



Service Manual

ORDER NO.
ARP2534

FM/AM DIGITAL SYNTHESIZER TUNER
F-401L HEX1K, HBX1K
F-401 HEWIX1K, SD

F-401L AND F-401 HAVE THE FOLLOWING :

| Type | Model | | Power Requirement | Remarks |
|---------|--------|-------|---|---------|
| | F-401L | F-401 | | |
| HEX1K | ○ | — | AC220-230V, 240V (switchable)* | |
| HBX1K | ○ | — | AC220-230V, 240V (switchable)* | |
| HEWIX1K | — | ○ | AC220-230V, 240V (switchable)* | |
| SD | — | ○ | AC110V, 120-127V, 220V, 240V (switchable) | |

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

● Refer to the service manual ARP2243 for F-449/HEWZ.

- This manual is applicable to the following : F-401L/HEX1K and HBX1K ; F-401/HEWIX1K and SD.
- F-401L covers MW/LW bands while F-401 covers MW.
- Ce manuel pour le service comprend les explications de réglage en français.
- Este manual de servicio trata del método ajuste escrito en español.

CONTENTS

| | |
|--|----|
| 1. CONTRAST OF MISCELLANEOUS PARTS | 2 |
| 2. SCHEMATIC AND PCB CONNECTIONS | |
| DIAGRAMS | 3 |
| 3. PCB PARTS LIST | 15 |
| 4. ADJUSTMENTS | 20 |
| 4. REGLAGES | 22 |
| 4. AJUSTES | 24 |

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 1992

DFS MAY 1992 Printed in Japan

F-401L, F-401**1. CONTRAST OF MISCELLANEOUS PARTS****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.

F-401L/HEX1K, HBX1K, F-401/HEWIX1K, SD and F-449/HEWZ have the same construction except for the following :


| Mark | Symbol & Description | Part No. | | | | | Remarks |
|-------------|---|----------------|------------------|------------------|-------------------|--------------|---------|
| | | F-449/ HEWZ | F-401L/ HEX1K | F-401L/ HBX1K | F-401/ HEWIX1K | F-401/ SD | |
| ● | TUNER assembly | AWZ3643 | AWZ4173 | AWZ4173 | AWZ4170 | AWZ4171 | |
| ● | POWER assembly | AWZ3649 | AWZ4177 | AWZ4177 | AWZ4174 | AWZ4175 | |
| ● | DISPLAY assembly | AWP1036 | AWP1039 | AWP1039 | AWP1039 | AWP1036 | |
| \triangle | AC Power cord | ADG1021 | ADG1021 | ADG1085 | ADG1021 | ADG1051 | |
| \triangle | Strain relief | ..... | ..... | ..... | ..... | AEC-882 | |
| | FL filter | AAK1785 | AAK1785 | AAK1785 | AAK1785 | AAK1786 | |
| | Screw (EARTH) | ABA1047 | ..... | ..... | ABA1047 | ..... |  |
| | Screw | ..... | ..... | ..... | ..... | PBZ40P080FZK | *2 |
| | Front panel | ANB1451 | ANB1515 | ANB1515 | ANB1514 | ANB1514 | |
| | Panel base | AMB1842 | AMB1994 | AMB1994 | AMB1994 | AMB1994 | |
| | Bonnet | AZN1745 | ANE1140 | ANE1140 | ANE1140 | AZN1745 | |
| NSP | Cushion rubber | ..... | AEB1197 | AEB1197 | AEB1197 | AEB1197 | |
| NSP | Binder | ..... | ..... | AEC-093 | ..... | ..... |  |
| NSP | Rear panel | ANC1695 | ANC1714 | ANC1714 | ANC1909 | ANC1694 | |
| | FM antenna assembly | ADH1002 | ..... | ..... | ADH1002 | ..... |  |
| | FM antenna | ..... | ADH1005 | ADH1005 | ..... | ADH1005 | |
| | Front, rear pad | AHA1095 | AHA1200 | AHA1200 | AHA1200 | AHA1095 | |
| | Packing case | AHD2056 | AHD2259 | AHD2259 | AHD2289 | AHD2258 | |
| | Packing sheet | AHG1017 | AHG1107 | AHG1107 | AHG1107 | AHG1017 | |
| | Operating instructions (German) | ARC1264 | ..... | ..... | ..... | ..... |  |
| | Operating instructions (English, French, German, Dutch, Swedish, Italian, Spanish, Portuguese) | ..... | ARE1234 | ..... | ..... | ..... |  |
| | Operating instructions (Italian) | ..... | ..... | ..... | ARC1358 | ..... |  |
| | Operating instructions (English) | ..... | ..... | ARB1365 | ..... | ARB1365 | |

NOTE : *1 Although DISPLAY assembly (AWP1036) and DISPLAY assembly (AWP1039) are different in part number, they have the same service parts.

*2 For Voltage selector.

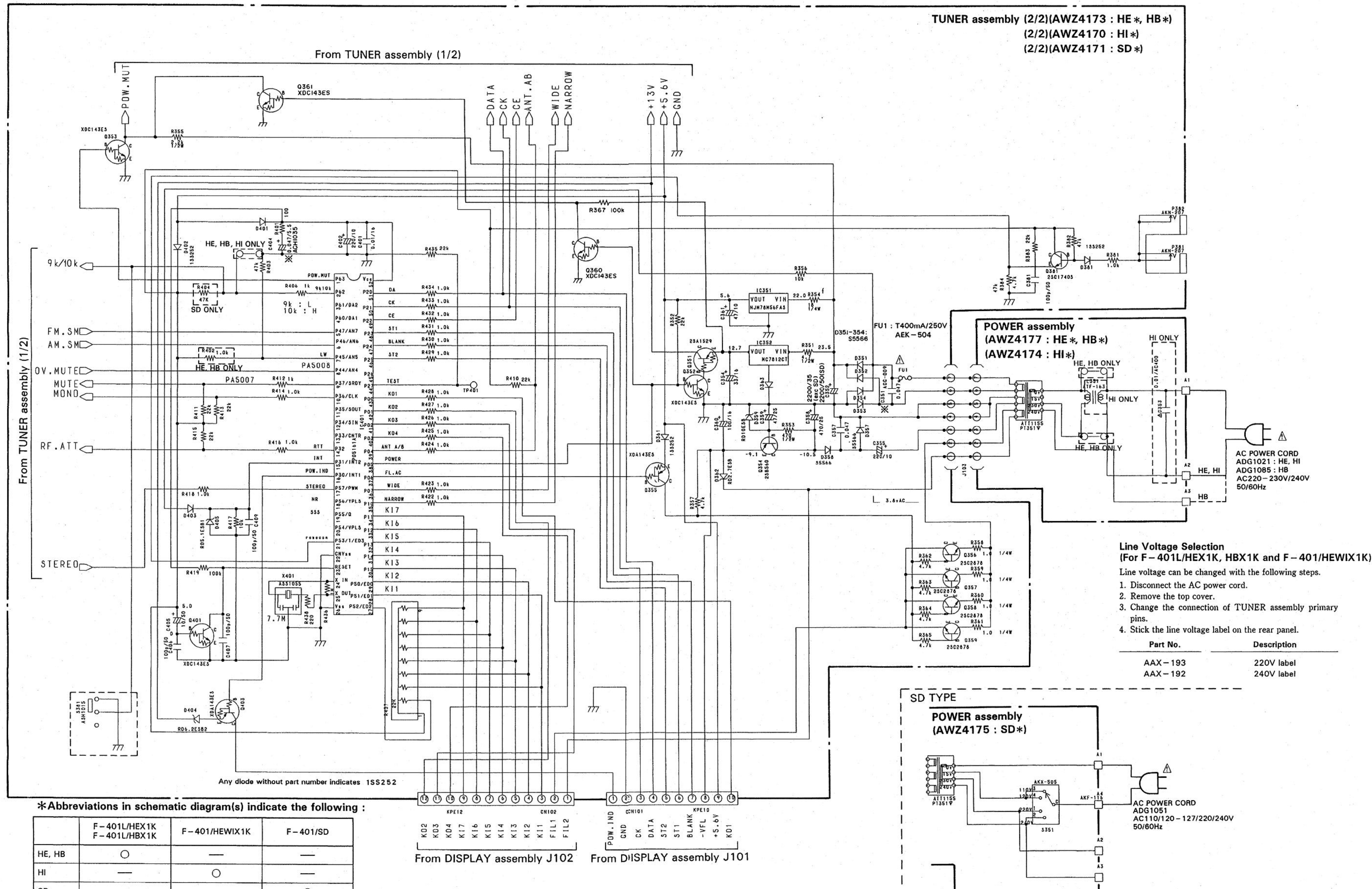
2. SCHEMATIC AND PCB CONNECTIONS DIAGRAMS

2.1 TUNER ASSEMBLY (1/2)



F-401L, F-401

2.2 TUNER ASSEMBLY (2/2) AND POWER ASSEMBLY

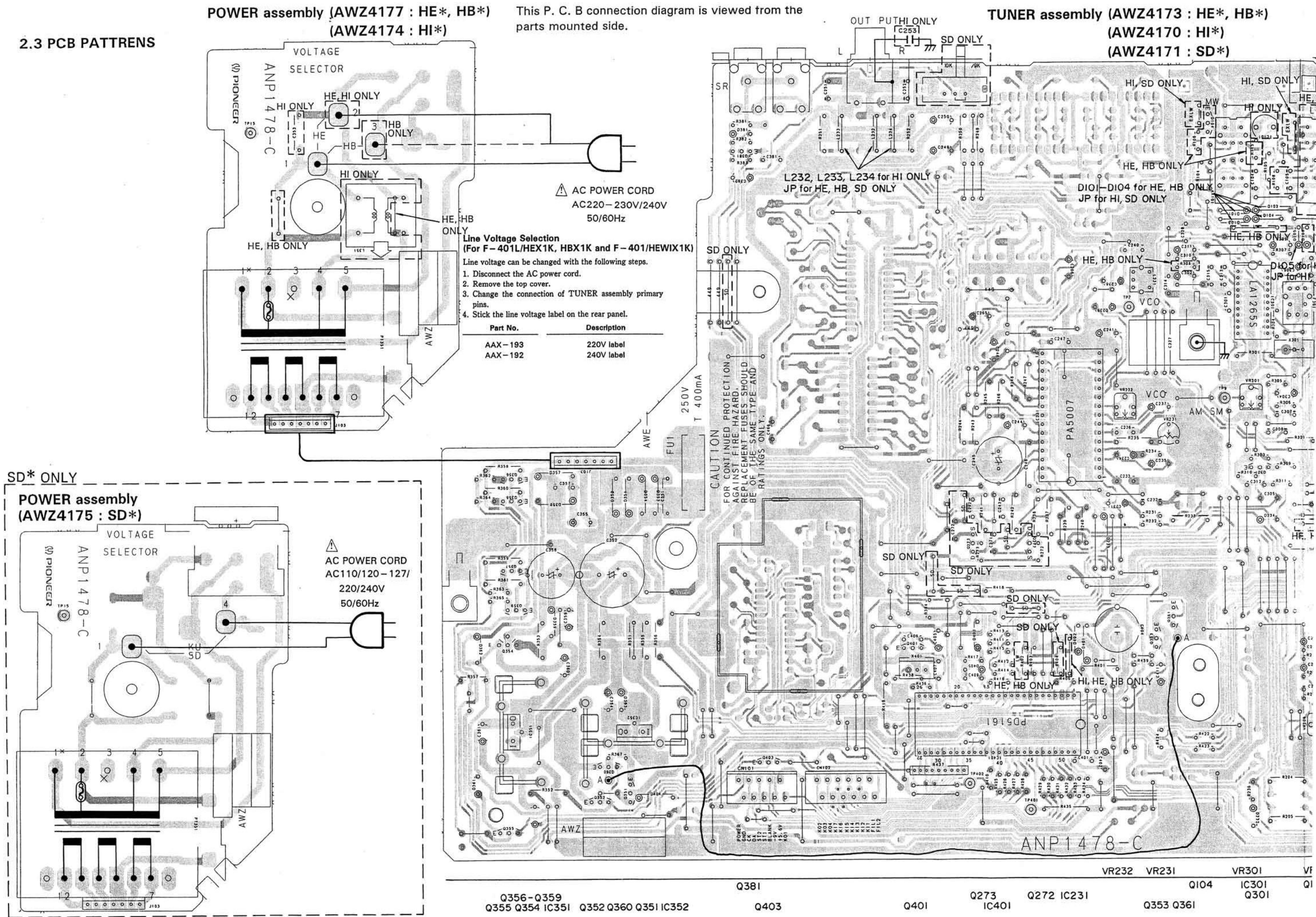


*Abbreviations in schematic diagram(s) indicate the following :

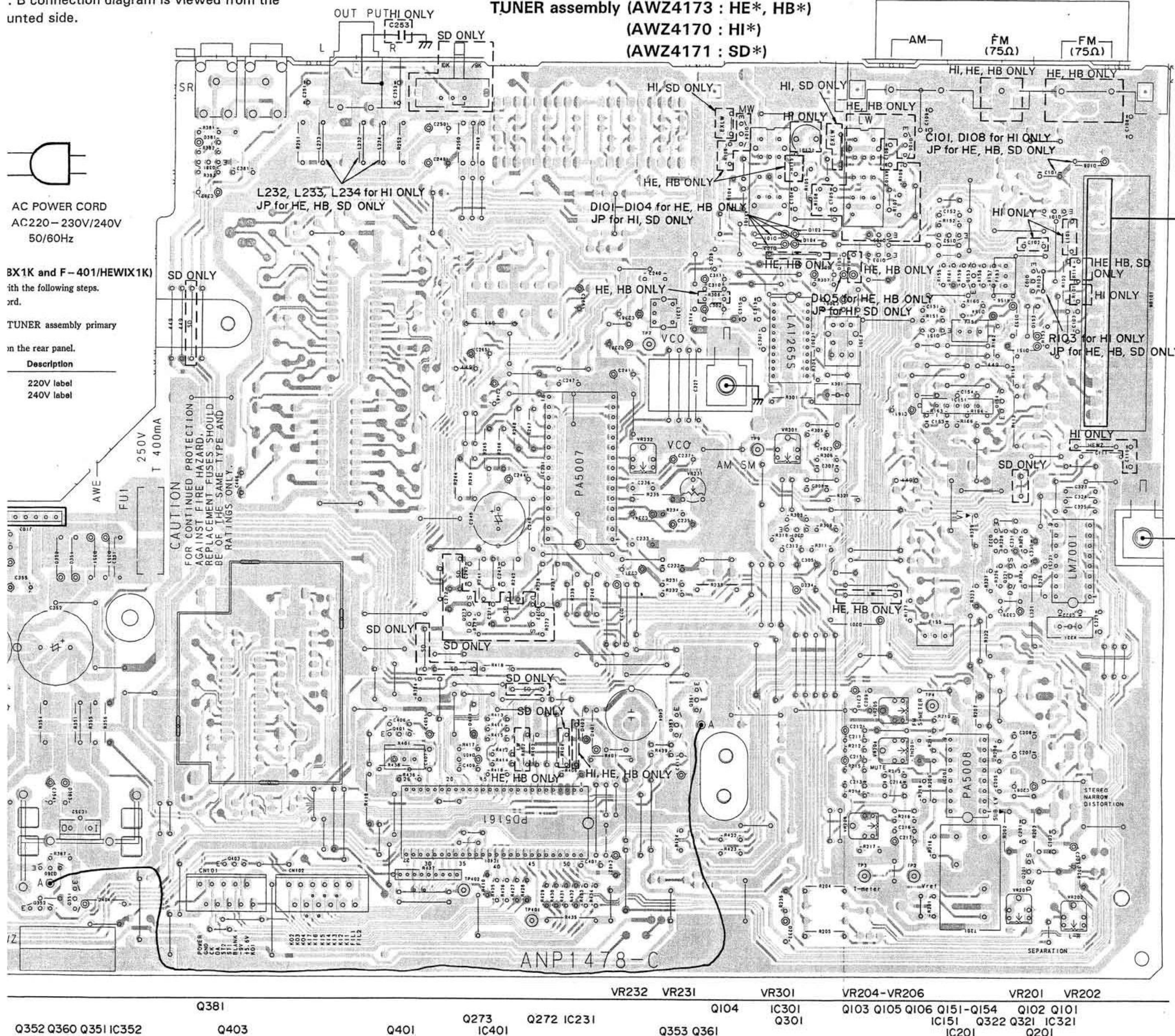
| | F-401L/HEX1K F-401L/HBX1K | F-401/HEWIX1K | F-401/SD |
|--------|------------------------------|---------------|----------|
| HE, HB | ○ | — | — |
| HI | — | ○ | — |
| SD | — | — | ○ |
| exc HI | ○ | — | ○ |

○ : Applicable
- : Not applicable

2.3 PCB PATTERNS

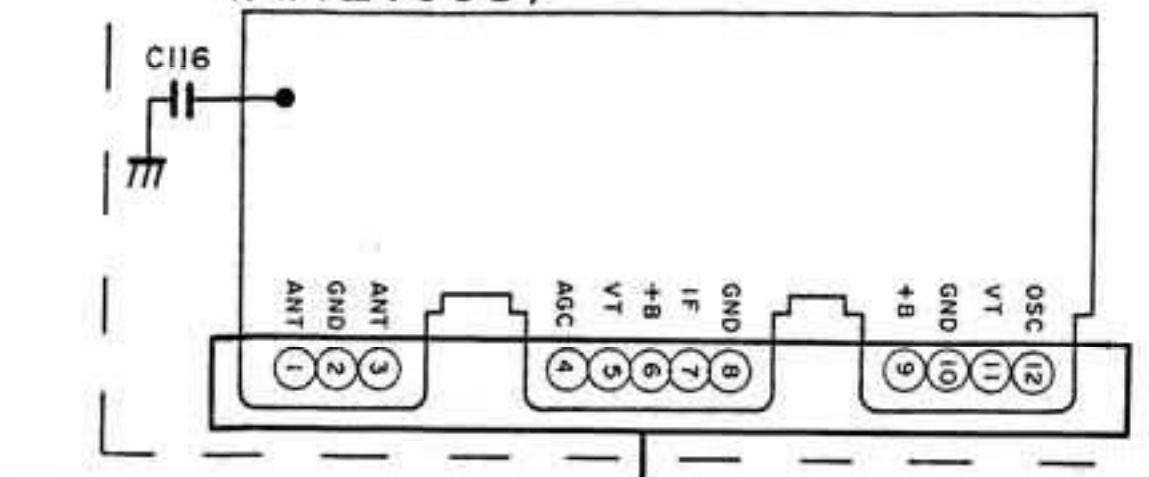


. B connection diagram is viewed from the unted side.

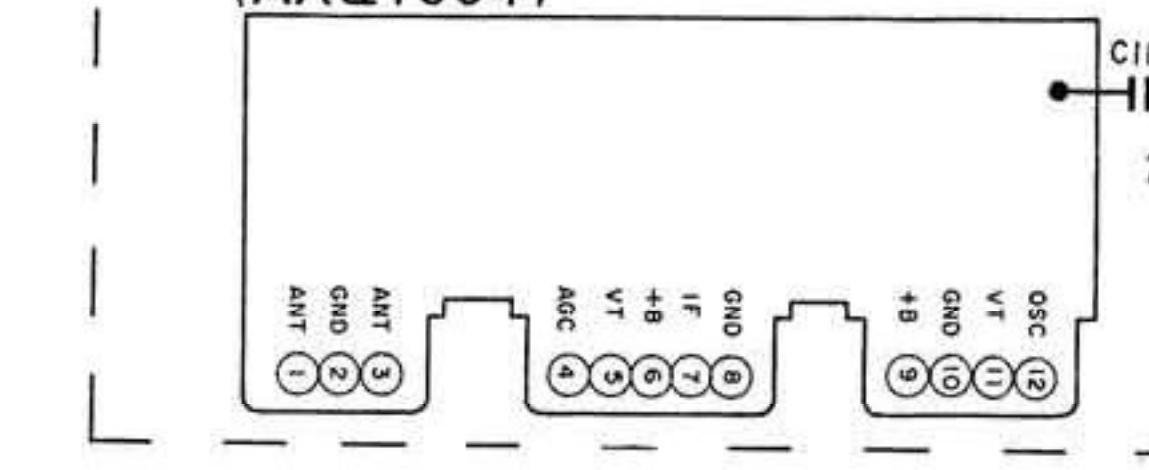


F-401L, F-401

HE*, HB*, SD* ONLY
└ 3 Serial F.E. module assembly —
(AXQ1003)



HI* ONLY
4 Serial F.E. module assembly
(AXQ1004)



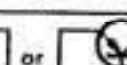
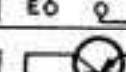
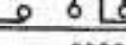
* Abbreviations in PCB diagram(s) indicate the following :

| | F-401L/HEX1K F-401L/HBX1K | F-401/HEWIX1K | F-401/SD |
|--------|------------------------------|---------------|----------|
| HE, HB | ○ | — | — |
| HI | — | ○ | — |
| SD | — | — | ○ |

○ : Applicable
- : Not applicable

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 same part number.

| P.C.B. pattern diagram indication | Corresponding part symbol | Part Name |
|-----------------------------------|--|---------------------------|
| 0504 EO O O |  or  | Transistor |
| 0215 O O O |  or  | Radiator type transistor |
| 0 D203 — O |  | Diode |
| — R237 — |  | Resistor |
| 0 C513 } |  | Capacitor (Polarized) |
| 0 C518 0 |  | Capacitor (Non-polarized) |

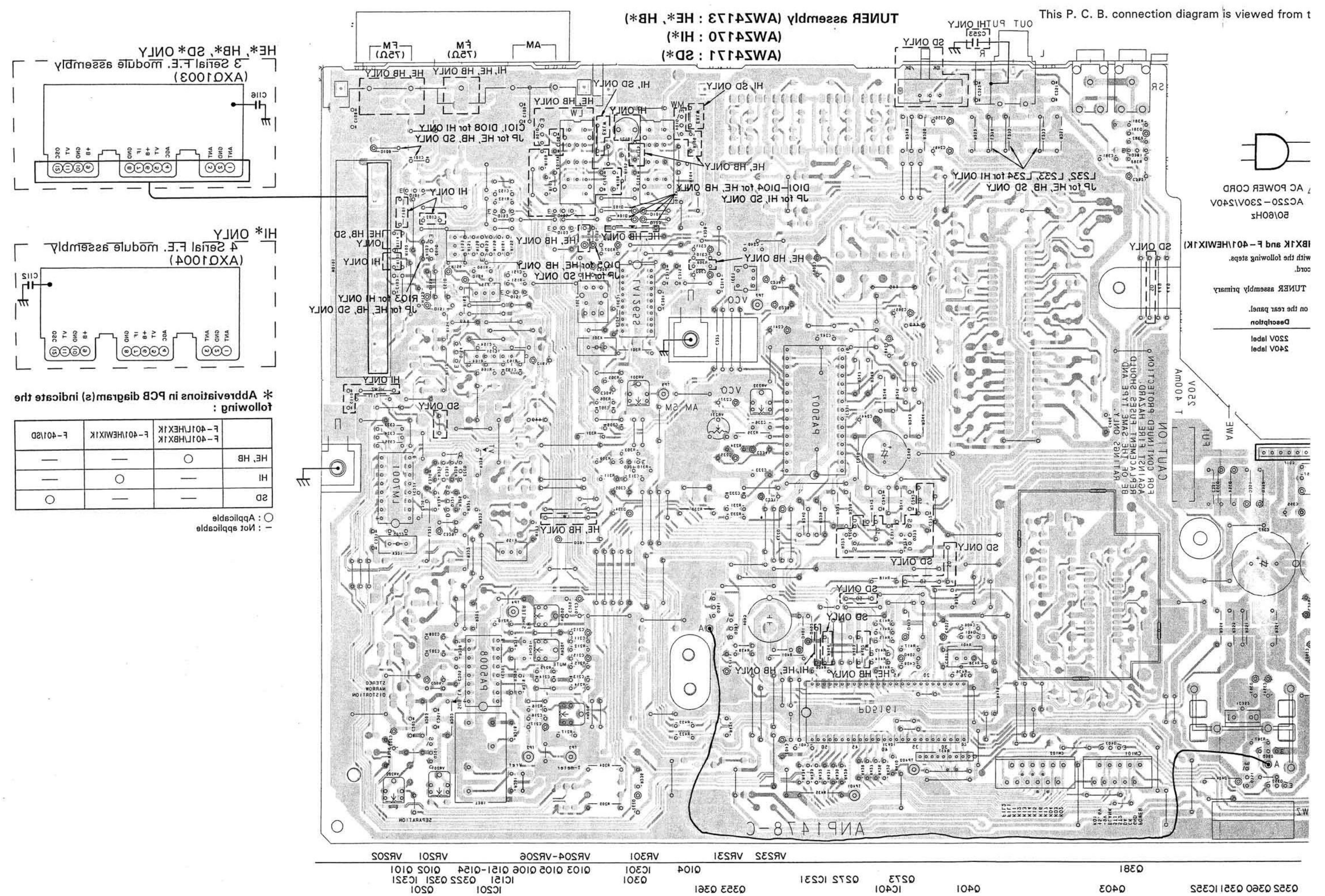
Others

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

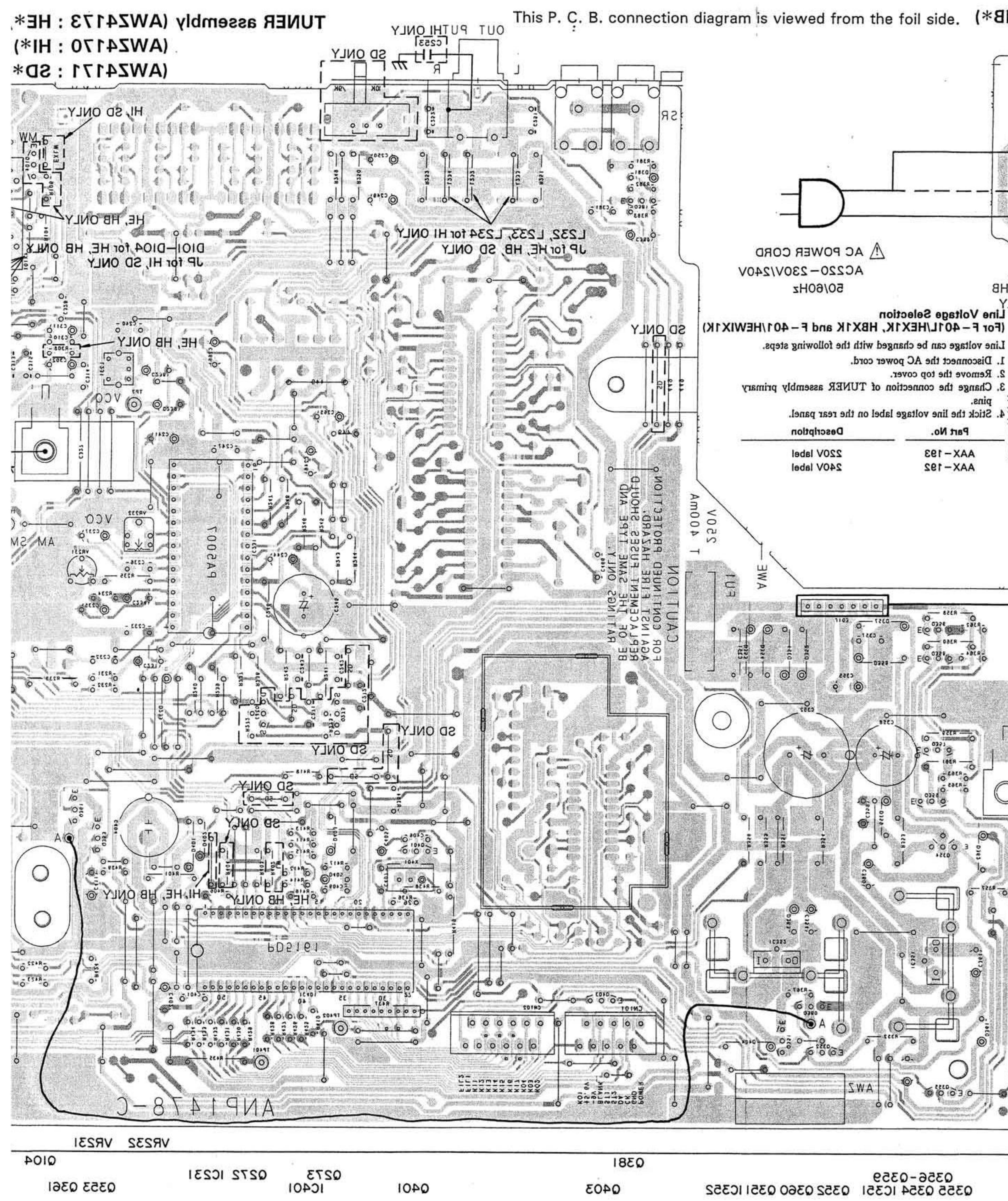
Semi-fixed Resistor

4. The diode terminal marked with shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

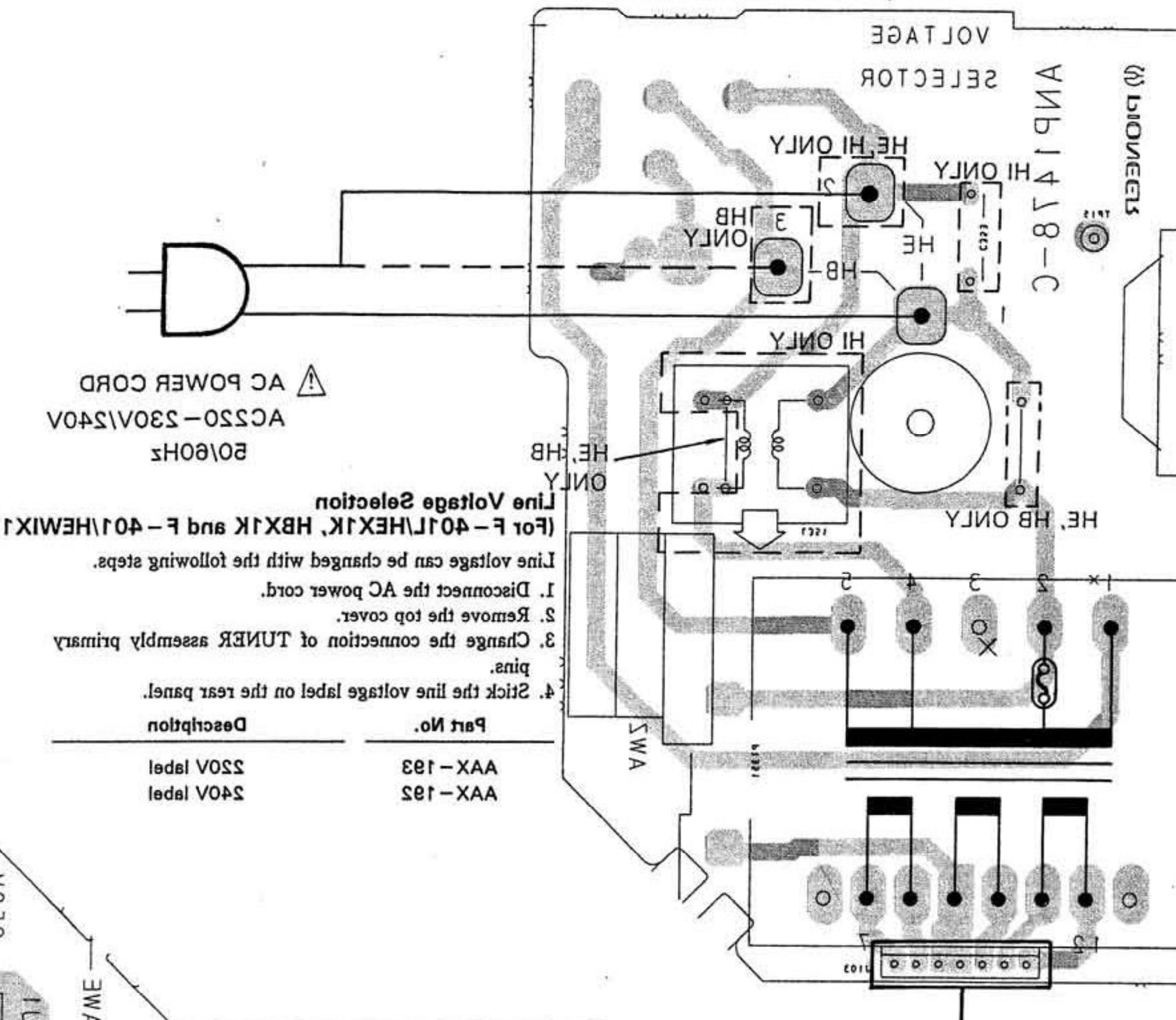
b. The transistor terminal to which E is affixed shows the emitter.



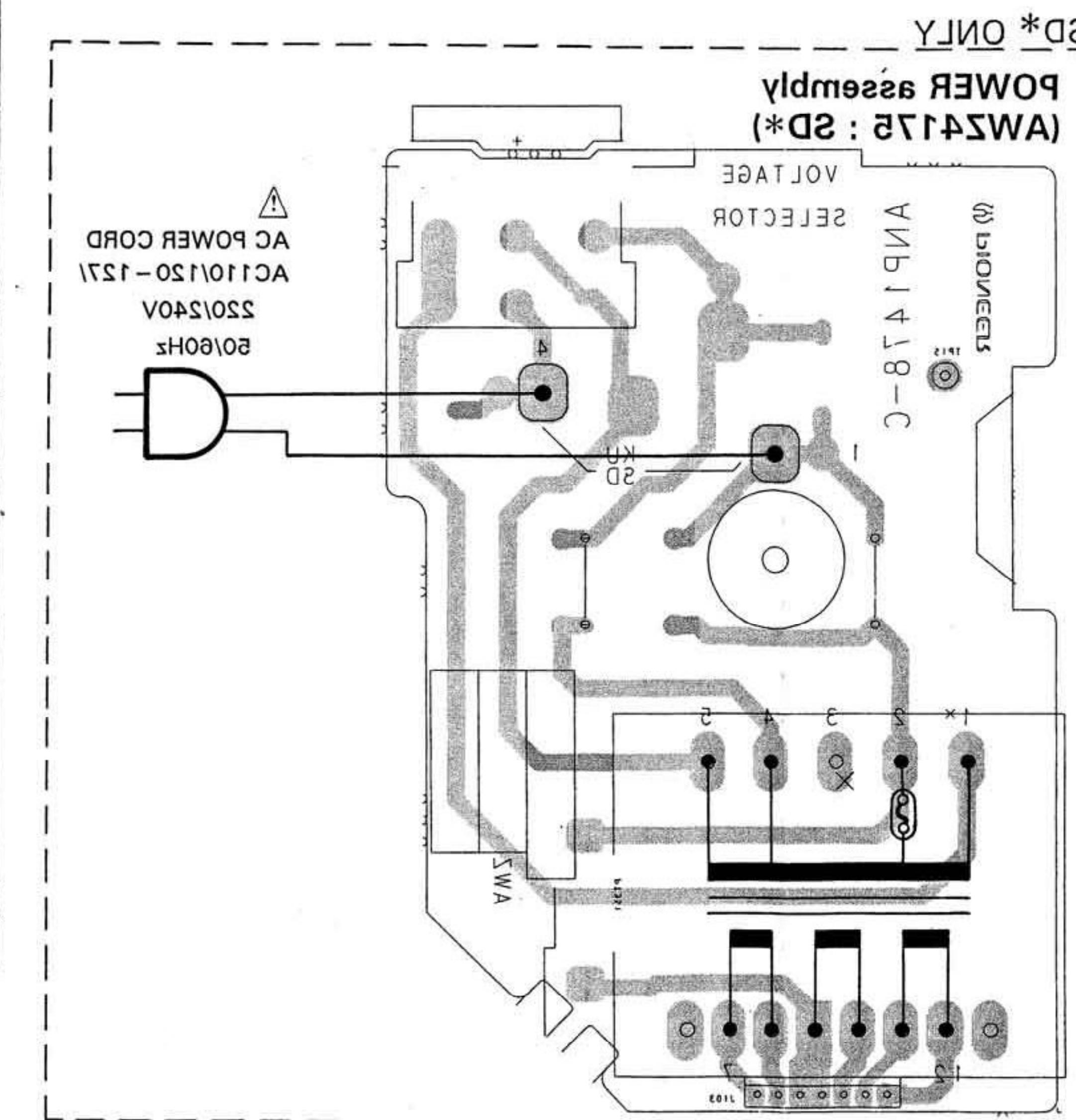
TUNER assembly (AWZ4173 : HE*)
(AWZ4170 : HI*)
(AWZ4171 : SD*)



POWER assembly (AWZ4173 : HE*, HB*)
(AWZ4174 : HI*)



2.3 PCB PATTERNS



F-401L, F-40

3. PCB PARTS LIST

3.1 FOR F-401L/HEX1K AND HBX1K

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%).

| | |
|--|-----------------|
| $560\Omega \rightarrow 56 \times 10^1 \rightarrow 561$ | RD1/8PM 5 6 1 J |
| $47k\Omega \rightarrow 47 \times 10^3 \rightarrow 473$ | RD1/4PS 4 7 3 J |
| $0.5\Omega \rightarrow 0R5$ | RN2H 0 R 5 K |
| $1\Omega \rightarrow 010$ | RS1P 0 1 0 K |

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

| | |
|--|-------------------|
| $5.62k\Omega \rightarrow 562 \times 10^3 \rightarrow 5621$ | RNI/4PC 5 6 2 1 F |
|--|-------------------|

| Mark No. | Description | Parts No. | Mark No. | Description | Parts No. |
|---------------------------|------------------|-------------|--------------------------------|-------------------|--------------|
| LIST OF ASSEMBLIES | | | | | |
| ◎ | TUNER ASSEMBLY | AWZ4173 | Q361 | TRANSISTOR | XDC124ES |
| ◎ | POWER ASSEMBLY | AWZ4177 | Q381 | TRANSISTOR | 2SC1740S |
| ◎ | DISPLAY ASSEMBLY | AWP1039 | Q401 | TRANSISTOR | XDC143ES |
| | | | Q403 | TRANSISTOR | XDA143ES |
| TUNER ASSEMBLY | | | | | |
| SEMICONDUCTORS | | | | | |
| IC151 | AMPLIFIER IC | TA7060AP | D101, 102 | DIODE | 1SS85 |
| IC201 | FM IC | PA5008 | D103-106 | DIODE | 1SS252 |
| IC231 | MPX IC | PA5007 | D151-154 | DIODE | 1SS252 |
| IC301 | AM/FM IC | LA1265S | D201 | DIODE | 1SS252 |
| IC321 | PLL IC | LM7001 | D232-234 | DIODE | 1SS252 |
| IC351 | REGULATOR IC | NJM78M56FAS | △ D351-354 | DIODE | S5566 |
| IC352 | REGULATOR IC | MC7812CT | △ D357, 358 | DIODE | S5566 |
| IC401 | TUNER CONTROL | PD5161A | D359 | ZENER DIODE | RD10ESB |
| | MICRO-COMPUTER | | D361 | DIODE | 1SS252 |
| | | | D362 | ZENER DIODE | RD2.7ESB |
| Q101 | TRANSISTOR | XDA143ES | D363, 381 | DIODE | 1SS252 |
| Q102 | TRANSISTOR | 2SC1740S | D401-403 | DIODE | 1SS252 |
| Q103 | TRANSISTOR | XDA143ES | D404 | ZENER DIODE | RD6.2ESB2 |
| Q104 | TRANSISTOR | XDC143ES | D405 | ZENER DIODE | RD5.1ESB1 |
| Q105 | TRANSISTOR | XDA143ES | COILS & TRANSFORMER | | |
| Q106 | TRANSISTOR | XDC143ES | F151 | CERAMIC FILTER | ATF-119 |
| Q151, 152 | TRANSISTOR | XDA143ES | F153 | CERAMIC FILTER | ATF1079 |
| Q153, 154 | TRANSISTOR | 2SC2668 | F155 | CERAMIC FILTER | ATF-107 |
| Q201 | N-FET | 2SK246 | F301 | CERAMIC FILTER | ATF-208 |
| Q301 | TRANSISTOR | 2SC1740S | L231 | COIL | ATM1003 |
| | | | L321 | AXIAL INDUCTOR | LAU2R2M |
| Q321 | N-FET | 2SK246 | T201 | IF TRANSFORMER | ATE-068 |
| Q322 | TRANSISTOR | 2SC1740SLN | CAPACITORS | | |
| Q351 | TRANSISTOR | 2SA1529 | C103 | CERAMIC CAPACITOR | CKPUYY103M16 |
| Q352, 353 | TRANSISTOR | XDC143ES | C104 | CERAMIC CAPACITOR | CKDYF473Z50 |
| Q354 | TRANSISTOR | 2SB560 | C105, 106 | CERAMIC CAPACITOR | CKDYF223Z50 |
| Q355 | TRANSISTOR | XDA143ES | C108, 109 | CERAMIC CAPACITOR | CKDYX103M25 |
| Q356-359 | TRANSISTOR | 2SC2878 | C111 | CERAMIC CAPACITOR | CKPUYB102K50 |
| Q360 | TRANSISTOR | XDC124ES | | | |

F-401L, F-401

| Mark No. | Description | Parts No. | Mark No. | Description | Parts No. | |
|-----------|----------------------|--------------|------------|----------------------|--------------|--|
| C116 | CERAMIC CAPACITOR | CKDYX103M25 | C326, 327 | CERAMIC CAPACITOR | CKPUYY103M16 | |
| C151, 152 | CERAMIC CAPACITOR | CKDYF223Z50 | C328 | AXIAL CAPACITOR | CCPUSL470J50 | |
| C153 | CERAMIC CAPACITOR | CKDYX473M25 | C329 | ELECT. CAPACITOR | CEAS330M35 | |
| C154 | CERAMIC CAPACITOR | CKPUYY103M16 | C330 | AUDIO FILM CAPACITOR | CFTXA224J50 | |
| C201 | CERAMIC CAPACITOR | CCMCH150J50 | △ C331 | CERAMIC CAPACITOR | CKPUYY103M16 | |
| C202 | CERAMIC CAPACITOR | CCMCH330J50 | C351 | CAPACITOR (CERAMIC) | ACG-009 | |
| C203 | ELECT. CAPACITOR | CEAS010M50 | C352 | ELECT. CAPACITOR | CEAS222M35 | |
| C205 | CERAMIC CAPACITOR | CKPUYY103M16 | C354 | ELECT. CAPACITOR | CEAS330M35 | |
| C206 | ELECT. CAPACITOR | CEAS101M25 | C355 | ELECT. CAPACITOR | CEAS221M10 | |
| C207, 208 | CERAMIC CAPACITOR | CKDYX473M25 | C357 | CERAMIC CAPACITOR | CKDYF473Z50 | |
| C209 | CERAMIC CAPACITOR | CKPUYY103M16 | C358 | ELECT. CAPACITOR | CEAS471M25 | |
| C210 | ELECT. CAPACITOR | CEAS010M50 | C359 | ELECT. CAPACITOR | CEAS470M25 | |
| C211 | CERAMIC CAPACITOR | CKPUYY103M16 | C360 | ELECT. CAPACITOR | CEAS101M25 | |
| C212 | ELECT. CAPACITOR | CEAS010M50 | C361 | ELECT. CAPACITOR | CEAS470M25 | |
| C213, 214 | CERAMIC CAPACITOR | CKMYB181K50 | C381 | CERAMIC CAPACITOR | CKPUYB101K50 | |
| C215 | ELECT. CAPACITOR | CEAS4R7M50 | C401 | CERAMIC CAPACITOR | CKPUYY103M16 | |
| C216 | CERAMIC CAPACITOR | CKPUYY103M16 | C402 | ELECT. CAPACITOR | CEAS221M10 | |
| C217 | ELECT. CAPACITOR | CEAS101M25 | C404 | CAPACITOR | ACH1135 | |
| C231 | ELECT. CAPACITOR | CEAS220M50 | C405 | ELECT. CAPACITOR | CEAS100M50 | |
| C232 | AUDIO FILM CAPACITOR | CFTXA473J50 | C406, 407 | CERAMIC CAPACITOR | CKPUYB101K50 | |
| C233 | CERAMIC CAPACITOR | CKCYB152K50 | C409 | CERAMIC CAPACITOR | CKPUYB101K50 | |
| C234 | ELECT. CAPACITOR | CEAS1R5M50 | RESISTORS | | | |
| C235 | ELECT. CAPACITOR | CEAS100M50 | VR201, 202 | VR (4.7kΩ) | ACP1042 | |
| C236 | CKA (390P/50V) | ACG-023 | VR204 | VR (10kΩ) | ACP1043 | |
| C237 | ELECT. CAPACITOR | CEAS6R8M50 | VR205 | VR (100kΩ) | ACP1046 | |
| C238, 239 | ELECT. CAPACITOR | CEAS100M50 | VR206 | VR (220Ω) | ACP1038 | |
| C240 | PL.STYRENE CAPACITOR | CQSA682J50 | VR231 | VR | VRTS6VS222 | |
| C241 | ELECT. CAPACITOR | CEAS220M50 | VR232 | VR (22kΩ) | ACP1044 | |
| C242, 243 | MYLAR FILM CAPACITOR | CQMA152J50 | VR301 | VR (10kΩ) | ACP1043 | |
| C244 | ELECT. CAPACITOR | CEAS470M25 | R102 | CARBON FILM RESISTOR | RD1/4PM472J | |
| C245 | ELECT. CAPACITOR | CEAS471M10 | R235 | METALFILM RESISTER | RN1/4PC5601F | |
| C246, 247 | CERAMIC CAPACITOR | CKPUYY103M16 | R237, 238 | CARBON FILM RESISTOR | RDR1/4PM223J | |
| C248 | ELECT. CAPACITOR | CEAS471M16 | R241, 242 | CARBON FILM RESISTOR | RDR1/4PM333J | |
| C249, 250 | ELECT. CAPACITOR | CEAS4R7M50 | R243, 244 | CARBON FILM RESISTOR | RDR1/4PM332J | |
| C251, 252 | CERAMIC CAPACITOR | CKDYB472K50 | R245, 246 | CARBON FILM RESISTOR | RDR1/4PM223J | |
| C265, 266 | ELECT. CAPACITOR | CEAS4R7M50 | R247, 248 | CARBON FILM RESISTOR | RDR1/4PM102J | |
| C301 | CERAMIC CAPACITOR | CKPUYY103M16 | R249, 250 | CARBON FILM RESISTOR | RDR1/4PM821J | |
| C302 | ELECT. CAPACITOR | CEAS330M35 | R251, 252 | CARBON FILM RESISTOR | RDR1/4PM152J | |
| C304 | ELECT. CAPACITOR | CEAS100M50 | R351 | CARBON FILM RESISTOR | RD1/2PM4R7J | |
| C305 | ELECT. CAPACITOR | CEANP4R7M50 | △ R353 | CARBON FILM RESISTOR | RD1/2PM471J | |
| C306 | ELECT. CAPACITOR | CEAS4R7M50 | R354 | FUSLIBLE RESISTOR | RFA1/4PS180J | |
| C307 | CERAMIC CAPACITOR | CKCYB222K50 | R355 | CARBON FILM RESISTOR | RD1/2PM222J | |
| C308 | CERAMIC CAPACITOR | CKDYX473M25 | | | | |
| C309 | CERAMIC CAPACITOR | CKDYF223Z50 | | | | |
| C310 | CERAMIC CAPACITOR | CKPUYY103M16 | | | | |
| C311 | ELECT. CAPACITOR | CEAS470M25 | | | | |
| C312 | CERAMIC CAPACITOR | CKPUYY103M16 | | | | |
| C313 | CERAMIC CAPACITOR | CKDYF223Z50 | | | | |
| C314 | CERAMIC CAPACITOR | CKPUYY103M16 | | | | |
| C315 | CERAMIC CAPACITOR | CKDYF223Z50 | | | | |
| C321, 322 | CERAMIC CAPACITOR | CCMCH150J50 | | | | |
| C323-325 | AXIAL CAPACITOR | CCPUSL470J50 | | | | |

F-401L, F-40

| Mark No. | Description | Parts No. |
|----------|-------------------------------|-------------|
| R358-361 | CARBON FILM RESISTOR | RD1/4PM010J |
| R437 | RESISTOR ARRAY (22K) | RA8T223J |
| | Other resistors | RD1/8PM□□□J |
| OTHERS | | |
| TH201 | THERMISTOR | TH103-2 |
| CN101 | CONNECTOR (10P) | KPE10 |
| CN102 | CONNECTOR (12P) | KPE12 |
| X301 | CERAMIC RESONATOR (450kHz) | ATF1027 |
| X321 | CRYSTAL RESONATOR (7.2MHz) | ASS1005 |
| X401 | CERAMIC RESONATOR (7.7MHz) | ASS1055 |
| | SCREW | ABA-298 |
| | ANTENNA TERMINAL 4-P WITH PAL | AKA1010 |
| | PIN JACK 2P | AKB1039 |
| | JACK | AKN-207 |
| | AM RF TUNING BLOCK | AXX1012 |
| | AM RF TUNING BLOCK | AXX1013 |
| | 3 SERIAL F.E. MODULE | AXQ1003 |
| | ASSEMBLY | |

NOTE :

3. Serial F.E. module assembly has no service parts.

POWER ASSEMBLY

TRANSFORMER

△ T351 POWER TRANSFORMER ATT1155

DISPLAY ASSEMBLY

Although DISPLAY assembly (AWP1036) and DISPLAY assembly (AWP1039) are different in part number, they have the same service parts.

F-401L, F-401

3.2 FOR F-401/HEWIX1K AND SD

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.

TUNER ASSEMBLY

TUNER assembly (AWZ4170, AWZ4171) and TUNER assembly (AWZ4173) have the same construction except for the following :

| Mark | Symbol & Description | Part No. | | | Remarks |
|------|------------------------------|-------------|--------------|-------------|---------|
| | | AWZ4173 | AWZ4170 | AWZ4171 | |
| | Q104, Q106 | XDC143ES | ..... | ..... |  |
| | Q105 | XDA143ES | ..... | ..... |  |
| | Q272, Q273 | ..... | ..... | 2SK246 | |
| | D101, D102 | 1SS85 | ..... | ..... |  |
| | D103~D106 | 1SS252 | ..... | ..... |  |
| | D108 | ..... | 1SV156 | ..... |  |
| | S381 9k/10k selector | ..... | ..... | ASH1015 | |
| | L101 | ..... | LAU2R2M | ..... |  |
| | L232 | ..... | LAU010M | ..... |  |
| | L233, L234 | ..... | LAU100K | ..... |  |
| | TC101 | ..... | ACM-018 | ..... |  |
| | C101, C110, C112, C253 | ..... | CKDYX103M25 | ..... |  |
| | C102 | ..... | CKPUYY103M16 | ..... |  |
| | C105 | CKDYF223Z50 | ..... | ..... |  |
| | C116 | CKDYX103M25 | ..... | CKDYX103M25 | |
| | C271, C272 | ..... | ..... | CKCYB681K50 | |
| | C352 | CEAS222M35 | CEAS222M35 | CEAS222M50 | |
| | R101 | ..... | RD1/8PM153J | ..... |  |
| | R102 | RD1/4PM472J | RD1/2PM751J | RD1/4PM472J | |
| | R103 | ..... | RD1/8PM330J | ..... |  |
| | R106, R109, 308 | RD1/8PM681J | ..... | ..... |  |
| | R107 | RD1/8PM104J | ..... | ..... |  |
| | R108, R402 | RD1/8PM102J | ..... | ..... |  |
| | R114 | RD1/8PM103J | ..... | RD1/8PM103J | |
| | R115 | RD1/8PM103J | ..... | ..... |  |
| | R177 | RD1/8PM331J | RD1/8PM221J | RD1/8PM331J | |
| | R272, R273 | ..... | ..... | RD1/8PM105J | |
| | R404 | ..... | ..... | RD1/8PM473J | |
| | Antenna terminal 4P | ..... | ..... | AKA1009 | |
| | Antenna terminal 4P-with PAL | AKA1010 | ..... | ..... |  |
| | Antenna terminal 2P with PAL | ..... | AKA1012 | ..... |  |

F-401L, F-401

| Mark | Symbol & Description | Part No. | | | Remarks |
|------|-------------------------------|----------|---------|---------|---------|
| | | AWZ4173 | AWZ4170 | AWZ4171 | |
| | 3 Serial F.E. module assembly | AXQ1003 | ..... | AXQ1003 | *1 |
| | 4 Serial F.E. module assembly | ..... | AXQ1004 | ..... | *1 |
| | AM RF Tuning block | AXX1012 | AXX1014 | AXX1011 | |
| | AM RF Tuning block | AXX1013 | ..... | ..... |  |

*1 All of these assemblies has no service parts.

POWER ASSEMBLY

POWER assembly (AWZ4174, AWZ4175) and POWER assembly (AWZ4177) have the same construction except for the following :

| Mark | Symbol & Description | Part No. | | | Remarks |
|------|--|----------|---------|---------|---------|
| | | AWZ4177 | AWZ4174 | AWZ4175 | |
| △ | S351 Voltage selector (AC110V/120~127V/220V/240V) | ..... | ..... | AKX-505 | |
| △ | L351 | ..... | ATF-163 | ..... |  |
| △ | C353 | ..... | ACG1002 | ..... |  |

F-401L, F-401**4. ADJUSTMENTS****4.1 FM TUNER ADJUSTMENTS**

- Connect as shown in the Fig. 4-1.

4.1.1 FM MONO

| Step | Adjustment name | FM SG (1kHz ± 75kHz dev.) | | | FL display IF BAND etc. | Location | Adjustment |
|------|----------------------------|---------------------------|------------|--------------|-------------------------------|----------|--|
| | | Frequency | Modulation | Level | | | |
| 1 | T-meter adjustment | 98MHz | MONO | 60dB μ V | 98MHz NORMAL | T201-B | Adjust so that the voltage between TP2 and TP3 becomes $0 \pm 100mV$. |
| 2 | MONO distortion adjustment | 98MHz | MONO | 60dB μ V | 98MHz NORMAL | T201-A | Adjust so that the distortion becomes minimum. |
| 3 | Sub-balance adjustment | 98MHz | MONO | 60dB μ V | 98MHz NORMAL | VR206 | Adjust so that the AC voltage at IC201 pin2 (TP5) becomes minimum. |

4.1.2 FM STEREO

Stereo modulation : Main 1kHz L+R ± 68.25kHz, Pilot 19kHz ± 6.75kHz

| Step | Adjustment name | FM SG (1kHz ± 75kHz dev.) | | | FL display IF BAND etc. | Location | Adjustment |
|------|------------------------------------|---------------------------|---------------|--------------|-------------------------------|--------------------------|---|
| | | Frequency | Modulation | Level | | | |
| 1 | VCO adjustment | 108MHz | OFF | 60dB μ V | 108MHz | VR231 | Adjust so that the output at TP7 becomes $38kHz \pm 100Hz$. |
| 2 | Pilot cancel | 107MHz | PILOT ONLY | 60dB μ V | 107MHz NORMAL | VR232 | Adjust so that the AC voltage at output terminal becomes minimum. (MAX LPF : OFF) |
| 3 | Separation adjustment | 89MHz | R-ONLY | 60dB μ V | 89MHz NORMAL | VR202 | Adjust so that the separation R → L becomes maximum. |
| 4 | | | L-ONLY | 60dB μ V | 89MHz NORMAL | VR201 | Adjust so that the separation L → R becomes maximum. |
| 5 | Stereo distortion adjustment *1 | 89MHz | L-ONLY | 60dB μ V | 89MHz | Front End IFT T101 | Minimize the distortion within 1/4 rotation of the core, and check conformity to the specification. |

*1 : F-401L/HEX1K, HBX1K and F-401/SD only

4.1.3 FM ETC

| Step | Adjustment name | FM SG (1kHz ± 75kHz dev.) | | | FL display IF BAND etc. | Location | Adjustment |
|------|-------------------------|---------------------------|------------|--------------|-------------------------------|----------|--|
| | | Frequency | Modulation | Level | | | |
| 1 | S-meter adjustment | 99MHz | MONO | 75dB μ V | 99MHz NORMAL | VR205 | Adjust so that the voltage between TP4 and GND becomes $4.9V \pm 0.05V$. |
| 2 | Muting level adjustment | 99MHz | MONO | 12dB μ V | 99MHz NORMAL | VR204 | Adjust so that the muting is released at the input level shown on the left.. |

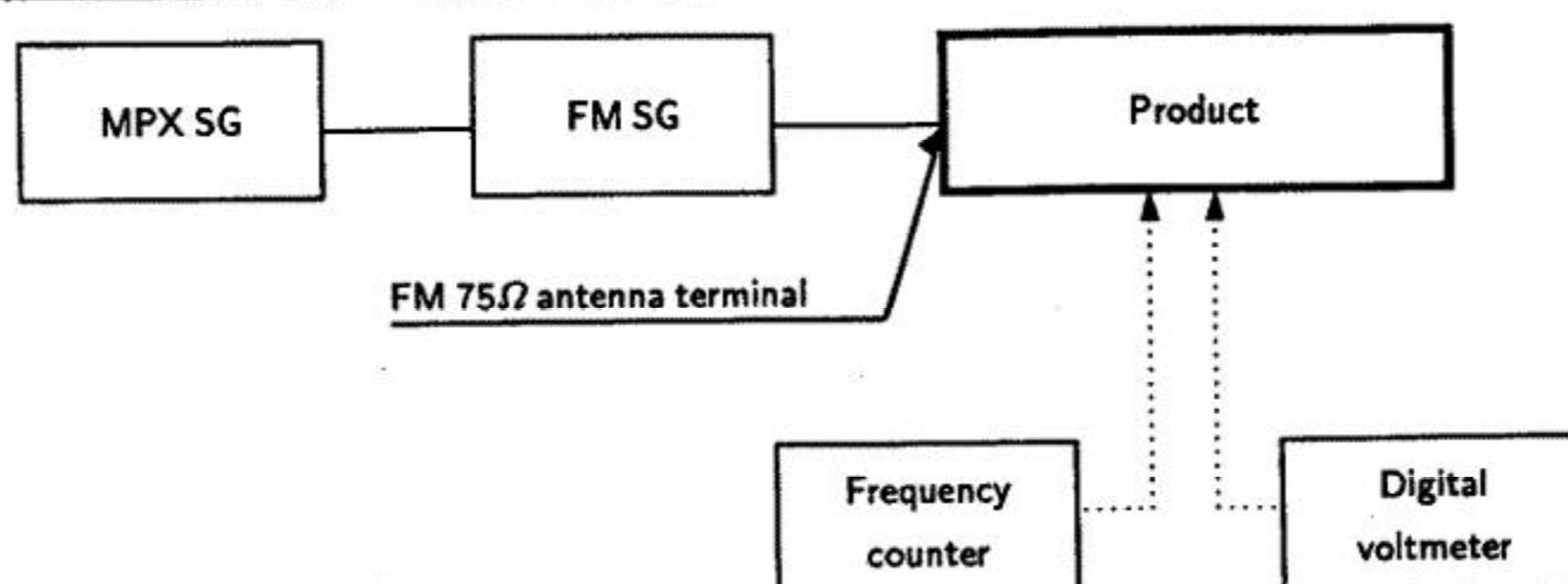


Fig. 4-1 FM Adjustment Connection Diagram

F-401L, F-40

4.2 AM TUNER ADJUSTMENTS

- Connect as shown in the Fig. 4-2.

| Step | Adjustment name | AM SG (400Hz 30% modulation) | | | FL display IF BAND etc. | Location | Adjustment |
|------|------------------------|------------------------------|------------|------------------------|-------------------------------|---------------------------------|--|
| | | Frequency | Modulation | Level | | | |
| 1 | Tracking adjustment *1 | 603kHz | OFF | Low input level | 603kHz | ANT. coil of MW block (AXX1014) | Adjust so that the voltage between TP9 and GND becomes maximum. |
| | | 1395kHz | OFF | Low input level | 1395kHz | TC101 | |
| 2 | IFT adjustment *1 | 603kHz | OFF | Low input level | 603kHz | F301 | |
| 3 | S-meter adjustment | 1008kHz | ON | 74dB _A /V/m | 1008kHz | VR301 | Adjust so that the voltage between TP9 and GND becomes $2.5 \pm 0.05V$. |

*1 : For F-401/HEWIX1K only

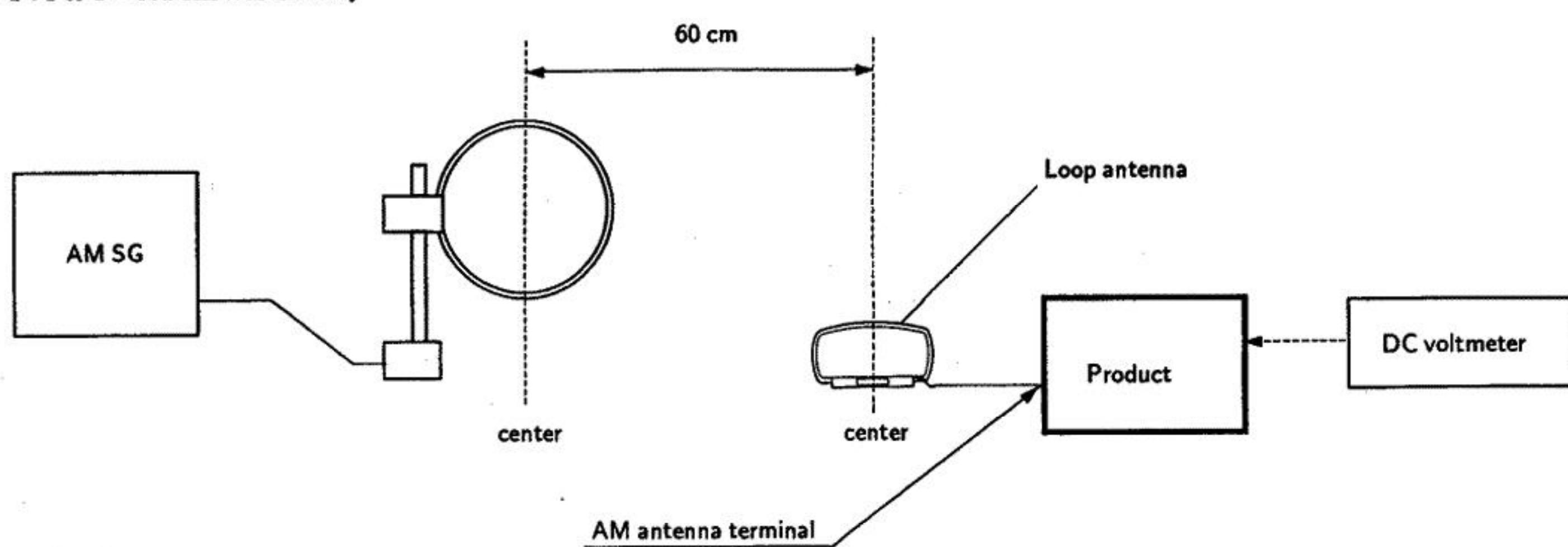


Fig. 4-2 MW Adjustment Connection Diagram

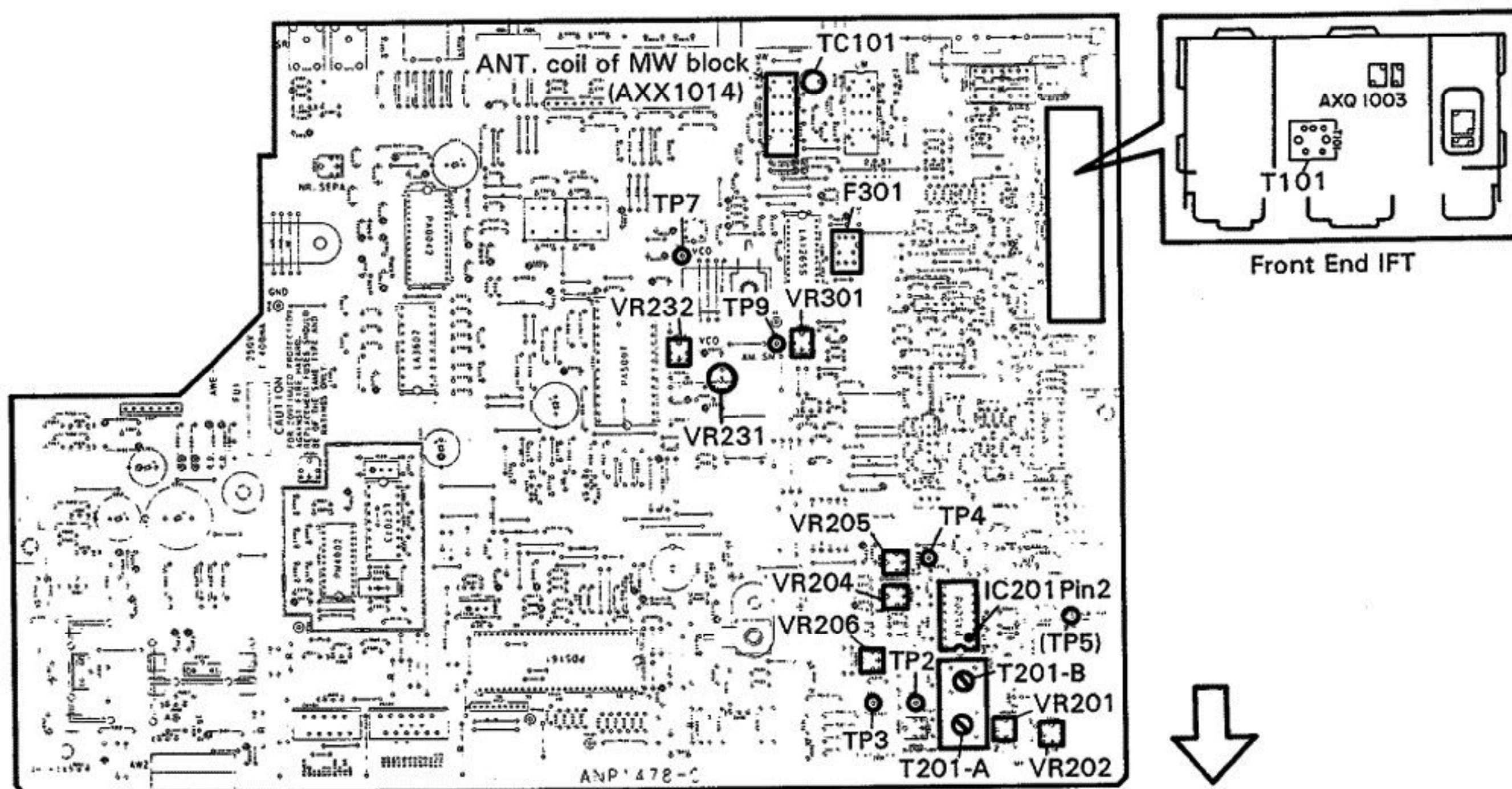


Fig. 4-3 Adjustment Points

F-401L, F-401

4. REGLAGES

4.1 REGLAGES DU SYNTONISEUR FM

- Raccorder comme indiqué à la Fig. 4-1.

4.1.1 MONO FM

| Etape | Nom du réglage | FM SG (1kHz ± 75kHz dev.) | | | Affichage FL, GAMME FI, etc. | Emplacement | Réglage |
|-------|-----------------------------------|---------------------------|------------|--------------|------------------------------------|-------------|---|
| | | Fréquence | Modulation | Niveau | | | |
| 1 | Appareil de mesure en T | 98MHz | MONO | 60dB μ V | 98MHz NORMAL | T201-B | Régler afin que la tension entre TP2 et TP3 soit de 0 ± 100mV. |
| 2 | Réglage de distortion MONO | 98MHz | MONO | 60dB μ V | 98MHz NORMAL | T201-A | Régler afin que la distortion soit minimale. |
| 3 | Réglage de l'équilibre auxiliaire | 98MHz | MONO | 60dB μ V | 98MHz NORMAL | VR206 | Régler afin que la tension CA à IC201 Broche 2 (TP5) soit minimale. |

4.1.2 STEREO FM

Modulation de Stéréo : Principalé 1kHz L + R ± 68,25kHz. Pilote 19kHz ± 6,75kHz

| Etape | Nom du réglage | FM SG (1kHz ± 75kHz dev.) | | | Affichage FL, GAMME FI, etc. | Emplacement | Réglage |
|-------|---------------------------------|---------------------------|------------|--------------|------------------------------------|--------------------------|---|
| | | Fréquence | Modulation | Niveau | | | |
| 1 | Réglage du VCO | 108MHz | OFF | 60dB μ V | 108MHz | VR231 | Régler afin que la sortie à TP7 soit de 38kHz ± 100Hz. |
| 2 | Neutralisation pilote | 107MHz | PILOT ONLY | 60dB μ V | 107MHz NORMAL | VR232 | Régler afin que la tension CA, bornes de sortie, soit minimale. (MAX LPF : HORS CIRCUIT) |
| 3 | Réglage du séparation | 89MHz | R-ONLY | 60dB μ V | 89MHz NORMAL | VR202 | Régler afin que la séparation D → G soit maximale. |
| 4 | | | L-ONLY | 60dB μ V | 89MHz NORMAL | VR201 | Régler afin que la séparation D → G soit maximale. |
| 5 | Réglage de distortion stéréo *1 | 89MHz | L-ONLY | 60dB μ V | 89MHz | Extrémité avant IFT T101 | Minimiser la distortion à 1/4 de rotation du noyau et vérifier qu'il y a conformité aux spécifications. |

*1 : F-401L/HEX1K, HBX1K et F-401/SD seulement

4.1.3 ETC FM

| Etape | Nom du réglage | FM SG (1kHz ± 75kHz dev.) | | | Affichage FL, GAMME FI, etc. | Emplacement | Réglage |
|-------|-------------------------------|---------------------------|------------|--------------|------------------------------------|-------------|---|
| | | Fréquence | Modulation | Niveau | | | |
| 1 | Appareil de mesure en S | 99MHz | MONO | 75dB μ V | 99MHz NORMAL | VR205 | Régler afin que la tension entre TP4 en GND soit de 4,9V ± 0,05 V. |
| 2 | Réglage de niveau de sourdine | 99MHz | MONO | 12dB μ V | 99MHz NORMAL | VR204 | Régler afin que la sourdine soit relâchée au niveau d'entrée indiqué sur la gauche. |

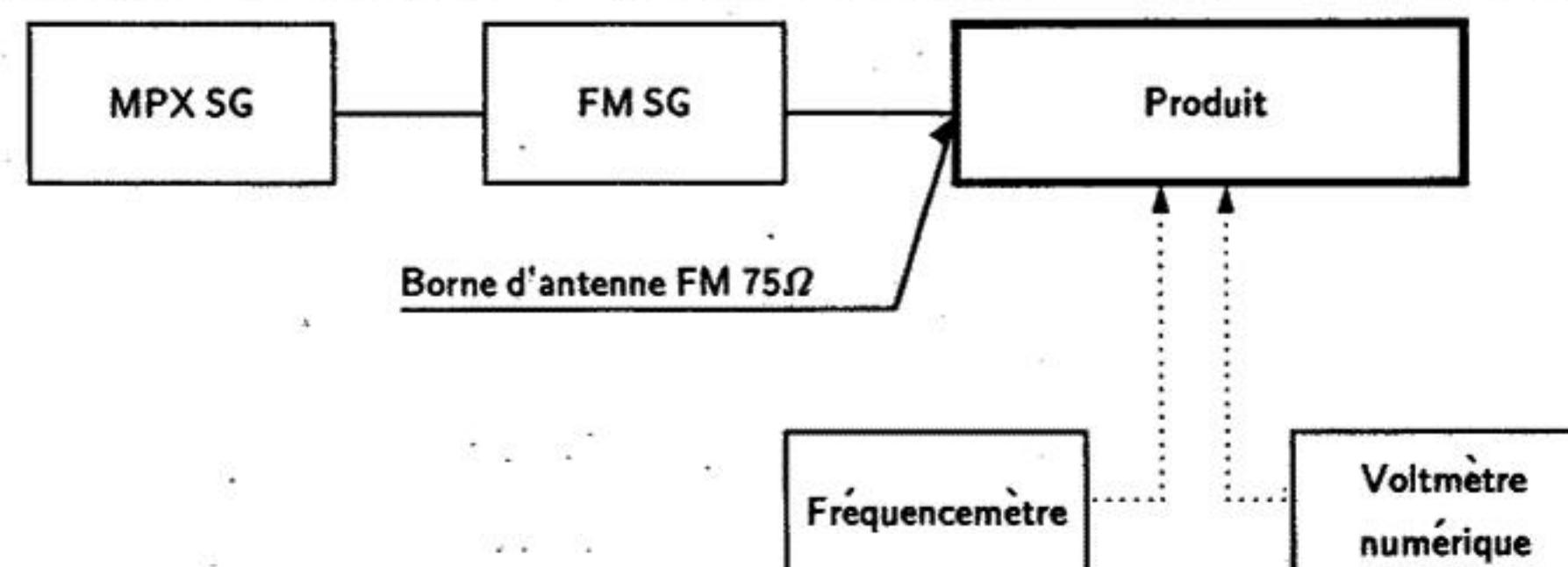


Fig. 4-1 Schéma de connexion de réglage FM

F-401L/F-40

4.2 REGLAGES DU SYNTONISEUR AM

- Raccorder comme indiqué à la Fig. 4–2.

| Etape | Nom du réglage | AM SG (400Hz 30% modulation) | | | Affichage FL, GAMME FI, etc. | Emplacement | Réglage |
|-------|---------------------------------------|------------------------------|------------|------------------------|------------------------------------|---------------------------------------|---|
| | | Fréquence | Modulation | Niveau | | | |
| 1 | Réglage d'alignement *1 | 603kHz | OFF | Niveau bas d'entrée | 603kHz | Bobine ANT du bloc MW (AXX1014) | Régler afin que la tension entre TP9 et GND soit maximale. |
| | | 1395kHz | OFF | Niveau bas d'entrée | 1395kHz | TC101 | |
| 2 | Réglage du transformateur de FI *1 | 603kHz | OFF | Niveau bas d'entrée | 603kHz | F301 | |
| 3 | Appareil de mesure en S | 1008kHz | ON | 74dB μ V/m | 1008kHz | VR301 | Régler afin que la tension entre TP9 et GND soit $2,5 \pm 0,05$ V. |

*1 : Réglage pour F-401/HEWIX1K seulement

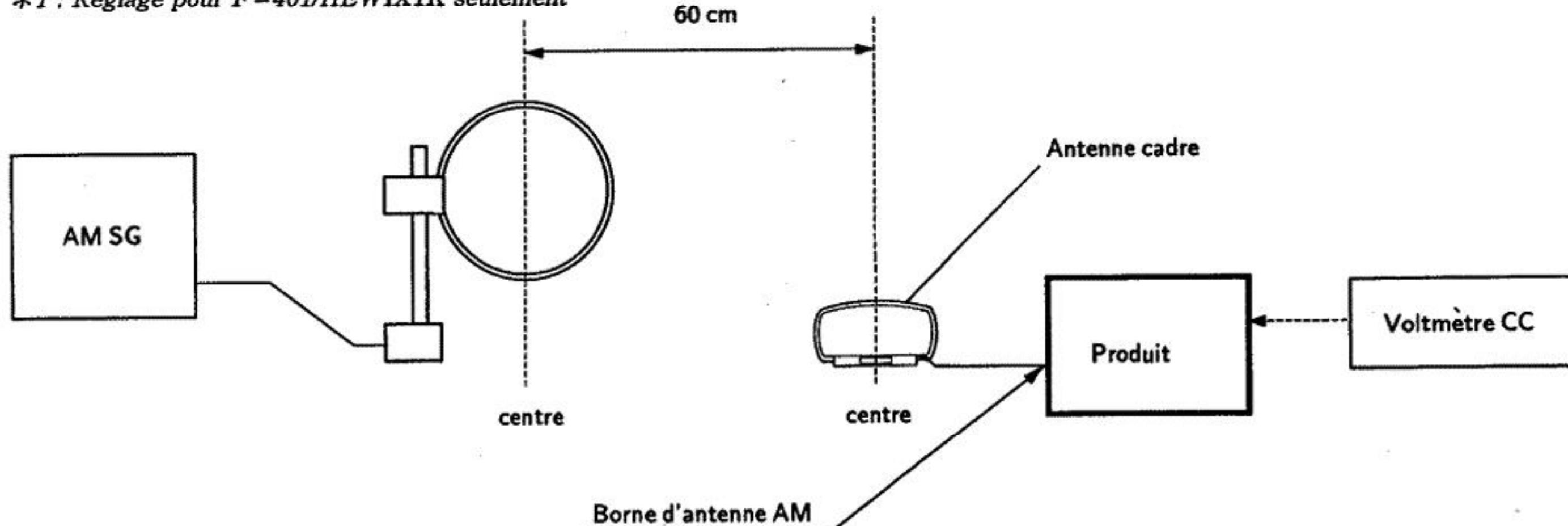


Fig. 4 – 2 Schéma de connexion de réglage AM

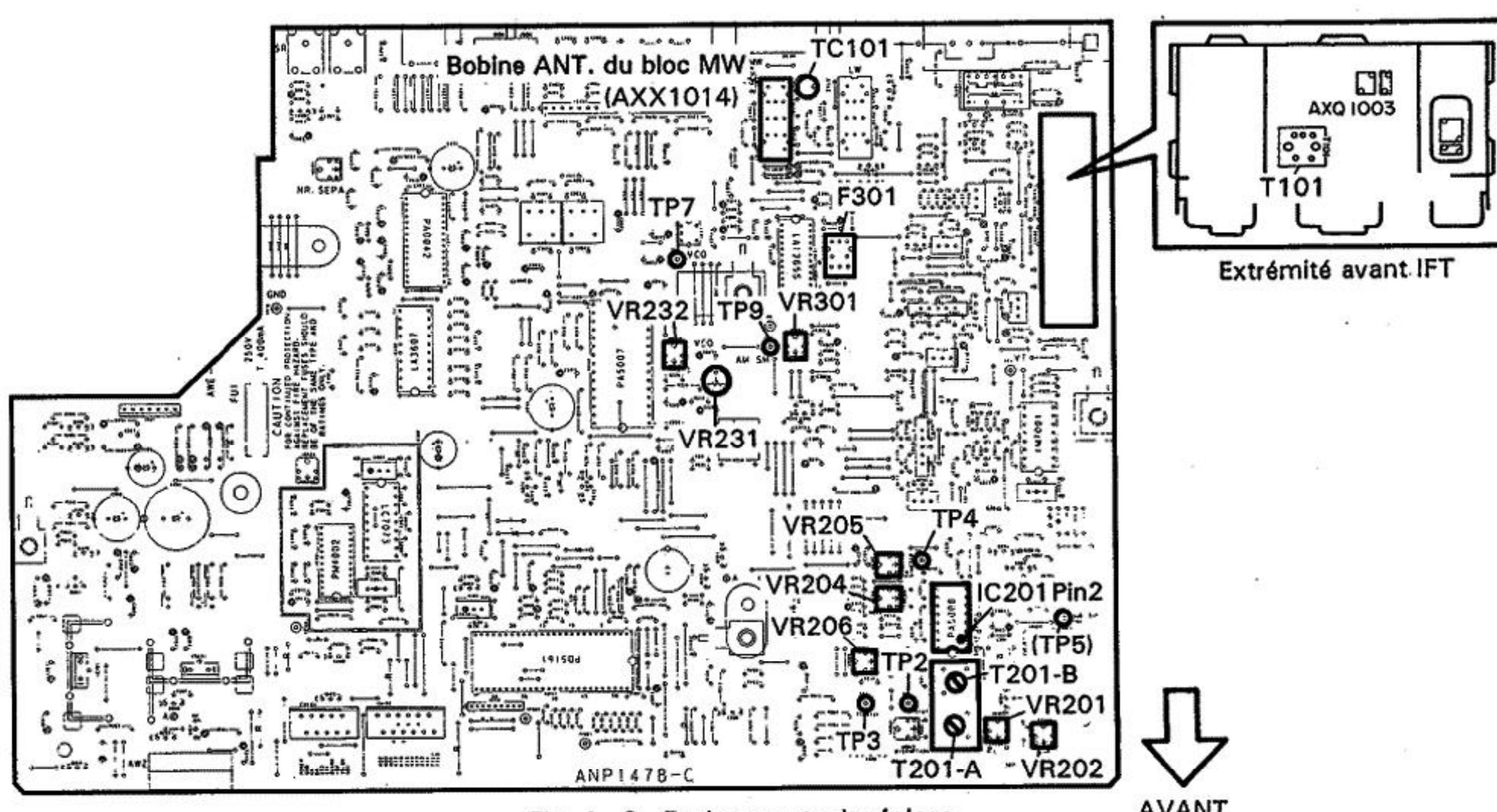


Fig. 4-3 Enplacements de réglage

F-401L, F-401**4. AJUSTES****4.1 AJUSTES DEL SINTONIZADOR DE FM**

- Conecte como indica la Fig. 4-1.

4.1.1 FM MONO

| Paso | Ajuste | FM SG (1kHz±75kHz dev.) | | | Visualización fluorescente, banda de FI, etc | Posición | Ajuste |
|------|------------------------------------|-------------------------|------------|--------------|--|----------|--|
| | | Frecuencia | Modulación | Nivel | | | |
| 1 | Ajuste del medidor T | 98MHz | MONO | 60dB μ V | 98MHz NORMAL | T201-B | Ajuste de modo que la tensión entre TP2 y TP3 sea $0 \pm 100mV$. |
| 2 | Ajuste de la distorsión monofónica | 98MHz | MONO | 60dB μ V | 98MHz NORMAL | T201-A | Ajuste de modo que la distorsión sea mínima. |
| 3 | Ajuste del subbalance | 98MHz | MONO | 60dB μ V | 98MHz NORMAL | VR206 | Ajuste de modo que la tensión de CA en IC201 Patilla 2 (TP5) sea mínima. |

4.1.2 FM STEREOModulación de estéreo : Principal 1kHz L+R $\pm 68,25kHz$. Piloto 19kHz $\pm 6,75kHz$

| Paso | Ajuste | FM SG (1kHz±75kHz dev.) | | | Visualización fluorescente, banda de FI, etc | Posición | Ajuste |
|------|------------------------------------|-------------------------|------------|--------------|--|-----------------------|--|
| | | Frecuencia | Modulación | Nivel | | | |
| 1 | Ajuste del VCO | 108MHz | OFF | 60dB μ V | 108MHz | VR231 | Ajuste de modo que la salida en TP7 sea $38kHz \pm 100Hz$. |
| 2 | Cancelación del piloto | 107MHz | PILOT ONLY | 60dB μ V | 107MHz NORMAL | VR232 | Ajuste de modo que la tensión de, terminales de salida, CA sea mínima. (MAX LPF : OFF) |
| 3 | Ajuste de la separación | 89MHz | R-ONLY | 60dB μ V | 89MHz NORMAL | VR202 | Ajuste de modo que la separación R → L sea máxima. |
| | | | L-ONLY | 60dB μ V | 89MHz NORMAL | VR201 | Ajuste de modo que la separación L → R sea máxima. |
| 5 | Ajuste de la distorsión estéreo *1 | 89MHz | L-ONLY | 60dB μ V | 89MHz | Paso de guía IFT T101 | Minimice la distorsión dentro de ratación de 1/4 del núcleo, y compruebe la conformidad con la especificación. |

*1 : Solo F-401L/HEX1K, HBX1K y F-401/SD

4.1.3 FM ETC

| Paso | Ajuste | FM SG (1kHz±75kHz dev.) | | | Visualización fluorescente, banda de FI, etc | Posición | Ajuste |
|------|------------------------------|-------------------------|------------|--------------|--|----------|--|
| | | Frecuencia | Modulación | Nivel | | | |
| 1 | Ajuste del medidor S | 99MHz | MONO | 75dB μ V | 99MHz NORMAL | VR205 | Ajuste de modo que la tensión entre TP4 y masa sea $4,9V \pm 0.5V$. |
| 2 | Ajuste del nivel silenciador | 99MHz | MONO | 12dB μ V | 99MHz NORMAL | VR204 | Ajuste de modo que el silenciamiento se desconecte en el nivel de entrada mostrado a la izquierda. |

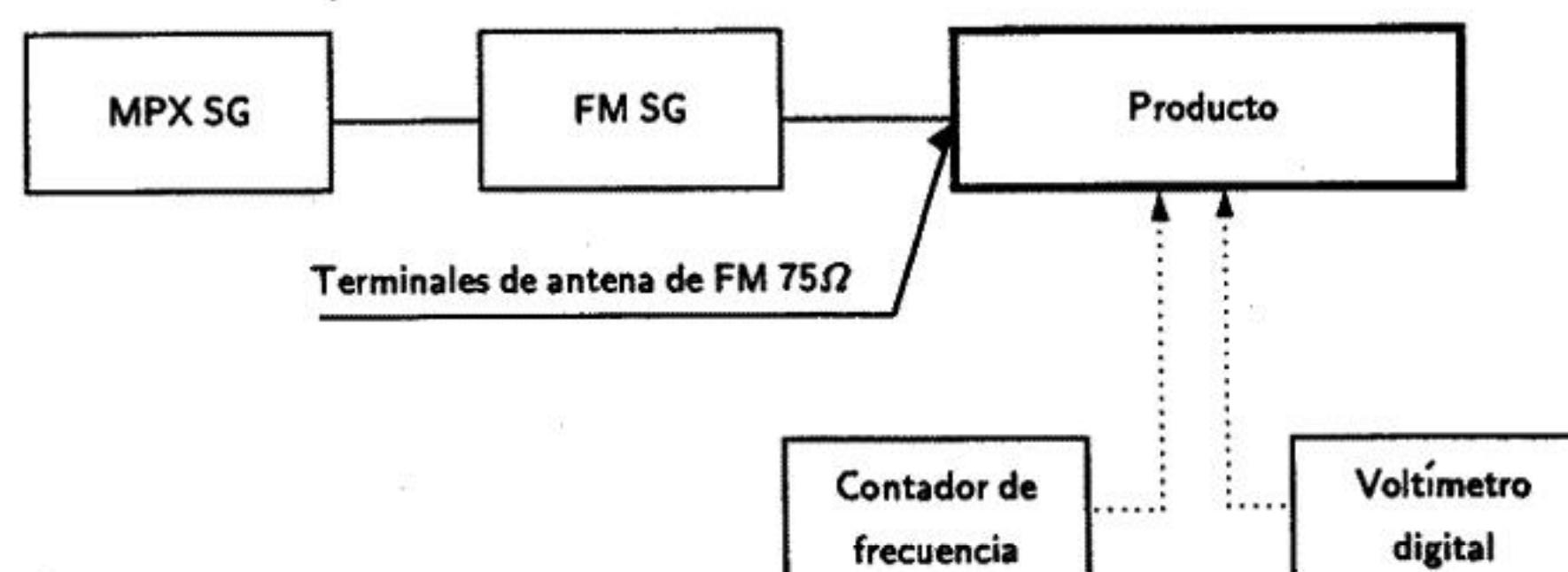


Fig. 4-1 Diagrama de conexiones para el ajuste de FM

F-401L, F-40

4.2 AJUSTES DEL SINTONIZADOR DE AM

- Conecte como indica la Fig. 4-2.

| Paso | Ajuste | AM SG (400Hz 30% modulation) | | | Visualización fluorescente, banda de FI, etc | Posición | Ajuste |
|------|---------------------------|------------------------------|------------|-----------------------|--|---|--|
| | | Frecuencia | Modulación | Nivel | | | |
| 1 | Ajuste del seguimiento *1 | 603kHz | OFF | Nivel de entrada bajo | 603kHz | Bobina de antena del bloque de MW (AXX1014) | Ajuste de modo que la tensión entre TP9 y masa sea máxima. |
| | | 1395kHz | OFF | Nivel de entrada bajo | 1395kHz | | |
| 2 | Ajuste del IFT *1 | 603kHz | OFF | Nivel de entrada bajo | 603kHz | F301 | |
| 3 | Ajuste del medidor S | 1008kHz | ON | 74dB μ V/m | 1008kHz | VR301 | Ajuste de modo que la tensión entre TP9 y masa sea $2,5 \pm 0,05$ V. |

*1 : Ajuste solo para F-401/HEWIX1K

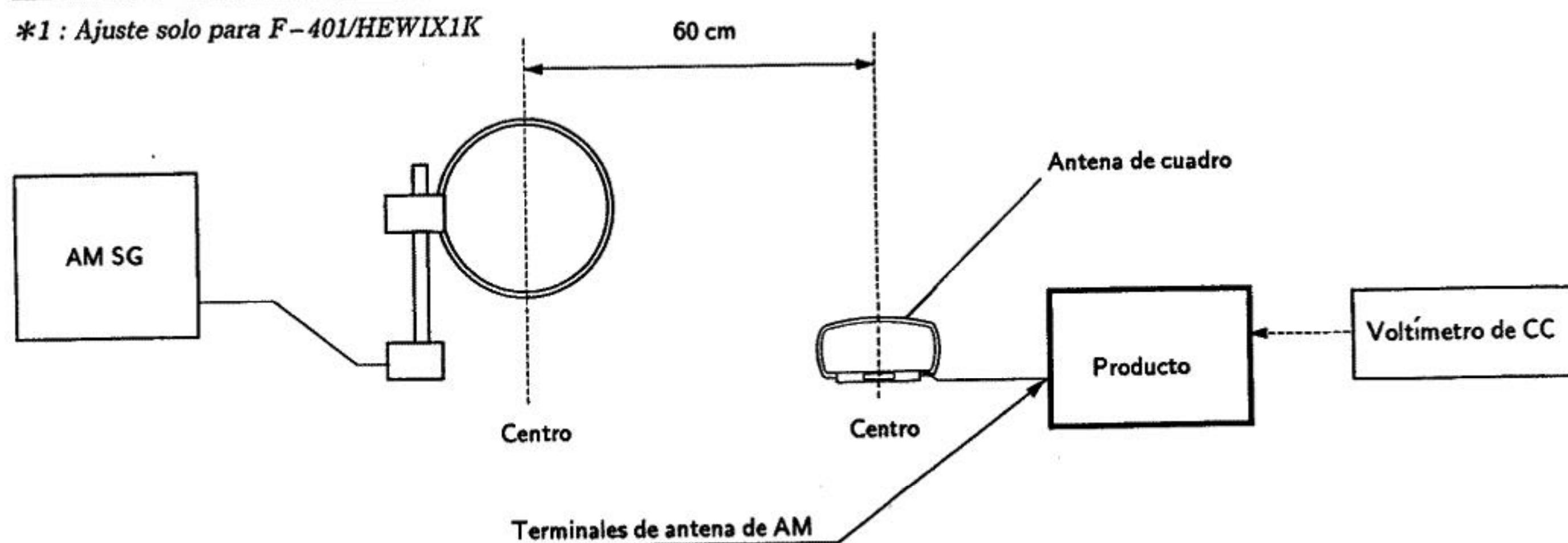


Fig. 4-2 Diagrama de conexiones para el ajuste de AM

