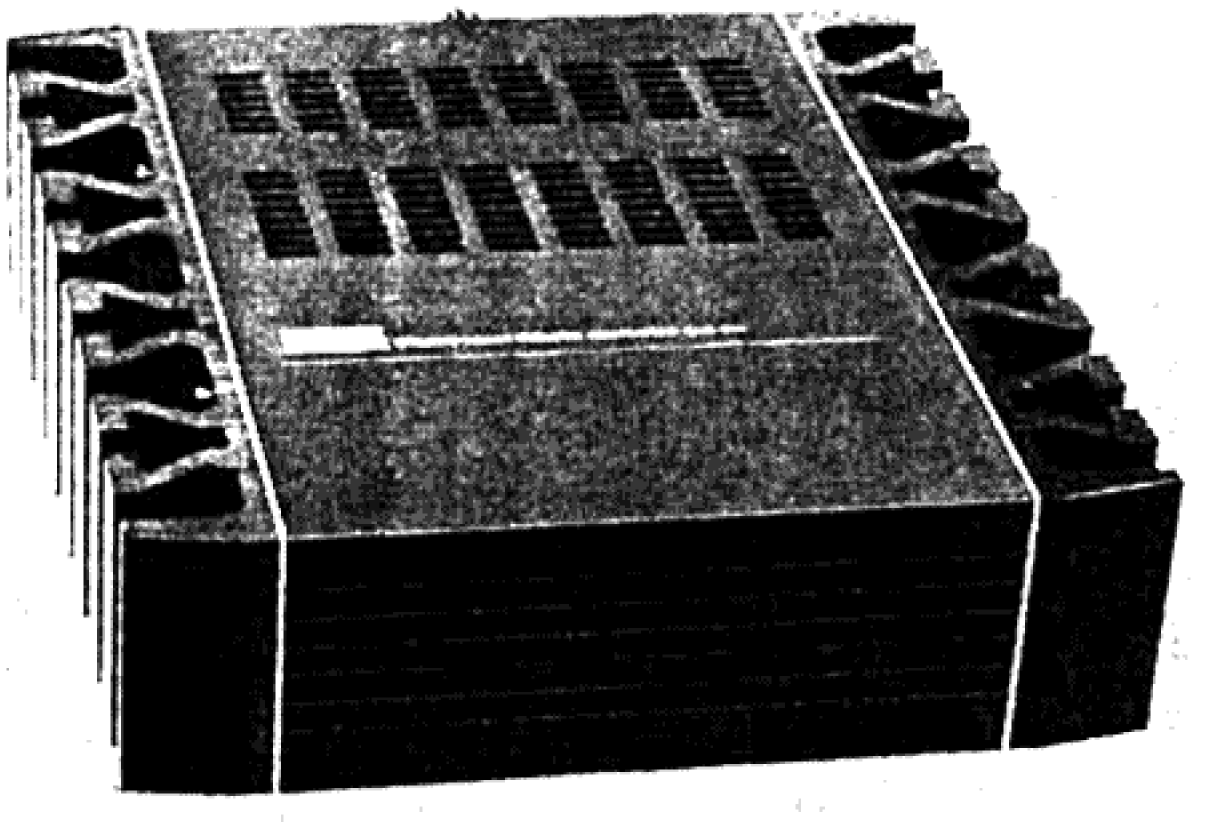
SERVICE MANUAL

4CHANNEL HIGH POWER AMPLIFIER

SANSUI SM-150



Sansui

SANSUI ELECTRIC CO., LTD.

•SPECIFICATIONS

Power output (1% total harmonic distortion)
- Front amp .... 13 watts per channel into 4 ohms (30 to 20,000 Hz)
- Rear amp .... 32 watts per channel into 4 ohms (20 to 20,000 Hz)

Maximum power output (1% total harmonic distortion)
- Front amp .... 15 watts per channel into 4 ohms (1 kHz)
- Rear amp .... 45 watts per channel into 4 ohms (1 kHz)

Load impedance............. 4 ohms

Total harmonic distortion (1 kHz)
- Front amp .... less than 0.05% at 5 watts
- Rear amp .... less than 0.008% at 30 watts

Frequency response
- Front amp .... 30 to 40,000 Hz $^{+0}_{-3}$ dB
- Rear amp .... 20 to 50,000 Hz $^{+0}_{-3}$ dB

Input sensitivity and impedance (1 kHz)
- LINE INPUT.............. 100 mV/10 kohm
- BOOSTER INPUT........ 1V/10 ohm

Signal to noise ratio (A network, IHF-A-200)
- Front amp .... 85 dB
- Rear amp .... 90 dB

Controls (Rear amp)
- BASS DRIVE .... +9 dB at 100 Hz
- HIGH CUT FILTER...... −5 dB at 1 kHz

Power requirements........ DC 12.0V
(Usable: 10.8~15.6V)
Rated: 14.4V
negative ground

Current consumption...... 19A Maximum

Dimensions..................... 200 mm (7-7/8") W
72 mm (2-7/8") H
217 mm (8-9/16") D

Weight.............................. 3.2 kg (7.1 lbs) net

Design and specifications subject to changes without notice for improvements.

CAUTION

1. Some printed circuit boards are not supplied as the assembled. To separate these in this service manual, the stock No's are not indicated at the ends of the board names. However, the individual parts on the circuit boards are provided by orders.

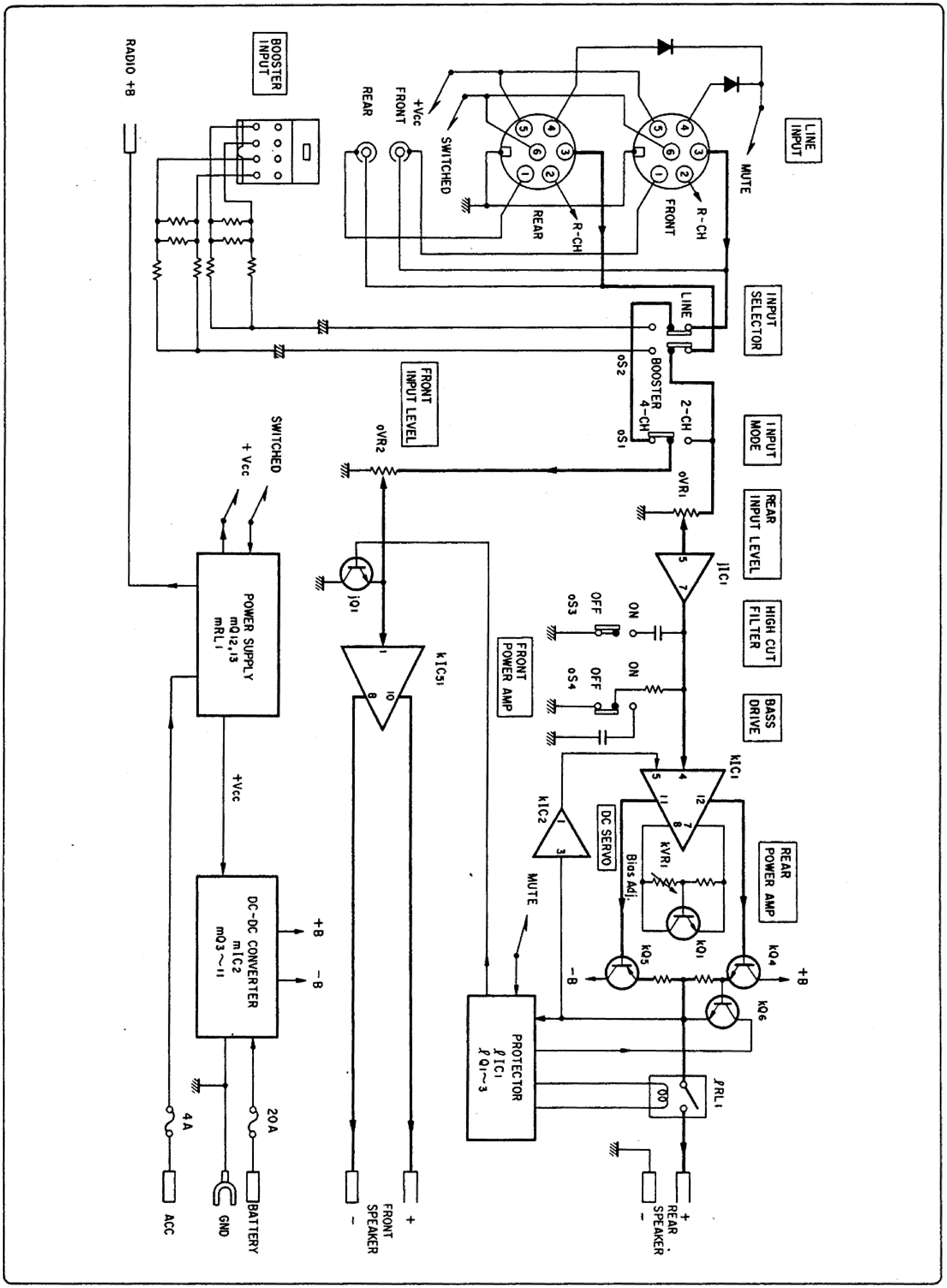
2. Since some of capacitors and resistors are omitted from parts lists in this service manual, refer to the Common Parts List for capacitors & resistors, which was issued on February 1983.

3. Abbreviations in this service manual are as follows.

•Abbreviations List

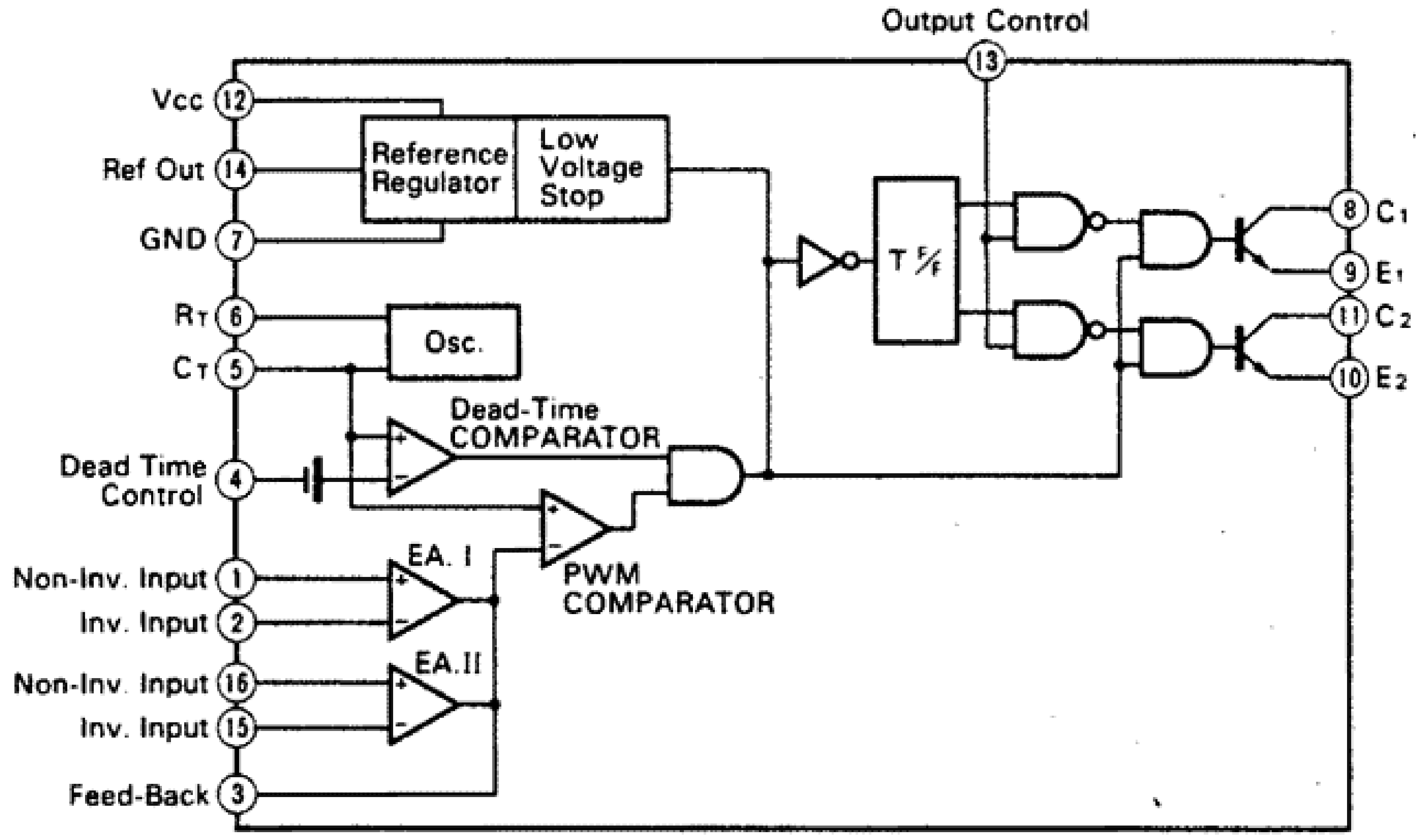
C.R.	: Carbon Resistor	E.B.L.	: Low Leak Bi-Polar Electrolytic Capacitor
S.R.	: Solid Resistor	Ta.C.	: Tantalum Capacitor
Ce.R.	: Cement Resistor	F.C.	: Film Capacitor
M.R.	: Metal Film Resistor	M.P.	: Metalized Paper Capacitor
F.R.	: Fusing Resistor	P.C.	: Polystyrene Capacitor
N.I.R.	: Non-Inflammable Resistor	G.C.	: Gimmic Capacitor
A.R.	: Array Resistor	A.C.	: Array Capacitor
C.C.	: Ceramic Capacitor	V.R.	: Variable Resistor
C.T.	: Ceramic Capacitor, Temperature Compensation	S.V.R.	: Semi Variable Resistor
E.C.	: Electrolytic Capacitor	SW.	: Switch
E.L.	: Low Leak Electrolytic Capacitor	Chip R.	: Chip Resistor
E.B.	: Bi-Polar Electrolytic Capacitor	Chip C.	: Chip Capacitor

1. BLOCK DIAGRAM

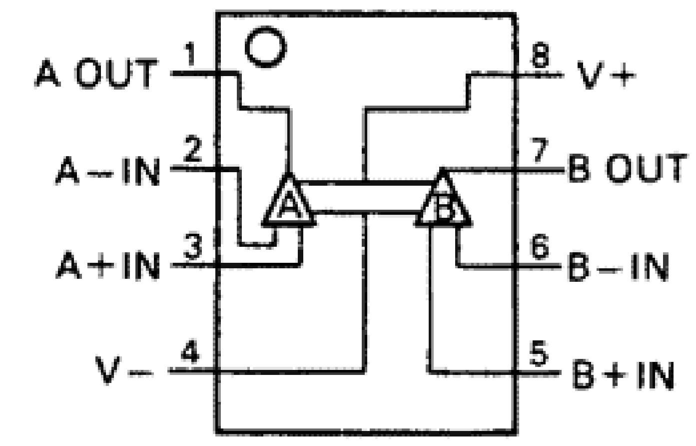


2. INTERIOR BLOCK DIAGRAM OF IC

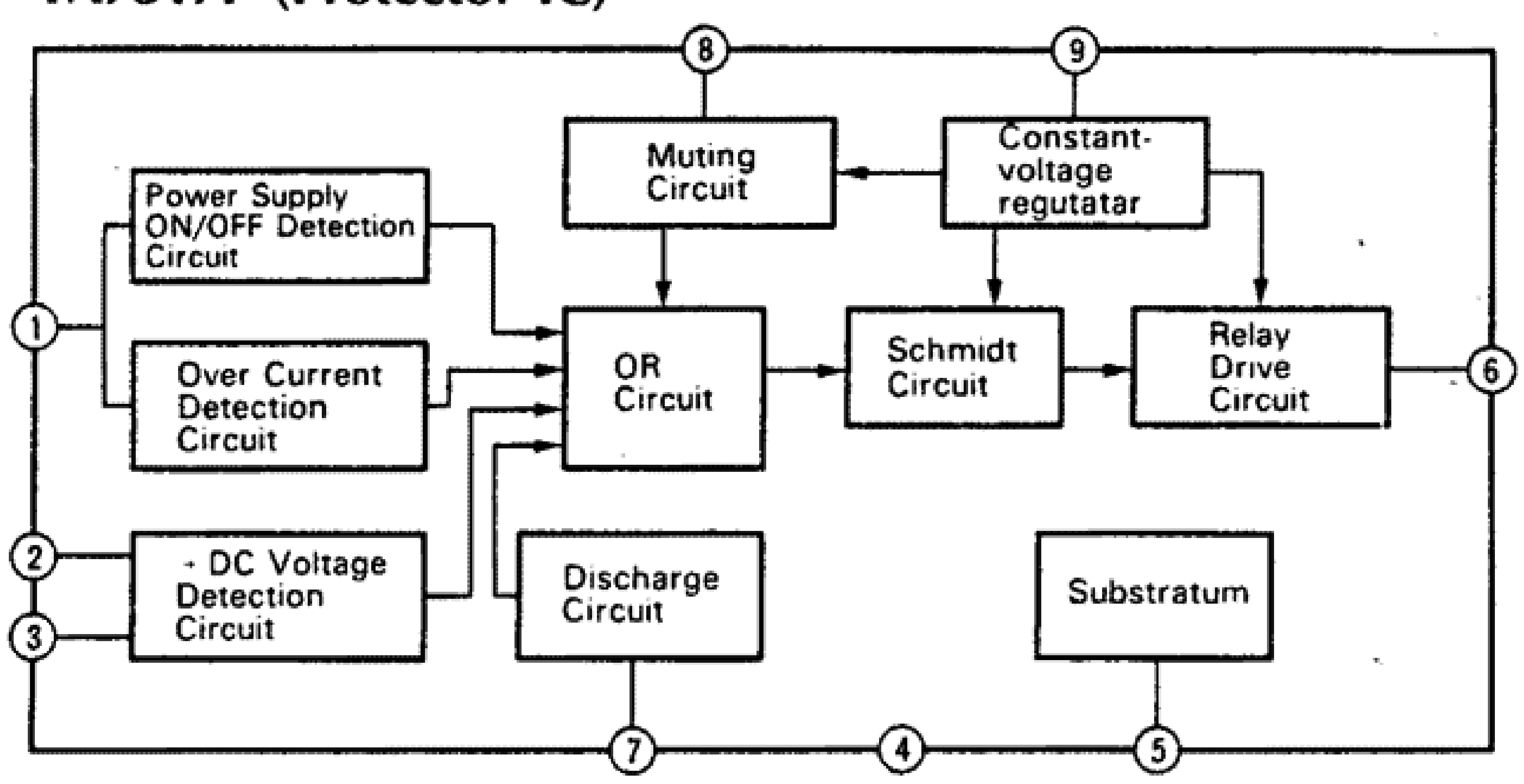
•µPC494C (Switching Regulator Control IC)



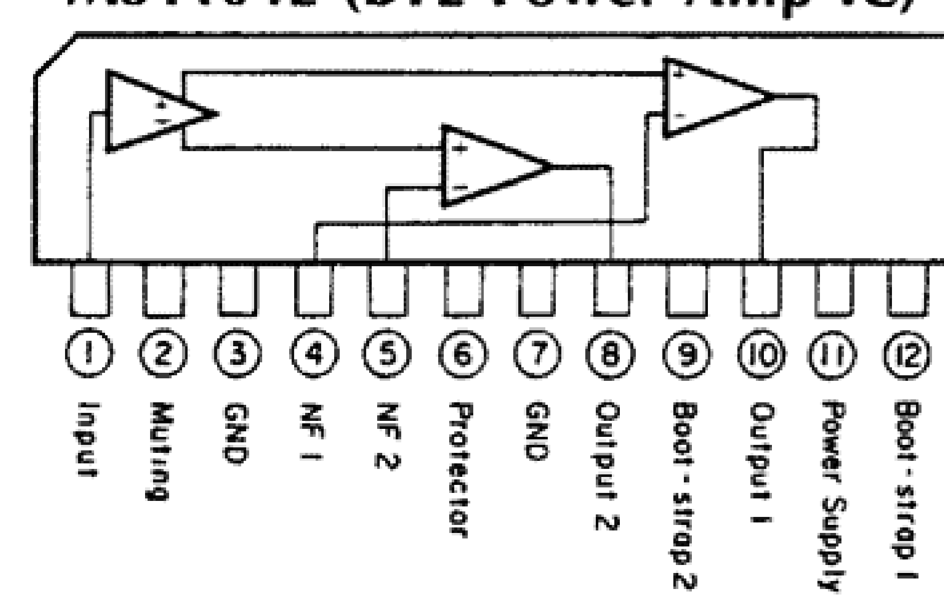
•NJM4558D (OP Amp IC)



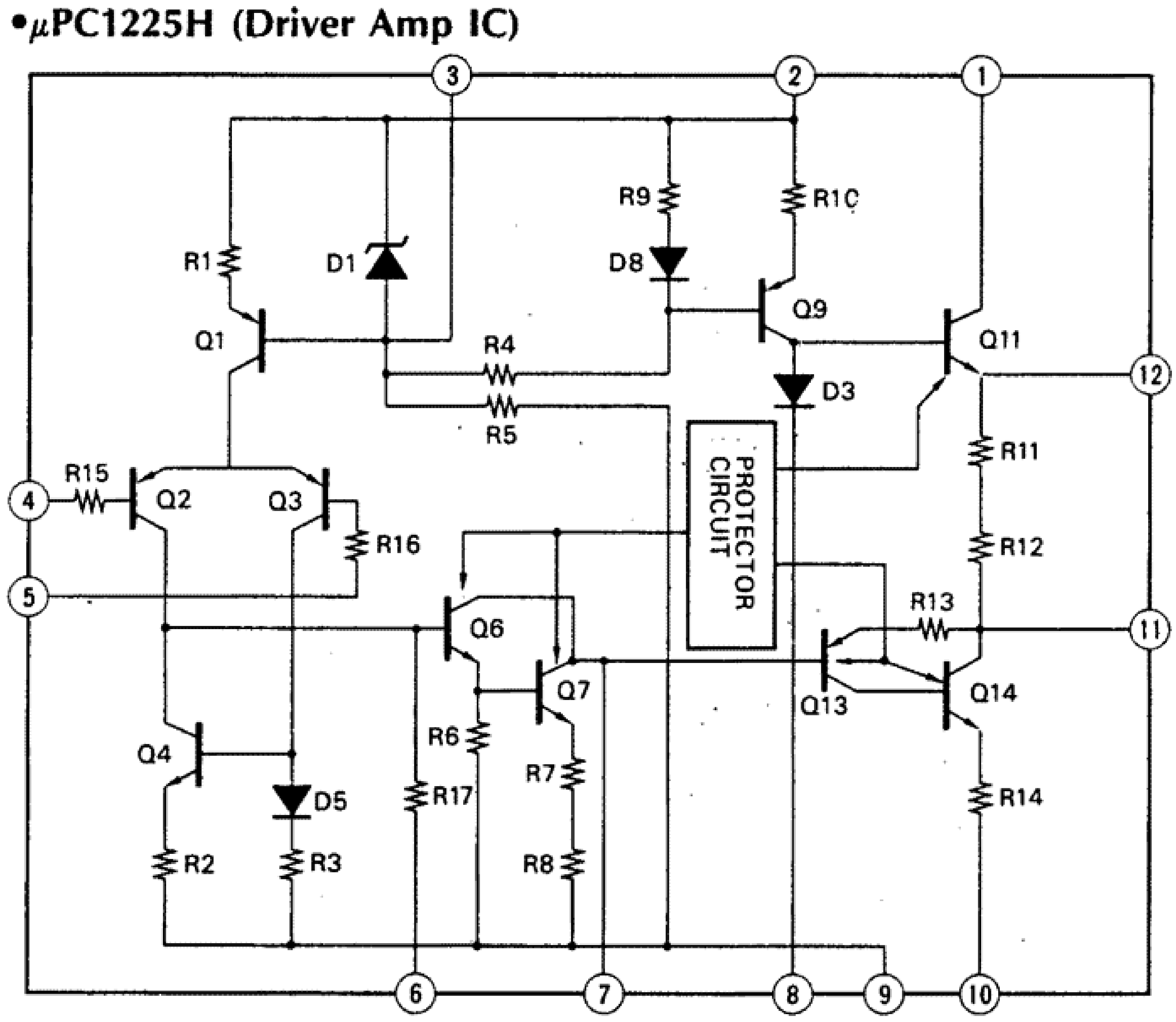
•TA7317P (Protector IC)



•M51104L (BTL Power Amp IC)



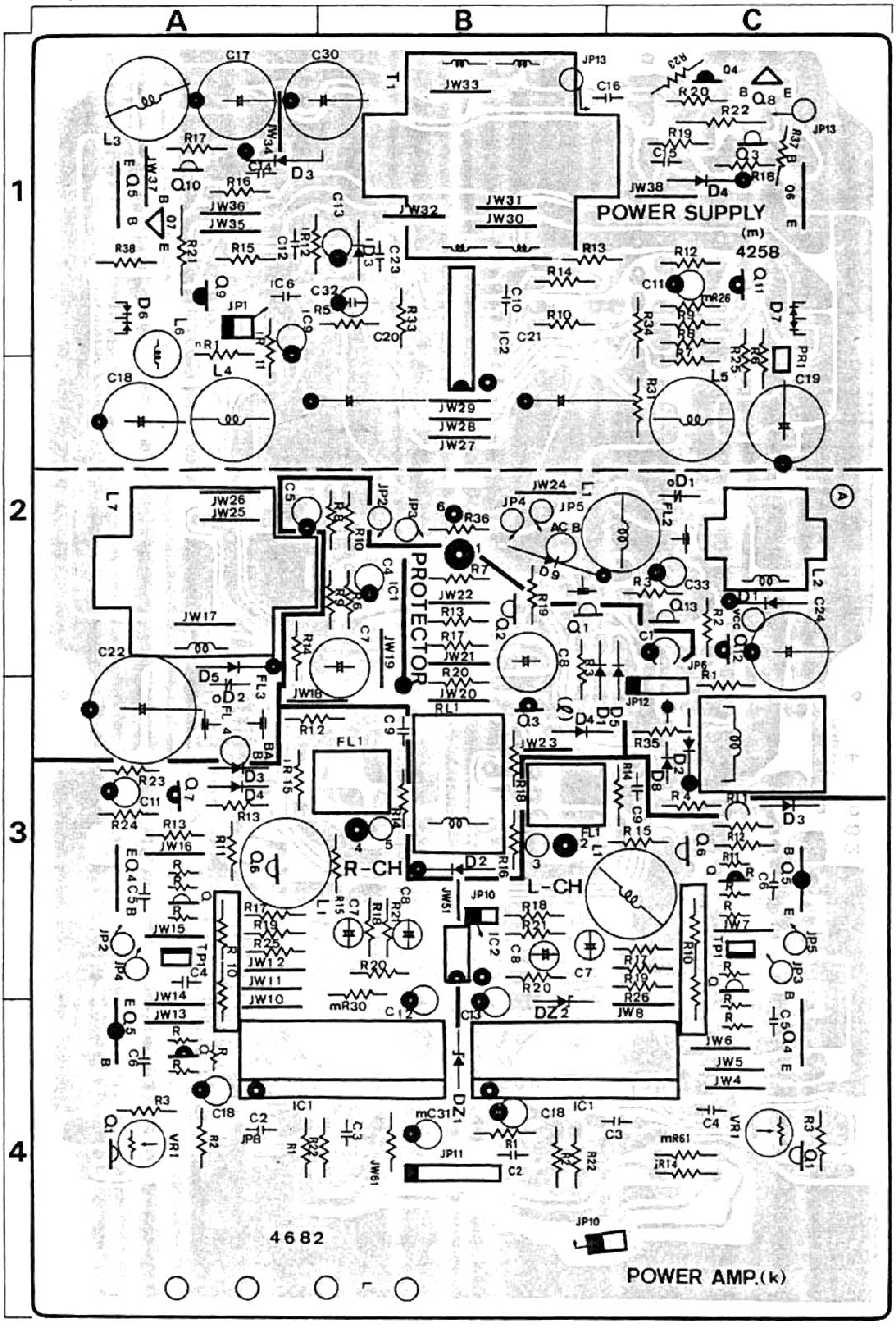
•µPC1225H (Driver Amp IC)



3: PARTS LOCATION & PARTS LIST

3-1. F-4682 REAR Channel Power Amp. & Power Supply Circuit Board (Stock No. 00821001)

Component Side



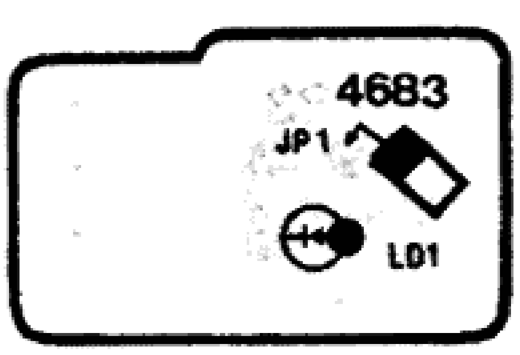
Parts List

Parts No.	Stock No.	Description
•Transistor		
kQ1	03059501	2SC945
	or 07194801	2SC1815
kQ4	03068701	2SC2577
kQ5	03011801	2SA1102
kQ6	46367301	2SC2458
	or 46391901	2SC2785
kQ7	46367201	2SA1048
	or 46392001	2SA1175
•IC		
kIC1	46446000	μPC1225H
kIC2	03607700	NJM4558D
•Diode		
kD3	03117600	1S2473T77
kD4	03117600	1S2473T77
• [illegible]er Diode		
kDZ1	03179000	RD13E-B
kDZ2	03179000	RD13E-B
kR10	00091700	0.33Ω×2 5W Ce.R.
kC7	08451400	4.7μF 25V E.B.
kC8	08451400	4.7μF 25V E.B.
kFL1	46612800	Choke Filter
kL1	46027200	1μH Inductor
kVR1	46634000	3.3kΩ (B) S.V.R., Blas Adj.
•Transistor		
lQ1	46367301	2SC2458
	or 46391901	2SC2785
lQ2	46367301	2SC2458
	or 46391901	2SC2785
lQ3	46367201	2SA1048
	or 46392001	2SA1175
•IC		
[illegible]1	46207600	TA7317P
•Diode		
lD1	03117600	1S2473T77
lD2	03117700	10E-2
lD3	03117600	1S2473T77
lD4	03117600	1S2473T77
lC7	46534900	220μF 6.3V E.B.
lC8	46534900	220μF 6.3V E.B.
lRL1	46533600	Relay, Protector
•Transistor		
mQ3	46614101	2SC3243
mQ4	46614001	2SA1283

Parts No.	Stock No.	Description
mQ5	46535201	2SC2750
	or 46535301	2SC3300LCR
	or 46636201	2SC3300
mQ6	46535201	2SC2750
	or 46535301	2SC3300LCR
	or 46636201	2SC3300
mQ7	03069301	2SC2238
mQ8	03069301	2SC2238
mQ9	46614001	2SA1283
mQ10	46614101	2SC3243
mQ11	46581601	2SA992
mQ12	46614001	2SA1283
mQ13	46367301	2SC2458
	or 46391901	2SC2785
•IC		
mIC2	46534100	μPC494C
•Diode		
mD1	03117700	10E-2
mD2	03117700	10E-2
mD3	07112300	10DF2
mD4	07112300	10DF2
mD5	03117700	10E-2
mD6	46534000	CTU21S
mD7	46533900	CTU21R
mD8	03117700	10E-2
mD9	46096300	30DL2
mOD1	46271300	Varistor ENB220D
mOD2	46271300	Varistor ENB220D
mPR1	46535400	Posistor
mR21	46624300	100Ω 2W N.I.R.
mR22	46624300	100Ω 2W N.I.R.
mC17	46604700	1000μF 16V E.C.
mC18	46637500	220μF 35V E.C.
mC19	46637500	220μF 35V E.C.
mC20	46533800	3300μF 35V E.C.
mC21	46533800	3300μF 35V E.C.
mC30	46604700	1000μF 16V E.C.
mFL1	46271100	Straight Through Capacitor
mFL3	46271100	Straight Through Capacitor
mFL4	46271100	Straight Through Capacitor
mL1	46273800	50μH Filter Coil
mL2	48146000	Choke Coil
mL3	46534200	10μH Inductor
mL4	46534300	15μH Inductor
mL5	46534300	15μH Inductor
mL6	46090000	1mH Inductor
mL7	46636000	Choke Coil
mT1	46533400	Choke Coil
mRL1	46533700	Relay, Power Supply

3-2. F-4683 POWER Indicator Board

Component Side

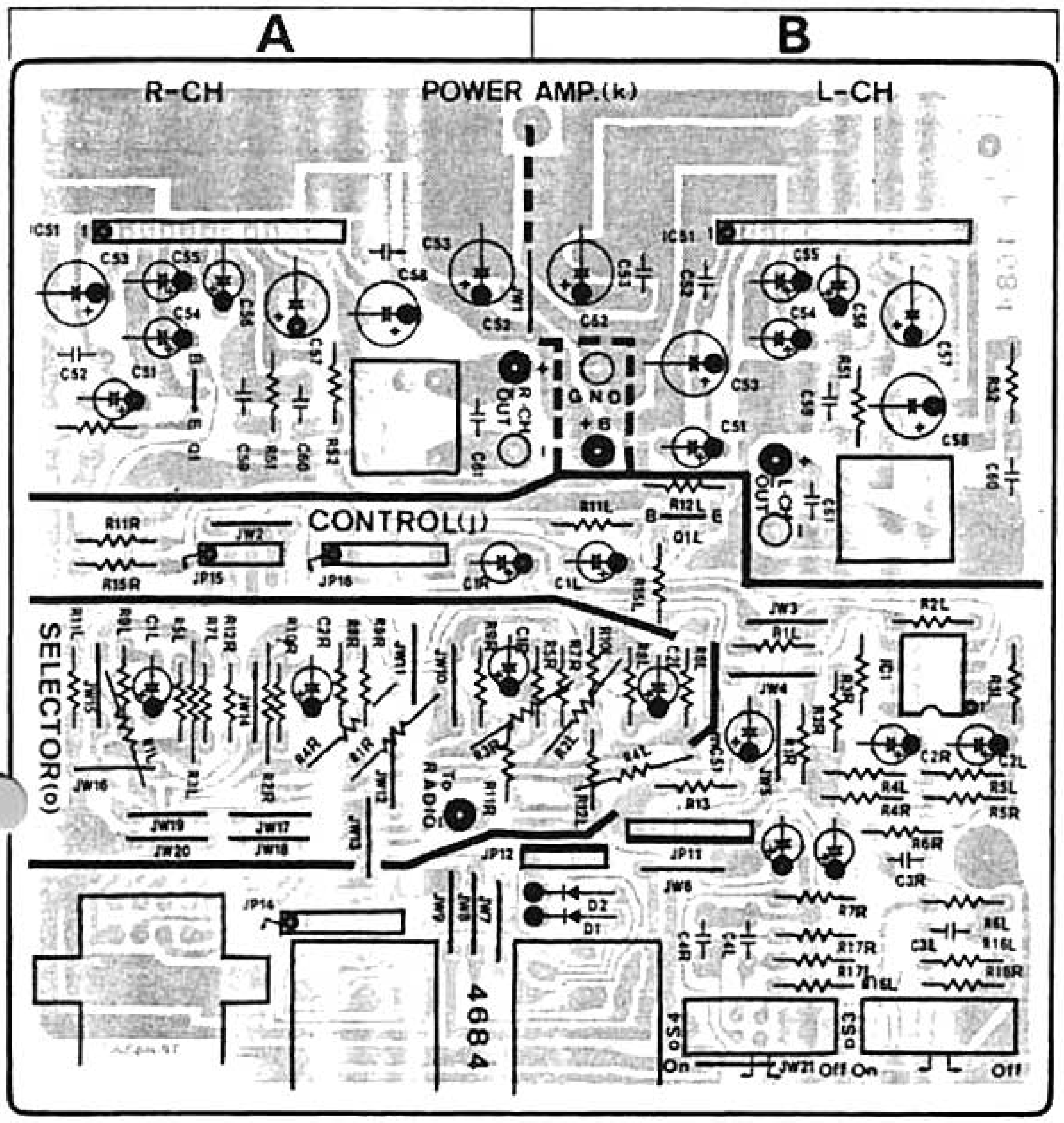


Parts List

Parts No.	Stock No.	Description
nLD1	46176900	LED TLS-123, POWER

3-3. F-4684 Input Terminal & FRONT Channel Power Amp. Circuit Board (Stock No. 00821301)

Component Side

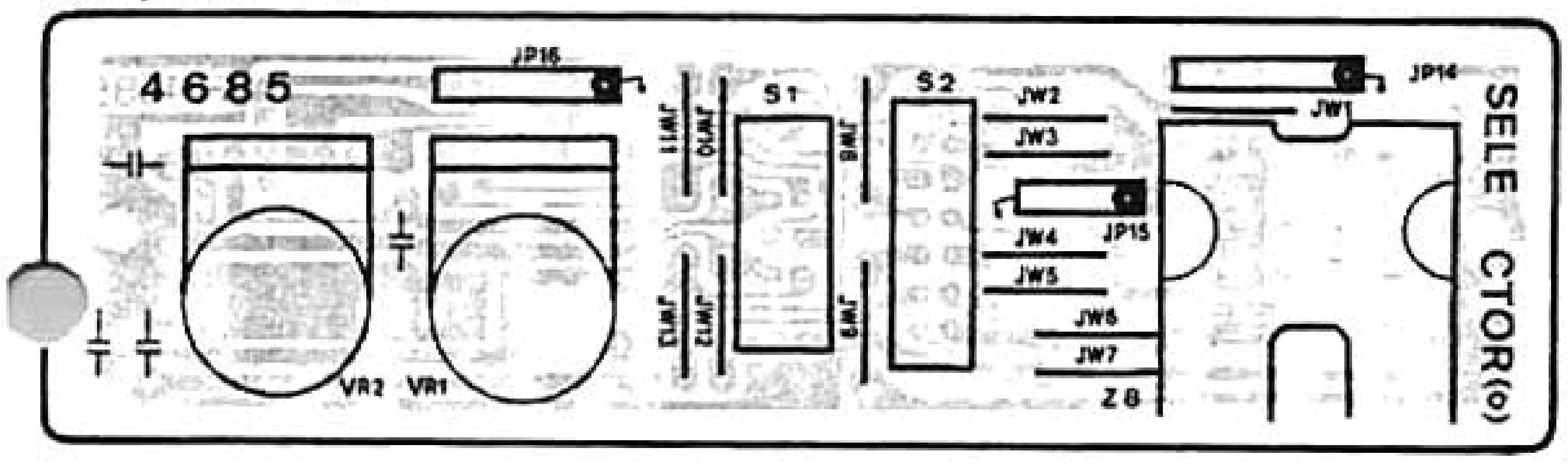


Parts List

Parts No.	Stock No.	Description
•Transistor		
jQ1	46367101	2SC2603
	or 46367301	2SC2458
•IC		
jIC1	03607700	NJM4558D
•Diode		
jD1	03117600	1S2473T77
jD2	03117600	1S2473T77
jC3	46698200	0.18μF 50V F.C.
jC4	46697600	0.1μF 50V F.C.
•IC		
kIC51	46837100	M51104L
kC59	46532000	0.15μF 50V F.C.
kC60	46532000	0.15μF 50V F.C.
kC61	46696800	0.047μF 50V F.C.
kFL51	46399800	Common Filter
kFL52	46399800	Common Filter
oR1	46623500	22Ω 2W N.I.R.
oR2	46623500	22Ω 2W N.I.R.
oR3	46623500	22Ω 2W N.I.R.
oR4	46623500	22Ω 2W N.I.R.
oS3	48117400	Slide SW., HIGH CUT FILTER
oS4	48117400	Slide SW., BASS DRIVE
qZ5	48117000	DIN Jack, LINE INPUT FRONT
qZ6	48117000	DIN Jack, LINE INPUT REAR
qZ7	48117500	Connector, BOOSTER INPUT

3-4. F-4685 Input Terminal & Control Circuit Board

Component Side



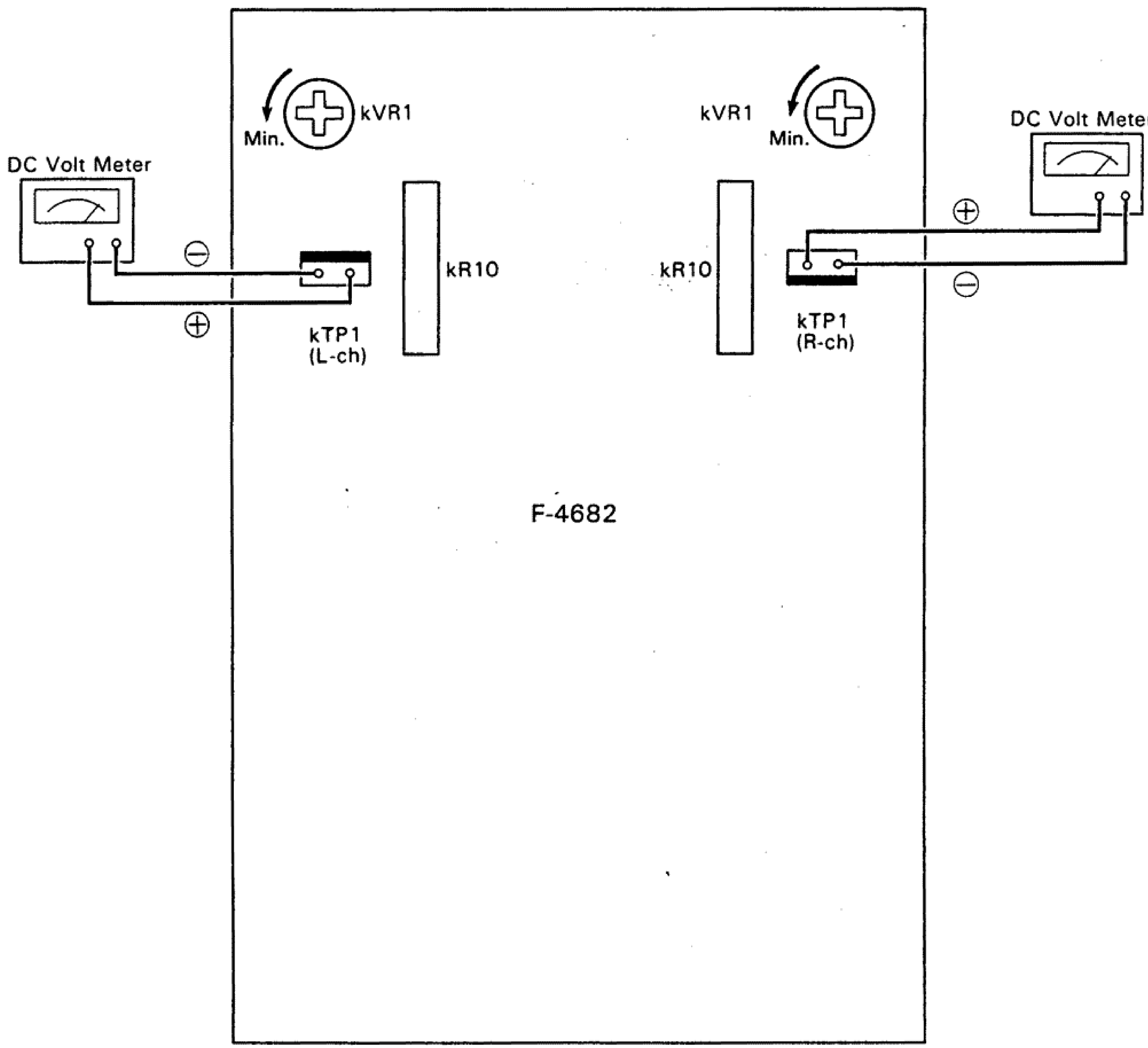
Parts List

Parts No.	Stock No.	Description
oVR1	48117100	10kΩ(B) V.R., INPUT LEVEL FRONT
oVR2	48117100	10kΩ(B) V.R., INPUT LEVEL REAR
oS1	48117200	Slide SW., INPUT SELECTOR 2-CH/4-CH
oS2	48117300	Slide SW., INPUT SELECTOR BOOSTER/LINE
qZ8	48072600	4P Input Terminal, LINE INPUT FRONT/REAR

4. ADJUSTMENT

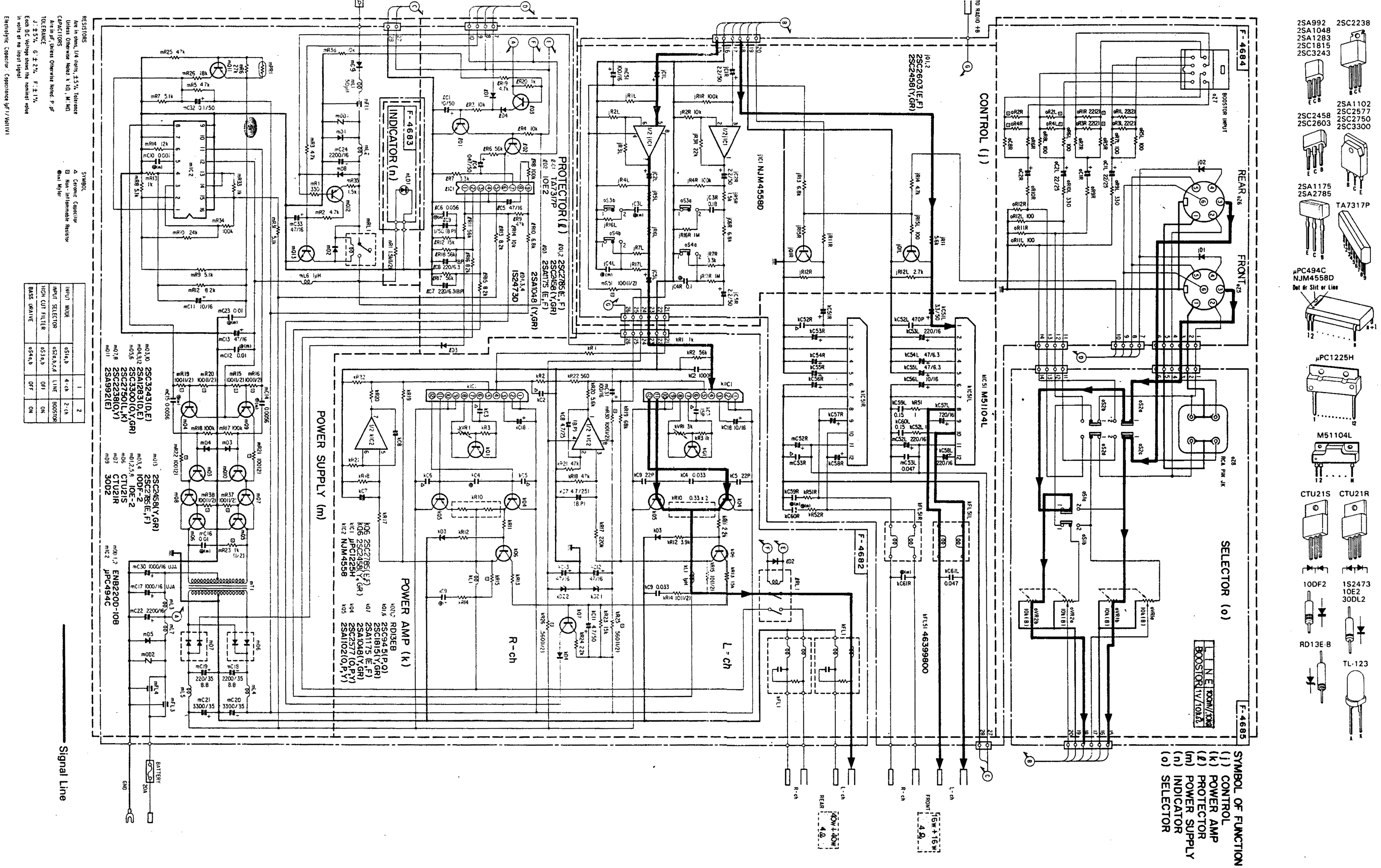
Notes: 1) Room Temperature ..... 18°C ~ 28°C
2) For adjustment, run the unit for more than 3 minutes after the power is switched on.
3) Before turning ON POWER switch, turn kVR1 on F-4682 fully counterclockwise.

STEP	SUBJECT	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	L-CH Bias Current Adj.	kTP1, (L-CH) F-4682	kVR1, (L-CH) F-4682	DC 10mV ± 2mV	This bias current adjustment converts current value into voltage by ohms law.
2.	R-CH Bias Current Adj.	kTP1, (R-CH) F-4682	kVR1, (R-CH) F-4682	DC 10mV ± 2mV	

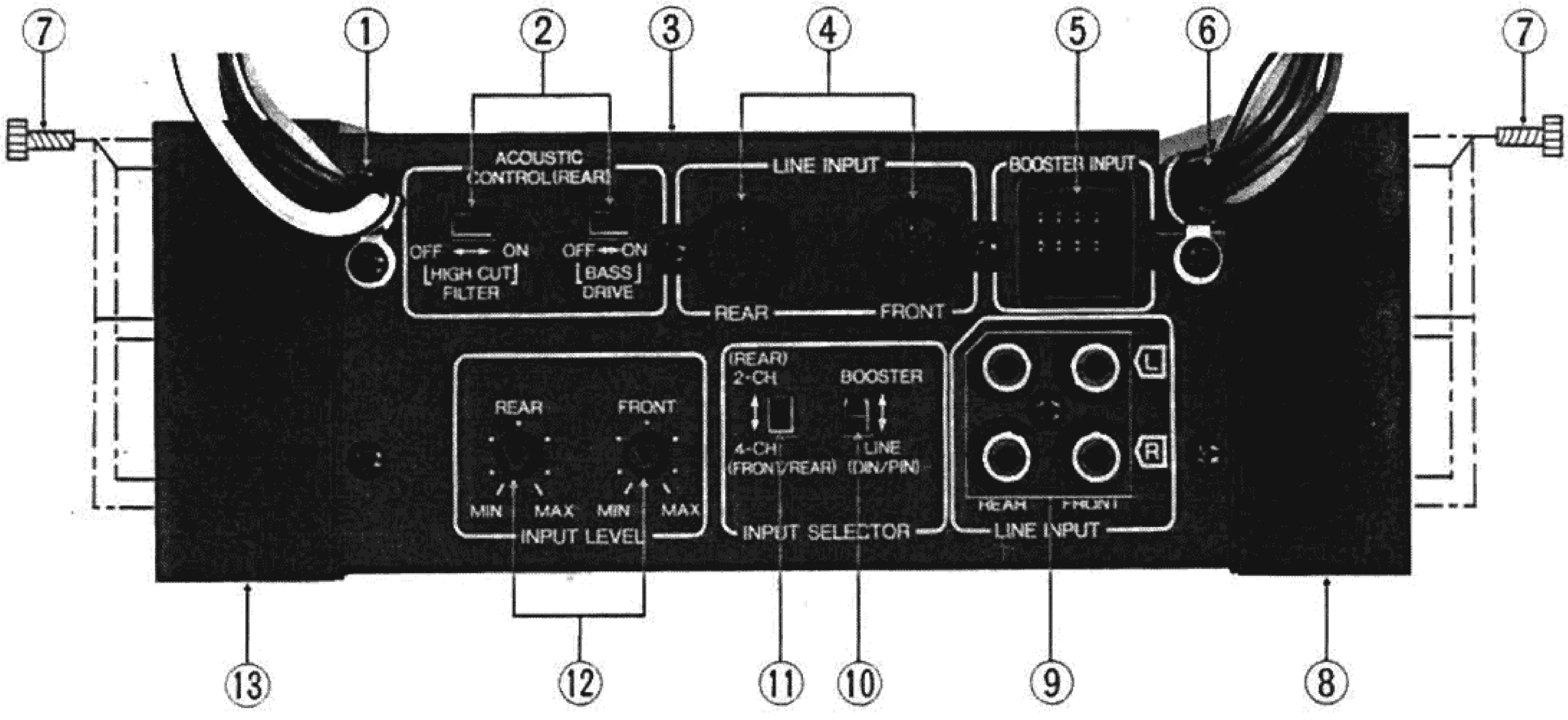


5. SCHEMATIC DIAGRAM

* Design and specifications subject to change without notice for improvement.
* La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
* Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



6. OTHER PARTS

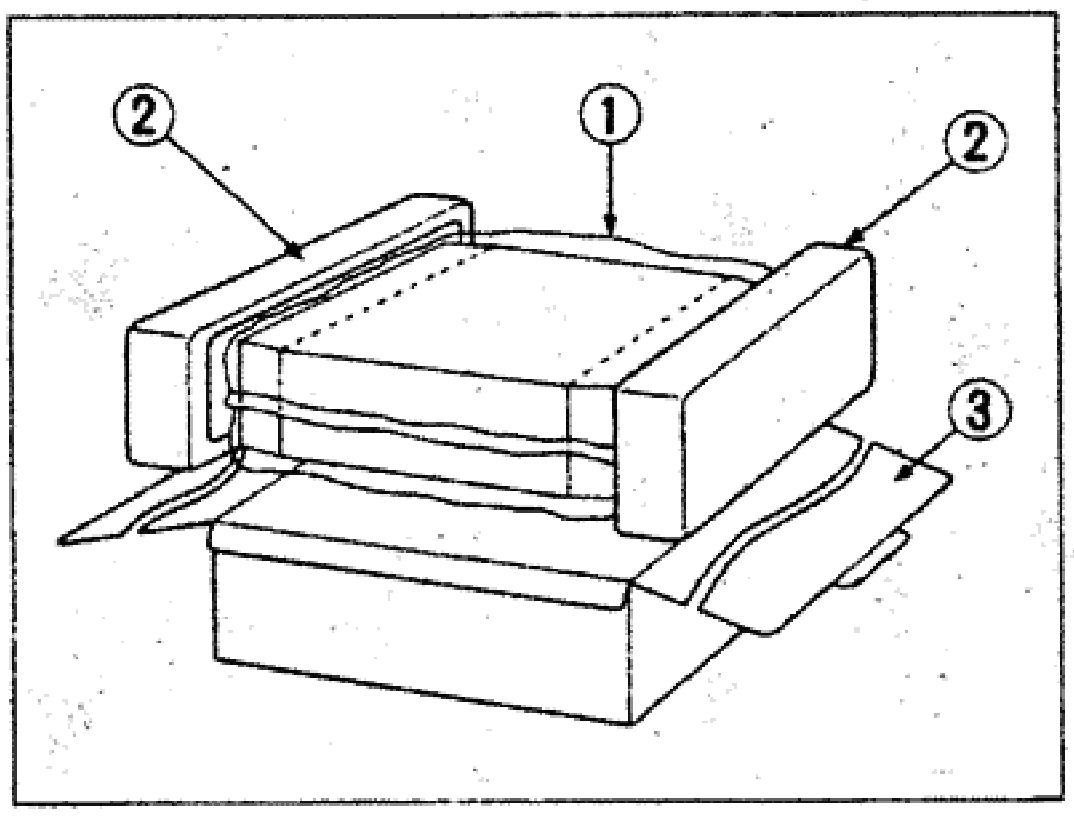


Parts List

Parts No.	Stock No.	Description
1	48117900	Connection Cord, Front Speaker
2	48117400	Slide SW., HIGH CUT FILTER, BASS DRIVE
3	47647600	Bonnet
4	48117000	DIN Jack, LINE INPUT FRONT/REAR
5	48117500	Connector, BOOSTER INPUT
6	48126600	Connection Cord, Rear Speaker, Power Supply
7	46535000	M3×12 Hex Socket Mashine Screw
8	47647100	Heat Sink (L)
9	48072600	4P Input Terminal, LINE INPUT FRONT/REAR
10	48117300	Slide SW., BOOSTER/LINE
11	48117200	Slide SW., 2-CH/4-CH
12	48117100	10kΩ(B) V.R., INPUT LEVEL FRONT/REAR
13	47647000	Heat Sink (R)

7. PACKING LIST

Parts No.	Stock No.	Description
1	47654700	Vinyl Bag
2	47652600	Styrofoam Packing
3	47652400	Carton Case



8. ACCESSORY LIST

Stock No.	Description
48117800	Booster Connection Cord
48126400	Front Left Speaker Cord
48126500	Front Right Speaker Cord
48149800	Ground Cord
46644100	Self Stripping Connector
47228800	Mounting Holder
47230810	Mounting Screw Ass'y
46960300	Operating Instruction

Sansui

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