

SERVICE MANUAL

MONITOR CONSOLE/ETTE

SANSUI MA-7



SPECIFICATIONS

Meter amp section

Input sensitivity and impedance

INPUT-1, 2, 3
0 dB 0.775V/47 kilohms
-20 dB 7.75V/47 kilohms
VARIABLE (max. +20 dB)
. 0.0775V/47 kilohms

POWER

0 dB 100 watts/8 ohms
-20 dB 10 kilowatts/8 ohms
VARIABLE (max. +20 dB)
. 1 watt/8 ohms

Frequency response . . . 10 to 20,000 Hz
±1.5 dB (+5 dB ~ -40 dB)

Attack time

PEAK, PEAK HOLD . . . within 100 μsec.
VU within 330 msec.

Recovery time

PEAK (0 dB → -20 dB)
. more than 1,000 msec.

PEAK HOLD (0 dB → -3 dB)
. more than 5 min.

VU (0 dB → -20 dB) . . . more than 250 msec.

Indication accuracy . . . 0 dB ±1.5 dB (INPUT
SENSITIVITY: 0 dB, -20 dB)

Oscillator frequency . . . 400 Hz, 10 kHz

Monitor amp output . . . 1.5 watts +1.5 watts (1 kHz).

Speaker section

Speaker 80 mm (3-3/16")
Cone-type

Maximum input power . . 2 watts

Frequency range 80 to 18,000 Hz

Sensitivity 86 dB/W (at 1m)

Impedance 8 ohms

Others

Power requirements

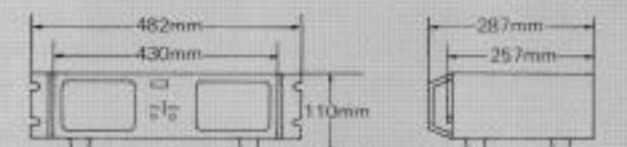
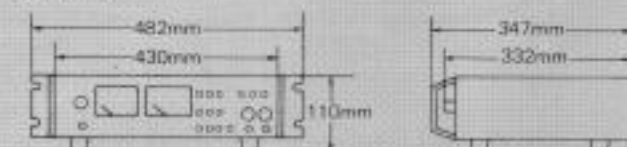
Power voltage 100, 120, 220, 240V (50/60 Hz)
For U.S.A. and Canada

. 120V (60 Hz)

Power consumption

Rated consumption . . . 15 watts

Dimensions



Weight 11.2 kg (24.7 lbs) packed

Meter amp section 5.8 kg (12.8 lbs) net

Speaker section 3.1 kg (6.8 lbs) net

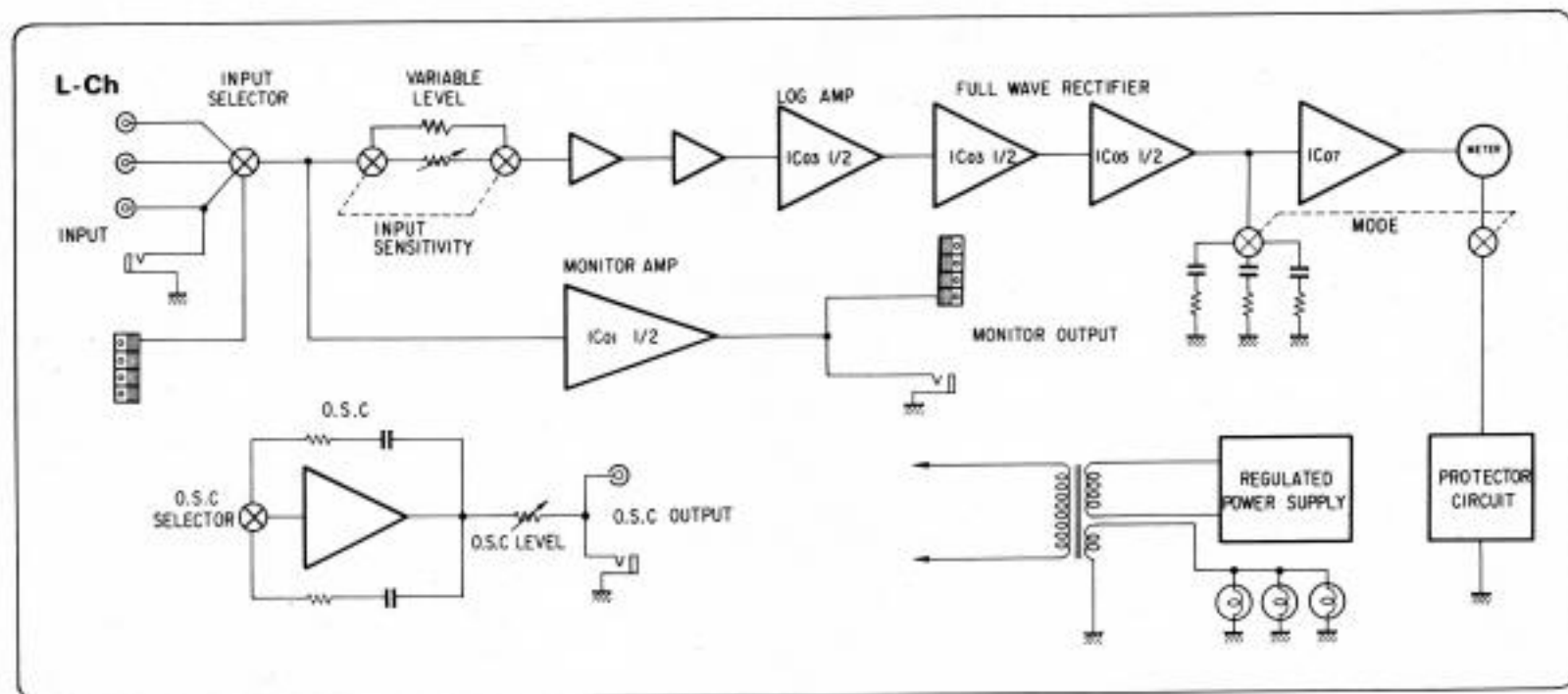
* Design and specifications subject to change without notice for improvements.

* In order to simplify the explanation illustrations may sometimes differ from the originals.

Sansui

SANSUI ELECTRIC CO., LTD.

1. BLOCK DIAGRAM



2. OPERATION

2-1. Logarithmic Amplifier (See Fig. 2-1)

The logarithmic amplifier is installed for the purpose of expanding the range of meter indication by compressing input signal logarithmically and by adding elements of logarithmic characteristic to the negative feedback loop of the amplifier. In this model, diode D01, 03 are connected to the NFB loop of IC03 to make this amplifier logarithmic characteristic. The logarithmic characteristic of this amplifier can be adjusted by VR01, 03, 05. Because of the logarithmic characteristic of diode, the amount of negative feedback is a little at small input signal that VR03 is installed in parallel with diode D01, 03 in order to control NFB amount at small input signal. VR01 varies the whole NFB amount of this amp and influences at large input signal (around 0 dB). VR05 can control the gain of whole circuit and gives effect at intermediate input signal.

2-2. Full-wave Rectifier circuit (See Fig. 2-2, 2-3)

Full-wave rectifier circuit consists of amp IC03 and half-wave rectifier of IC05 and D05, 07. As shown in Fig. 2-2, the full-wave rectification is achieved by mixing the output of half wave rectifier and input of full-wave rectifier in rate of 2:1. Output signal of log amp is supplied to pin No. 6 of IC03 through R33 and pin No. 2 of IC05 through R39. The signal added to IC03 is appeared at the output of IC03 in out-of-phase. (+) component of this signal is 100% fed back to input of IC03 and (-) component is supplied to IC05 through D05, R41, 43. The signal through R41, 43 to IC05 is multiplied by the value of $R47 / (\text{parallel composite resistance of } R47, 43)$ and signal through R39 is multiplied by the value of $R47/R39$ as well, then both signals are mixed at IC05 in rate of 2:1. The output signal of IC05 is the out of phase, resultly the output of full-wave rectified signal is obtained.

2-3. Peak Detection circuit (See Fig. 2-4)

1) Peak hold circuit

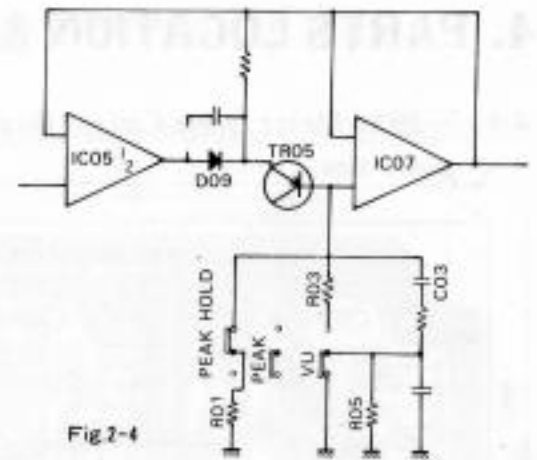
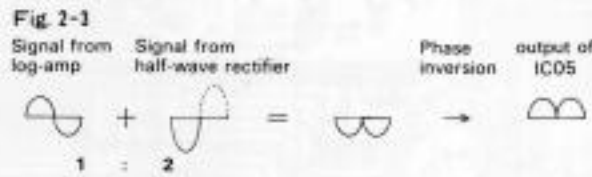
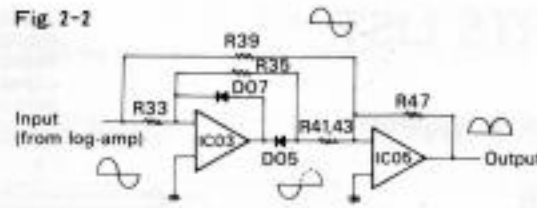
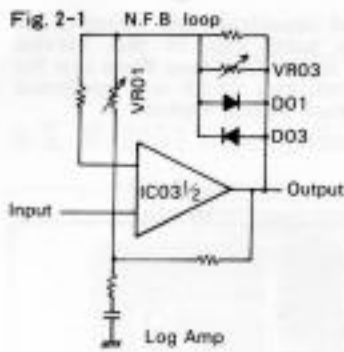
Peak hold circuit is a integrating circuit composed of C03, input impedance of IC07, D09, and reverse direction impedance of TR05. In order to hold the peak value of rectified signal by full-wave rectifier, this circuit has small charging and large discharging time constant. On this model, the charging time constant is determined by output impedance of IC05 (pin No. 7) and C03 and is extremely small. The discharging time constant is defined by C03, input impedance of IC05, and impedance of D09, TR05. The peak holding period is for 5 minutes.

2) Peak circuit

Peak circuit functions similarly as peak hold circuit and indicates peak value of full-wave rectified output signal, however, the discharging time constant is extremely small in contrast to peak hold circuit. When using this meter as peak level indication, the indication response against the input signal is too fast (attack time within 100 μsec) that the large resistor R01 (4.7M Ω) and C03 are installed to make time constant large and delay the recovery time (recovery time; more than 1000 msec).

3) VU circuit

Since the attack time of VU meter is set to be 330 msec to conform its movement to the way our ears perceive sound as volume, the charging time constant is larger in comparison with peak hold circuit. The charging time constant is determined by output impedance of IC05, C03 and R05, and the discharging time constant depends on C03 and R03. The attack time of VU meter is set to 250 msec (0 ~ 20 dB).



2-4. O.S.C.

O.S.C. used in this model is wien-bridge type and its output is able to opt for either 400 Hz or 10 kHz and is variable from 0V to 1.5V. Since the input sensitivity of meter amp and output of O.S.C. are variable respectively, it is possible to set many kinds of reference value by combining both the input sensitivity and the O.S.C. output.

• Setting of reference value

1. Set the input sensitivity switch of meter amp to 0 dB (or -20 dB).
2. Connect the output of O.S.C. to meter amp, then settle the required reference value by turning O.S.C. level control. (when indication of VU on meter scale is desired, set the required level to +4 dB, or when this meter is used as level meter of amp connecting 4Ω load, set the level to +3 dB and 16Ω load to -3 dB, etc.)

3. Set the input sensitivity switch to variable position, then turn the variable level control in order to correspond the meter indication of 0 dB with output of O.S.C. (the reference value settled by step 2)

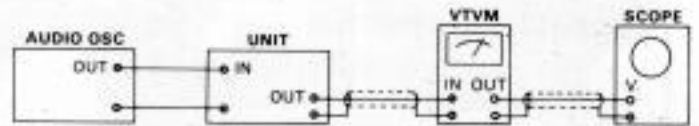
In addition, when the O.S.C. output is connected to an amp, the output balance between L-ch and R-ch can be observed, if the output of O.S.C. is connected to tape deck, the input balance between L-ch and R-ch can be adjusted, and if the output of O.S.C. is joined to either L-ch or R-ch of an amp, the separation between both channels can be roughly measured by reading both meter indications.

By combination use of the meter amp and the O.S.C. in various ways, many sorts of checks and measurements become possible.

3. ADJUSTMENT (See page 5. Top View)

1. VU METER

- Note: 1. INPUT SELECTOR 1, 2, 3, as appropriate.
 2. INPUT SENSITIVITY VARIABLE (MAX)
 3. MODE VU
 4. VR01, 02, 03, 04, 05, 06 (F-2934). Turn completely clockwise (MIN)



STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	0 dB Setting	O.S.C. output 1 kHz 77.5 mV	INPUT 1, 2, 3	Meter	VR01 (L-ch) VR02 (R-ch) on F-2934	Meter Indication 0 dB	
2.	-20 dB Setting	O.S.C. output 1 kHz 7.75 mV	Same as above	Same as above	VR05 (L-ch) VR06 (R-ch) on F-2934	Meter Indication -20 dB	
3.	-40 dB Setting	O.S.C. output 1 kHz 0.775 mV	Same as above	Same as above	VR03 (L-ch) VR04 (R-ch) on F-2934	Meter Indication -40 dB	

2. PEAK METER

- Note: 1. MODE PEAK

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	0 dB Setting	O.S.C. output 1 kHz 77.5 mV	INPUT 1, 2, 3	Meter	VR01 (L-ch) VR02 (R-ch) on F-2933	Meter Indication 0 dB	

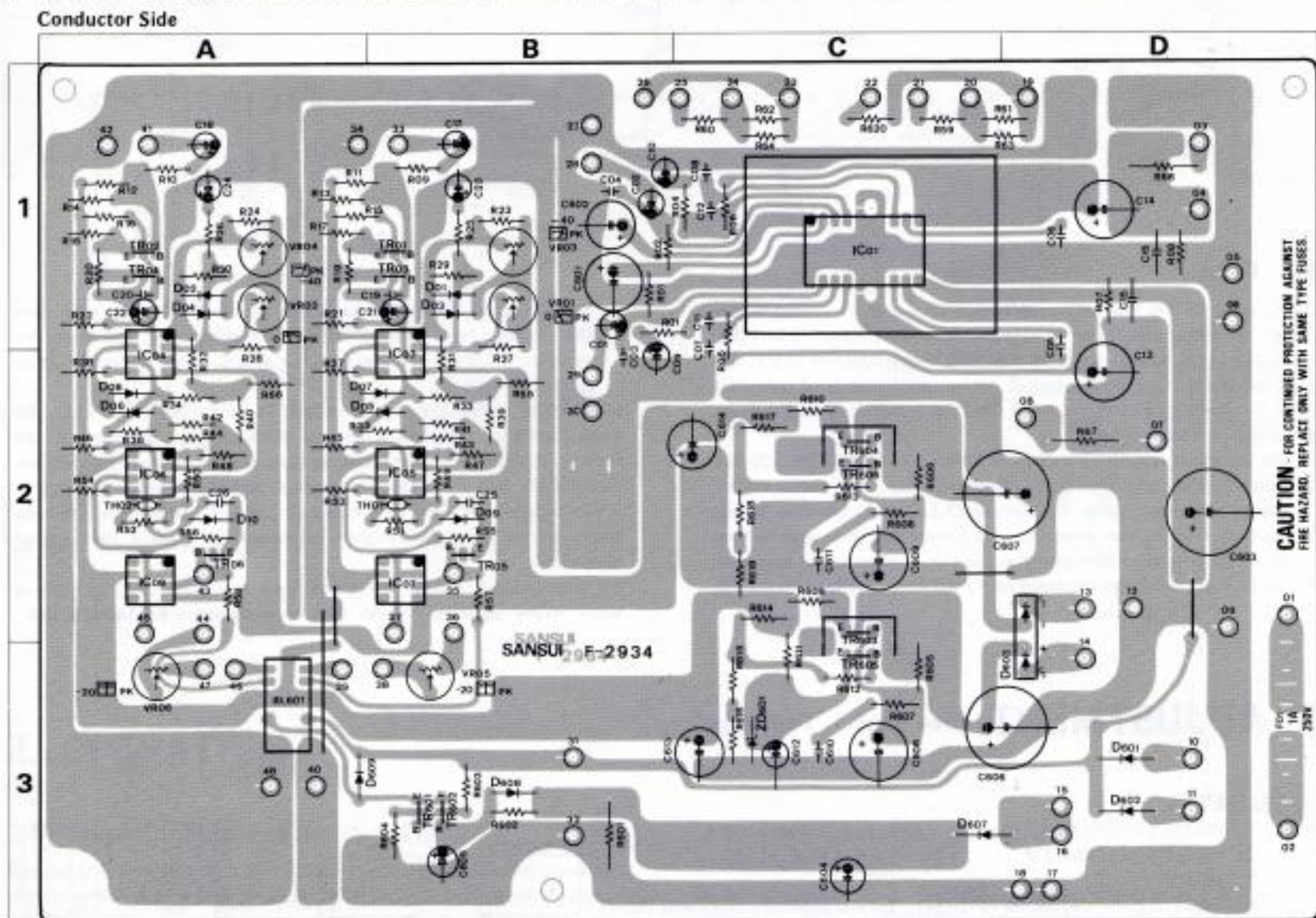
Abbreviations

<Equipment>	Oscilloscope	Scope
	Audio Oscillator	Audio Osc.

4. PARTS LOCATION & PARTS LIST

Since some of capacitors and resistors are omitted from parts lists in this Service Manual, refer to the Common Parts List for capacitors & resistors which was appended previously to each Sansui Manual.

4-1. F-2934 Meter Drive Circuit Board (Stock No. 7503101)

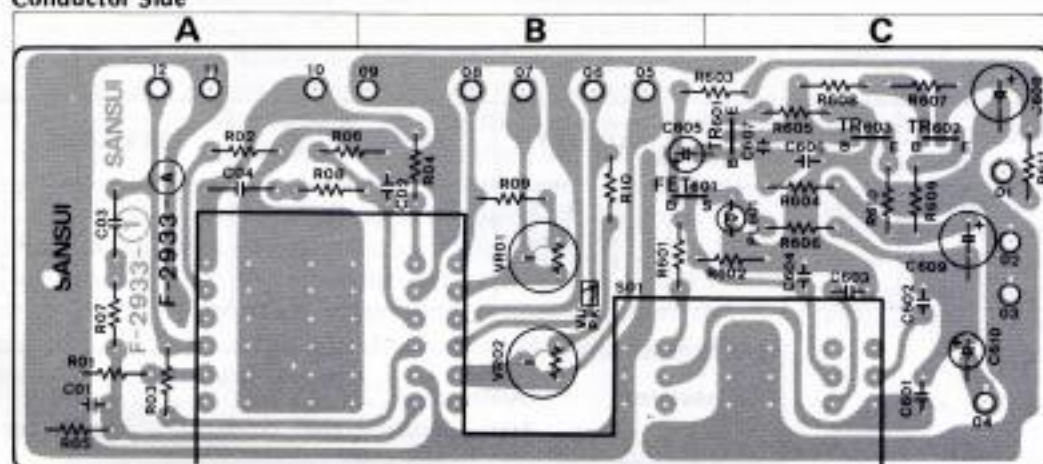


Parts List

Parts No.	Stock No.	Description	Position	Parts No.	Stock No.	Description	Position	Parts No.	Stock No.	Description	Position
•Transistors				•Diodes				RL01			
TR01, 02	0306290, 1	2SC1400 (1) E, U	1B, 1A	D 01-10	0311180	1S1588	1A, 1B, 2A, 2B	RL01	1150510	Relay	3A
TR03-06	0300890, 1	2SA750 (3) E, U	1A, 1B, 2A, 2B	D 601, 02	0310340	10D1 (1S2226)	3D	VR01, 02	1035110	Volume 4.7kΩ B, 0dB adjust	1B, 1A
TR601	0306290, 1	2SC1400 (1) E, U	3B	D 603	0311700	RB-152	2, 3D	VR03, 04	1035210	Volume 220kΩ B, -40dB adjust	1B, 1A
TR602	0306890, 1	2SA750 E, U	3B	D 607	0310340	10D1 (1S2226)	3C	VR05, 06	1035070	Volume 1kΩ B, -20dB adjust	3B, 3A
TR603	0308611, 2	2SD-357 D, E	2C	D 608	0311180	1S1588	3B				
TR604	0303441, 2	2SB-527 D, E	2C	D 609	0310340	10D1 (1S2226)	3A				
TR605	0306290, 1	2SC1400 (1) E, U	3C	•Zener Diode							
TR606	0300890, 1	2SA750 (3) E, U	2C	ZD01	0316390	RD6.2E B					
•ICs				•Thermistors							
IC 01	0360710	TA-7203P	1C	TH01, 02	0320150	31D28 Thermistor	2B, 2A				
IC 03-06	0360770	4558	2A, 2B								
IC 07, 08	0360820	CA3140E	2B, 2A	R 601	0103221	220Ω 1/2W C.R.	3B				

4-2. F-2933 Mode Switch Circuit Board (Stock No. 7596901)

Conductor Side

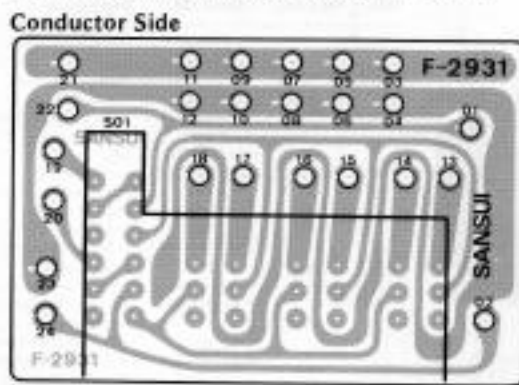


Parts List

Parts No.	Stock No.	Description	Position
•Transistors			
TR601, 02	0306290, 1	2SC1400 (1) E, U	C
TR603	0300890, 1	2SA750 (3) E, U	C
TR604	0306290, 1	2SC1400 (1) E, U	
TR605	0300890	2SA750 (3) E, U	
TR606	0300891	2SA750 (3) U	
•FET			
FT601	0370302	2SK-117 GR	B
C 601, 04	0620151	150pF 50V P.C.	C
VR01, 02	1035030	Volume 220Ω Peak adjust	B
S 01	1131700	Mode, O.S.C Selector	A, B, C
PL 601	0400400	Lamp 6V 30mA	C

* The circuit boards F-2929, F-2930, F-2931, F-2932, F-2974, F-2731 are not supplied as the assembled, the individual parts on the circuit board, however, are provided for orders.

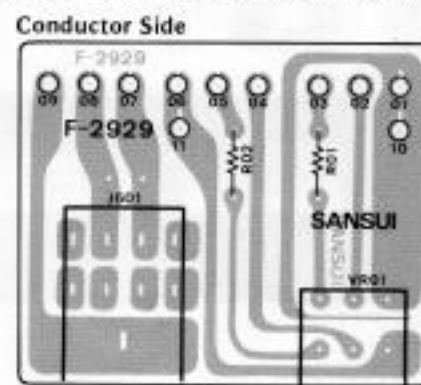
4-3. F-2931 Input Selector Circuit Board



Parts List

Parts No.	Stock No.	Description
S 01	1131690	Push Switch, Input selector

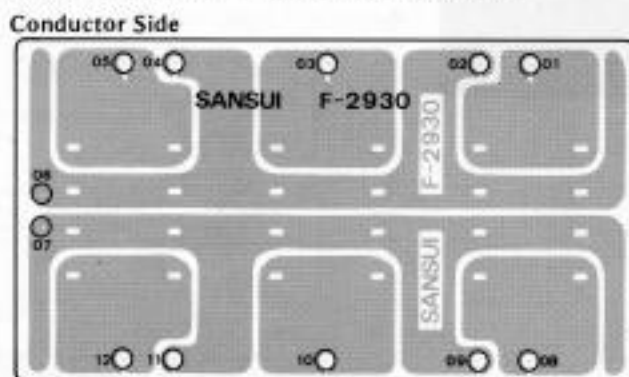
4-4. F-2929 Head Phone Volume Circuit Board



Parts List

Parts No.	Stock No.	Description
R 03, 04	0103120	12Ω 1/2W C.R.
VR01	1015430	Volume 250kΩ (A), Monitor Level
J 601	2430350	Jack, Phone

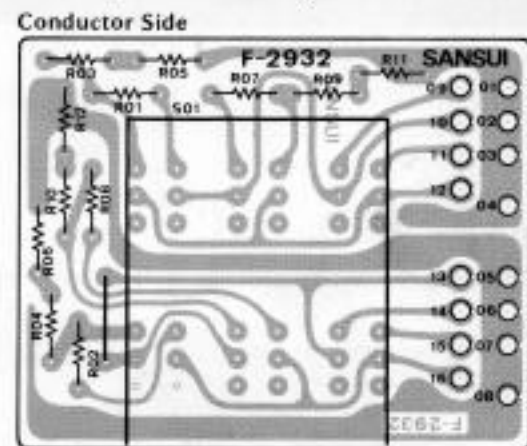
4-5. F-2930 Input Terminal Circuit Board



Parts List

Parts No.	Stock No.	Description
	2200580	4P Input Terminal Board

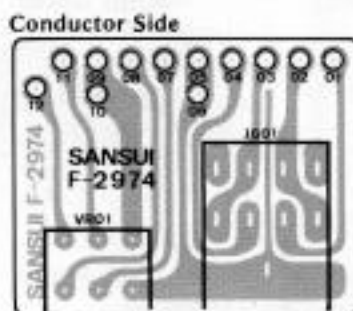
4-6. F-2932 Input Sensitivity Circuit Board



Parts List

Parts No.	Stock No.	Description
	1131690	Push Switch, Sensitivity

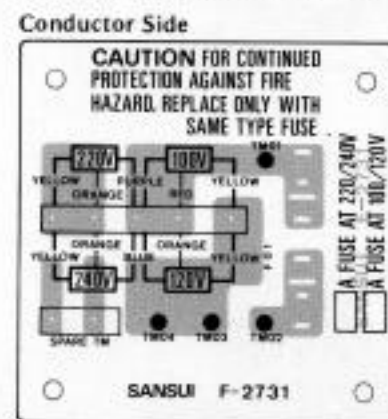
4-7. F-2974 Head Phone Jack Circuit Board



Parts List

Parts No.	Stock No.	Description
VR01	1025020	Volume 250kΩ (A) x 2 Variable Level
J 601	2430350	Jack input

4-8. F-2731 Voltage Selector Circuit Board



Parts List

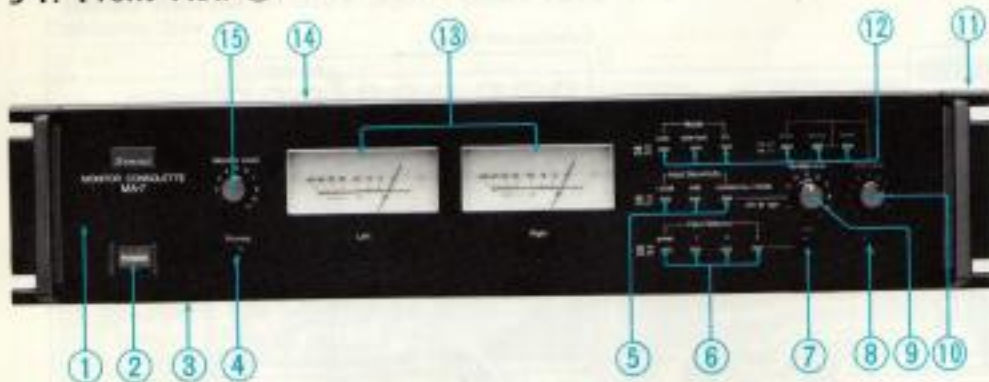
Parts No.	Stock No.	Description
F 01	0432220	AC Fuse 1A 250V

Abbreviations

C.R.	: Carbon Resistor	E.C.	: Electrolytic Capacitor
S.R.	: Solid Resistor	BP.E.C.	: Bi-Polar Electrolytic Capacitor
Ce.R.	: Cement Resistor	C.C.	: Ceramic Capacitor
M.R.	: Metal Film Resistor	M.C.	: Mica Capacitor
F.R.	: Fusing Resistor	O.C.	: Oil Capacitor
N.I.R.	: Non-Inflammable Resistor	P.C.	: Polystyrene Capacitor
M.C.	: Mylar Capacitor	T.C.	: Tantalum Capacitor

5. OTHER PARTS

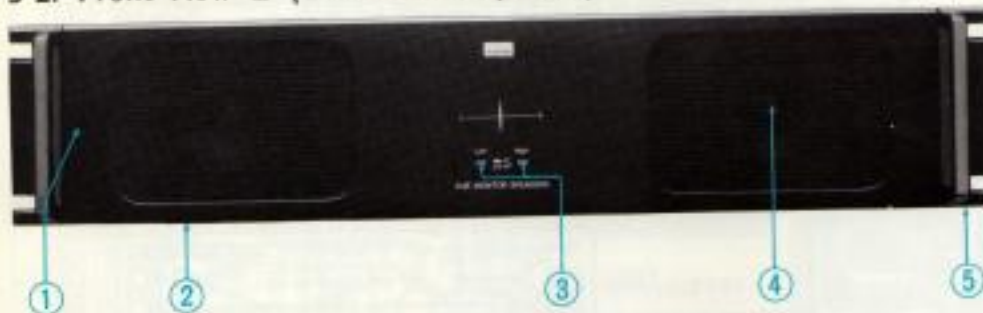
5-1. Front View ①



Parts List <Front View ①>

No.	Parts No.	Stock No.	Description
1	7007900		Front Panel Ass'y
	5446390		Meter glass
2	7106150		Push Knob Ass'y
	S 701	1131640	Power Switch
		7106340	Knob Holder, Power
		7226230	Lamp Ass'y
		9517070	Lens
		2430350	Jack, Phone
		1131680	Push Switch, Sensitivity
		7106150	Push Knob Ass'y
		1131690	Push Switch, Input Selector
		7106150	Push Knob Ass'y
7	J 801	2430090	Input Jack
8	J 701	2430090	O.S.C. Output Jack
9		1025020	Volume 250kΩ A X 2
			Variable Level
		5318951	Knob left, Sensitivity
		5319190	Knob right, Sensitivity
		1005300	Volume 2kΩ (A) O.S.C.
10		5318951	Knob, O.S.C.
		5396350	Rack mounting adaptor (each)
11	S 01	1131700	Push Switch O.S.C., Mode
		7106150	Push Knob Ass'y
12	M 701, 702	4301290	Meter
		0420080	Fuse Type Lamp, 6V 100mA
14		5006790	Bonnet
15		1015430	Volume 250kΩ (A)
		5318951	Knob, Monitor Level

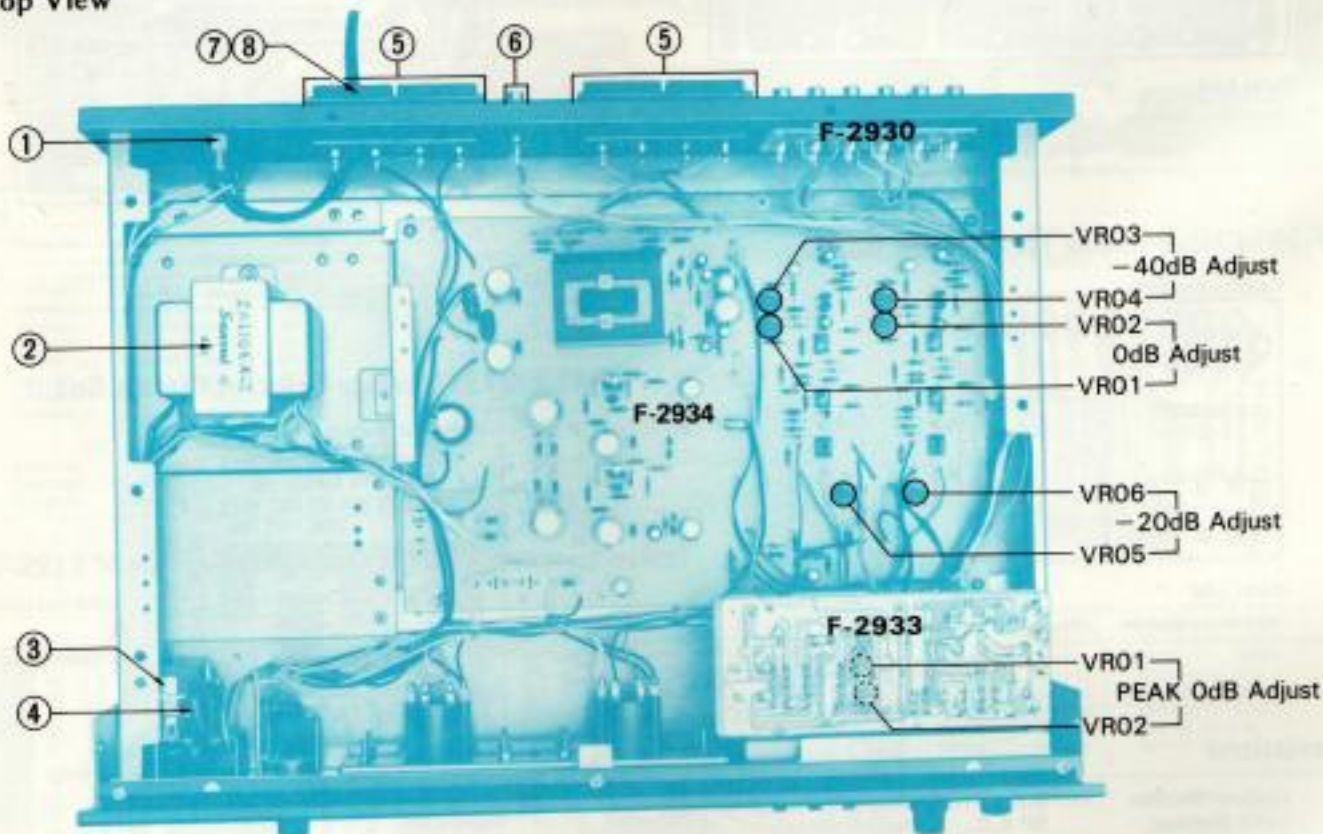
5-2. Front View ② (Cue Monitor Speaker)



Parts List <Front View ②>

No.	Parts No.	Stock No.	Description
1		5394460	Front Panel
2		5142826	Fixing Screw, Front Panel
		5907070	Lens
3		1131710	Push Switch
4		7106150	Push Knob
		4400120	Full range speaker P-711
5		5140825	Fixing Screw, speaker
		5396350	Rack mounting adaptor (each)

5-3. Top View



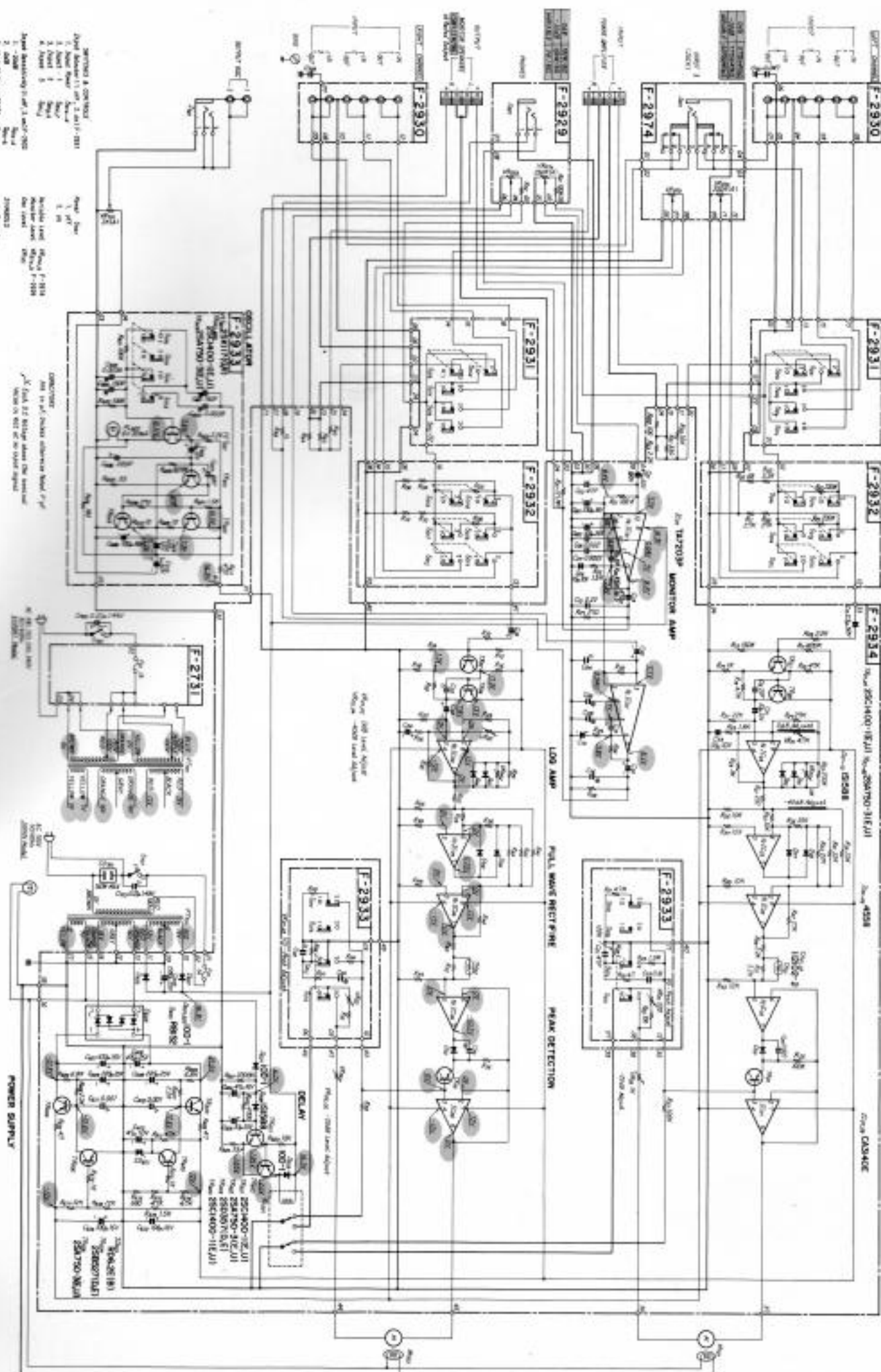
Parts List <Top View>

No.	Parts No.	Stock No.	Description
1		2450070	A.C. Outlet
2	PT 701	4002890	Power Transformer
3	S 701	1131640	Power Switch
4	C 703	0656801	0.01μF, 150V C.C.

No.	Parts No.	Stock No.	Description
5		2290190	Terminal, Monitor, Power
6		2200560	Terminal, Pin, O.S.C.
7		3800010	Power Cord
8		3910600	Strain relief

6. SCHEMATIC DIAGRAM

- SETTING & CONTROL**
- 1. 250V AC Mains (110V AC in U.S.A.)
 - 2. 100V AC Mains
 - 3. 50Hz AC Mains
 - 4. 60Hz AC Mains
 - 5. 100V AC Mains
 - 6. 250V AC Mains
 - 7. 50Hz AC Mains
 - 8. 60Hz AC Mains
- AMPLIFIER**
- 1. 100V AC Mains
 - 2. 250V AC Mains
 - 3. 50Hz AC Mains
 - 4. 60Hz AC Mains
- TEST & MEASUREMENT**
- 1. 100V AC Mains
 - 2. 250V AC Mains
 - 3. 50Hz AC Mains
 - 4. 60Hz AC Mains
- SETTING**
- 1. 100V AC Mains
 - 2. 250V AC Mains
 - 3. 50Hz AC Mains
 - 4. 60Hz AC Mains



- 25A-750**
25C-1400
- 25B-527**
25D-357
- TA-7531P**
455B
- 25K-117**
- TA-7203P**
- 151588**
- RD-6-25B**
- 100-1**
152226
- RB-152**

1

2

3

4

5