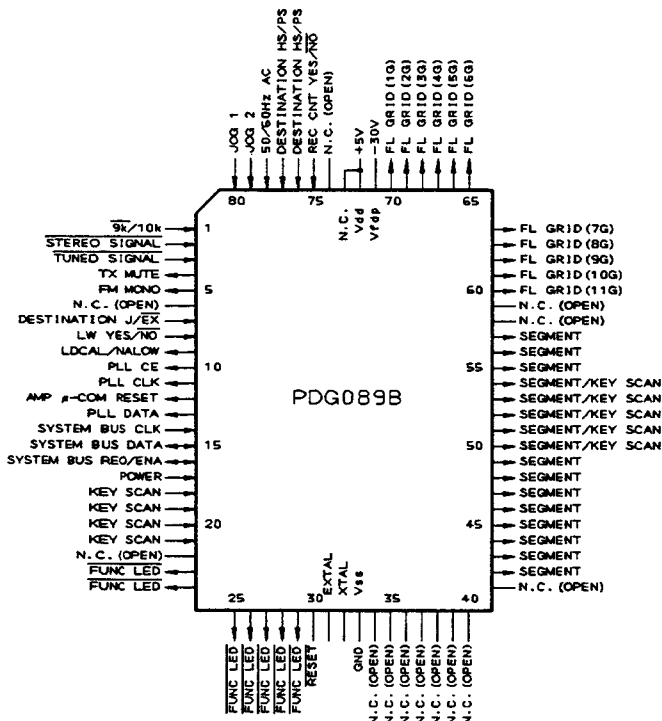
8. IC INFORMATION

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

8.1 PDG089B (DISPLAY ASSEMBLY : IC1001)

Tuner System Control Micro-computer

- Pin Assignment (Top View)



- Pin Function

No.	Name	I/O	Description	ACT
1	PE3	I	Switching Channel Step Frequency 9k / 10k Input	
2	PE4	I	STEREO Signal Input	L
3	PE5	I	TUNED Signal Input	L
4	PE6	O	TUNER MUTE Output	H
5	PE7	O	FM MONO Output	H
6	PB0	O	Not Used (OPEN)	
7	PB1	I	J / EX Input	
8	PB2	I	LW / No LW Input	H
9	PB3	O	LOCAL & NALOW Output	H
10	PB4	O	PLL CE Output (LM7001)	
11	PB5	O	PLL CLK Output (LM7001)	

No.	Name	I/O	Description	ACT
12	PB6	O	AMP Micro-computer Reset Output	H
13	PB7	O	PLL DATA Output (LM7001)	
14	PC0	I	System bus CLK Input	
15	PC1	I/O	System bus DATA Input / Output	
16	PC2	O	System bus REQ Output	
		I	System bus ENABLE Input	
17	PC3	I	POWER IN ON / $\overline{\text{OFF}}$	H
18	PC4	I	Key Scan Input	
19	PC5	I		
20	PC6	I		
21	PC7	I		
22	PA0	O	Not Used (OPEN)	
23	PA1	O	Function LED $\overline{\text{ON}}$ / OFF	L
24	PA2	O		
25	PA3	O		
26	PA4	O		
27	PA5	O		
28	PA6	O		
29	PA7	O		
30	RST	I/O	RESET Input	L
31	EXTAL	I	Connected to ceramic resonator (8MHz).	
32	XTAL	O		
33	Vss	—	Connected to GND	
34	PD0	DP	Not Used (OPEN)	
35	PD1	DP		
36	PD2	DP		
37	PD3	DP		

No.	Name	I/O	Description	ACT
38	PD4	DP	Not Used	
39	PD5	DP		
40	PD6	DP		
41	PD7	DP		
42	S8	DP	Segment Output	
43	S9	DP		
44	S10	DP		
45	S11	DP		
46	S12	DP		
47	S13	DP		
48	S14	DP		
49	S15	DP	Segment Output / Key Scan Output	
50	S16	DP		
51	S17	DP		
52	S18	DP		
53	S19	DP		
54	S20	DP	Segment Output	
55	S21	DP		
56	S22	DP		
57	S23	DP	Not Used (OPEN)	
58	T12	DP		
59	T11	DP	FL Grid Output (11G)	
60	T10	DP		
61	T9	DP		
62	T8	DP		
63	T7	DP		
64	T6	DP		
65	T5	DP		
66	T4	DP		
67	T3	DP		
68	T2	DP		

No.	Name	I/O	Description	ACT
69	T1	DP	FL Grid Output (2G)	
70	T0	DP	FL Grid Output (1G)	
71	Vfdp	—	—30V FDP load power Input	
72	Vdd	—	+5V Power Supply Input	
73	NC	—	Connected to Vdd.	
74	PG0	O	Not Used (OPEN)	
75	PG1	O	REC TIME COUNTER Yes / No	H
76	PG2	I	Switching Model and Destination	
77	PG3	I		
78	PE0	I	AC Input	
79	PE1	I	JOG 2 Input	
80	PE2	I	JOG 1 Input	

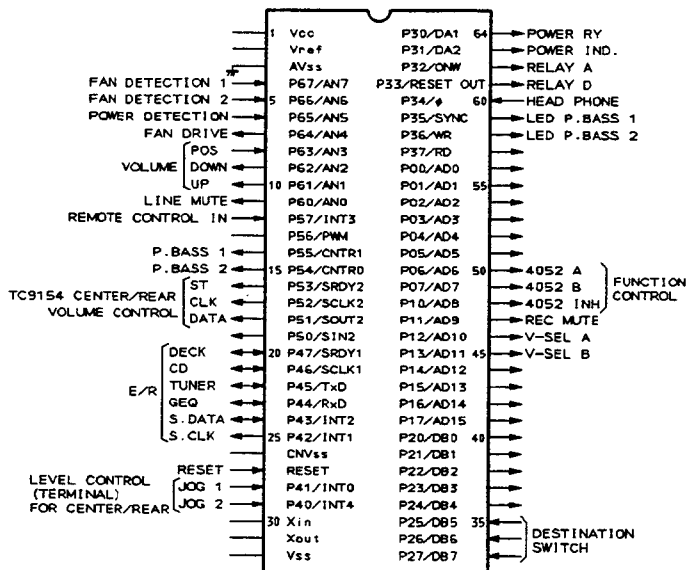
NOTE :
I : CMOS Input
O : CMOS Output
N : Nch Open Drain Output
P : Pch Open Drain Output
UN : Nch Open Drain Output with Pull-up Resistor
DP : Pch Open Drain Output with Pull-down Resistor
UI : CMOS Input with Pull-up Resistor
DI : CMOS Input with Pull-down Resistor

8.2 PD5199A (MAIN ASSEMBLY : IC701)

Amplifier Control Micro-computer

● Pin Assignment

(Top View)



● Pin Function

No.	Name	I/O	Description	ACT
1	Vcc	—	Connected to +5V.	
2	Vref	—		
3	AVss	—		
4	P67/AN7 FAN DETECTION 1	I	According to the A/D input value, function will switch to one of : FAN operation ; POWER OFF or NORMAL operation.	
5	P66/AN6 FAN DETECTION 2	I		
6	P65/AN5 POWER DETECTION	I	500mS after POWER ON, should "H" continue for 3S, POWER OFF.	H
7	P64/AN4 FAN DRIVE	O	FAN $\overline{\text{ON}}$ /OFF	L
8	P63/AN3 VOLUME POS	I	A/D Input for VR Position Detection.	
9	P62/AN2 VOLUME DOWN	O	Motor Volume DOWN	H
10	P61/AN1 VOLUME UP	O	Motor Volume UP	H

No.	Name	I/O	Description	ACT
11	P60/AN0 LINE MUTE	O	LINE MUTE Output	L
12	P57 REMOCON IN	I	SR Signal Input	L
13	P56	—	Not Connect	
14	P55 P. BASS 1	O	P. BASS1 $\overline{\text{ON}}$ /OFF	L
15	P54 P. BASS 2	O	P. BASS2 $\overline{\text{ON}}$ /OFF	L
16	P53 ST	O	CENTER/REAR VOLUME CONTROL (TC9154) ST	
17	P52 CLK	O	CENTER/REAR VOLUME CONTROL (TC9154) CLK	
18	P51 DATA	O	CENTER/REAR VOLUME CONTROL (TC9154) DATA	
19	P50/SIN2	O	Not Connect	
20	P47/SRDV1 DECK	I/O	System bus DECK Enable / Request	
21	P46/SCLK1 CD	I/O	System bus CD Enable / Request	
22	P45/TxD TUNER	I/O	System bus TUNER Enable / Request	
23	P44/RxD GEQ	I/O	System bus GEQ Enable / Request	
24	P43/INT2 S. DATA	I/O	System bus S. DATA Enable / Request	
25	P42/INT1 S. CLK	O		
26	CNVs	—	Connected to GND.	
27	RESET	I	RESET Input	
28	P41/INT0 JOG 1	I	Lever control (terminal) for Center/Rear.	
29	P40/INT4 JOG 2	I		
30	X in	I	Connected to Ceramic resonator (8MHz).	
31	X out	O		

No.	Name	I/O	Description	ACT
32	Vss	—	Connected to GND.	
33	P27/DB7	I	Switching Destination	
34	P26/DB6	I		
35	P25/DB5	I		
36	P24/DB4	O	Pull-up at R906	
37	P23/DB3	O		
38	P22/DB2	O		
39	P21/DB1	O		
40	P20/DB0	O		
41	P17/AD15	O	Not Connect	
42	P16/AD14	O		
43	P15/AD13	O		
44	P14/AD12	O		
45	P13/AD11 V-SEL A	O		
46	P12/AD10 V-SEL B	O		
47	P11/AD9 REC MUTE	O	Video Rec Out Mute	H
48	P10/AD8 4052 INH	O	Not Connect	
49	P07/AD7 4052 B	O		
50	P06/AD6 4052 A	O		
51	P05/AD5	O		
52	P04/AD4	O		
53	P03/AD3	O		
54	P02/AD2	O		
55	P01/AD1	O		
56	P00/AD0	O		
57	P37/RD	O		

No.	Name	I/O	Description	ACT
58	P36/WR LED P. BASS2	O	LED Display P. BASS 2	H
59	P35/SYNC LED P. BASS1	O	LED Display P. BASS 1	H
60	P34/ ϕ HEADPHONE	I	HEADPHONE Input	L
61	P33/RESET Out RELAY D	O	Rear Amp Speaker Relay	L
62	P32/ONW RELAY A	O	Front Amp Speaker Relay	L
63	P31/DA1 POWER IND	O	Not Connect	L
64	P30/DA1 POWER RY	O	AC Relay	H

9. FOR HB TYPE**NOTES:**

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The $\triangle$ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

SX – P930/HB and SX – P930/HE have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		SX – P930/HE	SX – P930/HB	
●	SUB POWER assembly	AWZ4362	AWZ4361	*1
$\triangle$	AC power cord	ADG1049	ADG1118	
NSP	Rear panel	ANC1934	ANC1933	
	Operating instructions (German, Italian)	ARC1377		
	Operating instructions (Dutch, Swedish, Spanish, Portuguese)	ARE1275		

*1 : Although AWZ4361 and AWZ4362 are different in part number, they have the same service parts.