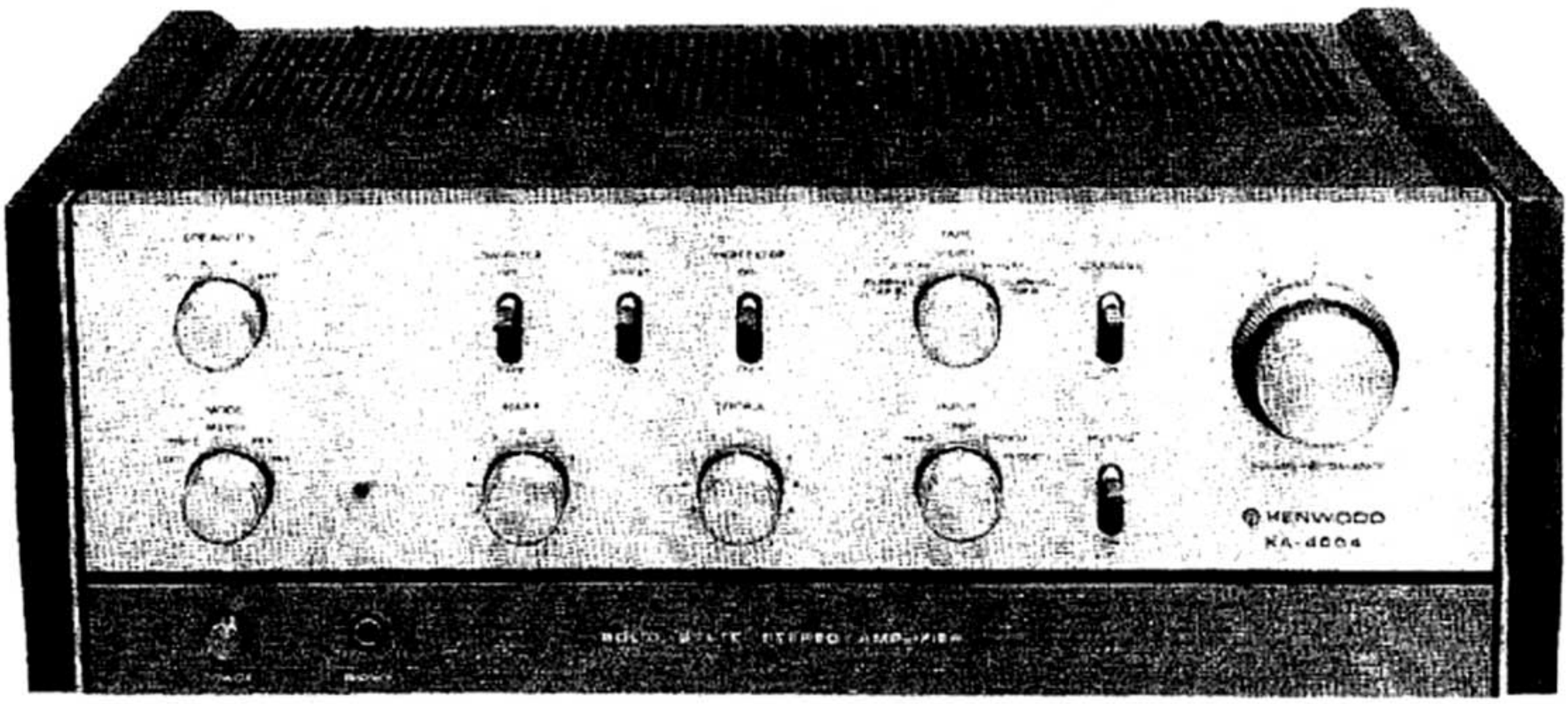
KENWOOD

HI/FI STEREO COMPONENTS

SERVICE MANUAL

KA-4004



STEREO AMPLIFIER

POWER OUTPUT:

36 Watts RMS continuous power stereo, 18 Watts per channel, both channels operating simultaneously into 8 ohm loads at any frequency from 20 Hz to 20,000 Hz.
36/36 Watts:
Each channel operating into 4 ohms at 1,000 Hz.
25/25 Watts:
Each channel operating into 8 ohms at 1,000 Hz.
26 + 26 Watts:
Both channels operating into 4 ohms at 1,000 Hz.
19 + 19 Watts:
Both channels operating into 8 ohms at 1,000 Hz.
95 Watts IHF total Dynamic Power into 4 ohms.
56 Watts IHF total Dynamic Power into 8 ohms.

HARMONIC DISTORTION:

Less than 0.5% at rated output from 20 Hz to 20,000 Hz
Less than 0.05% at −3 dB rated output.

Intermodulation Distortion (60 Hz & 7,000 Hz = 4 : 1):
Less than 0.5% at rated output.
Less than 0.08% at −3 dB rated output.

Power Bandwidth (IHF):
10 Hz to 50,000 Hz.

Input Sensitivity, Input Impedance (for rated output, at 1,000 Hz):

PHONO 1:	2.5 mV	50 k ohms
PHONO 2:	2.5 mV	50 k ohms
TUNER:	160 mV	30 k ohms
AUX 1 & 2:	160 mV	30 k ohms
TAPE PLAY, A & B (Pin):	160 mV	30 k ohms
MAIN AMP. INPUT:	1 V	50 k ohms

Recording Output (below rated input):

TAPE REC, A & B:	160 mV
DIN CONNECTOR:	40 mV

Signal to Noise Ratio (below rated output):

PHONO 1 & 2:	65 dB
TUNER:	75 dB
AUX 1 & 2:	75 dB
TAPE PLAY A & B:	75 dB

NOISER AT MINIMUM VOLUME CONTROL: 0.3 mV at 8 ohms 0.000012 milliwatts.

Damping Factor:	64 at 16 ohms load 32 at 8 ohms load
Speaker Impedance:	Accepts 4 to 16 ohms
Bass Control:	±10 dB at 100 Hz
Treble Control:	±10 dB at 10,000 Hz
Low Filter:	80 Hz Cutoff, 6 dB per octave.
High Filter:	7,000 Hz Cut off, 6 dB per octave.
Loudness Control (−30 dB):	+8 dB at 100 Hz +3 dB at 10,000 Hz

GENERAL:

Switches:

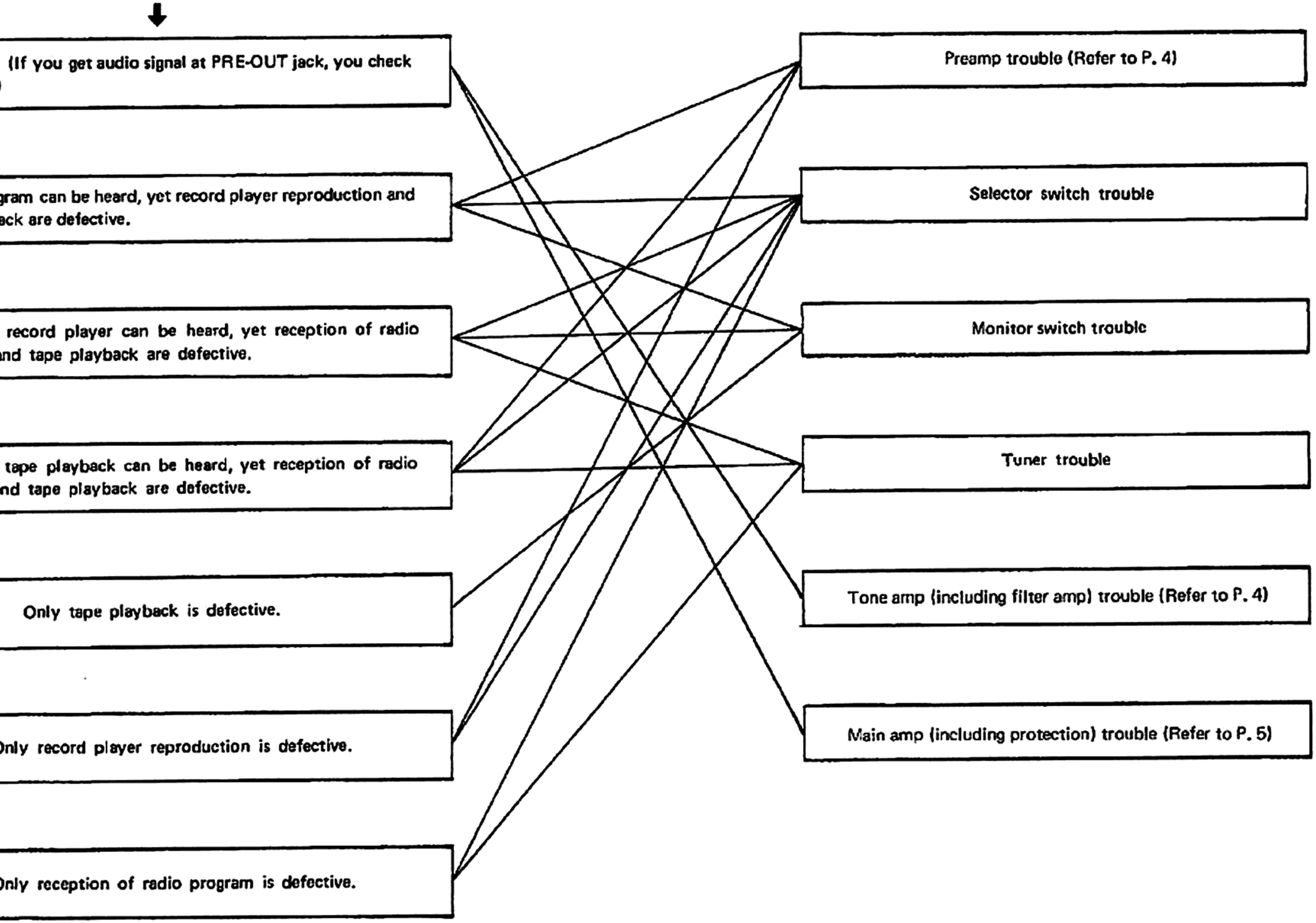
SPEAKERS:	OFF, A, B, A + B
SELECTOR:	AUX 1, AUX 2, TUNER, PHONO1 PHONO 2
MODE:	LEFT, RIGHT, STEREO, REV, MIX.
TAPE MONITOR:	DUBBING (A→B), A PLAY. SOURCE, B PLAY, DUBBING (B→A).
OTHERS:	LOW & HIGH FILTER. LOUDNESS, MUTING, TONE DEFEAT, POWER

AC Outlets:	3 switched & 1 unswitched.
Power Consumption:	105 Watts at full power 15 Watts at no signal
Dimensions:	17-1/8" W, 6-1/32" H, 11-13/16" D. (435 W, 153 H, 300 D mm.)
Weight:	20.5 lbs.

TROUBLESHOOTING

Can you hear radio program ?
Can you hear sounds of record player ?
Can you hear sounds of tape playback ?

You can find out following complaints.



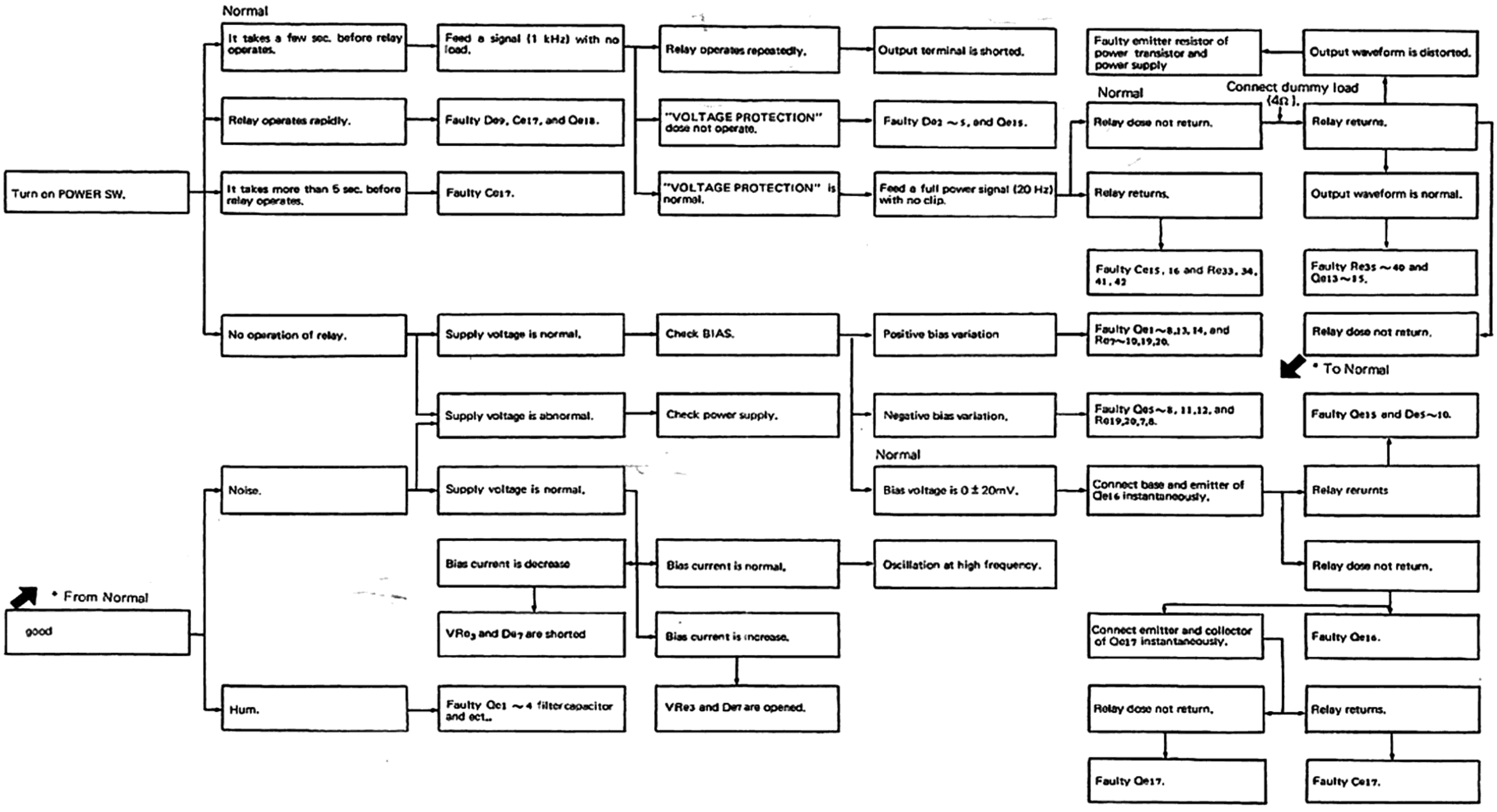
■ Preamp Unit (X08-1080-12)

Complaint	Possible cause	Repairs
No sound	Faulty transistors $Qd_{1 \sim 4}$.	Check and replace
Noise	Faulty transistors $Qd_{1,2}$, resistors $Rd_{5,6,25,26}$, and capacitors $Cd_{1,2,21,22}$.	Check and replace.
Dynamic range	Faulty transistors $Qd_{1,2}$ and capacitors $Cd_{1,2}$.	Check and replace
Hum	Faulty capacitor $Cd_{23,24}$.	Check and replace
Poor output at low frequency at phono position.	Faulty capacitor $Cd_{15,16,19,20}$.	Check and replace

■ Tone amp Unit (X11-1070-10)

Complaint	Possible cause	Repairs
No sound	Faulty transistors $Qi_{1 \sim 4}$.	Check and replace
	Faulty lever switch (TONE DEFEAT)	Check and replace
Noise	Faulty capacitors $Ci_{3,4,13,14}$.	Check and replace
(Position at AUX)	Faulty transistors $Qi_{1 \sim 4}$ and resistors $Ri_{1,2,23,24}$.	Check and replace

■ Main amp (X07-1030-01)



AUDIO ADJUSTMENT

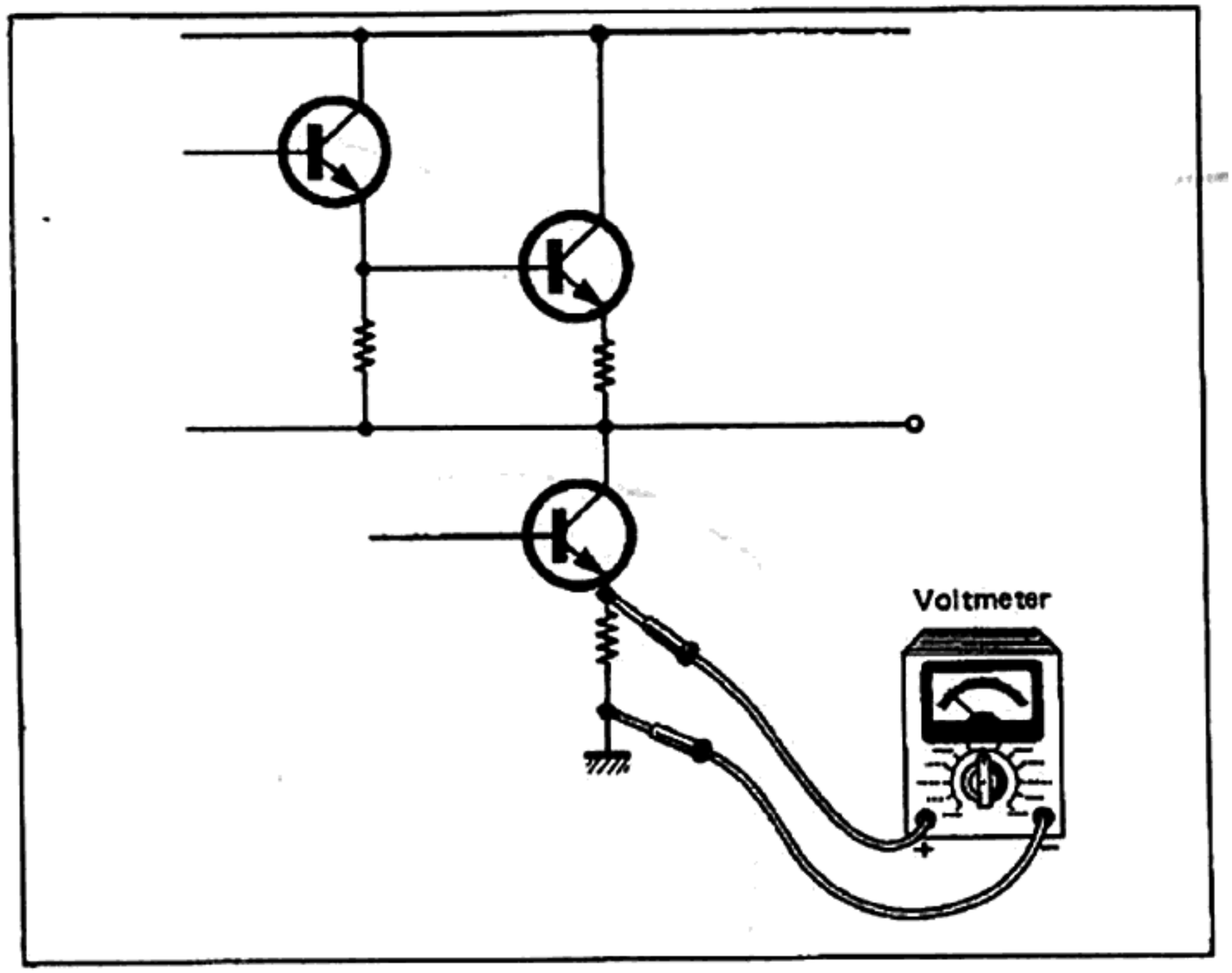
[BIAS ADJUSTMENT]

When using the voltmeter

1. Connect the voltmeter to the emitter resistor of power transistors.
2. Check the voltmeter to point around 15 mV.
3. If not, turn the PC trimmer potentiometer (VRe1, 2) so that the meter has rating value.

When using the audio generator and oscilloscope

1. Connect the dummy load (8Ω) to loud speaker terminal and connect the oscilloscope across the dummy.
2. Feed the signal (1 kHz) to the set.
3. Check the waveform to be the best.
4. If not, turn the PC trimmer potentiometer (VRe1, 2) so that the waveform is distortionless.
5. Check the voltmeter to point around 15 mV.

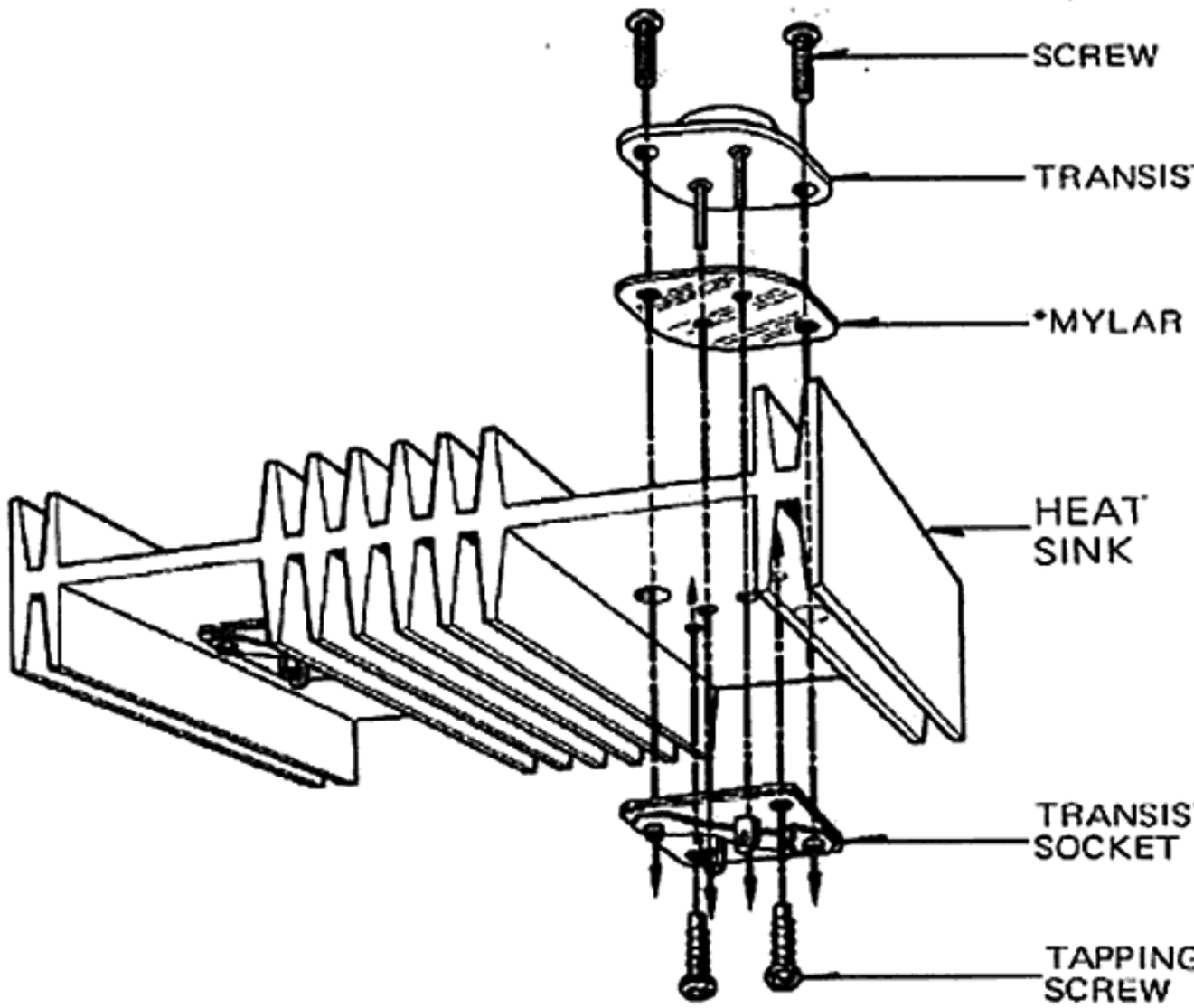


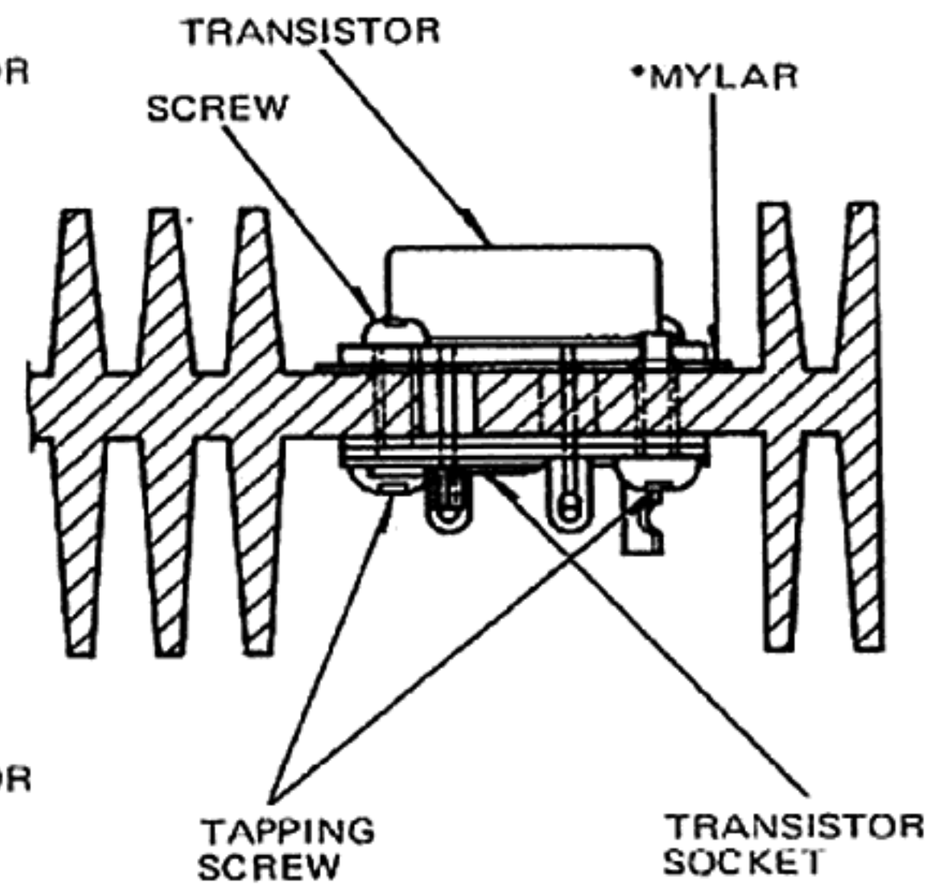
HOW TO REPLACE POWER TRANSISTOR

REPLACING POWER TRANSISTORS

1. Remove screws (not tapping screw).
2. Replace the power transistor with new.
   At this time, don't forget to spread silicone grease on faces of mylar.
3. Fix the power transistor with screw on the heat sink.
4. Check the transistor is not in contact with chassis.

Note: 1. Tapping screw holds the transistor socket. Don't remove it without necessity.
2. Before fixing the transistor, in the case of replacing transistor socket, fix the fransistor socket.

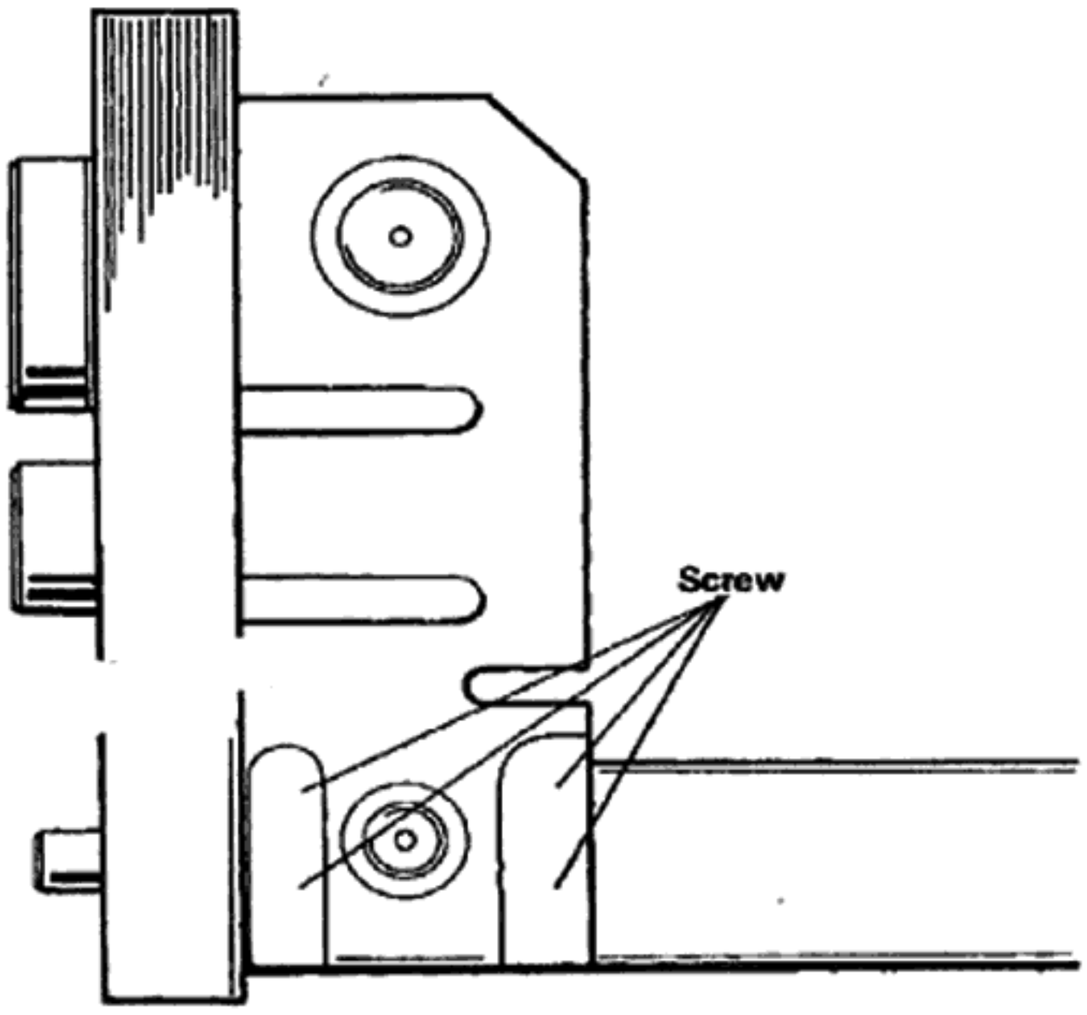




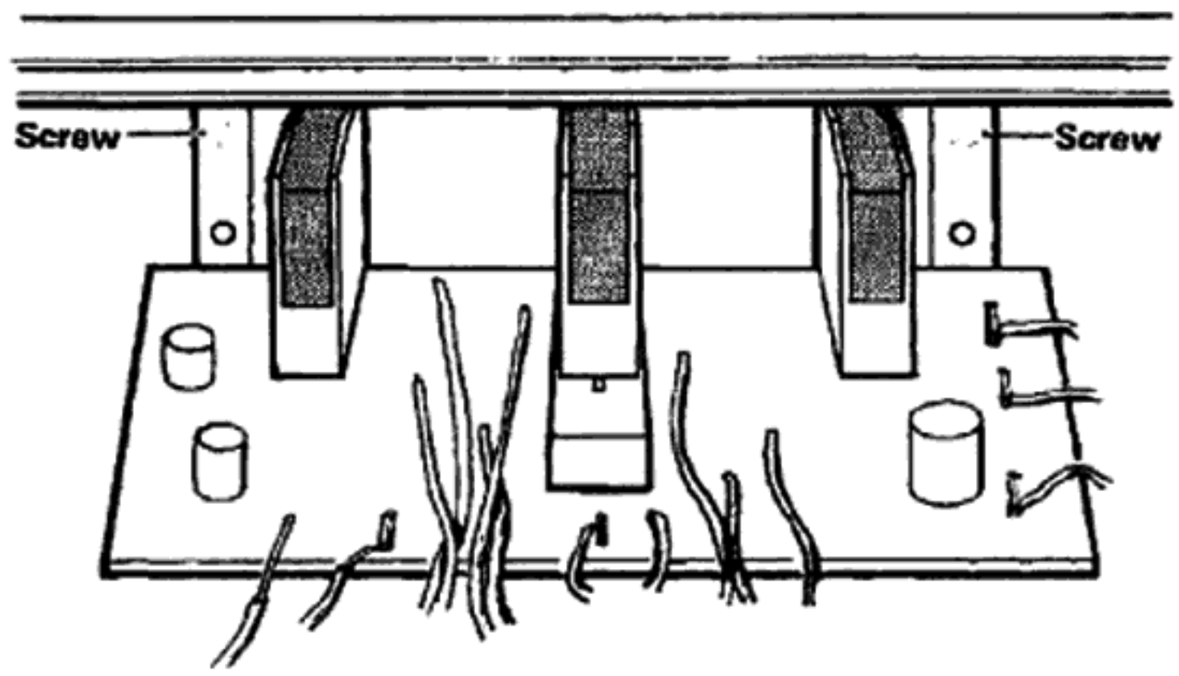
*Don't forget to spread silicone grease on the faces of mylar.

Caution: KA-4004 has different heat sink drawn in illustration.

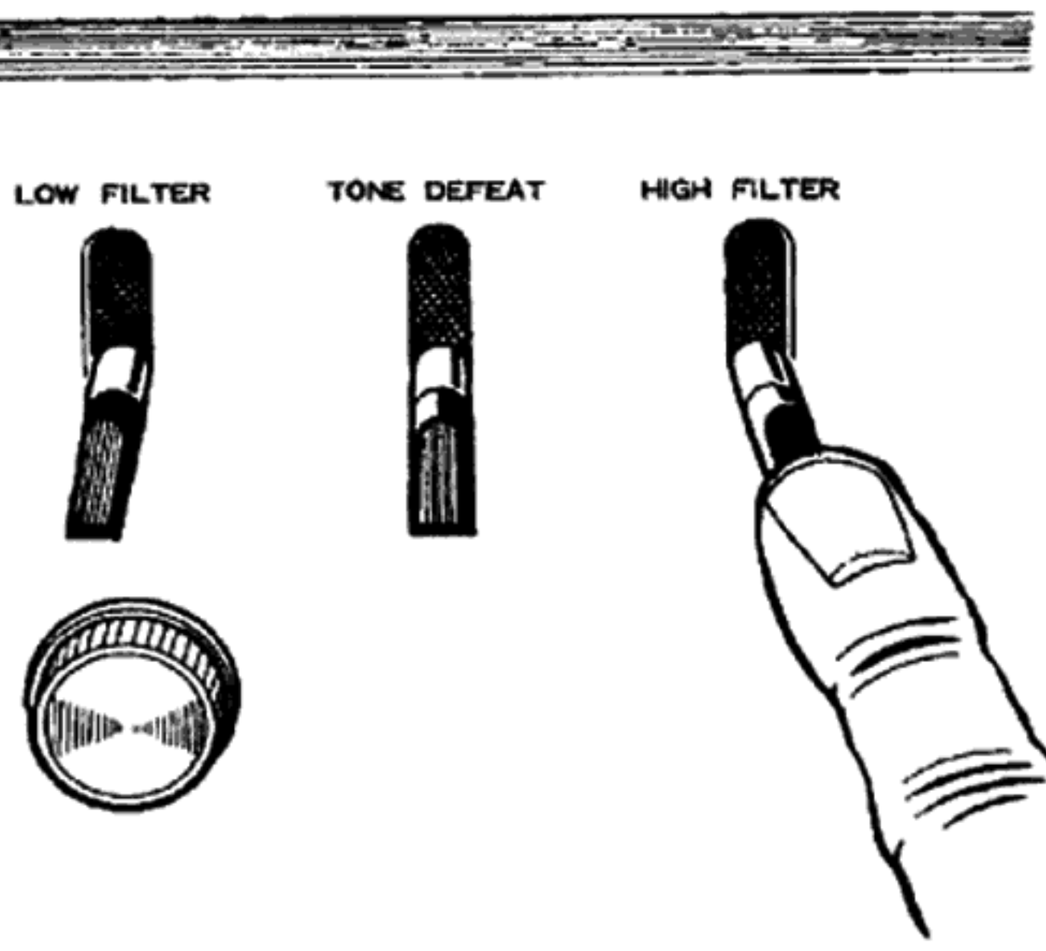
HOW TO REPLACE PUSHBUTTON PC BOARD



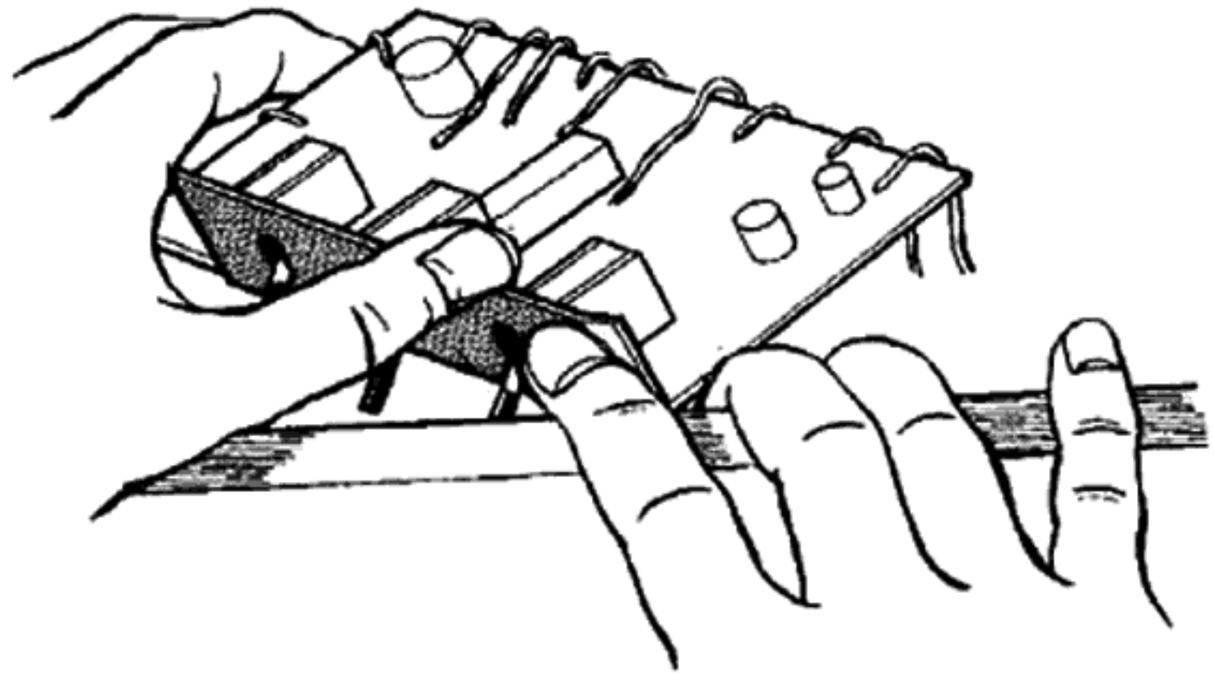
① Remove the cabinet and screws fixing front panel and chassis.



② Remove screws fixing PC board.



③ Push down lever switches.

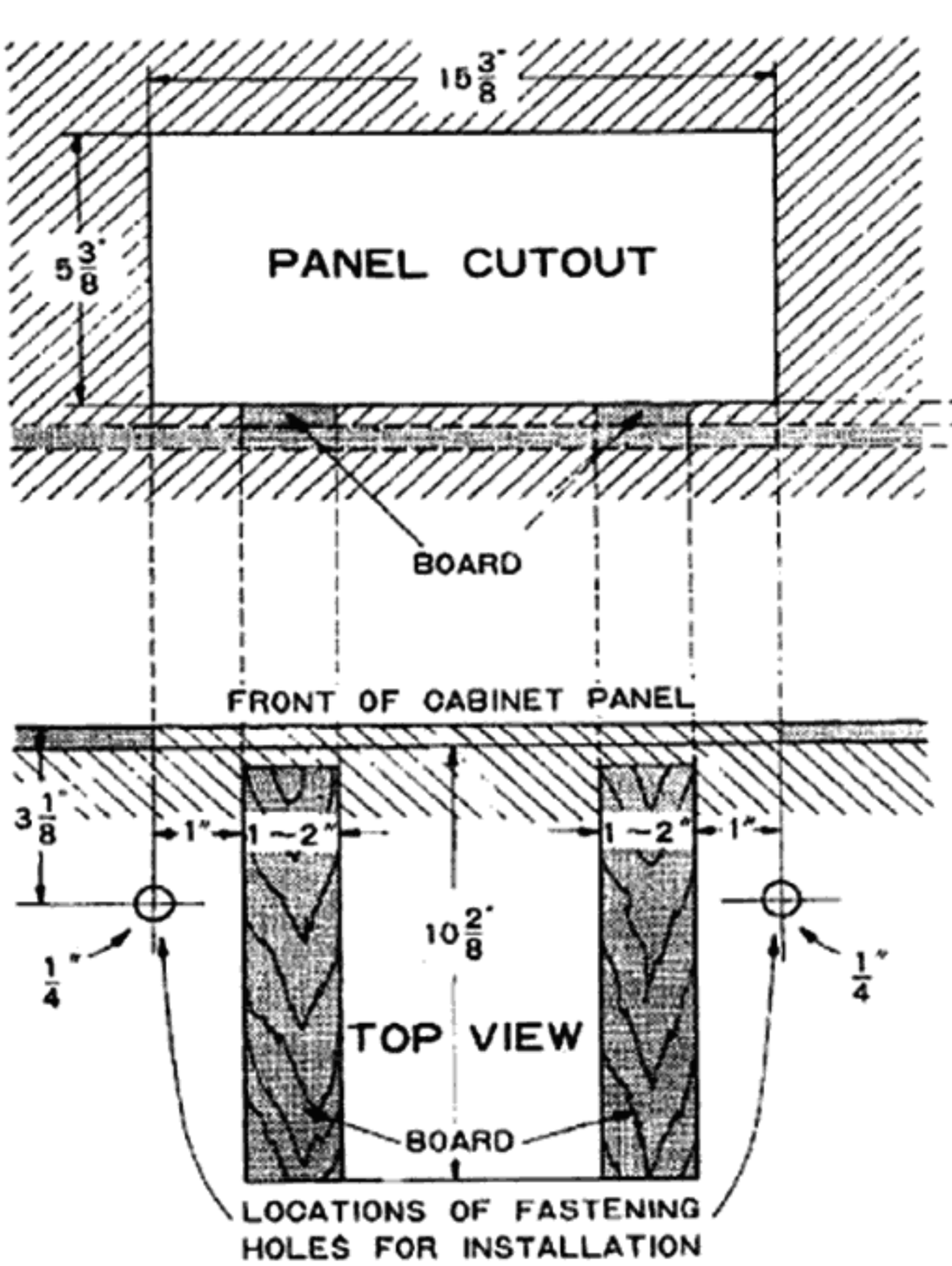


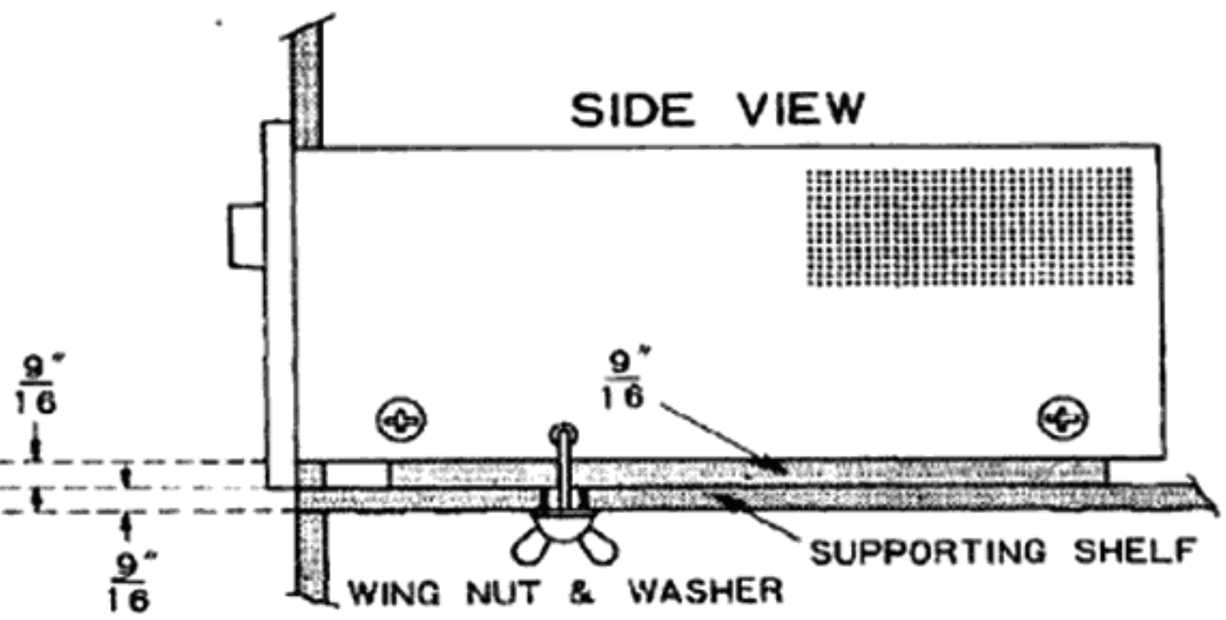
④ While pulling the front panel remove the PC board.

MOUNTING TEMPLATE

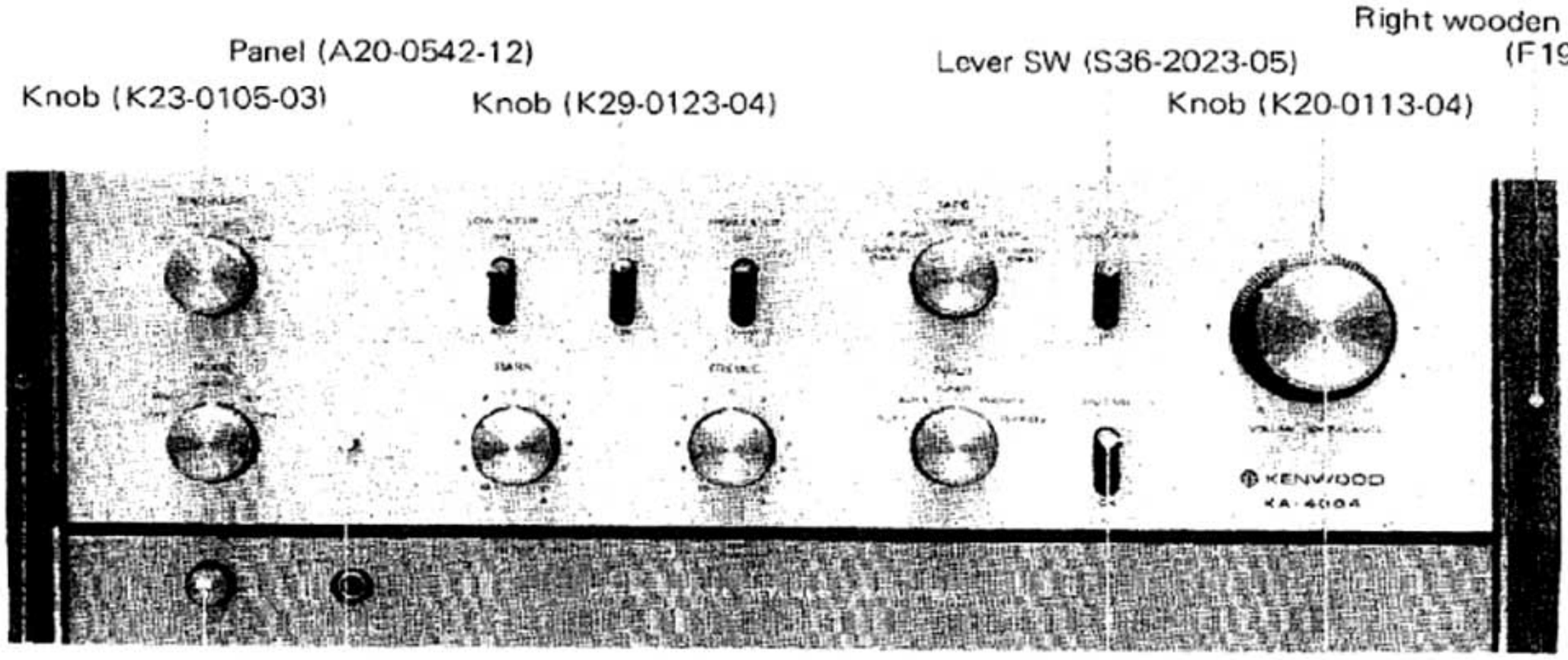
DIRECTIONS FOR PANEL MOUNTING

1. First remove the wooden side boards which are attached to both sides of the amplifier's metal enclosure. This can be done by removing three screws from each side board. Put these long screws way until such time as you may wish to reattach the side boards later. They are not required for panel mounting.
2. The 4 short screws which are supplied with this unit are now used to join the amp chassis and its metal enclosure. Screw them into the two lower holes on each side of the metal enclosure. Never use the long screws that were removed with the side boards as this may damage the amplifier.
3. Locate the supporting shelf at the height you wish the amplifier positioned.
4. Remove the four bottom legs.
5. An air space must be made between the bottom of the set and the supporting shelf to assure good ventilation and cool operation. This space can be made by placing two boards which measure 9/16" thick by 1" to 2" width between chassis and the supporting shelf.
6. Cut out the cabinet panel in the dimensions of 5-3/8" x 15-3/8" as shown in above Panel Cutout. The bottom of the cutout should be flush with the bottom plate of the amplifier, as shown in the side view. The distance between the bottom of the cutout and the top of the supporting shelf is 9/16".
7. The amplifier is held in place by two bolts. The holes must be made in the shelf to correspond with the holes in the amplifier. Use the "Top View" template to locate these holes on the supporting shelf. The holes should be made 1/4" in diameter or somewhat larger.





EXTERNAL VIEW



Left wooden side board (F19-0087-03)

Indicator (B08-2010-04)

*Pushbutton SW

Lever SW (S36-2023-05)

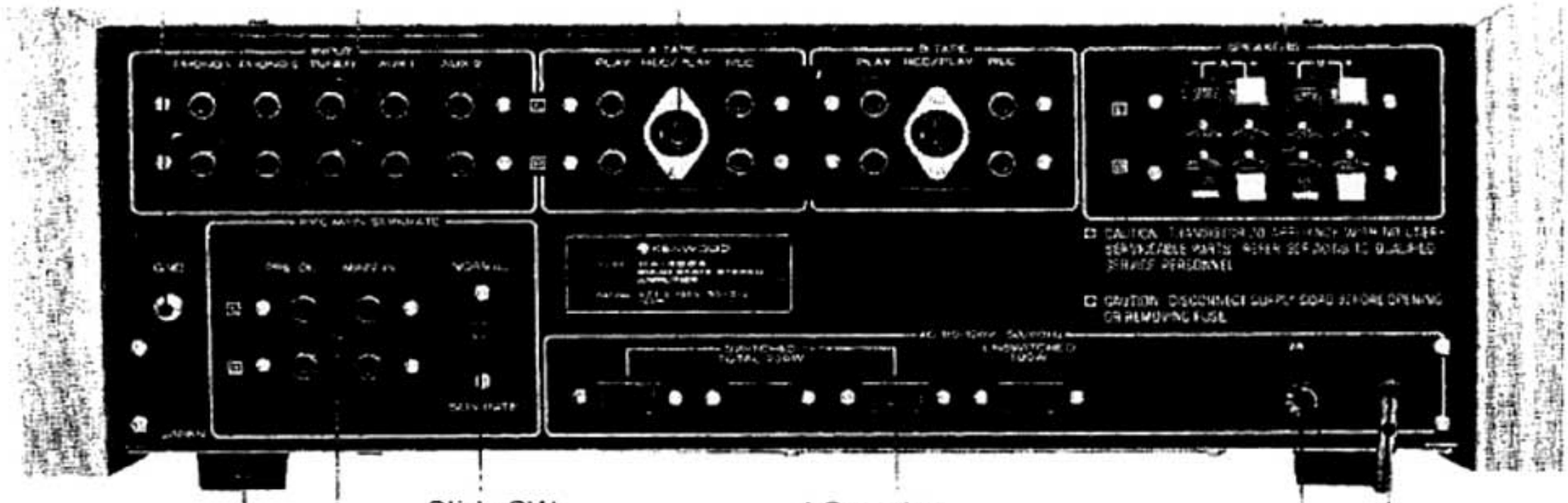
Knob (K21-0254-03)

GND terminal (N08-0002-04)

Pin jack (E13-1002-05)

Pin jack (E13-0401-05)

Push terminal (E21-0802-05)



Slide SW (S31-2007-05)

AC outlet (E08-0205-15)

*Power cord

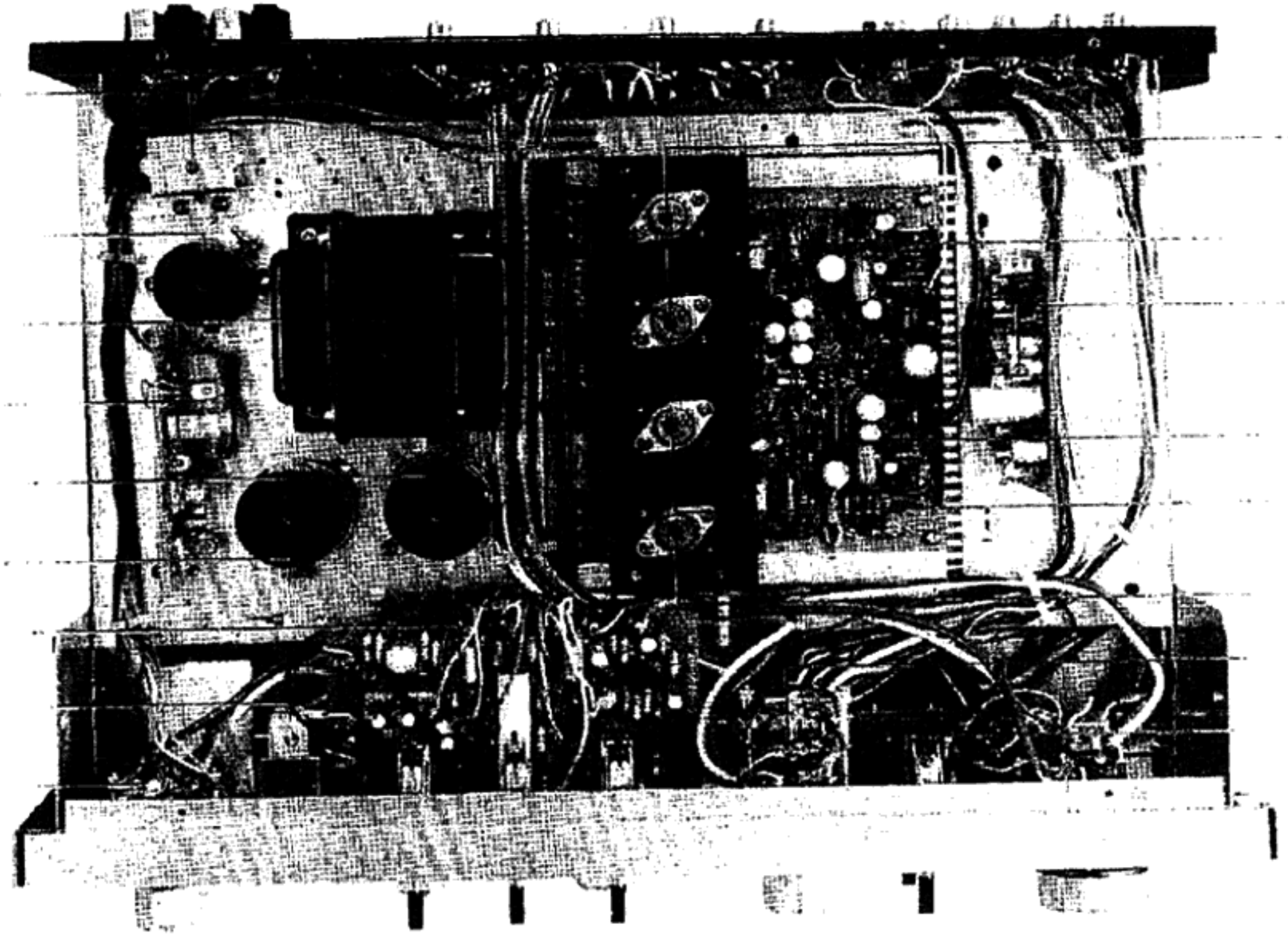
*Fuse holder

Pin jack (E13-0408-05)

Leg (J02-0049-14)

*Refer to parts list

INTERNAL VIEW



Relay
(S51-2017-05)

Capacitor (C2)

*Power trans

*Power supply
unit

Capacitor (C4)

Capacitor (C3)

Tone amp. unit
(X11-1070-10)

·Pilot lamp
(B30-0029-04)

Rotary SW.
(S10-1097-05)

Qe11

Qe13

Preamp unit
(X08-1080-12)

Main amp unit
(X07-1030-01)

Qe14

Qe12

Rotary SW.
(S10-2102-05)

PC board
(J35-0761-04)

Potentiometer
(R11-4013-05)

*Refer to parts list

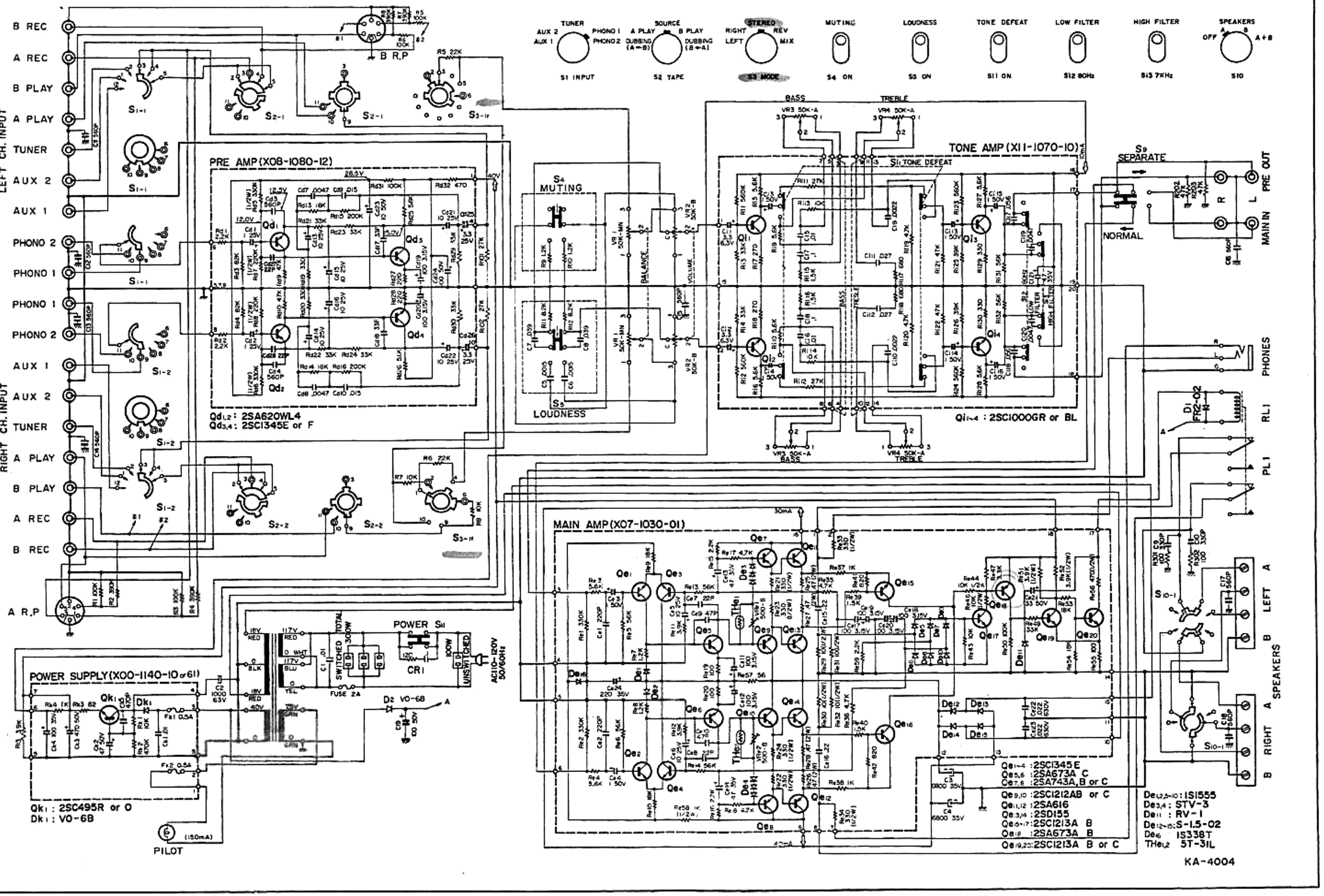
PARTS LIST

Ref. No.	Parts No.	Description				Remarks
CAPACITOR						
C1	C90-0029-05	Oil filled	0.01μF	±20%	−0%	UL
C2	C90-0137-05	Electrolytic	1000μF	63WV		
C3, 4	C90-0136-05	Electrolytic	6800μF	35WV		
C5, 6	CQ92M1H152K	Mylar	0.0015μF	±10%		
C7, 8	CQ92M1H393K	Mylar	0.039μF	±10%		
C9, 10	CK45D1H331M	Ceramic	330pF	±20%		
C11 ~ 18	CK45D1H561M	Ceramic	560pF	±20%		
C19	CE02W1H101	Electrolytic	100μF	50WV		
RESISTOR						
R1	PD14BY2E104J	Carbon	100kΩ	±5%	1/4W	
R2	PD14BY2E394J	Carbon	390kΩ	±5%	1/4W	
R3	PD14BY2E104J	Carbon	100kΩ	±5%	1/4W	
R4	PD14BY2E394J	Carbon	390kΩ	±5%	1/4W	
R5, 6	PD14BY2E223J	Carbon	22kΩ	±5%	1/4W	
R7, 8	PD14BY2E103J	Carbon	10kΩ	±5%	1/4W	
R9, 10	PD14BY2E122J	Carbon	1.2kΩ	±5%	1/4W	
R11, 12	PD14BY2E822J	Carbon	8.2kΩ	±5%	1/4W	
R13	RC05GF2H392J	Carbon	3.9kΩ	±5%	1/2W	
R101, 102	PD14BY2E273J	Carbon	27kΩ	±5%	1/4W	
R202, 203	PD14BY2E473J	Carbon	47kΩ	±5%	1/4W	
R301, 302	RC05GF2H101J	Carbon	100Ω	±5%	1/2W	
SEMICONDUCTOR						
D1		FR2-02				
D2		V06B				
SWITCH/RELAY						
S1	S10-2103-05	Rotary (INPUT)				
S2	S10-2102-05	Rotary (TAPE MONITOR)				
S3	S01-1013-05	Rotary (MODE)				
S4	S36-2023-05	Lever (MUTING)				
S5	S36-2023-05	Lever (LOUDNESS)				
S9	S31-2007-05	Slide (PRE-OUT MAIN-IN)				
S10	S10-1097-05	Rotary (SPEAKERS)				
RL1	S51-2017-05	Relay				
POTENTIOMETER						
VR1	R11-4013-05	Potentiometer (BALANCE) 50kΩ (MN) 4 gangs				
VR2	R11-4013-05	Potentiometer (VOLUME) 50kΩ (B) 4 gangs				
VR3	R08-4056-05	Potentiometer (BASS) 50kΩ (A) dual				
VR4	R08-4056-05	Potentiometer (TREBLE) 50kΩ (A) dual				
MISCELLANEOUS						
–	A01-0179-03	Case				
–	A10-0320-01	Chassis				
–	A20-0539-02	Panel assembly				
–	A20-0542-12	Panel				
–	A21-0103-03	Ornamental plate				
–	A22-0118-02	Sub panel				
–	A40-0098-03	Bottom plate				
–	A49-0011-03	Left side board (inside)				
–	A49-0012-03	Right side board (inside)				
–	A49-0013-03	Left side board (outside)				
–	A49-0014-03	Right side board (outside)				

Ref. No.	Parts No.	Description	Remarks
—	B07-0084-04	Black spacer (POWER)	
—	B08-2010-04	Red indicator	
P.L	B30-0029-15	Pilot lamp (8V, 150mA)	
—	B42-0009-04	Passed sticker	
—	B42-0037-00	Shorted pin caution card	
—	B52-0137-00	Schematic diagram	
—	E08-0205-15	AC outlet x 4	UL
—	E11-0002-05	Phone jack (PHONES)	
—	E13-0401-05	Pin jack with DIN	
—	E13-0408-05	Pin jack (4P)	
—	E13-1002-05	Pin jack (10P)	
—	E14-0107-05	Shorted pin x 2	
—	E15-0012-15	Pilot lamp socket	
—	E21-0802-05	Push terminal (8P)	
—	F07-0011-04	Lamp cover	
—	F19-0087-03	Left wooden side board	
—	F19-0088-03	Right wooden side board	
—	G16-0046-04	Rubber sheet	
—	H01-0813-04	Carton case	
—	J02-0049-14	Leg x 4	
—	J19-0268-04	Relay stopper	
—	J21-0192-04	Amp stopper x 2	
—	J21-0815-04	AC outlet mounting hardware x 4	
—	J21-0817-04	Pin jack mounting hardware (4P)	
—	J21-0749-04	Pin jack mounting hardware (10P)	
—	J21-0993-04	Pin jack mounting hardware (DIN) x 2	
—	J21-0996-04	Indicator mounting hardware	
—	J21-0997-04	Push terminal mounting hardware	
—	J25-0760-04	PC board	
—	J25-0761-04	PC board	
—	K20-0113-04	Knob (BALANCE)	
—	K21-0254-03	Knob (VOLUME)	
—	K23-0105-03	Knob (SPEAKERS, MODE, BASS, TREBLE, INPUT, TAPE)	
—	K29-0115-04	Knob (POWER)	
—	K29-0123-04	Knob (lever switch) x 5	
—	X07-1030-01	Main amp unit	
—	X08-1080-12	Preamp unit	
—	X11-1070-10	Tone amp with filter ciruit	
	In North America add to the following parts.		
—	A23-0307-02	Rear panel	
—	B40-0654-04	Model name plate . . . only Canada	
—	B42-0359-04	UL caution sticker x 2	UL
—	B46-0002-00	Warranty card . . . only U.S.A.	
—	B46-0021-00	Warranty card . . . only Canada	
—	B50-0849-00	Instruction manual	

Ref. No.	Parts No.	Description	Remarks
—	B58-0043-00	Carton case caution card	
—	D32-0021-04	Switch stopper	
—	E30-0046-05	Power cord	UL
F	F05-2021-05	Fuse (2A) . . . only U.S.A.	UL
F	F05-2023-05	Fuse (2A) . . . only Canada	
—	H03-0150-04	Carton case	
—	J13-0016-15	Fuse holder	UL
—	L03-0072-05	Power trans. . . . only U.S.A.	
—	L05-0010-05	Power trans. . . . only Canada	
CR1	R90-0097-05	Spark killer . . . only U.S.A.	
S11	S39-2002-05	Pushbutton switch (POWER)	UL
—	X00-1140-10	Power supply unit	
	In other area do . . .		
—	A23-0308-02	Rear panel	
—	B42-0368-04	EP sticker	
—	B46-0022-00	Warranty card	
—	B46-0023-00	Warrenty card	
—	B50-0850-00	Instruction manual	
—	B58-0139-00	Power supply caution card	
—	B58-0144-00	Power voltage selector caution card	
—	B58-0146-00	Spare fuse caution card	
—	B59-0018-00	KENWOOD service stations' list	
—	D32-0021-04	Switch stopper x 2	
—	E30-0034-05	Power cord	
F	F05-1023-05	Fuse (1A)	
F	F05-2023-05	Fuse (2A)	
—	J13-0033-05	Fuse holder	
P.T	L03-0072-05	Power trans.	
—	S31-2001-05	Slide switch (power voltage selector)	
S11	S39-2003-05	Pushbutton switch (POWER)	SEV
—	X00-1140-01	Power supply unit	

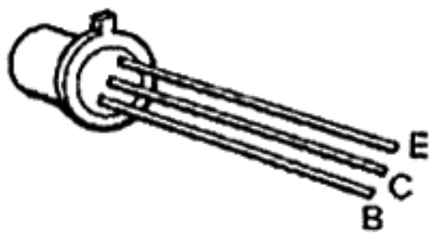
SCHEMATIC DIAGRAM



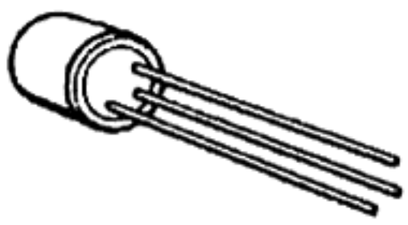
SCHEMATIC DIAGRAM

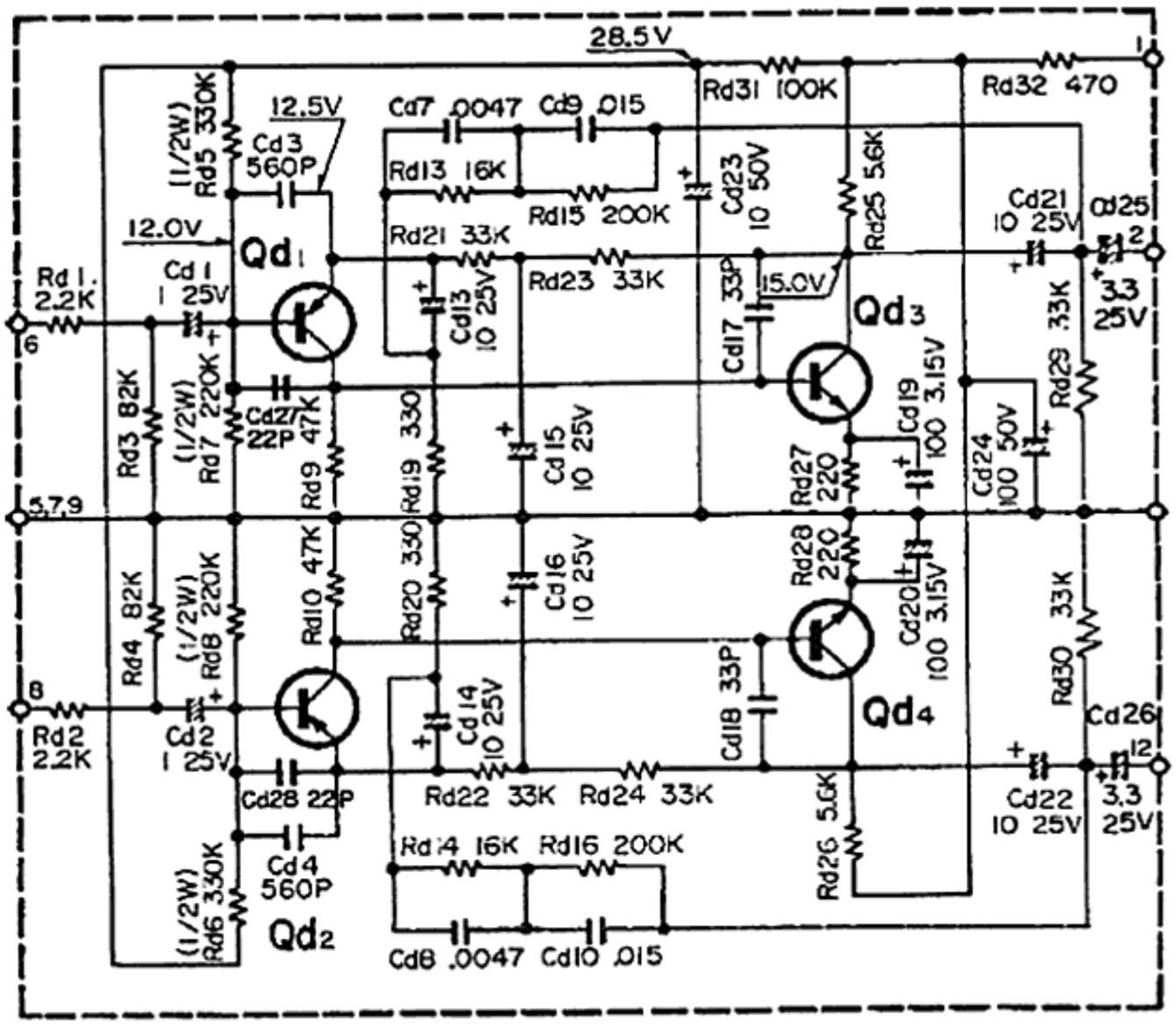
TRANSISTOR LEADS

2SA620WL

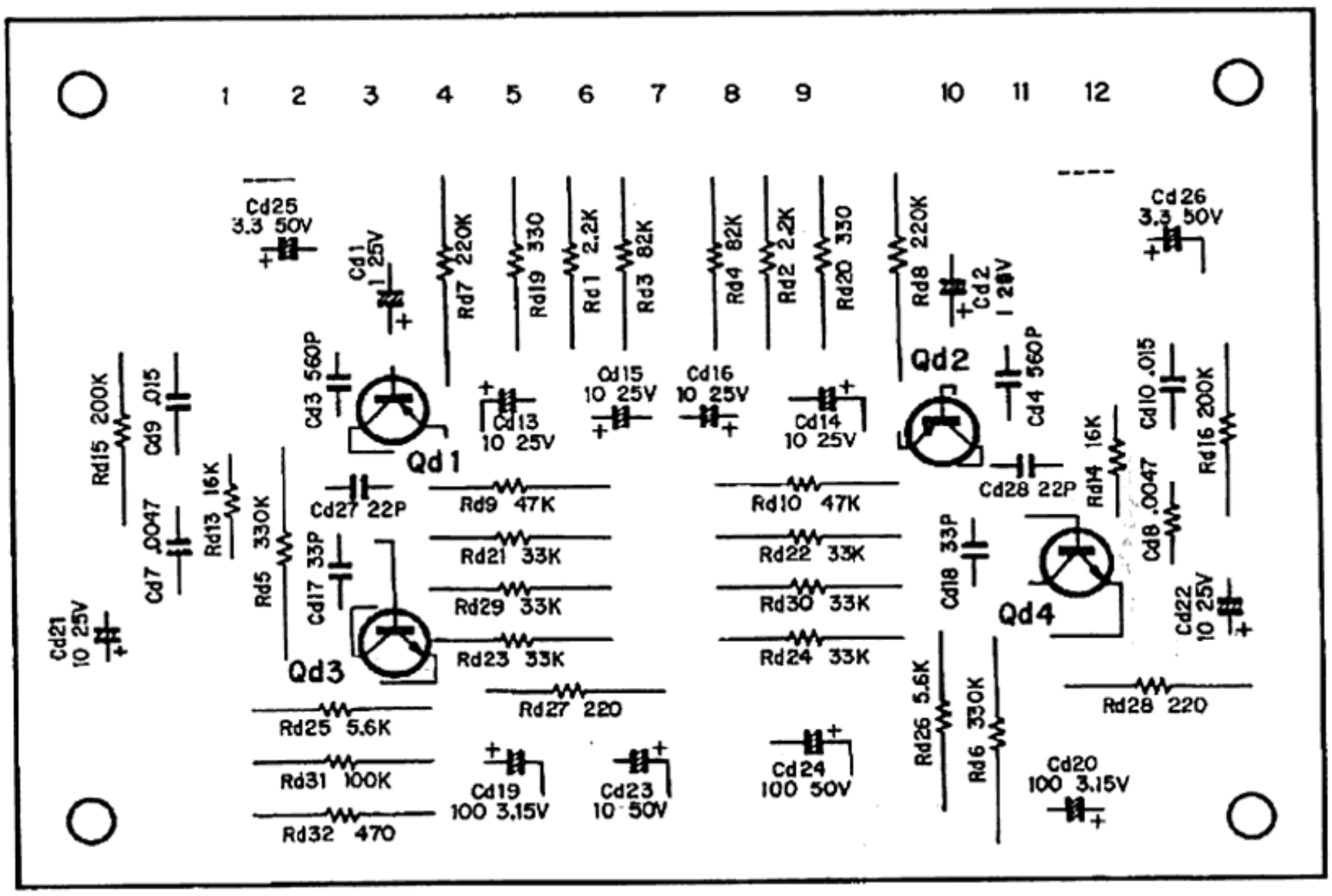


2SC1416





SEALED CIRCUIT ASSEMBLIES-PHANTOM VIEWS



Qd1, 2 : 2SA620WL4 Qd3, 4 : 2SC1416BL

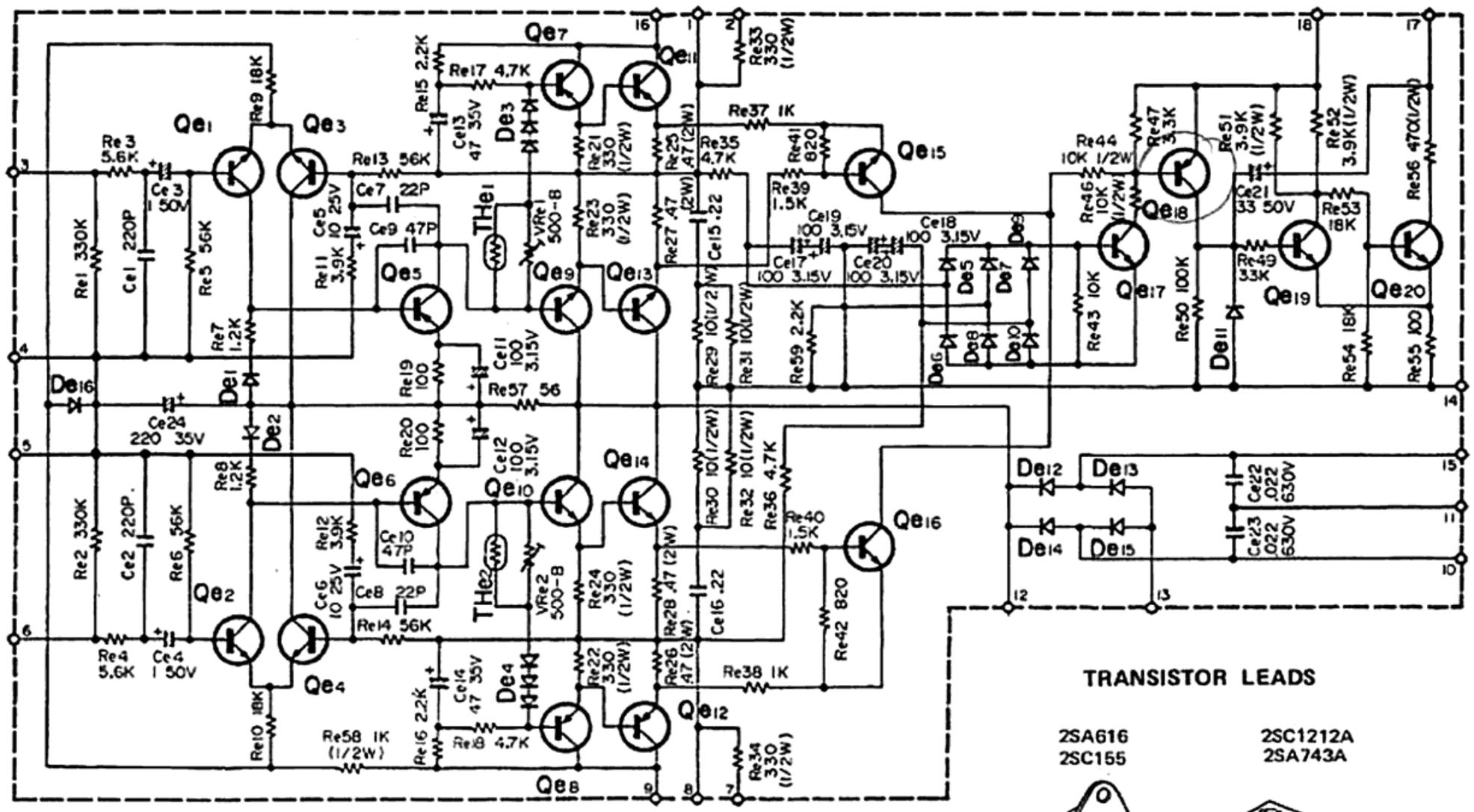
PARTS DESCRIPTION LIST

Ref. No.	Parts No.	Description				Remarks
		CAPACITOR				
Cd1, 2	CS04E1E010M	Tantalum	1μF	25WV		
Cd3, 4	CK45D1H561M	Ceramic	560pF	±20%		
Cd7, 8	CQ93M1H472J	Mylar	0.0047μF	±5%		
Cd9, 10	CQ93M1H153J	Mylar	0.015μF	±5%		
Cd13 ~ 16	CE04W1E100	Electrolytic	10μF	25WV		
Cd17, 18	CC45SL1H330K	Ceramic	33pF	±10%		
Cd19, 20	CE04W0F101	Electrolytic	100μF	3.15WV		
Cd21, 22	CE04W1E100	Electrolytic	10μF	25WV		
Cd23	CE04W1H100	Electrolytic	10μF	50WV		
Cd24	CE04W1H101	Electrolytic	100μF	50WV		
Cd25, 26	CE04W1H3R3	Electrolytic	3.3μF	50WV		
Cd27, 28	CC45SL1H220K	Ceramic	22pF	±10%		
		RESISTOR				
Rd1, 2	PD14BY2E222J	Carbon	2.2kΩ	±5%	1/4W	
Rd3,4	PD14BY2E823J	Carbon	82kΩ	±5%	1/4W	
Rd5,6	RN92A2H334J	Metal film	330kΩ	±5%	1/2W	
Rd7, 8	RN92A2H224J	Metal film	220kΩ	±5%	1/2W	
Rd9, 10	PD14BY2E473J	Carbon	47kΩ	±5%	1/4W	
Rd13, 14	RN92A2E163G	Metal film	16kΩ	±1%	1/4W	
Rd15, 16	PD14BY2E204J	Carbon	200kΩ	±5%	1/4W	
Rd19, 20	PD14BY2E331J	Carbon	330Ω	±5%	1/4W	
Rd21 ~ 24	PD14BY2E333J	Carbon	33kΩ	±5%	1/4W	
Rd25, 26	PD14BY2E562J	Carbon	5.6kΩ	±5%	1/4W	
Rd27, 28	PD14BY2E221J	Carbon	220Ω	±5%	1/4W	
Rd29, 30	PD14BY2E333J	Carbon	33kΩ	±5%	1/4W	
Rd31	PD14BY2E104J	Carbon	100kΩ	±5%	1/4W	
Rd32	PD14BY2E471J	Carbon	470Ω	±5%	1/4W	
		SEMICONDUCTOR				
Qd1, 2		2SA620WL4				
Qd3, 4		2SC1416BL				

KENWOOD — MAIN AMP (X07-1030-01) SECTION

(KA-4004)

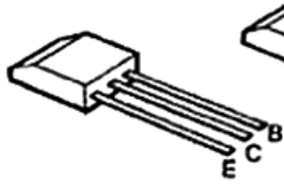
SCHEMATIC DIAGRAM



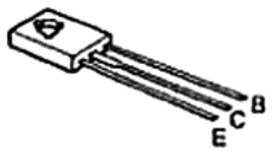
TRANSISTOR LEADS

2SA616
2SC155

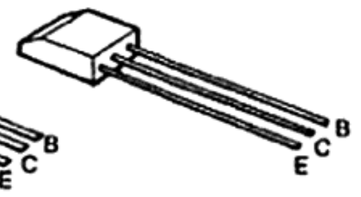
2SA673A
2SC1213A



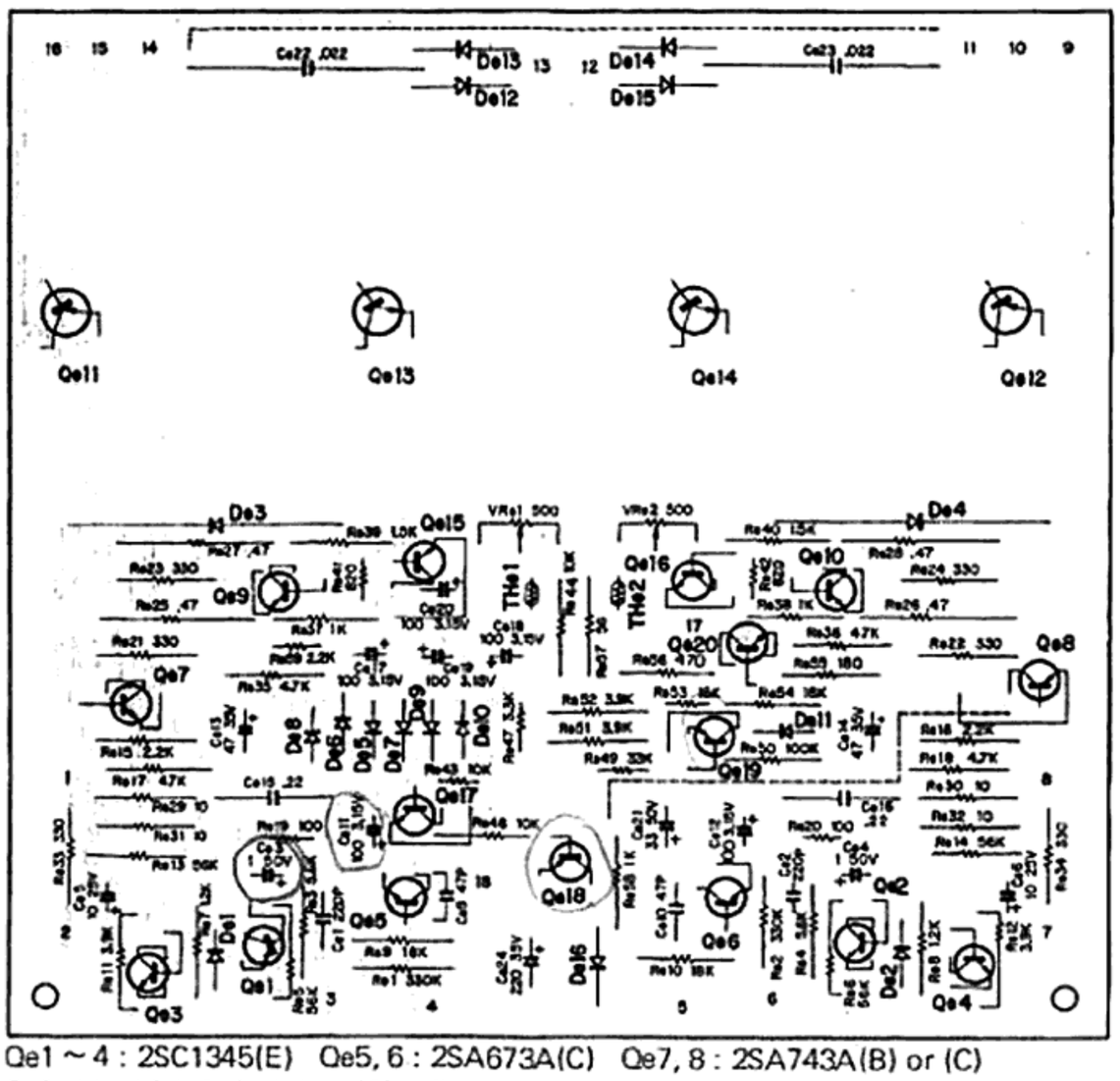
2SC1212A
2SA743A



2SC1345



SEALED CIRCUIT ASSEMBLIES-PHANTOM VIEWS



Qe1 ~ 4 : 2SC1345(E) Qe5, 6 : 2SA673A(C) Qe7, 8 : 2SA743A(B) or (C)
Qe9, 10 : 2SC1212A(B) or (C) Qe11, 12 : 2SA616 Qe13, 14 : 2SD155
Qe15 ~ 17 : 2SC1213A(B) Qe18 : 2SA673A(B) Qe19, 20 : 2SC1213A(B) or (C)
De1, 2 : 1S1555 De3, 4 : STV-3 De5 ~ 10 : 1S1555 De11 : RV-1
De12 ~ 15 : S1.5-02 De16 : 1S338T THe1, 2 : 5T-31L

PARTS DESCRIPTION LIST

Ref. No.	Parts No.	Description				Remarks
CAPACITOR						
Ce1, 2	CC94SL1H221K	Ceramic	220pF	±10%		
Ce3, 4	CE04W1H010	Electrolytic	1μF	50W		
Ce5, 6	CE04W1E100	Electrolytic	1μF	25WV		
Ce9, 10	CC94SL1H470K	Ceramic	47pF	±10%		
Ce11, 12	CE04W0F101	Electrolytic	100μF	3.15WV		
Ce13, 14	CE04W1V470	Electrolytic	47μF	35WV		
Ce15, 16	CQ93M1H224M	Mylar	0.22μF	±20%		
Ce17～20	CE04W0F101	Electrolytic	100μF	3.15WV		
Ce21	CE04W1H330	Electrolytic	33μF	50WV		
Ce22, 23	CP02B2J223M	Oil filled	0.022μF	±20%		
Ce24	CE04W1V221	Electrolytic	220μF	35WV		
RESISTOR						
Re1, 2	PD14BY2E334J	Carbon	330kΩ	±5%	1/4W	
Re3, 4	PD14BY2E562J	Carbon	5.6kΩ	±5%	1/4W	
Re5, 6	PD14BY2E563J	Carbon	56kΩ	±5%	1/4W	
Re7, 8	PD14BY2E122J	Carbon	1.2kΩ	±5%	1/4W	
Re9, 10	PD14BY2E183J	Carbon	18kΩ	±5%	1/4W	
Re11, 12	PD14BY2E392J	Carbon	3.9kΩ	±5%	1/4W	
Re13, 14	PD14BY3E563J	Carbon	56kΩ	±5%	1/4W	
Re15, 16	PD14BY2E222J	Carbon	2.2kΩ	±5%	1/4W	
Re17, 18	PD14BY2E472J	Carbon	4.7kΩ	±5%	1/4W	
Re19, 20	PD14CY2E101J	Carbon	100Ω	±5%	1/4W	
Re21～24	RC05GF2H331K	Carbon	330Ω	±10%	1/2W	
Re25～28	RN14AB3DR47J	Metal film	0.47Ω	±5%	2W	
Re29～32	RC05GF2H100K	Carbon	10Ω	±10%	1/2W	
Re33, 34	RC05GF2H331K	Carbon	330Ω	±10%	1/2W	
Re35, 36	PD14BY2E472J	Carbon	4.7kΩ	±5%	1/4W	
Re37, 38	PD14BY2E102J	Carbon	1kΩ	±5%	1/4W	
Re39, 40	PD14BY2E152J	Carbon	1.5kΩ	±5%	1/4W	
Re41, 42	PD14CY2E101J	Carbon	100Ω	±5%	1/4W	
Re43	PD14CY2E101J	Carbon	100Ω	±5%	1/4W	
Re44	PD14BY2E103J	Carbon	10kΩ	±5%	1/4W	
Re46	PD14BY2E103J	Carbon	10kΩ	±5%	1/4W	
Re47	PD14CY2E332J	Carbon	3.3kΩ	±5%	1/4W	
Re49	PD14CY2E333J	Carbon	33kΩ	±5%	1/4W	
Re50	PD14BY2E104J	Carbon	100kΩ	±5%	1/4W	
Re51, 52	RC05GF2H392K	Carbon	3.9kΩ	±10%	1/2W	
Re53	PD14CY2E183J	Carbon	18kΩ	±5%	1/4W	
Re54	PD14BY2E183J	Carbon	18kΩ	±5%	1/4W	
Re55	PD14BY2E101J	Carbon	100Ω	±5%	1/4W	
Re56	RN14AB3A471K	Metal film	470Ω	±10%	1W	
Re57	PD14BY2E560J	Carbon	56Ω	±5%	1/4W	
Re58	RC05GF2H102K	Carbon	1kΩ	±10%	1/2W	
Re59	PD14CY2E222J	Carbon	2.2kΩ	±5%	1/4W	
SEMICONDUCTOR						
Qe1～4		2SC1345 (E)				
Qe5, 6		2SA673A(C)				
Qe7, 8		2SA743A(B) or (C)				
Qe9, 10		2SC1212A(B) or (C)				
Qe11, 12		2SA616				
Qe13, 14		2SD155				
Qe15～17		2SC1213A(B)				
Qe18		2SA673A(B)				
Qe19, 20		2SC1213A(B) or (C)				
De1, 2		1S1555				
De3, 4		STV-3				
De5～10		1S1555				
De11		RV-1				
De12～15		S-1.5-02				
De16		1S338T				
THe1, 2		5T-31L				
POTENTIOMETER						
VRe1, 2	R12-0026-05	PC trimmer (BIAS) 500Ω (B)				
MISCELLEOUS						
–	E02-0208-05	transistor socket x 4				
–	F01-0081-03	heat sink				

1972-7 PRINTED IN JAPAN (G)

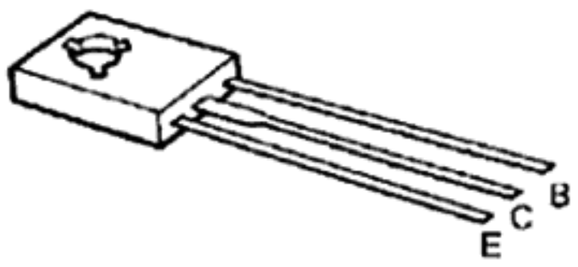
KENWOOD® POWER SUPPLY (X00-1140-10) SECTON

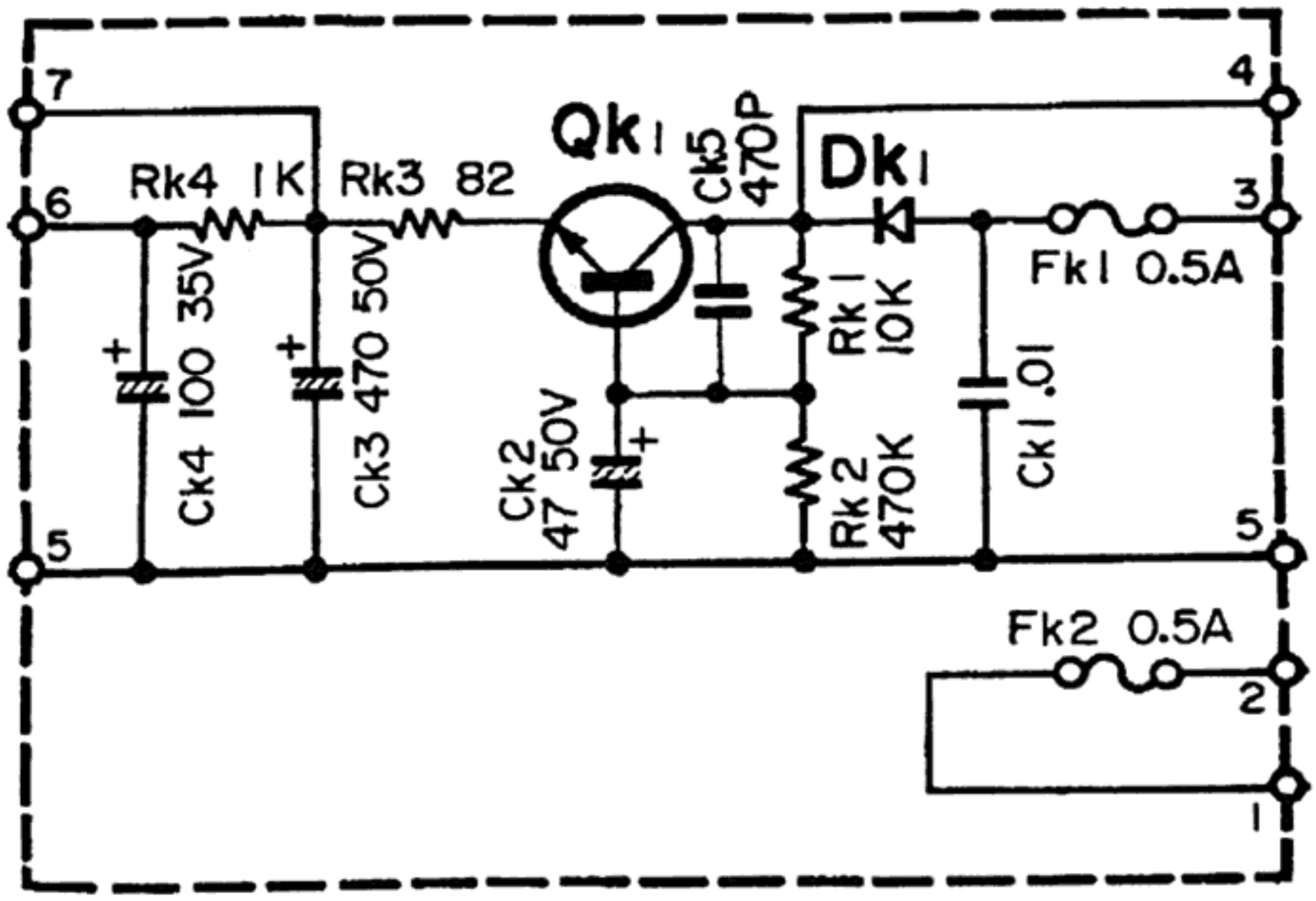
(KA4004)

SCHEMATIC DIAGRAM

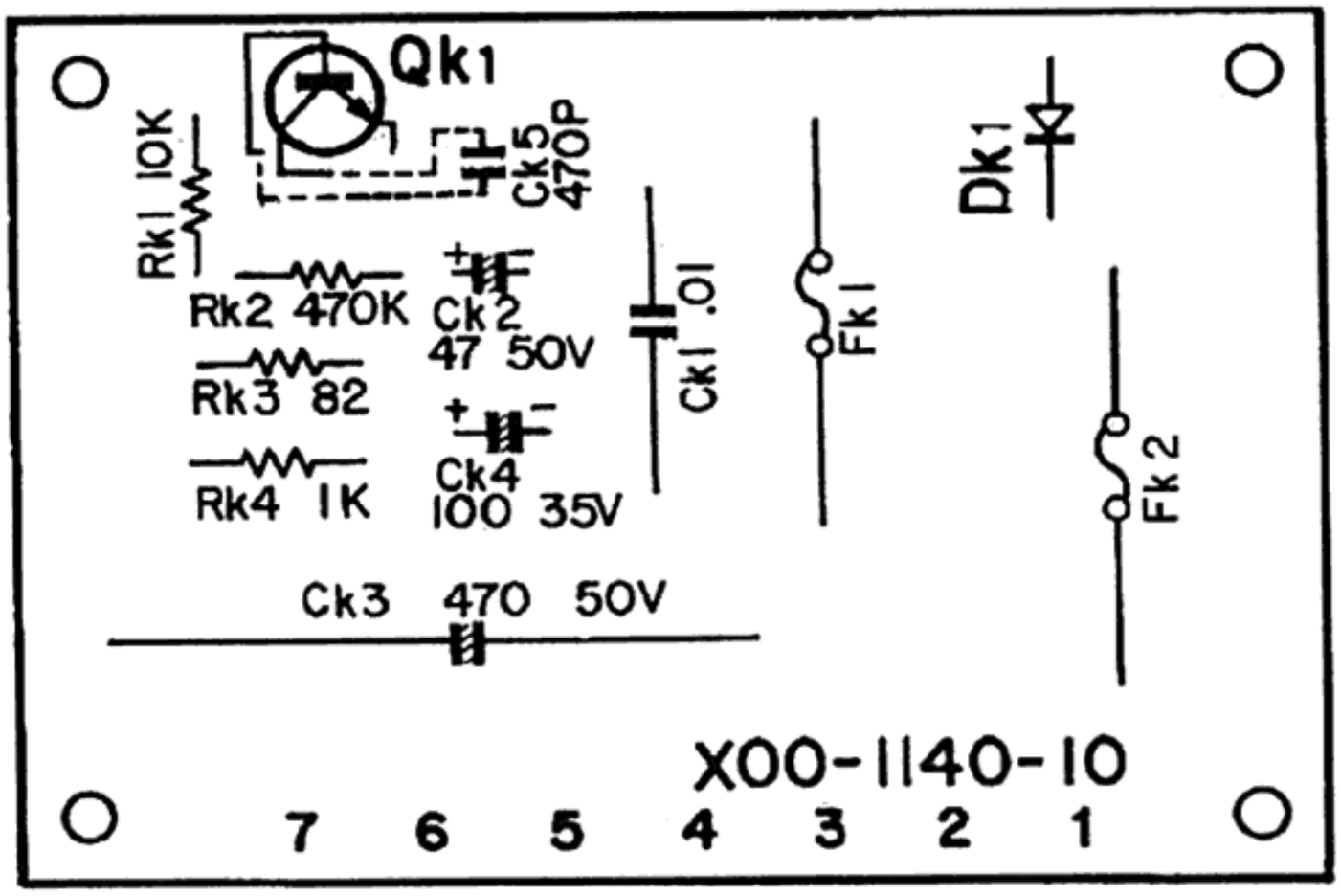
TRANSISTOR LEADS

2SC495





SEALED CIRCUIT ASSEMBLIES-PHANTOM VIEWS



Qk1 : 2SC495(R) or (O) Dk1 : V06B

PARTS DESCRIPTION LIST

Ref. No.	Parts No.	Description				Remarks
		CAPACITOR				
Ck1	CP02B2J103M	Oil filled	0.01μF	±20%		
Ck2	CE04W1H470	Electrolytic	47μF	50WV		
Ck3	CE02W1H471	Electrolytic	470μF	50WV		
Ck4	CE04W1V101	Electrolytic	100μF	35WV		
Ck5	CK45D1H471K	Ceramic	470pF	±10%		
		RESISTOR				
Rk1	PD14BY2E103J	Carbon	10kΩ	±5%	1/4W	
Rk2	PD14BY2E474J	Carbon	470kΩ	±5%	1/4W	
Rk3	RC05GF2H820K	Carbon	82Ω	±10%	1/2W	
Rk4	RC05GF2H102K	Carbon	1kΩ	±10%	1/2W	
		SEMICONDUCTOR				
Qk1		2SC495(R) or (O)				
Dk1		V06B				
		MISCELLANEOUS				
F1, 2	F05-5017-05	Fuse(0.5A)				UL
–	J13-0023-05	Fuse holder				

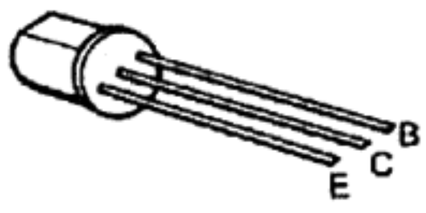
KENWOOD® FILTER & TONE (X11-1070-10) SECTION

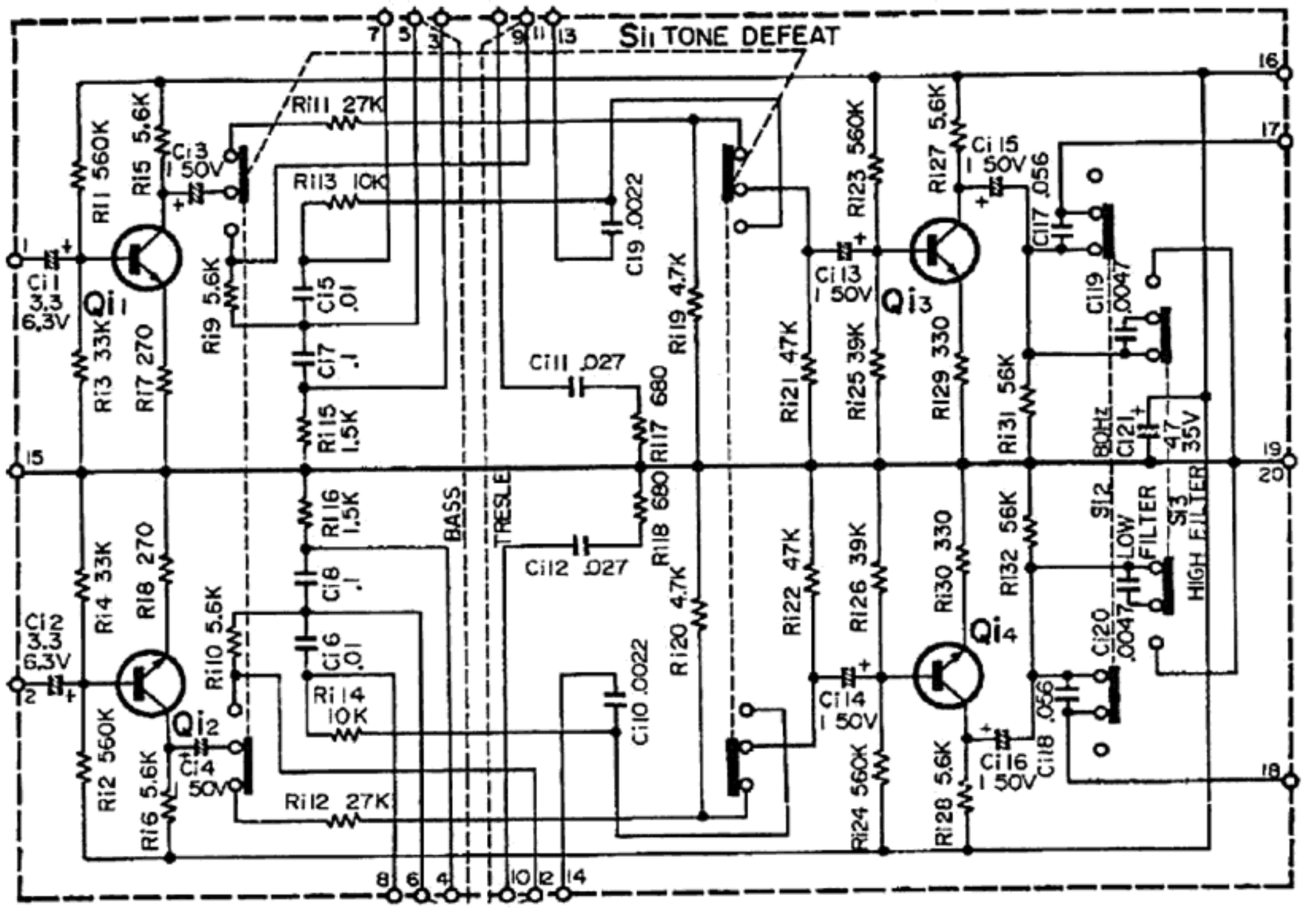
(KA-4004)

SCHEMATIC DIAGRAM

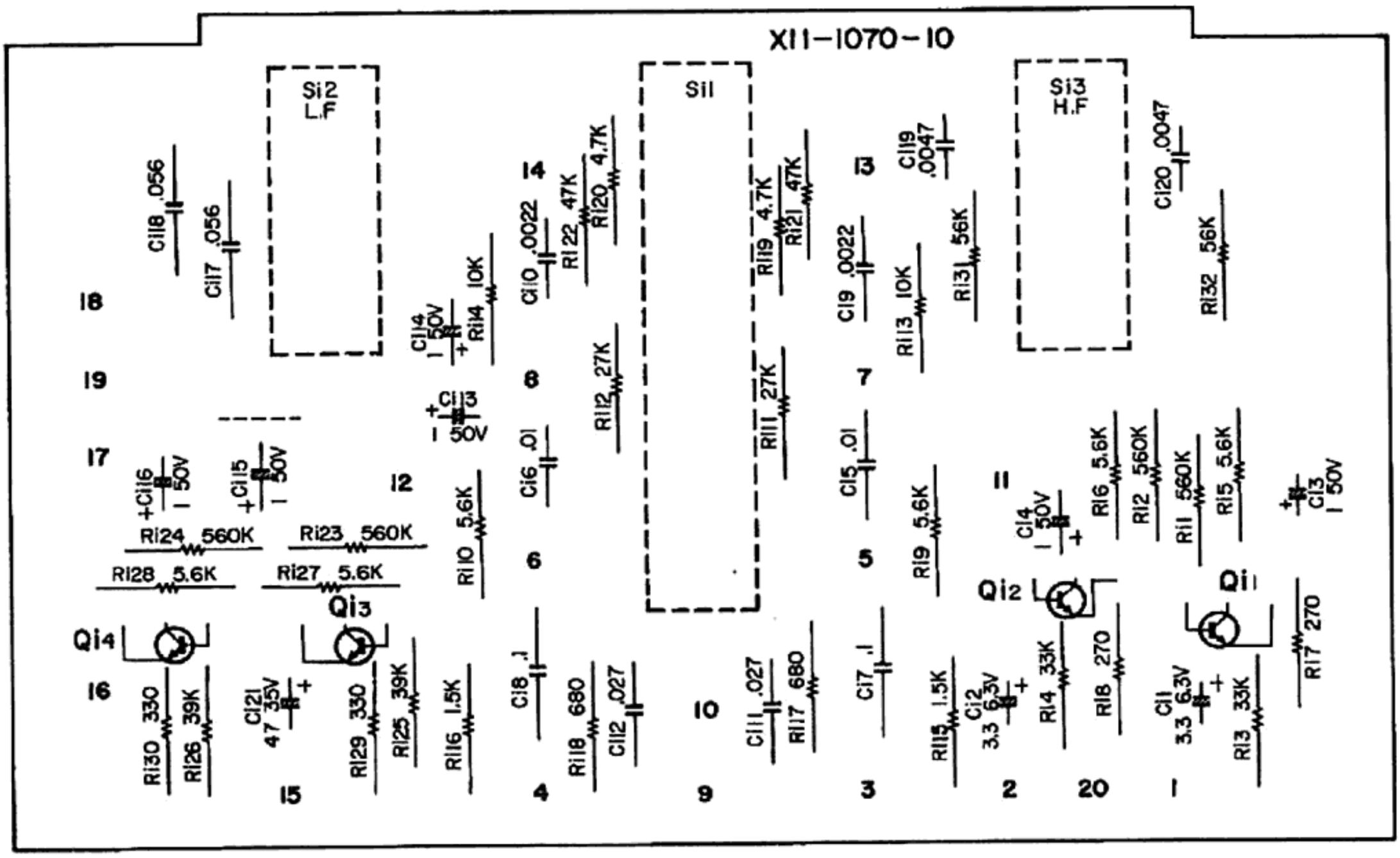
TRANSISTOR LEADS

2SC1000





SEALED CIRCUIT ASSEMBLIES-PHANTOM VIEWS



Qi1 ~ 4 : 2SC1000(GR) or (BL)

PARTS DESCRIPTION LIST

Circuit No.	Parts No.	Description				Remarks
CAPACITOR						
Ci1, 2	CS04D0J3R3X or M	Tantalum	3.3μF	6.3WV		
Ci3, 4	CE04W1H010	Electrolytic	1μF	50WV		
Ci5.6	CQ93M1H103K	Mylar	0.01μF	±10%		
Ci7, 8	CQ93M1H104K	Mylar	0.1μF	±10%		
Ci9,10	CQ93M1H222K	Mylar	0.0022μF	±10%		
Ci11, 12	CQ93M1H273K	Mylar	0.027μF	±10%		
Ci13,~16	CE04W1H010	Electrolytic	1μF	50WV		
Ci17, 18	CQ93M1H563K	Mylar	0.056μF	±10%		
Ci19, 20	CQ93M1H472K	Mylar	0.0047μF	±10%		
Ci21	CE04W1V470	Electrolytic	47μF	35WV		
RESISTOR						
Ri1, 2	PD14BY2E564J	Carbon	560kΩ	±5%	1/4W	
Ri3, 4	PD14BY2E333J	Carbon	33kΩ	±5%	1/4W	
Ri5,6	PD14BY2E562J	Carbon	5.6kΩ	±5%	1/4W	
Ri7. 8	PD14BY2E 271J	Carbon	270Ω	±5%	1/4W	
Ri9, 10	PD14BY2E562J	Carbon	5.6kΩ	±5%	1/4W	
Ri11, 12	PD14BY2E273J	Carbon	27kΩ	±5%	1/4W	
Ri13, 14	PD14BY2E103J	Carbon	10kΩ	±5%	1/4W	
Ri15, 16	PD14BY2E152J	Carbon	1.5kΩ	±5%	1/4W	
Ri17, 18	PD14BY2E681J	Carbon	680Ω	±5%	1/4W	
Ri19, 20	PD14BY2E472J	Carbon	4.7kΩ	±5%	1/4W	
Ri21, 22	PD14BY2E473J	Carbon	47kΩ	±5%	1/4W	
Ri23, 24	PD14BY2E564J	Carbon	560kΩ	±5%	1/4W	
Ri25, 26	PD14BY2E393J	Carbon	39kΩ	±5%	1/4W	
Ri27, 28	PD14BY2E562J	Carbon	5.6 kΩ	±5%	1/4W	
Ri29, 30	PD14BY2E331J	Carbon	330Ω	±5%	1/4W	
Ri31, 32	PD14BY2E563J	Carbon	56kΩ	±5%	1/4W	
SEMICONDUCTOR						
Qi1 ~ 4		2SC1000(GR) or (BL)				
SWITCH						
Si1	S36-4012-05	Lever (TONE DEFEAT)				
Si2	S36-2023-05	Lever (LOW FILTER)				
Si3	S36-2023-05	Lever (HIGH FILTER)				

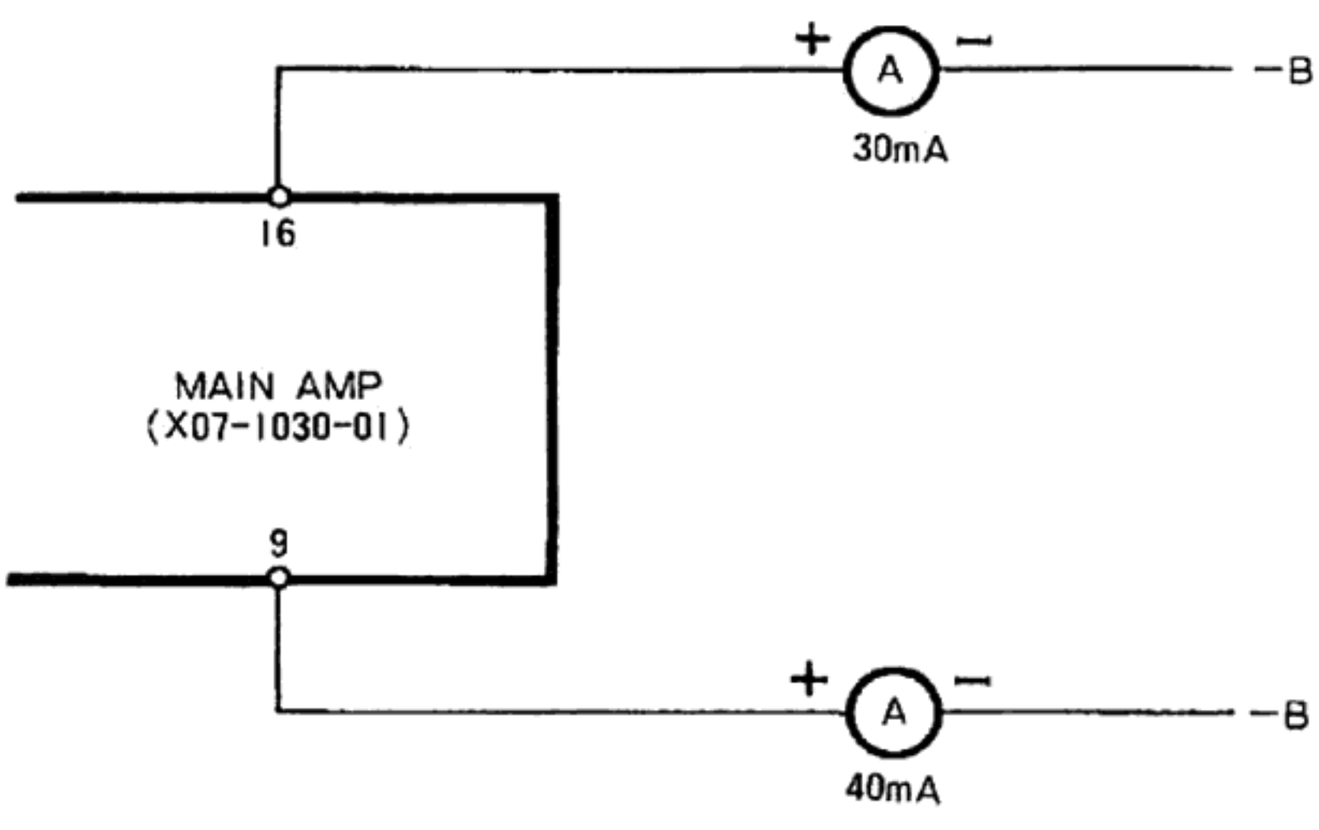
ADJUSTMENT OF AUDIO SECTION

(KA-4004)

WHEN USING TESTER AS AMMETER

1. Set pc trimmer potentiometer (VRe1, 2) to its min..
2. Couple tester (as ammeter) to terminal 16 of main amp unit and power supply lead.
3. Adjust pc trimmer potentiometer (VRe1) so that tester reading is 30mA.
4. Remove tester to terminal 9 of that and power supply lead.
5. Adjust pc trimmer potentiometer (VRe2) so that tester reading is 40mA.

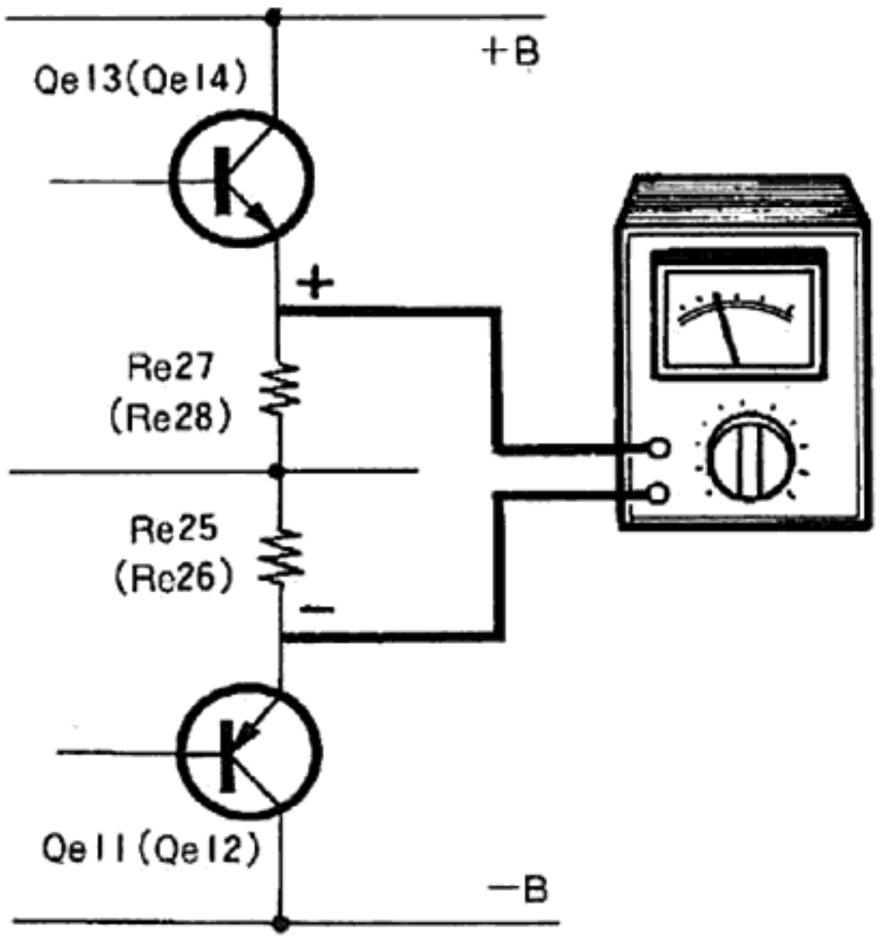
NOTE: Notice that ampere between L-ch and R-ch is different.

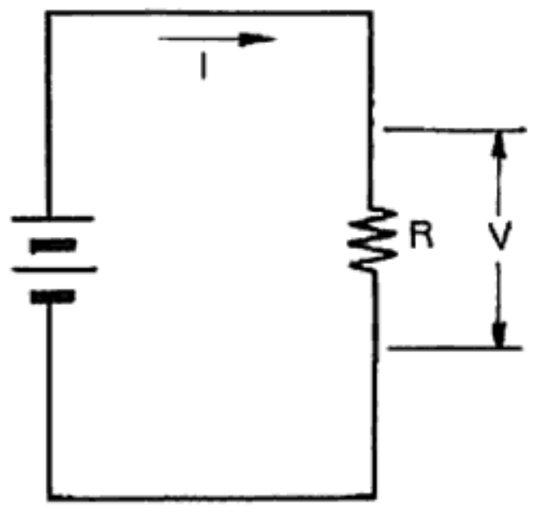


WHEN USING TESTER WITH LOW LEVEL RANGE
(Less than 0.3V range)

1. Connect tester (as voltmeter) to emitter of power transistor respectively.
2. Adjust pc trimmer potentiometer (VRe1, 2) so that tester reading is 20mV.

NOTE: This method is by the VOLTAGE DROP.





THE SIMPLIFIED CIRCUIT

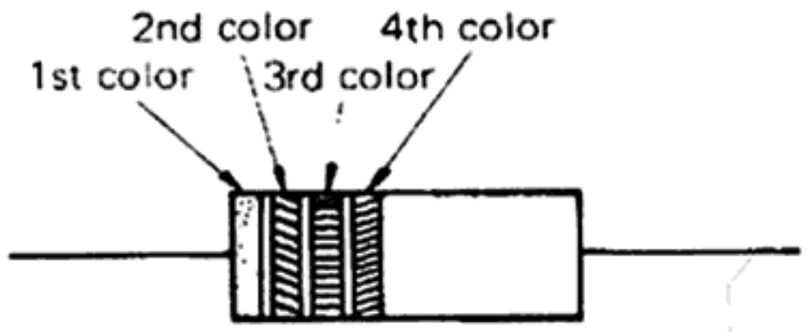
The total resistance is
R = Re25 + Re27 ≒ 1 ohm.
Bias current (I) is 20mA.
The voltage drop can be found from Ohm's Law.
V = I x R = 20mV.

1972-9 PRINTED IN JAPAN (T)

COLOR CODE

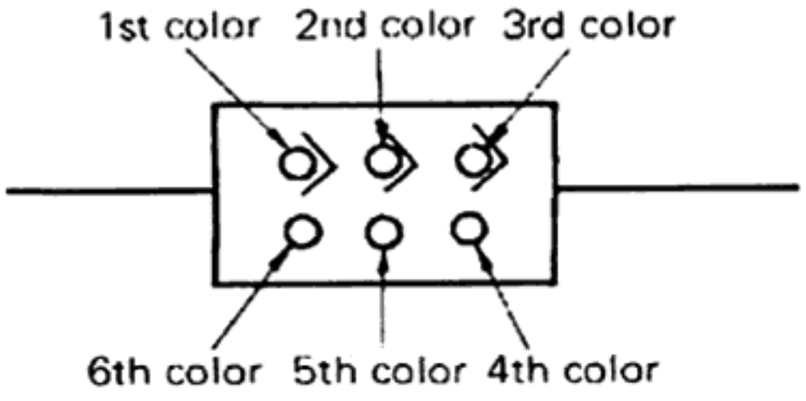
RESISTOR

COLOR (meaning)	1st (value)	2nd (value)	3rd (multiplier)	4th (tolerance)
Black	0	0	10^0	–
Brown	1	1	10^1	±1%
Red	2	2	10^2	±2%
Orange	3	3	10^3	–
Yellow	4	4	10^4	–
Green	5	5	10^5	–
Blue	6	6	10^6	–
Purple	7	7	10^7	–
Grey	8	8	10^8	–
White	9	9	10^9	–
Gold	–	–	10^{-1}	±5%
Silver	–	–	10^{-2}	±10%
Non-color	–	–	–	±20%



CAPACITOR (MICA)

COLOR (meaning)	1st (grade)	2nd (value)	3rd (value)	4th (multiplier)	5th (tolerance)	6th (characteristic)
Black	X	0	0	10^0	±20%	–
Brown	–	1	1	10^1	±1%	B
Red	Z	2	2	10^2	±2%	C
Orange	–	3	3	10^3	–	D
Yellow	–	4	4	10^4	–	E
Green	–	5	5	–	* ±5%	–
Blue	–	6	6	–	–	–
Purple	–	7	7	–	–	–
Grey	Y	8	8	–	–	–
White	–	9	9	0.1	±10%.	–



Unit = pF

* Capacitance being less than 10pF is ±0.5pF on tolerance.

KENWOOD ELECTRONICS, INC.

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- 72-02 51st AVENUE, WOODSIDE. N.Y. 11377

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