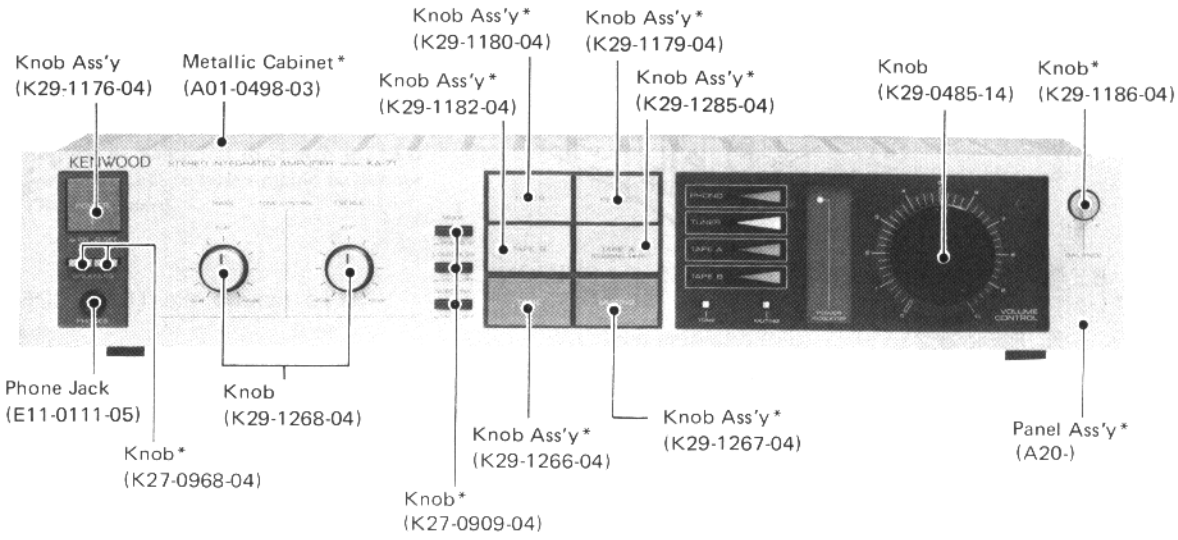
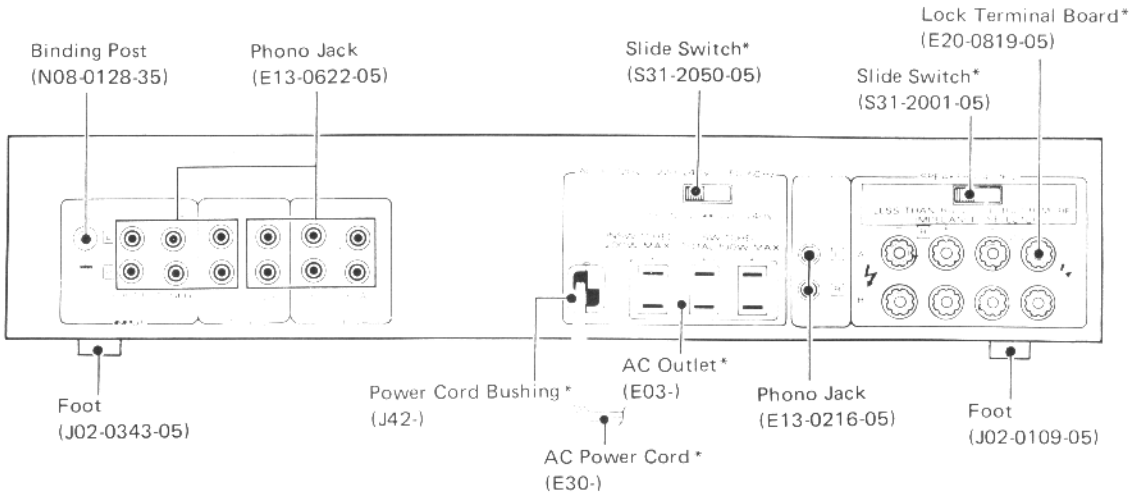
SERVICE MANUAL

KENWOOD

KA-31/51/71
KA-31B/51B

STEREO INTEGRATED AMPLIFIER





NOTE:
To avoid electrical shock and/or unit damage don't touch the heat sink as heat sink has power supply voltage.

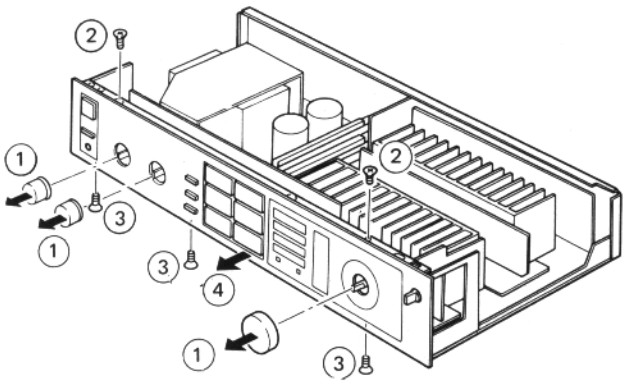
* Refer to Part List on Page 9.
Photo is KA-71.

DISASSEMBLY FOR REPAIR

DISASSEMBLY FOR REPAIR

A. 1. Pull volume knob and tone control knobs frontward (①).

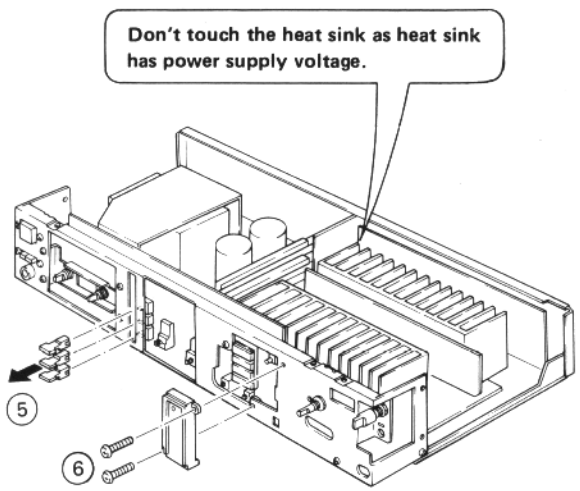
2. Remove 2 flat head screws (②) at the top side and 3 flat head screws (③) at the bottom side of the front panel and pull the front panel frontward (④).



B. 3. Pull 3 knobs (MODE, LOUDNESS and SUBSONIC) out (⑤).

4. Remove 2 screws (⑥) retaining the POWER LED escutcheon and remove the POWER LED escutcheon.

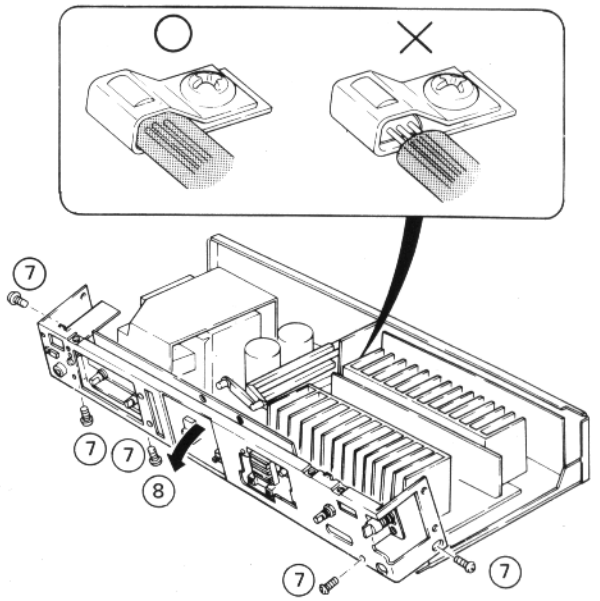
Note: Only these 2 screws (⑥) are longer than the other Br-tap screws.



C. 5. Remove 5 screws (⑦) from the sub panel to make the sub panel free from the chassis.

6. Tilt the sub panel frontward in the direction of the arrow (⑧) to let the EXTENTION shaft to be free.

Note: The thermo-compensation transistor Q9 and Q10 on POWER AMP pc board (X07-2020-A/4) is located on the top of the heat sink. When replacing, be careful so that the transistor leads do not touch to the transistor mounting hardware and be sure to cover the leads by vinyl cover (KA-31 and KA-51).

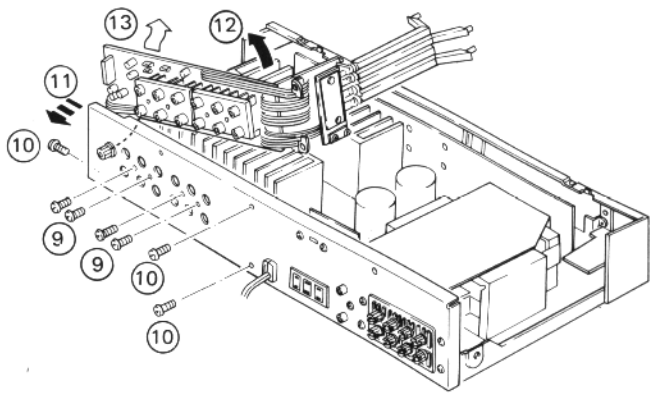


To remove the TONE CONTROL pc board, skip to 9.

D. 7. Remove 4 screws (⑨) retaining INPUT phono jack, 2 screws retaining INPUT SELECTOR pc board (X11-1870-B/6) and the screw (⑩) on the left side of the rear panel.

8. Pull the rear panel gently (⑪) and pull the EQ AMP pc board (X11-1870-C/6) and INPUT SELECTOR pc board (X11-1870-B/6) up together in the direction of the arrow (⑫ & ⑬).

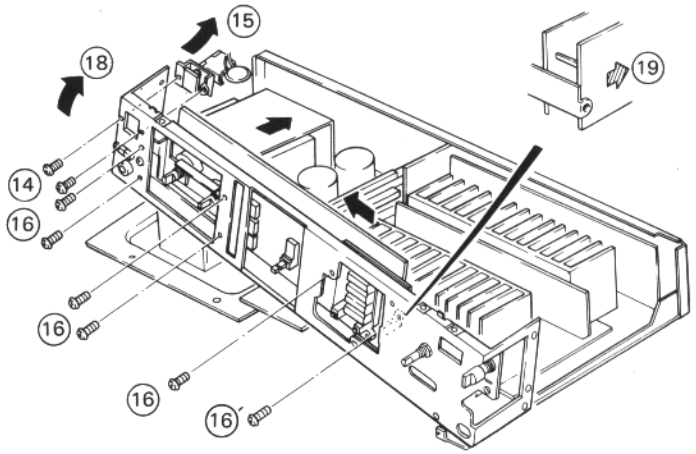
Note: When pulling out the EQ AMP pc board, be careful of GND lead.



DISASSEMBLY FOR REPAIR / ADJUSTMENT / REGLAGES / ABGLEICH

E. 9. Remove 2 screws (⑭) retaining the power switch mounting hardware and pull the POWER switch out in the direction of the arrow (⑮).
10. Remove 6 screws (⑯) retaining the TONE CONTROL pc board (X11-1870-A/6). One of the screw (⑯') is located behind of LED pc board (X11-1870-D/6), then remove it through the round cutting in LED pc board.
11. Pull the left side of the sub panel up a little and remove the left side of TONE CONTROL pc board (X11-1870-A/6) backward (⑰) until it is freed from the sub panel in the direction of the arrow (⑱).
12. Slide the TONE CONTROL pc board to the left to free from pc board mounting arm (⑲).

Note: When pulling the TONE CONTROL pc board, be careful of TEST terminal on the pc board not to scratch the LED pc board. To prevent this, LED pc board should be remove with TONE CONTROL pc board.



ADJUSTMENT

IDLE CURRENT ADJUSTMENT (BIAS CURRENT ADJUSTMENT)

1. Turn the volume knob fully counterclockwise.
2. Connect a DC voltmeter to both pins of R35 (R36) of the power amp pc board (X07-2010-B/4). (See the figure A).
3. Turn the power on and wait 5 minutes.
4. Adjust VR1 (VR2) so that the DC voltmeter reads 10 ~ 15 mV.

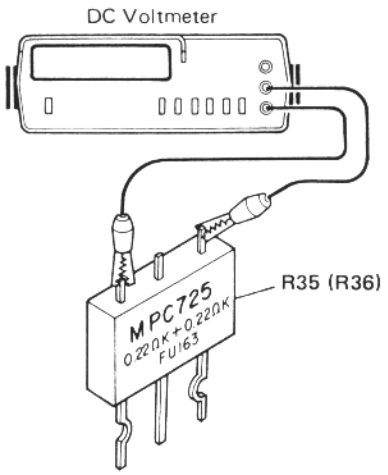


Fig. A

BLINDSTROMEINSTELLUNG (SIGNALLOSER ZUSTAND) (VORSPANNUNGSSTROM-EINSTELLUNG)

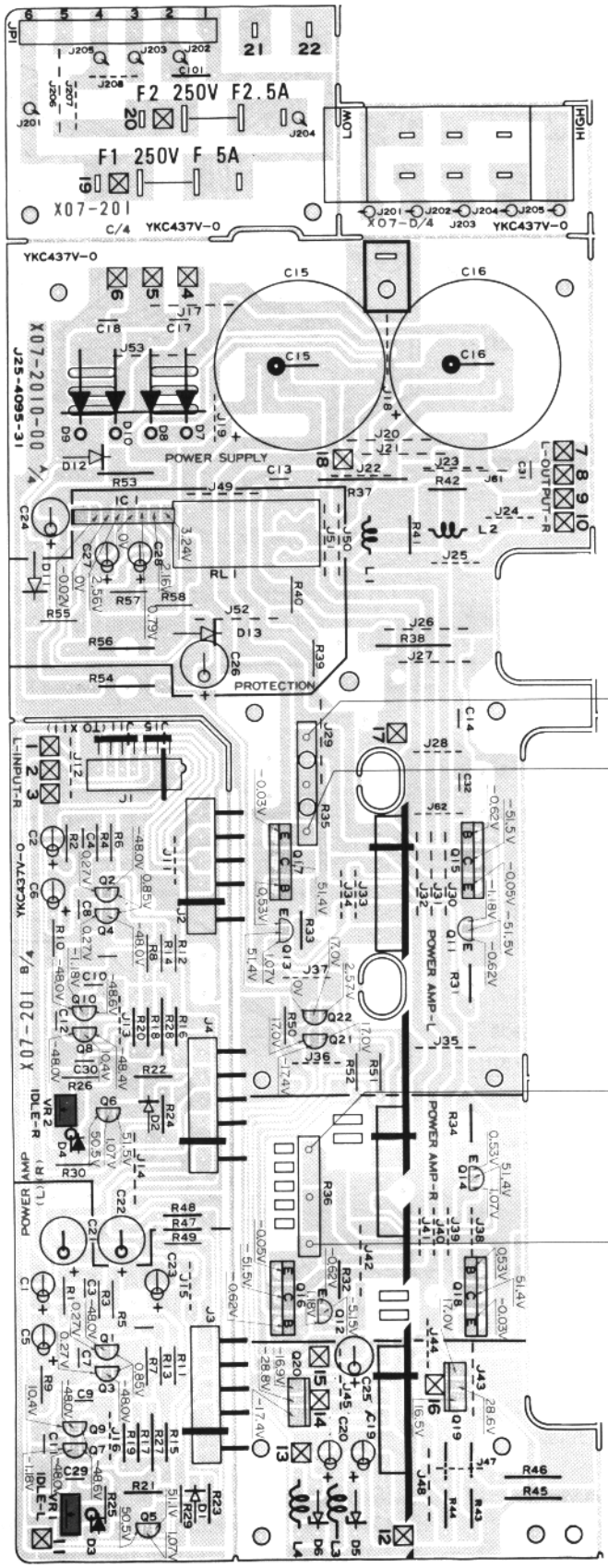
1. Den Lautstärkesteller ganz nach links drehen.
2. Einen Gleichspannungsmesser an beide Stifte von R35 (R36) des Audiogerätes (X07-2010-B/4) anschließen. (Siehe Zeichnung A)
3. Die Stromversorgung einschalten und 5 Minuten warten.
4. VR1 (VR2) so einstellen, daß der Gleichstrommesser 10 ~15 mV anzeigt.

REGLAGE DU COURANT LIBRE (SANS SIGNAL) (REGLAGE DU COURANT DE POLARISATION)

1. Tourner le réglage du volume à fond de course vers la gauche.
2. Relier un voltmètre pour courant continu aux deux broches du R35 (R36) de l'appareil audio (X07-2010-B/4). (Se reporter à l'illustration A)
3. Mettre le circuit sous tension et attendre cinq minutes.
4. Régler le VR1 (VR2) de façon que le voltmètre indique 10 à 15 mV.

PC BOARD (KA-71)

POWER AMP (X07-2010-11) Component side view



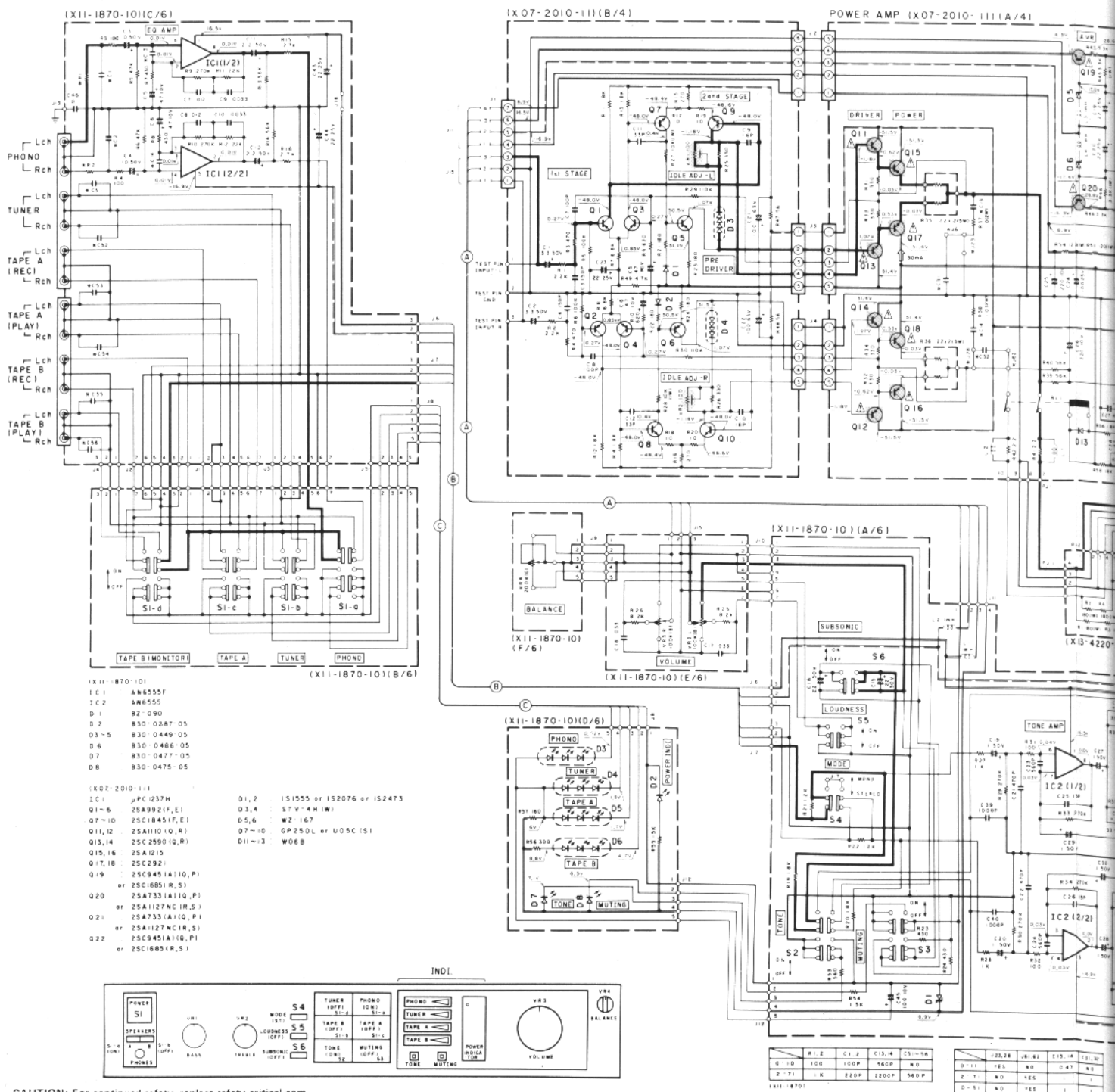
In this model, there are separated pc boards which was originally one. These separated pc boards can't be shipped independently.

ex. Part No. of pc board	Separated portion no.
X09-1230-00	(A/3)
X09-1230-00	(B/3)
X09-1230-00	(C/3)

In the example shown above, separated portion can't be ordered independently. In case only A/3 was ordered, pc board ass'y of X09-1230-00, which all A/3, B/3, C/3 included, will be shipped.

For CONTROL PCB & SUB PCB see page 7.

Refer to the schematic diagram for the values of resistor and capacitors.
The PC board drawing is vewing from the side easy to check.



(X11-1870-10)

IC1	AN6555F
IC2	AN6555
D1	BZ-090
D2	B30-0287-05
D3~5	B30-0449-05
D6	B30-0486-05
D7	B30-0477-05
D8	B30-0475-05

(X07-2010-11)

IC1	μPC1237H
Q1~6	2SA992(F,E)
Q7~10	2SC1845(F,E)
Q11,12	2SA1110(Q,R)
Q13,14	2SC2590(Q,R)
Q15,16	2SA1215
Q17,18	2SC2921
Q19	2SC945(A)(Q,P) or 2SC1685(R,S)
Q20	2SA733(A)(Q,P) or 2SA1127NC(R,S)
Q21	2SA733(A)(Q,P) or 2SA1127NC(R,S)
Q22	2SC945(A)(Q,P) or 2SC1685(R,S)
D1,2	1S1555 or 1S2076 or 1S2473
D3,4	STV-4H(W)
D5,6	WZ-167
D7~10	GP25DL or U05C(S)
D11~13	W06B

	R1,2	C1,2	C15,16	C51~56
Q-10	100	100P	560P	NO
2-71	1K	220P	2200P	560P

(X11-1870)

	J23,28	J61,62	C15,16	C51,52
Q-11	YES	NO	0.47	NO
2-71	NO	YES		
D-51	NO	YES		
D-21	YES	NO	0.47	NO

(X07-2001)

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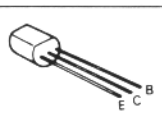
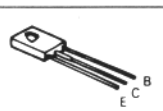
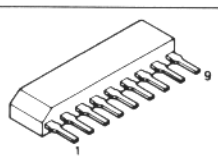
2SA733(A)
2SA992
2SA1127NC
2SC945(A)
2SC1685
2SC1845



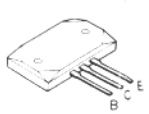
2SA1110
2SC2590



AN6555F
AN6555

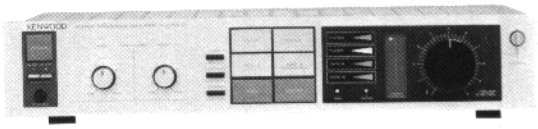


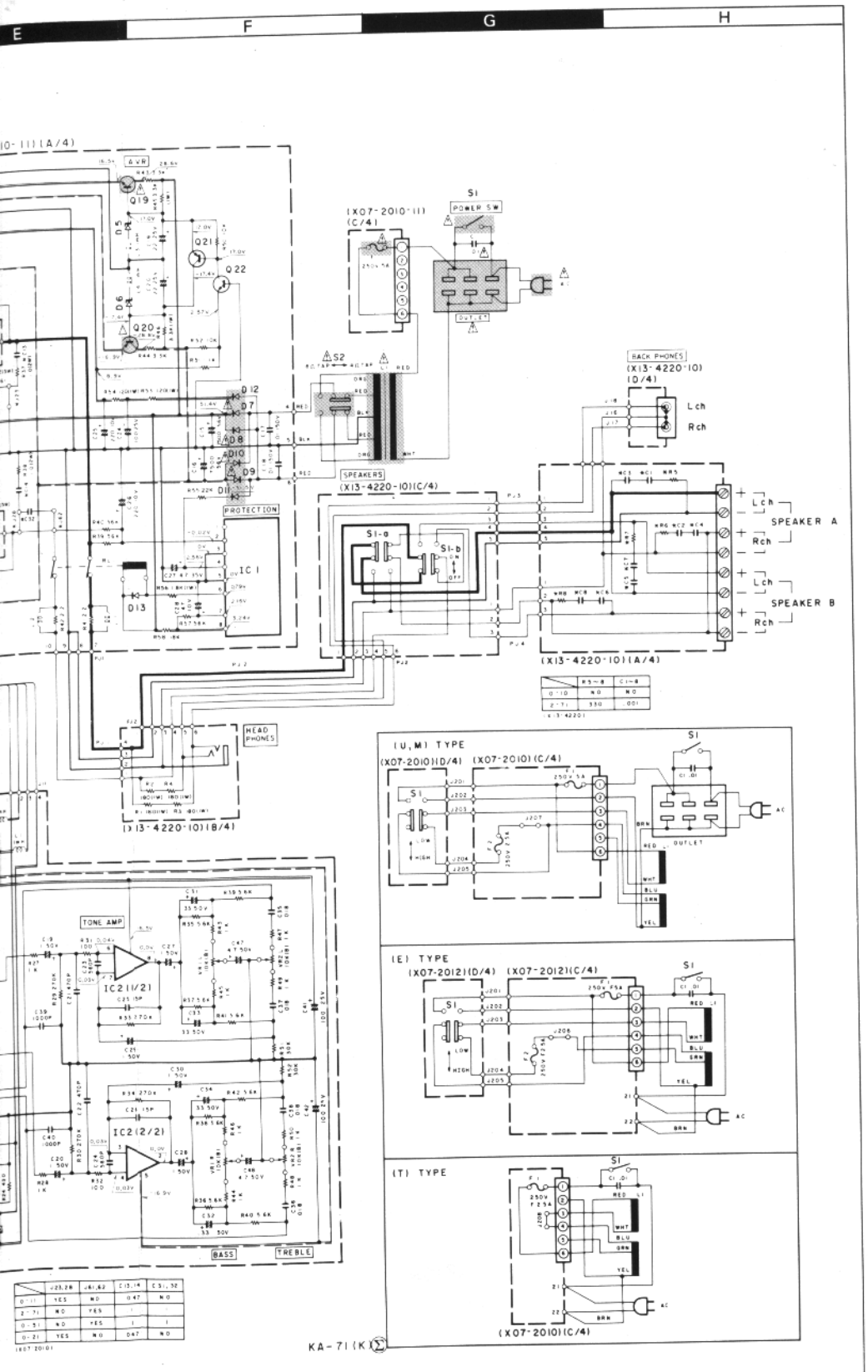
2SA1215
2SC2921



INTEGRATED AMPLIFIER

KA-71





SPECIFICATION

Audio Section

Power Output

65 watts* per channel minimum RMS, both channels driven, at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.05% total harmonic distortion.

Both Channels Driven at 8 ohms.
1 kHz.....68 W + 68 W
Dynamic Power Output at
4 ohms.....320 W
Total Harmonic Distortion
AUX input to SPEAKER output
(20 Hz to 20,000 Hz).....0.05% at rated power into 8 ohms
(20 Hz to 20,000 Hz).....0.03% at 1/2 rated power into 8 ohms
PHONO input to SPEAKER output (1 kHz).....0.025% at rated power with VOLUME −20 dB
Intermodulation Distortion (60 Hz:7 kHz = 4:1).....0.05% at rated power into 8 ohms
Damping Factor.....25 (1 kHz into 8 ohms)
Power Bandwidth.....10 Hz to 100 kHz at 0.2% T.H.D.
Frequency Response.....10 Hz to 100 kHz, +0 dB, −3 dB
Input Sensitivity/Impedance
Phono.....2.5 mV/50 k ohms
Tuner, Tape.....150 mV/25 k ohms
Signal-to-Noise Ratio (IHF, A)
Phono.....74 dB for 2.5 mV input
80 dB for 5.0 mV input
Tuner, Tape.....100 dB for 150 mV input
Phono Maximum Input Level.....110 mV (RMS), T.H.D. 0.05% at 1,000 Hz
Output Level/Impedance
Tape REC (Pin).....150 mV/2.7 k ohms
Phono Frequency Response.....RIAA standard curve ±0.5 dB (20 Hz to 20,000 Hz)
Tone Control
Bass.....±10 dB at 100 Hz
Treble.....±10 dB at 10 kHz
Subsonic Filter.....18 Hz, 6 dB/oct
Loudness Control.....+10 dB at 100 Hz (at −30 dB VOLUME Level)

General

Power Requirements.....60 Hz 120 V (U.S.A. & Canada model), 50 Hz 240 V (U.K. model) or 50/60 Hz 110 - 120 V/220 - 240 V, switchable
Power Consumption.....2.5 A (UL and CSA)
270 W
(8 ohms at rated power)
20 W (No signal)
A.C. Outlet.....Switched 2, Unswitched 1
Dimensions.....W 440 mm (17-5/16")
H 87 mm (4-19/64")
D 236 mm (9-51/64")
Weight.....6.7 kg (14.8 lb)

* Measured pursuant to Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifier in U.S.A.

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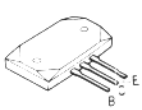
DC voltages are as measured with a high impedance voltmeter with no signal input. Values may vary slightly due to variations between individual instruments or/and units.

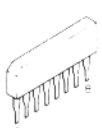
Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance sans signal d'entrée. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

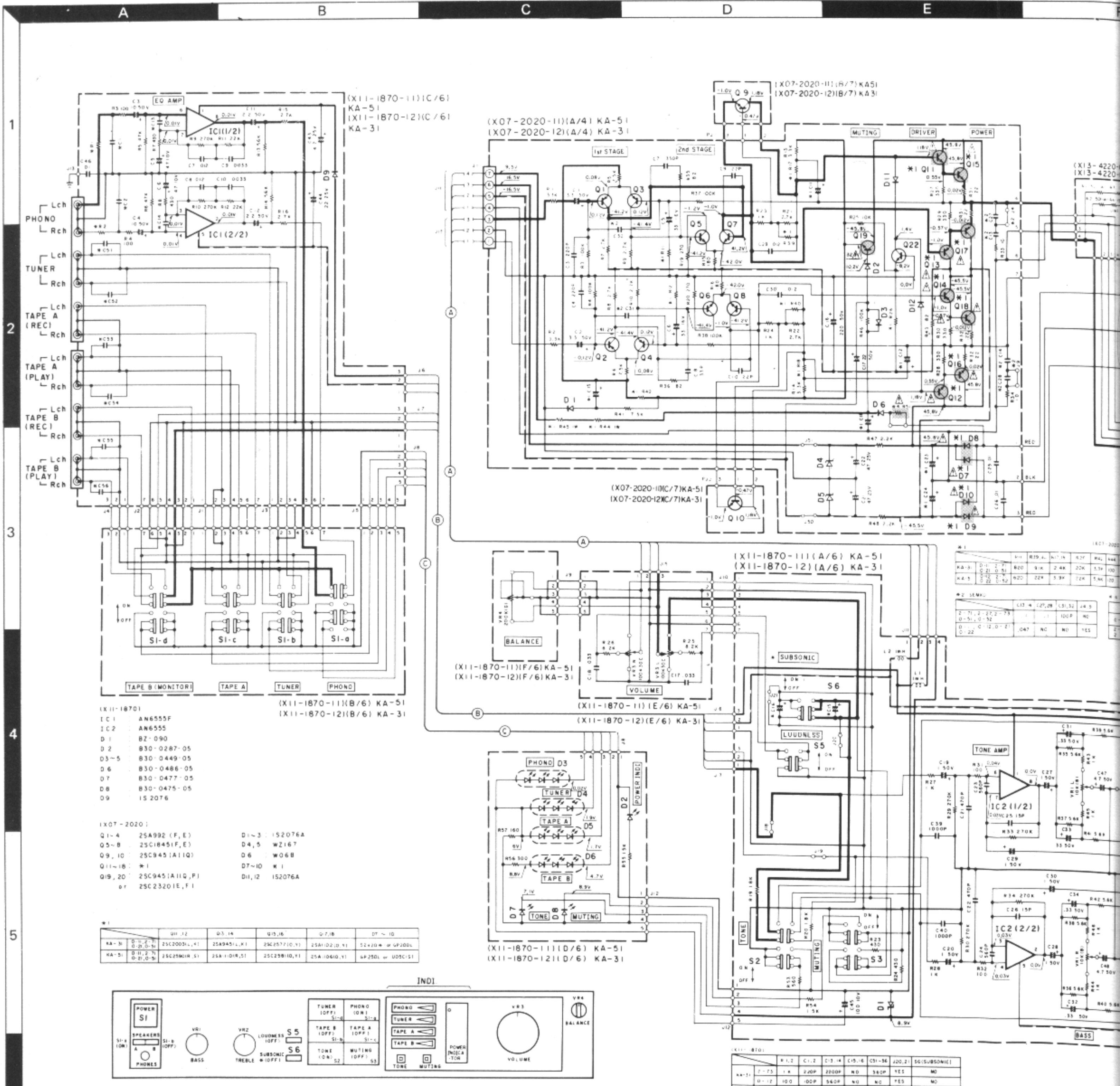
Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser ohne Eingangssignal gemessen. Dabei schwanden die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.

1215
2921



μPC1237H





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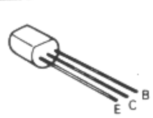
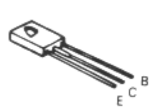
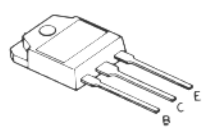
2SA954
2SA992
2SA945(A)
2SC1845
2SC2003
2SC2320



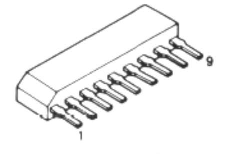
2SA1110
2SC2590



2SA1102
2SA1106
2SC2577
2SC2581

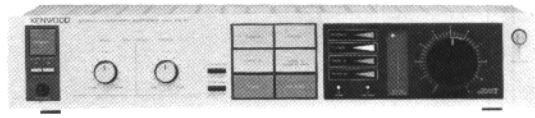


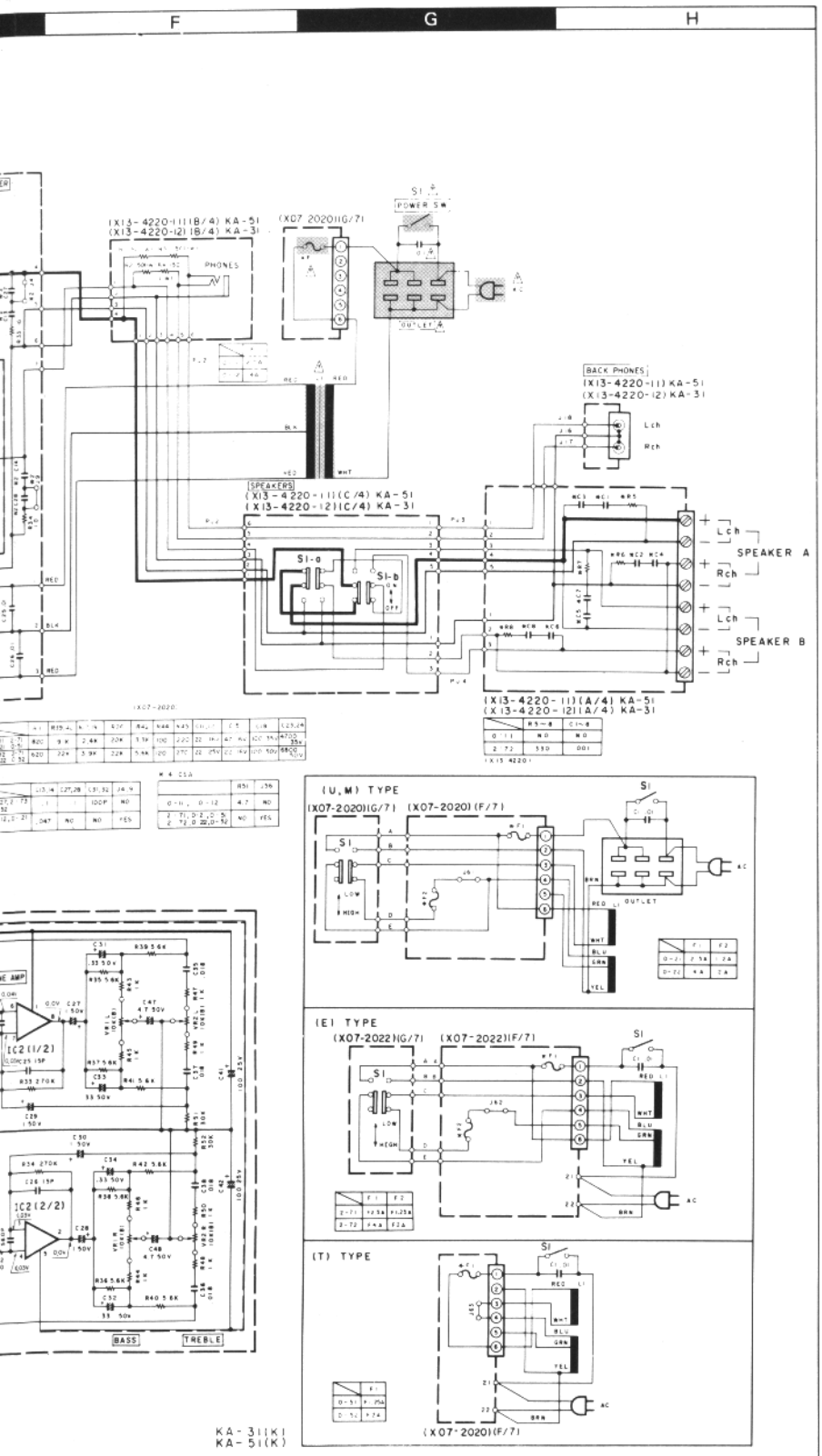
AN6555F
AN6555



RATED AMPLIFIER

KA-31/51





KA-31(K)
KA-51(K)

SPECIFICATION

Audio Section (KA-51)

Power Output

50 watts* per channel minimum RMS, both channels driven, at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.09% total harmonic distortion.

Both Channels Driven at 8 ohms,
1 kHz ..... 53 W + 53 W
Dynamic Power Output at
4 ohms ..... 250 W

Audio Section (KA-31)

Power Output

30 watts* per channel minimum RMS, both channels driven, at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.09% total harmonic distortion.

Both Channels Driven at 8 ohms,
1 kHz ..... 32 W + 32 W
Dynamic Power Output at
4 ohms ..... 150 W

Total Harmonic Distortion
AUX input to SPEAKER output
(20 Hz to 20,000 Hz) ..... 0.09% at rated power into 8 ohms
(20 Hz to 20,000 Hz) ..... 0.05% at 1/2 rated power into 8 ohms
PHONO input to SPEAKER
output (1 kHz) ..... 0.04% at rated power with VOLUME −20 dB
Intermodulation Distortion ..... 0.05% at rated power
(60 Hz:7 kHz = 4:1) into 8 ohms
Damping Factor ..... 25 (1 kHz into 8 ohms)
Power Bandwidth ..... 10 Hz to 100 kHz at 0.2% T.H.D.
Frequency Response ..... 10 Hz to 100 kHz, +0 dB, −3 dB
Input Sensitivity/Impedance
Phono ..... 2.5 mV/50 k ohms
Tuner, Tape ..... 150 mV/26 k ohms
Signal-to-Noise Ratio (IHF, A)
Phono ..... 74 dB for 2.5 mV input
80 dB for 5.0 mV input
Tuner, Tape ..... 100 dB for 150 mV input
Phono Maximum Input Level ..... 110 mV (RMS), T.H.D. 0.05% at 1,000 Hz
Output Level/Impedance
Tape REC (Pin) ..... 150 mV/2.7 k ohms
Phono Frequency Response ..... RIAA standard curve ±0.5 dB 20 Hz to 20,000 Hz
Tone Control
Bass ..... ±10 dB at 100 Hz
Treble ..... ±10 dB at 10 kHz
Loudness Control ..... +9 dB at 100 Hz (at −30 dB VOLUME Level)

General

Power Requirements ..... 60 Hz 120 V (U.S.A. & Canada model), 50 Hz 240 V (U.K. model) or 50/60 Hz 110 - 120 V/ 220 - 240 V, switchable
Power Consumption ..... 110 W (UL and CSA) 140 W 18 ohms at rated power) 13 W (No signal)
A.C. Outlet ..... Switched 2, Unswitched 1
Dimensions ..... W 440 mm (17-5/16") H 87 mm (3-19/64") D 236 mm (9-51/64")
Weight ..... 6.1 kg (13.5 lb) (KA-51) 4.7 kg (10.4 lb) (KA-31)

* Measured pursuant to Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifier in U.S.A.

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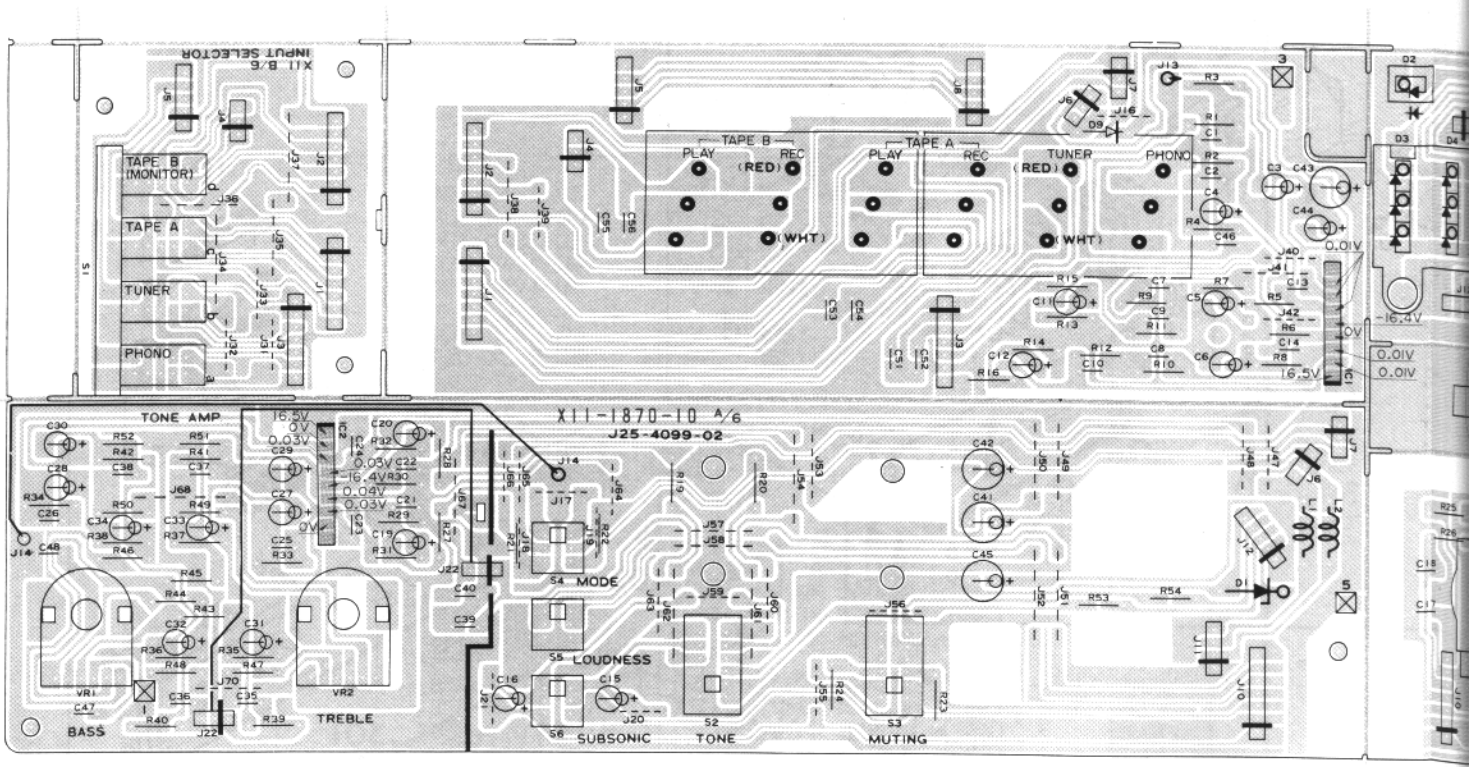
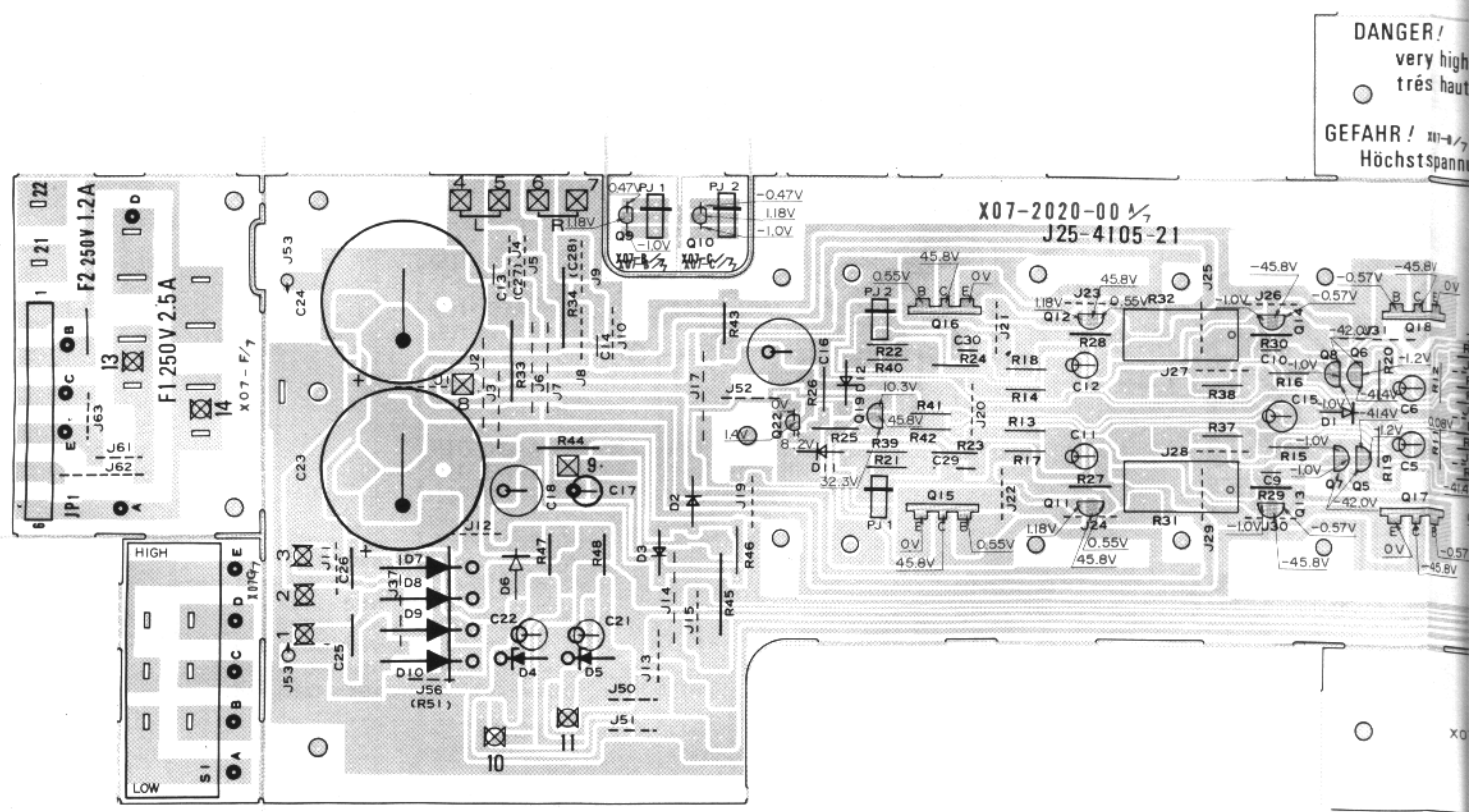
Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser ohne Eingangssignal gemessen. Dabei schwanden die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.

CONTROL PCB (X11-1870-10) Component side view

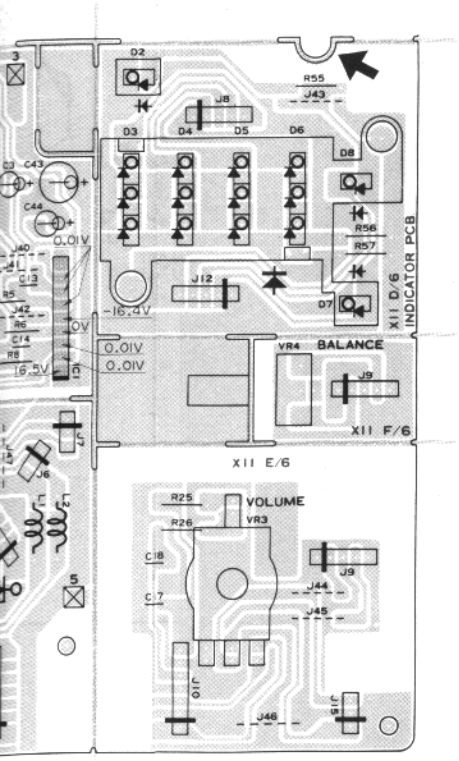


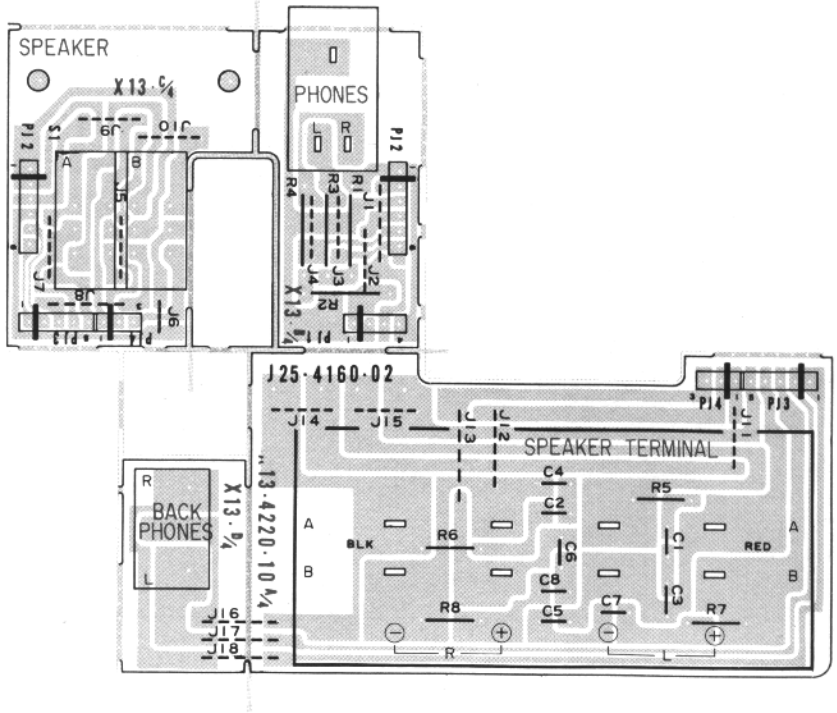
POWER AMP (X07-2020-11) (KA-51, KA-31) Component side view

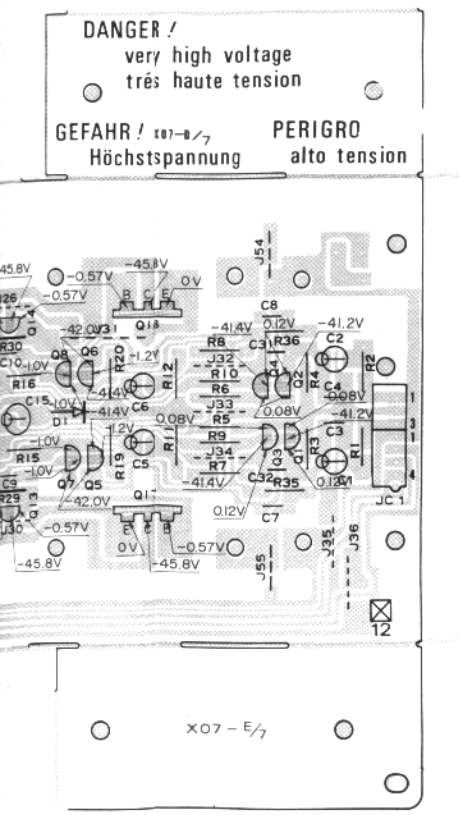


PC BOARD

SUB PCB (X13-4220-10) Component side view







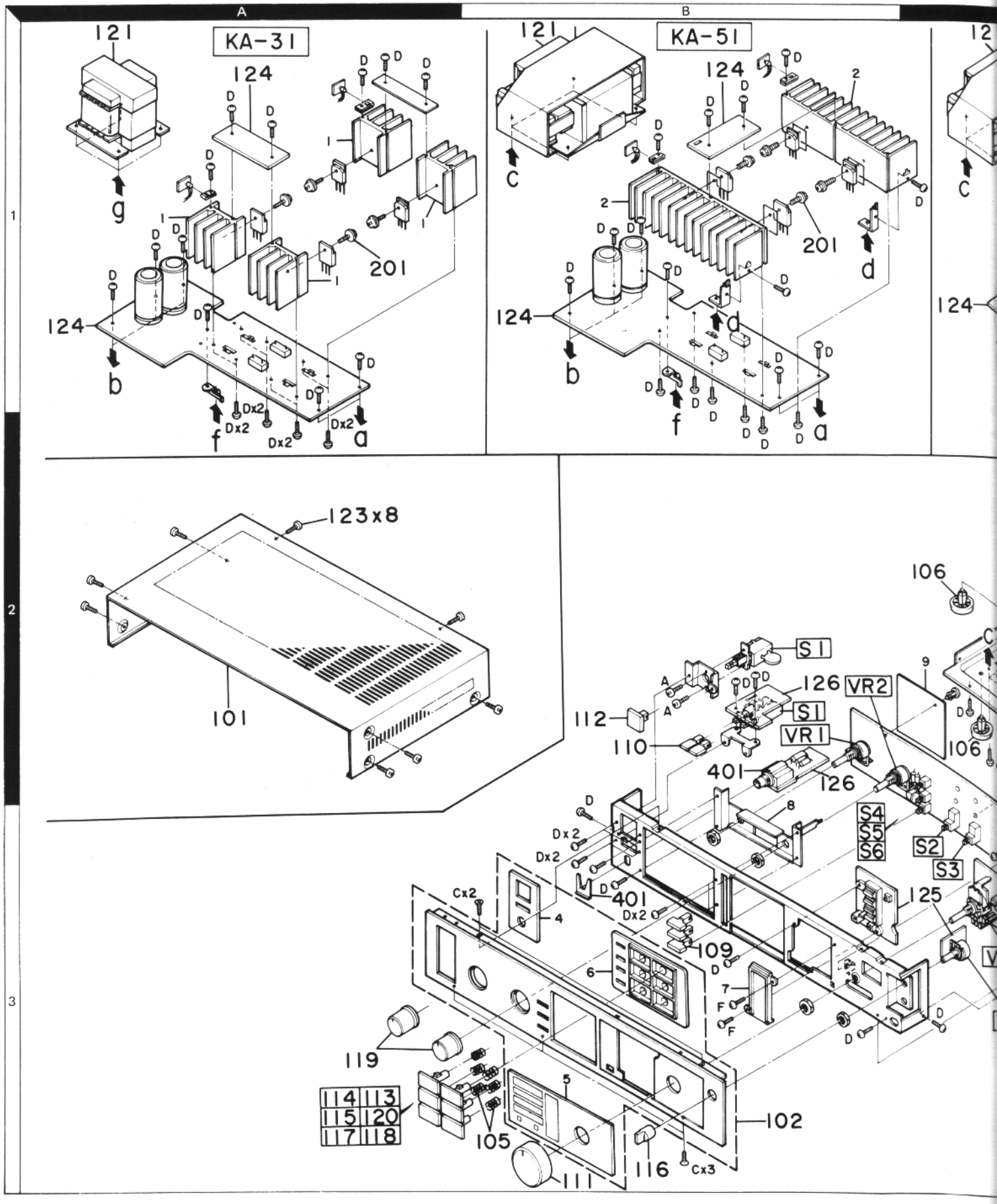
In this model, there are separated pc boards which was originally one. These separated pc boards can't be shipped independently.

ex.

Part No. of pc board	Separated portion no.
X09-1230-00	(A/3)
X09-1230-00	(B/3)
X09-1230-00	(C/3)

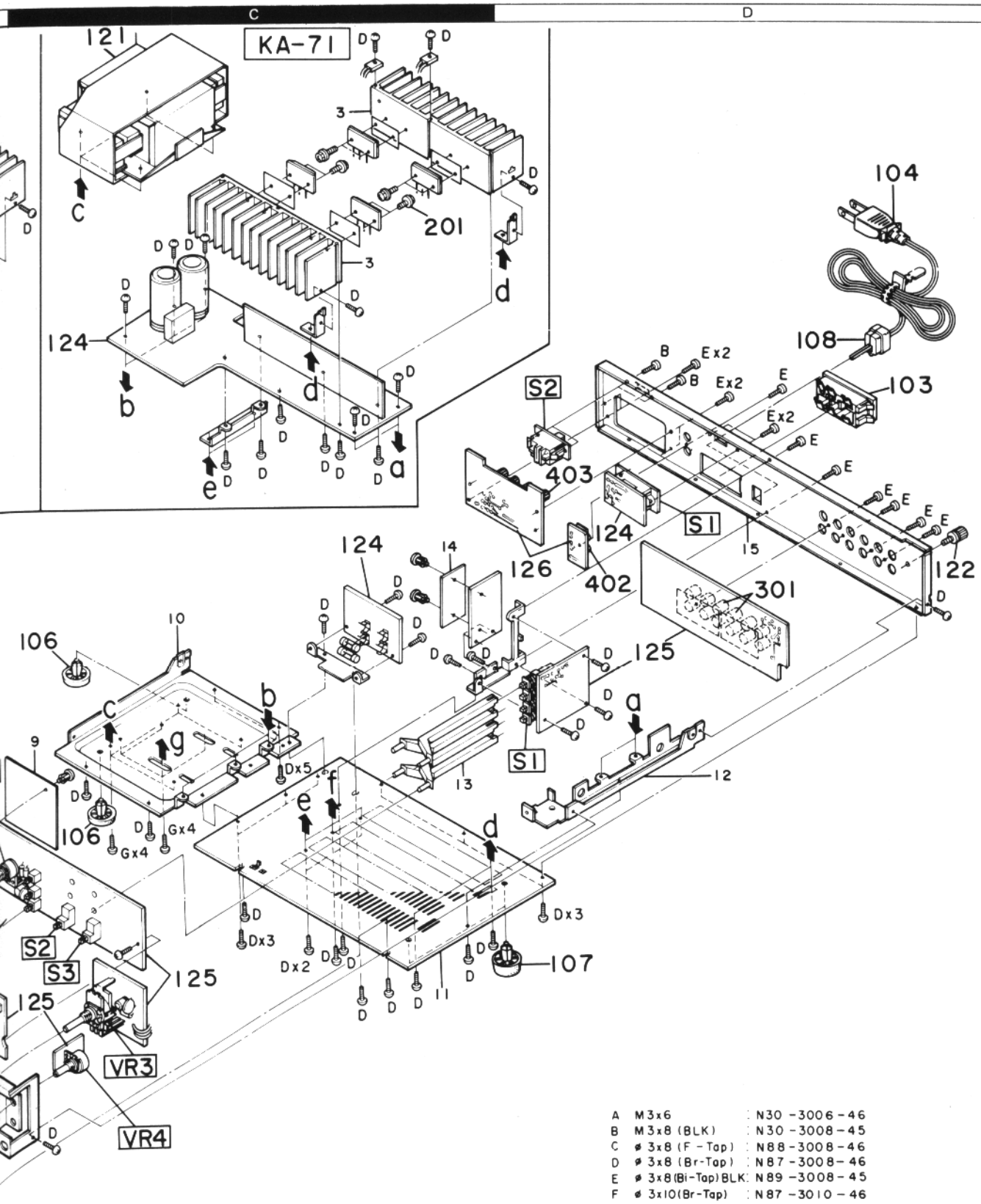
In the example shown above, separated portion can't be ordered independently. In case only A/3 was ordered, pc board ass'y of X09-1230-00, which all A/3, B/3, C/3 included, will be shipped.

Refer to the schematic diagram for the values of resistor and capacitors. The PC board drawing is viewing from the side easy to check.


A
B
1
2
3
KA-31
KA-51
121
124
201
123x8
101
106
S1
126
VR2
VR1
112
110
401
S4
S5
S6
S2
S3
125
109
102
119
114
113
115
120
117
118
105
116
111
Cx2
Cx3
Dx2

ED VIEW

Exploded view No. 1 ~ 15 are not supplied.



A	M3x6	: N30 -3006-46
B	M3x8 (BLK)	: N30 -3008-45
C	ø 3x8 (F-Tap)	: N88-3008-46
D	ø 3x8 (Br-Tap)	: N87-3008-46
E	ø 3x8(Bi-Tap)BLK	: N89-3008-45
F	ø 3x10(Br-Tap)	: N87-3010-46
G	ø 4x10(Br-Tap)	: N87-4010-46

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