

Shown in this photo is Model SX-3500.

Service Manual

STEREO RECEIVER

SX-3500
SX-620

 **PIONEER®**

Both Model SX-3500 and SX-620 have the same basic performance, but there are a few minor changes in design. For servicing of the SX-620, please see pages 25 – 27.

MODEL SX-3500 COMES IN THREE VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
KU	120V only	U.S.A. model
KC	120V only	Canada model
S	110V, 120V, 220V and 240V (Switchable)	General export model

This service manual is applicable to the KU type. When repairing the S type, please see the additional service manual (see page 29 – 36).

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1. SPECIFICATIONS

Amplifier Section

Continuous power output of 20 watts* per channel, min., at 8 ohms from 20 Hertz to 20,000 Hertz with no more than 0.05% total harmonic distortion.

Total Harmonic Distortion (20 Hertz to 20,000 Hertz, 8 ohms, from AUX)

continuous rated power output . . . No more than 0.05%
10 watts per channel power output
. No more than 0.05%

Intermodulation Distortion (50 Hertz: 7,000 Hertz = 4 : 1, 8 ohms, from AUX)

continuous rated power output . . . No more than 0.05%
10 watts per channel power output
. No more than 0.03%

Damping Factor (20 Hertz to 20,000 Hertz, 8 ohms)

. 35

Input (Sensitivity/Impedance)

PHONO 2.5mV/50 kilohms
AUX, TAPE PLAY 150mV/50 kilohms

Phono Overload Level (T.H.D. 0.1%, 1,000Hz)

PHONO 120mV

Output

TAPE REC 150mV
Speaker A, B, A+B

Frequency Response

PHONO (RIAA Equalization)
. 30Hz to 15,000Hz ± 0.3 dB
AUX, TAPE PLAY 10Hz to 50,000Hz $\begin{matrix} +0.5 \\ -3.0 \end{matrix}$ dB

Tone Control

BASS ± 8 dB (100Hz)
TREBLE ± 8 dB (10,000Hz)

Loudness Contour (Volume control set at -40dB position)

. +6dB (100Hz)

Hum and Noise (IHF, short-circuited, A network)

PHONO 76dB
AUX, TAPE PLAY 96dB

FM Tuner Section

Usable Sensitivity (IHF) 11.2dBf (2.0 μ V)

50dB Quieting Sensitivity

MONO 16.1dBf (3.5 μ V)
STEREO 37.0dBf (39 μ V)

Signal-to-Noise Ratio

MONO 78dB (at 65dBf)
STEREO 72dB (at 85dBf)

Distortion (at 65dBf)

MONO 100Hz 0.1%
1kHz 0.1%
6kHz 0.15%
STEREO 100Hz 0.2%
1kHz 0.15%
6kHz 0.25%

Capture ratio 1.0dB

Alternate Channel Selectivity

400kHz 60dB

Stereo Separation

1kHz 40dB
30Hz to 15kHz 35dB

Frequency Response

. 20Hz to 15kHz $\begin{matrix} +0.5 \\ -1.0 \end{matrix}$ dB

Spurious Response Ratio 65dB

Image Response Ratio 65dB

IF Response Ratio 90dB

AM Suppression Ratio 55dB

Subcarrier Product Ratio 40dB

SCA Rejection Ratio 60dB

Muting Threshold 19.2dBf (5 μ V)

Antenna Input 300 ohms balanced,
75 ohms unbalanced.

AM Tuner Section

Sensitivity (IHF, Ferrite Antenna) . . . 300 μ V/m
(IHF, Ext. antenna) . . . 15 μ V

Selectivity 27dB

Signal-to-Noise Ratio 52dB

Image Response Ratio 32dB

IF Response Ratio 40dB

Antenna Ferrite loopstick antenna

Miscellaneous

Power Requirements AC 120V, 60Hz

Power Consumption 200W

Dimensions 450(W) x 142(H) x 306(D)mm
17-11/16(W) x 5-9/16(H) x 12-1/16(D)in

Weight (without package)

Model for U.S. A 7.6kg (16 lb 12oz)
Model for Canada 7.9kg (17 lb 7oz)

Furnished Parts

Operating instructions 1

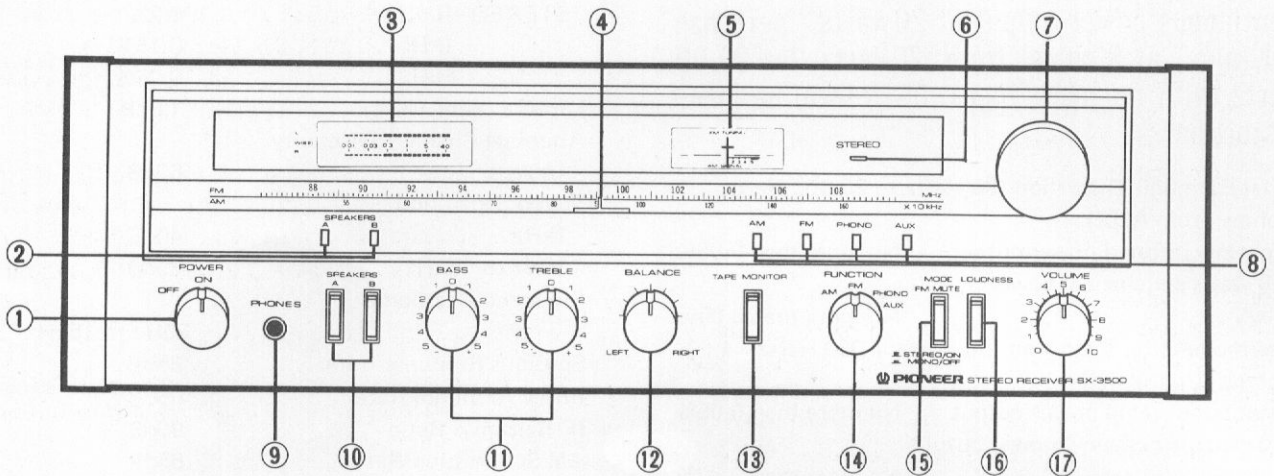
FM T-type antenna 1

**Measured pursuant to the Federal Trade commission's Trade Regulation rule on Power Output Claims for Amplifiers.*

NOTE:

Specifications and the design subject to possible modifications without notice due to improvements.

2. FRONT PANEL FACILITIES



① POWER SWITCH

Set this switch to ON to supply power to the receiver.

② SPEAKER INDICATORS

These lamps light according to the depressed speaker switch.

③ POWER METER

This meter allows you to read out the rated power level on the fluorescent display tube when speakers with a nominal impedance of 8 ohms are connected to the speaker terminals.

④ DIAL POINTER

This pointer indicates the broadcasting stations.

⑤ AM/FM TUNING METER

When an AM program is received, the meter functions as a signal meter. Adjust the tuning knob so that the pointer deflects as far to the right as possible.

When an FM program is received, the meter functions as a tuning meter. Adjust the tuning knob so that the pointer is positioned in the center.

⑥ FM STEREO INDICATOR

This indicator lights up when receiving an FM stereo program.

⑦ TUNING KNOB

Use this knob to select the station. Observe the AM/FM tuning meter, and set the tuning knob to the optimum tuning point when aligning the target broadcast station.

⑧ FUNCTION INDICATORS

These lamps indicate the position of the function selector.

⑨ HEADPHONE JACK

Plug the headphones into this jack when you want to listen through your stereo headphones.

Release both speaker switches if you want to listen to the sound through your headphones only.

⑩ SPEAKER SWITCHES

Depress the switch corresponding to the speakers connected to the SPEAKERS terminals (A or B) on the rear panel.

You can depress both of these buttons to listen to the sound from two pairs of speaker systems at the same time.

⑪ BASS AND TREBLE CONTROLS

Use these controls to adjust the bass and the treble. If you turn the bass control to the right from its center (0) position, you will be able to emphasize the sound in the low-frequency range. Conversely, turning this control to the left from the center (0) position will attenuate the sound. You can use the treble control to adjust the sound in the high-frequency range.

⑫ BALANCE CONTROL

Use this control to balance the volume of the left and right channels. First, however, set the mode/FM muting switch to MONO/OFF. If the sound appears to be louder on the right, it means that the volume of the right channel is higher. Turn the balance control to the left and adjust. Conversely, if the sound appears to be louder on the left, it means that the volume of the left channel is higher. Therefore, turn the balance control to the right and adjust. After adjusting, return the mode/FM muting switch to STEREO/ON.

⑬ TAPE MONITOR SWITCH

Depress this switch with a tape deck which is connected to the TAPE jacks (REC and PLAY) when you want to monitor the recording or playback of a tape.

NOTE:

Release this switch (OFF position) when listening to a record or a broadcast.

⑭ FUNCTION SELECTOR

Use this selector to select the program source.

AM: Set here when receiving an AM broadcast.

FM: Set here when receiving an FM broadcast.

PHONO: Set here when playing records on a turntable connected to the PHONO jacks.

AUX: Set here when listening to a program source which is connected to the AUX jacks.

⑮ MODE/FM MUTING SWITCH

This switch is a combination of the FM muting switch and the mode selector switch. When the switch is left undepressed (STEREO/ON) the reproduction is in stereo mode, while the FM muting function acts to suppress unpleasant interstation noise while listening to FM broadcasting.

When the switch is depressed (MONO/OFF position), however, reproduction is in mono mode, while the FM muting function does not act, thus enabling suitable reception of weak radio stations when tuning in to the FM broadcasting station.

NOTE:

Recording stereophonically with the mode/FM muting switch in the MONO/OFF position may cause deterioration in channel separation.

⑯ LOUDNESS SWITCH

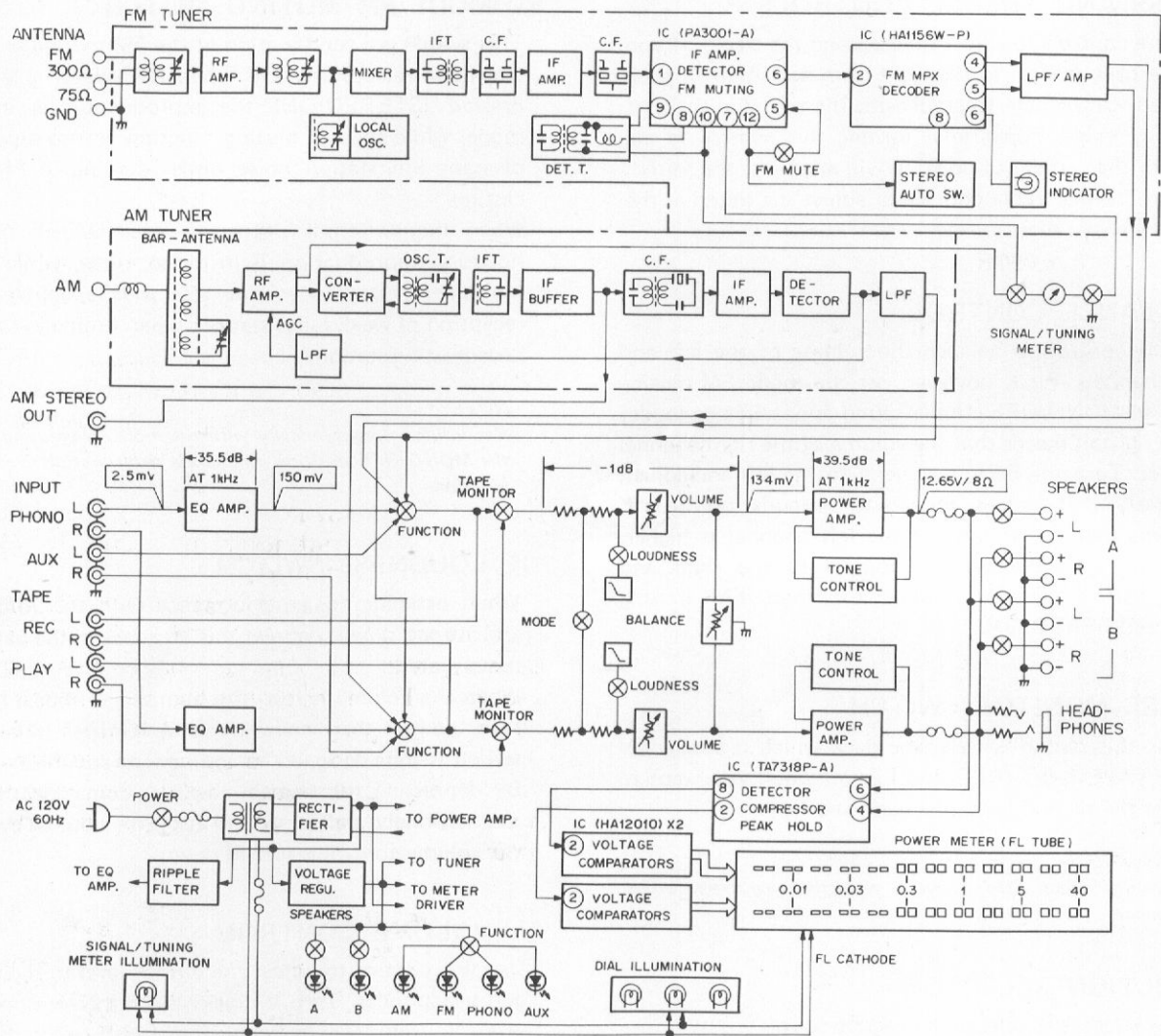
When listening to a performance with the volume control turned down, depress this switch and the bass will be accentuated.

When the volume is low, the human ear finds it harder to hear the bass than when the volume is high. The loudness switch is thus designed to compensate for this deficiency. By depressing this switch, the bass come through much more strongly and the sound takes on a punch even when the volume control is turned down.

⑰ VOLUME CONTROL

Use this control to adjust the output level to the speakers and headphones. Turn it clockwise to increase the output level. No sound will be heard if you set it to "0".

3. BLOCK DIAGRAM



4. CIRCUIT DESCRIPTIONS

4.1 RF SECTION

FM Tuner

The FM front end is comprised of a J-FET (2SK168) single-stage RF amplifier, an NPN transistor mixer, and an NPN transistor modified Clapp type local oscillator.

The IF stage consists of two dual-element ceramic filters, and an IF system IC (PA3001-A) which incorporates the IF limiter amplifier, FM detector, and the FM muting circuit.

The MPX stereo decoder stage employs an FM MPX IC (HA1156W-P), while the pilot signal leak (19kHz) and sub-carrier signal are removed by an -18dB/oct. active filter consisting of a PNP transistor. This active filter also serves as an amplifier for frequencies within its passband, and eliminates crosstalk.

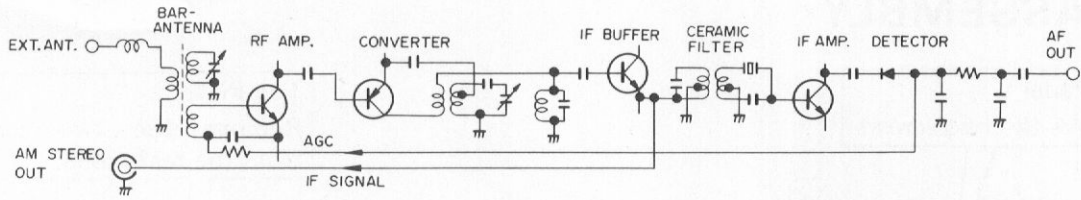


Fig. 4-1 AM Tuner Circuit

AM Tuner

The AM tuner stage employs a 2-ganged tuning capacitor, an NPN transistor RF amplifier, an PNP transistor converter, an NPN transistor IF buffer amplifier, a single-element ceramic filter, an NPN transistor IF amplifier, and the detector.

The AM STEREO OUT terminal on the rear panel is for connecting to an AM stereo broadcast decoder adaptor. The signal appearing at this terminal is the converter output (IF signal) passed via buffer (emitter-follower) stage.

4.2 AF SECTION

Phono Equalizer Amplifier

The equalizer amplifier is collector-to-emitter feedback type 2-stage direct-coupled amplifier, designed with a gain of 35.5dB (at 1kHz), a overload input level of 120mV (at 1kHz, THD 0.1%), and equalizer deviation of ± 0.3 dB (30Hz - 15kHz).

Power Amplifier

The power amplifier is all-stage direct-coupled pure complementary OCL circuit, resulting in an output power rating of 20W + 20W (8 Ω load, 20Hz - 20kHz, THD 0.05%).

Tone control (BASS, TREBLE) is accomplished by providing the power amplifier NFB circuit with a frequency selective characteristic.

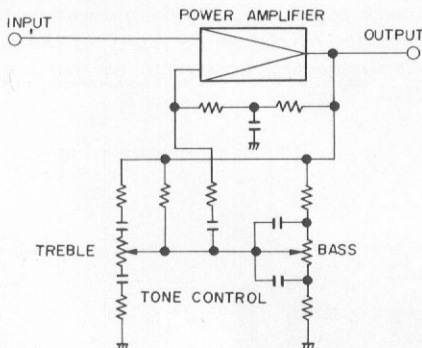


Fig. 4-2 Tone Control Circuit

Power Indicator Circuit

The SX-3500 output power indicators feature fluorescent indicator tube (FL tube). In this tube, thermionic emissions from the cathode are accelerated into fluorescent substance of the segmental anodes, resulting in the emission of light.

The output circuit signal is applied to the IC (TA7318P-A). The IC contains a detector circuit, compressor (40dB), and peak hold circuit for both left and right channels. The dynamic range of signal is thus contracted by 40dB to obtain a "peak held" DC voltage.

The output power indicator segments of the FL tube are driven by the HA12010 ICs (one for each channel) equipped with 12 pairs of voltage comparators. These comparators will commence to operate separately as the input level increase. And since these comparators apply the voltages to the output power indicator segmental anodes, each successive segment will light up in turn as the input level rises.

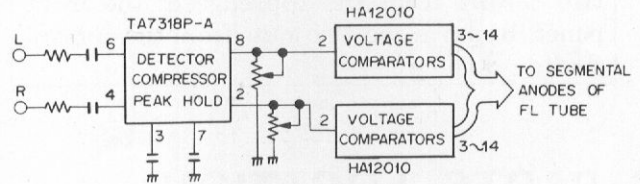
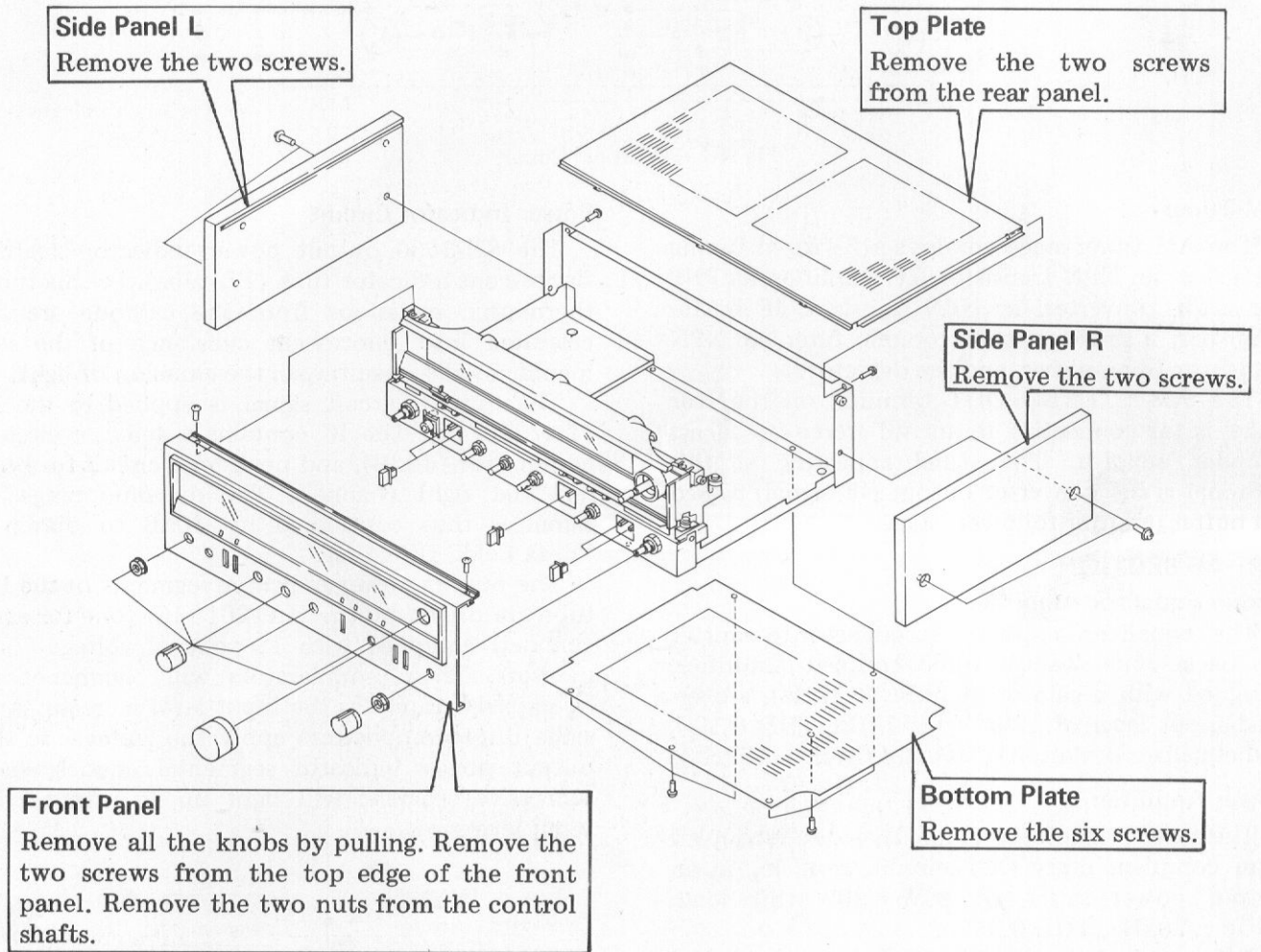


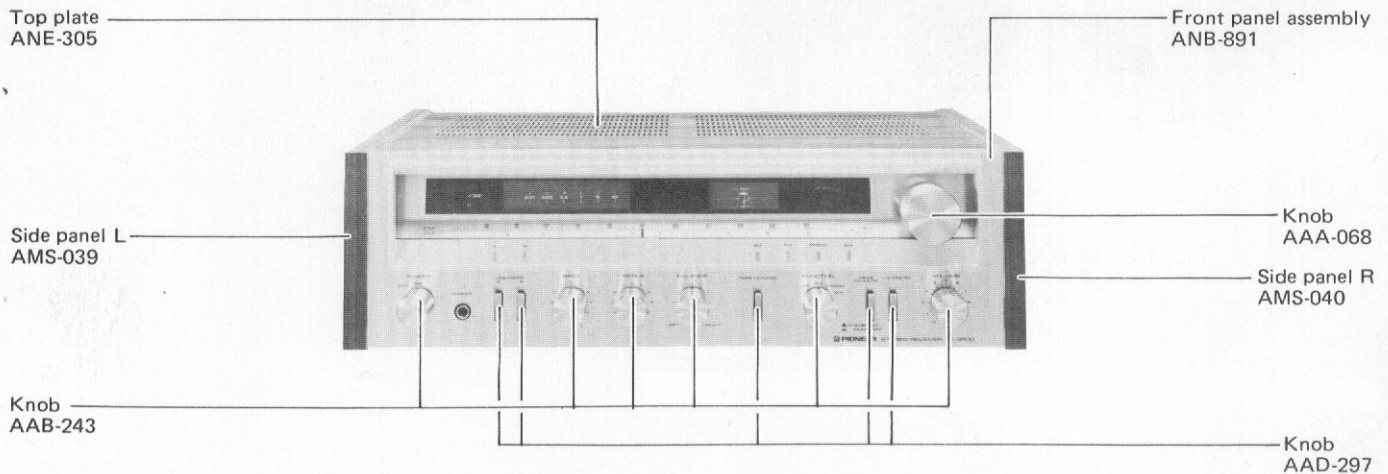
Fig. 4-3 Power Indicator Circuit

5. DISASSEMBLY



6. PARTS LOCATION

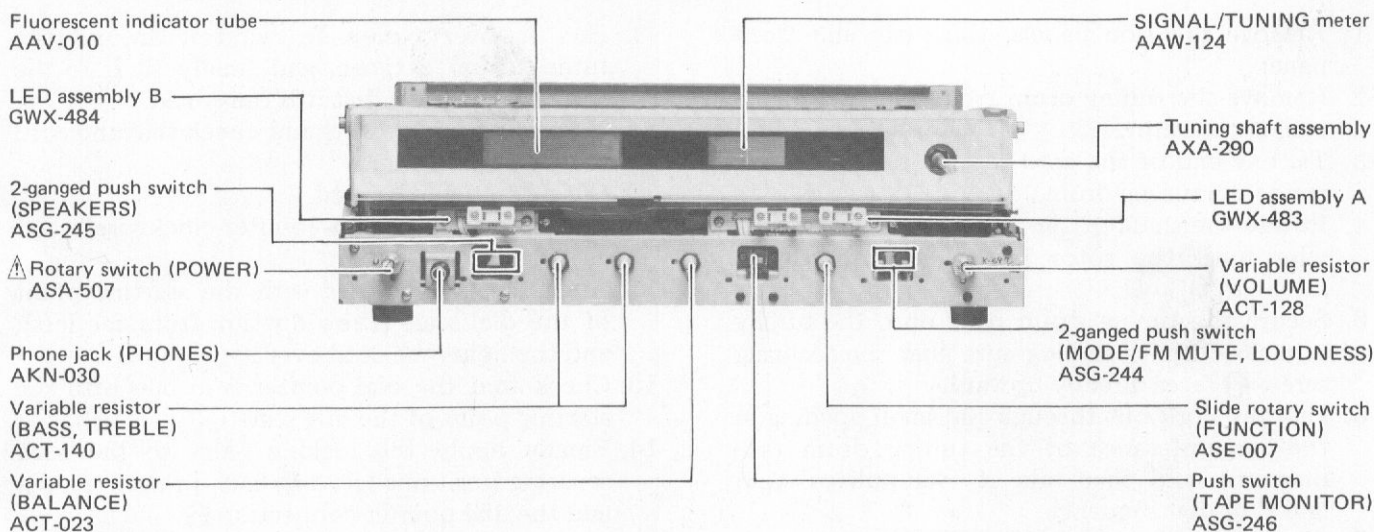
Front Panel View



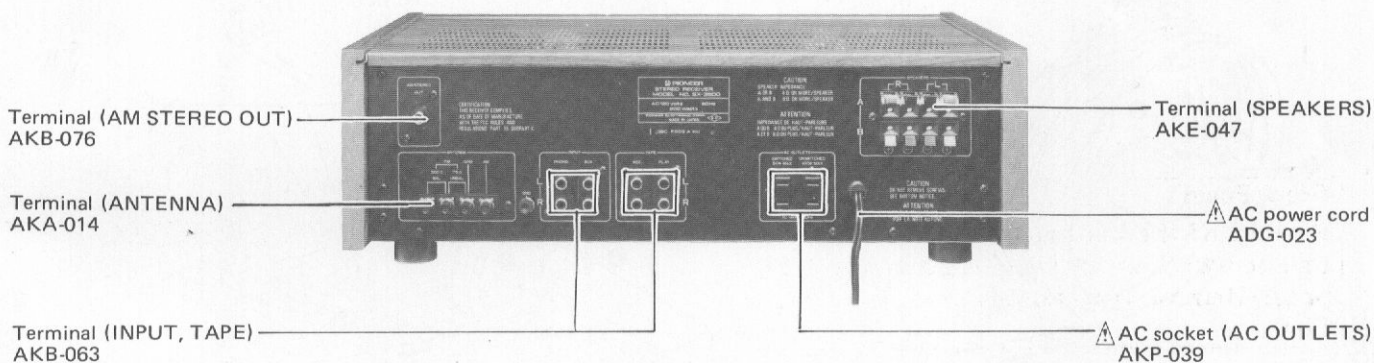
NOTE:

- 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.

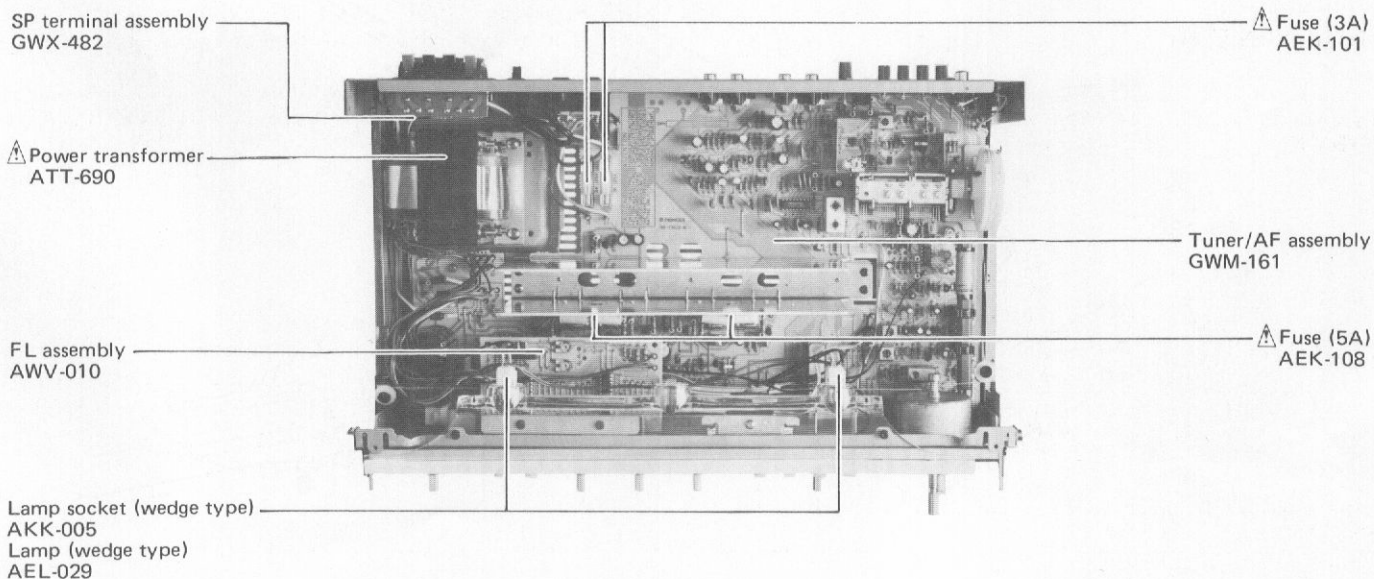
Front View with Panel Removed



Rear Panel View

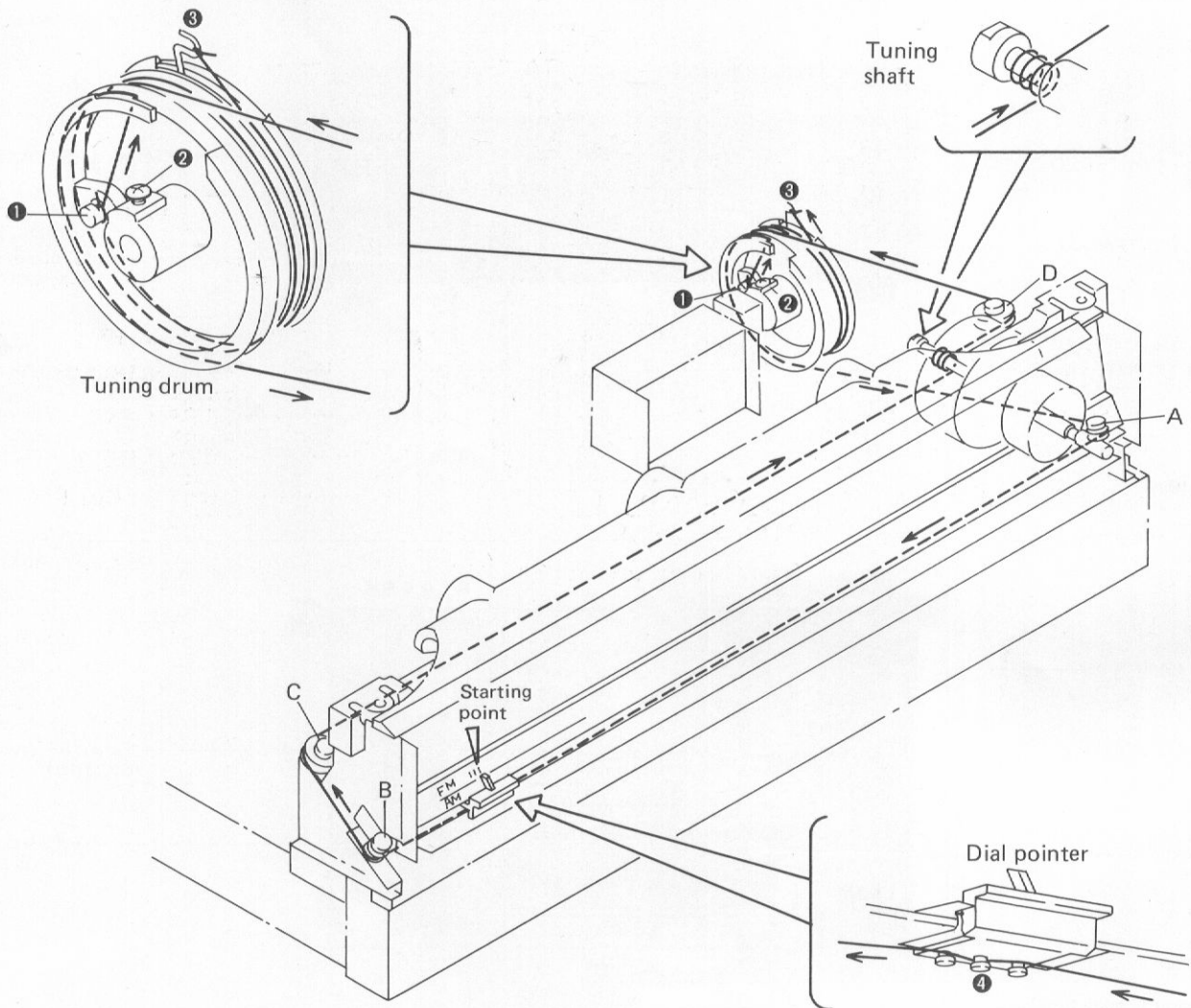


Top View



7. DIAL CORD STRINGING

1. Remove the side panels, top plate and front panel.
2. Remove the tuning drum from the shaft of the tuning capacitor.
3. Tie one end of the cord to the stud ① located inside the tuning drum.
4. Rotate the shaft of the tuning capacitor clockwise until the rotor blades are fully intermeshed.
5. Secure the tuning drum back onto the tuning capacitor shaft, making sure that the securing screw ② 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 A, B and C in that sequence.
7. Wind the cord around the tuning shaft 3 times.
8. Pass it over pulley D, wind it around the tuning drum 2 times, and finally tie it to the spring hook ③ 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 (third division from the left), 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 ① and spring hook ③) and the dial pointer connection ④.



8. ADJUSTMENTS

8.1 POWER AMPLIFIER

- Without any load or input signal, turn the VOLUME control to minimum position.

Left Channel Idle Current

- Check that the voltage between T1(+) and T2(-) lies within 10mV – 100mV range.
- If the voltage is less than 10mV, cut jumper A. If the voltage exceeds 100mV, check for circuit failure.

Right Channel Idle Current

- Check that the voltage between T3(+) and T4(-) lies within 10mV – 100mV range.
- If the voltage is less than 10mV, cut jumper B. If the voltage exceeds 100mV, check for circuit failure.

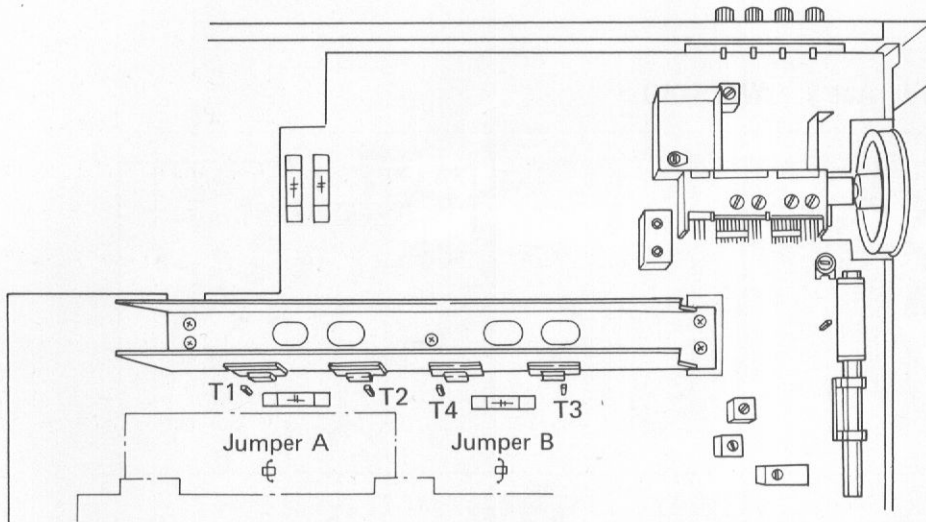


Fig. 8-1 Idle Current Adjustment

8.2 POWER INDICATOR CALIBRATION

- Without any load, set the FUNCTION selector to the AUX position.

Step	Input		Adjustment point	Adjustment method
	Terminals	Signal		
1	AUX	Sine wave 1kHz 150mV (rms)	VOLUME control	Obtain AC 12.6V (rms) reading on the output terminals (SPEAKERS).
2	AUX	Sine wave 1kHz 150mV (rms)	VR1 (L ch.) VR2 (R ch.)	Obtain the point where the 40W segments of the power indicator go out.

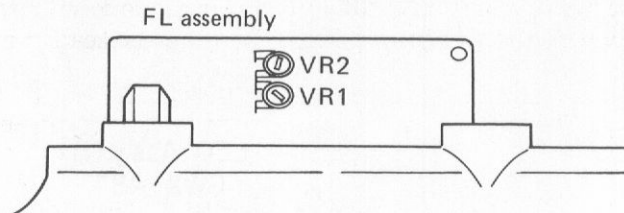


Fig. 8-2 Power Indicator Calibration

8.3 FM TUNER

- Connect the FM SG (FM signal generator) to the FM ANTENNA 300Ω terminal.
- Set the FUNCTION selector to the FM position.
- Tuning coil in the FM front end does not have an adjusting core. Consequently, tracking adjustment at 90MHz are performed by regulating the gap between rotor and stator of the tuning capacitors (VC1, VC2, and VC3). VC1, VC2 and VC3 adjusting that the two outer rotor blades of each of these tuning capacitors are to be extended outwards with spatula (Part No. GGK-066) as shown in Fig. 8-3.

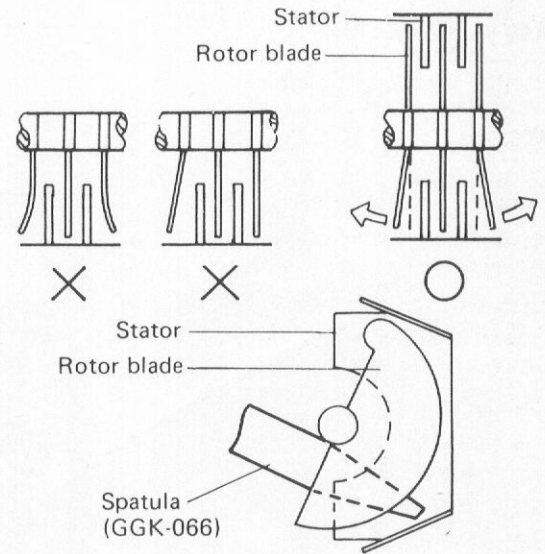


Fig. 8-3 Adjustment of Tuning Capacitor

Step	FM SG (400Hz, ±75kHz DEV.)		Position of tuning dial	Adjustment point	Adjustment method
	Frequency	Level			
1	No signal		106MHz	T2-A	Set the TUNING meter to dead center.
2	106MHz	106dB	106MHz	TC3	Obtain maximum DC voltage reading between pin no.13 of the PA3001-A (IC) and ground, and a dead center reading in the TUNING meter.
3	90MHz		90MHz	VC3	
4	106MHz	20dB	106MHz	TC3, TC1, TC2	
5	90MHz		90MHz	VC3, VC1, VC2	
6	Repeat steps 4 to 5 as above.				
7	No signal		98MHz	T2-A	Set the TUNING meter to dead center.
8	98MHz*	66dB		T2-B	Reduce distortion in the output (TAPE REC terminal) to minimum.
9	Repeat steps 7 to 8 as above.				

* Fine adjust the FM SG to ensure a dead center reading in the TUNING meter.

Multiplex Decoder Circuit

- Connect the MPX SG (FM multiplex signal generator) to the FM SG external modulator terminal. Set the FM SG output to 98MHz and 66dB (modulation mode to external), and tune the SX-3500 to this position (fine adjust the tuning knob to ensure a dead center reading in the TUNING meter).

Step	FM MPX SG	Adjustment point	Adjustment method
1	No signal (unmodulated)	VR5	Obtain a 19kHz signal at TP terminal.
2	Main: 1kHz, L+R, ±67.5kHz DEV. Pilot: 19kHz, ±7.5kHz DEV.	T1 (by up to 90° in either direction)	Reduce distortion in the output (TAPE REC terminal) to a minimum.

8.4 AM TUNER

- Connect the AM SG (AM signal generator) to the AM ANTENNA terminal via 1kΩ resistor.
- Set the FUNCTION selector to the AM position.

Step	AM SG (400Hz, 30% MOD.)		Position of tuning dial	Adjustment point	Adjustment method	
	Frequency	Level				
1	600kHz	100dB	600kHz	T4	Obtain maximum demodulated output (at TAPE REC terminal).	
2	1400kHz		1400kHz	TC5		
3	600kHz	30dB	600kHz	T4, bar-antenna*		
4	1400kHz		1400kHz	TC5, TC4		
5	Repeat steps 3 to 4 as above.					
6	1000kHz	30dB	1000kHz	T5, F3		

* Slide the bar-antenna coil along the core.

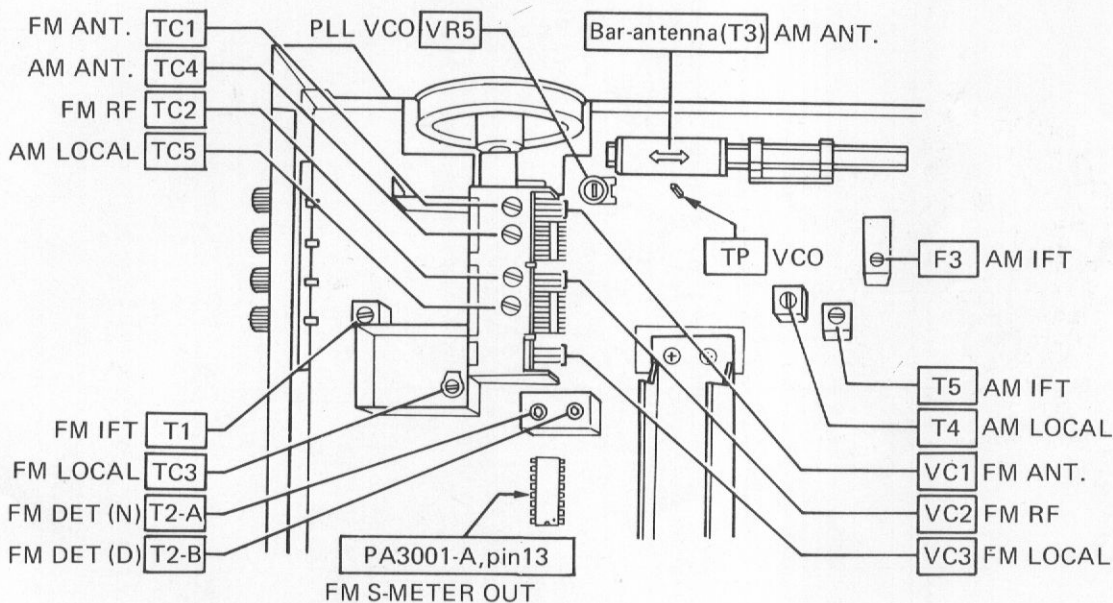
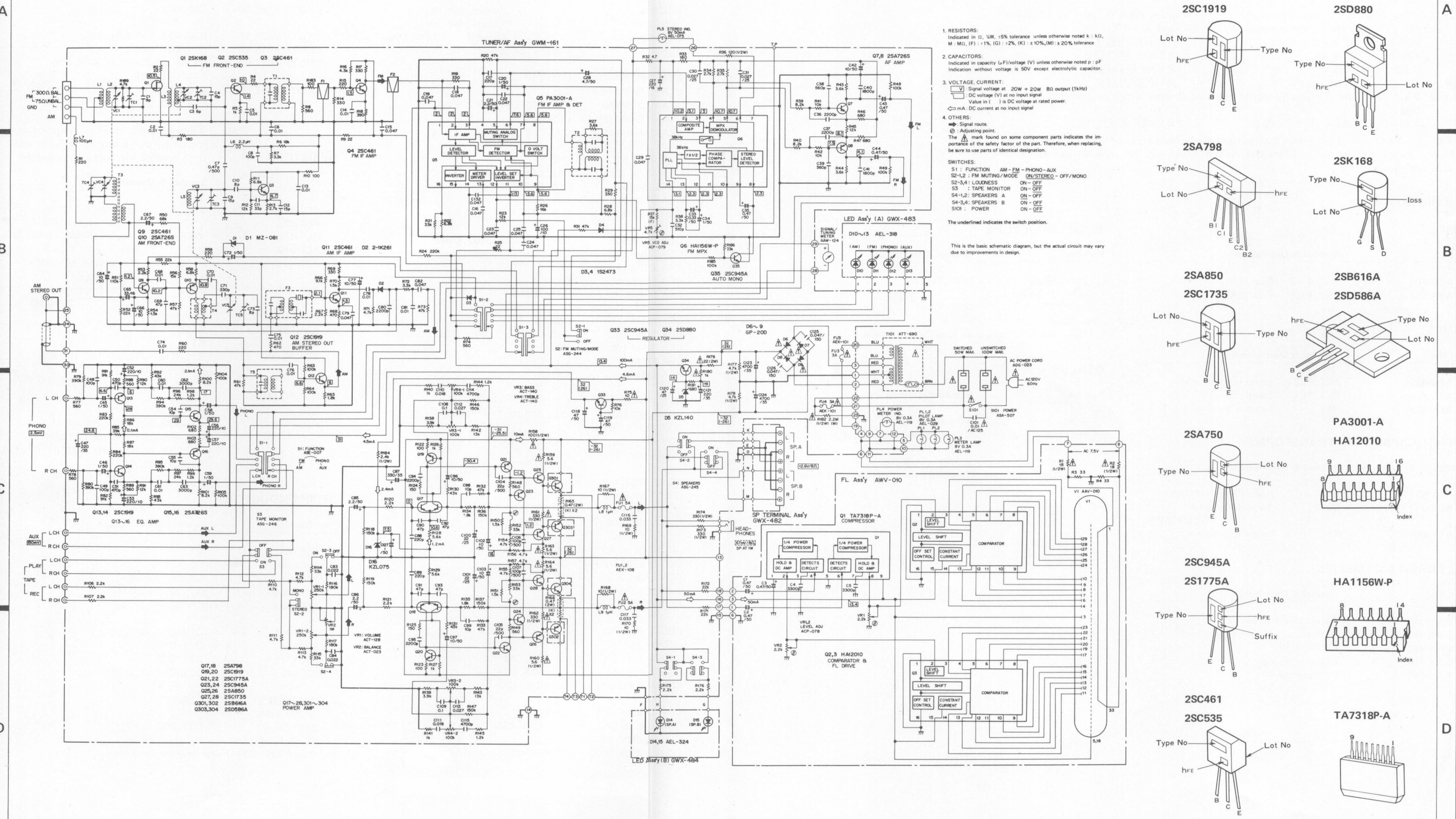


Fig. 8-4 Adjustment of FM/AM Tuner

10. SCHEMATIC DIAGRAM

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

External Appearance of Transistors and ICs



- 1. RESISTORS:**
 Indicated in Ω, $\frac{1}{4}$ W, .5% tolerance unless otherwise noted k: kΩ, M: MΩ, (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% tolerance
- 2. CAPACITORS:**
 Indicated in capacity (pF)/voltage (V) unless otherwise noted p: pF
 Indication without voltage is 50V except electrolytic capacitor.
- 3. VOLTAGE, CURRENT:**
 □ Signal voltage at 20W + 20W 8Ω output (1kHz)
 ▭ 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 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.
- SWITCHES:**
 S1: FUNCTION AM - FM - PHONO - AUX
 S2-3:4: LOUNESS ON - OFF
 S3: TAPE MONITOR ON - OFF
 S4-1,2: SPEAKERS A ON - OFF
 S4-3,4: SPEAKERS B ON - OFF
 S101: POWER ON - OFF
- The underlined indicates the switch position.
- This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

<p>2SA726S 2SC1919</p>	<p>2SD313 2SD880</p>
<p>2SA798</p>	<p>2SK168</p>
<p>2SA850 2SC1735</p>	<p>2SB616A 2SD586A</p>
<p>2SA750</p>	<p>PA3001-A HA12010</p>
<p>2SC945A 2S1775A</p>	<p>HA1156W-P</p>
<p>2SC461 2SC535</p>	<p>TA7318P-A</p>

11. ELECTRICAL PARTS LIST

NOTES:

- 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	RD¼PS	561J
47kΩ	47 × 10 ³	473	RD¼PS	473J
0.5Ω	0R5		RN2H	0R5K
1Ω	010		RSIP	010K

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

5.62kΩ	562 × 10 ¹	5621	RN¼SR	5621F
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- 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.

Miscellaneous Parts

FUSES

Part No.	Symbol & Description
Δ AEK-108	FU1, FU2 Fuse (5A)
Δ AEK-101	FU3, FU4 Fuse (3A)

LAMPS

Part No.	Symbol & Description
AEL-029	PL1, PL2 Lamp (wedge type)
AEL-119	PL3, PL4 Lamp assembly
AEL-075	PL5 Lamp with wires

SWITCH, CAPACITOR, TRANSFORMER

Part No.	Symbol & Description
Δ ASA-507	S101 Rotary switch (POWER)
Δ ACG-017	C101 Ceramic capacitor 0.01/125V
Δ ATT-690	T1 Power transformer

P.C. BOARD ASSEMBLIES

Part No.	Symbol & Description
GWM-161	Tuner/AF assembly
GWX-482	SP terminal assembly
GWX-483	LED assembly A
GWX-484	LED assembly B
AWV-010	FL assembly

SEMICONDUCTORS

Part No.	Symbol & Description
2SB616A-Q*	Q301, Q302
or 2SB616A-R*	
2SD586A-Q*	Q303, Q304
or 2SD586A-R*	

*hfe of Q301-Q304 should have the same value.

OTHERS

Part No.	Symbol & Description
Δ ADG-023	AC power cord
Δ AKP-039	AC socket (AC OUTLETS)
AKK-005	Lamp socket
AAW-124	SIGNAL/TUNING meter
AKB-076	Terminal (AM STEREO OUT)

Tuner/AF Assembly (GWM-161)

CAPACITORS

Part No.	Symbol & Description
ACK-012	VC Tuning capacitor
ACM-006	TC3 Ceramic trimmer
ACG-009	C125, C126 Ceramic 0.047/150V
ACH-217	C123, C124 Electrolytic 4700/35V
CEANL R33M 50	C33
CEANL R47M 50	C35
CEANL 010M 50	C34, C45, C46, C58, C59
CEANL 2R2M 50	C85, C86
CEANL 100M 50	C96, C97
CEA 100M 50L	C42
CEA R47M 50L	C43, C44
CEA 010M 50L	C20, C72, C127
CEA 2R2M 50L	C21, C67
CEA 4R7M 50L	C28
CEA 100M 50L	C64, C66, C77, C102, C103
CEA 220M 25L	C100, C101
CEA 330M 16L	C65
CEA 470M 25L	C120
CEA 470M 50L	C118, C119
CEA 101M 10L	C26
CEA 221M 10L	C52, C53, C56, C57
CEA 221M 16L	C27
CEA 221M 35L	C47, C121
CEA 331M 35L	C87
CGB R47K 500	C7
CQMA 302J 50	C62, C63
CQSH 331K 50	C71
CQSH 511J 50	C32
CQMA 103J 50	C60, C61
CQMA 183K 50	C110, C111
CQMA 104K 50	C108, C109
CQMA 273K 50	C112, C113
CQMA 333K 50	C116, C117
CCDUJ 090D 50	C1
CCDUJ 150J 50	C4
CCDSL 060D 50	C3
CCDPH 150J 50	C9
CCDCH 080D 50	C10
CCDCH 150J 50	C12
CCDCH 330J 50	C11
CCDSL 101J 50	C8, C48, C49
CCDSL 221J 50	C17, C88, C89
CCDSL 100D 50	C54, C55, C98, C99
CCDSL 101K 500	C106, C107
CCDSL 470J 50	C69, C90-C93
CCDXL 080D 50	C73
CCDSL 220K 500	C104, C105

Part No.	Symbol & Description
CKDYB 472K 50	C114, C115
CKDYF 223Z 50	C83, C84
CKDYX 273M 25	C30, C31
CKDYB 561K 50	C38, C39
CKDYB 182K 50	C40, C41
CKDYB 222K 50	C36, C37, C80, C94, C95
CKDYB 471K 50	C50, C51
CKDYF 103Z 50	C2, C5, C6, C13, C14, C68, C70, C74-C76, C78, C81
CKDYF 473Z 50	C15, C16, C18, C19, C22-C25, C29, C79, C82, C132

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

RESISTORS

Part No.	Symbol & Description
ACT-128	VR1 Variable (VOLUME)
ACT-023	VR2 Variable (BALANCE)
ACT-140	VR3, VR4 Variable (BASS, TREBLE)
ACP-079	VR5 Semi-fixed 4.7k-B
ACN-118	R165, R166 Wire wound 0.47/2Wx2
ACN-029	R182 Carbon composition 2.2M/½W
RD¼PMF □□□ J	R75, R180
RD¼PSF □□□ J	R158-R164
RS2P 220J	R179
RD½PS □□□ J	R36, R167-R170, R173, R174, R177, R178, R184
RN¼PQ 1502F	R37
RD¼PM □□□ JNL	R81-R84
RD¼PM □□□ J	R1-R29, R31-R35, R38-R74, R76-R80, R85-R107, R110-R157, R171, R172, R175, R176, R181, R183, R185, R186, R189

SEMICONDUCTORS

Part No.	Symbol & Description
2SK168	Q1
2SC535	Q2
2SC461	Q3, Q4, Q9, Q11
2SA726S (2SA750)	Q7, Q8, Q10, Q15, Q16
2SC1919	Q12-Q14, Q19, Q20
2SA798	Q17, Q18
2SC1775A	Q21, Q22
2SC945A	Q23, Q24, Q33, Q35
2SA850-D* or 2SA850-C*	Q25, Q26
2SC1735-D* or 2SC1735-C*	Q27, Q28

*hfe of Q25-Q28 should have the same value.

Part No.	Symbol & Description
2SD880 (2SD313)	Q34
PA3001-A	Q5
HA1156W-P	Q6
△ GP-20D	D6-D9
KZL140	D5
MZ-081	D1
2-1K261	D2
1S2473 (1S2076)	D3, D4
KZL075	D16

COILS, FILTERS

Part No.	Symbol & Description
ATE-008	T1 FM IFT
ATE-043	T2 FM DET
ATB-622	T3 Bar-antenna assembly
ATB-066	T4 AM osc. coil
ATB-069	T5 AM IF coil
ATF-053	F1, F2 FM ceramic filter
ATF-084	F3 AM ceramic filter
T24-028	L6 RF choke coil

SWITCHES

Part No.	Symbol & Description
ASE-007	S1 Slide rotary (FUNCTION)
ASG-244 (ASG-242)	S2 Push (MODE/FM MUTE)
ASG-246 (ASG-221)	S3 Push (TAPE MONITOR)
ASG-245 (ASG-243)	S4 Dual push (SPEAKERS)

OTHERS

Part No.	Description
AKN-030	Phone jack (PHONES)
AKA-014	Terminal (ANTENNA)
AKB-063	Terminal (INPUT, TAPE)
PMZ30P040FMC	Screw

SP Terminal Assembly (GWX-482)

Part No.	Symbol & Description
AKE-047	Terminal (SPEAKERS)

LED Assembly A (GWX-483)

Part No.	Symbol & Description
AEL-318	D10-D13 LED

LED Assembly B (GWX-484)

Part No.	Symbol & Description
AEL-324	D14, D15 LED

FL Assembly (AWV-010)

CAPACITORS

Part No.	Symbol & Description
CEA R47M 50L	C1-C3
CKDYF 332Z 50	C4, C5

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

RESISTORS

Part No.	Symbol & Description
ACP-078	VR1, VR2 Semi-fixed 2.2k-B
△ RD½PSF 180J	R1, R2
RD¼PM 330J	R3, R4

SEMICONDUCTORS


Part No.	Symbol & Description
TA7318P-A	Q1
HA12010	Q2, Q3

OTHERS

Part No.	Symbol & Description
AAV-010	V1 Fluorescent indicator tube
VBZ30P060FMC	Screw

12. EXPLODED VIEW

NOTES:

- Parts without part number cannot be supplied.
- 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.

Exterior Components

Key No.	Part No.	Description	Key No.	Part No.	Description
1.	DCZ40P150FZK	Screw	11.	AMS-040	Side panel R
2.	AMS-039	Side panel L	12.	VBZ30P060FMC	Screw
3.	BBT30P080FZK	Screw	13.	Bottom plate
4.	ANB-891	Front panel assembly	14.		
5.	ABN-024	Nut M9	15.		
6.	AAB-243	Knob	16.		
7.	AAA-068	Knob	17.		
8.	AEC-702	Foot assembly	18.		
9.	AAD-297	Knob	19.		
10.	ANE-305	Top plate	20.		

