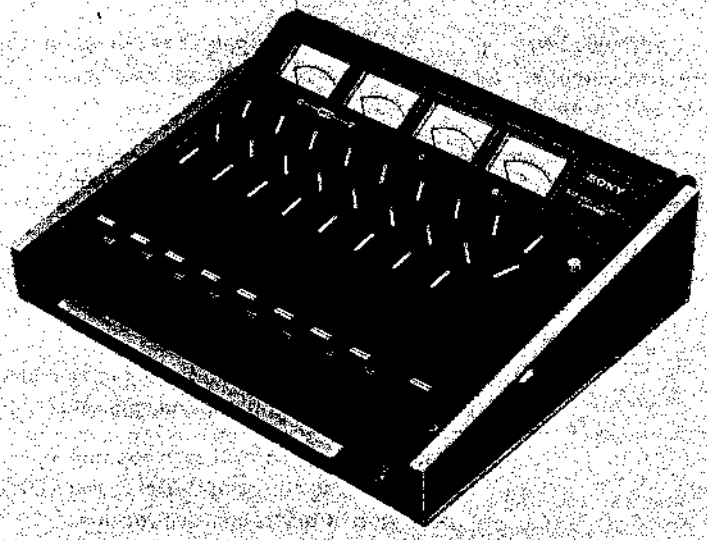
MX-710

E Model

AEP Model



8-CHANNEL MIXER

SPECIFICATIONS

Power Requirements: 220 V AC 50 Hz/60 Hz, 48 V DC

Power Consumption: 15 W

Inputs:
MIC INPUT (phone type) 8
Sensitivity: 0.2 mV (−72 dB)
Low Impedance
LINE INPUT (phono type) 8
Sensitivity: 60 mV (−22 dB)
Input impedance: 100 kΩ

Outputs:
FIX (phono type) 4
Rated output level: 0.245 V (−10 dB) at 100 kΩ load.
Suitable load impedance: more than 10 kΩ
VARIABLE (phone type) 4
Continuously variable: 0 to 0.775 V (0 dB) at load impedance of 100 kΩ, factory-set at maximum level.
Suitable load impedance: more than 10 kΩ
HEADPHONE (binaural type) 1
Load impedance: 8 Ω

Junction Points:
PREAMP OUT
Rated output level: 0.245 V (−10 dB)
Suitable load impedance: more than 10 kΩ
LINE AMP IN
Sensitivity: 0.245 V (−10 dB)
Input impedance: 10 kΩ

Frequency Response: 20 – 20,000 Hz $^{+0}_{-1.5}$ dB

Distortion: 0.1 %

Signal-to-noise Ratio: 60 dB

Crosstalk: 60 dB at 1 kHz

Dimensions: Including projecting parts and controls.
Approx. 464 (w) x 172 (h) x 423 (d) mm
18 ¼ (w) x 6 ¾ (h) x 16 ⅝ (d) inches

Weight: 9 kg, 19 lb 14 oz

SONY®

SERVICE MANUAL

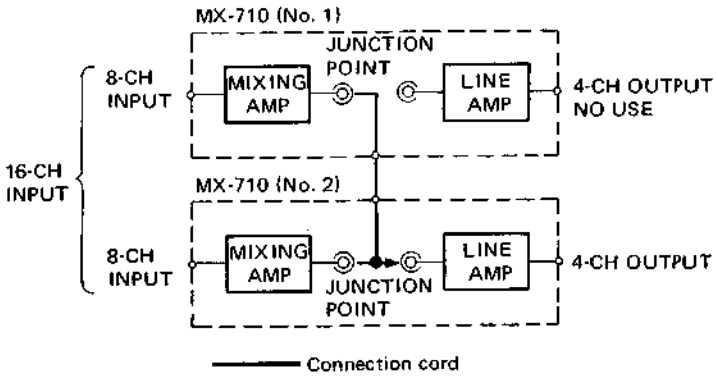
SECTION 1
OUTLINE

1-1. DESCRIPTION

MX-710 is an 8-channel mixer provided with 4-channel outputs. This model contains amplifiers to cover mixing loss and to improve S/N ratio. Power supply is two-ways for operation on AC house current or DC power source (48 V).

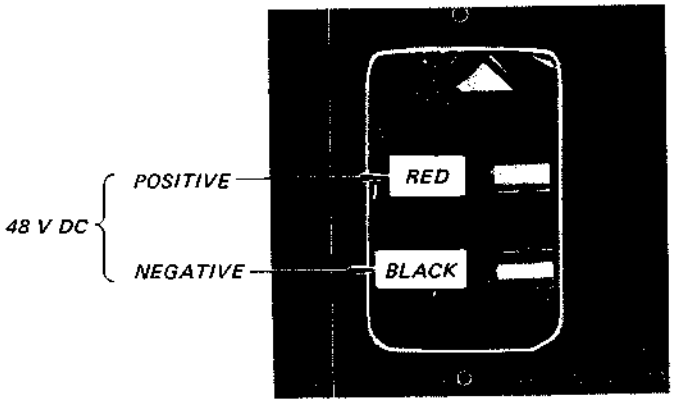
Switches, Controls and Jacks	Operation
1. INPUT SELECT switch	selectors of input source MIC..... for microphone input source LINE... for line input source OFF .... input source disconnected
2. INPUT ATT switch	attenuators to prevent distortion caused by excessive input level It is effective for microphone placement close to the source.
3. GAIN CONTROL	It is possible to control each channel input level of 8-channel. Double vertical lines of GAIN CONTROL indicate the best usable condition. Cursors are used for preset.
4. OUTPUT CHANNEL SELECT switch	4-channel output selectors for 8-channel inputs. INPUT ATT and GAIN CONTROL can be adjusted according to VU meter reading of selected output channel. When any output channel selector is set to B position, the same signal feeds to output channels 1 and 2. This feature facilitates "center-mixing" of a monaural sound source such as announcements or a single instrument between L-and R-channel microphones.
5. MASTER GAIN CONTROL	This control simultaneously adjusts four overall output levels. After finishing level set with each GAIN CONTROL, slide the MASTER GAIN CONTROL to 10 at record starting. After recording, slide the MASTER GAIN CONTROL gradually down to 0. It is usually used at 10 position.
6. HEADPHONE CHANNEL switch:	This switch selects output channels for monitoring. Position / Output Channel: Left Headphone / Right Headphone 1-2: 1 / 2 MIX: 1 + 3 / 2 + 4 3-4: 3 / 4
LEVEL control:	This continuously controls headphone monitor level.
7. INPUT and OUTPUT Jacks	INPUT MIX x 8 LINE x 8 OUTPUT FIXED x 4 VARIABLE x 4 Normal FIXED OUTPUT level: −10 dB (0.25 V) Maximum VARIABLE OUTPUT level: 0 dB (0.775 V) (See VARIABLE OUTPUT level adjustment on page 7.) −10 dB (0.25 V) normal level signals are fed from PRE AMP OUT jacks to LINE AMP IN jacks with connection cords. SQ encoder or echo unit can be connected at JUNCTION POINT

Switches, Controls and Jacks	Operation
	jacks after removing the connection cords. Two MX-710 mixers can be connected in parallel by using JUNCTION POINT jacks to obtain 16-channel inputs and 4-channel outputs.

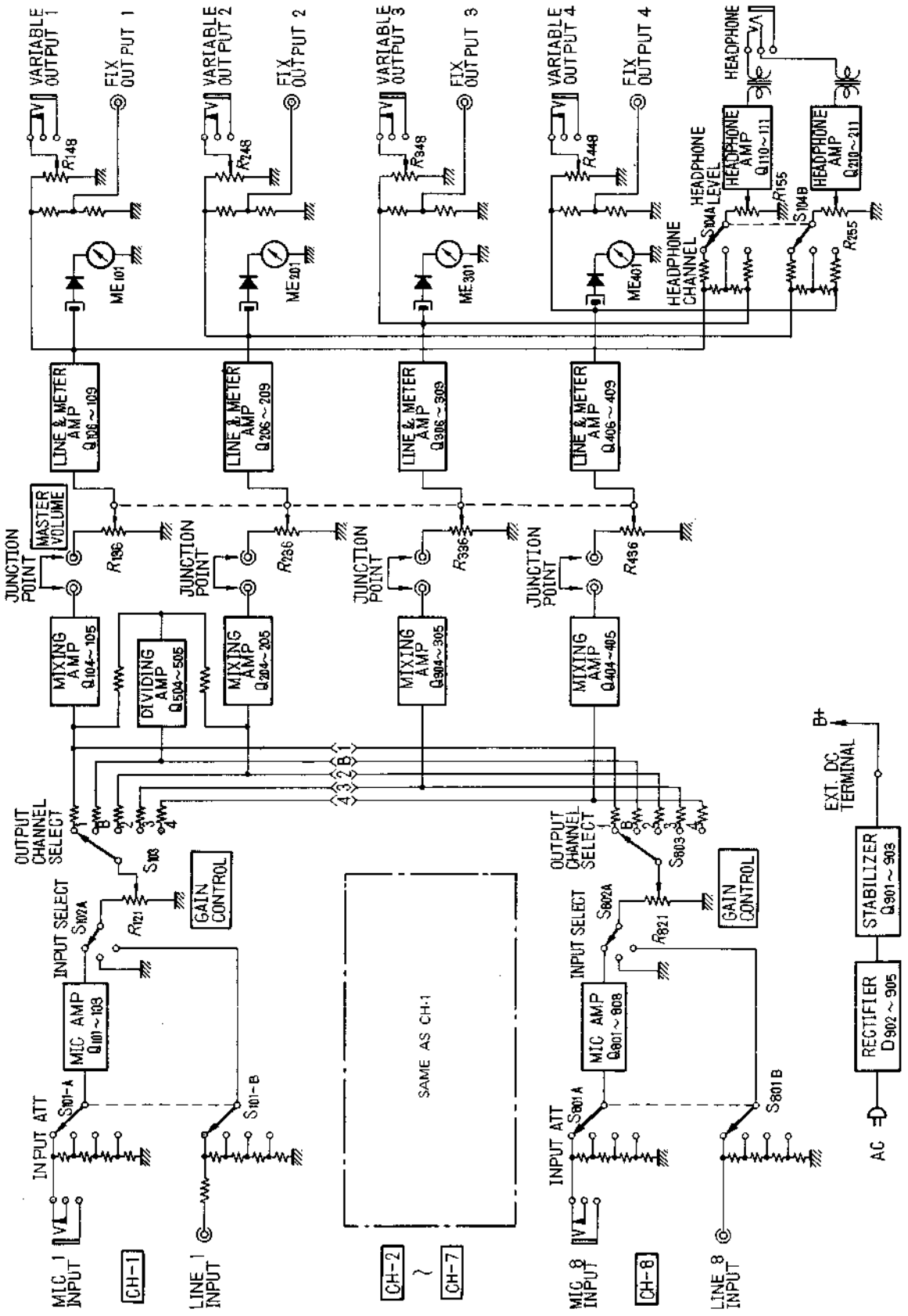


Connection of DC power supply

MX-710 has dc power supply terminals for outdoor use. After removing the cover (smallest), connect positivie lead of dc power source to red terminal and negative lead to black terminal. Use 48 V dc power source. During ac power supply use, diode D609 opens dc power supply connection.



1-2. BLOCK DIAGRAM



SECTION 2
DISASSEMBLY

2-1. CONTROL PANEL REMOVAL

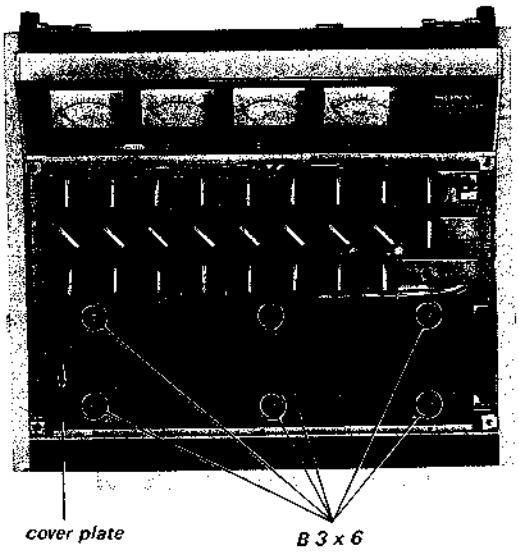
Remove four screws RK 4 x 10.

After the control panel is removed, switches and variable resistors can be replaced.

2-2. COVER PLATE REMOVAL

Remove six screws B 3 x 6.

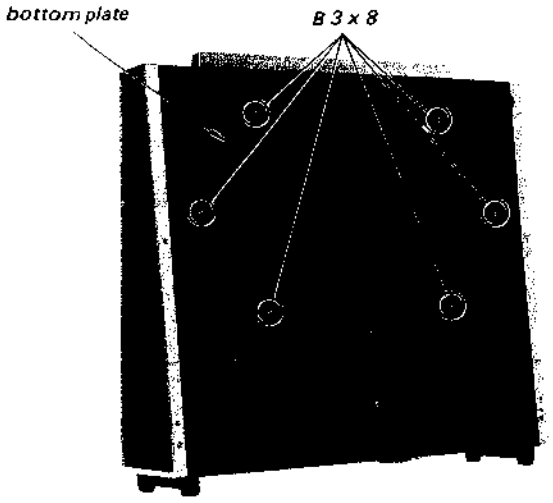
After the cover plate is removed, VU meter calibration can be performed.



2-3. BOTTOM PLATE REMOVAL

Remove six screws B 3 x 8.

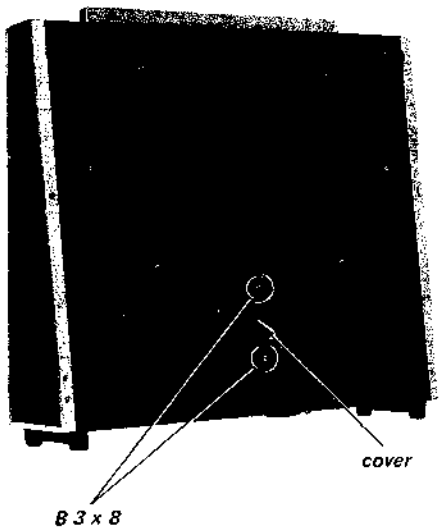
When the bottom plate is removed, voltage checks and VARIABLE OUTPUT level adjustment can be performed.



2-4. COVER REMOVAL

Remove two screws B 3 x 8.

After the cover removal, external dc power supply can be connected to the set.



SECTION 3
ADJUSTMENTS

Test Equipment/Tools Required:

audio oscillator (af osc)
VTVM
attenuator (600 Ω)
VOM
resistors ..... 600 Ω (¼ W),
100 kΩ (¼ W), 10 kΩ (¼ W)

Normal Input Level (Frequency: 1 kHz)

	MIC INPUT	LINE INPUT
impedance	300 Ω	10 kΩ
input level	−60 dB (0.78 mV)	−10 dB (0.25 V)

Normal Output Level (Frequency: 1 kHz)

	FIX OUTPUT
load impedance	100 kΩ
OUTPUT level	−10 dB (0.25 V)

Note: Connect JUNCTION POINT jacks with the connection cords.

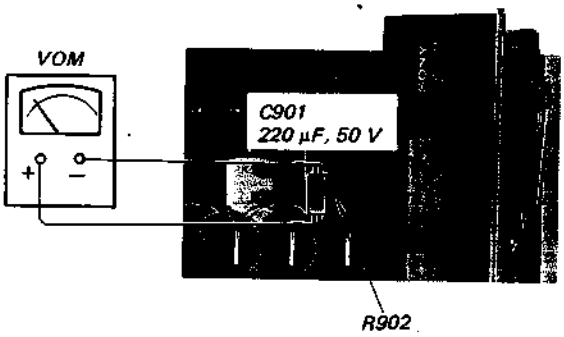
1. B + Voltage Adjustment

Control/Switch Setting:

INPUT ATT: 0 dB
INPUT SELECT: MIC
MASTER GAIN CONTROL: 0

Procedure:

1.



Adjust R902 so that VOM indicates 42 V ± 0.3 V.

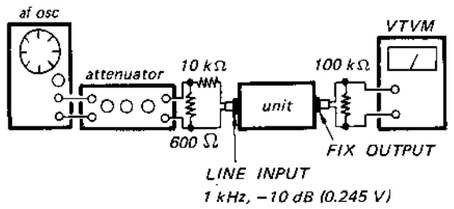
2. VU Meter Calibration

Control/Switch Setting:

INPUT ATT:	0 dB
INPUT SELECT:	LINE
MASTER GAIN CONTROL:	10

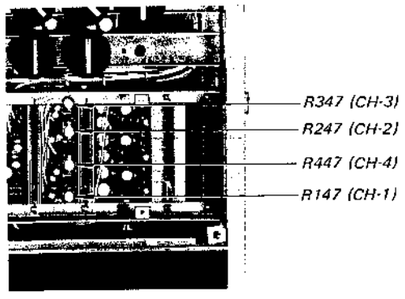
Procedure:

1.



Adjust GAIN CONTROL for −10 dB (0.245 V) VTVM reading.

2. Adjust resistors R147, 247, 347, 447 so that VU meters indicate 0.



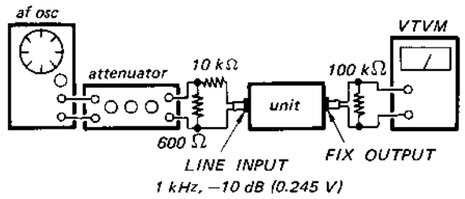
3. VARIABLE OUTPUT Level Adjustment

Control/Switch Setting:

INPUT ATT:	0 dB
INPUT SELECT:	LINE
MASTER GAIN CONTROL:	10

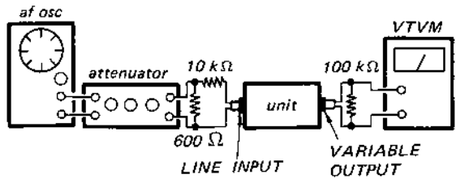
Procedure:

1.

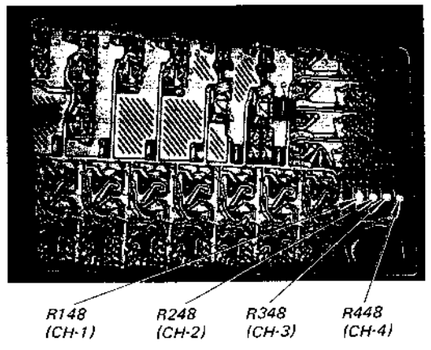


Adjust GAIN CONTROL for −10 dB (0.245 V) VTVM reading.

2.



Adjust resistors R148, 248, 348, 448 to get level user wants.

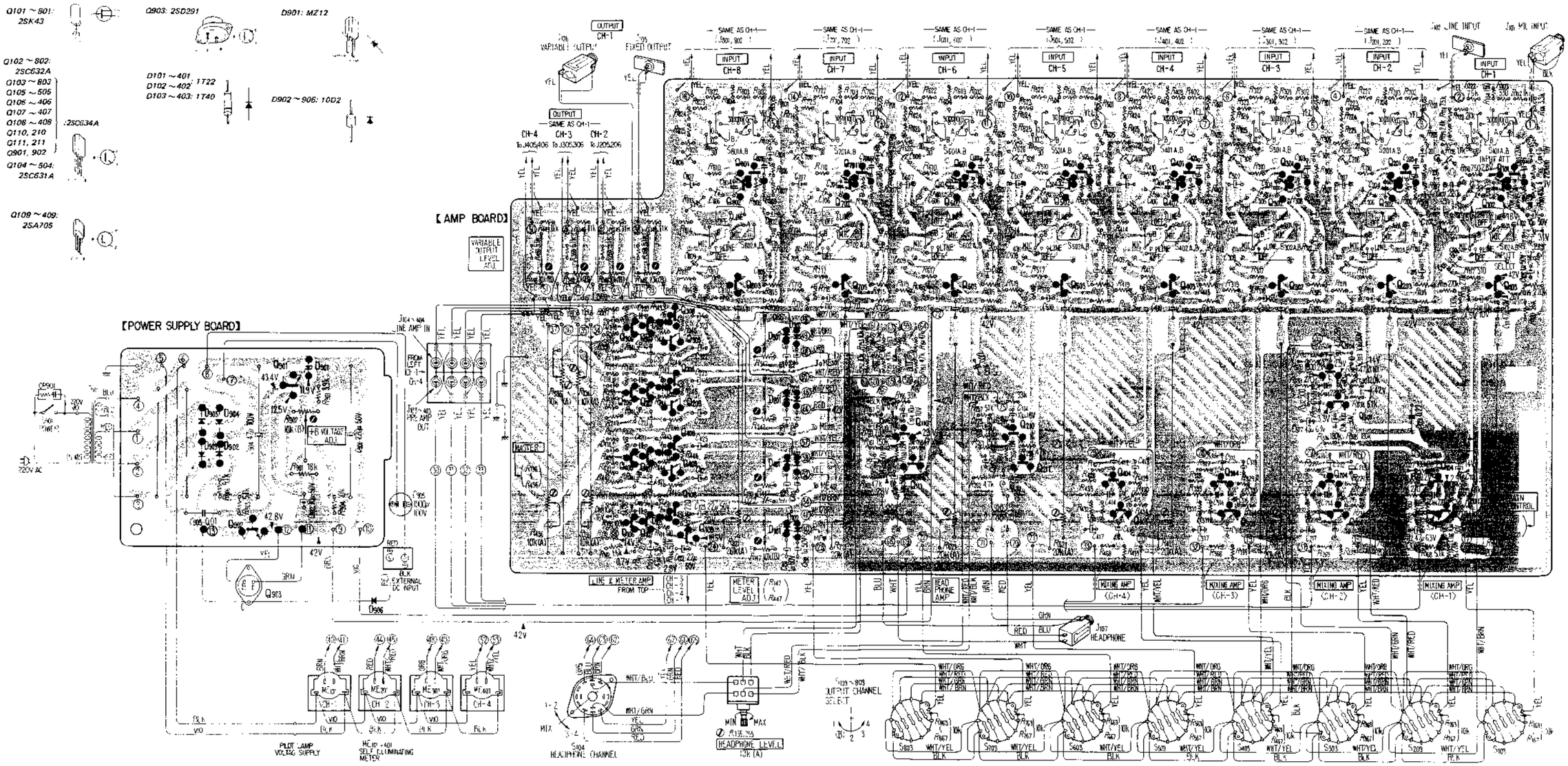


Note: Adjustable resistors are set to maximum at factory. Do not adjust them without user's permission since he might set to proper level.

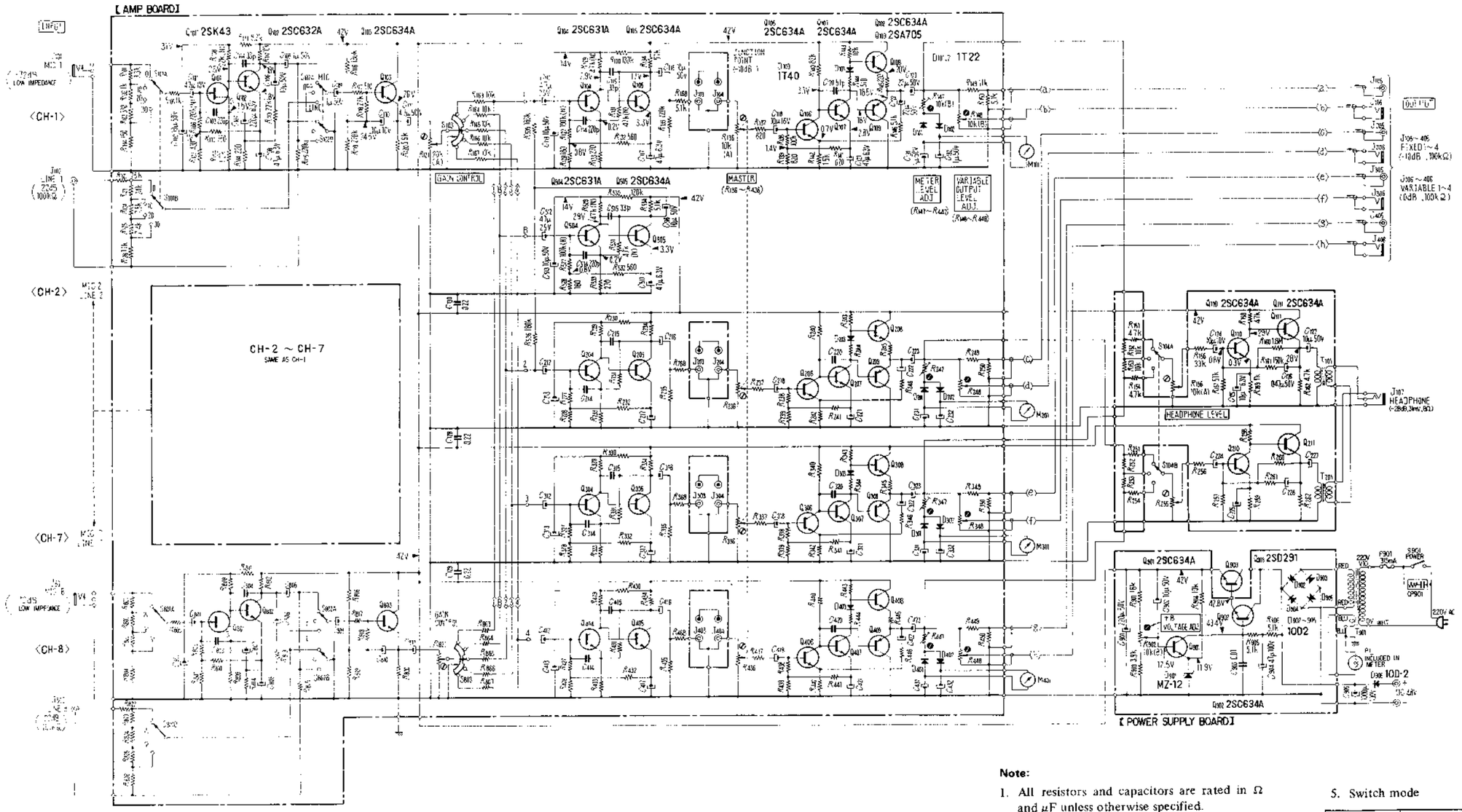
SECTION 4
DIAGRAMS

4-1. MOUNTING DIAGRAM

— Conductor Side —



4-2. SCHEMATIC DIAGRAM



Note:

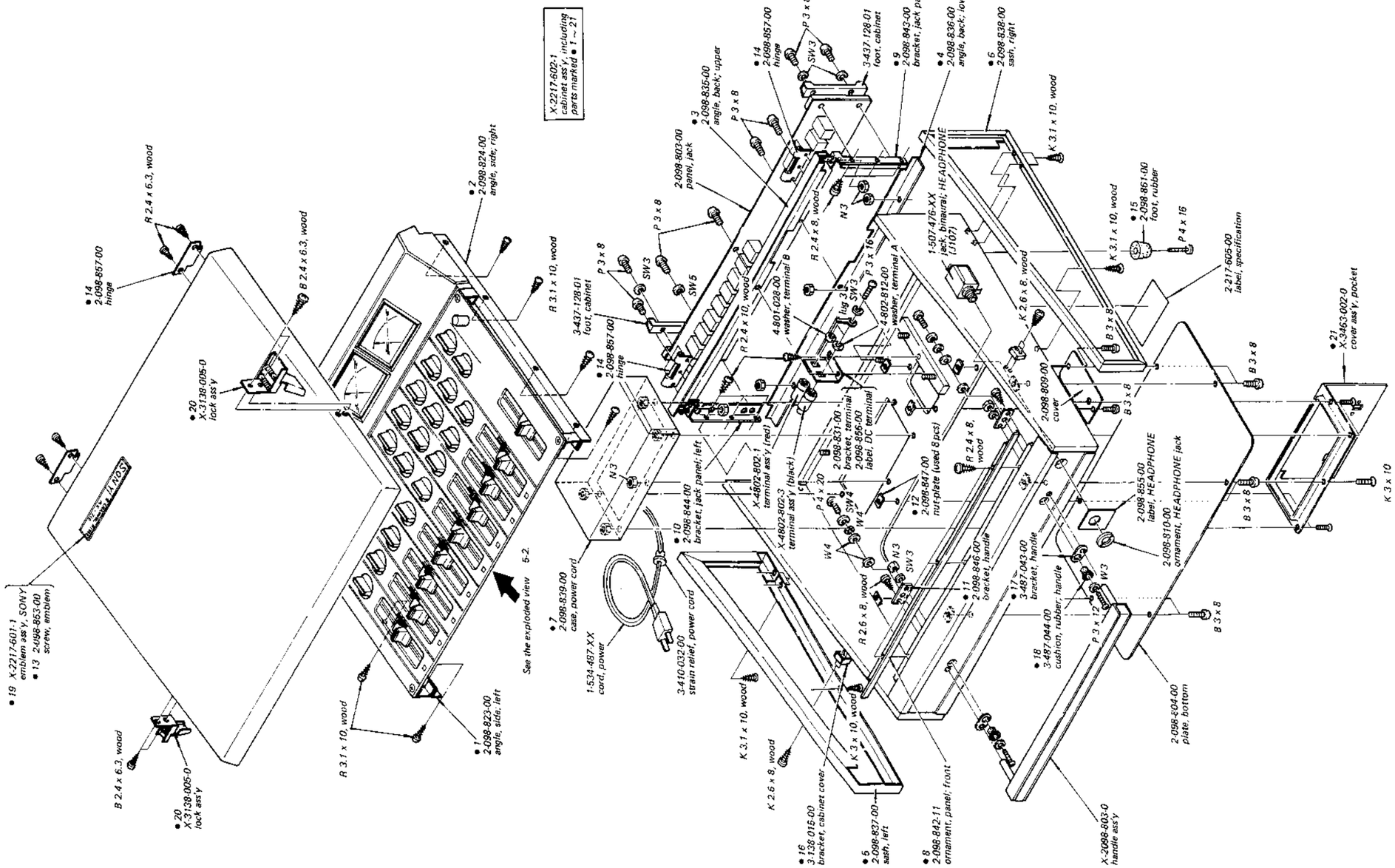
1. All resistors and capacitors are rated in Ω and μF unless otherwise specified.
2. The letter (A), (B) suffixed to rating value of variable resistor or adjustable resistor indicates its characteristic.
3. Voltage values shown are measured with a dc voltmeter of 20 kΩ/V with no input signal.
4. ◐◐ adjustable.

5. Switch mode

No.	Switch	Mode
S101 ~ 801	INPUT ATT	0 dB
S102 ~ 802	INPUT SELECT	MIC
S103 ~ 803	OUTPUT CHANNEL SELECT	2
S104	HEADPHONE CHANNEL	1 · 2
S901	POWER	ON

SECTION 5
EXPLODED VIEWS

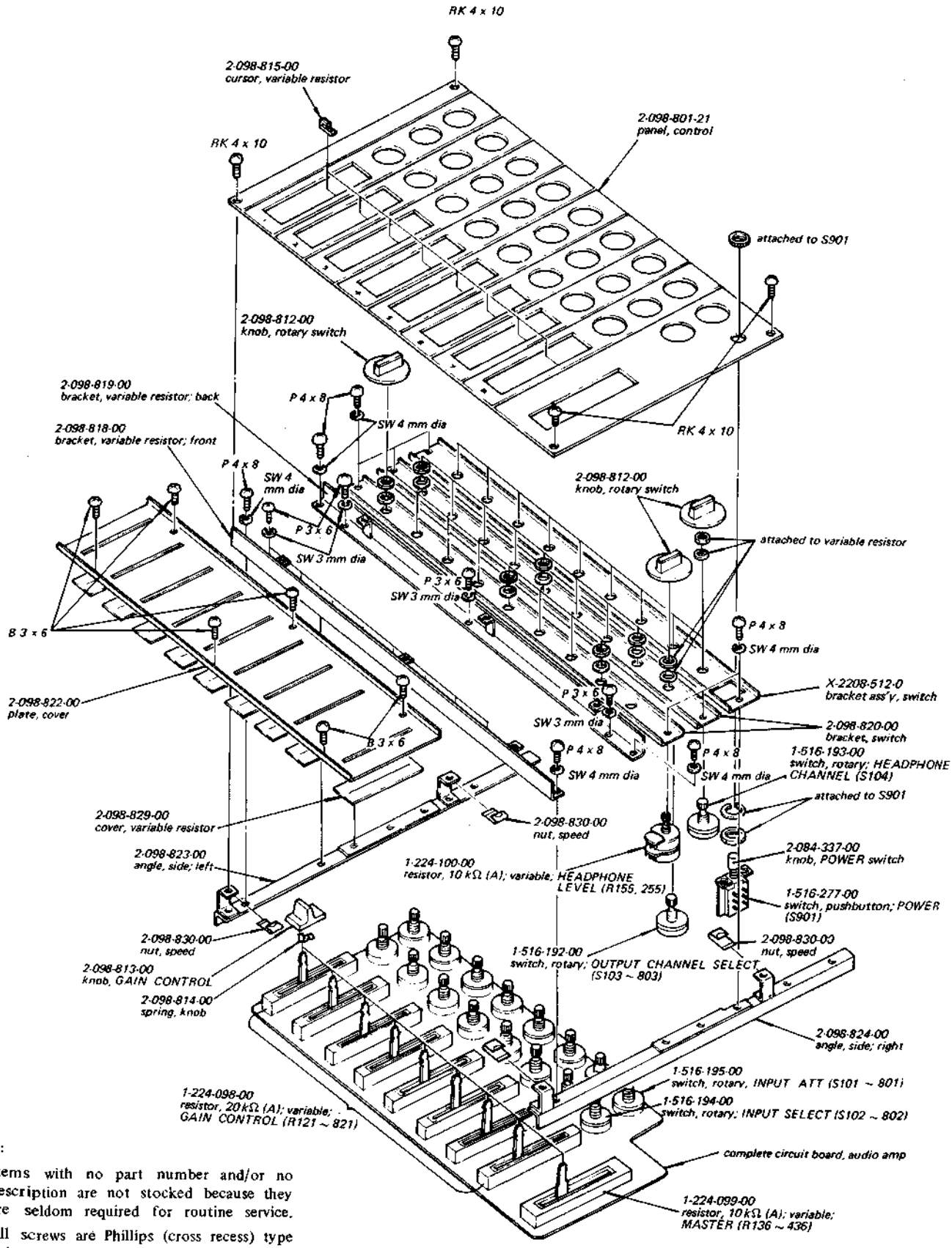
5-1.



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (-) = slotted head

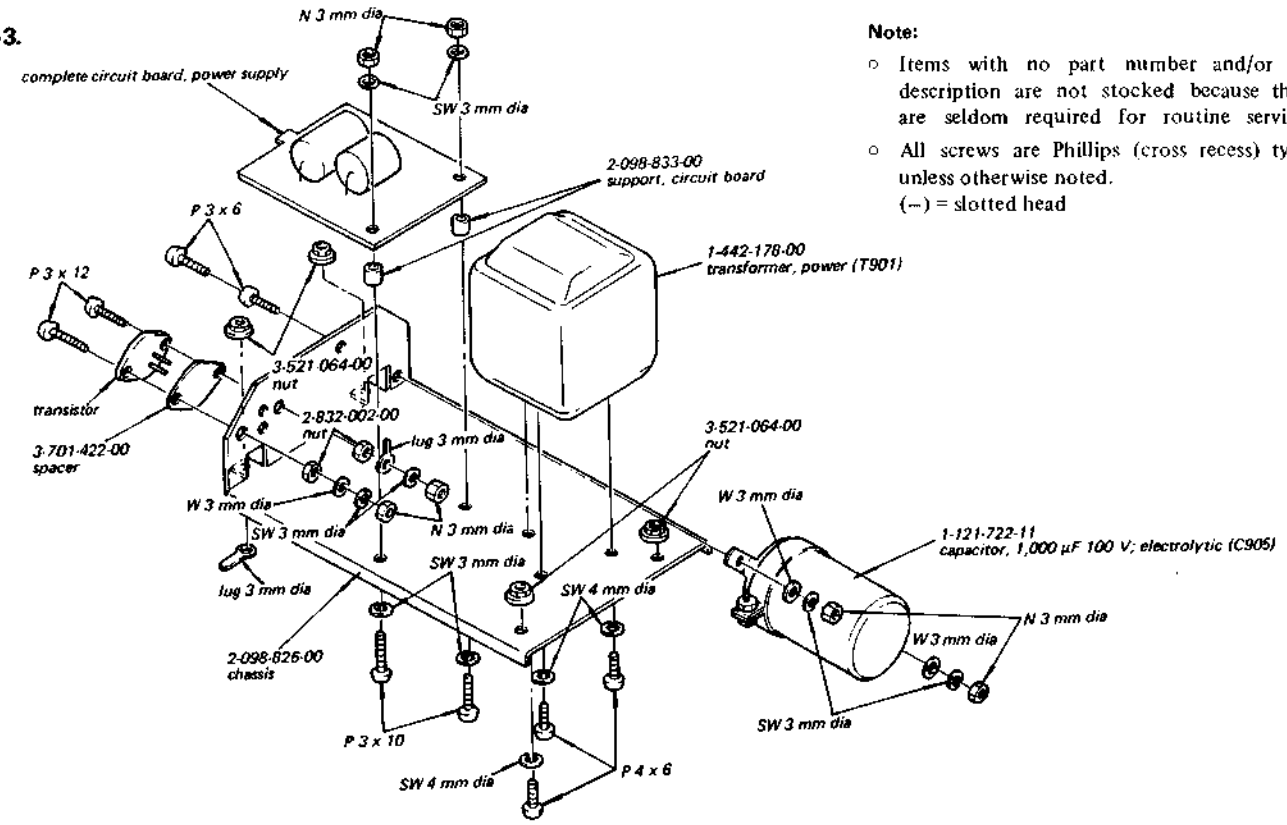
5-2



Note:

- ○ Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- ○ All screws are Phillips (cross recess) type unless otherwise noted.
  (−) = slotted head

5-3.



Note:

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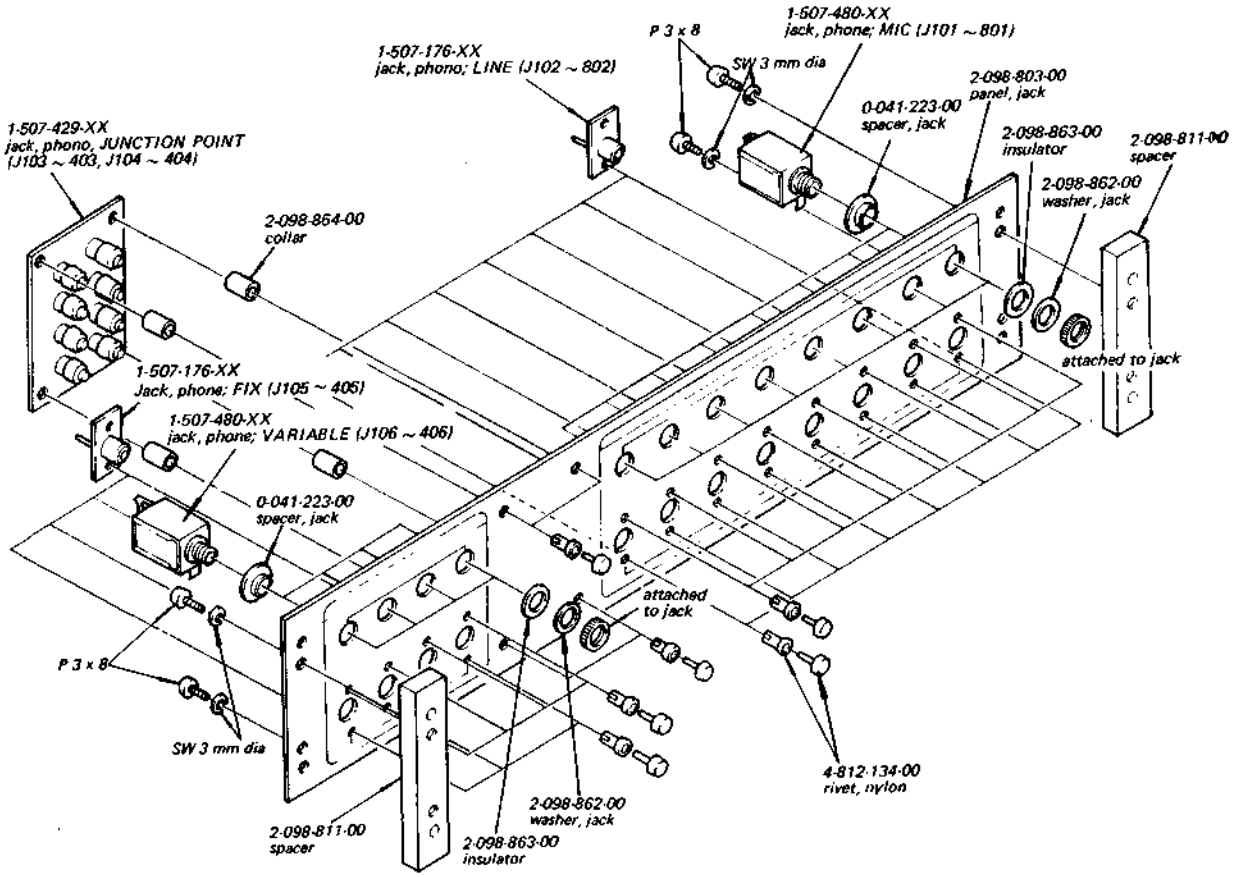
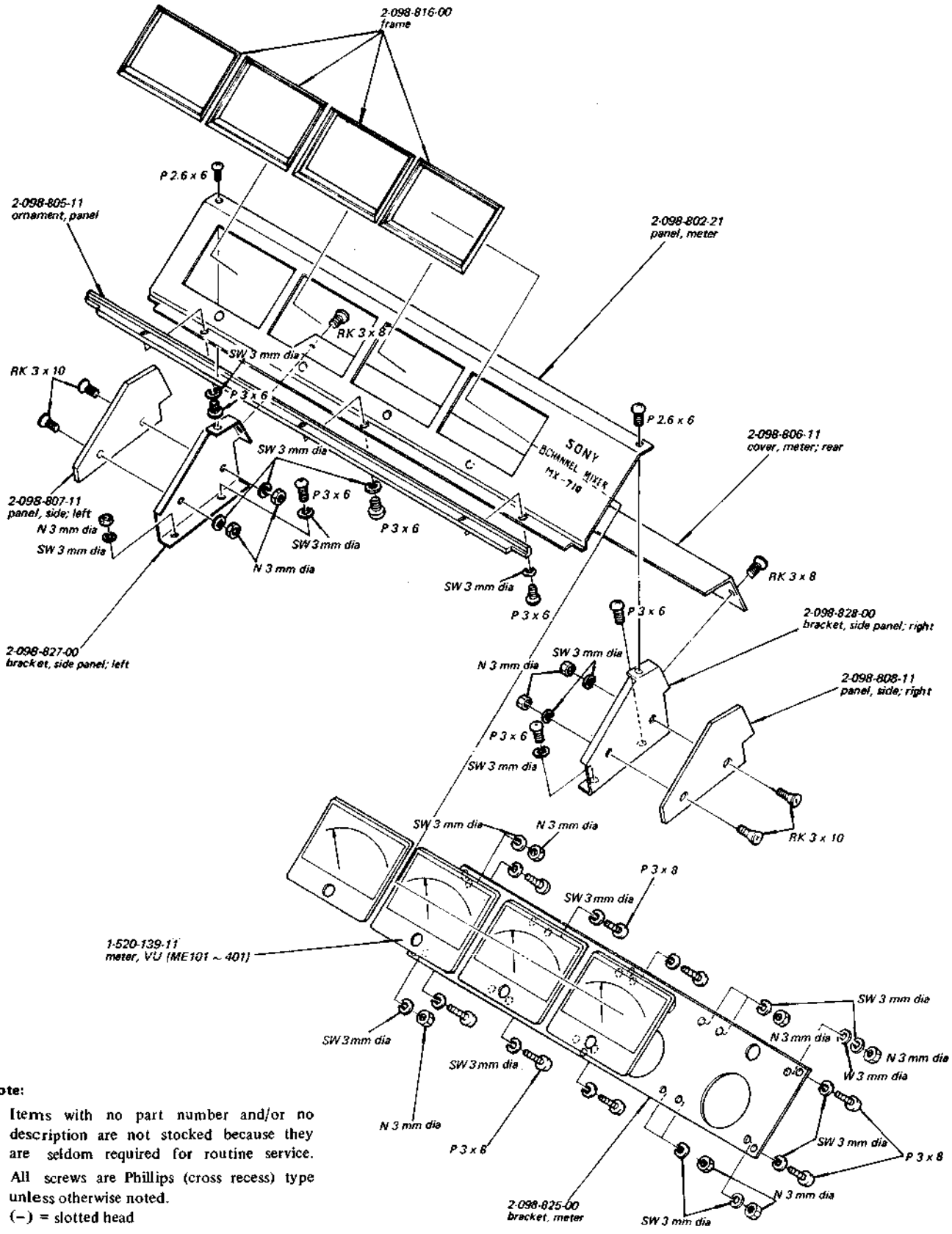
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head



5-4.



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head

SECTION 6
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
	COMPLETE CIRCUIT BOARDS	
		audio amp
		power supply
	SEMICONDUCTORS	
	Transistors (Q101 ~ 801: Q101, 201, 301 . . . . . Q801)	
Q101 ~ 801		2SK43 (FET)
Q102 ~ 802		2SC632A
Q103 ~ 803		2SC643A
Q104 ~ 504		2SC631A
Q105 ~ 505		2SC634A
Q106 ~406		2SC634A
Q107 ~407		2SC634A
Q108 ~408		2SC634A
Q109 ~409		2SA705
Q110, 210		2SC634A
Q111, 211		2SC634A
Q901, 902		2SC634A
Q903		2SD291
	Diodes (D101 ~405: D101, 201, 301, 401)	
D101 ~401		1T22
D102 ~ 402		1T22
D103 ~ 403		1T40
D901		MZ12
D902 ~ 906		10D2

CAPACITORS

All capacitors are in μF and of electrolytic unless otherwise noted. (p = μμF)
50 or less working volts are omitted except for electrolytic type.
C101 ~801: C101, 201, 301 . . . . . , C801

C101 ~ 801	1-131-140-11	4.7	10V	tantalum
C102 ~ 802	1-121-738-11	10	50V	
C103 ~ 803	1-107-139-11	220p		silvered mica
C104 ~ 804	1-107-119-11	33p		silvered mica
C105 ~ 805	1-121-912-11	1	50V	
C106 ~ 806	1-121-738-11	10	50V	
C107 ~ 807	1-121-419-11	220	6.3V	
C108 ~ 808	1-121-409-11	47	10V	
C109 ~ 809	1-121-912-11	1	50V	
C110 ~ 810	1-121-471-11	10	16V	
C111 ~ 811	1-121-396-11	4.7	50V	
C112 ~ 512	1-121-395-11	4.7	25V	
C113 ~ 513	1-121-738-11	10	50V	
C114 ~ 514	1-107-139-11	220p		silvered mica
C115 ~ 515	1-107-119-11	33p		silvered mica
C116 ~ 516	1-121-738-11	10	50V	
C117 ~ 517	1-121-409-11	47	10V	
C118 ~ 418	1-121-471-11	10	16V	
C120 ~ 420	1-107-124-11	51p		silvered mica
C121 ~ 421	1-121-352-11	47	10V	
C122 ~ 422	1-121-152-11	22	50V	
C123 ~ 423	1-121-152-11	22	50V	
C124, 224	1-121-471-11	10	16V	
C125, 225	1-121-471-11	10	16V	
C126, 226	1-121-726-11	0.47	50V	
C127, 227	1-121-738-11	10	50V	
C128	1-105-685-12	0.1		mylar
C129, 130	1-105-689-12	0.22		mylar
C131 ~ 431	1-121-391-11	1	50V	
C132 ~ 432	1-121-391-11	1	50V	
C901	1-119-229-11	220	50V	
C902	1-121-738-11	10	50V	
C903	1-105-673-12	0.01		mylar
C904	1-119-378-11	47	100V	
C905	1-121-722-11	1000	100V	

RESISTORS

All resistors are in ohms. Regular type ½W cabon resistors are omitted. Check schematic diagram for resistance values. (k = 1000, M = 1000 k)
R 101 ~801: R101, 201, 301 . . . . . , R801

R121 ~ 821	1-224-098-00	20k (A), variable; GAIN CONTROL
R136 ~ 436	1-224-099-00	10k (A), variable; MASTER
R147 ~ 447	1-222-752-00	10k, adjustable; METER LEVEL
R148 ~ 448	1-222-752-00	10k, adjustable; VARIABLE OUTPUT LEVEL
R155, 255	1-224-100-00	10k (A), variable; HEADPHONE LEVEL
R902	1-222-752-00	10, adjustable; B+

Ref. No.	*Part No.*	*Description*
		SWITCHES
	S101 ~ 801: S101, 201, 301 . . . . . , S801	
S101 ~ 801	1-516-195-00	rotary, INPUT ATT
S102 ~ 802	1-516-194-00	rotary, INPUT SELECT
S103 ~ 803	1-516-192-00	rotary, OUTPUT CHANNEL SELECT
S104	1-516-193-00	rotary, HEADPHONE CHANNEL
S901	1-516-277-00	pushbutton, POWER
		JACKS
	J101 ~ 801: J101, 102, 103 . . . . . , J801	
J101 ~ 801	1-507-480-XX	phone, MIC
J102 ~ 802	1-507-176-XX	phone, LINE
J103 ~ 403	1-507-429-XX	phone, JUNCTION POINT; line amp
J104 ~ 404	1-507-429-XX	phone, JUNCTION POINT; preamp
J105 ~ 405	1-507-176-XX	phone, FIX
J106 ~ 406	1-507-480-XX	phone, VARIABLE
J107	1-507-476-XX	binaural, HEADPHONE
		MISCELLANEOUS
CP901	1-231-057-00	encapsulated component
F901	1-532-447-XX	fuse, 0.315A
ME101~401	1-520-139-11	meter, VU
T102, 202	1-427-299-00	transformer, output
T901	1-442-178-00	transformer, power
	1-533-102-XX	holder, fuse
	1-534-286-31	cord, connection
	1-534-487-XX	cord, power
		ACCESSORIES
	1-534-049-31	cord, connection; RK-74
	1-534-834-00	cord, connection; RK-102
	3-780-534-11	manual, instruction

SECTION 7
HARDWARE

Part No.	*Description*	
	SCREWS	
	All screws are Phillips (cross recess) type unless otherwise noted.	
	B	2.4 x 6.3, wood
7-621-559-45	P	2.6 x 6
7-621-559-55	K	2.6 x 8, wood
7-621-743-21	K	3.1 x 10, wood
7-621-841-41	R	2.4 x 6.3, wood
	R	2.4 x 8, wood
7-621-841-52	R	2.4 x 10, wood
	R	2.6 x 8, wood
7-621-843-27	R	3.1 x 10, wood
7-682-147-01	P	3 x 6
7-682-148-15	P	3 x 8
7-682-149-01	P	3 x 10
7-682-150-05	P	3 x 12
7-682-152-01	P	3 x 16
7-682-160-01	P	4 x 6
7-682-161-01	P	4 x 8
7-682-165-01	P	4 x 16
7-682-166-01	P	4 x 20
7-682-249-01	K	3 x 10
7-682-348-04	RK	3 x 8
7-682-349-04	RK	3 x 10
7-682-362-01	RK	4 x 10
7-682-547-01	B	3 x 6
7-682-548-05	B	3 x 8

Part No.	*Description*
	WASHERS
7-623-108-15	3
7-623-110-21	4
7-623-208-26	3, spring
7-623-210-21	4, spring
	5, spring
7-623-308-04	3, external
	MISCELLANEOUS
7-623-508-11	lug 3
7-684-013-00	nut 3

When ordering replacement parts, use PART NUMBERS listed in Parts List or shown in EXPLODED VIEWS.
Parts List reference numbers should not be used.

Hardware Nomenclature

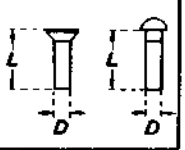
P – Pan Head Screw
K – Flat Countersunk Head Screw
B – Binding Head Screw
RK – Oval Countersunk Head Screw
T – Truss Head Screw
R – Round Head Screw
F – Flat Fillister Head Screw
SC – Set Screw

E – Retaining Ring (E Washer)

W – Washer
SW – Spring Washer
LW – Lock Washer
N – Nut

Example

P 3 x 10
- Length in mm (L)
- Diameter in mm (D)
- Type of Head



Sony Corporation