

724

SERVICE MANUAL

40W SURROUND STEREO
TUNER AMPLIFIER

MODEL **AS-8100**

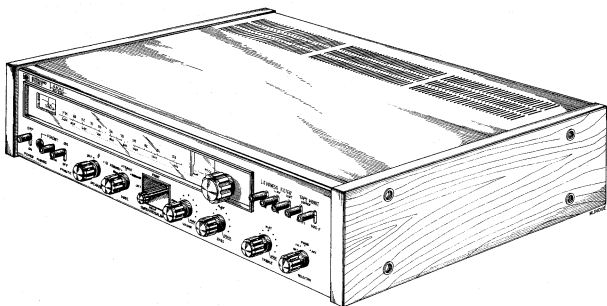


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When placing order for parts,
please use separate PARTS LIST.

I. SPECIFICATIONS

An asterisk next to a figure, indicates the minimum guaranteed performance.

AMPLIFIER SECTION

OUTPUT

MUSIC POWER OUTPUT

30 W each channel at 8 Ω , 4-channel
60 W each channel at 8 Ω , 2-channel

RATED POWER OUTPUT

18 W each channel at 8 Ω , 4-channel
40 W each channel at 8 Ω , 2-channel

REC. OUTPUT

Din: 25 mV
Pin: 150 mV

INPUT SENSITIVITY

Phono: 3 mV
Aux.: 150 mV
Tape 1, 2: 150 mV

FREQUENCY RESPONSE

20 to 100,000 Hz +0/-3 dB at 8 Ω
(20 to 50,000 Hz +0/-1 dB at 8 Ω *)

POWER BAND WIDTH

20 to 30,000 Hz at 8 Ω

HARMONIC DISTORTION

Less than 0.1% at 8 Ω

HUM AND NOISE

-48 dBm

SIGNAL TO NOISE RATIO

Phono: 70 dB (65 dB*)
Aux.: 80 dB (75 dB*)
Tape: 80 dB (75 dB*)

TONE CONTROL

Base: ± 10 dB at 100 Hz
Treble: ± 10 dB at 10,000 Hz

LOUDNESS CONTROL

+7 ± 2 dB at 100 Hz
+4 ± 2 dB at 10,000 Hz

FILTERS

High Cut Filter: -9 ± 2 dB at 50 Hz
: -6 ± 2 dB at 10,000 Hz

FM TUNER SECTION

FREQUENCY RANGE

75 to 91 MHz ± 800 KHz (JAPAN)
87 to 109 MHz ± 800 KHz (U.S.A. and S. AFRICA)

IF FREQUENCY

10.7 MHz

SENSITIVITY

Less than 10 dB

HARMONIC DISTORTION

Mono: Less than 0.5%
Stereo: Less than 0.8% (1.0%*)

SIGNAL TO NOISE RATIO

Better than 60 dB

SELECTIVITY

Better than 60 dB (40 dB*)

IMAGE INTERFERENCE RATIO

Better than 100 dB (80 dB*)

IF INTERFERENCE RATIO

Better than 100 dB (90 dB*)

CAPTURE RATIO

Better than 1.5 dB (2 dB*)

SPURIOUS RATIO

Better than 34 dB

MUTING SENSITIVITY

20 ± 3 dB

SCA INTERFERENCE RATIO

Better than 50 dB

SEPARATION

Better than 35 dB

ANTENNA INPUT IMPEDANCE

300 Ω balanced; 75 Ω unbalanced

AM TUNER SECTION

FREQUENCY RANGE

525 ± 5 KHz to 1630 ± 15 KHz

IF FREQUENCY

455 KHz

SENSITIVITY

Dummy: Less than 15 dB
Loop: Less than 46 dB

HARMONIC DISTORTION

Less than 1.5%

SIGNAL TO NOISE RATIO

Better than 50 dB (40 dB*)

SELECTIVITY

30 dB (20 dB*)

IMAGE INTERFERENCE RATIO

Better than 70 dB

IF INTERFERENCE RATIO

Better than 70 dB

TRANSISTORS USED

42SA545 (M)	22SC535
52SC838 (H)	82SC853 (M)
122SC900 (F, H)	32SC945 (R)
12SC968 (3)	22SC1014 (D1, D2)
82SD313	1SE3001

FET USED:

12SK30

IC USED:

2LA1111
6LD3120
1A3300

DIODES USED

61N34A	41N60
810D1	15B2
11RC5	11S337A
4VD1211	

THERMISTORS USED:

423D29

POWER SUPPLY

100 V to 240 V AC, 50/60 Hz
U.S.A.: 117 V AC, 60 Hz as per U/L

POWER CONSUMPTION

200 W

DIMENSIONS

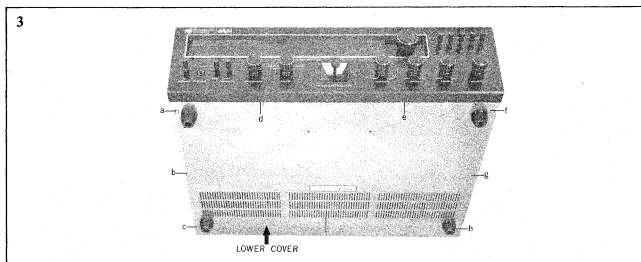
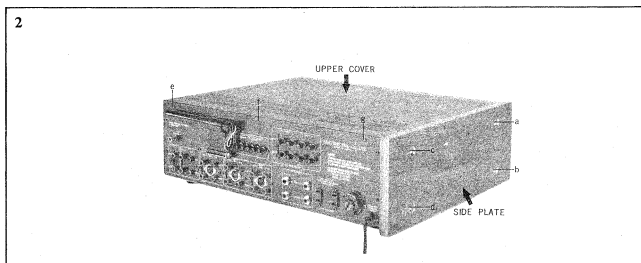
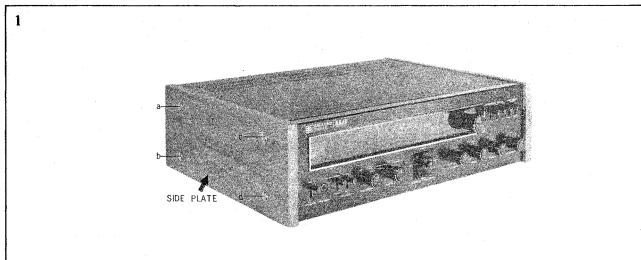
487(W) \times 165(H) \times 346(D) mm (19 $\frac{1}{2}$ " \times 7" \times 14 $\frac{1}{2}$ ")

WEIGHT

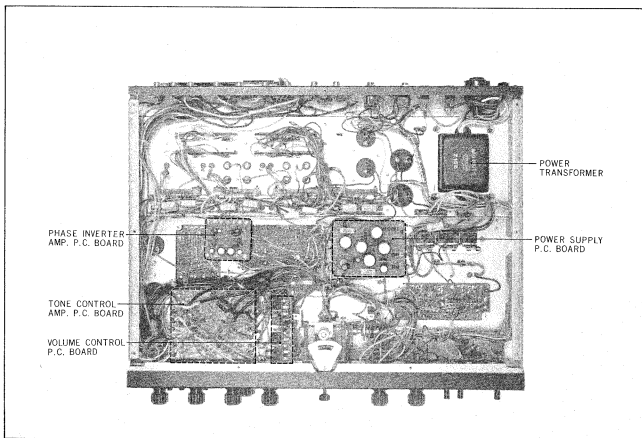
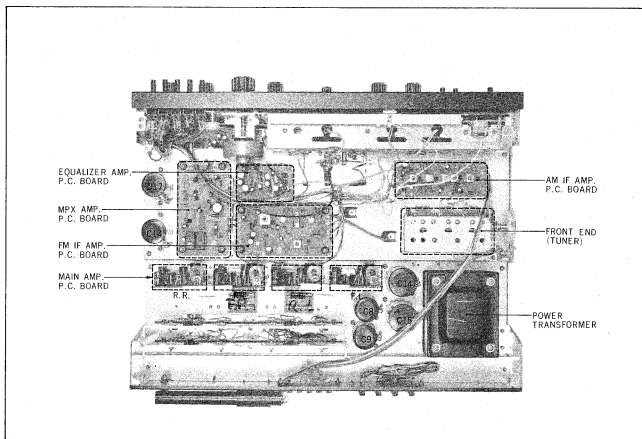
16 kg. (35.3 lbs.)

II. DISMANTLING OF AMPLIFIERS

In case of trouble, etc. necessitating disassembly, please disassemble in the order shown in photographs. Reassemble in reverse order.



III. DISPOSITION OF P.C. BOARD AS WELL AS CONDENSER OUTPUT



IV. TUNER SECTION ADJUSTMENT

1. FM IF CIRCUIT ADJUSTMENTS

(See Figs. 1 and 2)

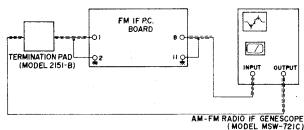


Fig. 1

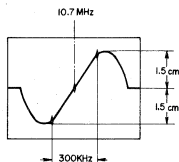


Fig. 2

- 1) Adjust V-Gain Volume to obtain a 2 cm amplitude of 0.3V p-p AM FM Radio IF Genescope calibration voltage on screen and set Genescope Output to 50 dB.
- 2) Connect Genescope Output to point (1) (FM IF Input), and Genescope Input to point (8) (AF Output).
- 3) Set Mode Switch to "FM" and set dial to about 109 MHz reception frequency.
- 4) Adjust the upper core of IFT "L₂" of FM IF Amp. P.C. Board so that the S Curve output voltage is maximum. Also adjust the lower core to obtain optimum S Curve linearity.
- 5) In making this adjustment, in some cases the rank of the ceramic filter causes a discrepancy in the S Curve Marker Point, but it is satisfactory if through adjustment a margin of within ± 500 KHz can be obtained (See Fig. 3).

Ceramic Filter Rank

Color	Center Frequency	Error Tolerance
Green	10.60 MHz	± 30 KHz
Black	10.65 MHz	± 30 KHz
Red	10.70 MHz	± 30 KHz
White	10.75 MHz	± 30 KHz
Yellow	10.80 MHz	± 30 KHz

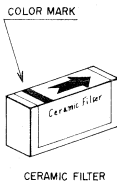
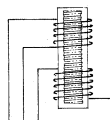


Fig. 3

2. FRONT END AND FM IF MATCHING ADJUSTMENT (See Fig. 6)



IF COIL (Front end)

Fig. 4

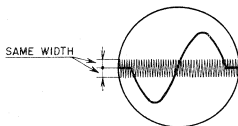


Fig. 5

- 1) Adjust V-Gain Volume to obtain a 2 cm amplitude of 0.3V p-p AM FM Radio IF Genescope calibration voltage on screen, and set Genescope Output to 90 dB.
- 2) Connect Genescope Output to 300 Ω impedance FM Antenna Terminal, and Genescope Input to Terminal (8) (AF Output) of FM IF P.C. Board.
- 3) Set Mode Switch to "FM" and set the tuning indicator to the right end of the dial.
- 4) Adjust the upper core of IF Adjustment Core in front end so that the value of the S Curve wave height is maximum. Then adjust the lower core so that the noise element is maximum and the upper and lower reaches of the scanning line are the same level (See Figs. 4, 5 and 7).

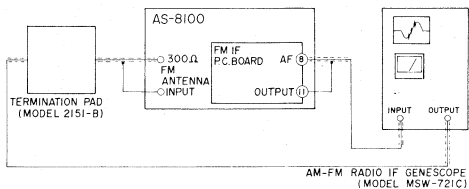
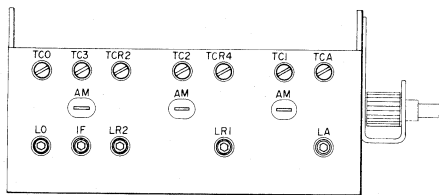


Fig. 6



TOP VIEW OF FRONT END

Fig. 7

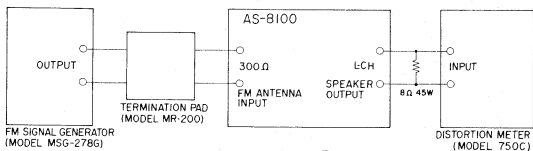


Fig. 8

3. FM RECEPTION FREQUENCY RANGE ADJUSTMENT (See Figs. 7 and 8).

- 1) Connect the FM Signal Generator Output to the 300Ω impedance FM Antenna Terminal of Model AS-8100 through the termination pad. Introduce an 8Ω 45W dummy load resistor to the left channel speaker output and connect a distortion meter to this output. At this time, with speaker output at 10 dB, set Speaker Surround Balance Shift to Front/Left position.
- 2) Set the FM Signal Generator to 90 MHz (400 Hz, 30% internal modulation and the output to 90 dB.
- 3) Adjust the core of Oscillator Coil "L₀" of FM Local Oscillator in front end so that the distortion meter level is maximum and the distortion factor is minimum.
- 4) Set the tuning indicator to the right end of the dial. Set the FM Signal Generator frequency to 106 MHz.
- 5) Adjust Trimmer Condenser "TCO" in front end so that the distortion meter level is maximum and the distortion factor is minimum.
- 6) Repeat items 2) through 5) two or three times until perfect reception is obtained in the reception frequency range of 87 to 109 MHz.

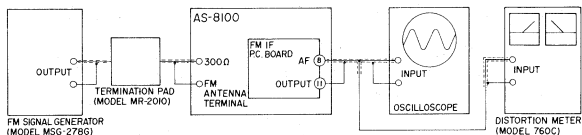


Fig. 9

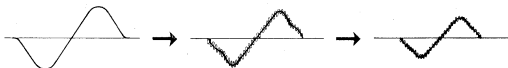


Fig. 10

4. FM TUNER TRACKING ADJUSTMENT (See Figs. 7 and 8)

Use the same instruments as in item 3 (Fig. 8) and connect them in the same way.

- 1) Set the FM Signal Generator frequency to 98 MHz (400 Hz, 75% internal modulation) and the output to 16 dB.
- 2) Set the Tuning Dial to receive the 98 MHz signal. Adjust core "IF" of coil in front end so that the distortion meter level is maximum and the distortion factor is less than 0.3%.
- 3) Set the FM Signal Generator frequency to 106 MHz and set the tuning dial to receive the 106 MHz signal. Adjust Trimmer Condensers "TCA", "TCR 1" and "TCR 2" in the front end so that the distortion meter level is maximum and the distortion factor is less than 0.3%.
- 4) Set the FM Signal Generator frequency to 90 MHz and set the tuning dial to receive the 90 MHz signal. Adjust cores "LA", "LR 1" and "LR 2" in front end so that the distortion meter level is maximum and the distortion factor is minimum.
- 5) Repeat items 1) through 4) two or three times until perfect tracking and maximum reception sensitivity is obtained at 90 MHz, 98 MHz, and 106 MHz.

Note: When the distortion factor is 0.3%, the generator output level is less than 16 dB.

5. MUTING SENSITIVITY ADJUSTMENT (See Figs. 9 and 10)

- 1) Set the Signal Generator output level to 26 dB (± 3 dB) and connect this output to the FM Antenna Terminal of Model AS-8100 through the termination pad, and connect the vertical input of the Oscilloscope as well as the distortion meter input to Terminal (8) (AF Output) of AM IF P.C. Board.

- 2) Turn Muting Level Adjustment Semi-Fixed Resistor VR-1 (68 KB) in FM IF P.C. Board fully clockwise and set FM Mute Lever to "Off" position.
- 3) Turn semi-fixed resistor VR-1 counter-clockwise to position at which Oscilloscope sine waveform is completely erased (do not turn beyond this point).
If in this waveform erasing process, the waveform is not erased and appears as in Fig. 10, the mute circuit is defective.
- 4) If perfect adjustment cannot be made by adjusting muting sensitivity volume VR-1, because this is due to poor alignment of Coil "L₁" (05M-755), in the mute circuit, adjust the core of "L₁" for improved mute circuit sensitivity.

6. TUNING INDICATOR CHECK AND DISTORTION ADJUSTMENT

- 1) Use the same instruments as in Section 5 (Muting Sensitivity Adjustment) and connect them in the same way.
- 2) Set the FM Signal Generator Output to 66 dB, and connect this output to the FM Antenna Terminal of Model AS-8100 through the termination pad. Connect the Oscilloscope Vertical Input as well as the Distortion Meter Input to Terminal (8) (AF Output Terminal) of FM IF P.C. Board.
- 3) Set the FM Signal Generator frequency to 98 MHz, and set the tuning dial of Model AS-8100 to the same 98 MHz frequency.
- 4) Adjust the upper core of "L₂" (05M-775A) so that the tuning indicator needle is centered, and adjust the lower core of "L₂" to obtain the least distortion.

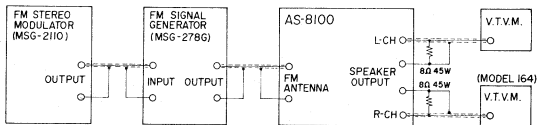


Fig. 11

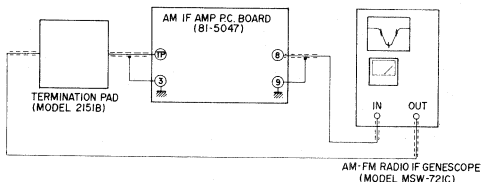


Fig. 12

7. SEPARATION ADJUSTMENT (See Fig. 11)

- 1) Set the FM Stereo Modulator Pilot Signal 19 KHz to 10% modulation and the main signal (L + R) to 400 Hz, 90% modulation. Connect this composite signal (ratio 9:1) to the EXT MOD Terminal of the FM Signal Generator.
- 2) Set the FM Signal frequency to 98 MHz and set this output level to 66 dB, and connect to the FM Antenna Terminal of Model AS-8100. Connect a high sensitivity V.T.V.M. or an 8Ω more than 45W dummy load resistor to the various speaker output terminals. Set Tone Control to "Flat" position and then set the tuning dial to 98 MHz and speaker output to 20 dB.
- 3) Turn Separation Adjustment Volume VR-3 (1 KB) fully clockwise. Set the FM Stereo Modulator to right channel, and adjust the cores of "L₁" and "L₂" coils so that the indication of V.T.V.M. (connected to left channel) is minimum. Then turn VR-3 counter-clockwise to position at which the V.T.V.M. indication is minimum.
- 4) Set FM Stereo Modulator to left channel and adjust the cores of "L₁" and "L₂" so that the indication of V.T.V.M. (connected to right channel) is minimum. Then adjust VR-3 so that the V.T.V.M. indication is minimum.
- 5) If separation is not better than 35 dB, repeat the above adjustments again. Avoid turning the coil cores too much when making this second adjustment.
- 6) If the FM Signal Generator output has been decreased to 26 dB (± 3 dB), check to see whether the stereo indicator lamp has been extinguished.

8. AM IF CIRCUIT ADJUSTMENT (See Figs. 12 and 13)

- 1) Adjust the V-Gain Volume to obtain a 2 cm amplitude of 0.3V p-p AM FM Radio IF Genescope calibration voltage on screen, and set the Genescope output to 60 dB.

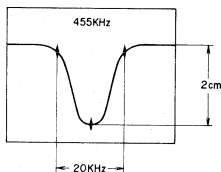


Fig. 13

- 2) Connect Genescope output to Test Point (TP) and Genescope Input to Point (8) (AF Output).
- 3) Set Mode Switch to "AM" and reception frequency to about 1630 kHz.
- 4) Adjust cores of IFT, T₁, T₂, and T₃ of AM IF Amp P.C. Board so that the waveform (Fig. 13) level is maximum and center frequency is 455 kHz (Center frequency differs according to country. Adjust according to country's center frequency).

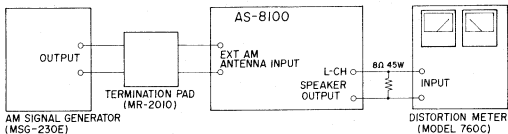


Fig. 14

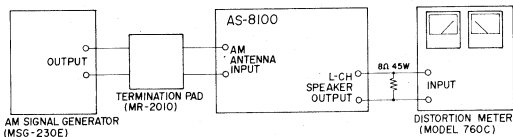


Fig. 15

9. AM RECEPTION FREQUENCY RANGE ADJUSTMENT (See Fig. 14.)

- 1) Connect the AM Signal Generator output to the EXT AM Antenna input terminal of Model AS-8100 through the termination pad. Introduce an 8Ω more than 45W dummy load resistor to the left channel speaker output and connect a distortion meter to this output. At this time, set speaker output level to 10 dB and the Surround Balance Shift to Front/Left position.
- 2) Set the tuning indicator to the left end of the dial. Set the AM Signal Generator frequency to 525 kHz (± 5 kHz), (400 Hz, 30% modulation) and the output to 70 to 80 dB.
- 3) Adjust the core of AM Local Oscillator Coil "L" (09A-465) in the AM IF P.C. Board so that the distortion meter level is maximum and the distortion factor is minimum.
- 4) Set the tuning indicator to the right end of the dial. Set the AM Signal Generator frequency to 1530 kHz (± 5 kHz).
- 5) Adjust Trimmer Condenser "TC3" in front end block so that the distortion meter level is maximum and the distortion factor is minimum.
- 6) Repeat adjustments outlined in items 2) through 5) above two or three times until perfect reception is obtained in the reception frequency range of 525 to 1530 kHz.

10. AM TUNER TRACKING ADJUSTMENT (See Fig. 15)

- 1) Connect the Signal Generator output to the AM input point of Model AS-8100 through the termination pad. Introduce an 8Ω more than 45W dummy load resistor to the left channel speaker output and connect this output to the distortion meter input. At this time, with speaker output level at 10 dB, set Speaker Surround Balance Shift to Front/Left and Tone Control to "Flat" position.
- 2) Set the AM Signal Generator frequency to 1400 kHz (400 Hz, 30% internal modulation) and the output to 21 dB. Set the tuning dial to receive the 1400 kHz signal.
- 3) Adjust Trimmer Condensers "TC 1" and "TC 2" in the front end so that the distortion meter level is maximum and the distortion factor is minimum.
- 4) Set the AM Signal Generator frequency to 600 kHz and set the tuning dial to receive the 600 kHz signal.
- 5) Adjust the core of coil "L₁" (05M-741 A) in AM IF P.C. Board as well as core of the Bar Antenna so that the distortion meter level is maximum and the distortion factor is less than 10%.
- 6) Set the AM Signal Generator frequency to 1,000 kHz and set the tuning dial to receive the 1,000 kHz signal.
- 7) Check to confirm that the distortion meter level is maximum and the distortion factor is less than 10%.
- 8) Repeat items 2) through 6) above two or three times until perfect tracking is obtained at these three frequencies.

Note: When the distortion factor is 10%, the Generator output level is less than 21 dB.

V. MAIN AMPLIFIER ADJUSTMENT

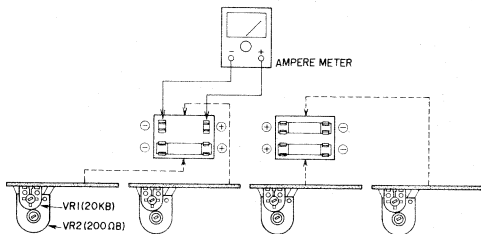


Fig. 16

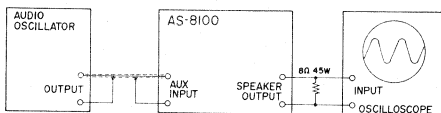


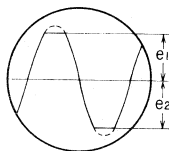
Fig. 17

1. IDLING CURRENT ADJUSTMENT (See Fig. 16)

Set Mode Switch to "Surround". Remove fuse from fuse holder and connect ammeter to both of the fuse terminals (match + and -). Adjust semi-fixed resistor VR-2 (200Ω B) to obtain an ammeter indication of 35 mA.

2. OUTPUT WAVEFORM ADJUSTMENT (See Figs. 17 and 18)

- 1) Connect Audio Oscillator to the "Aux" input terminals of Model AS-8100 and connect an 8Ω more than 45W dummy load resistor to the speaker output and then connect this terminal to the oscilloscope vertical input.
- 2) Turn Volume Control to maximum. Adjust Audio Oscillator Attenuator to point at which the speaker output waveform distortion is least and supply this input voltage to the "Aux" terminal.
- 3) Adjust semi-fixed volume VR-1 (20 KB) so that the clipping position of the upper and lower parts of the waveform on the oscilloscope are equal.



$$e_1 = e_2 = \text{ABOUT } 12V$$

Fig. 18

VI. EPC (ELECTRONIC PROTECTION CIRCUIT) ADJUSTMENT

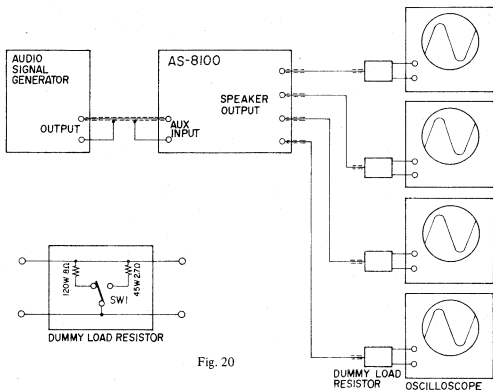


Fig. 20

1. Supply output from the Audio Signal Generator to the various "Aux" output terminals of Model AS-8100. Connect a dummy load resistor equipped with resistor value switch to the various speaker output terminals as shown in Fig. 20 and connect this output terminal to the Oscilloscope input terminal.
2. Turn EPC Operating Point Adjustment Semi-Fixed Resistor VR-1 (1 KB) fully clockwise.
3. Set Mode Selector Switch to "Stereo" and set dummy load resistor switch to 8 Ω position. Adjust volume control to obtain an undistorted oscilloscope waveform of maximum value.
4. At this condition, set dummy load resistor switch to "2.7 Ω " position and turn operating point adjustment semi-fixed resistor VR-1 counter-clockwise to the point at which the output waveform is erased and from this point, turn clockwise again about 20° from erased point. With a 2.7 Ω dummy load resistor, the waveform will appear as shown in Fig. 21.
5. Set Mode Switch to "Surround" and manipulate Surround Balance Shift to check whether or not EPC functions. If EPC functioned during this check, turn EPC operating point adjustment semi-fixed resistor slightly further clockwise.

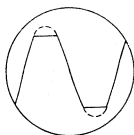


Fig. 21 Waveform when the dummy load resistor is 2.7 Ω

6. In the check outlined in item 5), if EPC did not function, try shorting the various speaker output terminals. Check to confirm that no matter which terminal is shorted, EPC functions. When making this check, even if a single waveform is not erased, turn EPC operating point adjustment semi-fixed resistor slightly further clockwise.
7. When EPC functions regardless of which speaker output terminal is shorted, EPC adjustment is perfect.

Fig. 19

VII. DISPOSITION OF EACH ADJUSTMENT PART

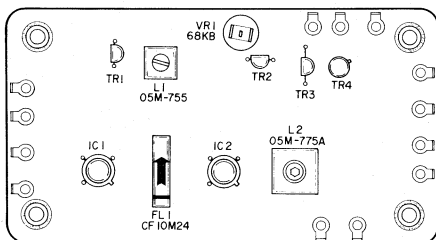


Fig. 22 81-5045 FM IF AMP P.C. BOARD

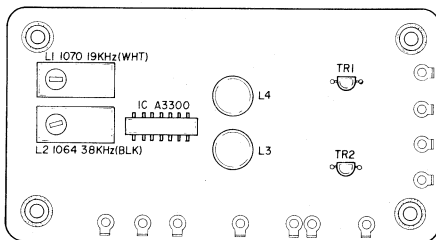


Fig. 23 81-5050 MPX AMP P.C. BOARD

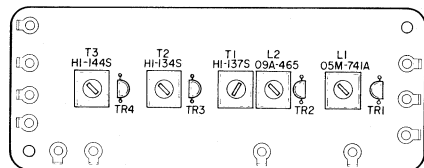


Fig. 24 81-5047 AM IF AMP P.C. BOARD

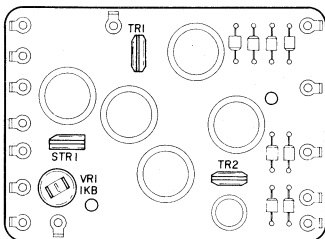


Fig. 25 81-5044 POWER SUPPLY P.C. BOARD

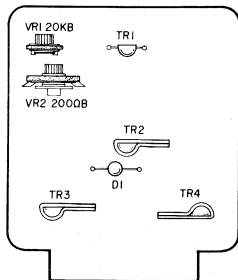
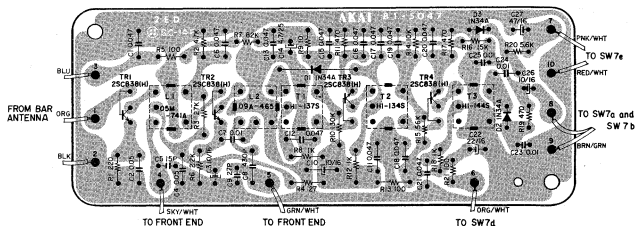
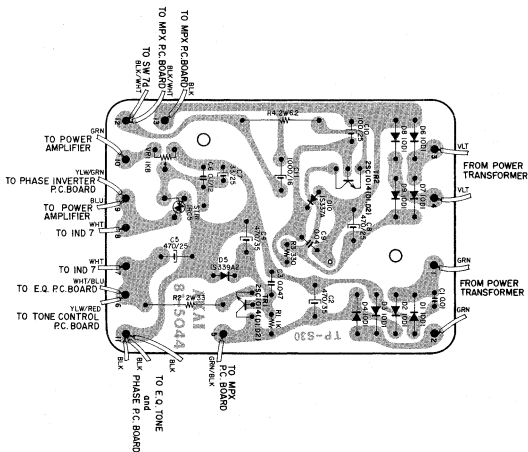


Fig. 26 81-5049 MAIN AMP. P.C. BOARD

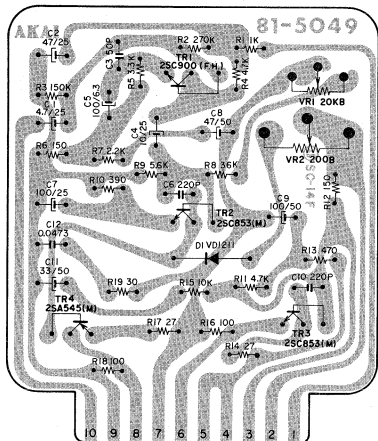
AM IF AMP. P.C. BOARD (81-5047)



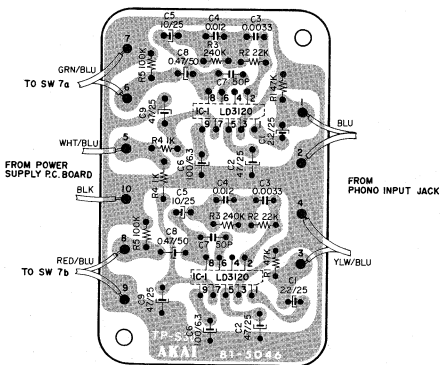
POWER SUPPLY P.C. BOARD (81-5044)



MAIN AMP. P.C. BOARD (81-5049)



EQUALIZER AMP. P.C. BOARD (81-5046)



MEMOS:

MEMOS: End transistoren BD 243 17/13K

SERVICE MANUAL

PARTS LIST

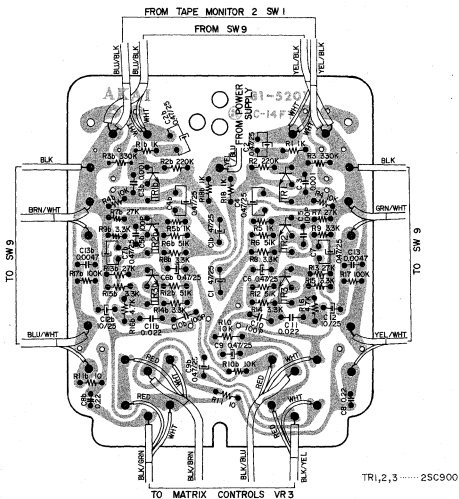
**AKAI SURROUND STEREO
TUNER AMPLIFIER**

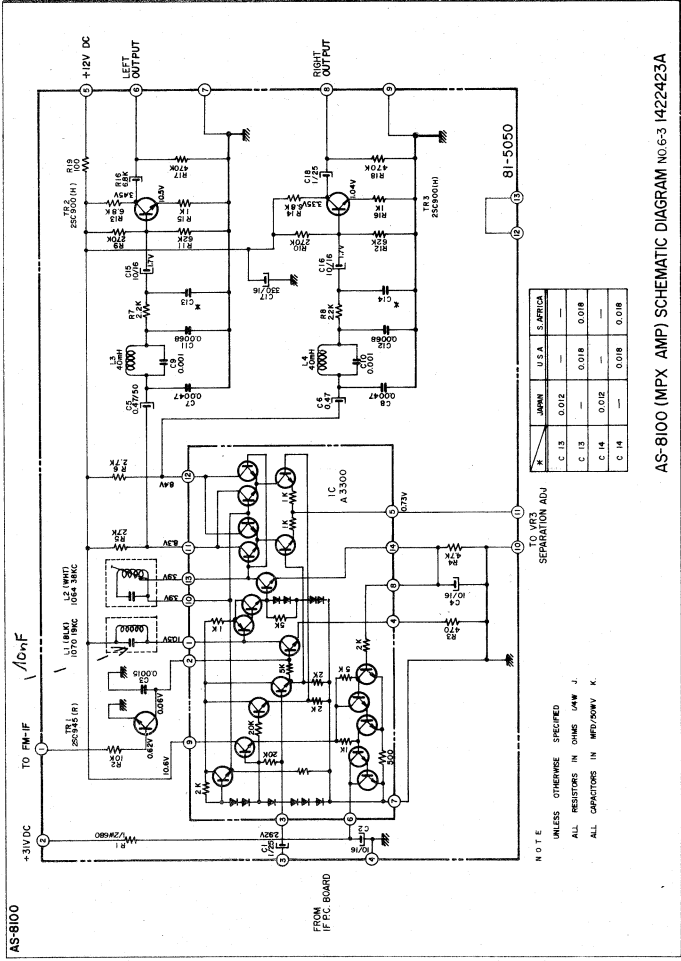
MODEL **AS-8100S**

THIS MANUAL MUST BE USED AS A SET TOGETHER WITH SEPARATELY
PUBLISHED AS-8100 SERVICE MANUAL AND AS-8100 PARTS LIST.

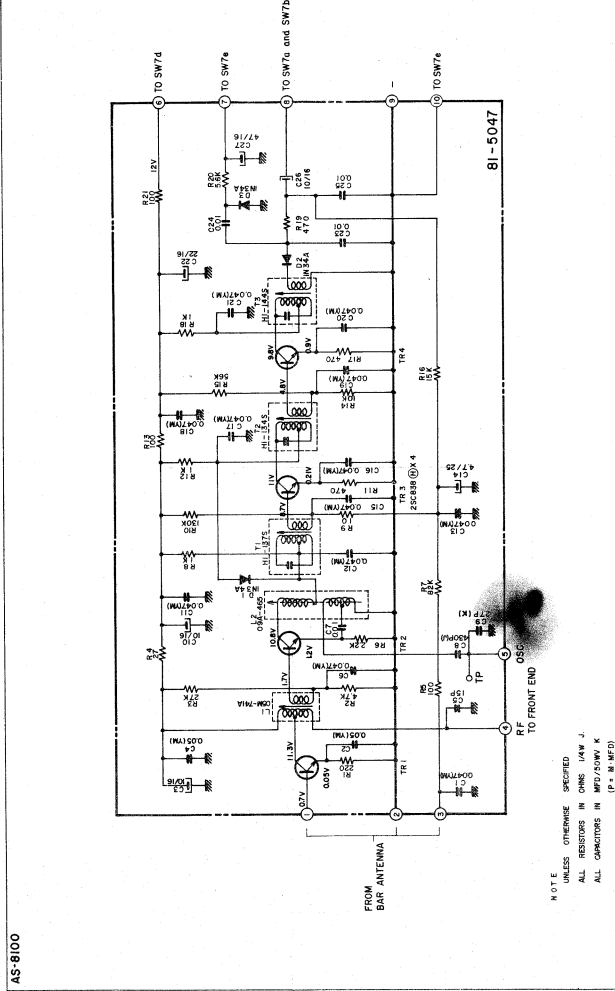


MATRIX AMP. P.C. BORAD (81-5201)

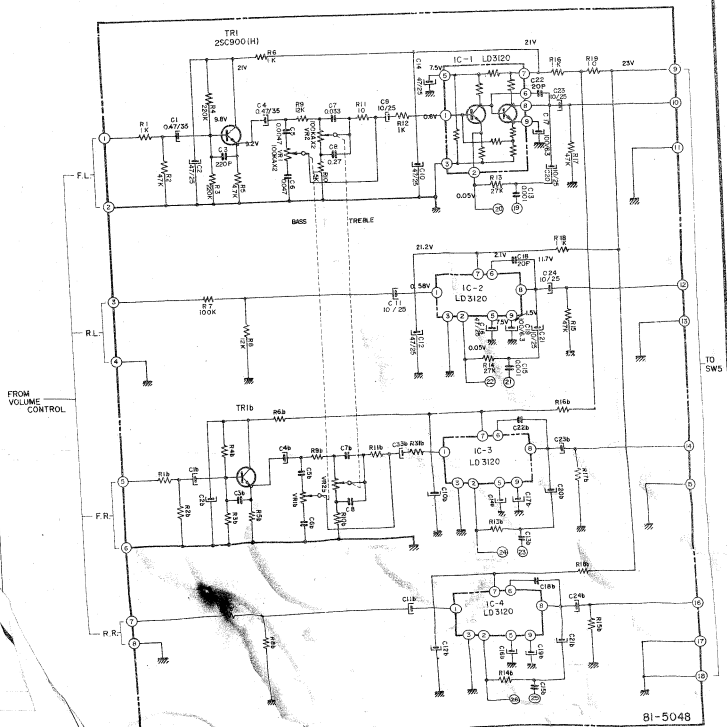




AS-8100 (MPX AMP) SCHEMATIC DIAGRAM NO.6-3 1422423A

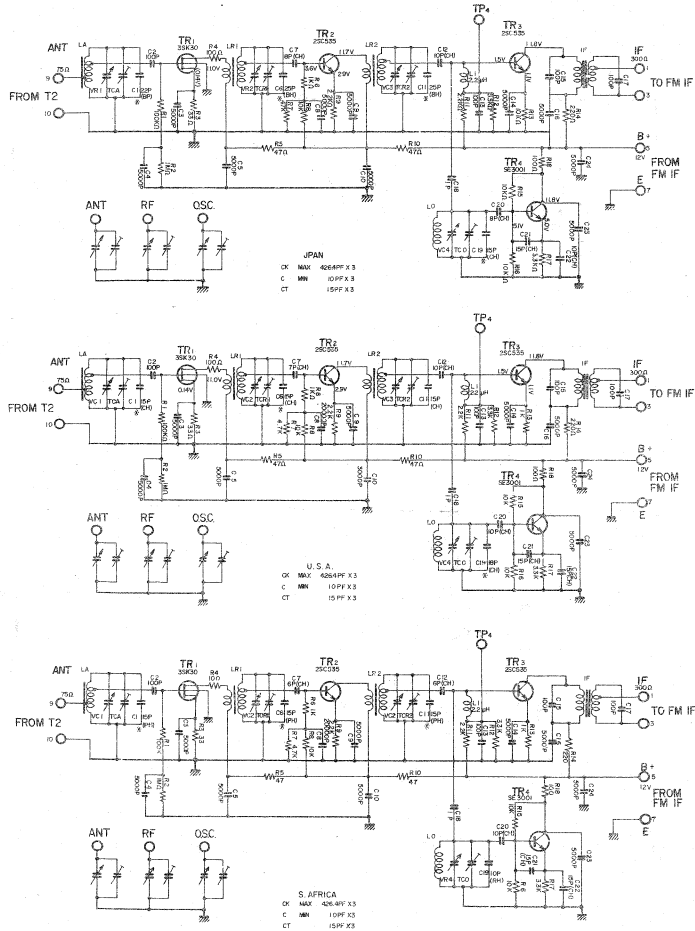


AS-8100 (AM IF AMP) SCHEMATIC DIAGRAM NO.6-4 1422424A

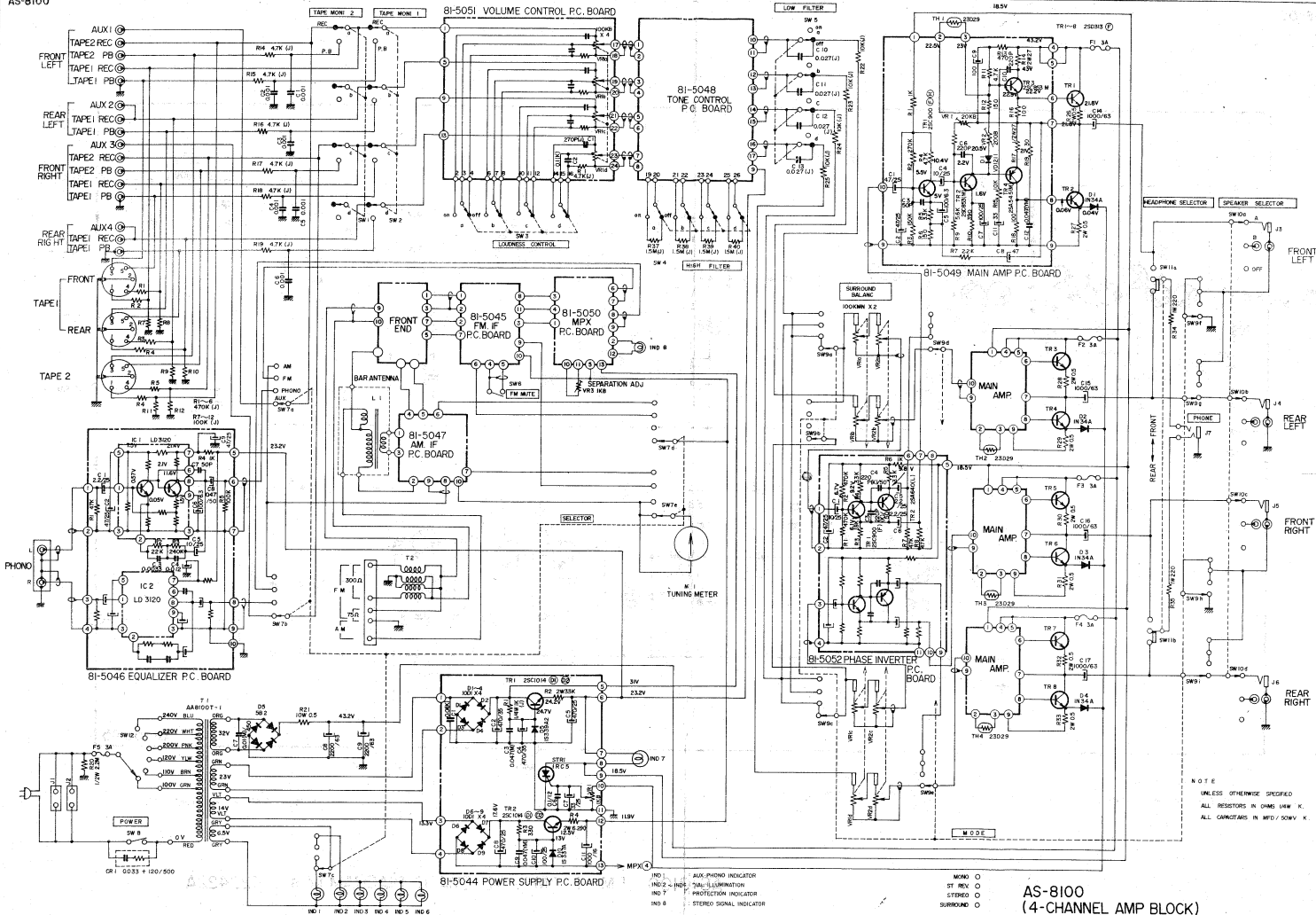


NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS / 1/4W J
ALL CAPACITORS IN PFD/50W K
(P - M/M/D)

AS-8100 (TONE CONTROL) SCHEMATIC DIAGRAM
NO.6-5 1422421A



AS-8100 FM FRONT END (TUNER) SCHEMATIC DIAGRAM NO.6-6 1422425A

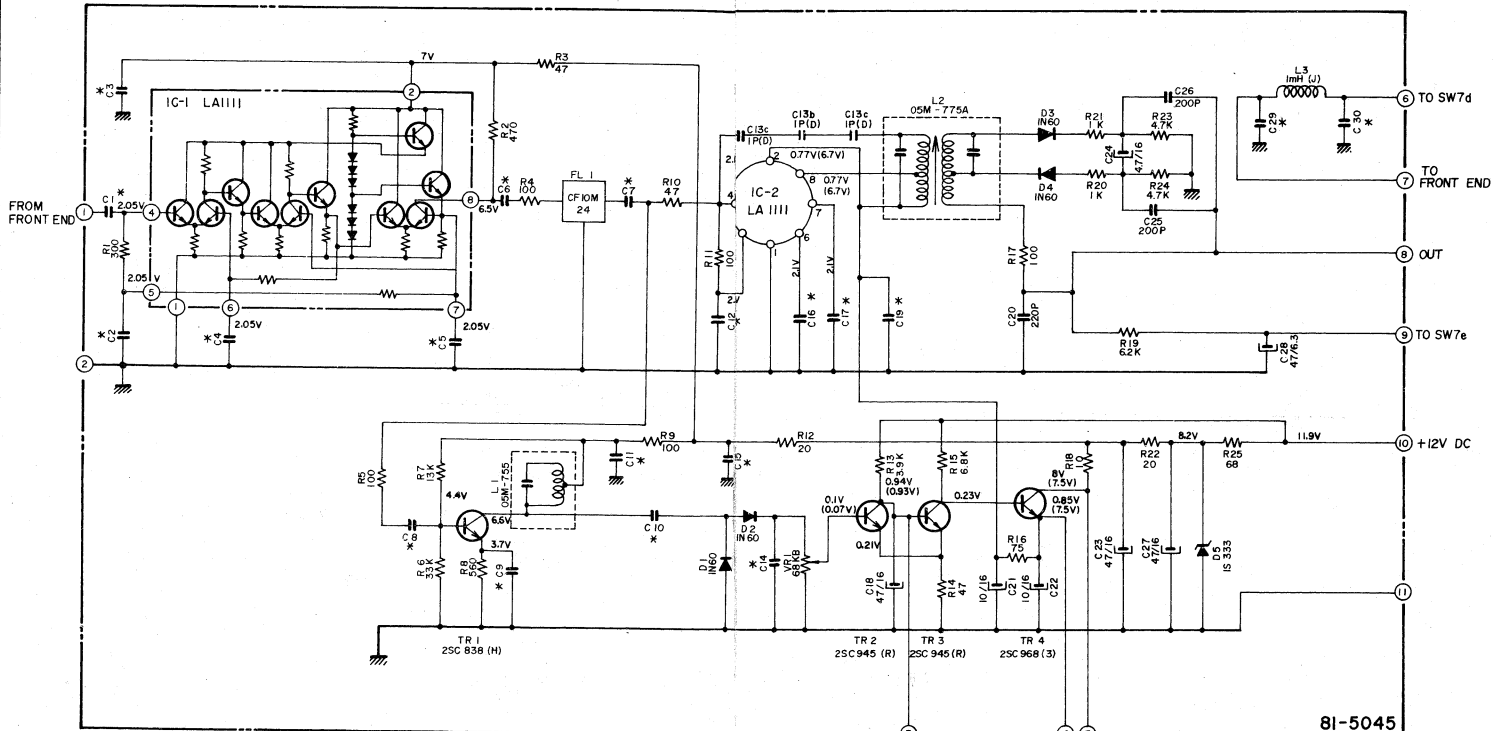


NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS UNLESS
ALL CAPACITORS IN MFD/50VDC K.

IND 1 - AUX-PHONO INDICATOR
IND 2 - STEREO INDICATOR
IND 3 - PROTECTION INDICATOR
IND 4 - STEREO SIGNAL INDICATOR

MONO
STEREO
STEREO
SURROUND

AS-8100
(4-CHANNEL AMP BLOCK)
SCHEMATIC DIAGRAM No.6-1 1422420A



81-5045

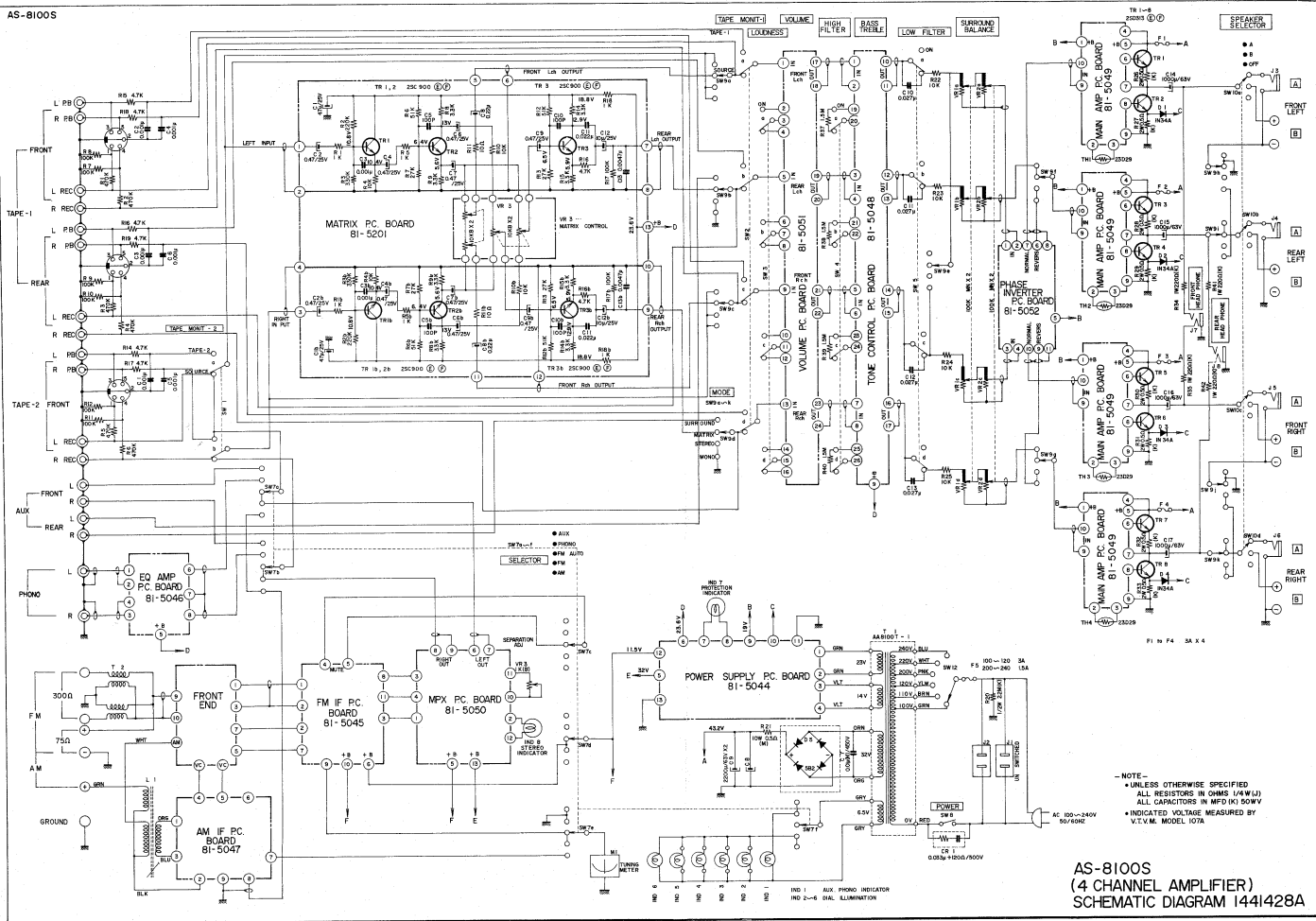
NOTE
 ALL RESISTORS IN OHMS 1/4W J.
 CAPACITORS IN MFD/50WV J.

* C1 ~ C12
 C14 ~ C17
 C19
 C29 ~ C30 } 0.015μF (YM) 50WV

() VOLTAGE AT MUTE OFF CONDITION

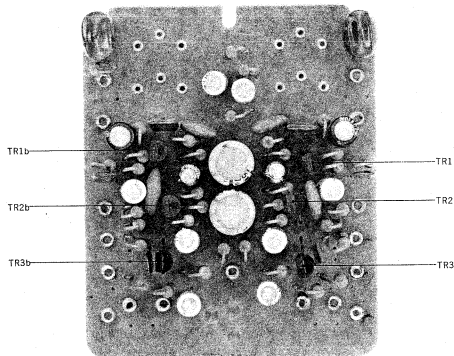
AS-8100 (FM IF AMP) SCHEMATIC DIAGRAM NO.6-2 1422422A

AS-8100S



The parts for AS-8100S which differ from AS-8100 are as follows:

PHOTO OF MATRIX AMP. P.C. BOARD (81-5201) BLOCK



ASSEMBLY BLOCK

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
FRONT CHASSIS LIGHT BOX BLOCK				
10-48ax	BZ479237	Front Chassis Light Box		1
Block Comp.				
	AS-8100S		81-5201	1
10-49a	EZ479068	Front Chassis		1
10-57a	ES479081	Rotary Switch F365	25-6-47	1
10-69a	ES479092	Rotary Switch F-6-12-4	25-6-46	1
10-71a	EZ479103	Switch Bracket	81-5201	1
10-133	EJ486415	9P Mate-N-Lock Cap		1
Comp. 81S				
	81-5201		81-5201	1
FRONT CHASSIS BLOCK				
10-112ax	BZ479204	Front Chassis Comp.	AS-8100S	1
10-113ax	BZ479237	Front Chassis Light Box		1
Block Comp.				
	AS-8100S		81-5201	1
10-134	EJ486426	9P Mate-N-Lock Plug		1
Comp. 81S				
	81-5201		81-5201	1
10-135	EV479441	4-throw Volume		1
V16L5DG4N 10R (B10k x 2) + (B10k x 2)				
			3634-3	1
FRONT PANEL BLOCK				
10-130ax	BZ479193	Front Panel Block Comp.	AS-8100S	1
10-132a	SP479057	Front Panel B	81-5205	1

MATRIX P.C. BOARD (81-5201) BLOCK

Symbol No.	Parts No.	Description	Q'ty
11-1x	BA479248	Matrix P.C. Board Comp. (81-5201)	1
11-TR1,2,3	ET452687	Transistor 2SC900(E) (F)	6
Capacitor, Vertical Type			
11-C1	EC220678	Elect. 47µF 25WV	2
11-C2	EC432808	Elect. 0.47µF 50WV (noiseless)	2
11-C3	EC350875	Mylar 0.001µF (J) 50WV	2
11-C4	EC432808	Elect. 0.47µF 50WV (noiseless)	2
11-C5	EC290520	VFM 100PF (J) 50WV	2
11-C6, 7	EC432808	Elect. 0.47µF 50WV (noiseless)	4
11-C8	EC334620	Mylar 0.22µF (K) 50WV	2
11-C9	EC432808	Elect. 0.47µF 50WV (noiseless)	2
11-C10	EC290520	VFM 100PF (J) 50WV	2
11-C11	EC366335	Mylar 0.022µF (J) 50WV	2
11-C12	EC220994	Elect. 10µF 25WV	2
11-C13	EC337500	Mylar 0.0047µF (J) 50WV	2
Resistor, Stopper Type			
11-R1	ER211465	Carbon RD1/4 1k (J)	2
11-R2	ER380711	Carbon RD1/4 220k (J)	2
11-R3	ER362455	Carbon RD1/4 330k (J)	2
11-R4	ER336442	Carbon RD1/4 10k (J)	2
11-R5	ER211465	Carbon RD1/4 1k (J)	2
11-R6	ER379675	Carbon RD1/4 51k (J)	2
11-R7	ER342933	Carbon RD1/4 27k (J)	2
11-R8, 9	ER212477	Carbon RD1/4 3.3k (J)	4
11-R10	ER336442	Carbon RD1/4 10k (J)	2
11-R11	ER304290	Carbon RD1/4 10 (J)	2
11-R12	ER379675	Carbon RD1/4 51k (J)	2
11-R13	ER342933	Carbon RD1/4 27k (J)	2
11-R14, 15	ER212477	Carbon RD1/4 3.3k (J)	4
11-R16	ER212883	Carbon RD1/4 4.7k (J)	2
11-R17	ER211757	Carbon RD1/4 100k (J)	2
11-R18	ER211465	Carbon RD1/4 1k (J)	2

AKAI ELECTRIC CO., LTD.
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TELEPHONE: TOKYO (742) 5111

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Printed No. 1441850 Printed in Japan Price \$2.00

When ordering parts, please describe Parts Number, Serial Number, and Model Number in detail.