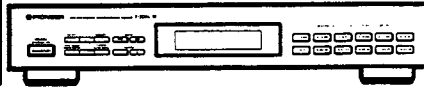


Service Manual



ORDER NO.
ARP2790

FM/AM DIGITAL SYNTHESIZER TUNER

F - 202L

F - 202

F - 202L AND F - 202 HAVE THE FOLLOWING:

Type	Model		Power Requirement	Remarks
	F-202L	F-202		
HEX1K	○	—	AC220V—230V, 240V (switchable)*	
HBX1K	○	—		
HEWZX1K	—	○		
HEWIX1K	—	○		

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

- This manual is applicable to the following: F - 202L/HEX1K and HBX1K; F - 202/HEWZX1K and HEWIX1K.
- For the following: F - 202L/HBX1K; F - 202/HEWZX1K and HEWIX1K, refer to page 21.
- F - 202L covers MW/LW bands while F - 202 covers MW.

CONTENTS

1. SPECIFICATIONS	2
2. BLOCK DIAGRAM	3
3. EXPLODED VIEWS, PACKING AND PARTS LIST ...	4
4. PCB PARTS LIST	7
5. SCHEMATIC AND PCB CONNECTION DIAGRAMS	9
6. ADJUSTMENTS	19
7. FOR F-202L/HBX1K, F-202/HEWZX1K AND HEWIX1K	21
8. PANEL FACILITIES	28

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 300 Allstate Parkway Markham, Ontario L3R 0P2 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911
 © PIONEER ELECTRONIC CORPORATION 1993

FK MAY 1993 Printed in Japan

1. SPECIFICATIONS

FM Tuner Section

Frequency range	87.5 MHz to 108 MHz
Usable Sensitivity (IHF)	12.7 dBf (1.2 μ V/75 Ω)
50 dB Quieting Sensitivity	Mono: 18 dBf (2.2 μ V/75 Ω) Stereo: 38.3 dBf (22.6 μ V/75 Ω)
Sensitivity (DIN)	Mono: 1.0 μ V/75 Ω Stereo: 35 μ V/75 Ω
Signal-to-Noise Ratio	Mono: 78 dB (at 85 dBf) Stereo: 74 dB (at 85 dBf)
Signal-to-Noise Ratio (DIN)	Mono: 62 dB Stereo: 60 dB
Distortion	0.3 % (1 kHz)
Alternate Channel Selectivity	60 dB (300 kHz)
Stereo Separation	40 dB (1 kHz)
Frequency Response	30 Hz to 15 kHz \pm 1 dB
Image Response Ratio	50 dB
IF Response Ratio	90 dB
Antenna Input	75 Ω unbalanced
Output	650 mV/2.7 k Ω (100 % MOD.)

MW (AM) Tuner Section

Frequency range	531 kHz to 1,602 kHz
Sensitivity (IHF, Loop antenna)	350 μ V/m
Selectivity	20 dB
Signal-to-Noise Ratio	50 dB
Antenna	Loop Antenna
Output	150 mV/2.7 k Ω (30 % MOD.)

LW Tuner Section

Frequency range	153 kHz to 281 kHz
Sensitivity (IHF, Loop antenna)	1,500 μ V/m
Antenna	Loop Antenna
Output	150 mV/2.7 k Ω (30 % MOD.)

Miscellaneous

Power Requirements	a.c. 220 — 230 Volts ~, 50/60 Hz
Power Consumption	10 W
Dimensions	420 (W) x 75.5 (H) x 284 (D) mm
Weight (without package)	2.6 kg

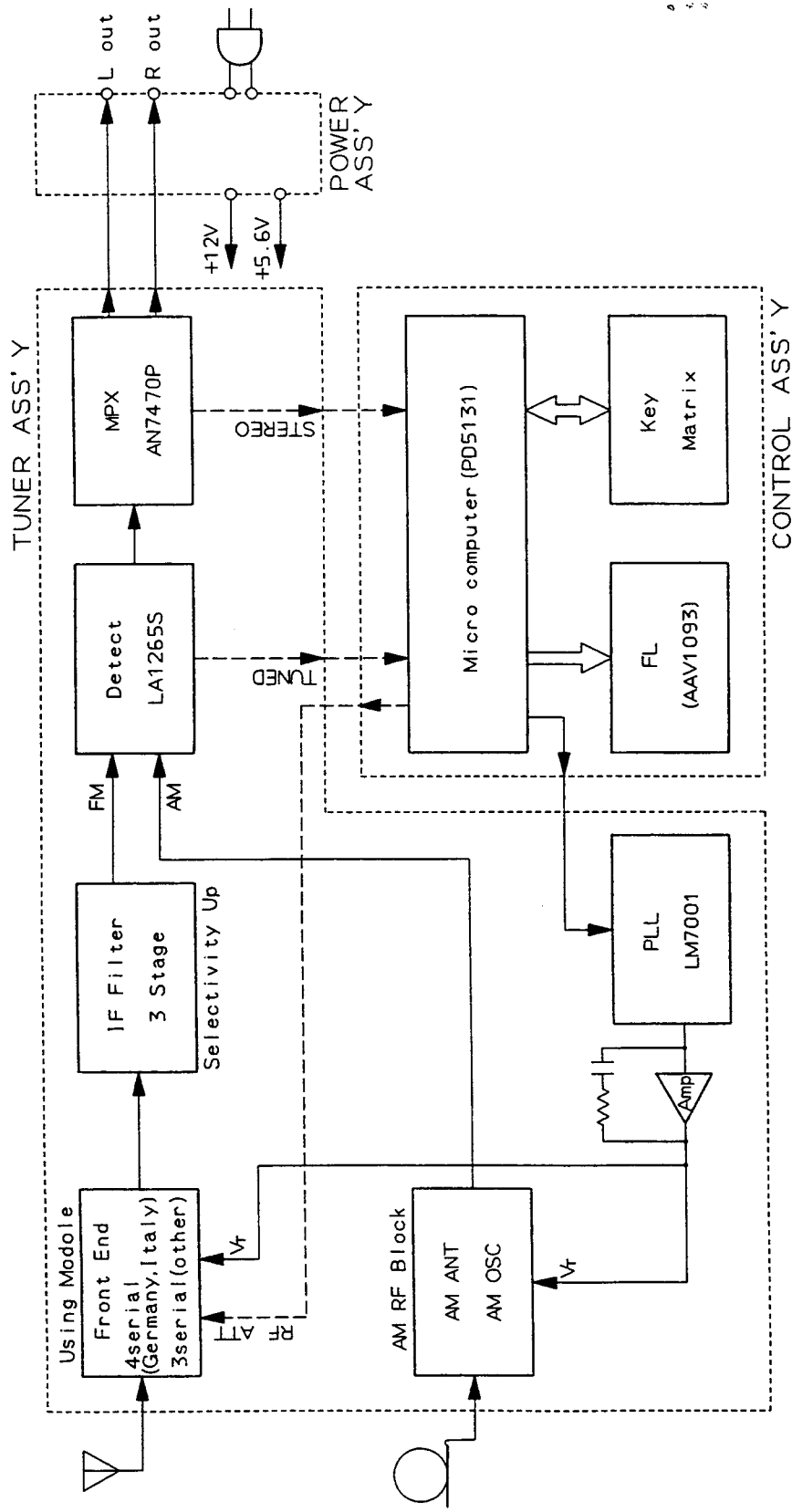
Furnished Parts

FM T-type antenna	1
AM loop antenna	1
Connecting cord with pin plugs	1
Operating instructions	1
Control cord	1

NOTE:

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

2. BLOCK DIAGRAM

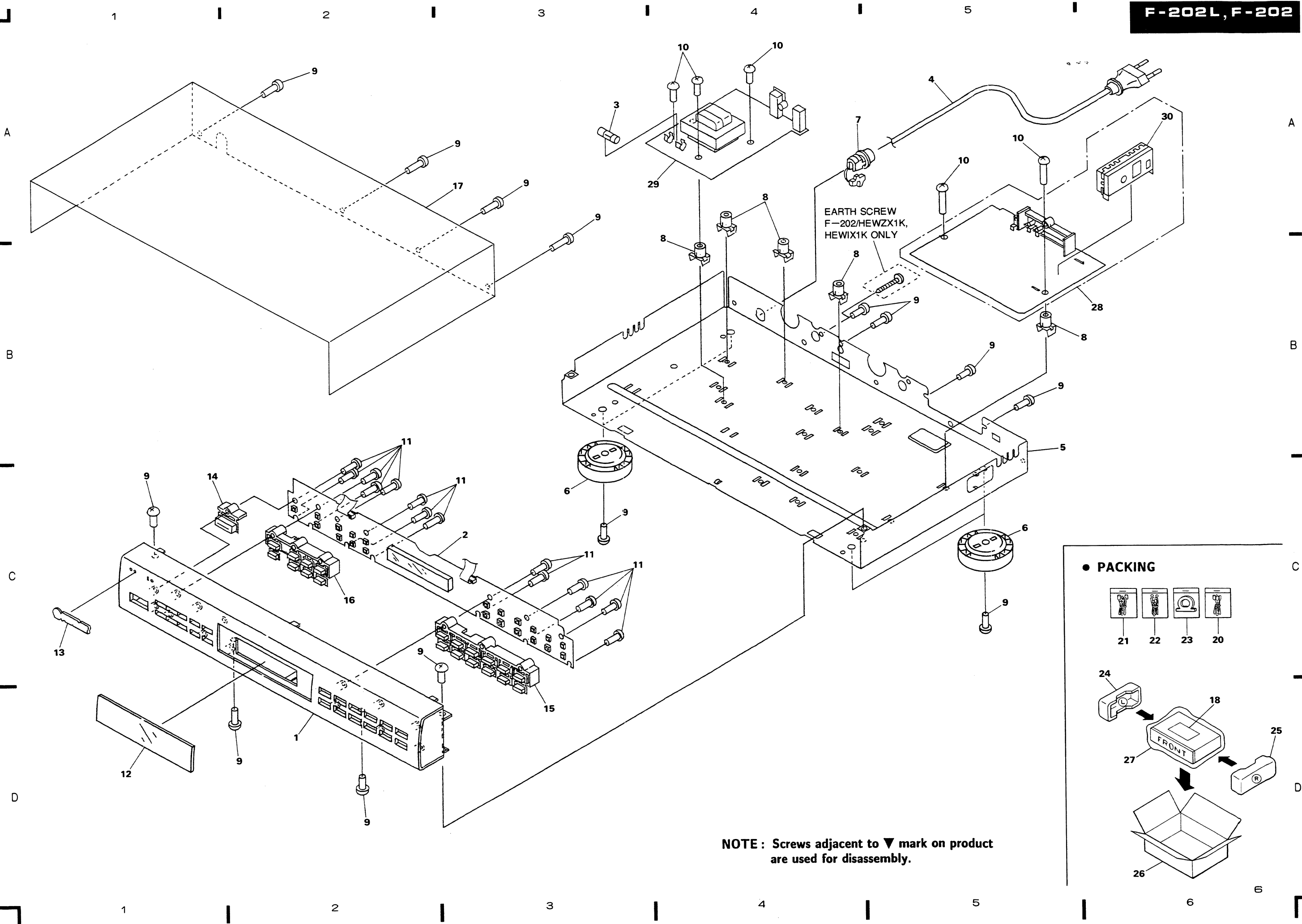


3. EXPLODED VIEWS, PACKING AND PARTS LIST

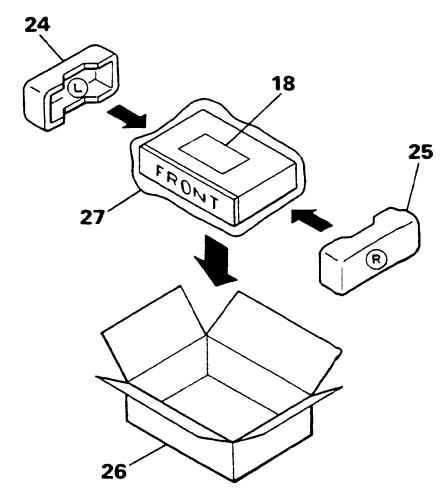
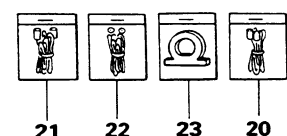
NOTES:

- 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.

Mark	No.	Description	Parts No.
	1	FRONT PANEL	AMB2149
	2	CONTROL ASSEMBLY	AWP1049
Δ	3	FU1 (T400mA,250V)	AEK1044
Δ	4	AC POWER CORD	ADG1138
NSP	5	CHASSIS	ANA1122
	6	INSULATOR ASSEMBLY	AMR2140
Δ	7	STRAIN RELIEF	AEC-882
NSP	8	PCB MOULD	AMR1525
	9	SCREW	ABA-298
	10	SCREW	ABA1018
	11	SCREW	BBZ26P100FMC
	12	PANEL	AAK2466
	13	NAME PLATE (METAL)	AAM1058
	14	POWER BUTTON (ABS)	AAD2425
	15	STATION BUTTON (ABS)	AAD2426
	16	BAND BUTTON (ABS)	AAD2428
	17	BONNET(FE)	ANE1430
	18	OPE. INSTRUCTIONS (English/German/French/Italian/ Swedish/Dutch/Spanish/Portuguese)	ARE1278
	19	.....
	20	CONNECTION CORD WITH PIN PLUG	ADE-052
	21	CONNECTION CORD WITH MINI PLUG	ADE-085
	22	FM ANTENNA	ADH1005
	23	LOOP ANTENNA	ATB1006
	24	STYROL PROTECTOR L	AHA1602
	25	STYROL PROTECTOR R	AHA1603
	26	PACKING CASE	AHD2550
	27	PACKING SHEET	AHG1107
	28	TUNER ASSEMBLY	AWZ4971
	29	POWER ASSEMBLY	AWZ4976
	30	3 SERIAL F.E.MODULE ASSEMBLY	AXQ1003



● PACKING



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

4. 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%).

560Ω	→ 56 × 10 ¹	→ 561	.....	RD1/8PM	<u>5</u> <u>6</u> <u>1</u> J
47kΩ	→ 47 × 10 ³	→ 473	.....	RD1/4PS	<u>4</u> <u>7</u> <u>3</u> J
0.5Ω	→ 0R5		.....	RN2H	<u>0</u> <u>R</u> <u>5</u> K
1Ω	→ 010		.....	RS1P	<u>0</u> <u>1</u> <u>0</u> K

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

5.62kΩ	→ 562 × 10 ¹	→ 5621	RN1/4PC	<u>5</u> <u>6</u> <u>2</u> <u>1</u> F
--------	-------------------------	--------	-------	---------	---------------------------------------

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

LIST OF ASSEMBLIES

NSP	TUNER ASSEMBLY	AWE1278
	└ TUNER ASSEMBLY	AWZ4971
	└ POWER ASSEMBLY	AWZ4976
	CONTROL ASSEMBLY	AWP1049

TUNER ASSEMBLY

SEMICONDUCTORS

IC103	AN7470P
IC102	LA1265S
IC101	LM7001
Q116	2SA933S
Q103,Q112,Q114,Q115	2SC1740S
Q111	2SC1740SLN
Q101,Q102	2SC2668
Q110	2SK246
Q104,Q106,Q108	DTA124ES
Q105,Q107,Q109,Q118	DTC143ES
D102-D108	1SS252

COILS, FILTERS

L102	ATE-079
L103	LAU2R2K
F103	ATF-107
F101,F102	ATF-119
F104	ATF-208

CAPACITORS

C141 (470P,50V)	ACE1039
C109,C117,C118	CCDCH150J50
C115,C119-C121	CCPUSL470J50
C138	CEANP4R7M50
C133	CEAS010M50
C127	CEAS100M50
C128,C137	CEAS101M16
C143	CEAS1R5M50
C126,C151,C152	CEAS2R2M50
C111	CEAS330M16

C142	CEAS3R3M50
C135,C150	CEAS470M10
C123	CEAS4R7M50
C144	CEASR22M50
C112	CFTXA224J50

C107	CKDYB103K50
C124	CKDYB222K50
C153,C154	CKDYB682K50
C132	CKDYF103Z50
C4,C122,C130,C131	CKDYF223Z50

C2	CKDYX103M25
C125,C146	CKDYX473M25
C3	CKPUYB101K50
C101,C102	CKPUYB102K50
C147	CKPUYB121K50

C134	CKPUYB331K50
C108,C110	CKPUYF473Z16
C103,C104,C106,C113,C114,	CKPUYY103M16
C116,C129,C136,C145	
C148,C149	CQMA102J50

RESISTORS

VR101 (4.7K)	ACP1042
VR102 (10K)	ACP1043
VR103 (22K)	ACP1044
Other Resistors	RD1/8PM□□□J

OTHERS

X101	AM RF TUNING BLOCK	AXX1026
	CRYSTAL RESONATOR	ASS1042
	(7.200MHz)	
X102	CERAMIC RESONATOR	ATF1027
	ANTENNA TERMINAL 4-P	AKA1010

CN2	CONNECTOR(9P)	KPE9
	3 serial F.E. Module ASSY	AXQ1003

Note: 3 serial F.E. Module ASSY has no service part.

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

POWER ASSEMBLY

SEMICONDUCTORS

IC301	MC7812CT
Q301	2SA1529
Q117,Q305,Q401	2SC1740S
Q304	2SC1845
Q302	DTA143ES
Q303,Q306	DTC143ES
D306,D401	1SS252
D305	RD6.2ESB
D301-D304	S5566

TRANSFORMER

Δ T301	ATT1226
---------------	---------

CAPACITORS

Δ C303 (0.047, 25V)	ACG-009
C304	ACH1135
C301	CEAS101M16
C302	CEAS222M35
C308	CEAS330M16
C305,C306	CEAS470M10
C307,C402	CKPUYB101K50

RESISTORS

All Resistors	RD1/8PM□□□J
---------------	-------------

OTHERS

CN3	PIN JACK(2P)	AKB1039
CN1	JACK	AKN1006
	CONNECTOR(10P)	KPE10
	SCREW	ABA1012

CONTROL ASSEMBLY

SEMICONDUCTORS

IC201	PD5131-A
Q203	2SC1740S
Q202	DTC124ES
Q201	DTC143ES
D201-D207	1SS252

SWITCHES

S201-S221	ASG1034
-----------	---------

CAPACITORS

C208	CEJA221M6
C203	CEJA470M16
C204	CEJAR47M50
C207	CKDYX473M25
C206	CKPUYB101K50

C205	CKPUYB102K50
C201,C202	CKPUYY103M16

RESISTORS

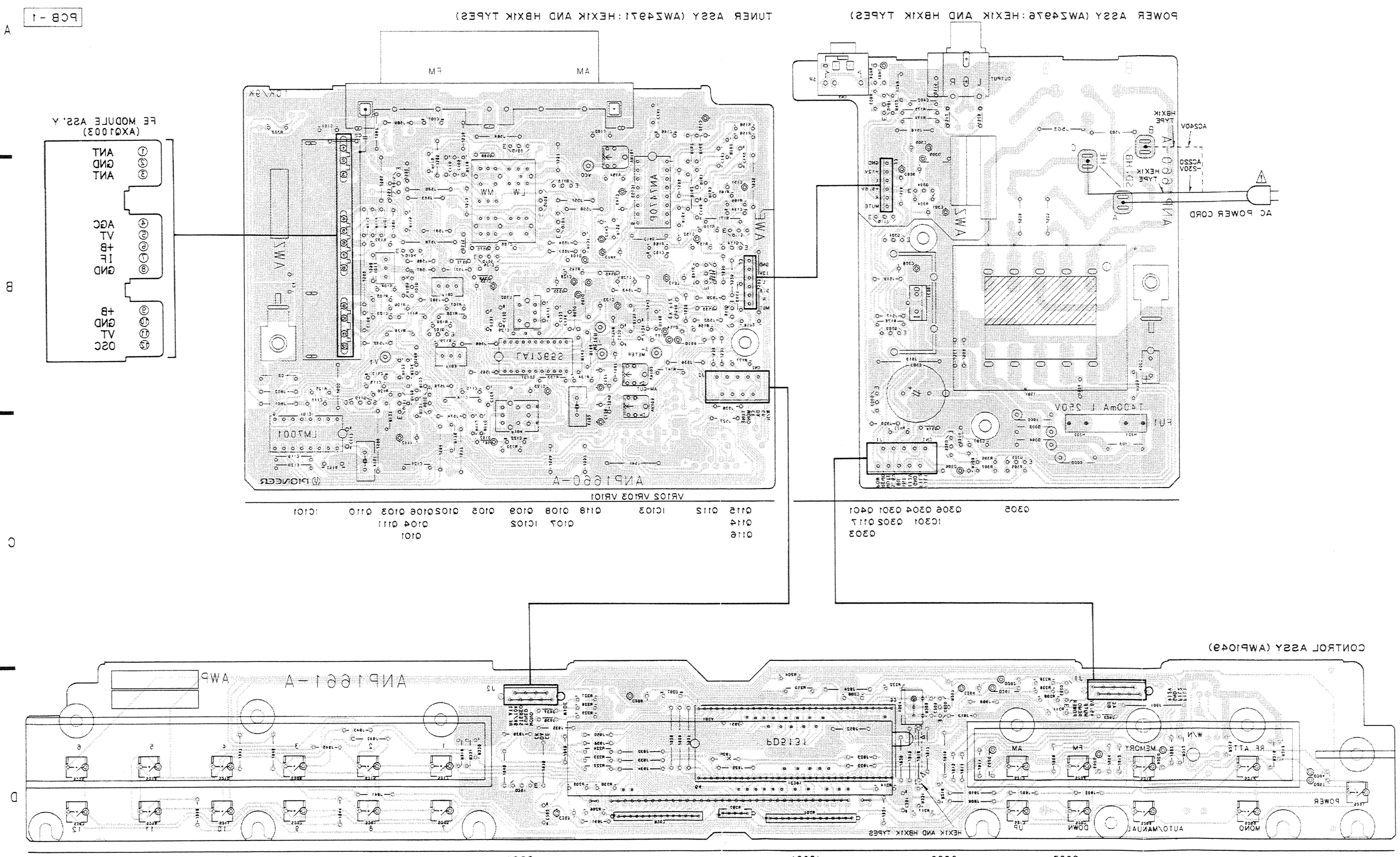
R201,R203	RA13T103J
R202	RA4T103J
Other Resistors	RD1/8PM□□□J

OTHERS

X201	CERAMIC RESONATOR	ASS1018
	(4.19MHz)	
V201	FL TUBE	AAV1093

5. SCHEMATIC AND PCB CONNECTION DIAGRAMS

5.1 PCB CONNECTION DIAGRAMS OF CONTROL, TUNER AND POWER ASSEMBLIES



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

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

A

POWER ASSY (AWZ4976:HEX1K AND HBX1K TYPES)

TUNER ASSY (AWZ4971:HEX1K AND HBX1K TYPES)

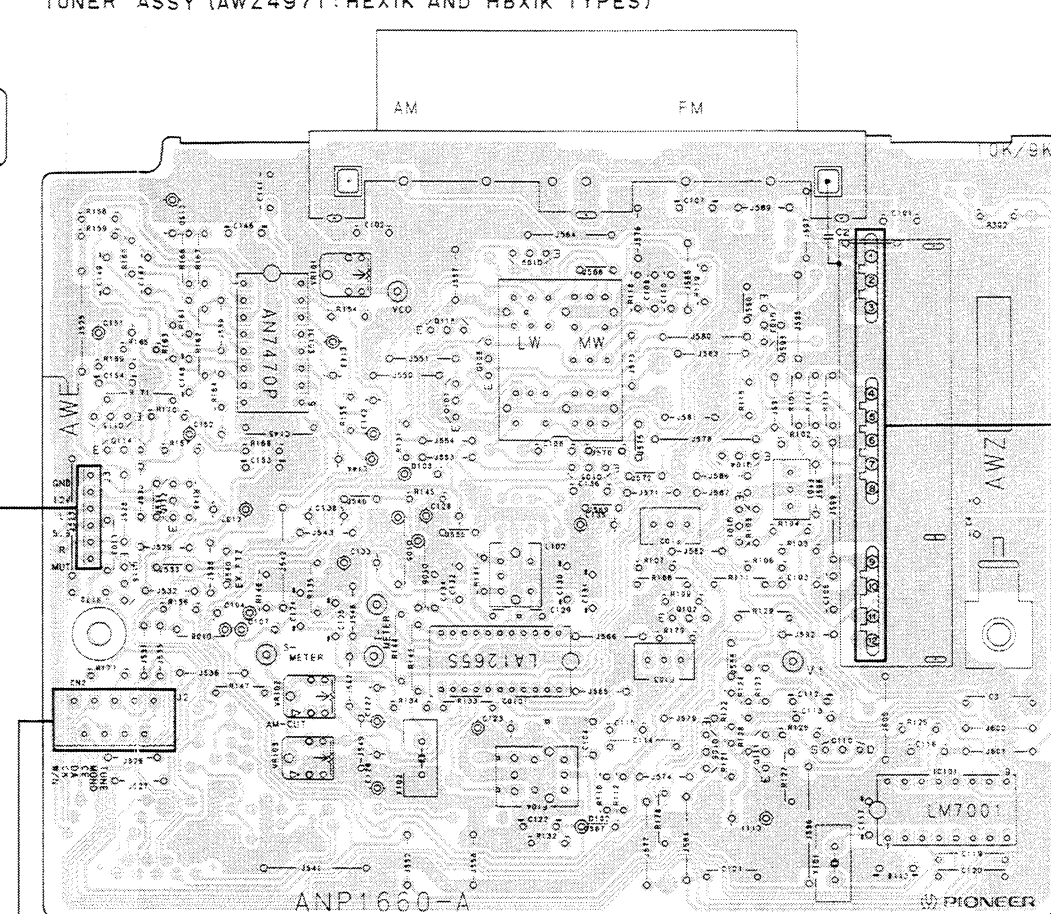
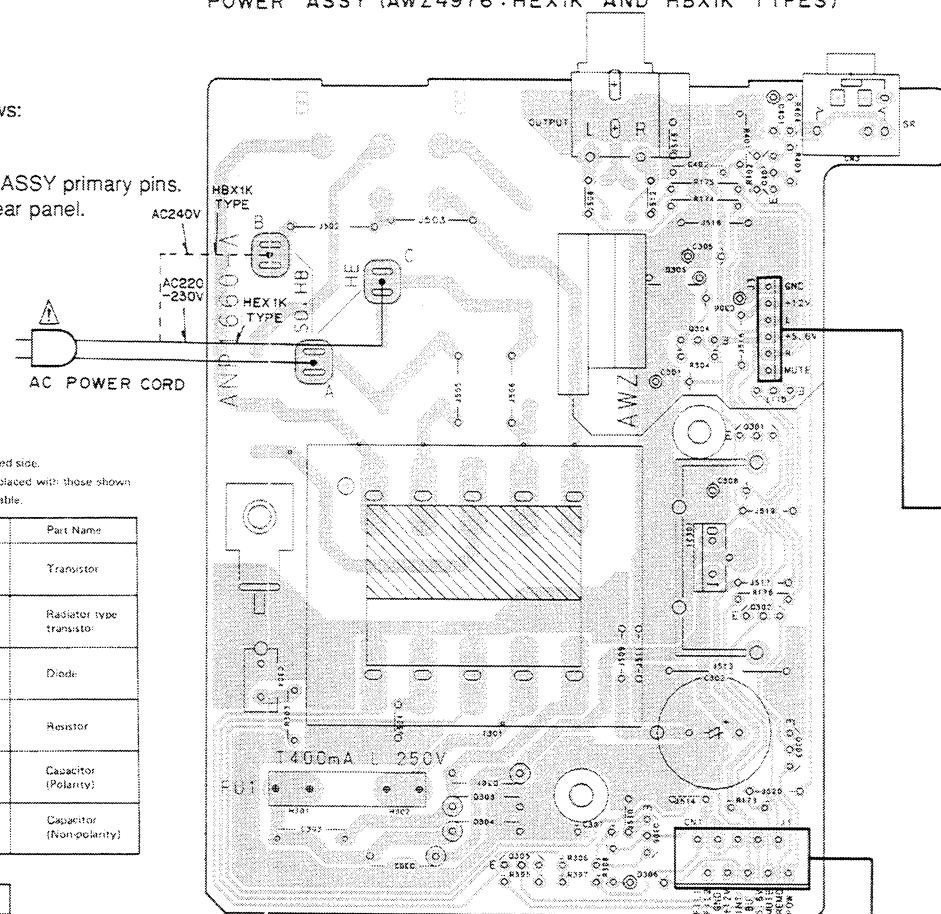
PCB - 1

Line Voltage Selection

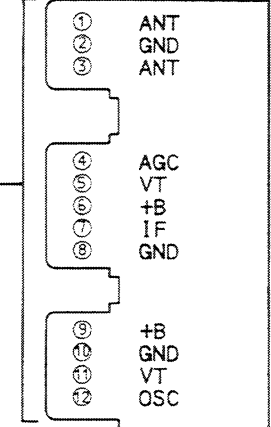
Line Voltage can be changed as follows:

1. Disconnect the AC power cord.
2. Remove the cover.
3. Change the connection of POWER ASSY primary pins.
4. Stick the line voltage label on the rear panel.

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



FE MODULE ASS'Y (AXQ1003)



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

B

C

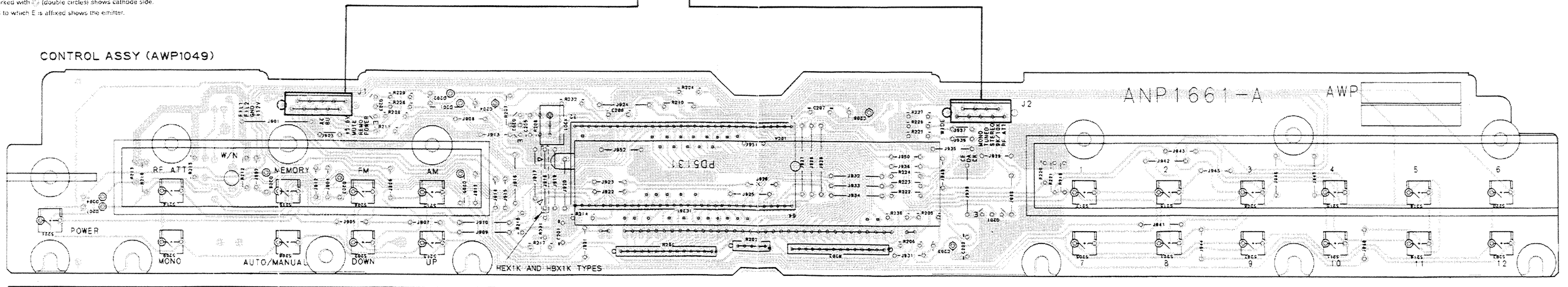
A

B

C

D

CONTROL ASSY (AWP1049)



Q203 Q202 IC201 Q201

1

2

3

4

5

6

5.2 SCHEMATIC DIAGRAM OF TUNER AND POWER ASSEMBLIES
(FOR F-202L/HEX1K AND HBX1K)

Note: For F-202/HEWZX1K and HEWIX1K, refer to SCH-3.

A

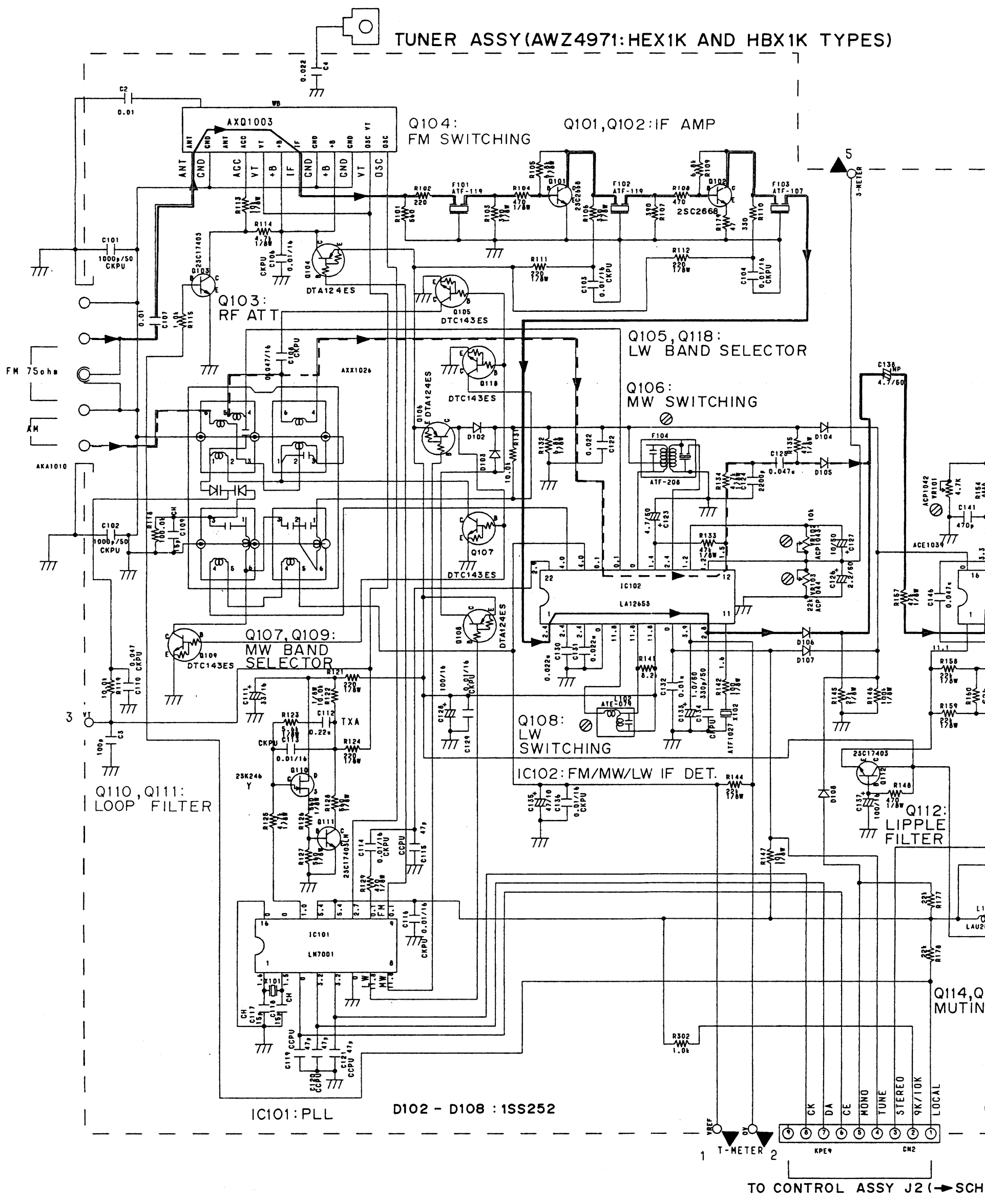
B

C

D

E

F



SCH-1

TUNER,
POWER ASSY

EX1K AND HBX1K TYPES)

2: IF AMP

Q05, Q118: W BAND SELECTOR

Q06: W SWITCHING

W IF DET.

Q112: RIPPLE FILTER

Q114, Q115: MUTING

Q116: MUTE SWITCH

TO CONTROL ASSY J2 (→SCH-2)

Note:

(Type 3)

- 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:**
mV: Signal voltage at FM 1kHz, 100% MOD.
V: DC voltage (V) at no input signal unless otherwise noted.
Value in () is DC voltage at rated power.
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.

8. SWITCHES (Underline indicates switch position)

- CONTROL ASSEMBLY
- S201 : 8
 - S202 : TUNING(DOWN)
 - S203 : 12
 - S204 : BAND(FM)
 - S205 : 7
 - S206 : 3
 - S207 : 9
 - S208 : AUTO/MANUAL
 - S209 : MONO
 - S210 : 4
 - S211 : 10
 - S212 : BAND(AM)
 - S213 : TUNING(UP)
 - S214 : RF ATT
 - S215 : 2
 - S216 : 11
 - S217 : 1
 - S218 : 5
 - S219 : MEMORY
 - S220 : 6
 - S221 : POWER(STANDBY/ON)

9. For SCH - □ on the schematic diagram
SCH - □ indicates the drawing number diagram.
(SCH stands for schematic diagram.)

—: FM SIGNAL LINE
---: AM SIGNAL LINE

POWER ASSY (AWZ4976: HEX1K AND HBX1K TYPES)

Q302: SWITCHING

IC301, Q301, Q304: REGULATOR

Q401: BUFFER

Q303, Q305: POWER DETECTOR

Q117: MUTE SWITCHING
D301 - D304 : S5566
D306, D401 : 1SS252

TO CONTROL ASSY J

Note:

(Type 3)

- 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:Ω, 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:**
mV: Signal voltage at FM 1kHz, 100% MOD.
V: DC voltage (V) at no input signal unless otherwise noted.
Value in () is DC voltage at rated power.
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.

8. SWITCHES (Underline indicates switch position):

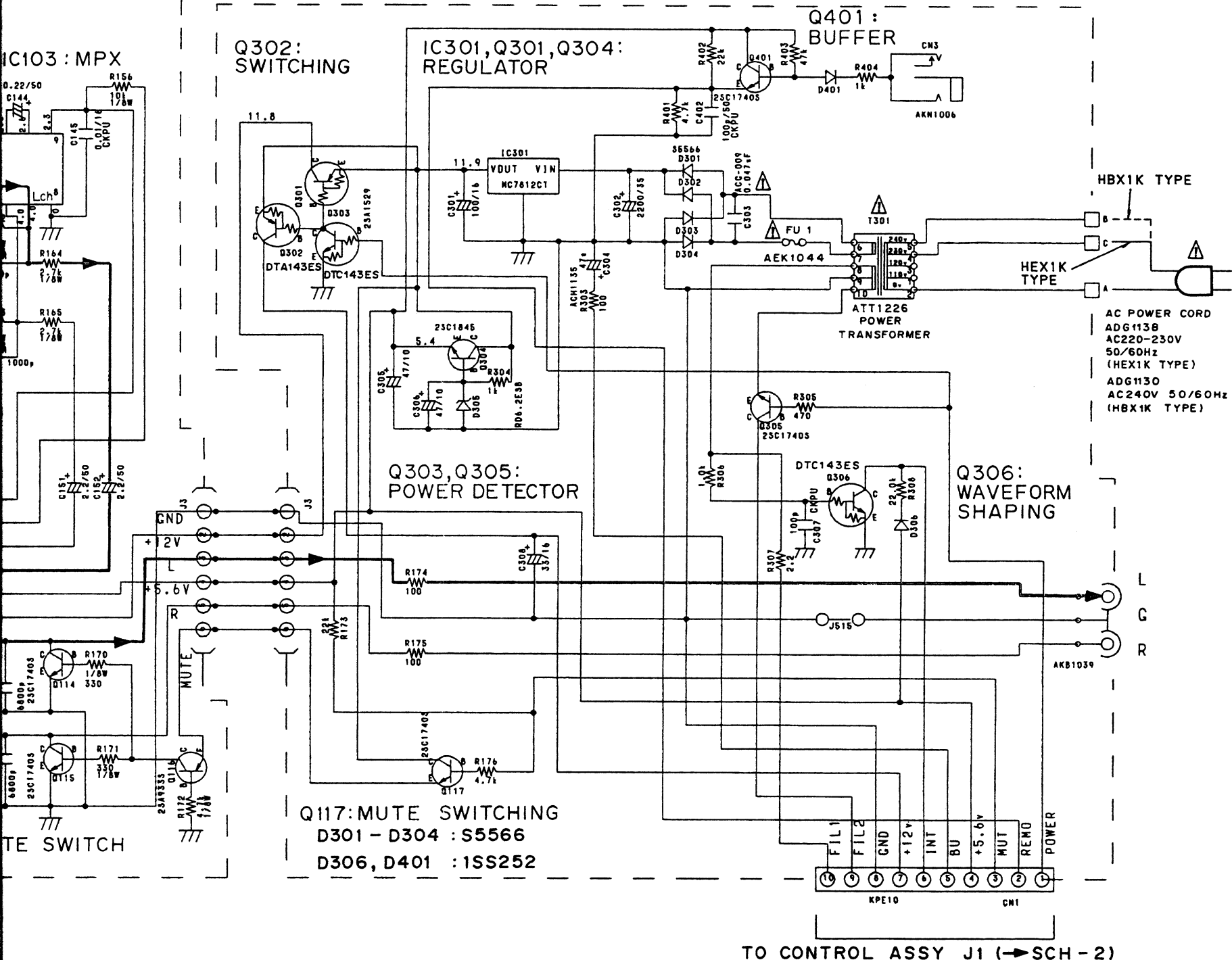
- CONTROL ASSEMBLY
- S201 : 8
 - S202 : TUNING(DOWN)
 - S203 : 12
 - S204 : BAND(FM)
 - S205 : 7
 - S206 : 3
 - S207 : 9
 - S208 : AUTO/MANUAL
 - S209 : MONO
 - S210 : 4
 - S211 : 10
 - S212 : BAND(AM)
 - S213 : TUNING(UP)
 - S214 : RF ATT
 - S215 : 2
 - S216 : 11
 - S217 : 1
 - S218 : 5
 - S219 : MEMORY
 - S220 : 6
 - S221 : POWER(STANDBY/ON)

9. For SCH - □ on the schematic diagram
SCH - □ indicates the drawing number of the schematic diagram.
(SCH stands for schematic diagram.)

SCH-1

—————: FM SIGNAL LINE
- - - - -: AM SIGNAL LINE

POWER ASSY (AWZ4976:HEX1K AND HBX1K TYPES)



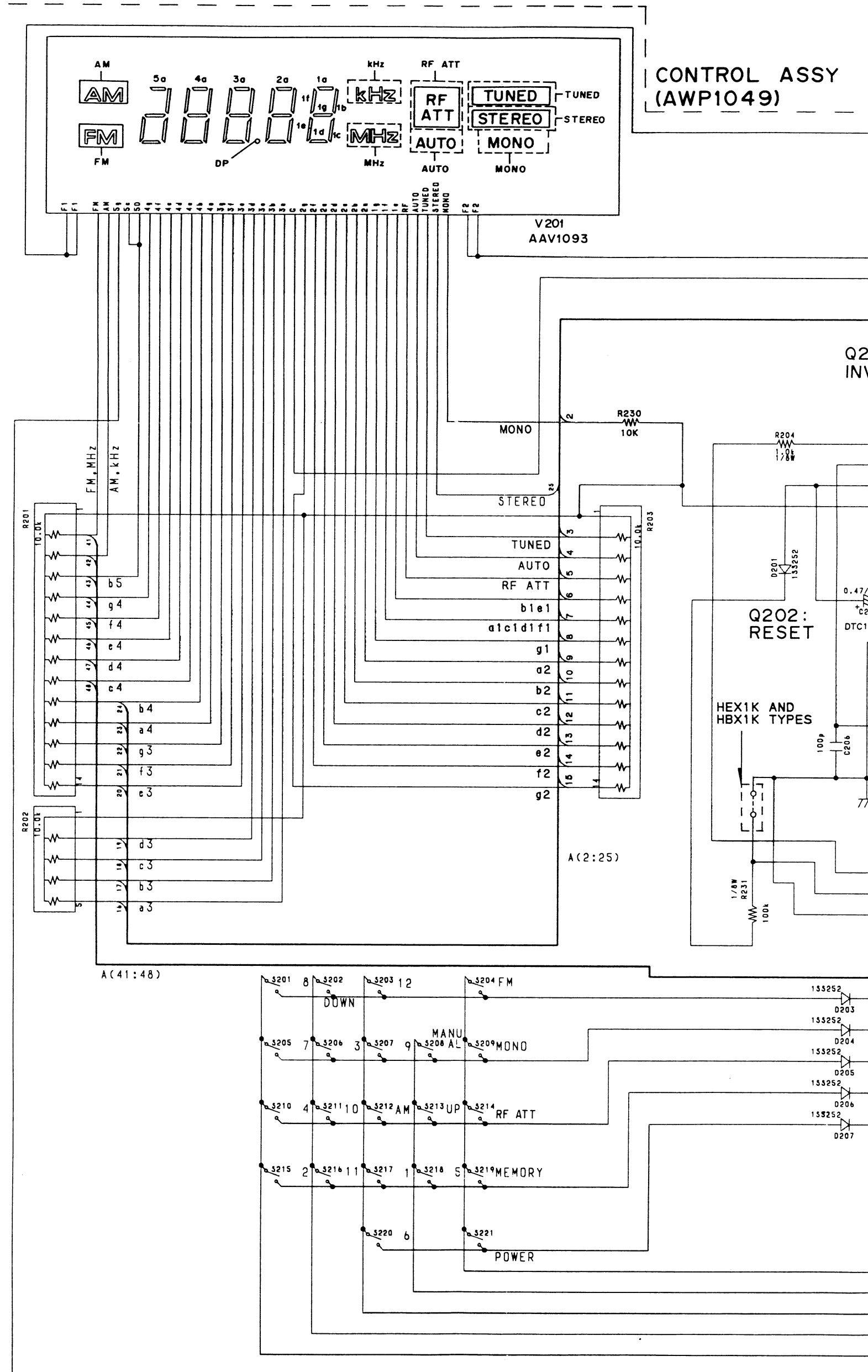
TO CONTROL ASSY J1 (→SCH-2)

TUNER, POWER ASSY

SCH-1

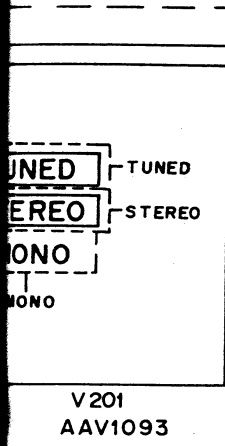
5.3 SCHEMATIC DIAGRAM OF CONTROL ASSEMBLY

A
B
C
D
E
F



SCH-2

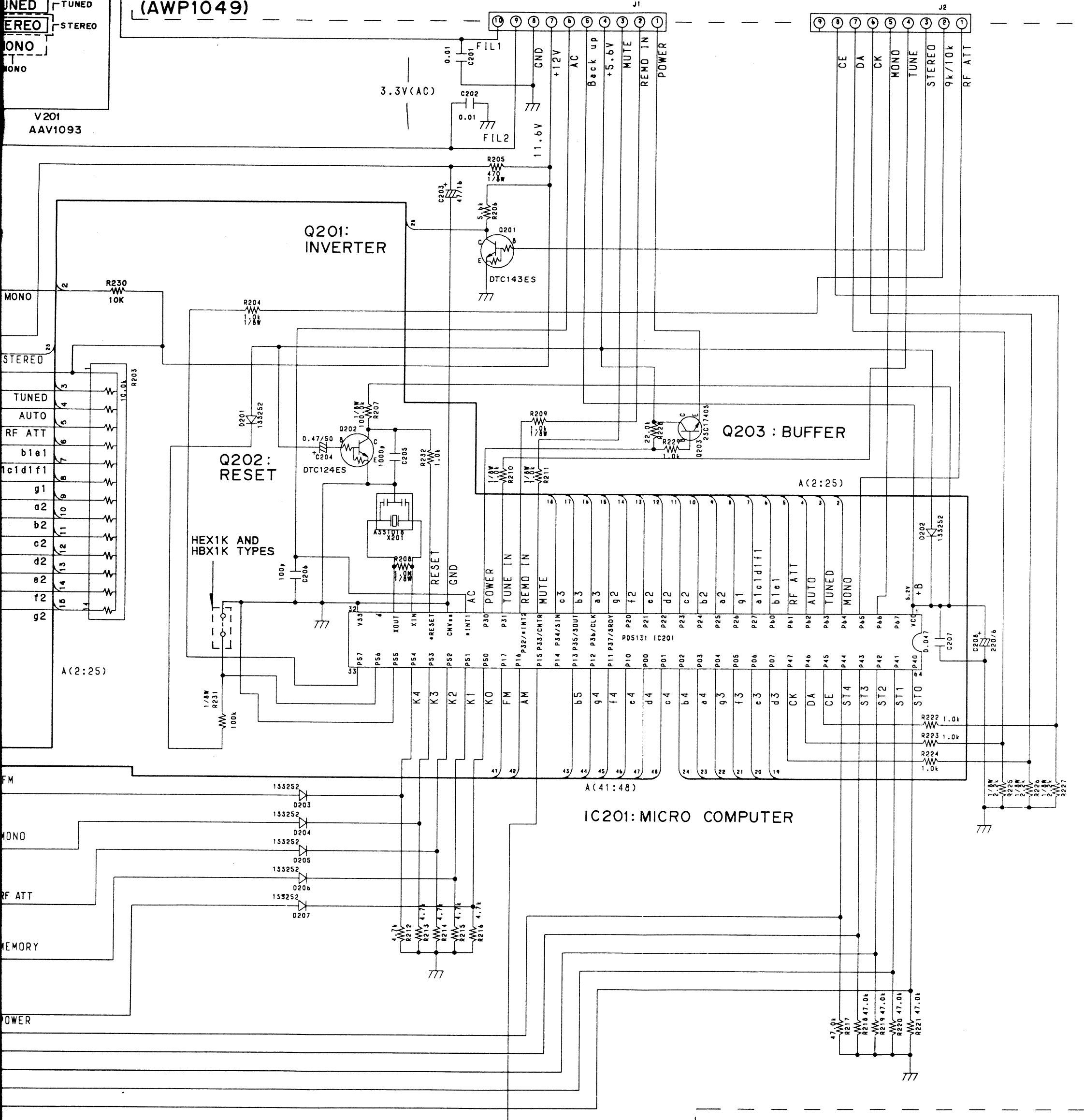
CONTROL ASSY

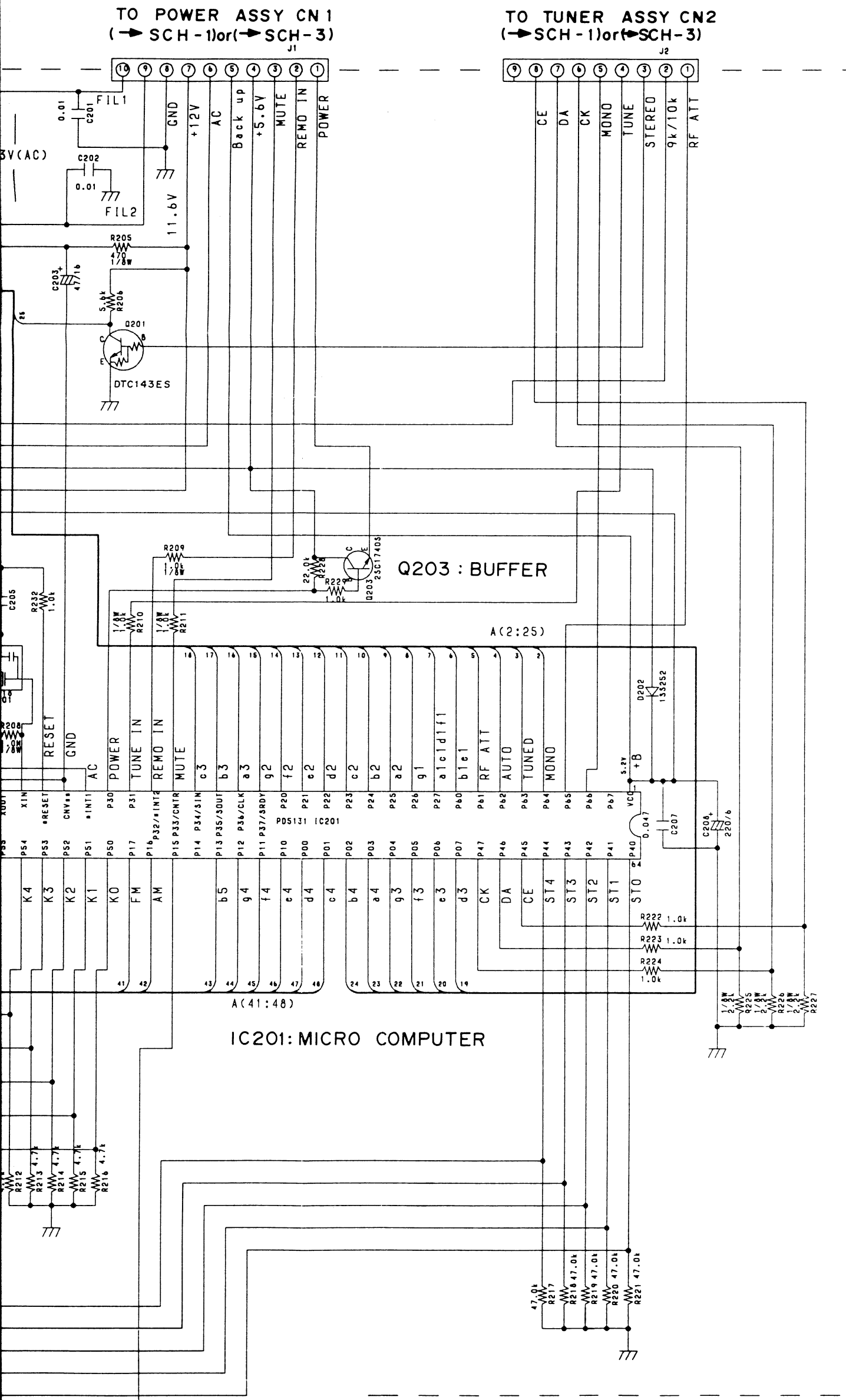


CONTROL ASSY
(AWP1049)

TO POWER ASSY CN1
(→SCH-1)or(→SCH-3)

TO TUNER ASSY CN2
(→SCH-1)or(→SCH-3)





A
B
C
D
E
F

6. ADJUSTMENTS

6.1 ADJUSTMENT OF THE FM TUNER SECTION

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

Step No.	Adjustment Title	FM SG(1kHz, ± 75 kHz dev.)		Reception Frequency Display	Adjustment	
		Frequency(MHz)	Level(dB μ V)		Adjustment Location	Specifications
1	Center adjustment* ¹	98.0	60	98.0MHz	L102	Adjust so that the voltage between the TP - 1 and TP - 2 becomes 0V \pm 50mV.
2	VCO adjustment	Non-modulation	60	98.0MHz	VR101	Adjust so that the output of the TP - 4 becomes 76kHz \pm 0.5kHz.
3	TUNED IND. Lighting level	98.0* ² (Stereo modulation)	15 (± 3 dB)	98.0MHz	VR103	Adjust so that the indicator lights up.

*1: When FE module assembly has been replaced, make sure to adjust the center adjustment.

*2: Stereo modulation : Main; 1kHz, L+R, ± 68.25 kHz dev.

Pilot; 19kHz, ± 6.75 kHz dev.

6.2 ADJUSTMENT OF MW TUNER SECTION

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

Step No.	Adjustment Title	AM SG(400Hz, 30% Mod.)		Reception Frequency Display	Adjustment	
		Frequency(kHz)	Level(dB μ V/m)		Adjustment Location	Specifications
1	Tracking adjustment *1	603	Weak input	603kHz	MW ANT. coil	Adjust so that the voltage between the TP-5 and GND becomes maximum.
2		1395		1395kHz	TC101	
3	IF adjustment *1	603		603kHz	F104	
4	TUNED IND. Lighting level	999	55(± 5 dB)	999kHz	VR102	Adjust so that the indicator lights up.

*1: F-202/HEWIX1K only

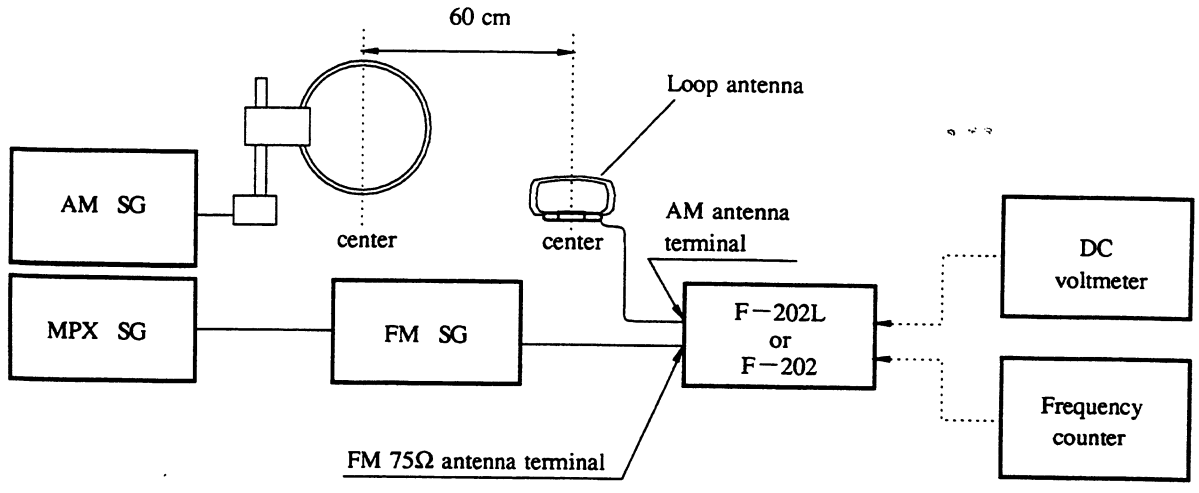


Fig. 1 Connection Diagram

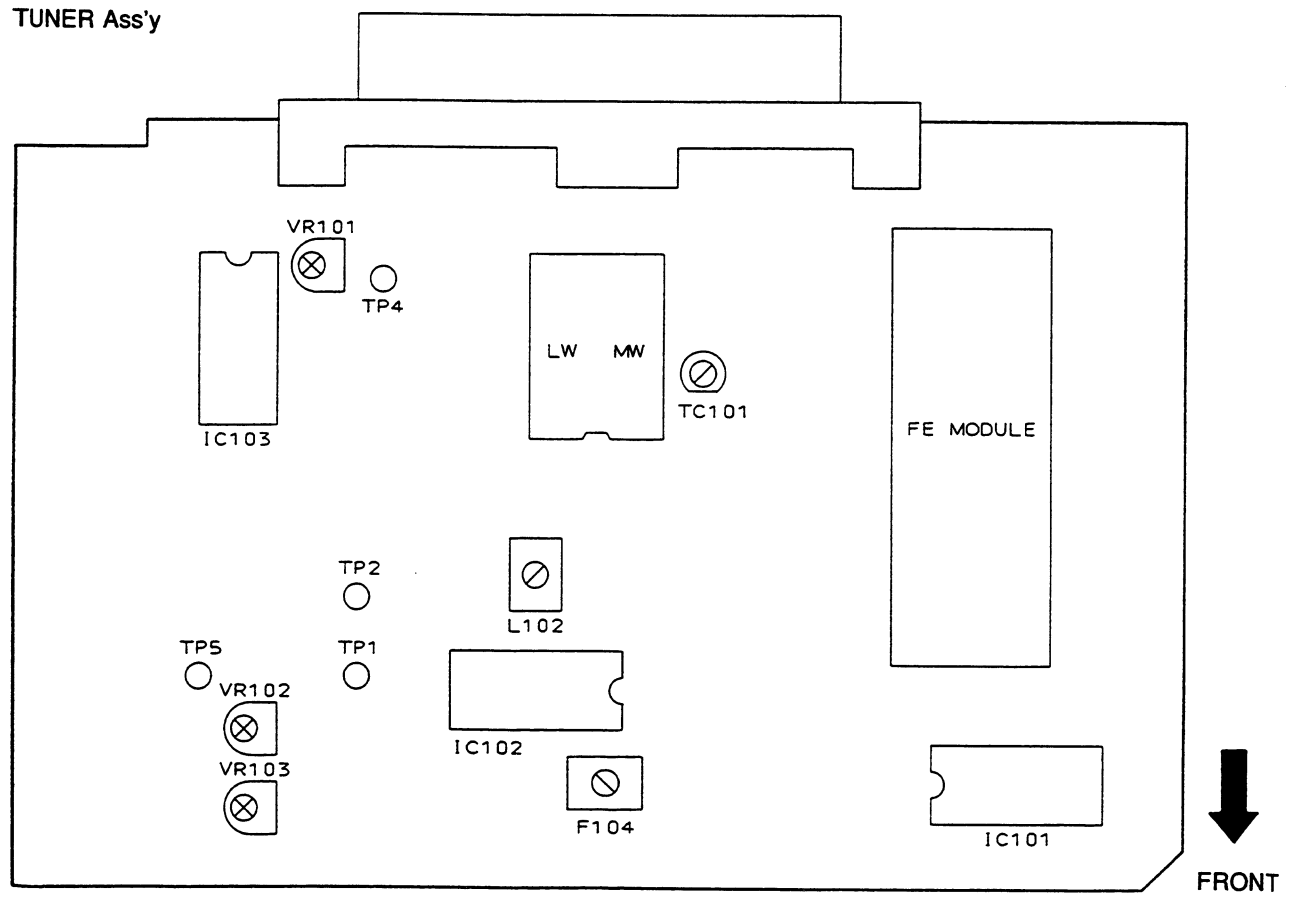


Fig. 2 Adjustment Points

7. FOR F – 202L/HBX1K, F – 202/HEWZX1K AND HEWIX1K

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.

7.1 CONTRAST OF MISCELLANEOUS PARTS FOR F – 202L/HBX1K, F – 202/HEWZX1K AND HEWIX1K

F – 202L/HBX1K, F – 202/HEWZX1K, HEWIX1K and F – 202L/HEX1K have the same construction except for the following:

Mark	Symbol & Description	Part No.				Remarks
		F-202L HEX1K	F-202L HBX1K	F-202 HEWZX1K	F-202 HEWIX1K	
NSP	TUNER assembly TUNER assembly POWER assembly	AWE1278 AWZ4971 AWZ4976	AWE1278 AWZ4971 AWZ4976	AWE1276 AWZ4969 AWZ4974	AWE1277 AWZ4970 AWZ4975	Refer to page 6.
Δ	Earth screw	.....	.....	ABA1047	ABA1047
	AC power cord	ADG1138	ADG1130	ADG1138	ADG1138	
	FM antenna	ADH1005	ADH1005	.....	.....
	FM antenna assembly	.....	.....	ADH1002	ADH1002
	Packing case	AHD2550	AHD2550	AHD2549	AHD2549	
	Front panel	AMB2149	AMB2149	AMB2141	AMB2141	
	Operating instructions (English/German/French/Italian/ Swedish/Dutch/Spanish/Portuguese)	ARE1278	.....	.....	.....
	Operating instructions (English)	.....	ARB1432	.....	.....
	Operating instructions (German)	.....	.....	ARC1423	.....
	Operating instructions (Italian)	.....	.....	.....	ARC1424

TUNER ASSEMBLY

AWZ4969, AWZ4970 and AWZ4971 have the same construction except for the following:

Mark	Symbol & Description	Part No.			Remarks
		AWZ4971	AWZ4969	AWZ4970	
	C2	CKDYX103M25	
	C3	CKPUYB101K50	.....	.....
	C105	.....	CKDYB103K50	CKDYB103K50
	C108	CKPUYF473Z16	.....	.....
	C139	.....	CKDYB122K50	CKDYB122K50
	C140	.....	CEAS4R7M50	CEAS4R7M50
	C153,C154	CKDYB682K50	.....	.....

Mark	Symbol & Description	Part No.			Remarks
		AWZ4971	AWZ4969	AWZ4970	
	D101	.....	1SV156	1SV156 ²	
	D102,D103	1SS252	.....	.....
	F105	.....	ATF1088	ATF1088	
	L101	.....	LAU2R2K	LAU2R2K	
	Q105,Q107,Q109,Q118	DTC143ES	.....	.....
	Q108	DTA124ES	.....	.....
	Q113	.....	2SC1740S	2SC1740S	
	R116	.....	RD1/8PM270J	RD1/8PM270J	
	R117	.....	RD1/2PM561J	RD1/2PM561J	
	R131	RD1/8PM103J	.....	.....
	R149	.....	RD1/8PM224J	RD1/8PM224J	
	R150	.....	RD1/8PM473J	RD1/8PM473J	
	R151	.....	RD1/8PM222J	RD1/8PM222J	
	R152	.....	RD1/8PM152J	RD1/8PM152J	
	R153	.....	RD1/8PM392J	RD1/8PM392J	
	R160	RD1/8PM623J	RD1/8PM683J	RD1/8PM683J	
	R168,R169	RD1/8PM242J	RD1/8PM912J	RD1/8PM242J	
	TC101	.....	.....	ACM - 018	
	Antenna terminal (PAL 4P)	AKA1010	.....	.....
	Antenna terminal (PAL 2P)	.....	AKA1012	AKA1012	
	3 serial FE module assembly	AXQ1003	.....	.....
	4 serial FE module assembly	.....	AXQ1004	AXQ1004	
	AM RF tuning block	AXX1026	AXX1025	AXX1027	

Note: 4 serial FE module assembly has no service part.

POWER ASSEMBLY

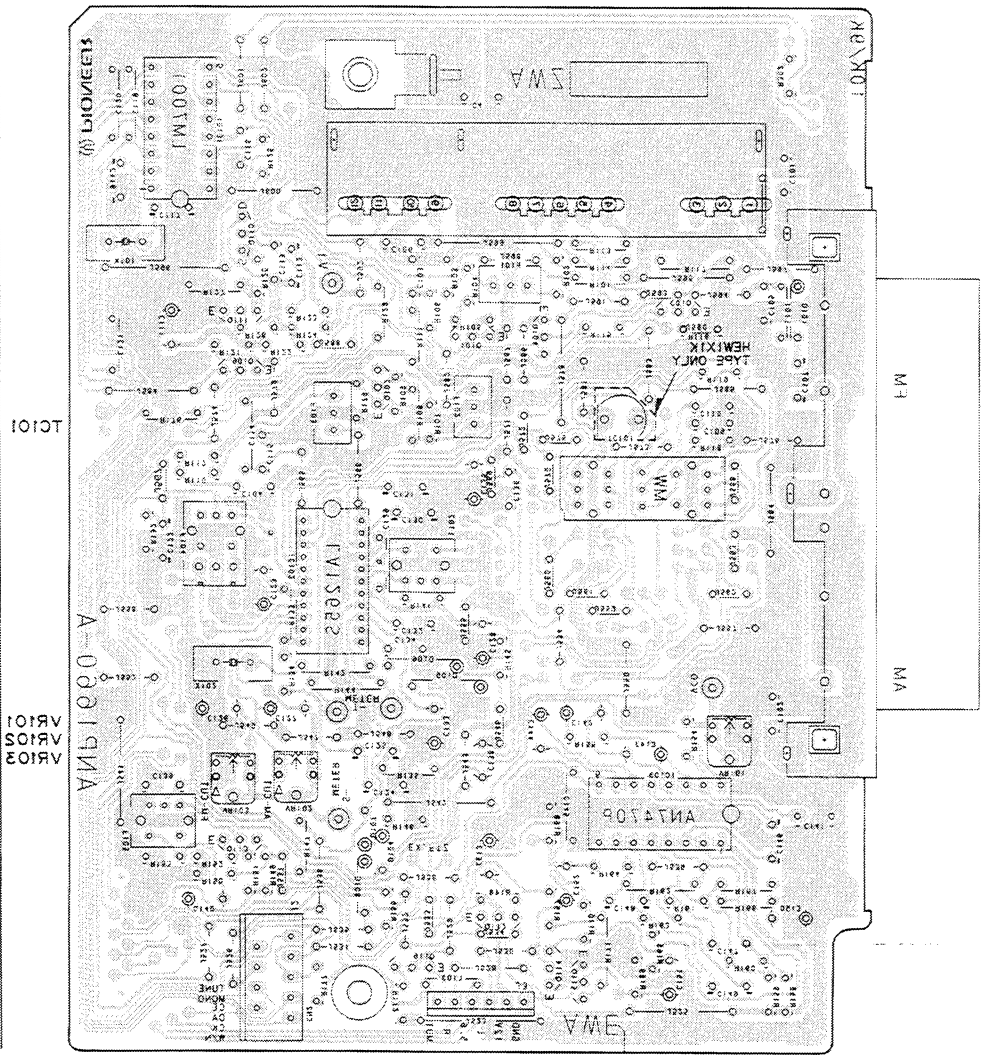
AWZ4974, AWZ4975 and AWZ4976 have the same construction except for the following:

Mark	Symbol & Description	Part No.			Remarks
		AWZ4976	AWZ4974	AWZ4975	
⚠	C1	.....	CKDYX103M25	CKDYX103M25	
	C155,C156	.....	CKDYB332K50	CKDYB392K50	
	C309	.....	ACG1002	ACG1002	
⚠	L104,L106	.....	LAU2R2K	LAU2R2K	
	L301	.....	ATF - 163	ATF - 163	

7.5 PCB CONNECTION DIAGRAMS OF TUNER AND POWER ASSEMBLIES

(AW24970: HEWLETT TYPE)
 (AW24969: HEWLETT TYPE)

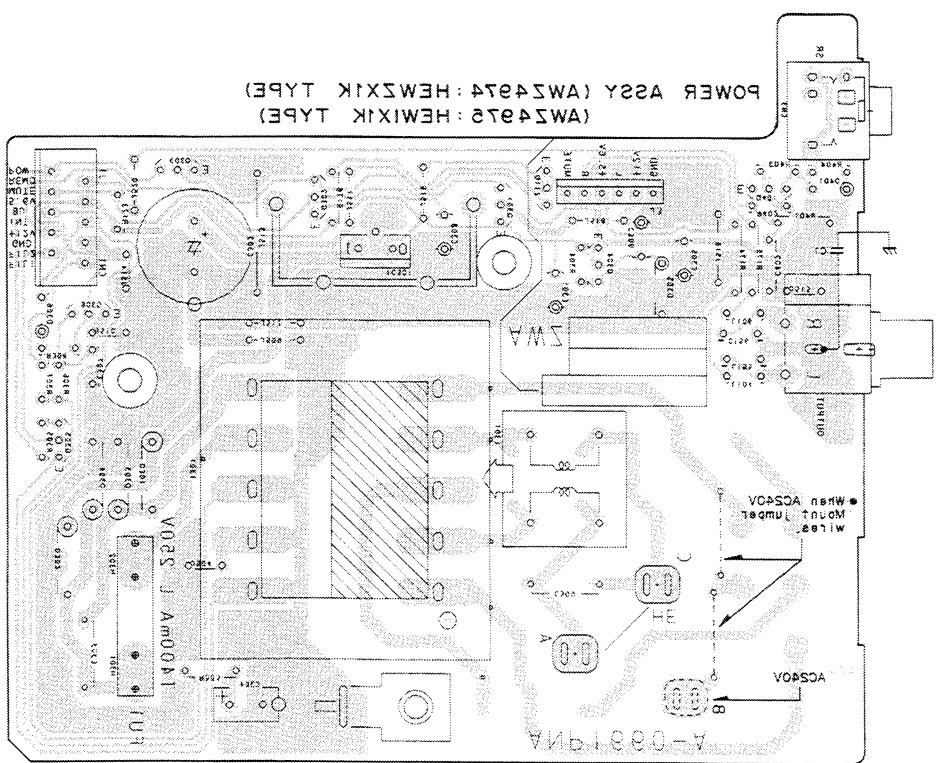
PCB - S



- Q101
- Q110
- Q103
- Q111
- Q104
- Q101
- Q108
- Q105
- LC101
- LC105
- VR101
- VR103
- LC103
- Q113
- Q115
- Q116
- Q114
- Q112

A
B
C
D

(AW24975: HEWLETT TYPE)
 (AW24974: HEWLETT TYPE)



- Q303
- Q401
- Q305
- Q301
- Q301
- Q304
- Q308
- Q308

C
D

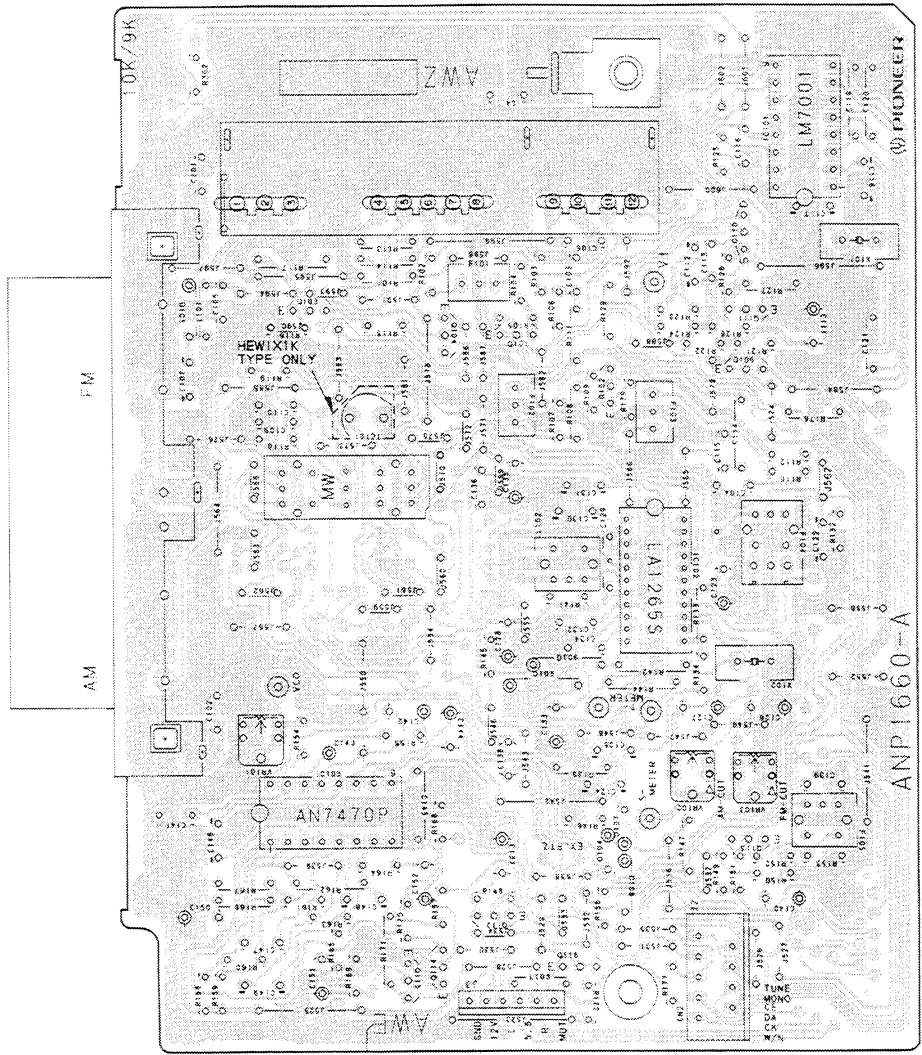
This P.C.B. connection diagram is viewed from the foil side.

1 | 2 | 3

7.2 PCB CONNECTION DIAGRAMS OF TUNER AND POWER ASSEMBLIES

TUNER ASSY (AWZ4969 : HEWZX1K TYPE)
(AWZ4970 : HEWIX1K TYPE)

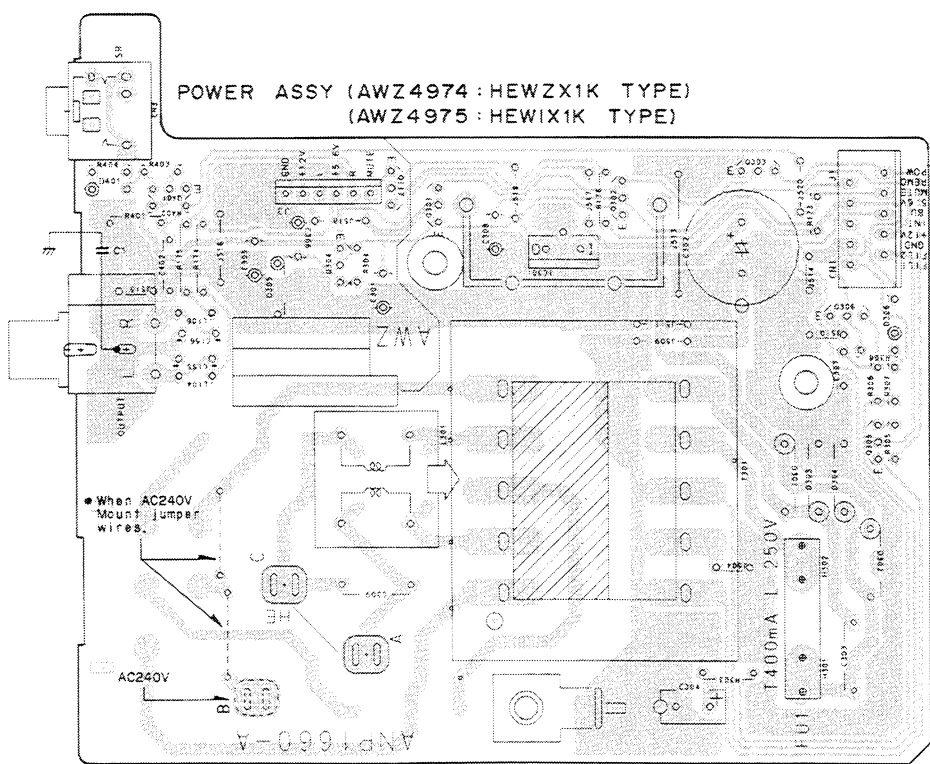
PCB - 2



- IC101
- Q110
- Q103
- Q111
- Q104
- Q101
- Q106
- Q102
- TC101
- IC102
- VR101
- VR102
- VR103
- IC103
- Q113
- Q112
- Q116
- Q114
- Q115

A

B



- Q303
- Q117
- Q401
- Q302
- Q301
- IC301
- Q304
- Q306
- Q305

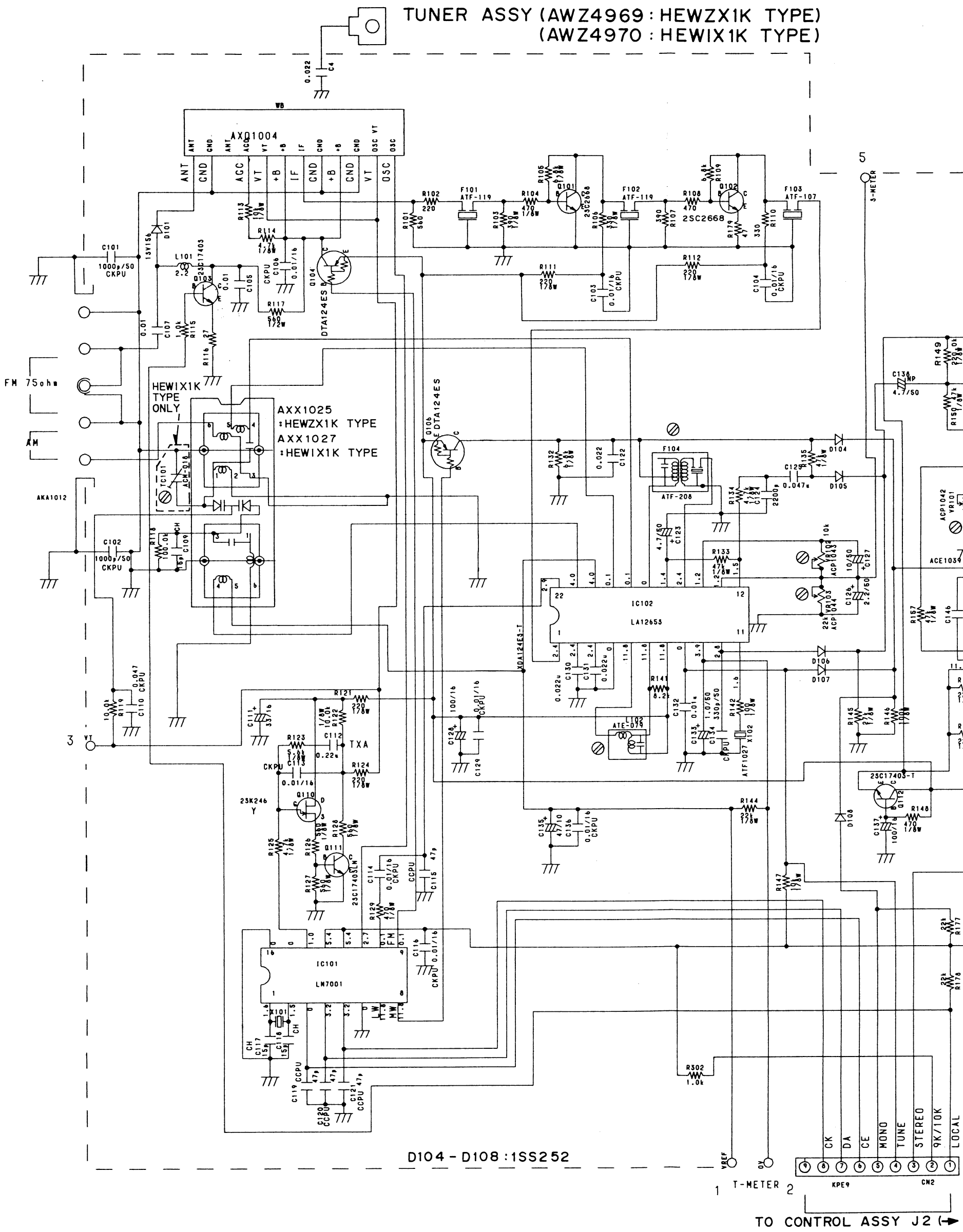
C

D

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

7.3 SCHEMATIC DIAGRAM OF TUNER AND POWER ASSEMBLIES
(FOR F-202/HEWZX1K AND HEWIX1K)

A
B
C
D
E
F



SCH-3

TUNER,
POWER ASSY

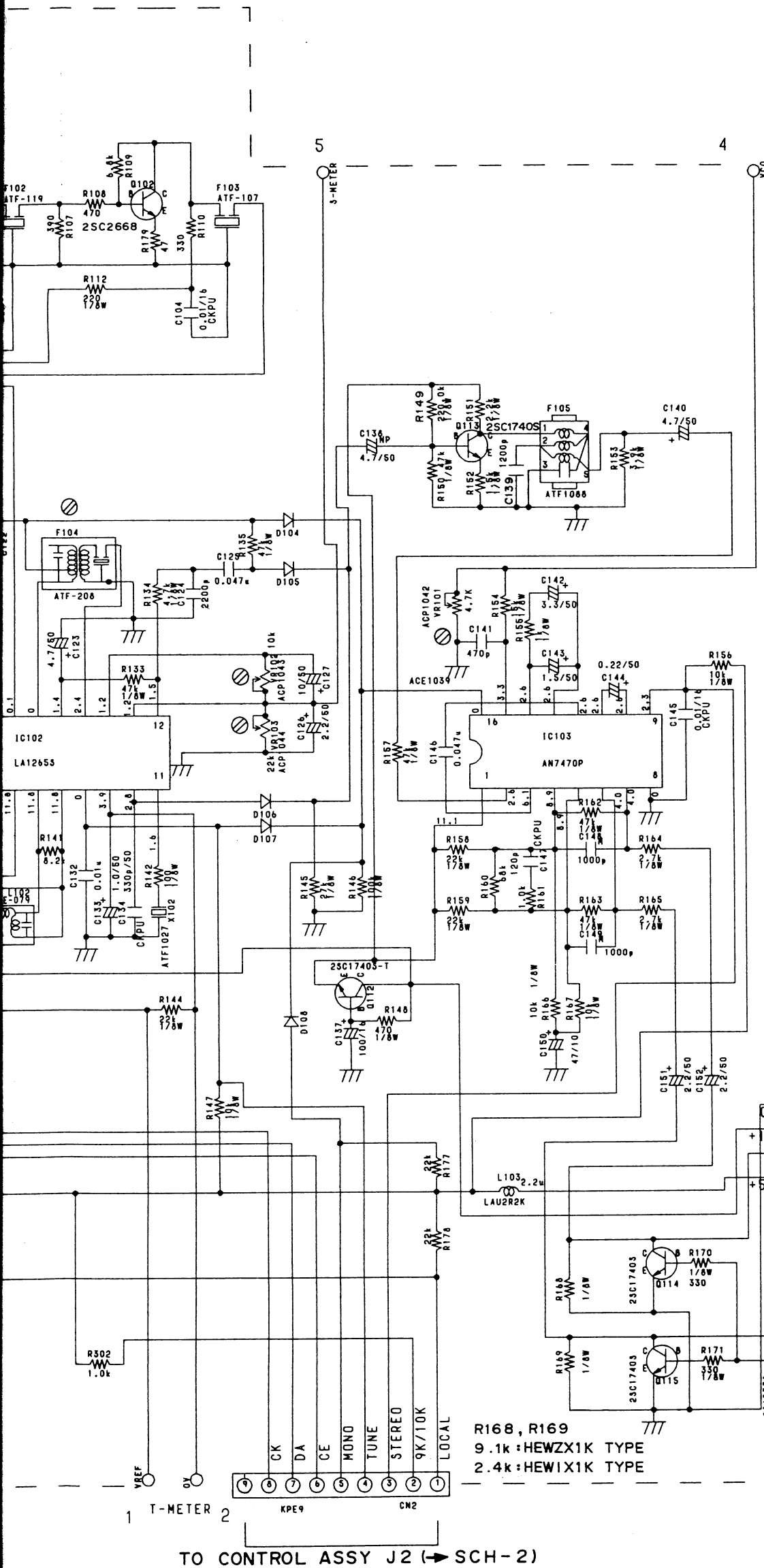
1

2

3

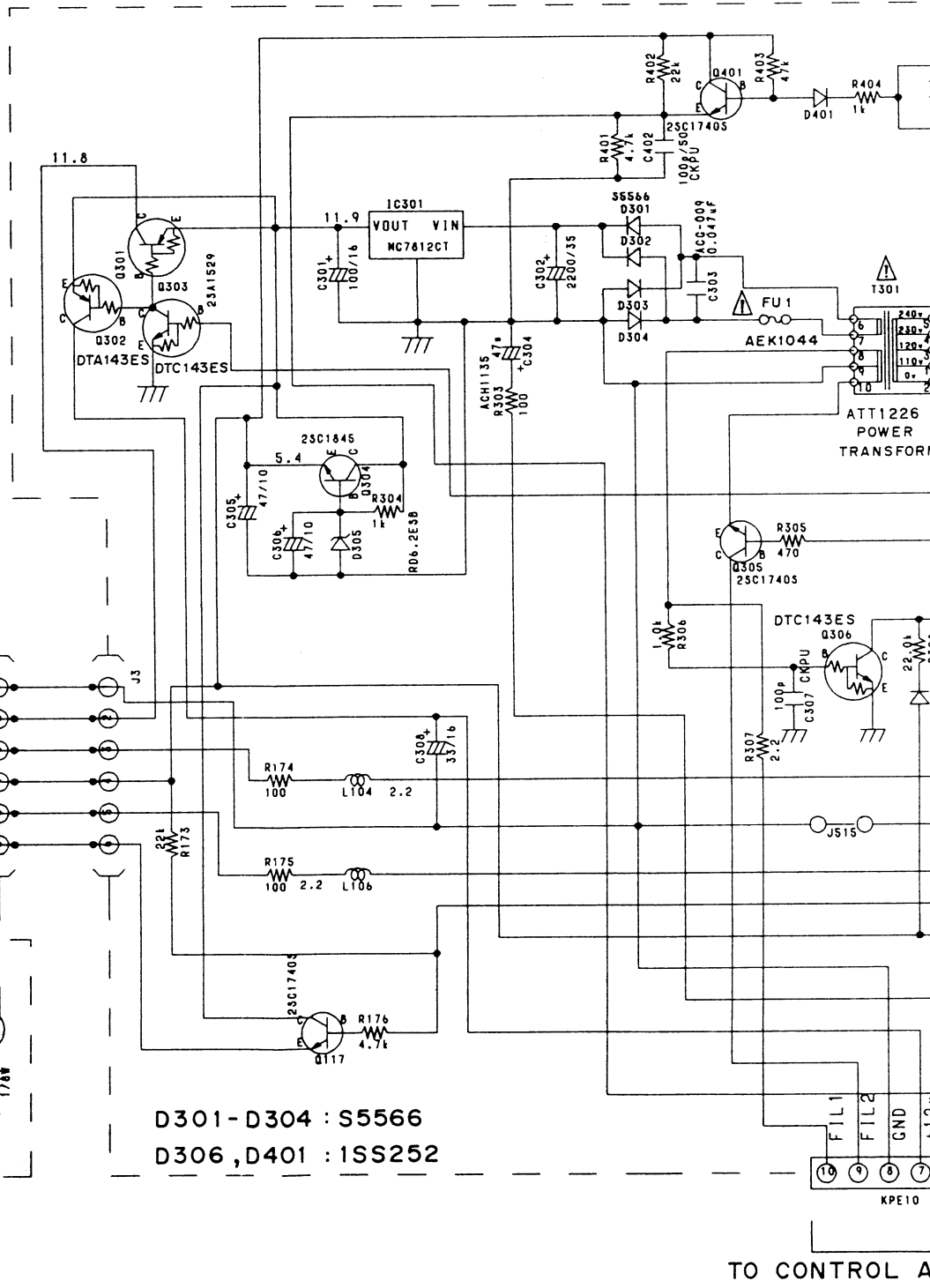
4

69: HEWZX1K TYPE)
70: HEWIX1K TYPE)



R168, R169
9.1k: HEWZX1K TYPE
2.4k: HEWIX1K TYPE

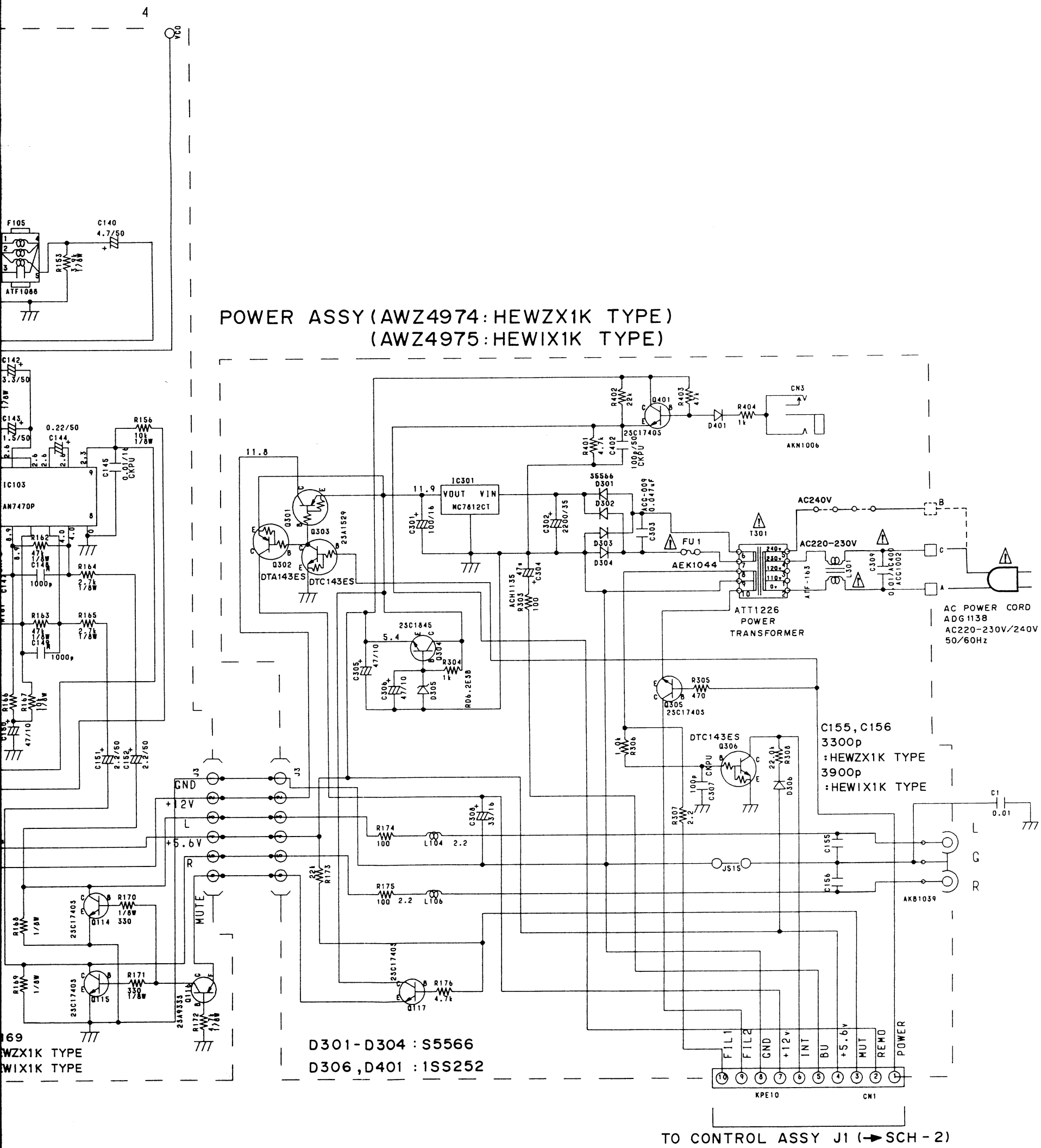
POWER ASSY (AWZ4974: HEWZX1K TYPE)
(AWZ4975: HEWIX1K TYPE)



D301-D304: S5566
D306, D401: 1SS252

SCH-3

POWER ASSY (AWZ4974:HEWZX1K TYPE)
(AWZ4975:HEWIX1K TYPE)



D301-D304 : S5566
D306, D401 : 1SS252

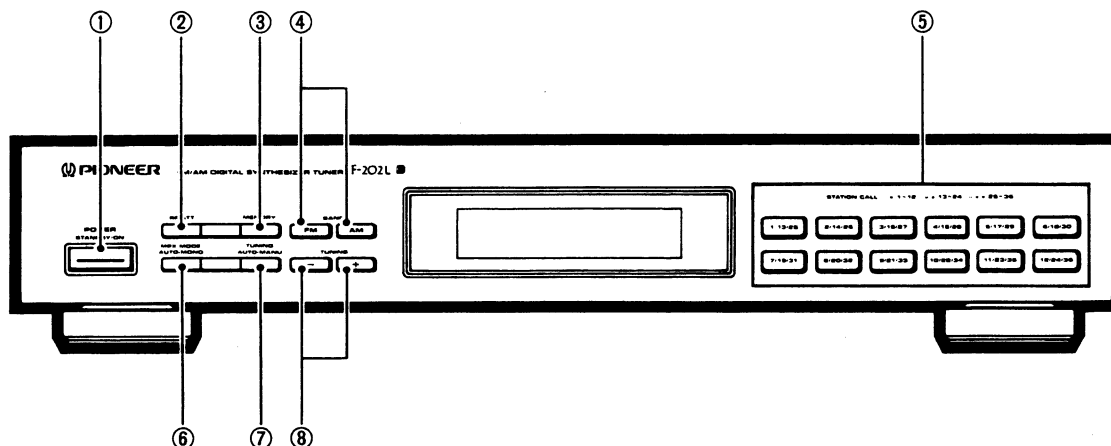
TO CONTROL ASSY J1 (→ SCH-2)

TUNER,
POWER ASSY

SCH-3

8. PANEL FACILITIES

FRONT PANEL FACILITIES



① POWER (STANDBY/ON) switch

ON..... When set to the ON position, power is supplied and the unit becomes operational.

STANDBY... When set to 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.

Disconnect the power cord from the power outlet when you do not plan to use the unit for a long period of time.

NOTE:

- The memory will be backed up so long as the power cord is not unplugged.
- If the power cord is unplugged, the memory will be retained for several days.

② RF ATT button

Set this button to ON when receiving strong FM signals (nearby stations) to reduce sound distortion. ^{RF}ATT indicator lights. Normally, this button should be set to OFF. This button does not affect AM reception.

NOTE:

This button's status is preset for each station in station memory.

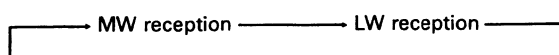
③ MEMORY button

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

④ BAND (FM/AM) selector buttons

These are used to select the band of the desired station.

(F-202L U.K. model) AM reception



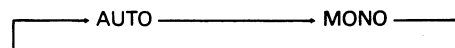
The bands change alternately each time the button is pressed.

⑤ STATION CALL buttons

These are used to preset stations and to recall a already prese station.

⑥ MPX (multiplex) MODE AUTO/MONO button

Mode changes as follows each time this button is pressed:



This button does not affect AM reception.

AUTO:

Depending on the broadcast station, STEREO, or MONO is automatically selected.

NOTE:

When the signal level is too weak for reception, sound output is automatically muted.

MONO:

To receive stereo broadcasts in monaural.

"MONO" indicator lights up.

NOTE:

This button's status is preset for each station in station memory.

⑦ TUNING AUTO/MANU (Manual) button

Use to select either the auto tuning mode or manual tuning mode for FM/AM reception.

(When the auto tuning mode is selected, AUTO indicator will now light.)

NOTE for F-202L:

Auto tuning is not possible on the LW band.

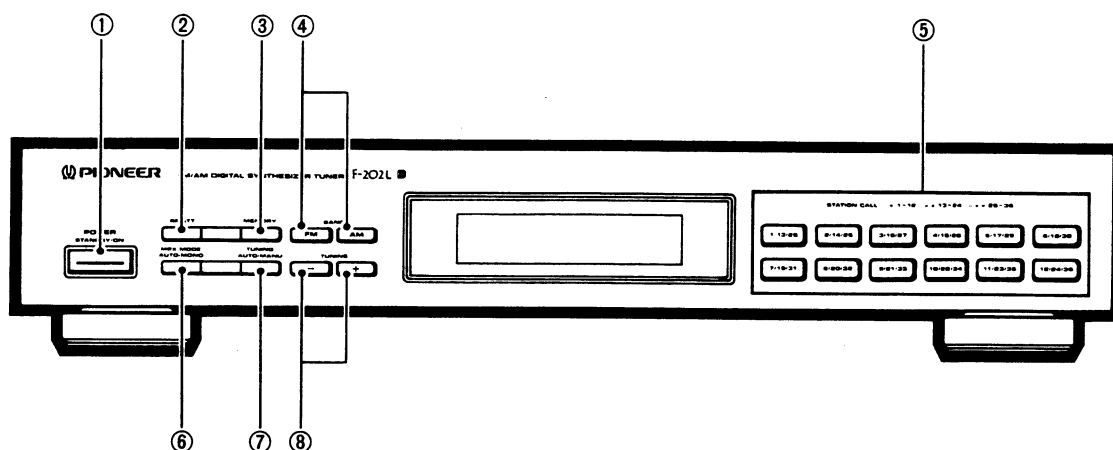
⑧ TUNING (— (down)/ + (up)) buttons

These are used to locate the stations.

Push the "—" button to go to a lower, and the "+" button to go to a higher frequency.

8. PANEL FACILITIES

FRONT PANEL FACILITIES



① POWER (STANDBY/ON) switch

ON..... When set to the ON position, power is supplied and the unit becomes operational.

STANDBY... When set to 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.

Disconnect the power cord from the power outlet when you do not plan to use the unit for a long period of time.

NOTE:

- The memory will be backed up so long as the power cord is not unplugged.
- If the power cord is unplugged, the memory will be retained for several days.

② RF ATT button

Set this button to ON when receiving strong FM signals (nearby stations) to reduce sound distortion. **RF ATT** indicator lights.

Normally, this button should be set to OFF. This button does not affect AM reception.

NOTE:

This button's status is preset for each station in station memory.

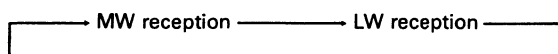
③ MEMORY button

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

④ BAND (FM/AM) selector buttons

These are used to select the band of the desired station.

(F-202L U.K. model) AM reception



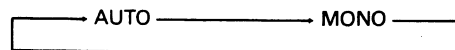
The bands change alternately each time the button is pressed.

⑤ STATION CALL buttons

These are used to preset stations and to recall a already prese station.

⑥ MPX (multiplex) MODE AUTO/MONO button

Mode changes as follows each time this button is pressed:



This button does not affect AM reception.

AUTO:

Depending on the broadcast station, STEREO, or MONO is automatically selected.

NOTE:

When the signal level is too weak for reception, sound output is automatically muted.

MONO:

To receive stereo broadcasts in monaural.

"MONO" indicator lights up.

NOTE:

This button's status is preset for each station in station memory.

⑦ TUNING AUTO/MANU (Manual) button

Use to select either the auto tuning mode or manual tuning mode for FM/AM reception.

(When the auto tuning mode is selected, AUTO indicator will now light.)

NOTE for F-202L:

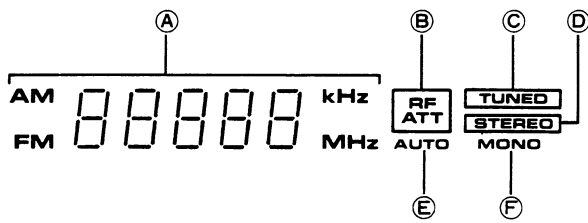
Auto tuning is not possible on the LW band.

⑧ TUNING (- (down)/ + (up)) buttons

These are used to locate the stations.

Push the "-" button to go to a lower, and the "+" button to go to a higher frequency.

Display section



A Frequency display

Shows received broadcast frequency. Also gives scrolling display of main function status. The FM band is indicated by MHz, and the AM band by kHz.

B RF ATT indicator

Lights when the RF ATT button is set to on.

C TUNED indicator

Lights when a broadcast is received and tuned in well.

D STEREO indicator

Lights when a stereo broadcast is received. (The indicator does not light when the MPX MODE AUTO/MONO button is set to MONO.)

E AUTO indicator

Lights when the TUNING AUTO/MANU button is set to AUTO.

F MONO indicator

Lights when the MPX MODE AUTO/MONO button is set to MONO.