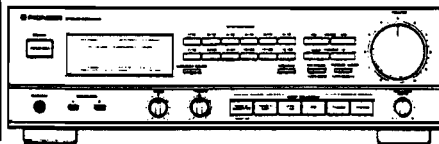


# Service Manual



ORDER NO.  
ARP1774

STEREO RECEIVER

# SX-225

SX-225 HAS FOLLOWING VERSIONS:

Type	Power requirement	Export destination
HB	AC220, 240V (switchable) *	United Kingdom
HE	AC220, 240V (switchable) *	European continent
HEZ	AC220, 240V (switchable) *	West Germany
KUC	AC120V only	U.S.A. and Canada

\* Change the lead wires of the transformer.

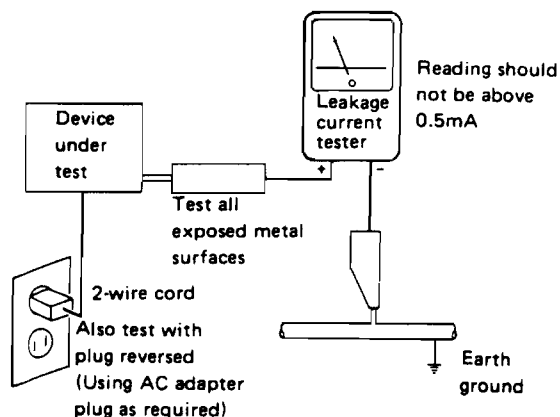
# 1. SAFETY INFORMATION

## 1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

### LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

### ADVARSEL!

Lithiumbatteri. Eksplosionsfare. Udskiftning må kun foretages af en sagkyndig, og som beskrevet i servicemanualen.

Denne advarsel er angivet på produktet eller i brugsvejledningen. Ved udskiftning af lithium batterierne følges nedenstående anvisning. Batterierne må kun udskiftes med batterier af samme type og mærke.

**ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.**

## 2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a  $\Delta$  on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

### WARNING!

Lithium batteries. Danger of explosion. Replacement must be done by qualified personnel and only by following the instructions given in the service manual.

This warning is stated on the product or in the operating instructions. When replacing the lithium batteries, follow the note below. The batteries must be replaced only by batteries of the same type and manufacture.

### VAROITUS!

Litiumparistot. Räjähdyksvaara. Vaihdon saa suorittaa ainoastaan asiantunteva huoltoteknikko noudattamalla huolto-ohjeissa annettuja ohjeita.

Tämä varoitus sijaitsee laitteessa tai käyttöohjeessa. Noudata litiumparistoja vaihtaessasi alla olevaa huomautusta. Paristot on vaihdettava samantyyppisiin ja saman tehtaan valmistamiin paristoihin.

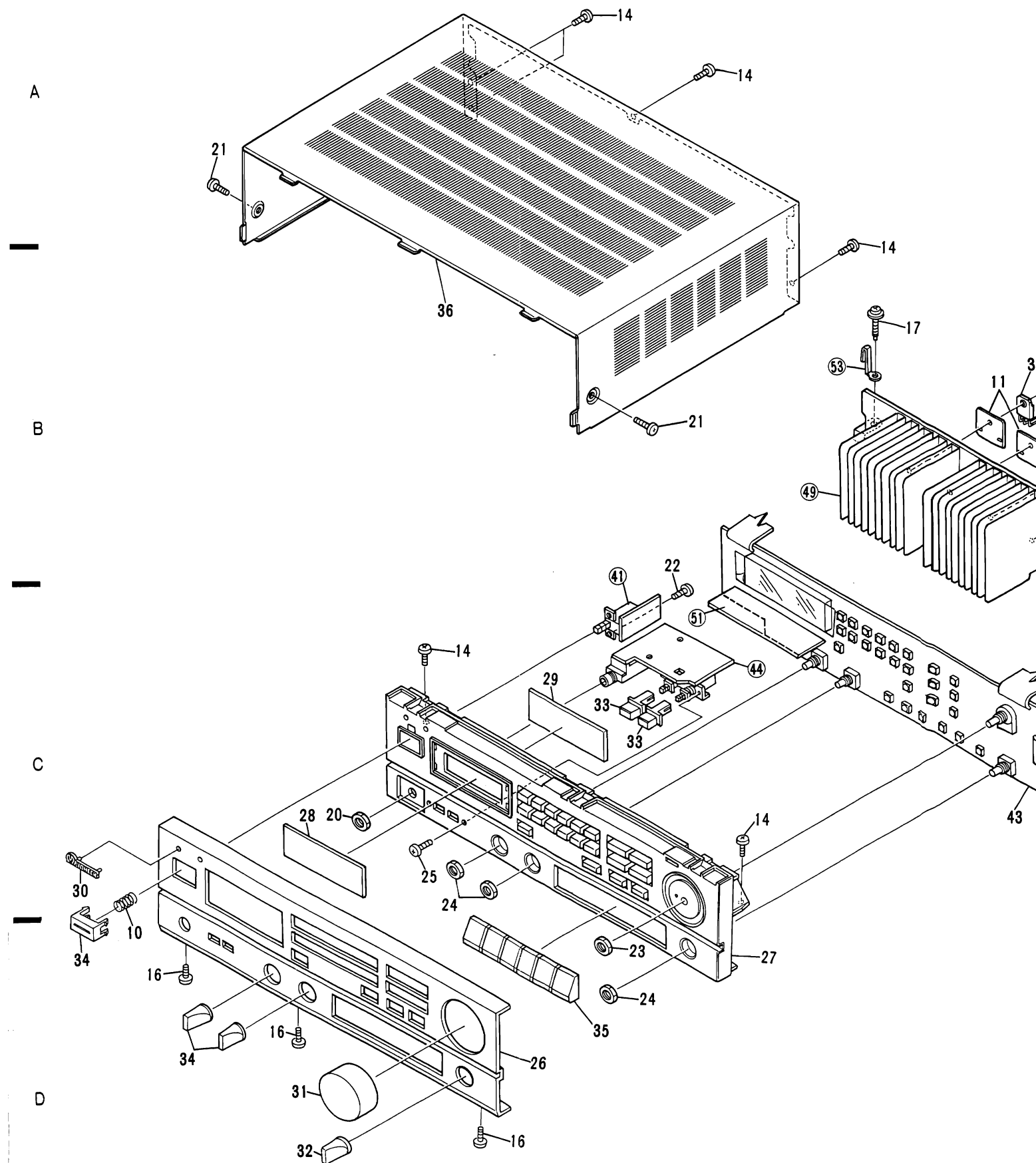
## 2. EXPLODED VIEWS, PACKING AND PARTS LIST

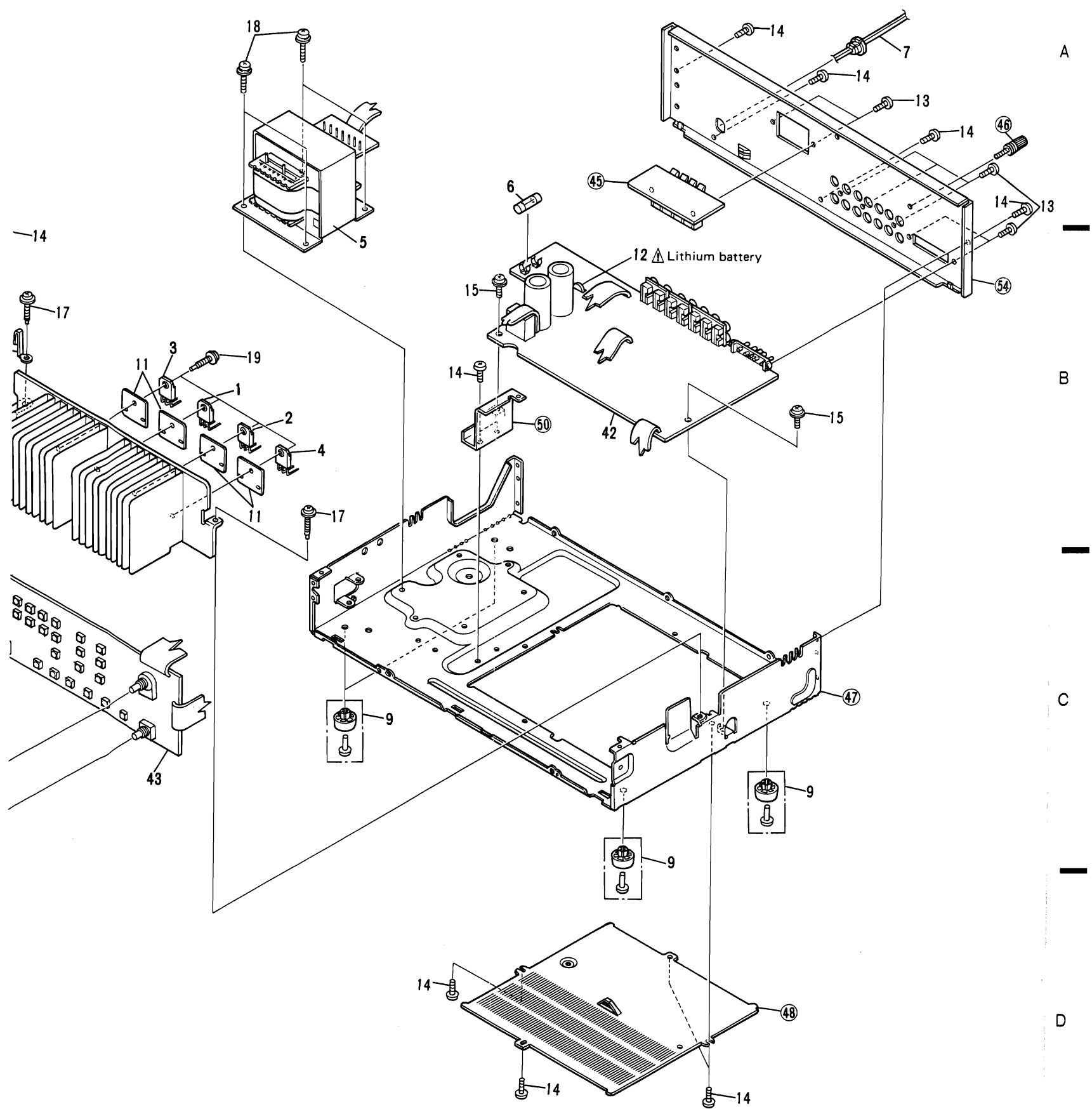
### NOTES:

- Parts without part number cannot be supplied.
- The  $\Delta$  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.

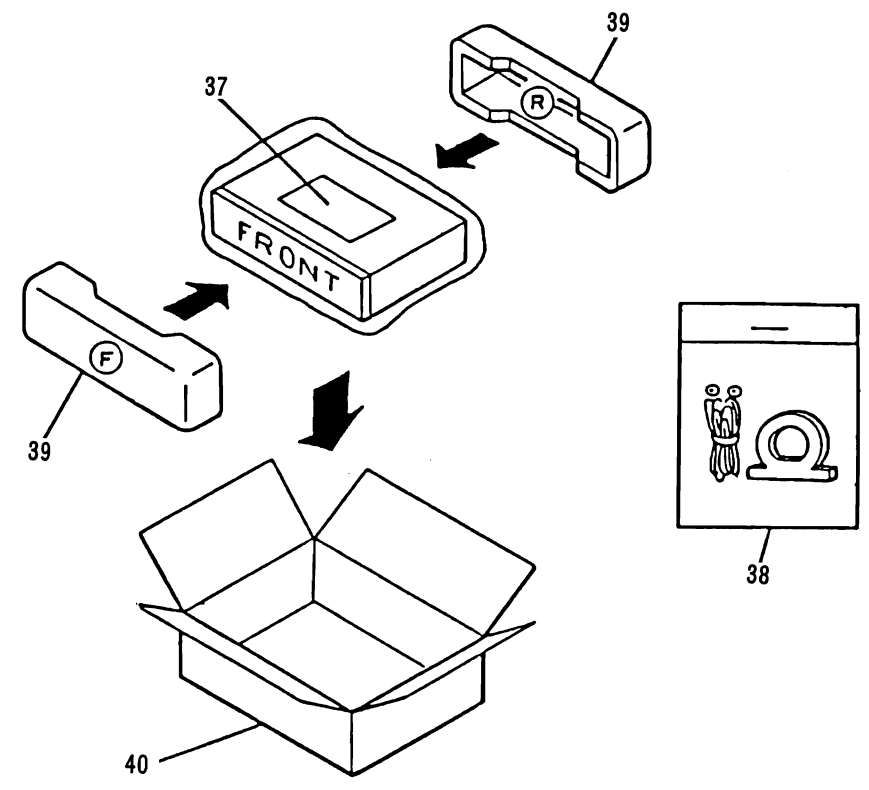
### PARTS LIST

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
$\Delta$	1	2SA1263N	Transistor (Q3)		31	AAB1099	Knob (VOLUME)
$\Delta$	2	2SA1263N	Transistor (Q4)		32	AAB1100	Rotary knob
$\Delta$	3	2SC3180N	Transistor (Q1)		33	AAD-418	Push knob B
$\Delta$	4	2SC3180N	Transistor (Q2)		34	AAD1535	Power knob
$\Delta$	5	ATS1119	Power transformer (T1)		35	AAD1539	Knob array
$\Delta$	6	AEK-509	Fuse (FU1)		36	AZN1783	Bonnet
$\Delta$	7	ADG-063	AC power cord		37	ARB1163	Operating instructions
	8	.....	.....		38	AEA1002	Antenna set
	9	AEC-784	Leg ASSY		39	AHA1015	Front rear pad
	10	ABH-052	Coil spring B		40	AHD1607	Packing case
	11	AAE1014	Sheet		41		POWER SW ASSY
$\Delta$	12	AEX-008	Lithium battery (3V)		42	AWZ2396	COMPLEX ASSY
	13	ABA1006	Screw (3 x 8)		43	AWZ2397	CONTROL ASSY
	14	ABA1009	Screw		44		SP SWITCH ASSY
	15	ABA1011	Screw		45		SP TERMINAL ASSY
	16	ABA1048	Screw (3 x 6)		46		Terminal (GND)
	17	ABA1052	Screw (3 x 12)		47		Chassis
	18	ABA1054	Screw (3 x 10)		48		Bottom plate
	19	ABA1082	Screw (3 x 14)		49		Heat sink
	20	ABN-065	Nut		50		Heat sink holder
	21	BBT30P060FZK	Screw		51		Shield plate
	22	CBZ30P080FMC	Screw		52		.....
	23	NK70FUC	Nut		53		Binder
	24	NK90FUC	Nut		54		Rear panel
	25	VMZ30P060FMC	Screw				
	26	ANB1273	Front panel				
	27	AMB1460	Panel base				
	28	AAK1673	Acrylic panel				
	29	AAK1674	FL filter				
	30	AAM1029	Name plate				





A  
B  
C  
D





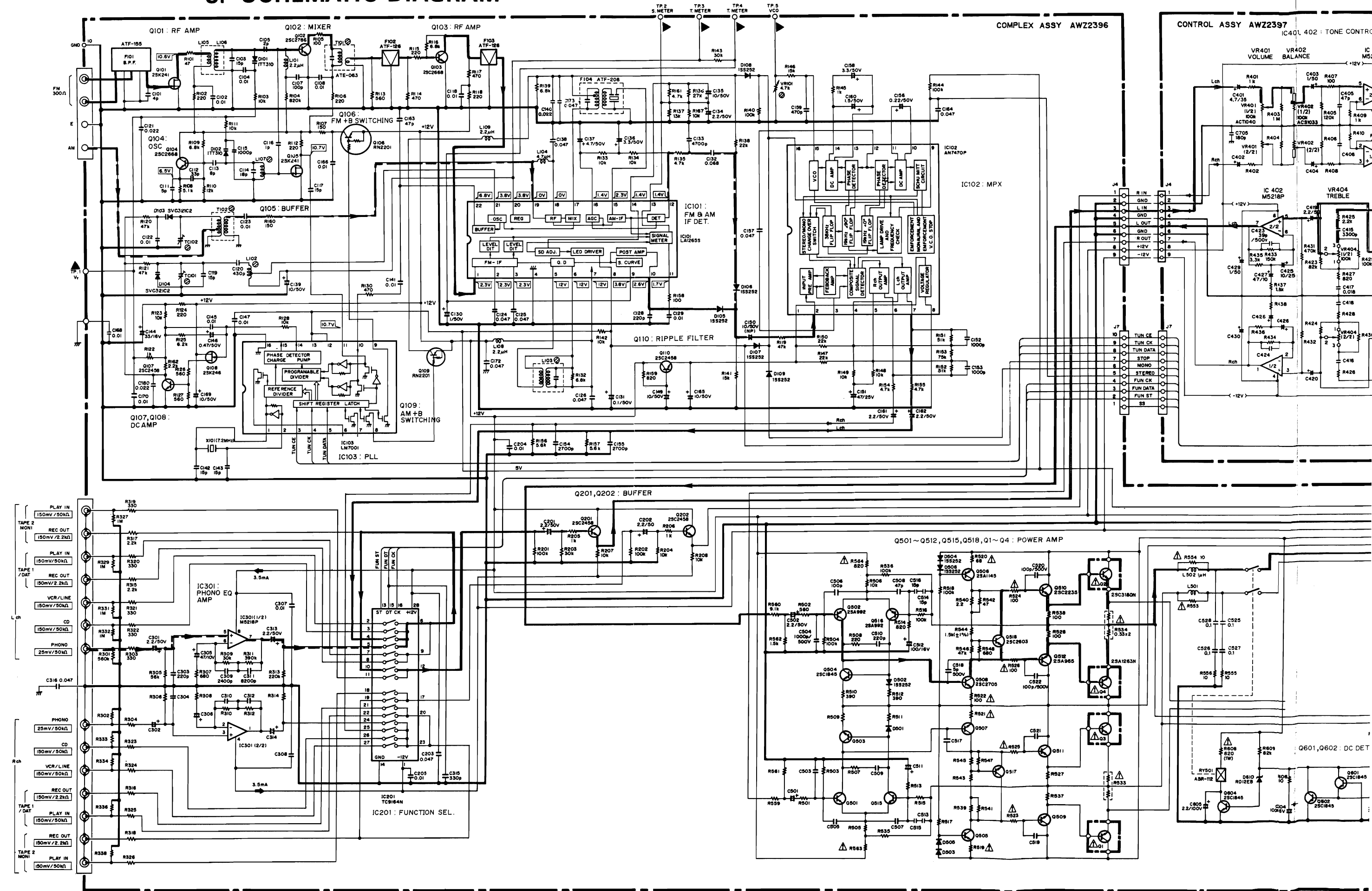
# 3. SCHEMATIC DIAGRAM

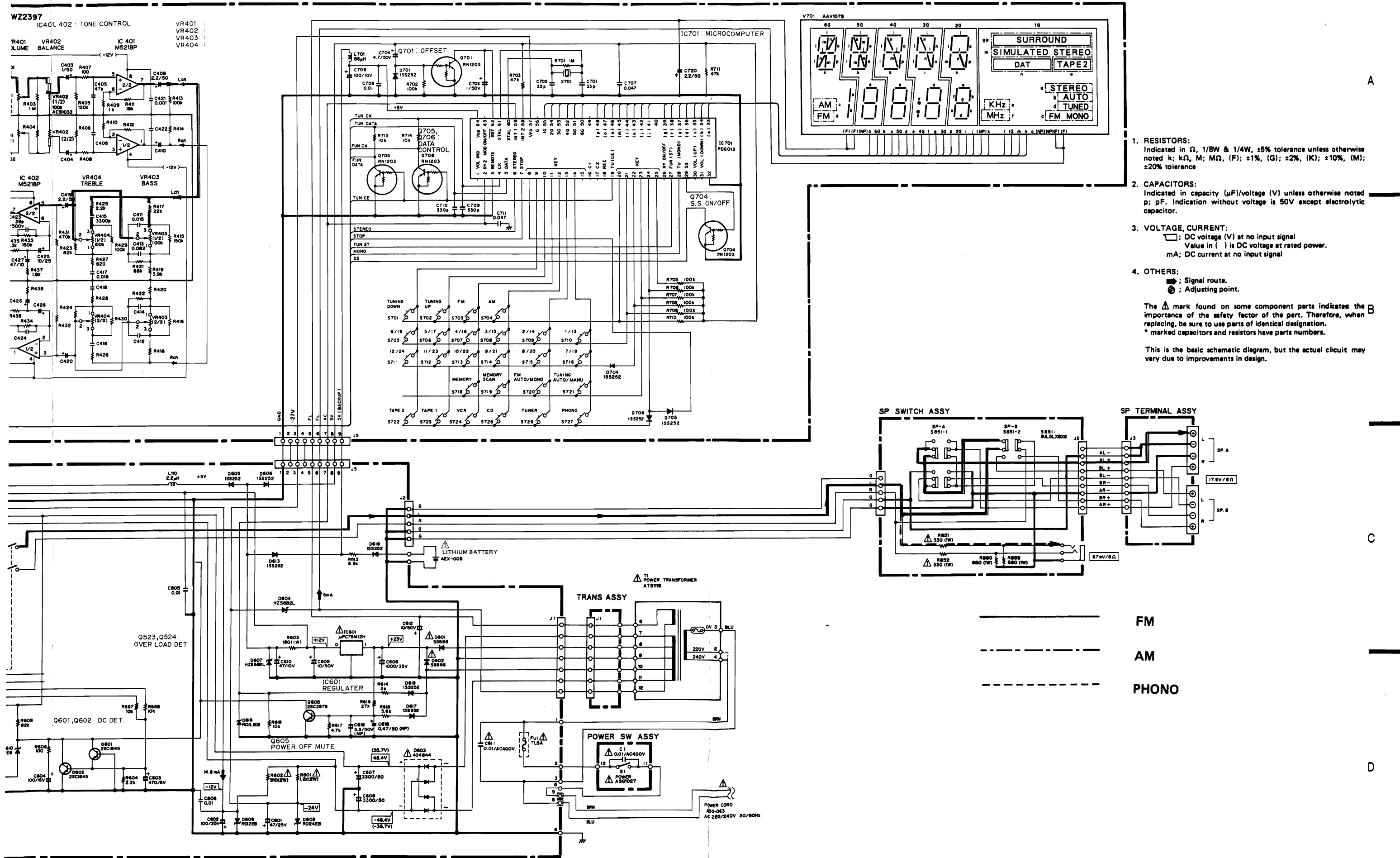
A

B

C

D





1. RESISTORS:  
Indicated in  $\Omega$ , 1/8W & 1/4W,  $\pm 5\%$  tolerance unless otherwise noted k;  $k\Omega$ , M;  $M\Omega$ , (F);  $\pm 1\%$ , (G);  $\pm 2\%$ , (K);  $\pm 10\%$ , (M);  $\pm 20\%$  tolerance
  2. CAPACITORS:  
Indicated in capacity ( $\mu F$ )/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.
  3. VOLTAGE, CURRENT:  
□: DC voltage (V) at no input signal  
Value in ( ) is DC voltage at rated power.  
mA; DC current at no input signal
  4. OTHERS:  
⊛: Signal route.  
⊙: Adjusting point.
- The  $\Delta$  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.  
\* marked capacitors and resistors have parts numbers.
- This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

A

B

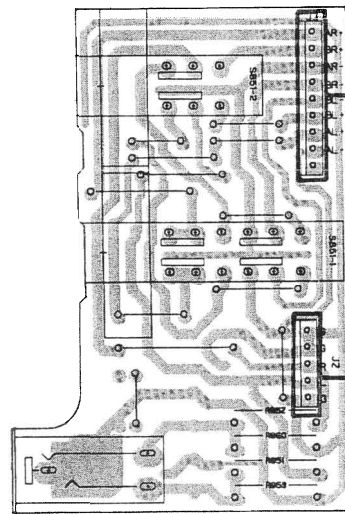
C

D

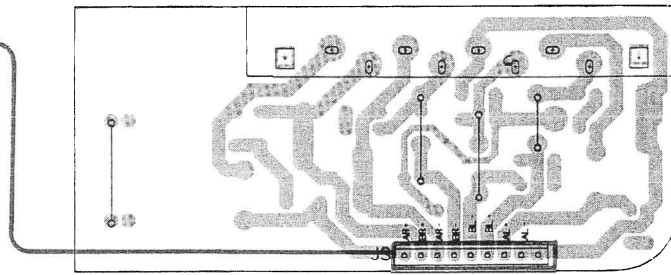
FM  
AM  
PHONO

# 4. P.C. BOARD CONNECTION DIAGRAM

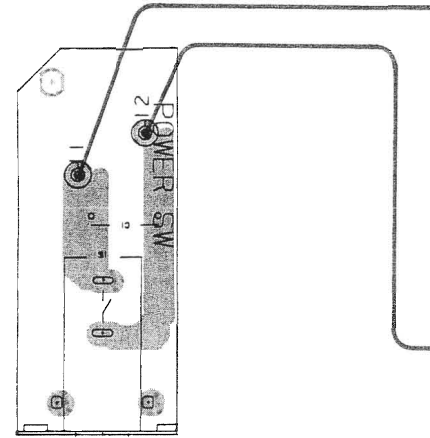
SP SWITCH ASSY



SP TERMINAL ASSY



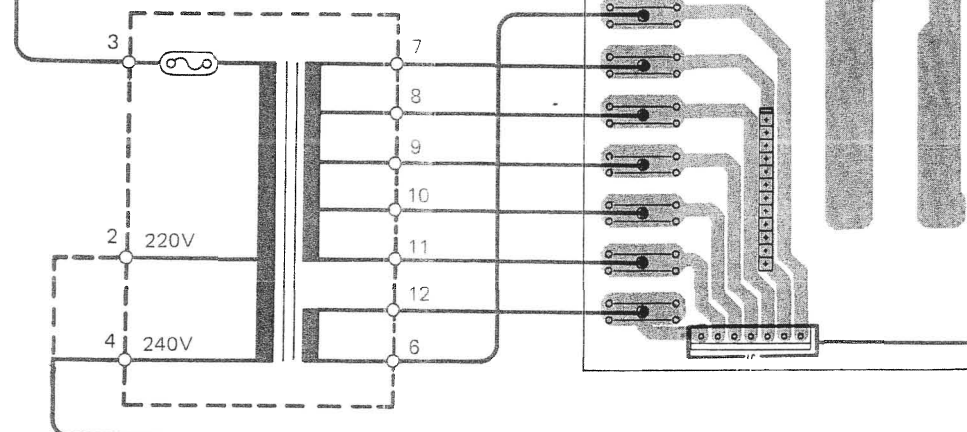
POWER SW ASSY



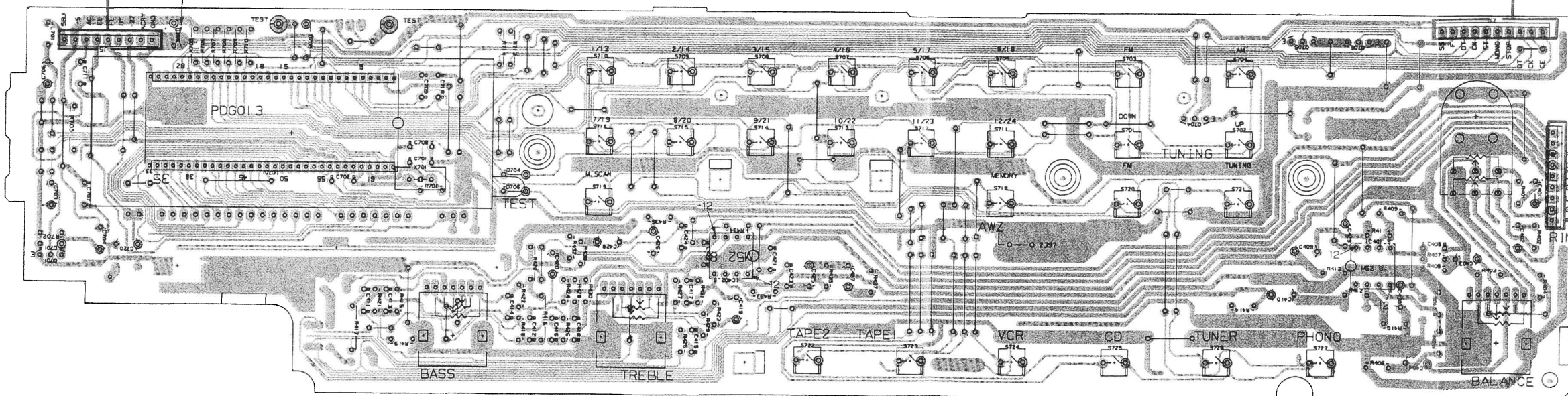
POWER CORD  
ADG-063  
AC 220/240V 50/60Hz

ATTENTION POUR LES  
PRECAUTIONS CONTINUELLES  
CONTR'INCENDIESESTABLES  
A REPLACER DOIVENT ETRE LES  
MEMETYPES ET  
NORMES  
UNIQUEMENT  
CAUTION FOR CONTINUOUS  
PROTECT AGAINST FIRES  
HAZARD REPLACEMENT FUSES  
SHOULD BE OF THE SAME  
TYPE AND RATINGS

T1: ATS1119  
POWER TRANSFORMER



CONTROL ASSY (AWZ2397)



Q701

IC701

IC402

Q704

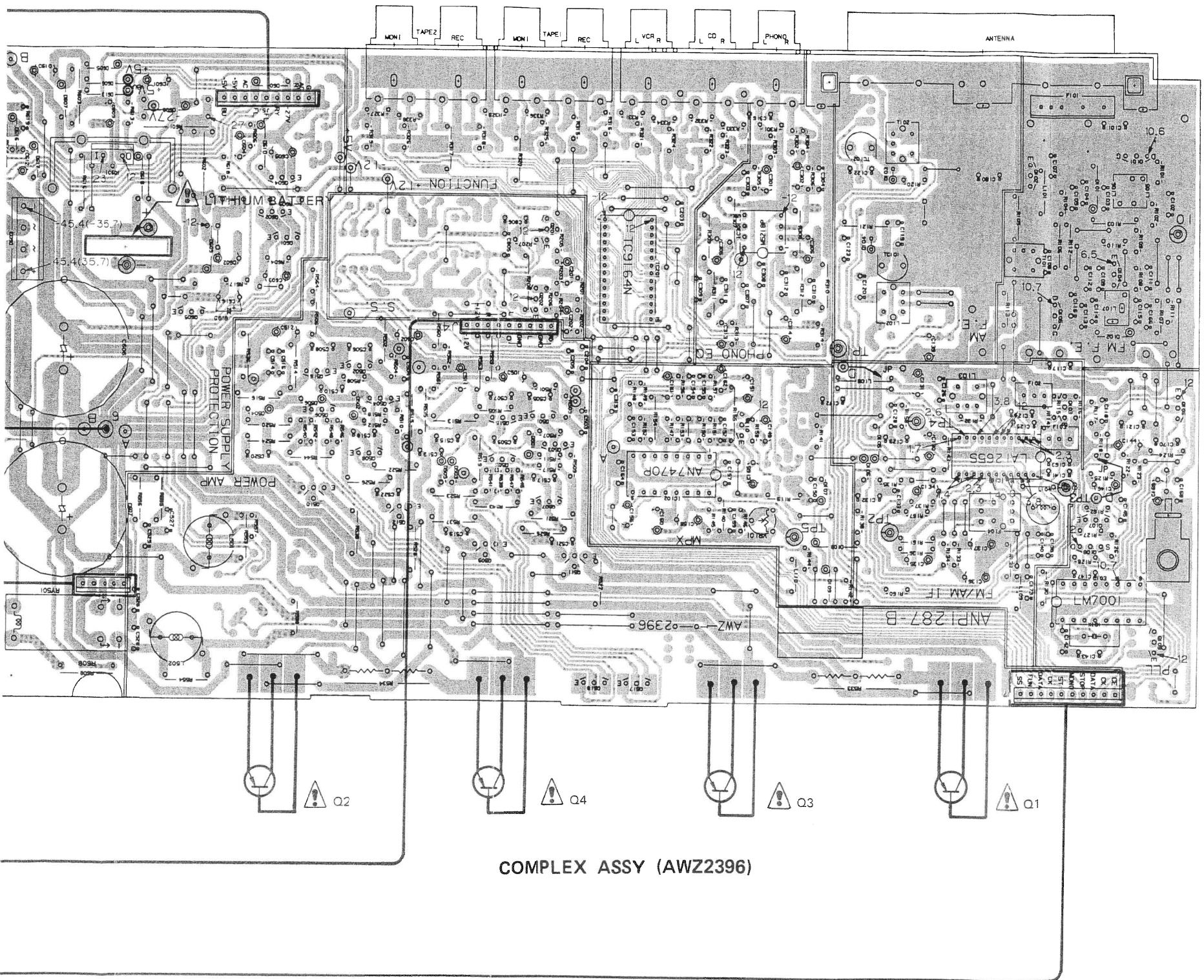
Q705

Q706 IC401

IC601

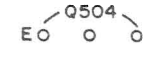
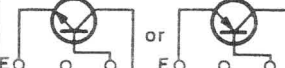
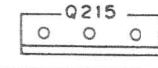
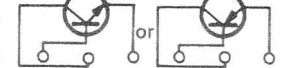
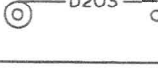
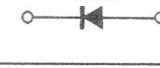
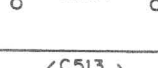
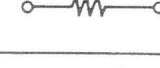
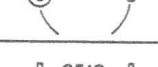
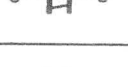




Q516 Q506 Q508 Q507 Q107 Q109  
 Q602 Q604 Q510 Q504 Q202 Q201 Q103 Q108 Q104  
 Q601 Q502 Q512 Q509 Q515 Q503 Q518 Q517 Q505 Q501 Q511 IC201 IC102 Q110 IC301 IC101 Q102 Q105 IC103 Q101 Q106



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 (Polarity)
		Capacitor (Non-polarity)

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

A

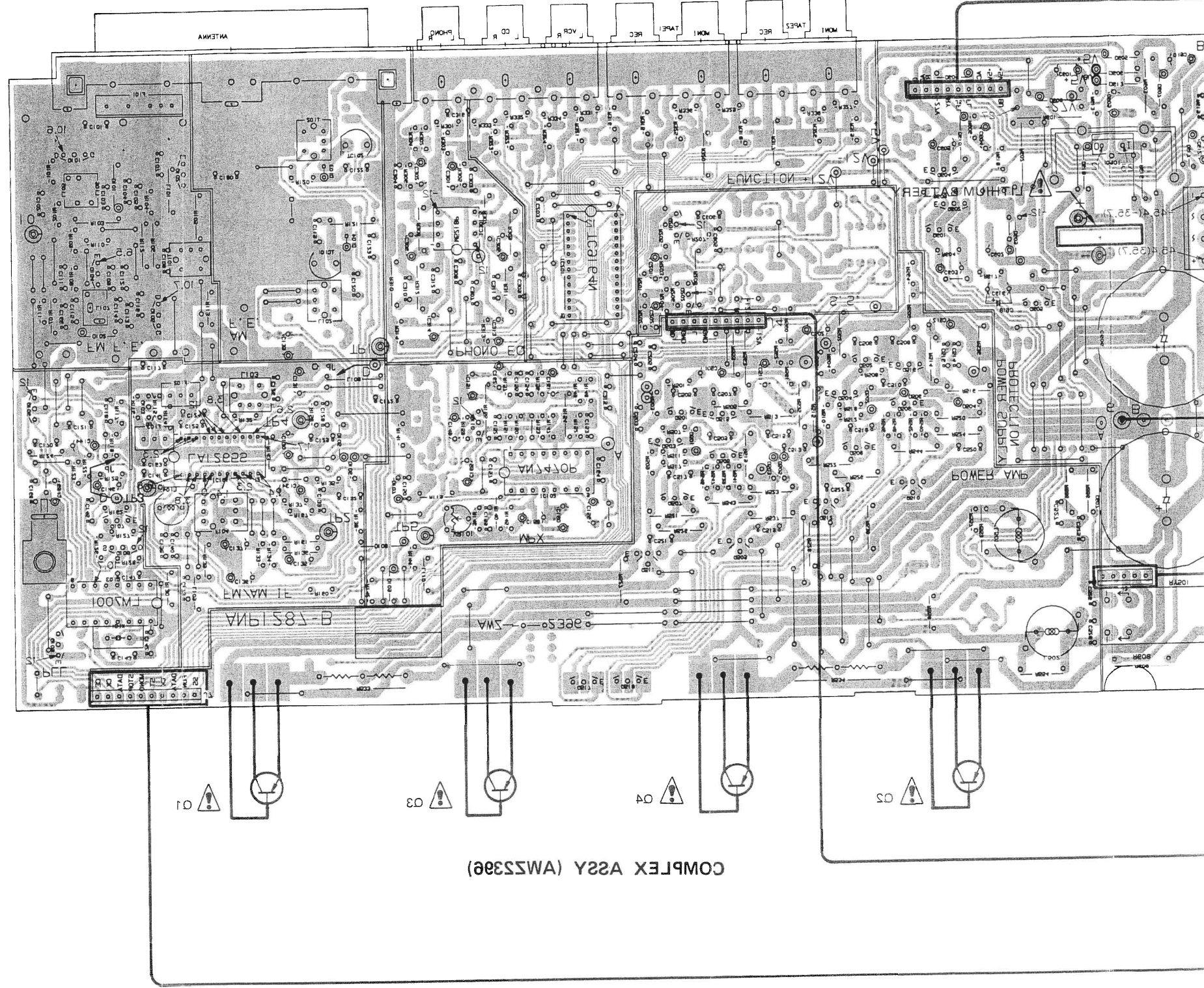
B

C

D

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

IC601 Q601 Q602 Q603 Q604 Q605 Q606 Q607 Q608 Q609 Q610 Q611 Q612 Q613 Q614 Q615 Q616 Q617 Q618 Q619 Q620 Q621 Q622 Q623 Q624 Q625 Q626 Q627 Q628 Q629 Q630 Q631 Q632 Q633 Q634 Q635 Q636 Q637 Q638 Q639 Q640 Q641 Q642 Q643 Q644 Q645 Q646 Q647 Q648 Q649 Q650 Q651 Q652 Q653 Q654 Q655 Q656 Q657 Q658 Q659 Q660 Q661 Q662 Q663 Q664 Q665 Q666 Q667 Q668 Q669 Q670 Q671 Q672 Q673 Q674 Q675 Q676 Q677 Q678 Q679 Q680 Q681 Q682 Q683 Q684 Q685 Q686 Q687 Q688 Q689 Q690 Q691 Q692 Q693 Q694 Q695 Q696 Q697 Q698 Q699 Q700 Q701 Q702 Q703 Q704 Q705 Q706 Q707 Q708 Q709 Q710 Q711 Q712 Q713 Q714 Q715 Q716 Q717 Q718 Q719 Q720 Q721 Q722 Q723 Q724 Q725 Q726 Q727 Q728 Q729 Q730 Q731 Q732 Q733 Q734 Q735 Q736 Q737 Q738 Q739 Q740 Q741 Q742 Q743 Q744 Q745 Q746 Q747 Q748 Q749 Q750 Q751 Q752 Q753 Q754 Q755 Q756 Q757 Q758 Q759 Q760 Q761 Q762 Q763 Q764 Q765 Q766 Q767 Q768 Q769 Q770 Q771 Q772 Q773 Q774 Q775 Q776 Q777 Q778 Q779 Q780 Q781 Q782 Q783 Q784 Q785 Q786 Q787 Q788 Q789 Q790 Q791 Q792 Q793 Q794 Q795 Q796 Q797 Q798 Q799 Q800 Q801 Q802 Q803 Q804 Q805 Q806 Q807 Q808 Q809 Q810 Q811 Q812 Q813 Q814 Q815 Q816 Q817 Q818 Q819 Q820 Q821 Q822 Q823 Q824 Q825 Q826 Q827 Q828 Q829 Q830 Q831 Q832 Q833 Q834 Q835 Q836 Q837 Q838 Q839 Q840 Q841 Q842 Q843 Q844 Q845 Q846 Q847 Q848 Q849 Q850 Q851 Q852 Q853 Q854 Q855 Q856 Q857 Q858 Q859 Q860 Q861 Q862 Q863 Q864 Q865 Q866 Q867 Q868 Q869 Q870 Q871 Q872 Q873 Q874 Q875 Q876 Q877 Q878 Q879 Q880 Q881 Q882 Q883 Q884 Q885 Q886 Q887 Q888 Q889 Q890 Q891 Q892 Q893 Q894 Q895 Q896 Q897 Q898 Q899 Q900 Q901 Q902 Q903 Q904 Q905 Q906 Q907 Q908 Q909 Q910 Q911 Q912 Q913 Q914 Q915 Q916 Q917 Q918 Q919 Q920 Q921 Q922 Q923 Q924 Q925 Q926 Q927 Q928 Q929 Q930 Q931 Q932 Q933 Q934 Q935 Q936 Q937 Q938 Q939 Q940 Q941 Q942 Q943 Q944 Q945 Q946 Q947 Q948 Q949 Q950 Q951 Q952 Q953 Q954 Q955 Q956 Q957 Q958 Q959 Q960 Q961 Q962 Q963 Q964 Q965 Q966 Q967 Q968 Q969 Q970 Q971 Q972 Q973 Q974 Q975 Q976 Q977 Q978 Q979 Q980 Q981 Q982 Q983 Q984 Q985 Q986 Q987 Q988 Q989 Q990 Q991 Q992 Q993 Q994 Q995 Q996 Q997 Q998 Q999



COMPLEX ASSY (AM2396)





# 5. ELECTRICAL PARTS LIST

**NOTES:**

- Parts without part number cannot be supplied.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- 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.
- 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%).

560Ω	56 × 10 <sup>1</sup>	561.....	RD1/4PS	⊙	⊙	⊙	J
47kΩ	47 × 10 <sup>3</sup>	473.....	RD1/4PS	⊙	⊙	⊙	J
0.5Ω	0R5.....		RN2H	⊙	⊙	⊙	K
1Ω	010.....		RS1P	⊙	⊙	⊙	K

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

5.62kΩ	562 × 10 <sup>1</sup>	5621.....	RN1/4SR	⊙	⊙	⊙	F
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**MISCELLANEOUS PARTS**

**P.C. BOARD ASSEMBLIES**

Mark	Symbol & Description	Part No.
	POWER SW ASSY	
	COMPLEX ASSY	AWZ2396
	CONTROL ASSY	AWZ2397
	SP SWITCH ASSY	
	SP TERMINAL ASSY	

**OTHERS**

Mark	Symbol & Description	Part No.
Δ	Q3, Q4 Transistor	2SA1263N
Δ	Q1, Q2 Transistor	2SC3180N
Δ	T1 Power transformer	ATS1119
Δ	FU1 Fuse (T1.25A)	AEK-509
Δ	AC power cord	ADG-063
Δ	Lithium battery (3V)	AEX-008

**POWER SW ASSY**

**SWITCH**

Mark	Symbol & Description	Part No.
Δ	S1	ASG1027

**CAPACITOR**

Mark	Symbol & Description	Part No.
Δ	C1 (0.01μ/AC400V)	ACG1003

**COMPLEX ASSY (AWZ2396)**

**SEMICONDUCTORS**

Mark	Symbol & Description	Part No.
	IC102	AN7470P
	IC101	LA1256S
	IC103	LM7001
	IC301	M5218P
	IC201	TC9164T
	IC601	μPC78M12H
	Q106, Q109	RN2201
	Q505, Q506	2SA1145
	Q511, Q512	2SA965
	Q501, Q502, Q515, Q516	2SA992
	Q503, Q504, Q601, Q602, Q604	2SC1845
	Q509, Q510	2SC2235
	Q107, Q110, Q201, Q202	2SC2458
	Q517, Q518	2SC2603
	Q103, Q104	2SC2668
	Q507, Q508	2SC2705
	Q102	2SC2786
	Q605	2SC2878
	Q101, Q105	2SK241
	Q108	2SK246
	D604, D607	HZS6B2L
	D101, D102	ITT310
	D609, D610	RD12EB
	D608	RD24EB
	D616	RD5.1EB
	D103, D104	SVC321C2
Δ	D601, D602	S5566
	D105-D109, D501-D506,	1SS252
Δ	D605, D606, D613, D617-D619	
	D603	4D4B44

**RELAY**

Mark	Symbol & Description	Part No.
	RY501	ASR-111

**COILS AND TRANSFORMERS**

Mark	Symbol & Description	Part No.
	T102 AM antenna transformer	ATB-095
	T101 FM matching transformer	ATE-063
	L102 AM OSC coil	ATB-114
	L106 FM coil	ATC1002
	L105 FM coil	ATC1004
	L107 FM coil	ATC1011
	L103 FM detector coil	ATE-079
	L501, L502 AF choke coil	ATH1004
	L101, L108-L110 Inductor	LAU2R2M
	L104 Inductor	LTA472J
	F102, F103 FM ceramic filter	ATF-126
	F101 FM band pass filter	ATF-155
	F104 AM ceramic filter	ATF-208

**CAPACITORS**

Mark	Symbol & Description	Part No.
	TC101, TC102	AMC-015
△	C611 (0.0μ/AC400V)	ACG1003
	C606, C607	ACH1119
	C517, C518	CCCSL050C500
	C519-C522	CCCSL101C500
	C128, C303, C304, C509, C510	CCCSL221J50
	C507, C508	CCCSL470J50
	C101	CCDCH040C50
	C113	CCDCH080D50
	C111, C117, C119, C142, C143, C513-C516	CCDCH150J50
	C112	CCDCH330J50
	C103	CCDRH150J50
	C116	CCDSL010C50
	C105	CCDSL020C50
	C107, C505, C506	CCDSL101J50
	C163	CCDSL470J50
	C114	CCDTH180J50
	C618	CEANPR47M50
	C150	CEANP100M50
	C616	CEANP3R3M50
	C156	CEASR22M50
	C146	CEASR47M50
	C131	CEASOR1M50
	C130	CEAS010M50
	C160	CEAS1R5M50

Mark	Symbol & Description	Part No.
	C135, C139, C149, C165, C169, C609, C612	CEAS100M50
	C511, C512, C604	CEAS101M16
	C602	CEAS101M25
	C608	CEAS102M35
	C605	CEAS2R2M100
	C134, C161, C162, C201, C202, C301, C302, C313, C314, C501, C502	CEAS2R2M50
	C136, C158	CEAS3R3M50
	C144	CEAS330M16
	C137	CEAS4R7M50
	C305, C306, C610	CEAS470M10
	C151, C601	CEAS470M25
	C603	CEAS471M6
	C525-C528	CFTXA104J50
	C133	CKCYB472K50
	C121, C140	CKCYF223Z50
	C115	CKDYB102K50
	C503, C504	CKDYB102K500
	C154, C155	CKDYB272K50
	C315	CKDYB331K50
	C102, C104, C108, C118, C122, C123, C129, C141, C145, C147, C166, C168, C170, C204, C205, C307, C308, C805, C806	CKDYF103Z50
	C180	CKDYF223Z50
	C124, C125, C138, C157, C164, C173, C203, C316	CKDYF473Z50
	C126, C172	CKDYX473M25
	C152, C153	CQMA102K50
	C309, C310	CQMA242J50
	C132	CQMAE83J50
	C311, C312	CQMAE22J50
	C120	CQSA411J50
	C159	CQSA411J50

**RESISTORS**

Mark	Symbol & Description	Part No.
	VR101	VRTB6VS472
△	R533, R534 (0.33 x 2)	ACN-13E
	R515, R516	RDR1/4/M1 04J
	R501, R502, R559-R562	RDR1/6IU□□□□
	R555, R556	RD1/4PWF1 00J
△	R519, R520, R527, R528, R537, R538, R553, R554	RD1/4PWF□□□□
	R307-R312, R513, R514, R614	RD1/4PW□□□□



Mark	Symbol & Description	Part No.
△	R521-R526 R543, R544	RFA1/4PS101J RN1/4PQ1501F
△	R603	RS1LMF181J
△	R608	RS1LMF821J
△	R601	RS2LMF122J
△	R602 Other resistors	RS2LMF911J RD1/8PM□□□J

**OTHERS**

Mark	Symbol & Description	Part No.
	X101 Crystal resonator	ASS1005
	4P antenna terminal	AKA1010
	4P pin jack	AKB1007
	6P pin jack	AKB1024

**CONTROL ASSY (AWZ2397)**

**SEMICONDUCTORS**

Mark	Symbol & Description	Part No.
	IC401, IC402 IC701	M5218P PDG013
	Q701, Q704-Q706	RN1203
	D710, Q704-Q706	1SS252

**SWITCHES**

Mark	Symbol & Description	Part No.
	S701-S716, S718-S727	ASG1029

**COIL**

Mark	Symbol & Description	Part No.
	L701 Inductor	LAU560K

**CAPACITORS**

Mark	Symbol & Description	Part No.
	C424	CCCSL390K500
	C701, C702	CCDCH330J50
	C405, C406	CCMSL470J50
	C706	CEAS101M10
	C403, C404, C429, C430, C703	CEJA010M50
	C425, C426	CEJA100M25
	C409, C410, C419, C420, C720	CEJA2R2M50
	C401, C402	CEJA4R7M35
	C704	CEJA4R7M50

Mark	Symbol & Description	Part No.
	C427, C428	CEJA470M10
	C709, C710	CKDYB331K50
	C708	CKDYF103Z50
	C707	CKDYF473Z50
	C711	CKDYX473M25
	C421, C422	CKMYB102K50
	C411, C412	CQMA153J50
	C417, C418	CQMA183J50
	C415, C416	CQMA332J50
	C413, C414	CQMA823J50

**RESISTORS**

Mark	Symbol & Description	Part No.
	VR403, VR404	ACS1032
	VR402	ACS1033
	VR401	ACT1040
	R435, R436 Other resistors	RDR1/6PU332J RD1/8PM□□□J

**OTHERS**

Mark	Symbol & Description	Part No.
	X701 Ceramic oscillator	ASS1004
	V701 Fluorescent indicator tube	AAV1079

**SP SWITCH ASSY**

**SWITCH**

Mark	Symbol & Description	Part No.
	S851	SUL5LXBYS

**RESISTORS**

Mark	Symbol & Description	Part No.
△	R851, R852 R859, R860	RS1PMF33 1J RS1PMF68 1J

**OTHERS**

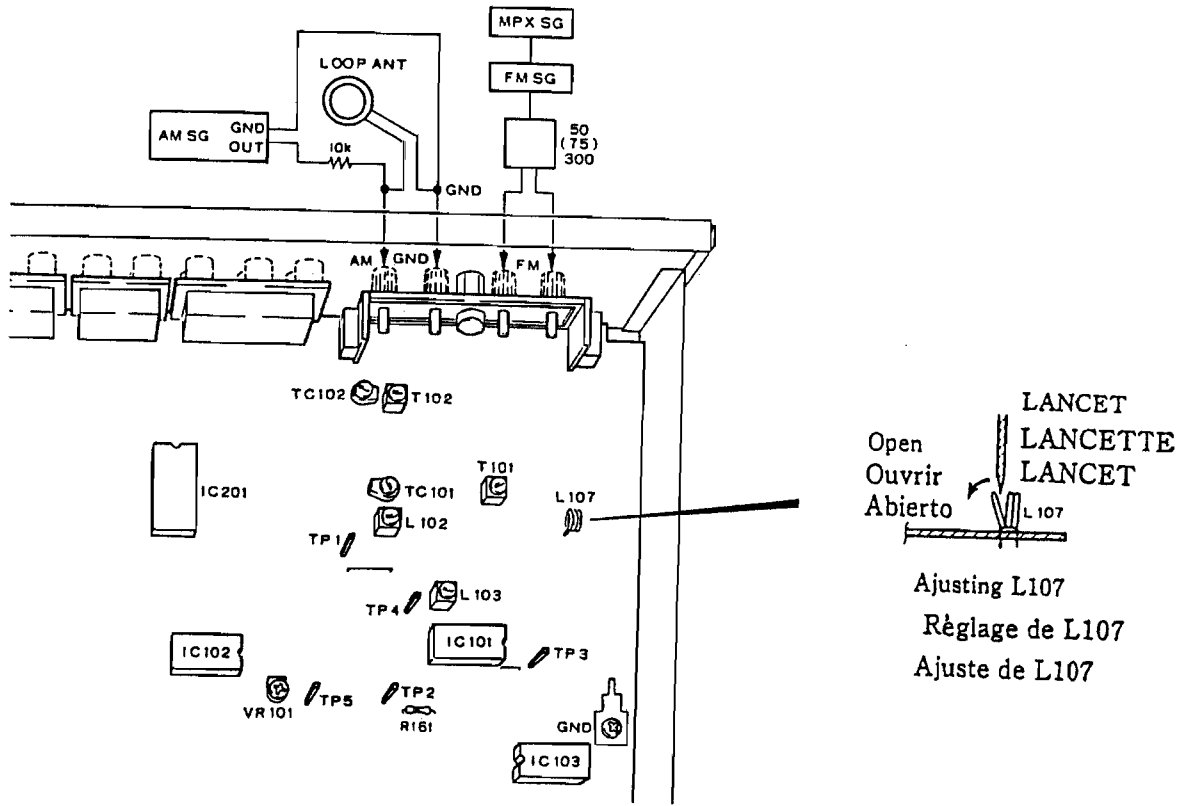
Mark	Symbol & Description	Part No.
	Phone jack	AKN1002

**SP TERMINAL ASSY**

**OTHERS**

Mark	Symbol & Description	Part No.
	8P speaker terminal	AKE-111

## 6. ADJUSTMENTS



## 6.1 ADJUSTMENT FOR HB AND HE TYPES

### FM TUNER SECTION

- Connect the FM signal generator (FM SG) to the FM ANTENNA 300Ω terminal through a 300Ω dummy antenna.
- Set the function to FM.
- Connect the FM multiplex stereo signal generator to the FM SG external modulator terminal. Set the modulation to Main 1 kHz/L + R/±68.25kHz deviation. Pilot 19kHz/±6.75kHz deviation.

Step	FM SG (1kHz, ±75kHz deviation)		Frequency display	Adjustment point	Adjustment procedure
	Frequency	Level			
1	No signal		87.5MHz	—	Check DC voltage between terminal TP1(VT) and ground (2.5V – 4V).
2	98.0MHz	30 to 40 dB	98.0MHz	T101 L107	Adjust DC voltage between IC101 13 pin and ground at maximum.
3	98.0MHz	60dB	98.0MHz	L103	Adjust DC voltage between terminal TP 3 and TP 4 to 0±50mV.
4	98.0MHz	60dB	98.0MHz	VR101	Adjust signal between TP 5(VCO) and ground to 76kHz (within ±200Hz).
	no modulation				

### AM TUNER SECTION

#### MW Tuner Section

- Connect the furnished AM loop antenna between terminals AM ANTENNA and GND.
  - Connect the AM signal generator (AM SG) to the AM ANTENNA terminal through a 10kΩ resistor.
  - Set the function to AM (MW).
- (\*1) One is the channel step frequency of 10kHz and the other is 9kHz. Accordingly, in case of model 10kHz step, the adjustment should be performed by using the frequency of Item "10kHz step" and in case of model 9kHz step, the adjustment should be performed by using the frequency of Item "9kHz step".
- (\*2) Tune the AM SG to the SX-225.

Step	AM SG (400Hz, 30% modulation)			Frequency display (*1)		Adjustment point	Adjustment procedure
	Frequency (*1)		Level	10kHz step	9kHz step		
	10kHz step	9kHz step					
1	No signal			530kHz	531kHz	L102	Adjust DC voltage between terminal TP 1(VT) and ground. (1.3±0.1V)
2	No signal			1700kHz	1602kHz	TC101	Adjust DC voltage between terminal TP 1(VT) and ground. (10±0.3V)
3	Repeat steps 1 and 2 until both specifications become correct.						
4	600kHz(*2)	603kHz(*2)	76dB	600kHz	603kHz	T102	Adjust DC voltage between TP2 and ground at maximum.
5	1400kHz(*2)	1395kHz(*2)	76dB	1400kHz	1395kHz	TC102	
6	Repeat steps 4 and 5 until maximum sensitivity is attained.						
7	1000kHz	999kHz(*2)	45 to 65dB	1000kHz	999kHz	R161 4.7kΩ	However, remove the R161(4.7kΩ) from the COMPLEX assembly if the tuning indicator fails of light up at more than 65dB

**6.1 RÉGLAGES POUR LES TYPES HB ET HE**

**SECTION TUNER FM**

- Connecter le générateur de signaux FM (FM SG) à la borne de 300 ohms de l'antenne FM (FM ANTENNA) par l'intermédiaire d'une antenne factice de 300 ohms.
- Régler la fonction sur FM.
- Connecter le générateur de signaux stéréo multiplex FM à la borne du modulateur externe FM SG. Régler la modulation à Principal 1 kHz/G + D/ ±68,25 kHz d'écart; Pilote 19 kHz/ ±6,75 kHz d'écart.

Etape	FM SG (1kHz, ±75kHz d'écart)		Affichage de fréquence	Point de réglage	Procédure de réglage
	Fréquence	Niveau			
1	Pas de signal		87,5 MHz	—	Vérifier la tension CC entre la borne TP1 (VT) et la terre (2,5 V - 4 V).
2	98,0 MHz	30 à 40 dB	98,0 MHz	T101 L107	Régler la tension CC entre la broche (13) IC101 et la terre au maximum.
3	98,0 MHz	60 dB	98,0 MHz	L103	Régler la tension CC entre les bornes TP3 et TP4 à 0 ±50mV.
4	98,0 MHz	60 dB	98,0 MHz	VR101	Régler le signal entre la borne TP5 (VCO) et la terre à 76 kHz (moins de ±200 Hz).
	sans modulation				

**SECTION TUNER AM**

**Section tuner PO**

- Connecter l'antenne cadre AM fournie entre les bornes d'antenne AM (AM ANTENNA) et de terre (GND).
- Connecter le générateur de signaux AM (AM SG) à la borne d'antenne AM (ANTENNA AM) par l'intermédiaire d'une résistance de 10 kohms.
- Régler la fonction sur AM (MW).

(\*1) Le premier est la fréquence de pas de canaux de 10 kHz et l'autre de 9 kHz. En conséquence, dans le cas du modèle avec pas de 10 kHz, le réglage doit être effectué en utilisant la fréquence de l'article "Pas de 10 kHz" et dans le cas du modèle avec pas de 9 kHz, le réglage doit être effectué en utilisant la fréquence de l'article "Pas de 9 kHz".

(\*2) Accorder le AM GS au SX-225.

Etape	AM SG (400 Hz, modulation de 30%)		Affichage de fréquence (*1)		Point de réglage	Procédure de réglage
	Fréquence (*1)		Niveau			
	Pas de 10kHz	Pas de 9kHz	Pas de 10kHz	Pas de 9kHz		
1	Pas de signal		530 kHz	531 kHz	L102	Régler la tension CC entre la borne TP1 (VT) et la terre (1,3 V ±0,1 V)
2	Pas de signal		1700 kHz	1602 kHz	TC101	Régler la tension CC entre la borne TP1 (VT) et la terre (10 V ±0,3 V)
3	Répéter les étapes 1 et 2 jusqu' à ce que les spécifications soient toutes les deux correctes.					
4	600kHz(*2)	603kHz(*2)	76 dB	600 kHz	603 kHz	T102 Régler la tension CC entre TP2 et la terre au maximum.
5	1400kHz(*2)	1395kHz(*2)	76 dB	1400 kHz	1395 kHz	
6	Répéter les étapes 4 et 5 jusqu' à ce que la sensibilité maximum soit obtenue.					
7	1000 kHz	999kHz(*2)	45 à 65 dB	1000 kHz	999 kHz	(R161 4,7 kohms) Cependant, retirer le R161 (4,7 kohms) de l'ensemble COMPLEX si le témoin d'accord ne s'allume pas à plus de 65 dB.

**6.1 AJUSTE PARA LOS TIPOS HB Y HE**

**SECCIÓN DEL SINTONIZADOR DE FM**

- Conecte el generador de señal de FM (FG SG) al terminal FM ANTENNA 300Ω a través de una antena ficticia de 300Ω.
- Ajuste la función a FM.
- Conecte el generador de señales estéreo múltiplex de FM al terminal del modulador externo del FM SG. Ajuste la modulación de la señal principal a 1 kHz/L + R/ ± 68,25 kHz de desviación, y la señal piloto a 19 kHz/ ± 6,75 kHz de desviación.

Paso	FM SG (1 kHz, +75 kHz de desviación)		Frecuencímetro del	Punto de ajuste	Procedimiento de ajuste
	Frecuencia	Nivel			
1	Sin señal		87,5 MHz	—	Compruebe la tensión de CC entre el terminal TP1 (VT) y masa (2,5V - 2V).
2	98,0 MHz	30 a 40 dB	98,0 MHz	T101 L107	Ajuste al máximo la tensión de CC entre la patilla (13) del IC101 y masa.
3	98,0 MHz	60 dB	98,0 MHz	L103	Ajuste la tensión de CC entre los terminales TP3 y TP4 a 0 ± 50 mV.
4	98,0 MHz	60 dB	98,0 MHz	VR101	Ajuste la señal entre el terminal TP5 (VCO) y masa a 76 kHz (dentro de ± 200 Hz).
	Sin modulación				

**SECCIÓN DEL SINTONIZADOR DE AM**

**Sección del sintonizador de MW**

- Conecte la antena de cuadro de AM suministrada entre los terminales AM ANTENNA y GND.
  - Conecte el generador de señales de AM (AM SG) al terminal AM ANTENNA a través de un resistor de 10 kilohmios.
  - Ajuste la función a AM (MW).
- (\*1) Uno es el de frecuencia de separación entre canales de 10 kHz, y el otro de 9 kHz. Por consiguiente, en el caso del modelo de separación de 10 kHz, el ajuste deberá realizarse empleando la frecuencia del ítem "separación de 10 kHz", y en el caso del modelo de 9 kHz, el ajuste deberá realizarse empleando la frecuencia del ítem "separación de 9 kHz".
- (\*2) Sintonice el AM SG con el SX-225.

Paso	AM SG (400 Hz, modulación al 30%)			Frecuencímetro del(*1)		Punto de ajuste	Procedimiento de ajuste
	Frecuencia (*1)		Nivel	Separación de 10 kHz	Separación de 9 kHz		
	Separación de 10 kHz	Separación de 9 kHz					
1	Sin señal			530 kHz	531 kHz	L102	Ajuste la tensión de CC entre el terminal TP1 (VT) y masa (1,3 ± 0,1V).
2	Sin señal			1700 kHz	1602 kHz	TC101	Ajuste la tensión de CC entre el terminal TP1 (VT) y masa (10 ± 0,3V).
3	Repita los pasos 1 y 2 hasta que ambas especificaciones sean correctas.						
4	600kHz(*2)	603kHz(*2)	76 dB	600 kHz	603 kHz	T102	Ajuste al máximo la tensión de CC entre el terminal TP2 y masa.
5	1400kHz(*2)	1395kHz(*2)	76 dB	1400 kHz	1395 kHz	TC102	
6	Repita los pasos 4 y 5 hasta obtener la sensibilidad máxima.						
7	1000 kHz	999 kHz (*2)	45 a 65 dB	1000 kHz	999 kHz	R161 4,7 kilohmios	Sin embargo, si el indicador de sintonía no se enciende a más de 65 dB, desconecte R161 (4,7 kilohmios) del conjunto COMPLEX.

**6.2 ADJUSTMENT FOR HEZ TYPE**

- This adjustment procedure is for only the adjustment (FM tuner adjustment Step I) which is different from that for the SX-225/HEZ type.

**FM Tuner Adjustment**

Step	FM SG (1kHz ± 75kHz deviation)		Frequency display	Adjustment point	Adjustment procedure	
	Frequency	Level				
I	1	90.0MHz	30 to 40dB	90.0MHz	L902,T901,L903 (AWB1004)	
	2	106.0MHz	30 to 40dB	106.0MHz	TC901,T901,L903 (AWB1004)	Adjustment until DC voltage between IC101 13pin (FM S-METER) and ground is at maximum.
	3	90.0MHz	30 to 40dB	90.0MHz	L902 (AWB1004)	
	4	Repeat step 2 and 3 until the DC voltage between IC101 13pin (FM S-METER) and GND is at maximum. Step 3 should always be the last step performed.				
5	98.0MHz	30 to 40dB	98.0MHz	T902(AWB1004)	Adjustment until DC voltage between IC101 13pin (FM S-METER) and ground is at maximum.	
II	6	98.0MHz	60dB	98.0MHz	L103	Adjust DC voltage between terminal TP 3 and TP 4 to 0 ± 50mV
	7	98.0MHz	60dB	98.0MHz	VR101	Adjust signal between TP 5(VCO) and ground to 76kHz (within ± 200Hz).

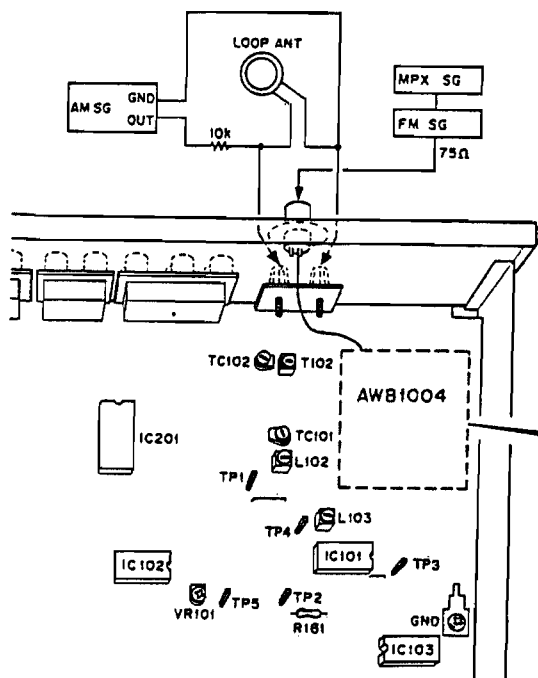
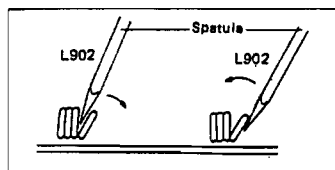


Fig. 6-1 Adjustment point



To make the output maximum by opening and closing of the first right side turn of the coil.

Fig. 6-3 Adjustment tuning

As the adjusting method for the AM tuner is the same as that for the HB and HE types, refer to 23 page.

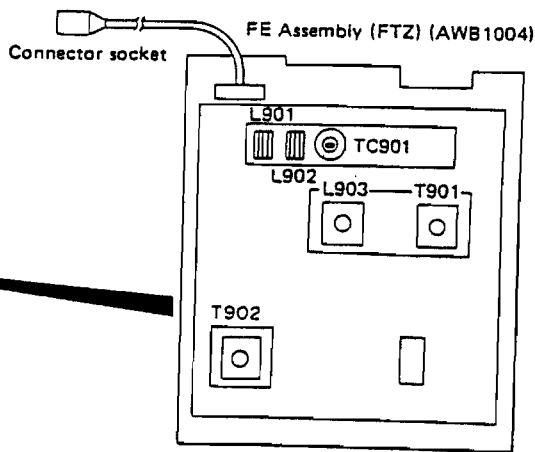


Fig. 6-2 Adjustment point of FE Assembly



Use a spatula whose an edge is thin. The spatula is not metal (ex. Glass-Cloth Epoxy Resin).

SPATULA

**6.2 RÉGLAGE POUR LE TYPE HEZ**

- Ce réglage n'est à effectuer que lorsque le réglage (réglage de tuner FM, Etape 1) est différent de celui pour le type SX-225/HEZ.

**Réglage Tuner FM**

Etape	FM SG (1 kHz, ±75 kHz d'écart)		Affichage de fréquence	Point de réglage	Procédure de réglage	
	Fréquence	Niveau				
I	1	90,0 MHz	30 à 40 dB	90,0 MHz	Réglage jusqu'à ce que la tension CC entre la broche 13 de IC101 (S-METRE FM) et la terre soit au maximum.	
	2	106,0 MHz	30 à 40 dB	106,0 MHz		
	3	90,0 MHz	30 à 40 dB	90,0 MHz		
	4	Répéter les étapes 2 et 3 jusqu'à ce que la tension CC entre la broche 13 de IC101 (S-METRE FM) et la terre soit au maximum. L'étape 3 doit toujours être effectuée en dernier.				
5	98,0 MHz	30 à 40 dB	98,0 MHz	T902 (AWB1004)	Réglage jusqu'à ce que la tension CC entre la broche 13 de IC101 (S-METRE FM) et la terre soit au maximum.	
II	6	98,0 MHz	60 dB	98,0 MHz	L103	Régler la tension CC entre les bornes TP3 et TP4 à 0 ±50mV
	7	98,0 MHz	60 dB	98,0 MHz	VR101	Régler le signal entre la borne TP5 (VCO) et la terre à 76 kHz (moins de ±200 Hz).

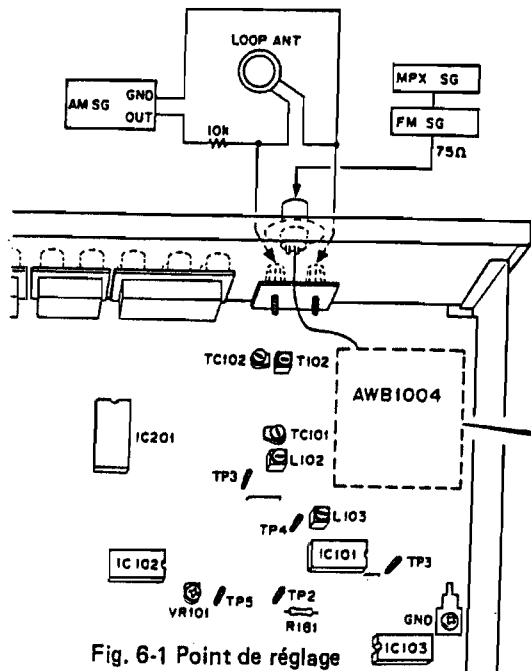
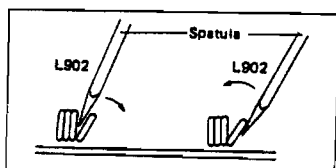


Fig. 6-1 Point de réglage



Pour obtenir une sortie maximale en ouvrant et fermant la spire à l'extrémité droite de la bobine.

Fig. 6-3 Accord de réglage

La méthode d'ajustement de la radio AM est la même que celle des types HB et HE, se référer à la page 24.

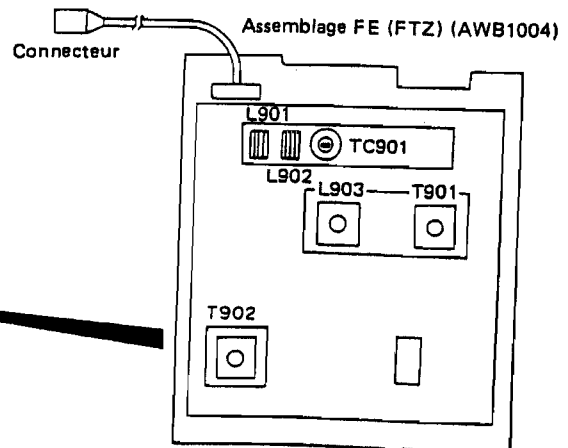


Fig. 6-2 Point de réglage de l'assemblage FE



Utiliser une spatule à bord fin. Elle ne doit pas être en métal (ex. résine époxy tissu de verre)

SPATULE

**6.2 AJUSTE PARA EL TIPO HEZ**

- Este procedimiento de ajuste es solamente el ajuste (paso I de ajuste del sintonizador de FM) que es diferente al del tipo SX-225/HEZ.

**Ajuste del sintonizador de FM**

Paso	Señal de FM (1 kHz, desviación ± 75 kHz)		Presentación de frecuencia	Punto de ajuste	Procedimiento de ajuste	
	Frecuencia	Nivel				
I	1	90 MHz	30 a 40 dB	90 MHz	L902, T901, L903 (AWB1004)	
	2	106 MHz	30 a 40 dB	106 MHz	TC901, T901, L903 (AWB1004)	
	3	90 MHz	30 a 40 dB	90 MHz	L902 (AWB1004)	
4	Repita los pasos 2 y 3 hasta que la tensión de CC entre la patilla 13 del IC101 (FM S-METER) y puesta a tierra (GND) se encuentre al máximo. El paso 3 siempre debe ser el último paso realizado.					
5	98 MHz	30 a 40 dB	98 MHz	T902 (AWB1004)	Ajuste hasta que la tensión de CC entre la patilla 13 del IC101 (FM S-METER) y puesta a tierra se encuentre al máximo.	
II	6	98,0 MHz	60 dB	98,0 MHz	L103	Ajuste la tensión de CC entre los terminales TP3 y TP4 a 0±50 mV.
	7	98,0 MHz	60 dB	98,0 MHz	VR101	Ajuste la señal entre el terminal TP5 (VCO) y masa a 76 kHz (dentro de ±200 Hz).

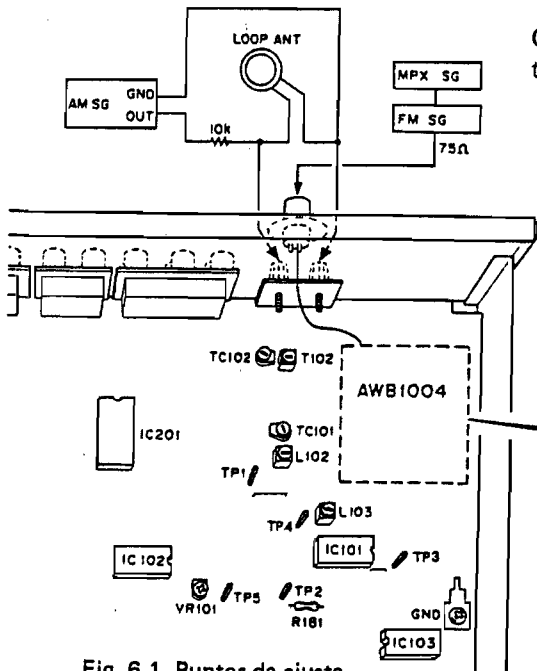
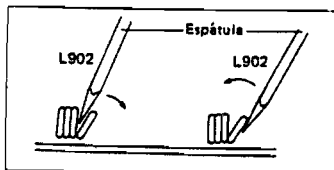


Fig. 6-1 Puntos de ajuste



Ajuste al máximo la salida abriendo y cerrando la primera espira de la derecha de la bobina.

Fig. 6-3 Ajuste de la sintonía

Como el método de ajuste del sintonizador de AM es igual que para los tipos HB y HE, consulte la página 25.

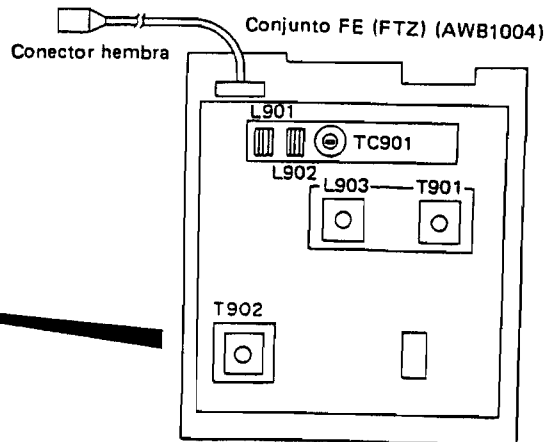


Fig. 6-2 Puntos de ajuste del conjunto FE



Emplee una espátula cuyo borde sea fino. La espátula no deberá ser de metal (p. ej. resina epoxídica con fibra de vidrio)

ESPÁTULA



## 7. FOR HE AND HEZ TYPES

### 7.1 CONTRAST OF MISCELLANEOUS PARTS

**NOTES:**

- Parts without part number cannot be supplied.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- 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.

The SX-225/HE and HEZ types are the same as the SX-225/HB type with the exception of the following sections.

Mark	Symbol & Description	Part No.		
		SX-225/HB	SX-225/HE	SX-225/HEZ
	COMPLEX ASSY	AWZ2396	AWZ2396	AWZ2400
	CONTROL ASSY	AWZ2397	AWZ2397	AWZ2401
	SP SWITCH ASSY	Non supply	Non supply	Non supply
	SP TERMINAL ASSY	Non supply	Non supply	Non supply
	TRANS ASSY	...	...	Non supply
	FE ASSY	...	...	AWB1004
Δ	AC power cord	ADG-063	ADG1021	ADG1010
Δ	Capacitor(C2)	...	...	ACE-507
	Ceramic capacitor(C3)	...	...	CKDYB102K50
Δ	Fuse(FU1)	AEK-511	AEK-018	AEK-018
	Antenna set	AEA1002	AEA1002	...
	FM antenna ASSY	...	...	ADH1002
	Loop antenna ASSY	...	...	ATB-113
	Resistor	...	...	RD1/4PMF100J
	PAL socket	...	...	AKX1029
	Operating instructions(English)	ARB1163	...	...
	Operating instructions (English/German/French/Italian/ Dutch/Swedish/Spanish/Portuguese)	...	ARE1110	...
	Operating instructions(German)	...	...	ARC1128
	Nut M12	...	...	NKX2FN1
	Earth screw	...	...	ABA1047

**7.2 LINE VOLTAGE SELECTION FOR HB AND HE TYPES**

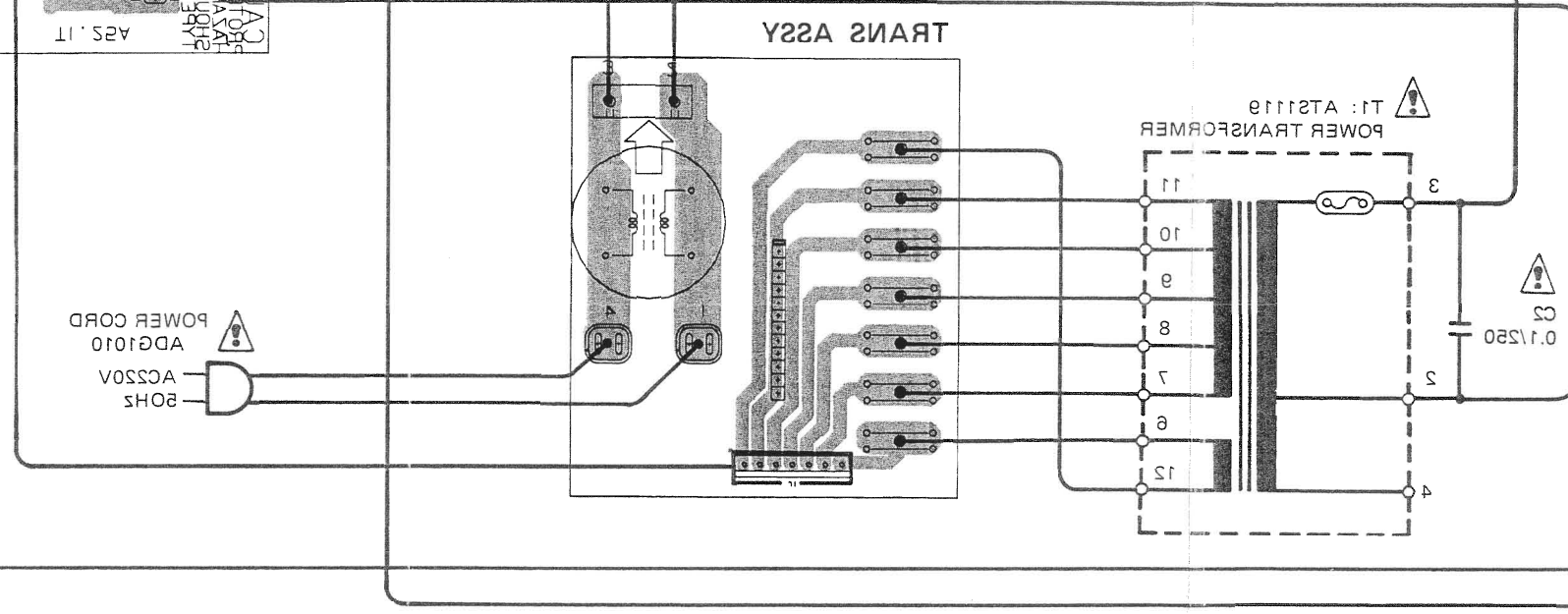
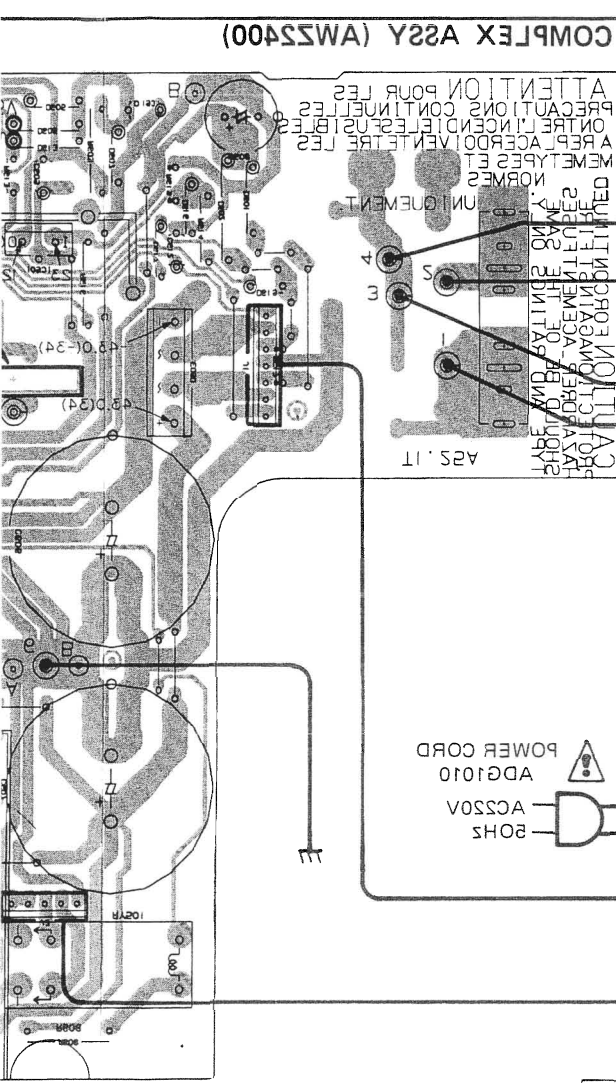
Line voltage can be changed with following steps.

1. Disconnect the AC power cord.
2. Remove the top cover.
3. Change the connection wire (To Power transformer) of Terminal No. 2 or No. 4 (BRN) as follows.

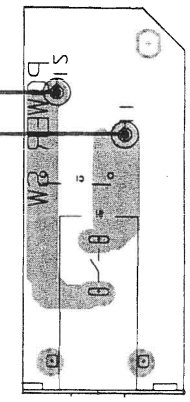
Voltage	Terminal No. 2	Terminal No. 4
220V	BRN wire	.....
240V	.....	BRN wire

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

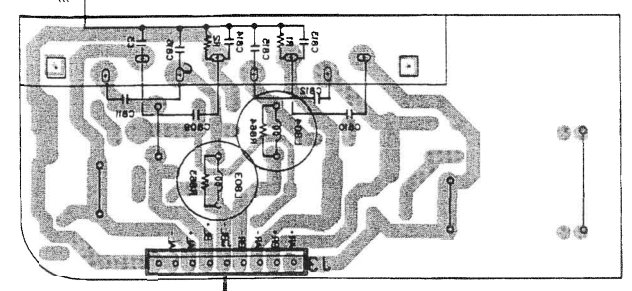
Description	Part No.
220V label	AAX-193
240V label	AAX-192



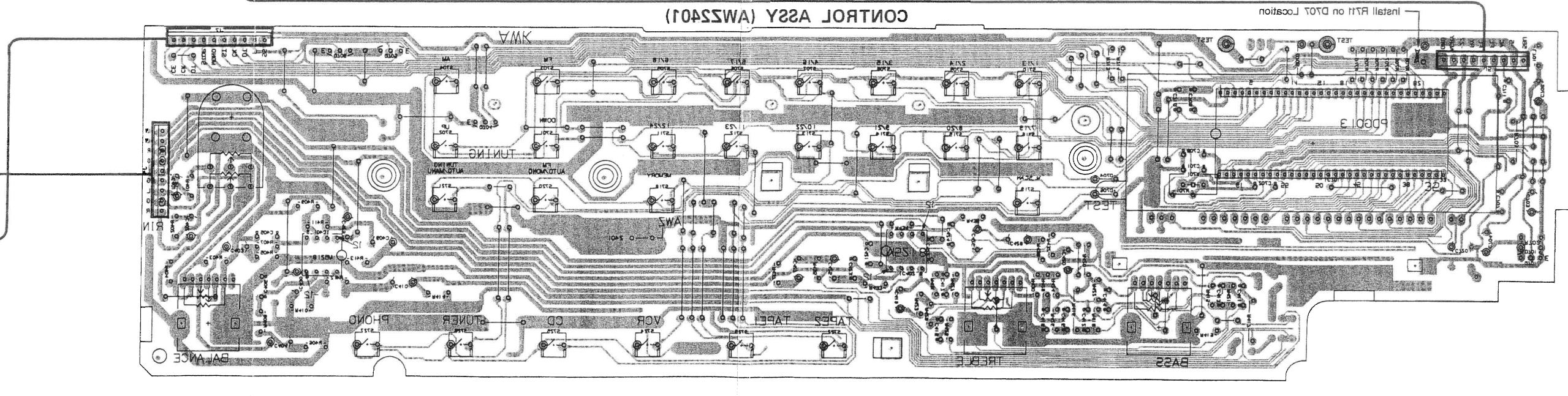
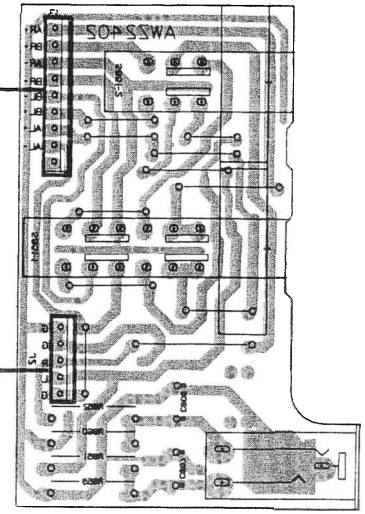
POWER SW ASSY



2P TERMINAL ASSY



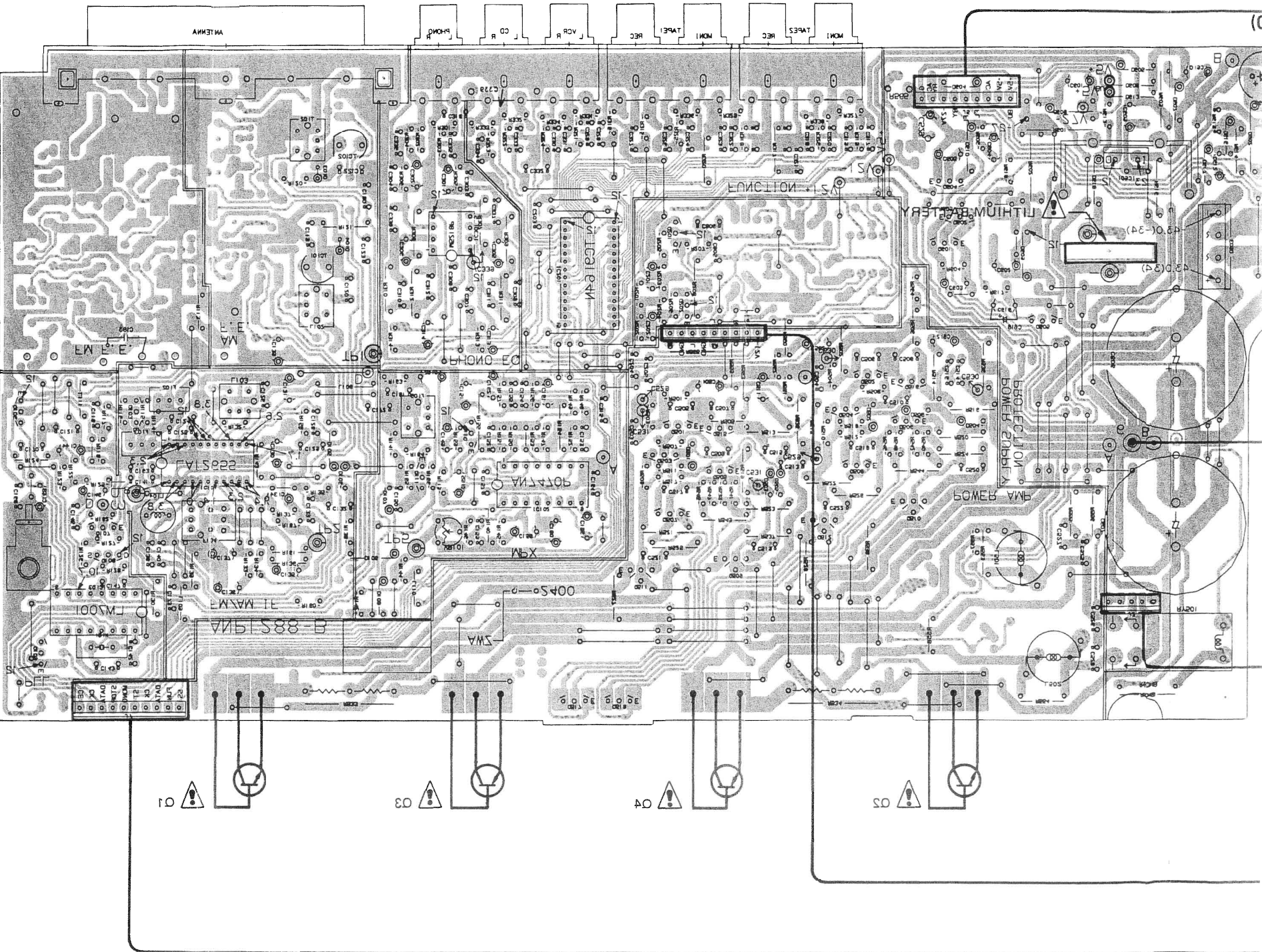
2P SWITCH ASSY



0201 0202 0203 0204 0205 0206 IC401

A  
B  
C  
D

IC801 IC802 IC803 IC804 IC805 IC806 IC807 IC808 IC809 IC810 IC811 IC812 IC813 IC814 IC815 IC816 IC817 IC818 IC819 IC820 IC821 IC822 IC823 IC824 IC825 IC826 IC827 IC828 IC829 IC830 IC831 IC832 IC833 IC834 IC835 IC836 IC837 IC838 IC839 IC840 IC841 IC842 IC843 IC844 IC845 IC846 IC847 IC848 IC849 IC850 IC851 IC852 IC853 IC854 IC855 IC856 IC857 IC858 IC859 IC860 IC861 IC862 IC863 IC864 IC865 IC866 IC867 IC868 IC869 IC870 IC871 IC872 IC873 IC874 IC875 IC876 IC877 IC878 IC879 IC880 IC881 IC882 IC883 IC884 IC885 IC886 IC887 IC888 IC889 IC890 IC891 IC892 IC893 IC894 IC895 IC896 IC897 IC898 IC899 IC900



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

A

B

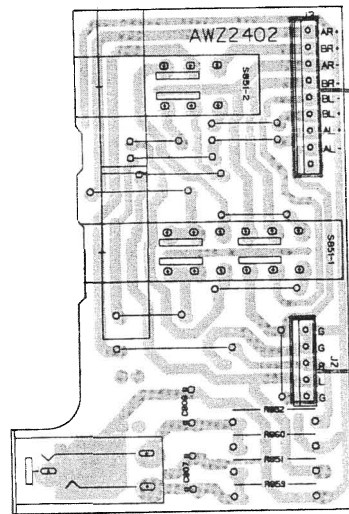
C

D

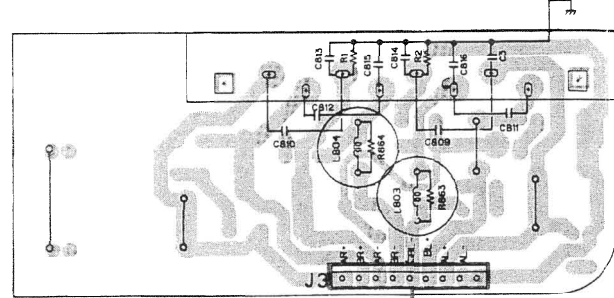


7,3,3 P.C. BOARD CONNECTION DIAGRAM

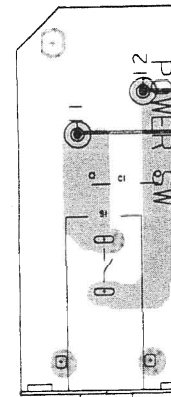
SP SWITCH ASSY



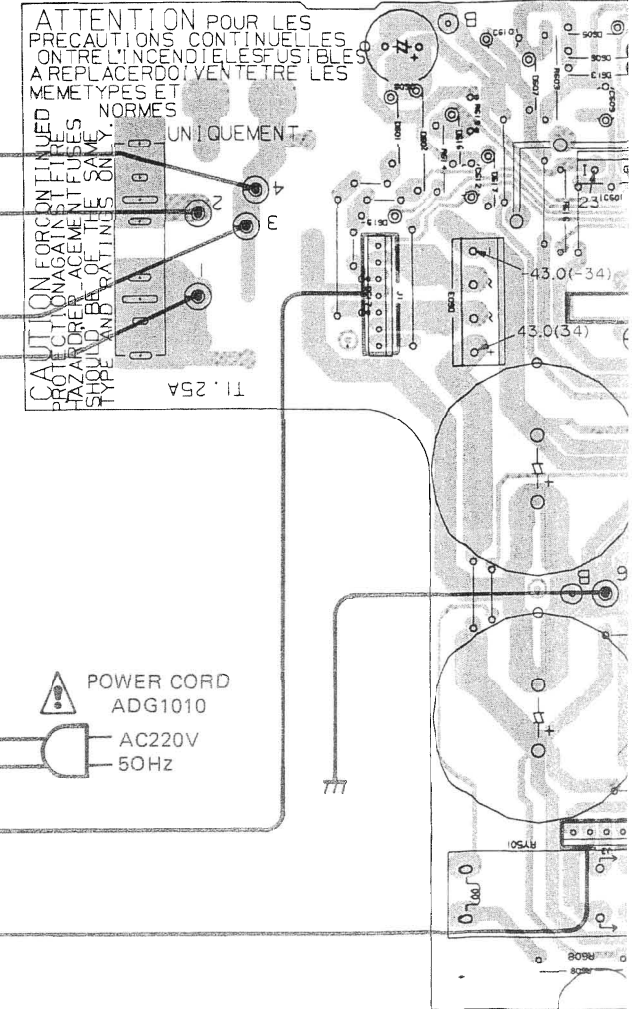
SP TERMINAL ASSY



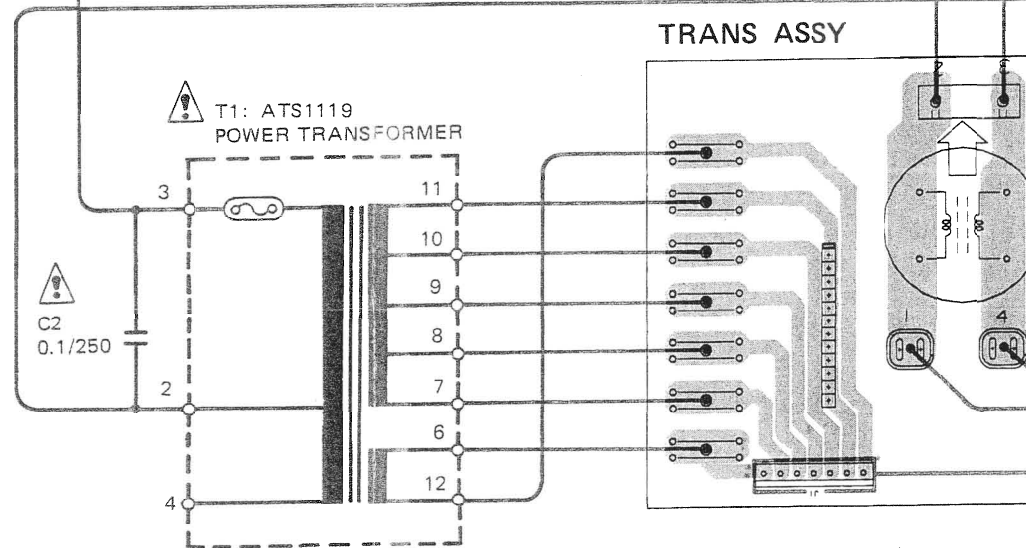
POWER SW ASSY



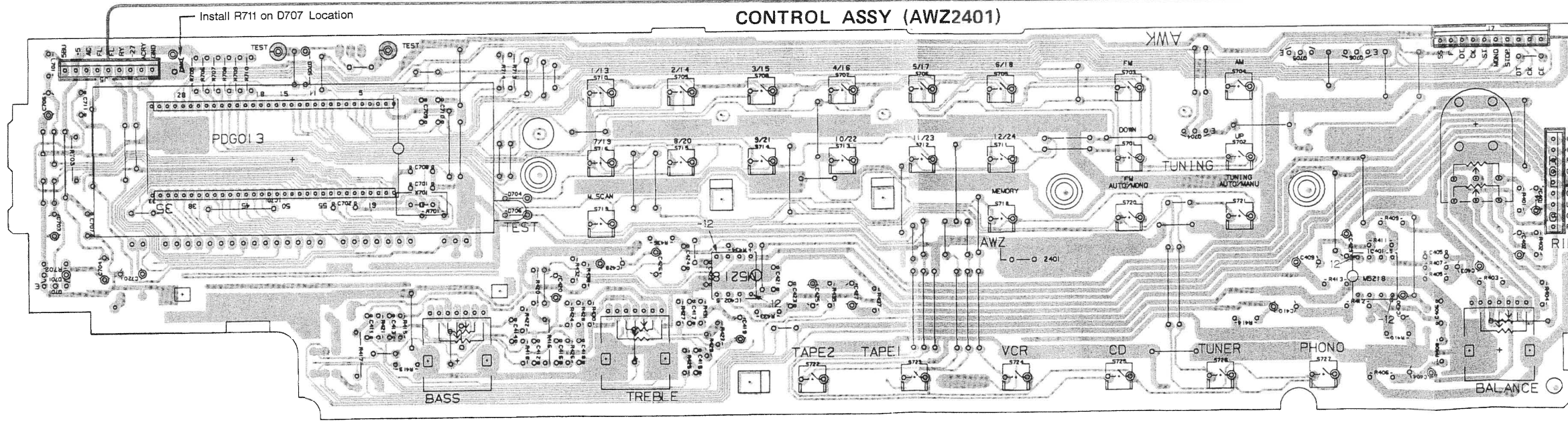
COMPLEX ASSY (AWZ2400)



TRANS ASSY



CONTROL ASSY (AWZ2401)



Q701

IC701

IC402

Q704

Q705 Q706 IC401



A

B

C

D

COMPLEX ASSY AWZ2400

CONTROL ASSY AWZ2401

IC401 402 : TONE CONTROL

VR401 VOLUME BALANCE IC 401 M5218P

VR402 TREBLE VR403 BASS

VR404

VR405

VR406

VR407

VR408

VR409

VR410

VR411

VR412

VR413

VR414

VR415

VR416

VR417

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VR485

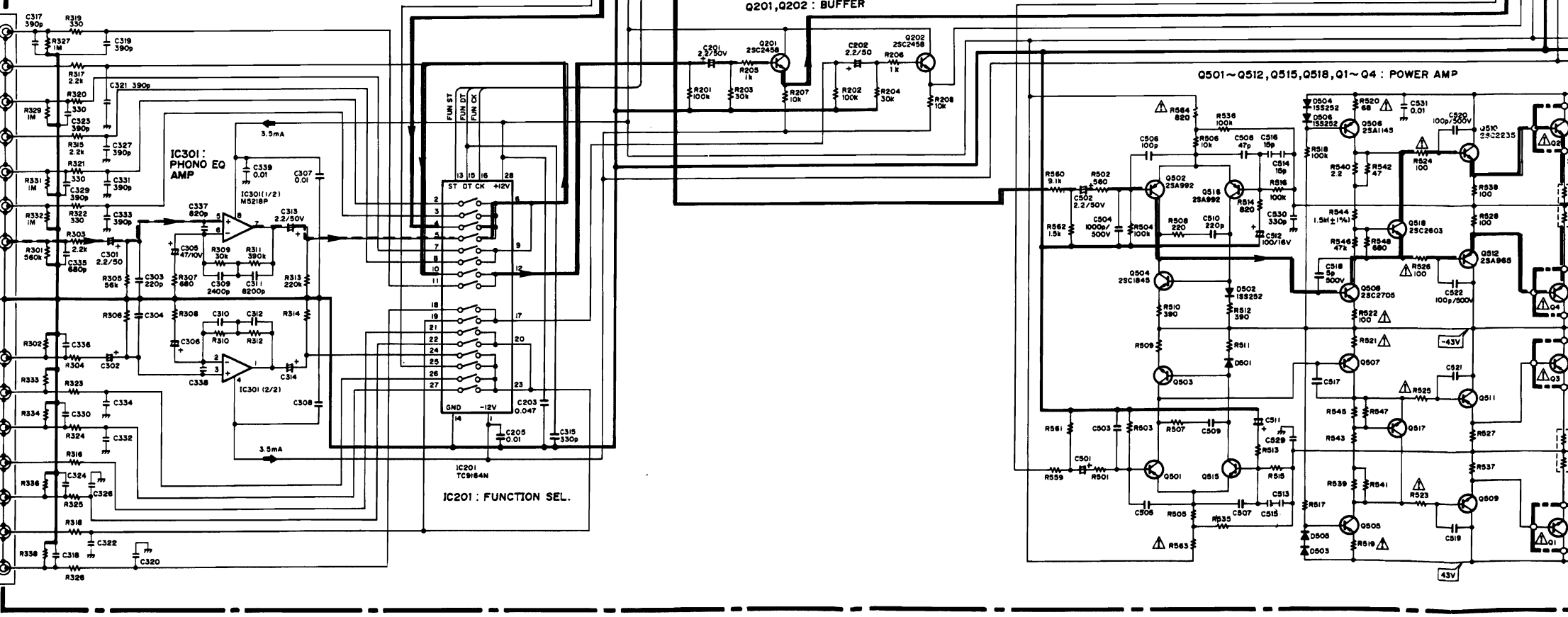
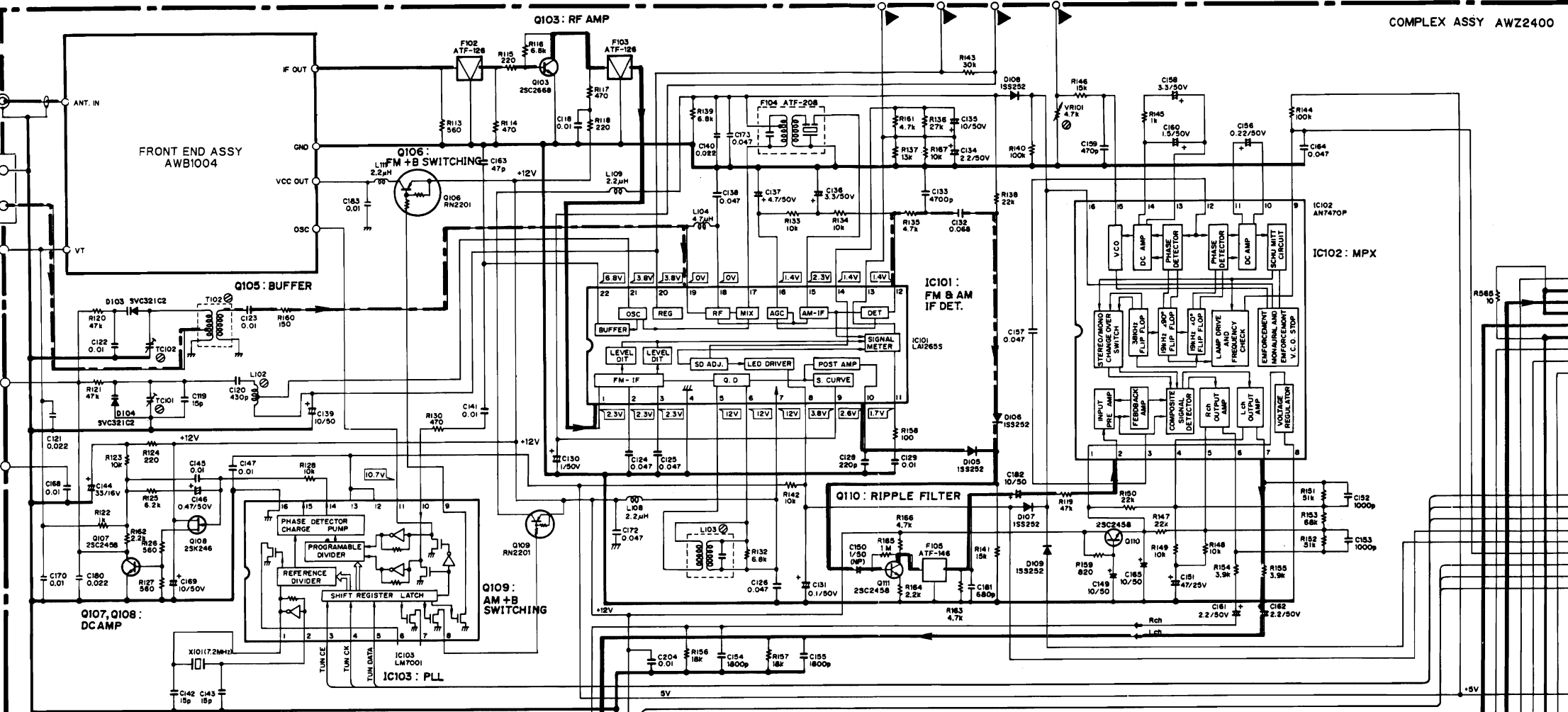
VR486

VR487

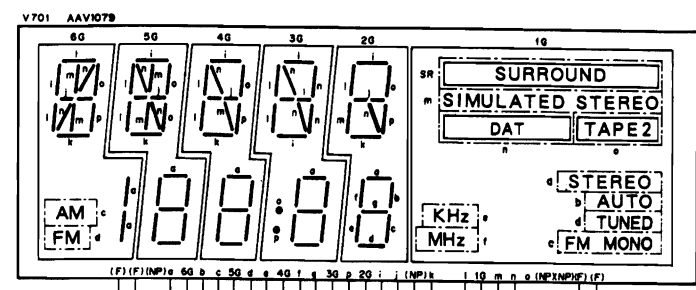
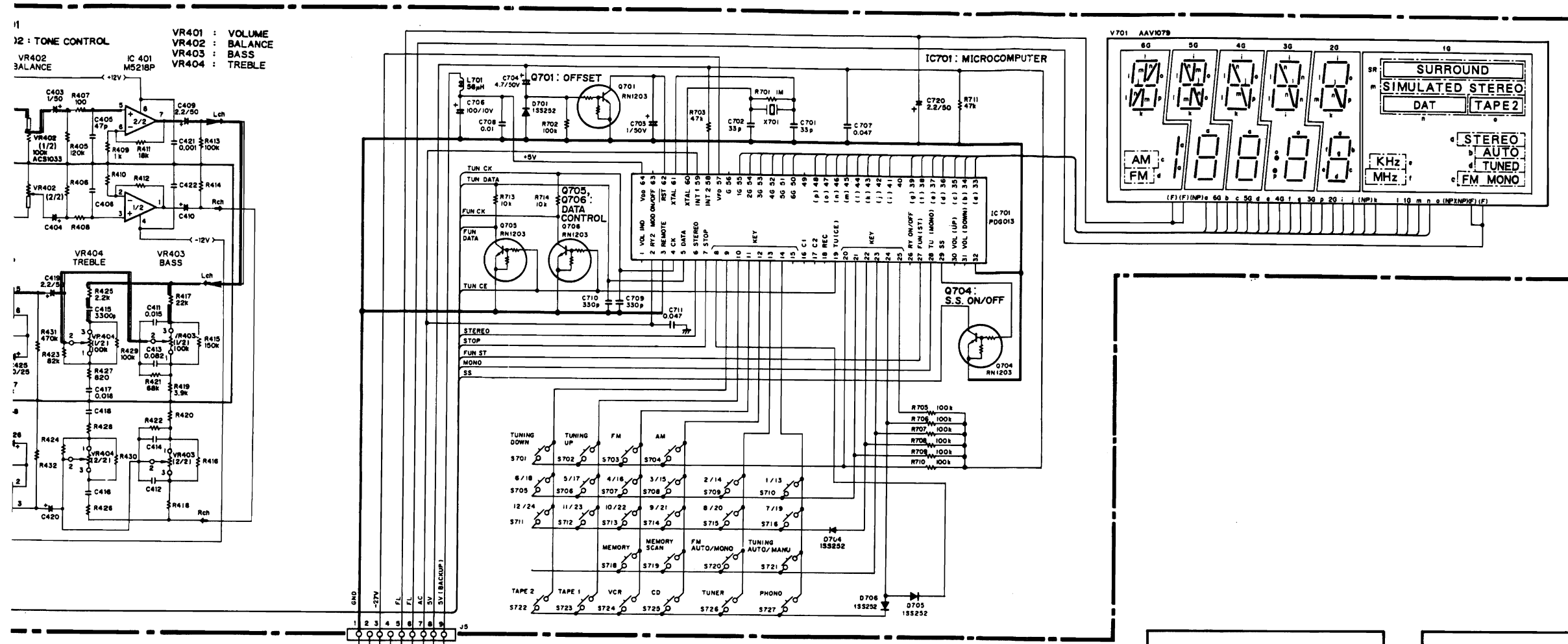
VR488

VR489

VR490



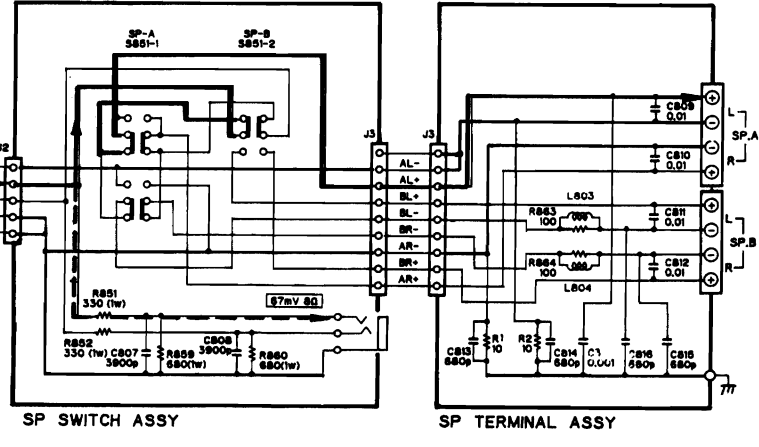
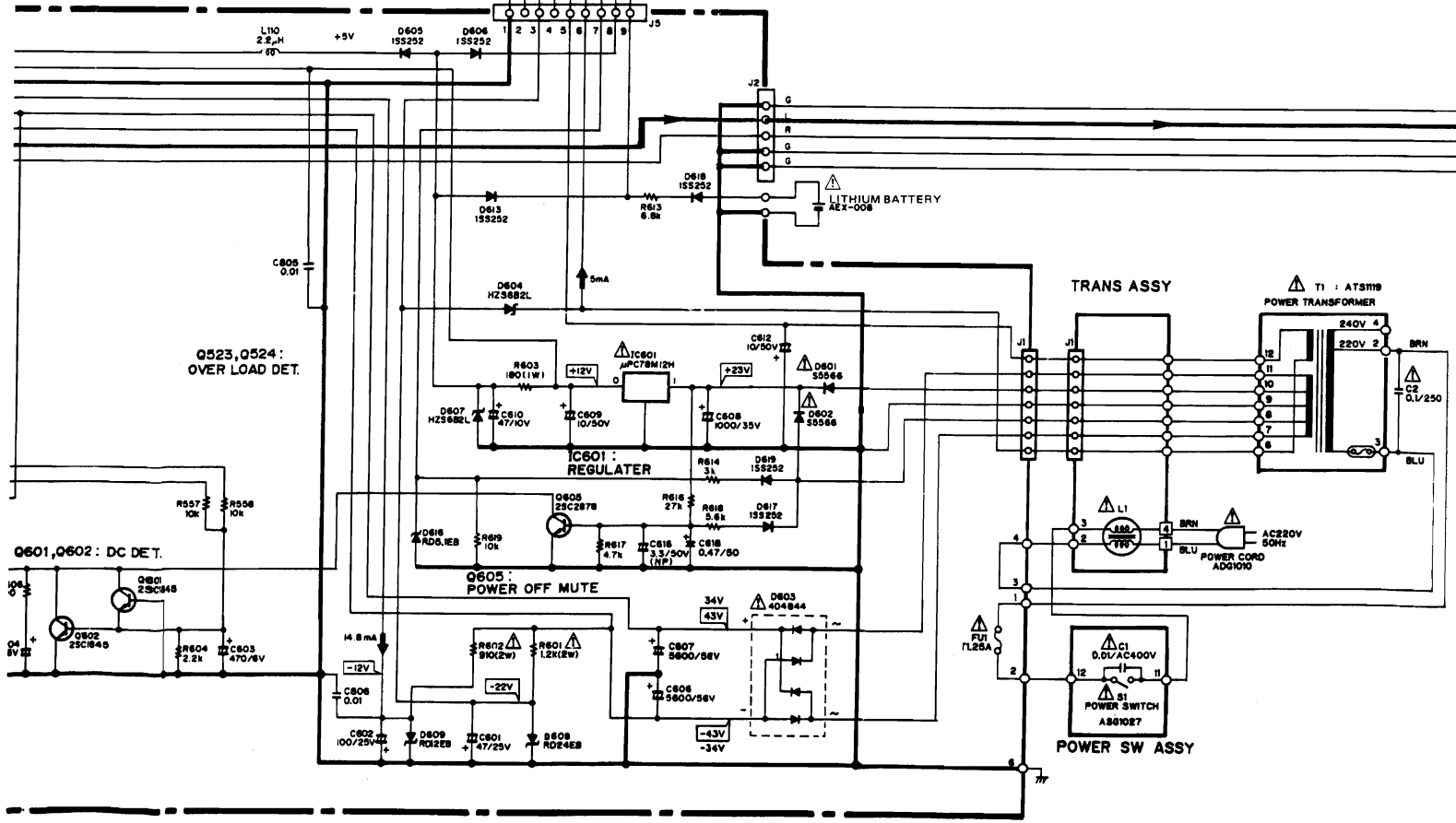




- RESISTORS:**  
 Indicated in Ω, 1/8W & 1/4W, ±5% tolerance unless otherwise noted; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance
- CAPACITORS:**  
 Indicated in capacity (μF)/voltage (V) unless otherwise noted; p; pF. Indication without voltage is 50V except electrolytic capacitor.
- VOLTAGE, CURRENT:**  
 □: DC voltage (V) at no input signal  
 Value in ( ) is DC voltage at rated power.  
 mA; DC current at no input signal
- OTHERS:**  
 ■: Signal route.  
 ⊙: Adjusting point.

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.  
 \* marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.





### 7.3 FOR HEZ TYPE

#### 7.3.1 ELECTRICAL PARTS LIST FOR HEZ TYPE

##### NOTES:

- Parts without part number cannot be supplied.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- 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.
- 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%).

560Ω 56 × 10<sup>1</sup> 561.....RD1/4PS ⊙ ⊙ ⊙ J  
 47kΩ 47 × 10<sup>3</sup> 473.....RD1/4PS ⊙ ⊙ ⊙ J  
 0.5Ω 0R5.....RN2H ⊙ ⊙ ⊙ K  
 1Ω 010.....RS1P ⊙ ⊙ ⊙ K

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

5.62kΩ 562 × 10<sup>1</sup> 5621.....RN1/4SR ⊙ ⊙ ⊙ F

#### MISCELLANEOUS PARTS

##### P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	POWER SW ASSY	
	TRANS ASSY	
	COMPLEX ASSY	AWZ2400
	CONTROL ASSY	AWZ2401
	SP SWITCH ASSY	
	SP TERMINAL ASSY	
	FE ASSY	AWB1004

##### OTHERS

Mark	Symbol & Description	Part No.
Δ	Q3, Q4 Transistor	2SA1263N
Δ	Q1, Q2 Transistor	2SC3180N
Δ	R1, R2 Resistor	RD1/4PMF100J
Δ	C2 Capacitor	ACE-507
	C3 Ceramic capacitor	CKDYB102K50
Δ	T1 Power transformer	ATS1119
	PAL socket	AKX1029
Δ	FU1 Fuse (T1, 25A 250V)	AEK-018
Δ	AC power cord	ADG1010
Δ	Lithium battery	AEX-008

#### POWER SW ASSY

##### SWITCH

Mark	Symbol & Description	Part No.
Δ	S1	ASG1027

#### CAPACITOR

Mark	Symbol & Description	Part No.
Δ	C1	ACG1003

#### TRANS ASSY

##### COIL

Mark	Symbol & Description	Part No.
Δ	L1 Line filter	ATF-151

#### COMPLEX ASSY (AWZ2400)

##### SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC102	AN7470P
	IC101	LA125S
	IC103	LM7001
	IC301	M5218P
	IC201	TC9164N
	IC601	μ PC78M12H
	Q106, Q109	RN2201
	Q505, Q506	2SA1145
	Q511, Q512	2SA965
	Q501, Q502, Q515, Q516	2SA992
	Q503, Q504, Q601, Q602, Q604	2SC1845
	Q509, Q510	2SC2235
	Q107, Q110, Q111, Q201, Q202	2SC2458
	Q517, Q518	2SC2603
	Q103	2SC2668
	Q507, Q508	2SC2705
	Q605	2SC2878
	Q108	2SK246
	D604, D607	HZS6B2L
	D609, D610	RD12EB
	D608	RD24EB
	D616	RD5.1EB
	D103, D104	SVC321C2
Δ	D601, D602	S5566
	D105-D109, D501-D506,	1SS252
Δ	D605, D606, D613, D617-D619	
	D603	4D4B44

#### RELAY

Mark	Symbol & Description	Part No.
	RY501	ASR-111

#### COILS AND TRANSFORMERS

Mark	Symbol & Description	Part No.
	T102 AM antenna transformer	ATB-095
	L102 AM OSC coil	ATB-114
	L103 FM detector coil	ATB-079
	L501, L502 AF choke coil	ATH1009
	L108-L111 Inductor	LAU2R2M
	L104 Inductor	LTA472J
	F102 FM ceramic filter	ATF-107
	F103 FM ceramic filter	ATF-119
	F105 Beat eliminate filter	ATF-146
	F104 AM ceramic filter	ATF-208

#### CAPACITORS

Mark	Symbol & Description	Part No.
	TC101, TC102	ACM-015
	C617	ACG1005
	C606, C607	ACH1119
	C517, C518	CCCSL050C500
	C519, C520, C522	CCCSL101K500
	C128, C303, C304, C509, C510	CCCSL221J50
	C507, C508	CCCSL470J50
	C119, C142, C143, C513-C516	CCDCH150J50
	C505, C506	CCDSL101J50
	C521	CCDSL101K500
	C163	CCDSL470J50
	C618	CEANPR47M50
	C150	CEANP010M50
	C616	CEANP3R3M50
	C156	CEASR22M50
	C146	CEASR47M50
	C131	CEASOR1M50
	C130	CEASO10M50
	C160	CEAS1R5M50
	C135, C139, C149, C165, C169, C182, C609, C612	CEAS100M50
	C511, C512, C604	CEAS101M16
	C602	CEAS101M25
	C608	CEAS102M35
	C605	CEAS2R2M100
	C134, C161, C162, C201, C202, C301, C302, C313, C314, C501, C502	CEAS2R2M50
	C136, C158	CEAS3R3M50
	C144	CEAS330M16
	C137	CEAS4R7M50
	C305, C306, C610	CEAS470M10
	C151	CEAS470M25

Mark	Symbol & Description	Part No.
	C603	CEAS471M6
	C601	CEHAQ470M25
	C525-C528	CFTXA104J50
	C133	CKCYB472K50
	C121, C140	CKCYF223Z50
	C503, C504	CKDYB102K500
	C154, C155	CKDYB182K50
	C315, C529, C530	CKDYB331K50
	C317-C324, C326-C334	CKDYB391K50
	C181, C335, C336	CKDYB681K50
	C337, C338	CKDYB821K50
	C118, C122, C123, C129, C141, C145, C147, C168, C170, C183, C204, C205, C307, C308, C339, C531, C805, C806	CKDYF103Z50
	C180	CKDYF223Z50
	C124, C125, C138, C157, C164, C173, C203, C316	CKDYF473M50
	C126, C172	CKDYX473M25
	C152, C153	CQMA102K50
	C309, C310	CQMA242J50
	C132	CQMA683J50
	C311, C312	CQMA822J50
	C120	CQSA431J50
	C159	CQSA471J50

#### RESISTORS

Mark	Symbol & Description	Part No.
	VR101	VRTB6VS472
Δ	R533, R534 (0.33 x 2)	ACN-139
	R515, R516	RDR1/4PM104J
	R501, R502, R559-R562	RDR1/6PU□□□J
	R555, R556, R565	RD1/4PMF100J
Δ	R519, R520, R527, R528, R537, R538, R553, R554	RD1/4PMF□□□J
Δ	R521-R526	RFA1/4PS101J
	R543, R544	RN1/4PQ1501F
	R603	RS1LMF181J
	R608	RS1LMF821J
	R601	RS2LMF122J
	R602	RS2LMF911J
	R307-R312, R513, R514, R614	RD1/4PM□□□J
	Other resistors	RD1/8PM□□□J

**OTHERS**

Mark	Symbol & Description	Part No.
X101	Crystal resonator	ASS1005
	2P antenna terminal	AKA-023
	4P pin jack	AKB1007
	6P pin jack	AKB1024

**CONTROL ASSY (AWZ2401)**

**SEMICONDUCTORS**

Mark	Symbol & Description	Part No.
	IC401, IC402	M5218P
	IC701	PDG013
	Q701, Q704-Q706	RN1203
	D701, D704-D706	1SS252

**SWITCHES**

Mark	Symbol & Description	Part No.
	S701-S716, S718-S727	ASG1029

**COIL**

Mark	Symbol & Description	Part No.
	L701 Inductor	LAU560K

**CAPACITOR**

Mark	Symbol & Description	Part No.
	C424	CCCSL390K500
	C701, C702	CCDCH330J50
	C423	CCDSL390K500
	C405, C406	CCMSL470J50
	C706	CEAS101M10
	C403, C404, C429, C430, C703	CEJA010M50
	C425, C426	CEJA100M25
	C409, C410, C419, C420, C720	CEJA2R2M50
	C401, C402	CEJA4R7M35
	C704	CEJA4R7M50
	C427, C428	CEJA470M10
	C709, C710	CKDYB331K50
	C708	CKDYF103Z50
	C707	CKDYF473Z50
	C711	CKDYX473M25
	C421, C422	CKMYB102K50
	C411, C412	CQMA153J50
	C417, C418	CQMA183J50
	C415, C416	CQMA332J50
	C413, C414	CQMA823J50

**RESISTORS**

Mark	Symbol & Description	Part No.
	VR403, VR404	ACS1032
	VR402	ACS1033
	VR401	ACT1040
	R435, R436	RDR1/6PU332J
	Other resistors	RD1/8PM□□□J

**OTHERS**

Mark	Symbol & Description	Part No.
	X701 Ceramic oscillator	ASS1004
	V701 Fluorescent indicator tube	AAV1079

**SP SWITCH ASSY**

**SWITCH**

Mark	Symbol & Description	Part No.
	S851	SUL5LXBYS

**CAPACITORS**

Mark	Symbol & Description	Part No.
	C807, C808	CKDYB392K50

**RESISTORS**

Mark	Symbol & Description	Part No.
△	R851, R852	RS1PMF331J
	R859, R860	RS1PMF681J

**OTHERS**

Mark	Symbol & Description	Part No.
	Phone jack	AKN1002

**SP TERMINAL ASSY**

**COILS**

Mark	Symbol & Description	Part No.
	L803, L804 AF choke coil	ATH-133

**CAPACITORS**

Mark	Symbol & Description	Part No.
	C813-C816	CKDYB681K50
	C809-C812	CKDYF103Z50

**RESISTORS**

Mark	Symbol & Description	Part No.
	R863, R864	RD1/4PMF101J

**OTHERS**

Mark	Symbol & Description	Part No.
	8P speaker terminal	AKE-111

**FE ASSY (AWB1004)**

**SEMICONDUCTORS**

Mark	Symbol & Description	Part No.
	Q902	2SC2668
	Q905	2SC2786
	Q901, Q903, Q904	2SK241
	D901-D904	1SV147-4

**COILS AND TRANSFORMERS**

Mark	Symbol & Description	Part No.
	T901 FM RF transformer	ATC-194
	T902 FM matching transformer	ATE-063
	L903 FM RF coil	ATC-247
	L901 FM coil	ATC1001
	L904 FM coil	ATC1003
	L902 FM coil	ATC1010
	L905, L906 Inductor	LAU2R2M

**CAPACITORS**

Mark	Symbol & Description	Part No.
	TC901	ACM-014
	C908	CCDCH010C50
	C909, C910	CCDCH020C50
	C917	CCDCH050C50
	C915	CCDCH080D50
	C913	CCDCH150J50
	C914	CCDCH330J50
	C901	CCDRH100D50
	C905	CCDRH330J50
	C902, C904, C906	CCDRH390J50
	C911	CCDSL101J50
	C916	CCDTH180J50
	C903, C912, C918, C919	CKDYF103Z50
	C907	CKDYF223Z50

## 8. SPECIFICATIONS

### Amplifier Section

Continuous Power Output (both channels driven, DIN)	
1 kHz, T.H.D. 1%, 4 Ω	55 W + 55 W
1 kHz, T.H.D. 1%, 8 Ω	45 W + 45 W
40 Hz - 20 kHz, T.H.D. 0.07%, 8 Ω	38 W + 38 W
IEC power output	
63 Hz - 12.5 kHz, T.H.D. 0.7%, 4 Ω	49 W + 49 W
63 Hz - 12.5 kHz, T.H.D. 0.7%, 8 Ω	45 W + 45 W
Dynamic power output	
4/8 Ω	70/55 W
Total Harmonic Distortion*	
1 kHz, 38 W, 8 Ω	0.01%
Input (Sensitivity/Impedance)	
PHONO	2.5 mV/47 kΩ
CD, VCR/LINE, TAPE 1/DAT, TAPE 2	150 mV/22 kΩ
Phono Overload Level (T.H.D. 0.01%, 1,000 Hz)	
PHONO	130 mV
Output (Level/Impedance)	
TAPE REC.	150 mV/2,2 kΩ
Frequency Response	
PHONO (RIAA Equalization)	20 Hz to 20,000 Hz ± 0.5 dB
CD, VCR/LINE, TAPE 1/DAT, TAPE 2	10 Hz to 70,000 Hz ± 0.5 dB 3.0
Signal-to-Noise Ratio (DIN, continuous power/50 mW)	
PHONO	68 dB/59 dB
CD, VCR/LINE, TAPE 1/DAT, TAPE 2	86 dB/60 dB
Tone control	
BASS	± 8dB (100Hz)
TREBLE	± 8dB (10kHz)

### FM Tuner Section

Frequency range	87.5 MHz to 108 MHz
Usable Sensitivity	10.8 dBf, IHF (0.95 μV/75 Ω)
50 dB Quieting Sensitivity	
MONO	15.3 dBf (1.6 μV/75 Ω)
STEREO	37.1 dBf (19.5 μV/75 Ω)
Sensitivity (DIN)	
MONO	0.9 μV/75 Ω
STEREO	29 μV/75 Ω
Signal-to-Noise Ratio	
MONO	78 dB (at 85 dBf)
STEREO	75 dB (at 85 dBf)
Signal-to-Noise Ratio (DIN)	
MONO	66 dB
STEREO	60 dB
Distortion	
STEREO	0.3% (1 kHz)
Alternate Channel Selectivity	55 dB (400 kHz)
Stereo Separation	35 dB (1 kHz)
Frequency Response	30 Hz to 15 kHz (± 1 dB)
Antenna Input	300 Ω balanced, 75 Ω unbalanced

### AM Tuner Section

Frequency range	531 kHz to 1,602 kHz
Sensitivity	
IHF, Loop antenna	300 μV/m
Selectivity	20 dB
Signal-to-Noise Ratio	50 dB
Antenna	AM Loop Antenna

### Miscellaneous

Power Requirements	a.c. 240 V~, 50/60 Hz
Power Consumption	250 Watts
Dimensions	420(W) x 120(H) x 337(D) mm
Weight (without package)	6.2 kg (13 lb 11 oz)

### Furnished Parts

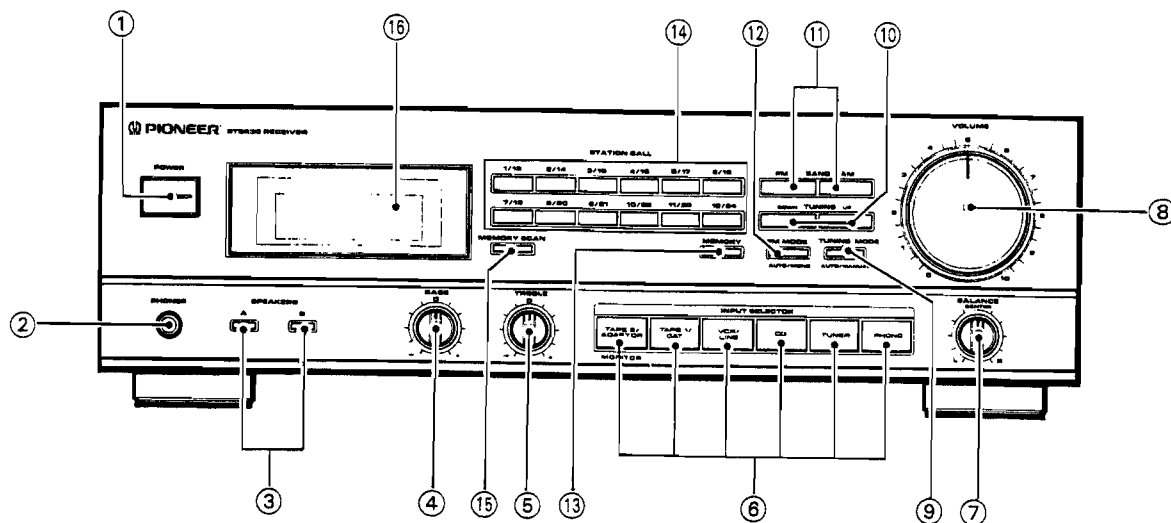
FM T-type Antenna	1
AM Loop Antenna	1
Operating Instructions	1

### NOTE:

*Specifications and design subject to possible modification without notice due to improvements.*

• Measured by audio spectrum analyzer.

## 9. PANEL FACILITIES



### ① POWER switch

When this switch is pressed, power is supplied to the unit. Press the switch again to turn power off.

### ② PHONES jack

Connect the plug on your headphones to this jack. To listen to a program through the headphones only, set both SPEAKERS A and B switches to the OFF position.

### ③ SPEAKERS switches (OFF, ON)

These are used to select the speaker through which you wish to listen.

A: When the speakers connected to A terminals are in use.

B: When the speakers connected to B terminals are in use.

- Turn both A and B speakers to OFF position when only the headphones are in use.

#### NOTE:

*No sound will be heard through the speakers when both A and B switches are depressed if only one set of speakers has been connected to either A or B SPEAKERS terminals.*

### ④ BASS tone control

Use to adjust the low-frequency tone.

The center position is the "0" (normal) position. When moved to the right, low-frequency tones are emphasized; when moved to the left, low-frequency tones are de-emphasized.

### ⑤ TREBLE tone control

Use to adjust the high-frequency tone.

The center position is the "0" (normal) position. When moved to the right, high-frequency tones are emphasized; when moved to the left, high-frequency tones are de-emphasized.

### ⑥ INPUT SELECTOR switches

Use to select playback source.

[TAPE 1/DAT]—Press when listening to tape playback with a cassette deck or digital audio tape deck (DAT).

[VCR/LINE] — Press when listening to programs from a component connected to the VCR/LINE terminals.

[CD] — Press when listening to compact disc playback with a CD player.

[TUNER] — Press when listening to AM or FM broadcasts with a tuner.

[PHONO] — Press when listening to record playback on a turntable.

#### MONITOR switch

[TAPE 2/ADAPTOR]—Press when listening to tape playback with a cassette deck or when using a graphic equalizer.

### ⑦ BALANCE control

Should normally be left in the center position. Adjust balance if sound is louder from one of the speakers. If the right side is louder, turn toward the LEFT position and if the left side is louder, turn toward the RIGHT position.

### ⑧ VOLUME control

Use to adjust volume level.

### ⑨ TUNING MODE AUTO/MANUAL switch

Works during FM reception.

Use this switch to select either the AUTO mode or the MANUAL mode.

When the "AUTO" indicator is lit, the receiver is in the AUTO mode.

### ⑩ TUNING switches (DOWN, UP)

UP: The FM or AM band is scanned in the direction of increasing frequency.

DOWN: The FM or AM band is scanned in the direction of decreasing frequency.

**⑪ BAND selector switches**

These switches are used to select either AM or FM reception.

**AM:** Push this switch for AM reception.

**FM:** Push this switch for FM reception.

**⑫ FM MODE AUTO/MONO selector switch**

Use to select the auto stereo mode or monaural mode when listening to FM broadcasts.

**Auto stereo mode:**

Normally leave in this mode for reception. When a stereo FM broadcast is received, it will be automatically reproduced in stereo sound.

**Monaural mode:**

When receiving distant stations or stations with weak broadcast signals, the input signal may be weak, thus resulting in increasing noise during FM stereo broadcasts. In this event, setting the receiver to the monaural mode will reduce the noise. In this case, however, FM stereo broadcasts will be reproduced in monaural sound.

The monaural mode has been selected when the FM MONO indicator is lit.

**NOTE:**

*This switch has no effect on reception of AM broadcasts.*

**⑬ MEMORY switch**

This is used to memorize stations. When the switch is pressed, the frequency indicator will flash. To memorize the frequency of any station, press a STATION CALL switch while the frequency indicator is flashing.

**⑭ STATION CALL switches**

These switches are used to preset and recall desired broadcasting stations.

**⑮ MEMORY SCAN switch**

Press this switch to scan the stations in the memory.

**⑯ OPERATION DISPLAY panel**

- (a) Indicates the function selected by the INPUT SELECTOR.
- (b) Indicates frequency or channel (STATION CALL number).
- (c) Indicates TAPE 2 monitor
- (d) FM STEREO indicator
- (e) AUTO tuning indicator
- (f) FM MONO indicator
- (g) TUNED indicator

