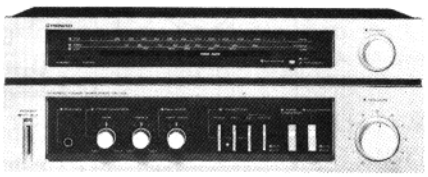
PIONEER

Service Manual

CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS



ORDER NO.
ARP-213-0

STEREO TUNER AMPLIFIER

TA-110L

MODEL TA-110L COMES IN TWO VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
HE	220V and 240V (Switchable)	European continent model
HB	220V and 240V (Switchable)	United Kingdom model
HEZ	220V and 240V (Switchable)	West Germany Model

- **This service manual is applicable to the HE and HB types. For servicing of the other types, please refer to the additional service manual.**
- **Ce manuel d'instruction se refère au mode de réglage, en français.**
- **Este manual de servicio trata del método de ajuste escrito en español.**

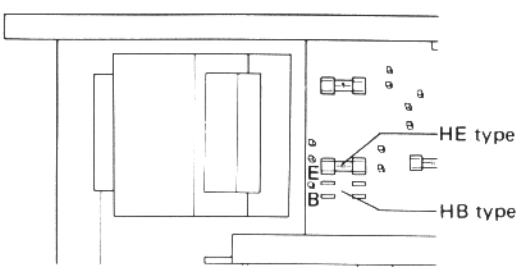
CONTENTS

Line Voltage Selection

Line voltage can be changed with following steps.

1. Disconnect the AC power cord.
2. Remove the top cover.
3. Take out the fuses from the fuse holder assembly.
4. Re-install the fuses in the correct voltage indication.
5. Stick the line voltage label on the rear panel.

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



PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS [USA] INC. 1925 E. Dominguez St., Long Beach, California 90810 U.S.A.
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia

4. DIAL CORD STRINGING

1. Remove the bonnet.
2. Remove the tuning drum from the shaft of the tuning capacitor.
3. Tie one end of the cord to the stud A located inside the tuning drum.
4. Rotate the tuning capacitor right around until the rotor blades are fully intermeshed.
5. Secure the tuning drum back onto the tuning capacitor shaft, making sure that the securing screw B faces directly upward.
6. Pass the cord out through the small opening in the circumference of the tuning drum (see diagram), and then take it over pulleys C and D in that sequence.
7. Wind the cord around the tuning shaft 3 times.
8. Pass it over pulley E, wind it around the tuning drum 2 times, and finally tie it to the spring hook F so that it is tensioned.
9. Turn the tuning shaft, and check that the cord moves smoothly.
10. Cut off any excess cord.
11. Turn the tuning shaft counter-clockwise as far as it will go.
12. Align the dial pointer with the starting point of the dial scale, and then pass the cord over it.
13. Check that the dial pointer is in line with the starting point of the dial scale.
14. Finally apply the locking paint to the cord securing positions (stud A and spring hook F) and the dial pointer connection.

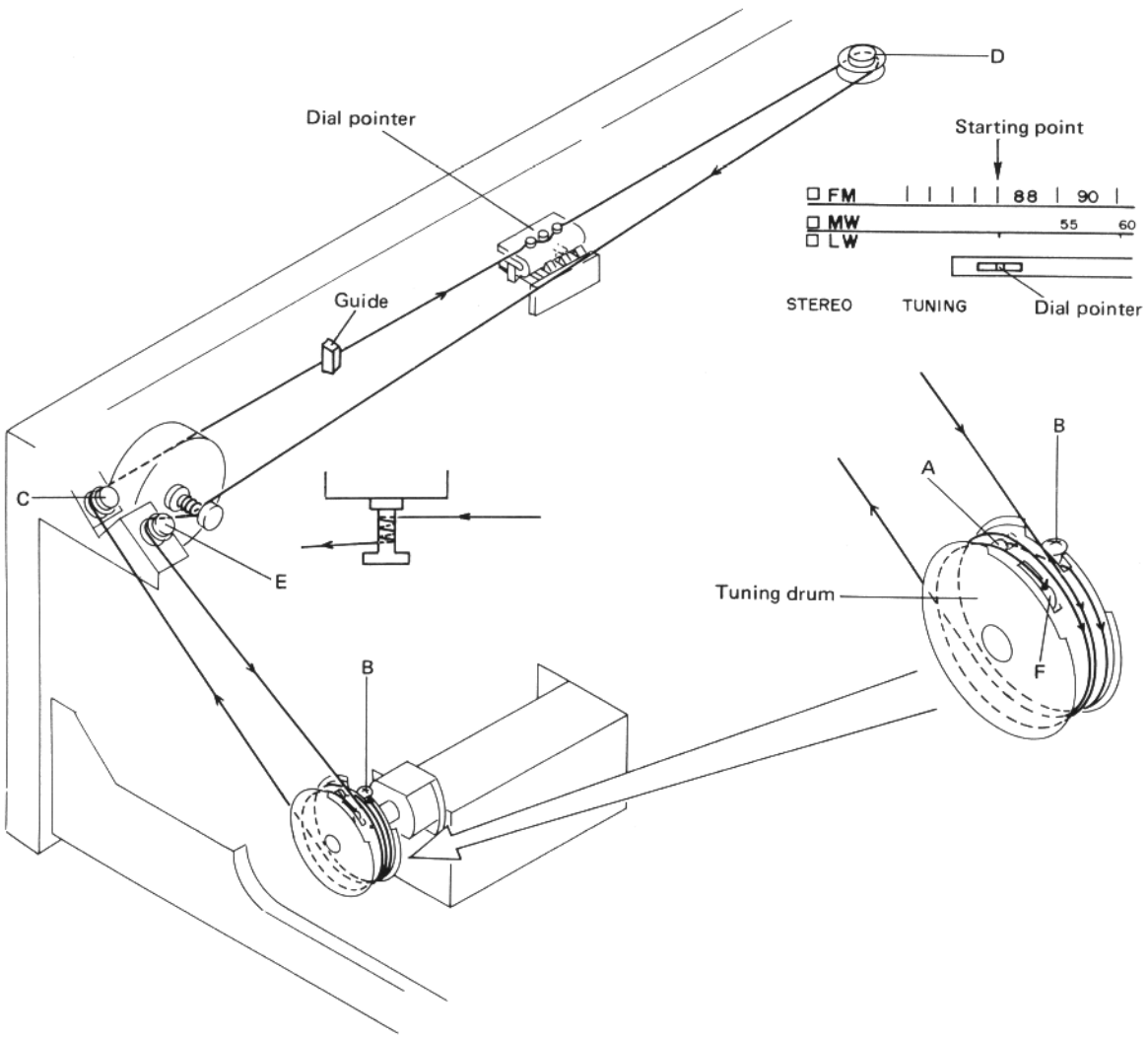


Fig. 4-1 Dial cord stringing

5. BLOCK DIAGRAM

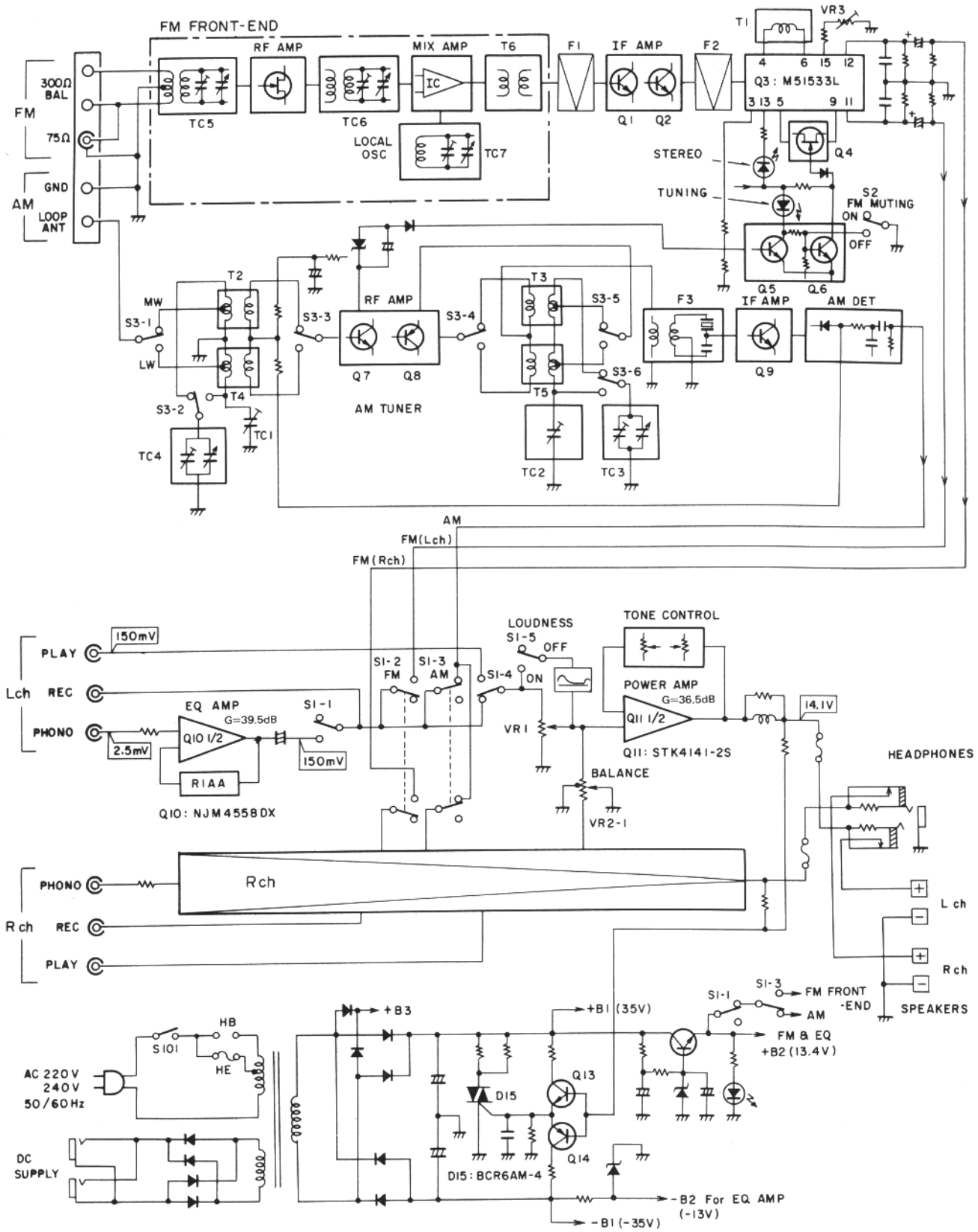


Fig. 5-1 Block diagram

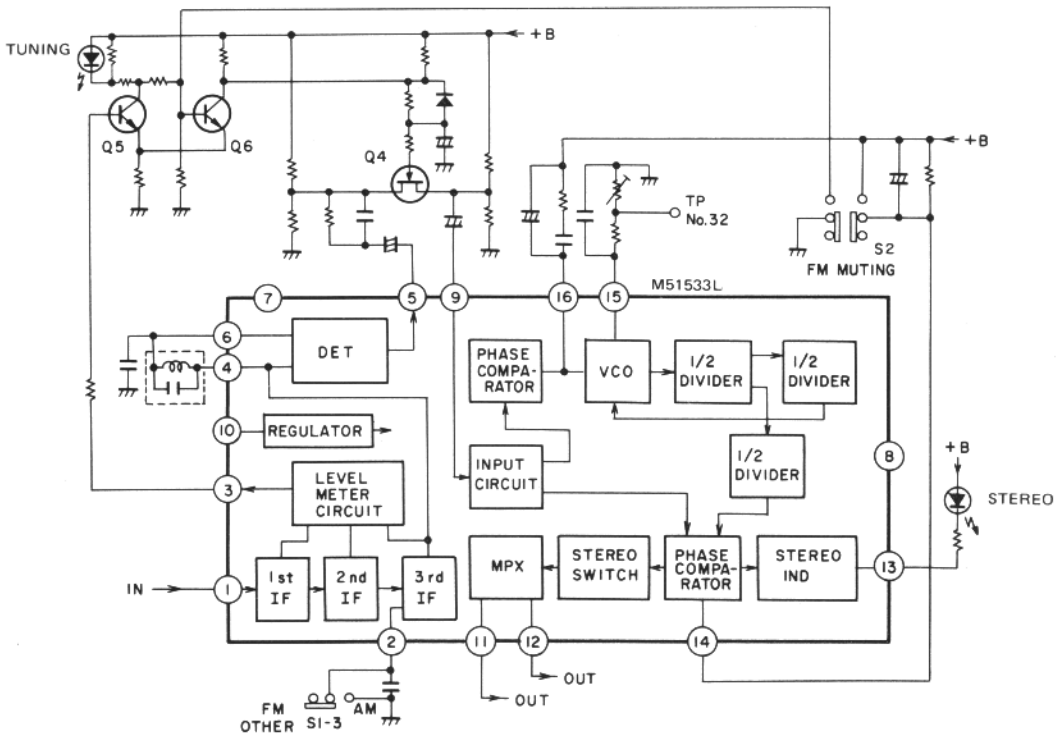


Fig. 5-2 FM IF, Detector and MPX circuit

SWITCHES:

COMPLEX Ass'y

S1-1	: FUNCTION (PHONO)	ON –	OFF
S1-2	: FUNCTION (FM)	ON –	OFF
S1-3	: FUNCTION (AM)	ON –	OFF
S1-4	: TAPE MONITOR	ON –	OFF
S1-5	: LOUDNESS	ON –	OFF
S3	: MW / LW	MW –	LW

SWITCH Ass'y

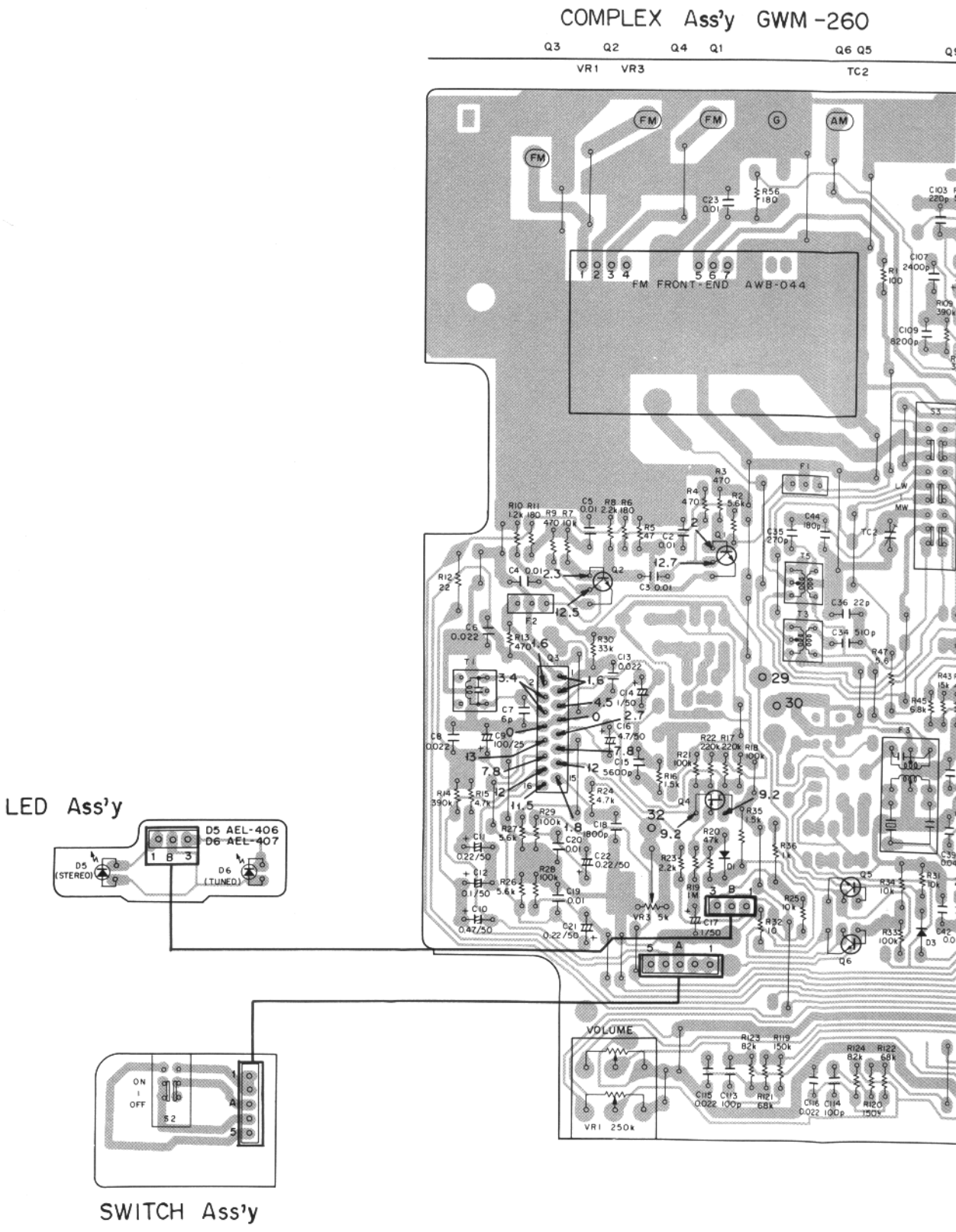
S2	: FM MUTE	ON –	OFF

OUTSIDE OF PC BOARD

S101	: POWER	ON –	OFF

The underlined indicates the switch position.

8. P.C.BOARDS CONNECTION DIARAM



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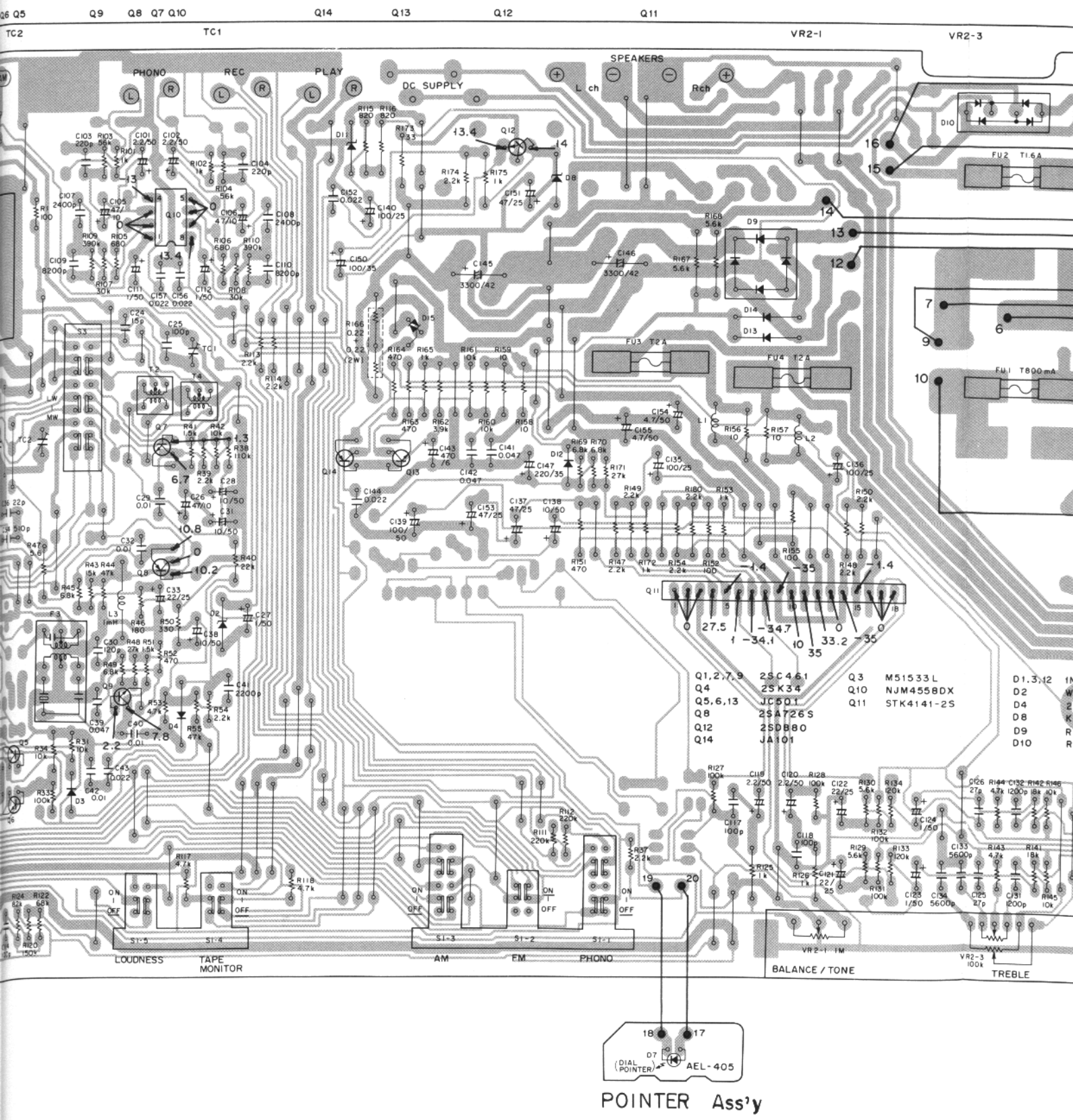
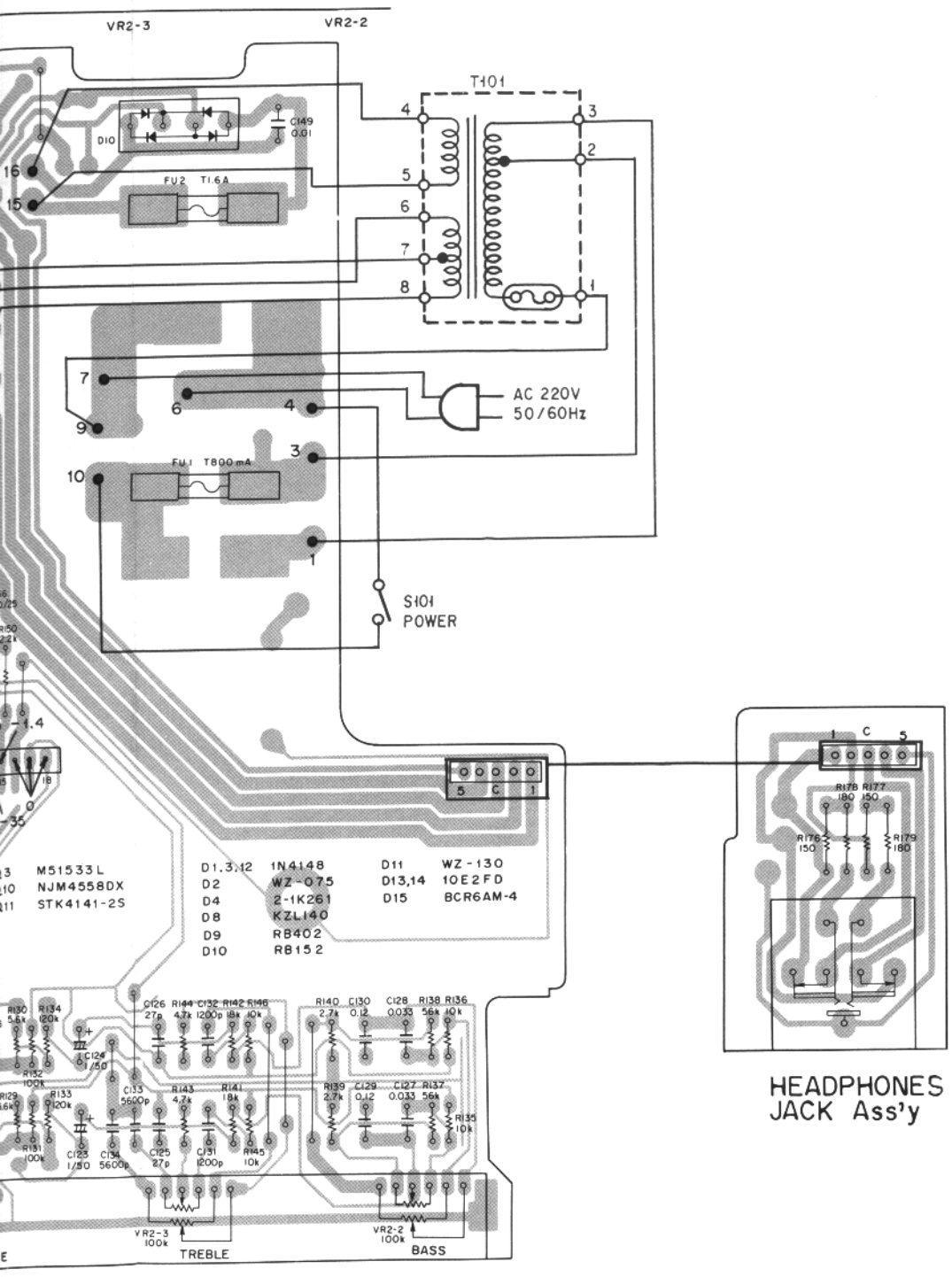
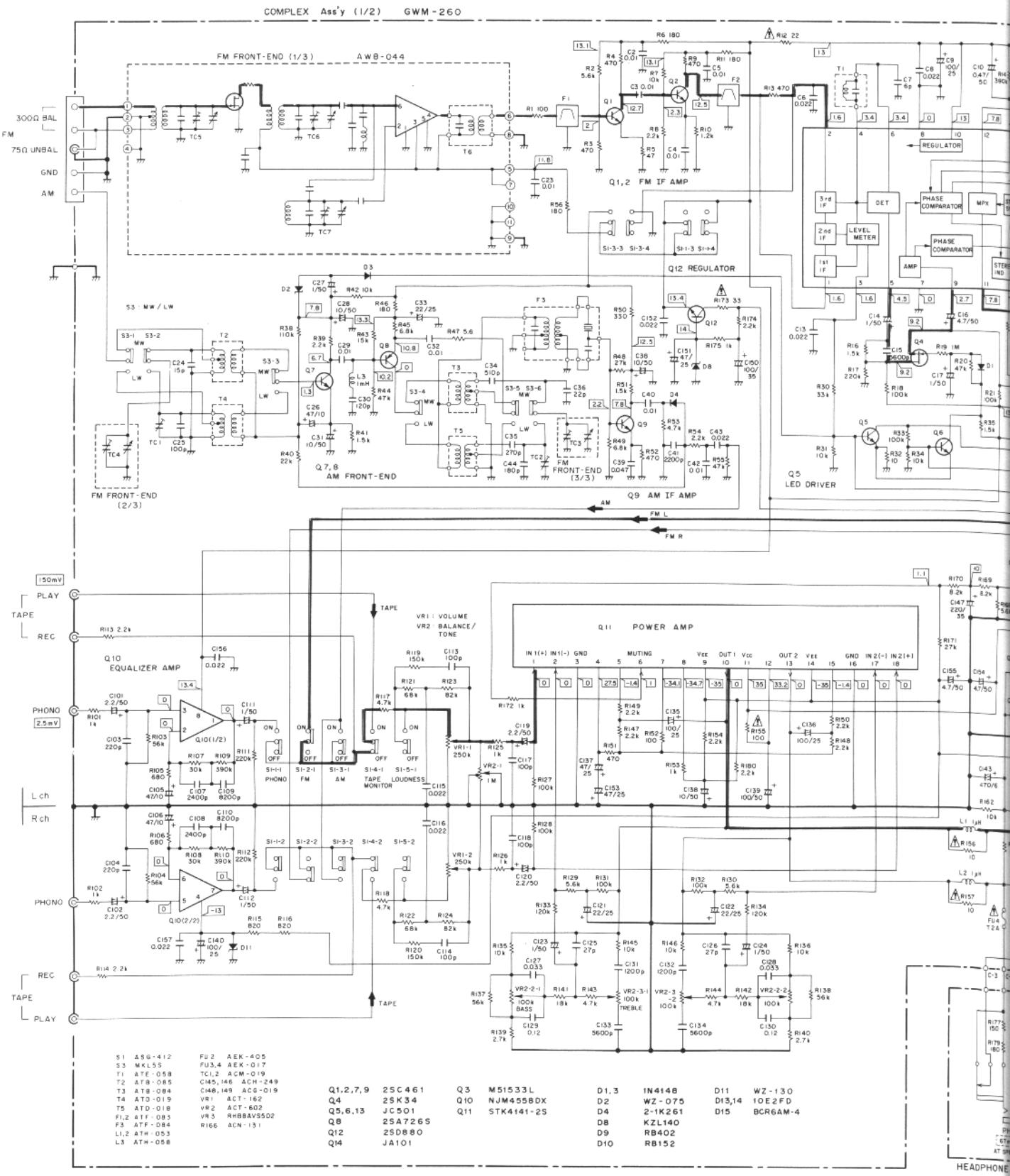

Q6 Q5
Q9
Q8 Q7 Q10
Q14
Q13
Q12
Q11
TC2
TC1
VR2-1
VR2-3
PHONO
REC
PLAY
DC SUPPLY
SPEAKERS
L ch
Rch
FU2 T1.6A
FU3 T2A
FU4 T2A
FU1 T800mA
Q1,2,7,9 2SC461
Q4 2SK34
Q5,6,13 JC501
Q8 2SA726S
Q12 2SD880
Q14 JA101
Q3 M51533L
Q10 NJM4558DX
Q11 STK4141-2S
D1,3,12
D2
D4
D8
D9
D10
LOUDNESS
TAPE MONITOR
AM
FM
PHONO
BALANCE / TONE
TREBLE
POINTER Ass'y
D7 (DIAL POINTER)
AEL-405

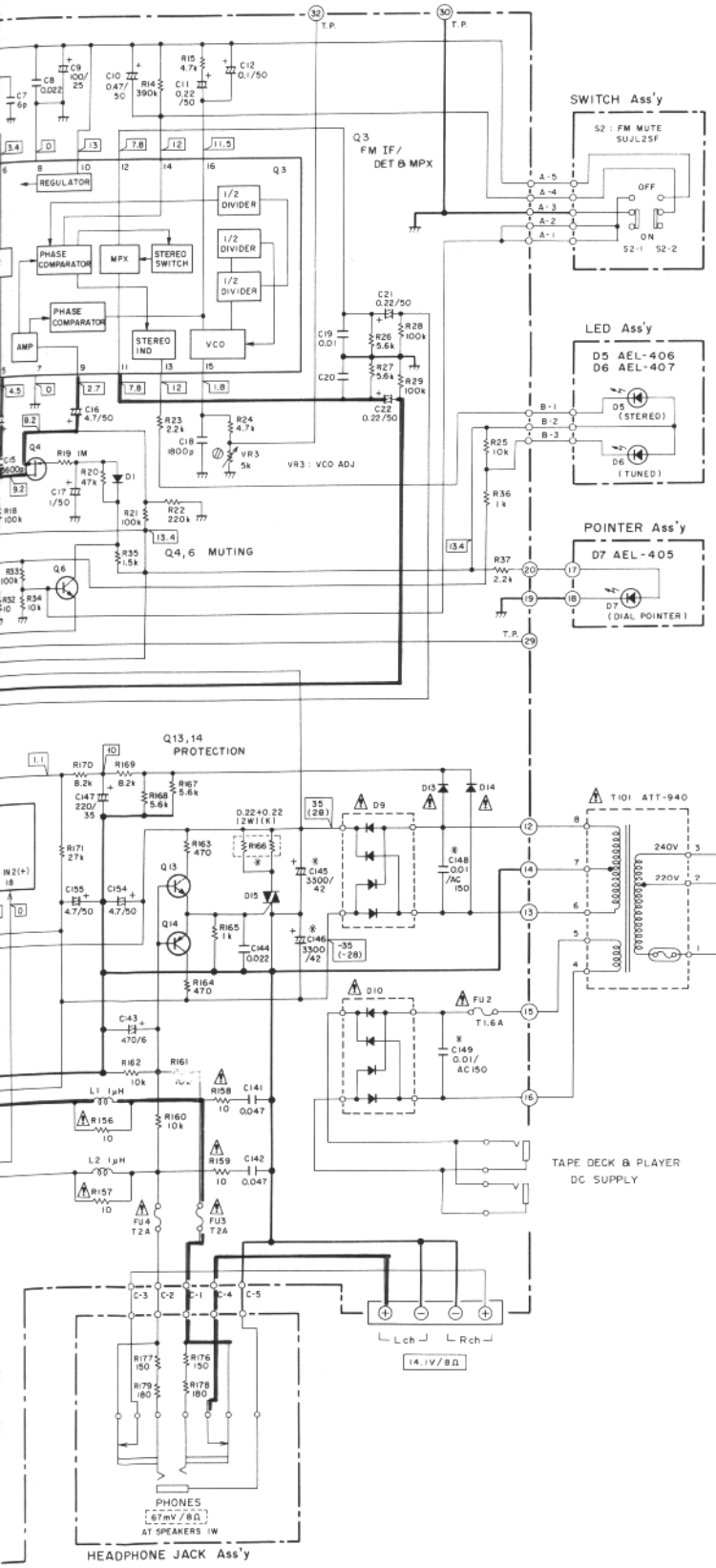


HEADPHONES JACK Ass'y

9. SCHEMATIC DIAGRAM



NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.



1. RESISTORS:
Indicated in Ω, ¼W, ⅛W, ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10% (M), ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE
: Signal voltage at (2.5 W + 2.5 W 8Ω)output (1kHz)
: DC voltage (V) at no input signal
Value in ( ) is DC voltage at rated power.

4. OTHERS:
➡ : Signal route.
⊜ : Adjusting point.
The ⚠ 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.

SWITCHES:

COMPLEX Ass'y

S1-1	:	FUNCTION (PHONO)	ON — OFF
S1-2	:	FUNCTION (FM)	ON — OFF
S1-3	:	FUNCTION (AM)	ON — OFF
S1-4	:	TAPE MONITOR	ON — OFF
S1-5	:	LOUDNESS	ON — OFF
S3	:	MW / LW	MW — LW

SWITCH Ass'y

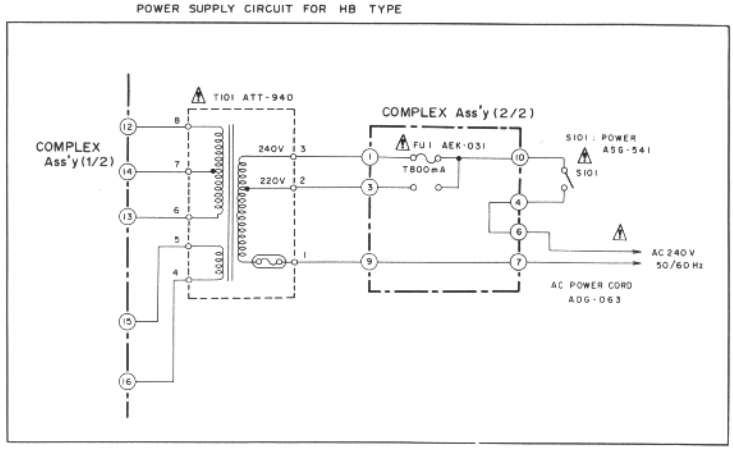
S2	:	FM MUTE	ON — OFF

OUTSIDE OF PC BOARD

S101	:	POWER	ON — OFF

The underlined indicates the switch position.

POWER SUPPLY CIRCUIT FOR HB TYPE



11. ADJUSTMENTS

FM Tuner Section

- Check that the dial pointer indicates a starting point.
- Connect the SIGNAL meter between terminal no. 29 of complex assembly and the ground.
- In principle, no adjustment should be made on FM tracking. (See page 20, if necessary.)
- Set the FM switch to ON and the FM MUTING switch to OFF.

Step	FM SG (400Hz, ±75kHz deviation)		Position of dial pointer	Adjustment point	Adjustment procedure
	Frequency	Level			
1.	98MHz	66dB	98MHz	T1	Set the output of the REC OUT terminal to the maximum value.
2.	98MHz	46dB	98MHz	T6	Set the SIGNAL meter to the maximum value.
3.	98MHz	66dB	98MHz	T1	Adjust the output of the REC OUT terminal distortion to the minimum level.
4.	Set the FM MUTING switch to ON.				
5.	98MHz 66dB Not modulated		98MHz	VR3	Set the signal of the terminal no. 32 to 76kHz (±200Hz).
6.	98MHz 66dB ★ Stereo modulation		98MHz	T6 (within ±90°)	Minimize the distortion of the REC OUT terminal signal.

★ **NOTE:**

Connect the MPX SG to the FM SG external modulator terminal and set the modulation of Main (1kHz, L+R) ±67.5kHz deviation, Pilot (19kHz) ±7.5kHz deviation.

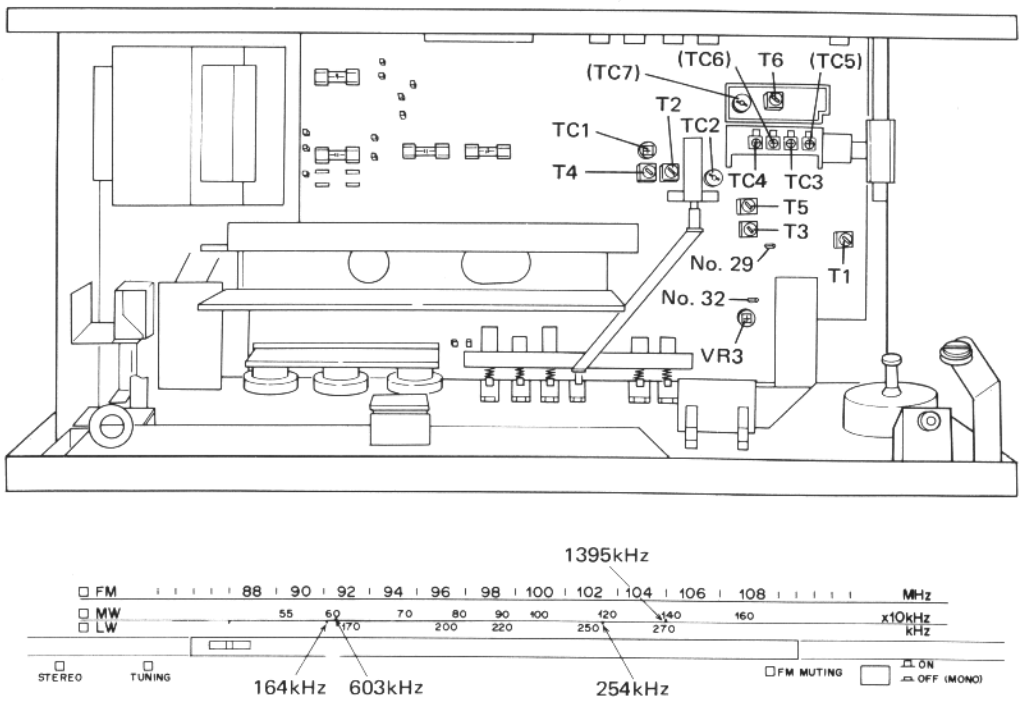


Fig. 11-1 Adjustment points

AM Tuner Section

- Check that the dial pointer indicates a starting point.
- Turn ON the MW switch.
- Connect the SIGNAL meter between the terminal no. 29 of tuner ass'y and the ground.

Step	AM SG (400Hz, 30% modulation)		Position of dial pointer	Adjustment point	Adjustment procedure
	Frequency	Level			
1.	1395kHz	100dB	1395kHz	TC3	Set the SIGNAL meter to the maximum value.
2.	603kHz	100dB	603kHz	T3	
3.	Set the AM SG to 30dB output level, repeat steps 1 to 2 above.				
4.	1395kHz	30dB	1395kHz	TC4	Set the SIGNAL meter to the maximum value.
5.	603kHz	30dB	603kHz	T2	
6.	Repeat steps 4 to 5 until maximum sensitivity is attained.				

Long Wave Section

- Set the AM BAND switch to the LW position.

Setp	AM SG (400Hz, 30% modulation)		Position of dial pointer	Adjustment point	Adjustment procedure
	Frequency	Level			
1.	254kHz	100dB	254kHz	TC2	Set the SIGNAL meter to the maximum value.
2.	164kHz	100dB	164kHz	T5	
3.	Set the AM SG to 30dB output level, repeat steps 1 to 2 above.				
4.	254kHz	50dB	254kHz	TC1	Set the SIGNAL meter to the maximum value.
5.	164kHz	50dB	164kHz	T4	
6.	Repeat steps 4 to 5 until maximum sensitivity is attained.				

FM tracking

Step	FM SG (400Hz, ±75kHz deviation)		Position of dial pointer	Adjustment point	Adjustment procedure
	Frequency	Level			
1.	106MHz	10dB	106MHz	TC7	Set the SIGNAL meter to the maximum value.
2.				TC5	
3.				TC6	
4.	Confirm that the dial pointer does not get out of position at 106MHz and 98MHz.				