

STEREO CONTROL AMPLIFIER

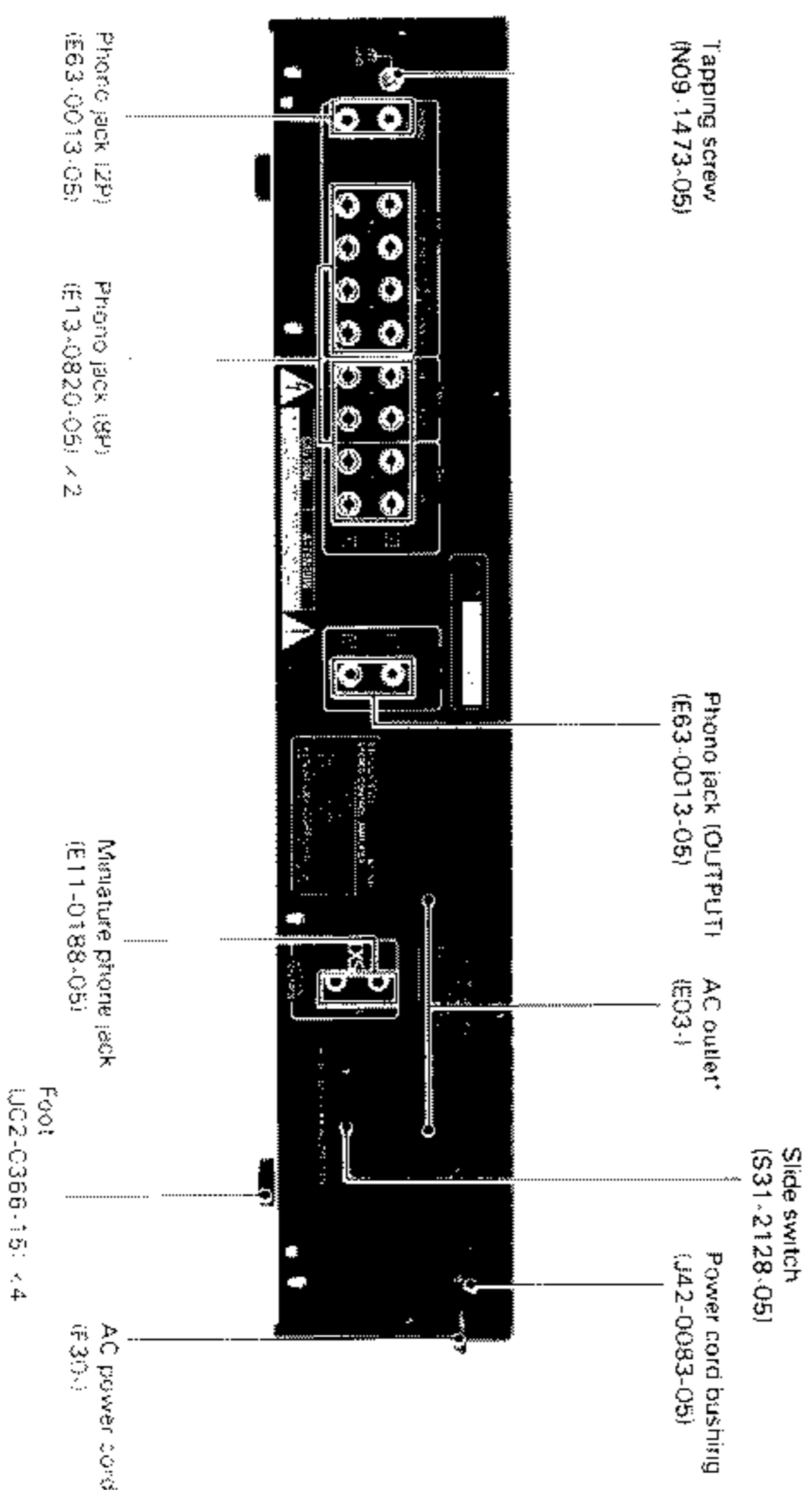
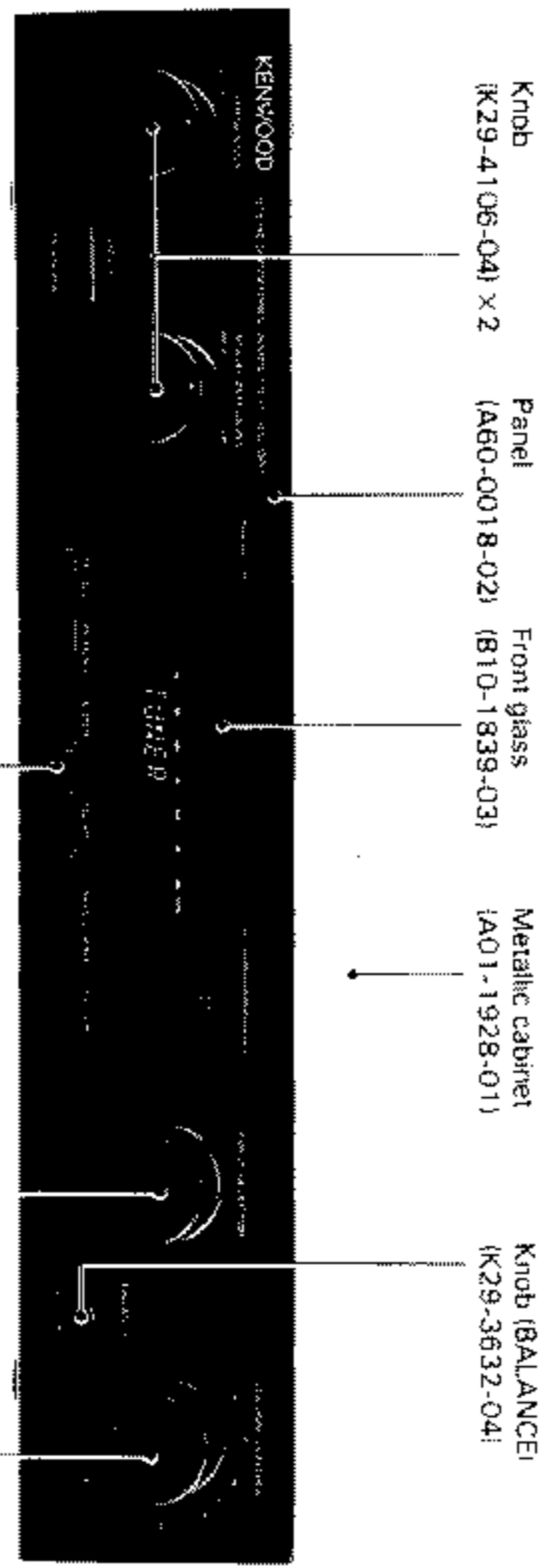
KC-991

SERVICE MANUAL

KENWOOD

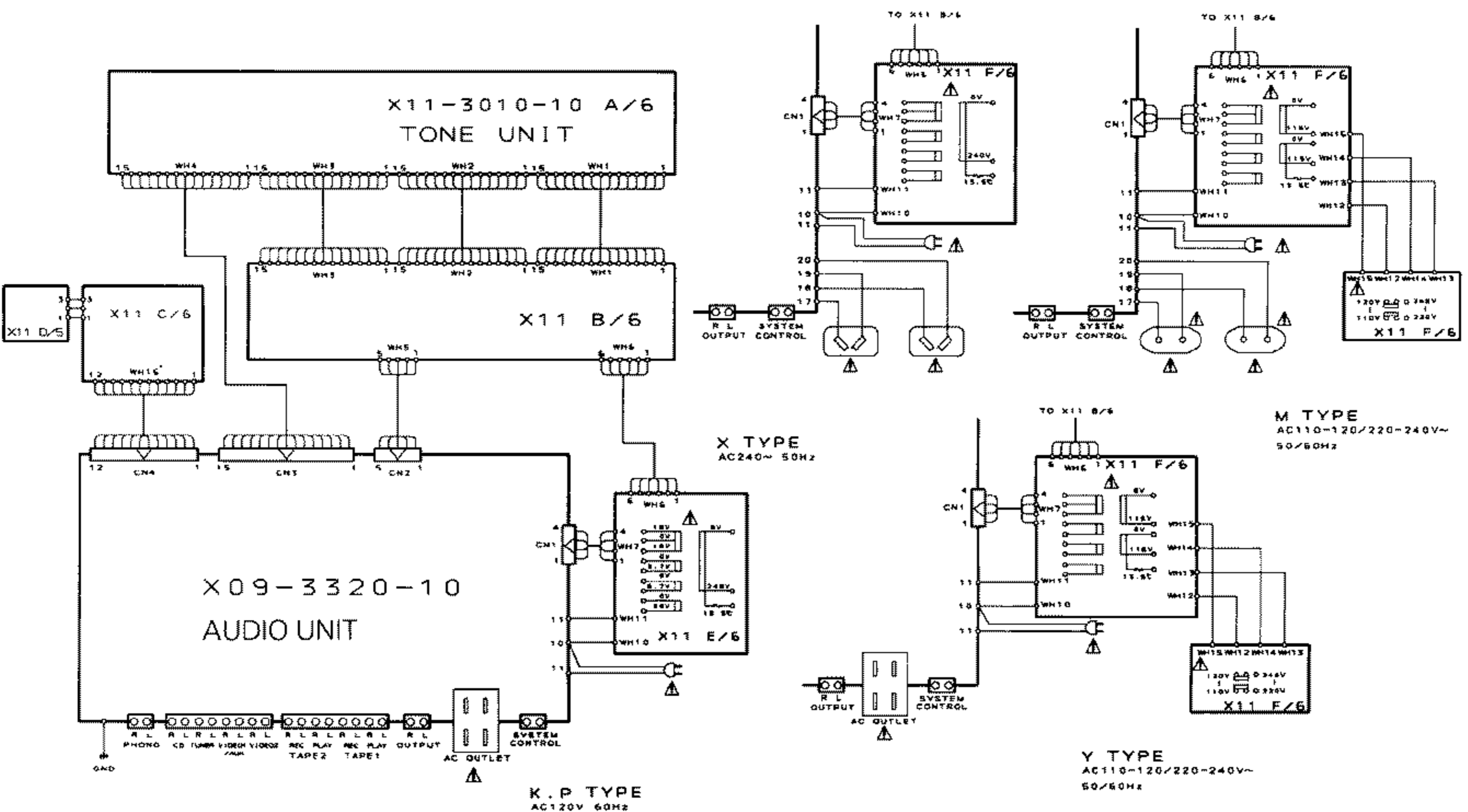
KC-991

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B51-4288-00(S)2260

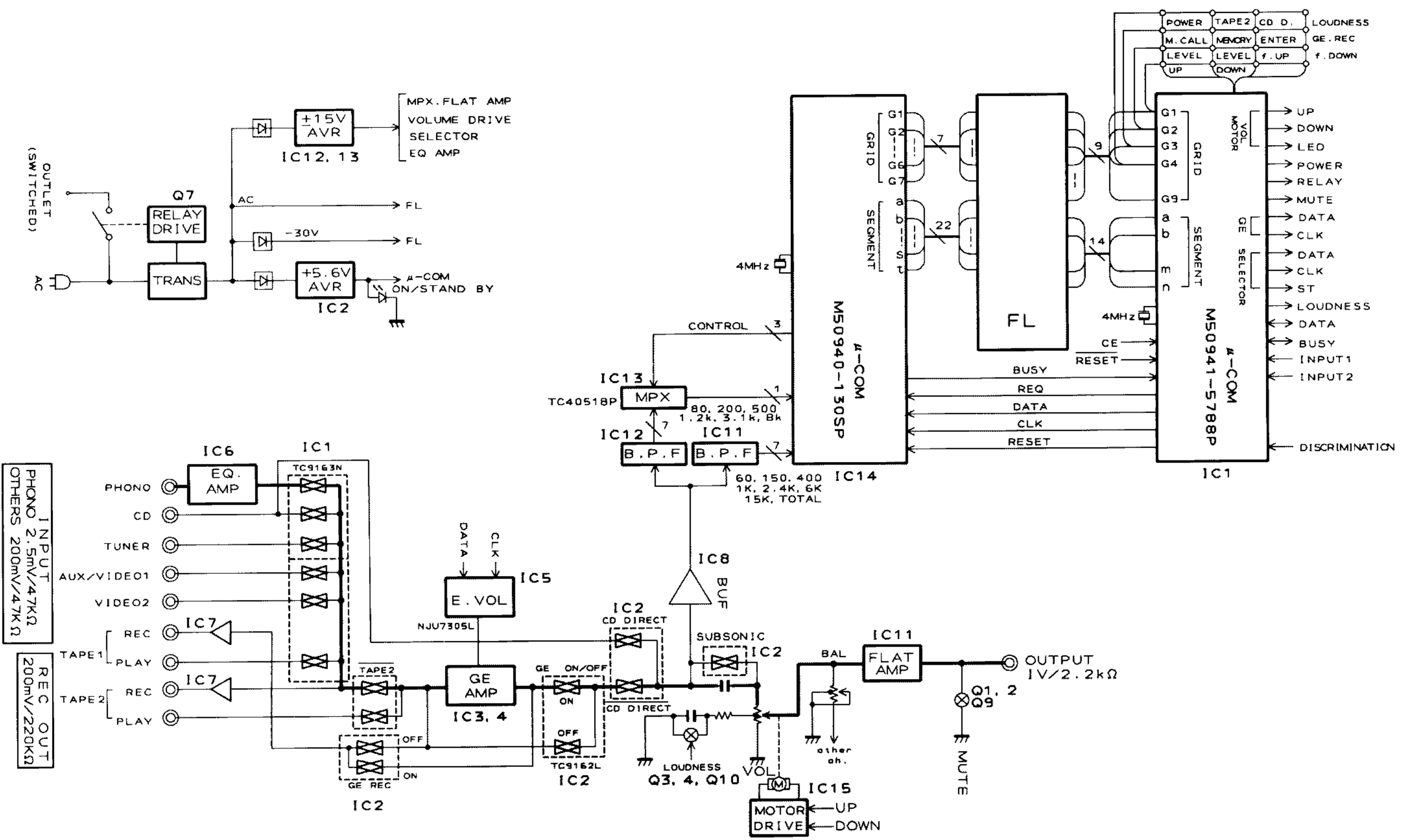


* Refer to parts list on page 20.

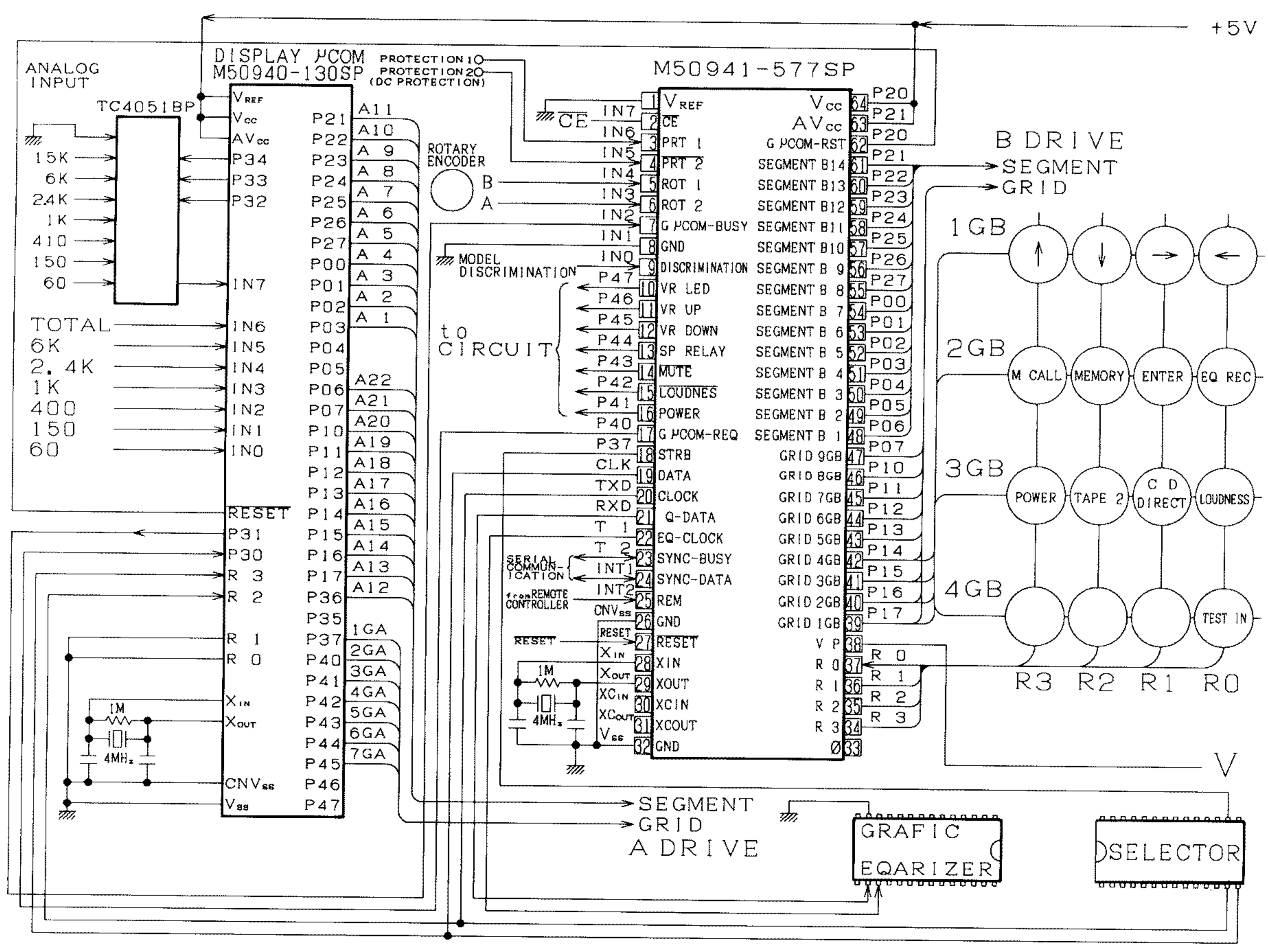
WIRING DIAGRAM



BLOCK DIAGRAM



CIRCUIT DESCRIPTION



CIRCUIT DESCRIPTION

Pin description

| Pin No. | Pin Name | I/O | Name | Description |
|---------|------------|-----|-------------|--------------------------------|
| 1 | VREF | I | OV | GND |
| 2 | IN 7 | I | CE | Chip enable |
| 3 | IN 6 | I | PRT 1 | Protection |
| 4 | IN 5 | I | PRT 2 | DC protection |
| 5 | IN 4 | I | ROT 1 | Rotary encoder |
| 6 | IN 3 | I | ROT 2 | Rotary encoder |
| 7 | IN 2 | I | G μCOM-BUSY | Display μ-COM busy |
| 8 | IN 1 | I | | |
| 9 | IN 0 | I | | |
| 10 | P4 7 | O | VR LED | Volume LED |
| 11 | P4 6 | O | VR UP | Volume up |
| 12 | P4 5 | O | VR DOWN | Volume down |
| 13 | P4 4 | O | SP RELAY | Speaker relay |
| 14 | P4 3 | O | MUTE | Mute |
| 15 | P4 2 | O | LOUDNESS | Loudness |
| 16 | P4 1 | O | POWER | Power |
| 17 | P4 0 | O | G μCOM-REQ | Display μ-COM request |
| 18 | P3 7 S-RDY | O | STRB | Strobe (Selector) |
| 19 | P3 6 CLK | O | DATA | Data (Selector, Display μ-COM) |
| 20 | P3 5 TXD | O | CLOCK | Clock (Selector Display μ-COM) |
| 21 | P3 4 RXD | O | EQ-DATA | Data for GE |
| 22 | P3 3 T1 | O | EQ-CLOCK | Clock for GE |
| 23 | P3 2 T2 | I/O | SYNC-BUSY | Syncro busy |
| 24 | P3 1 INT1 | I/O | SYNC-DATA | Syncro data |
| 25 | P3 0 INT2 | I | REM | Remote controller input |
| 26 | CVSS | I | GND | |
| 27 | RESET | I | RESET | Reset |
| 28 | XIN | I | XIN | Clock |
| 29 | XOUT | O | XOUT | Clock |
| 30 | XCM | I | XCM | GND |
| 31 | XCOULT | O | XCOULT | |
| 32 | Vss | I | GND | GND |
| 33 | φ | O | φ | Timing output |
| 34 | R3 | I | R3 | Key return input 3 |
| 35 | R2 | I | R2 | Key return input 2 |
| 36 | R1 | I | R1 | Key return input 1 |
| 37 | RD | I | RD | Key return input 0 |
| 38 | VP | I | VP | Pull-down voltage |
| 39 | P1 7 | O | GRID 1GB | Grid |
| 40 | P1 6 | O | GRID 2GB | Grid |
| 41 | P1 5 | O | GRID 3GB | Grid |
| 42 | P1 4 | O | GRID 4GB | Grid |
| 43 | P1 3 | O | GRID 5GB | Grid |
| 44 | P1 2 | O | GRID 6GB | Grid |

CIRCUIT DESCRIPTION

| Pin No. | Pin Name | I/O | Name | Description |
|---------|----------|-----|------------------|---------------------|
| 45 | P1 1 | O | GRID 7GB | Grid |
| 46 | P1 0 | O | GRID 8GB | Grid |
| 47 | P0 7 | O | GRID 9GB | Grid |
| 48 | P0 6 | O | SEGMENT 91 | Segment |
| 49 | P0 5 | O | SEGMENT 92 | Segment |
| 50 | P0 4 | O | SEGMENT 93 | Segment |
| 51 | P0 3 | O | SEGMENT 94 | Segment |
| 52 | P0 2 | O | SEGMENT 95 | Segment |
| 53 | P0 1 | O | SEGMENT 96 | Segment |
| 54 | P0 0 | O | SEGMENT 97 | Segment |
| 55 | P2 7 | O | SEGMENT 98 | Segment |
| 56 | P2 6 | O | SEGMENT 99 | Segment |
| 57 | P2 5 | O | SEGMENT 100 | Segment |
| 58 | P2 4 | O | SEGMENT 101 | Segment |
| 59 | P2 3 | O | SEGMENT 102 | Segment |
| 60 | P2 2 | O | SEGMENT 103 | Segment |
| 61 | P2 1 | O | SEGMENT 104 | Segment |
| 62 | P2 0 | O | G μCOM-RST | Display μ-COM reset |
| 63 | P2 1 | O | AV _{cc} | |
| 64 | P2 0 | O | V _{cc} | V _{cc} |

TEST mode

1. Setting method

The power supply code is connected AC wall socket while pressing CD DIRECT key.

2. Content

- 2-1 A spectrum analyzer sections except for all FL tube is lighted.
- 2-2 When other key are pushed all illuminations are canceled.
- 2-3 EQ FREQ knob operation
A selection of a frequency is carried out similarly with at the time of an ordinairness.

2-4 EQ LEVEL knob operation

A level of frequency range where was selected is controlled with 3 point of MAX CENTER MIN.

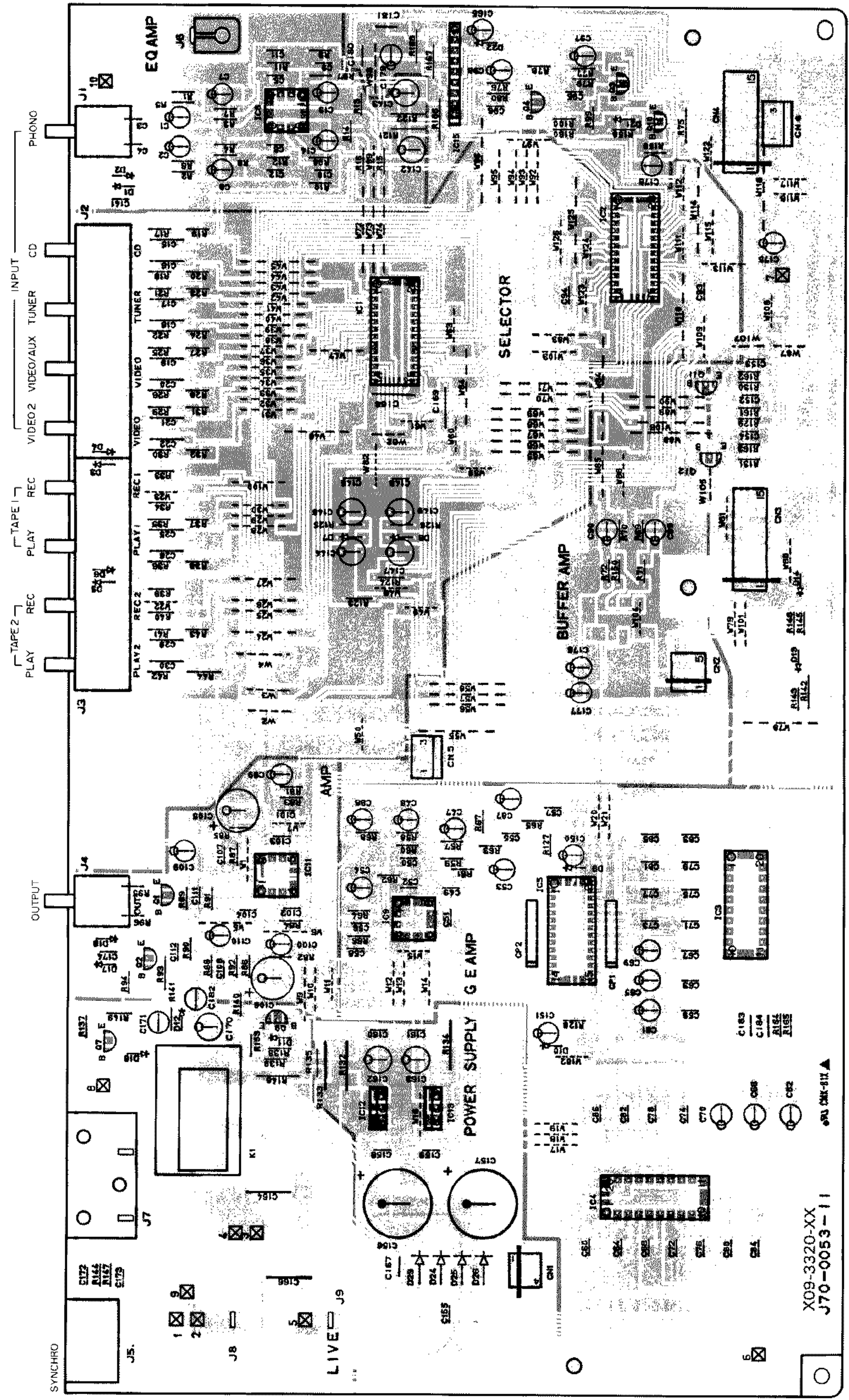
- 2-5 M1: MAX segments of all frequency range turn ON.
- M2: MIN segments of all frequency range turn ON.
- M3 — M5: Flat

- 2-6 CD DIRECT key operation Volume up
- 2-7 TAPE 2 key operation Volume down

INITIALIZATION

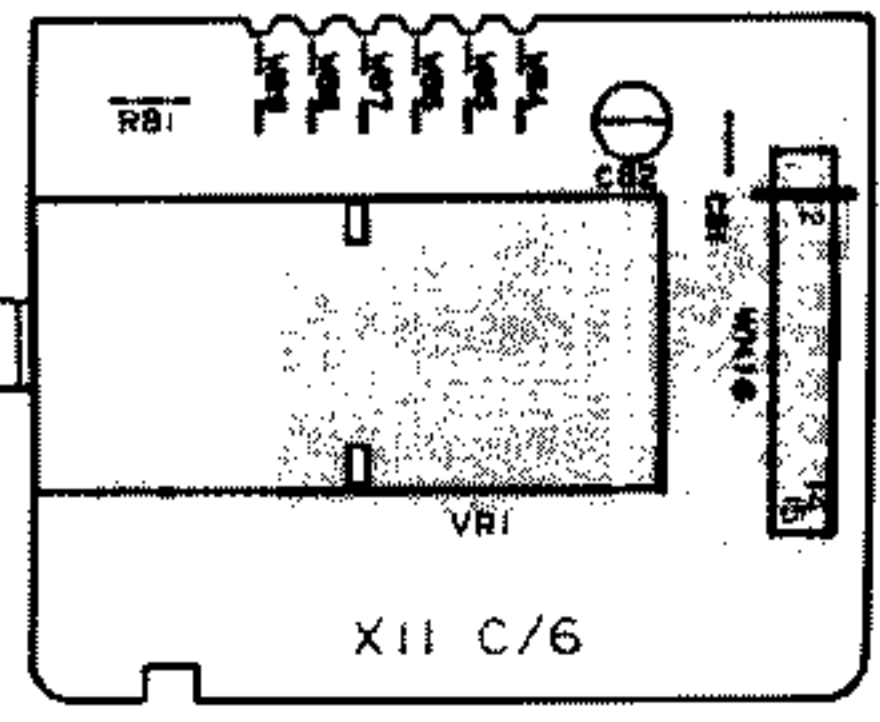
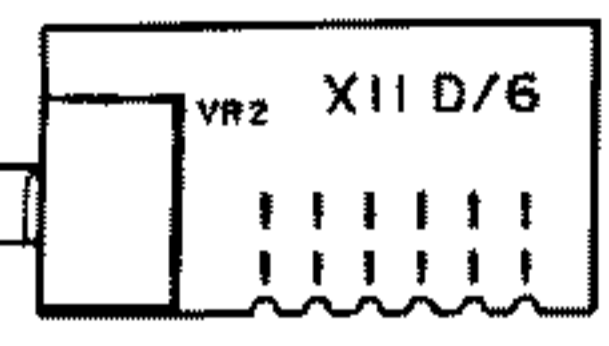
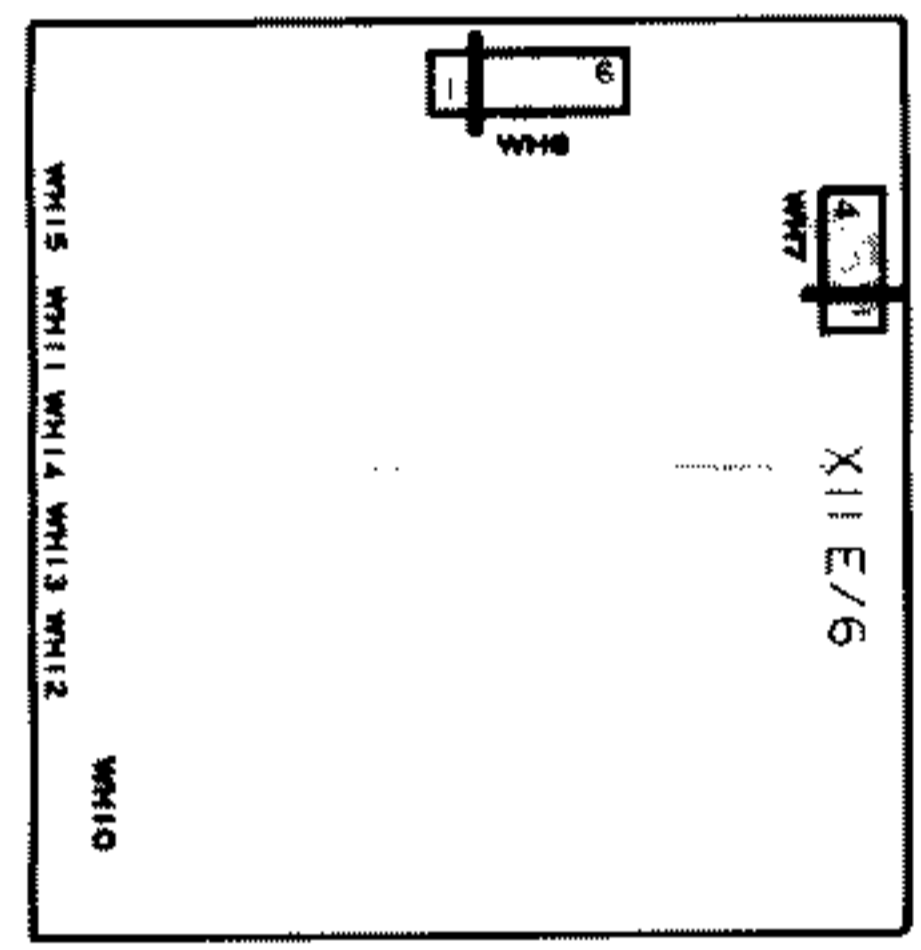
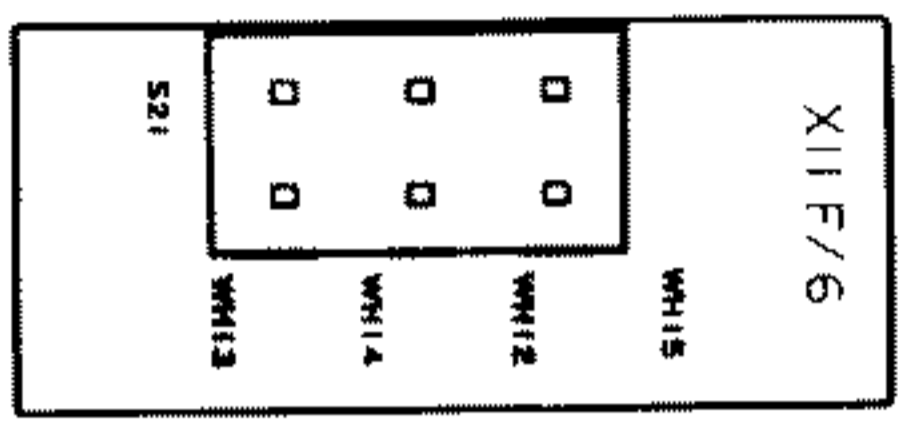
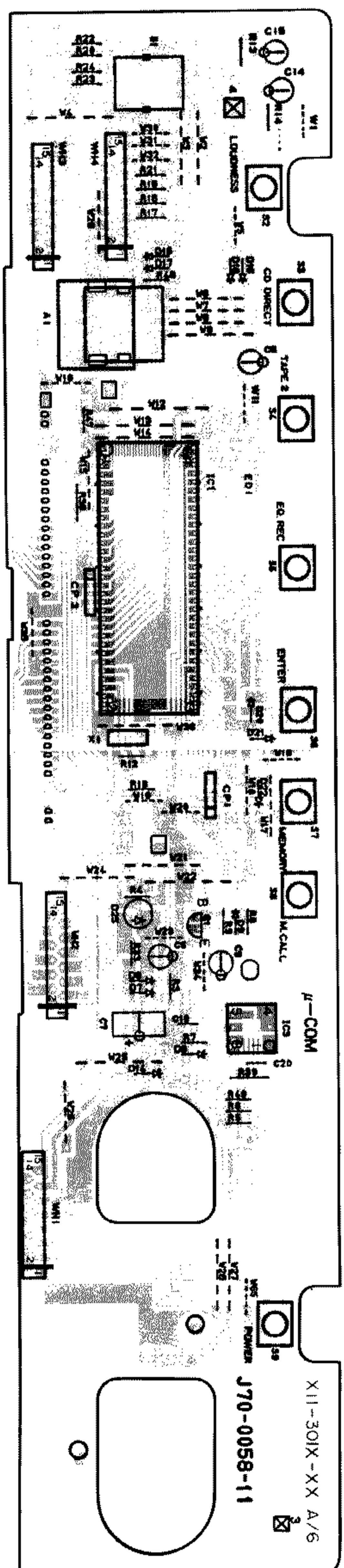
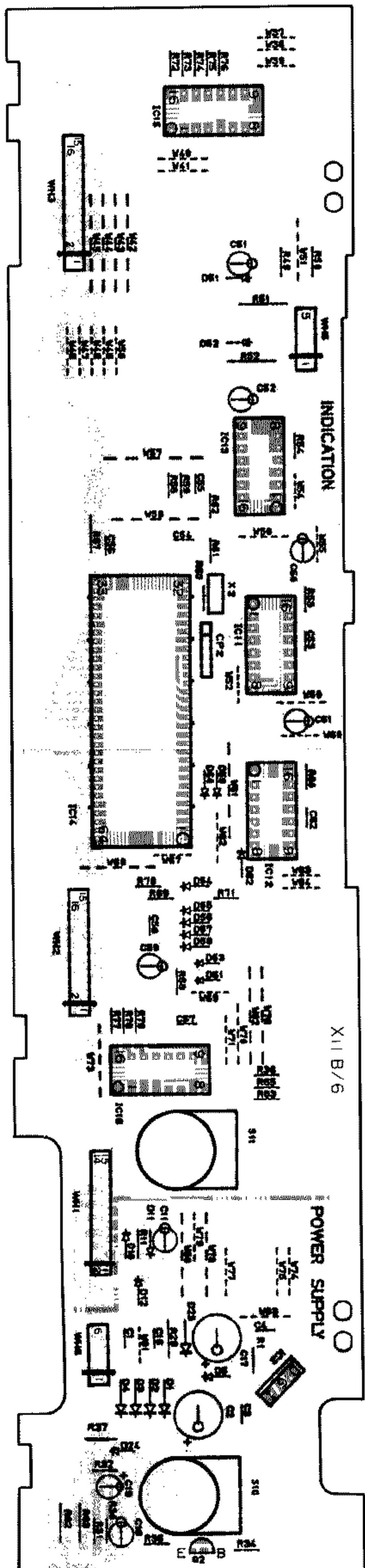
The power supply code is connected AC wall socket while pressing ENTER key.

• AUDIO UNIT



X09-3320-XX
J70-0053-11

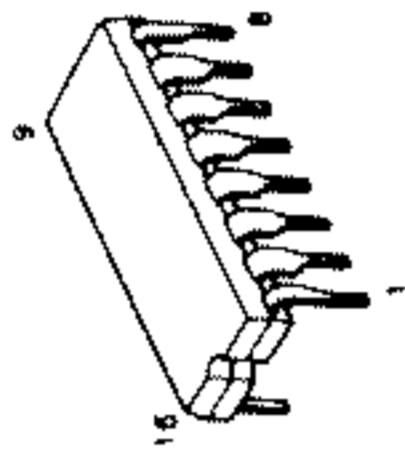
© 1971 CMR-811-A



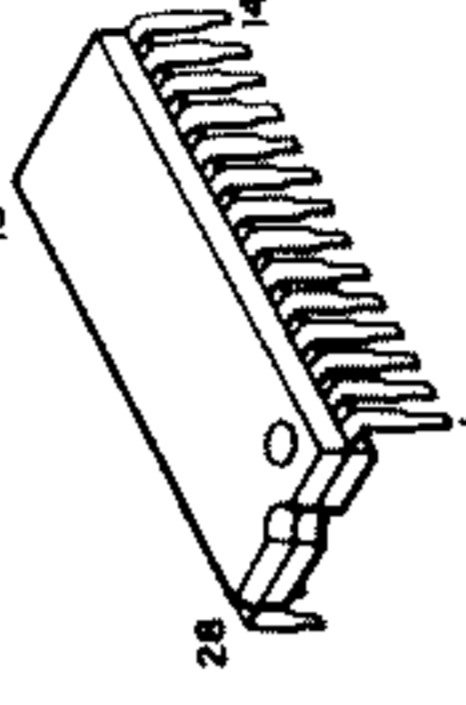
2SC2878
2SC3246



TC4051BP



RZ7305L



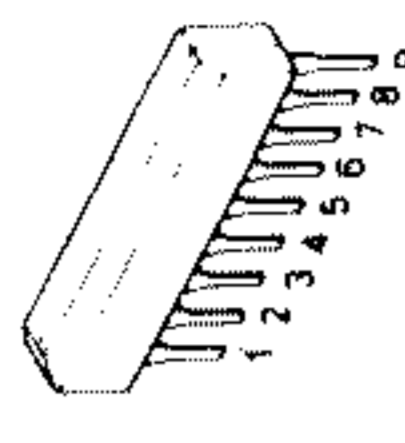
TA7805S



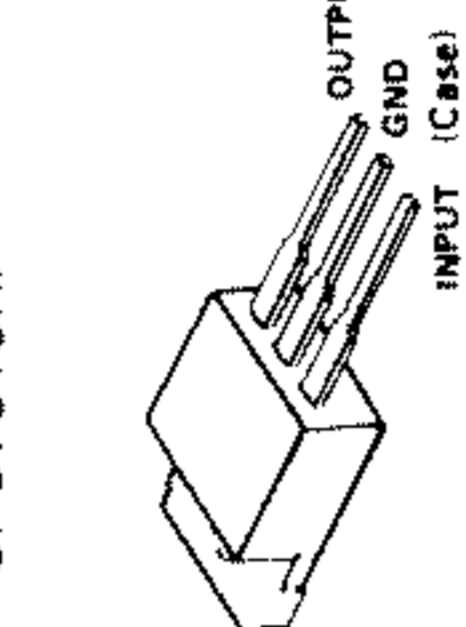
DTC124ES
2SA1048
2SA933S
2SC1740S
2SC2458



TA8409S



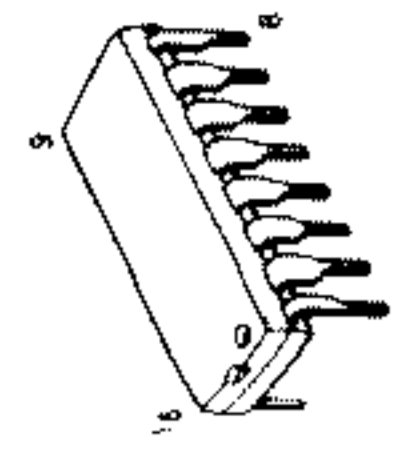
UPC7805HF
UPC7815HF



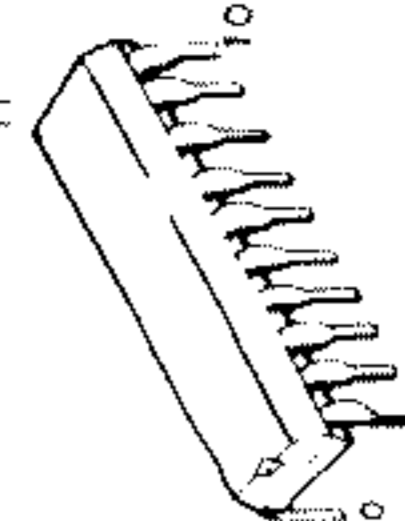
UPC7915HF



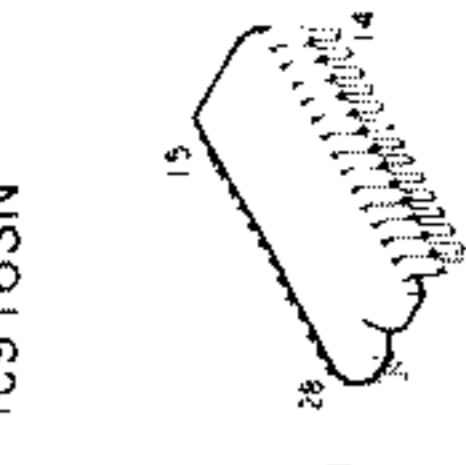
XR-1091DCP



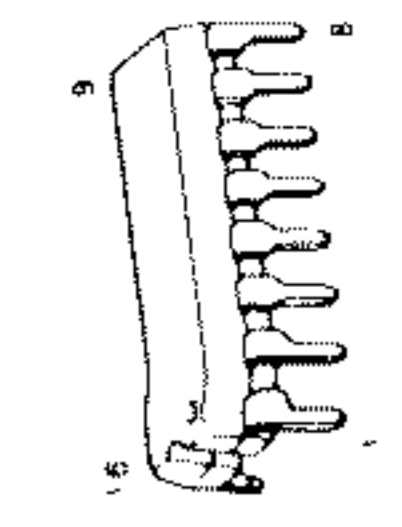
M5229P



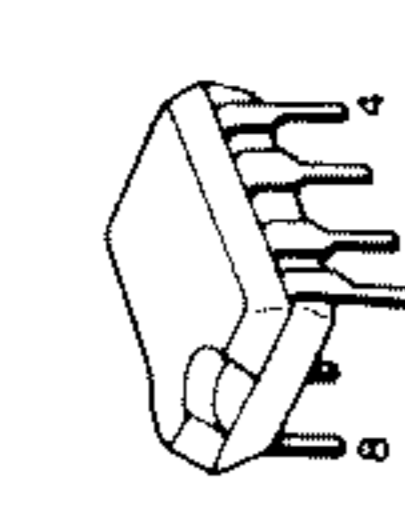
TC9162N
TC9163N



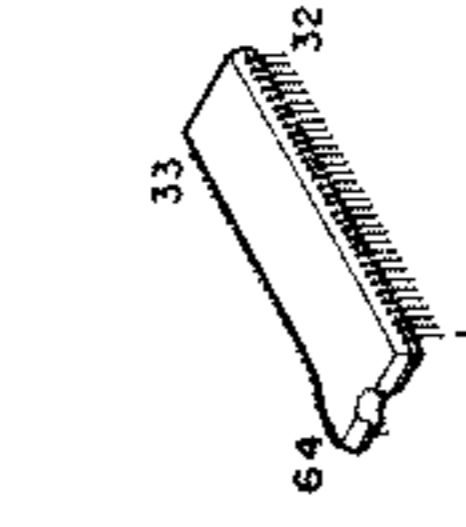
LB1294



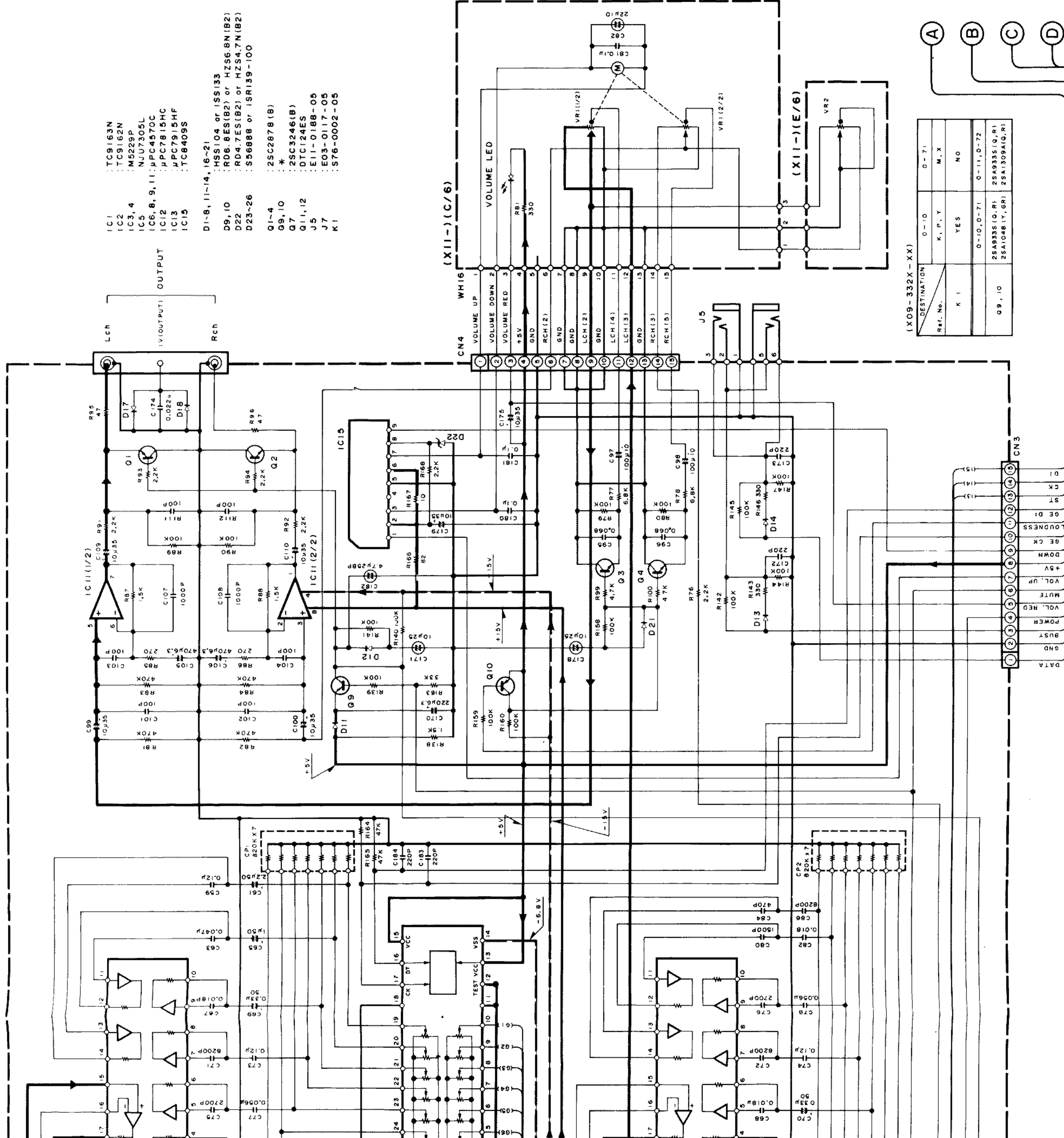
BA10393
UPC4570C-A



M50941-578SP



- IC1 : TC9163N
IC2 : TC9162N
IC3, 4 : M5229P
IC5 : NUJ7305L
IC6, 8, 9, 11 : UPC4570C
IC12 : UPC7815HC
IC13 : UPC7915HF
IC15 : TC8409S
- D1-8, 11-14, 16-21 : HSS104 or ISS133
D9, 10 : RD6.8ES(B2) or HZS6.8N (B2)
D22 : RD4.7ES(B2) or HZS4.7N (B2)
D23-26 : S56888 or ISRI39-100
- Q1-4 : 2SC2878 (B)
Q9, 10 : *
Q7 : 2SC3246(B)
Q11, 12 : DTC124ES
J5 : E11-0188-05
J7 : E03-0117-05
K1 : S76-0002-05



(X09-332X-XX)

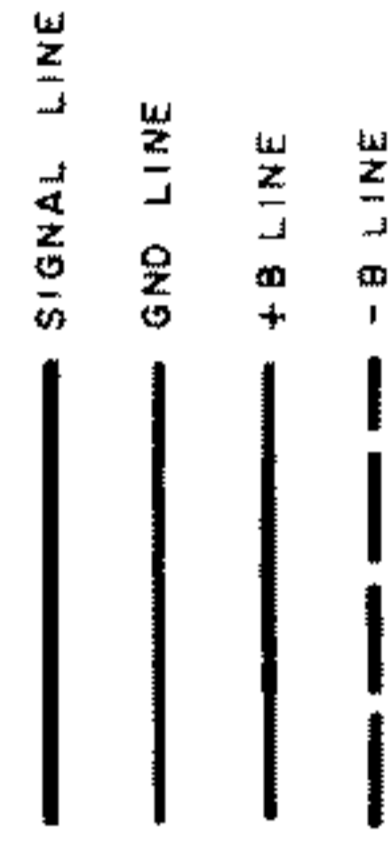
| Ref. No. | DESTINATION | 0-10 | 0-71 |
|----------|-----------------|-----------------|------|
| K1 | K, P, Y | YES | NO |
| Q9, 10 | 0-10, 0-71 | 0-11, 0-72 | |
| | 25A9335 (Q, R) | 25A9335 (Q, R) | |
| | 25A1048 (Y, GR) | 25A1048 (Y, GR) | |

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). **⚠** Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

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 schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u. U. geringfügig.

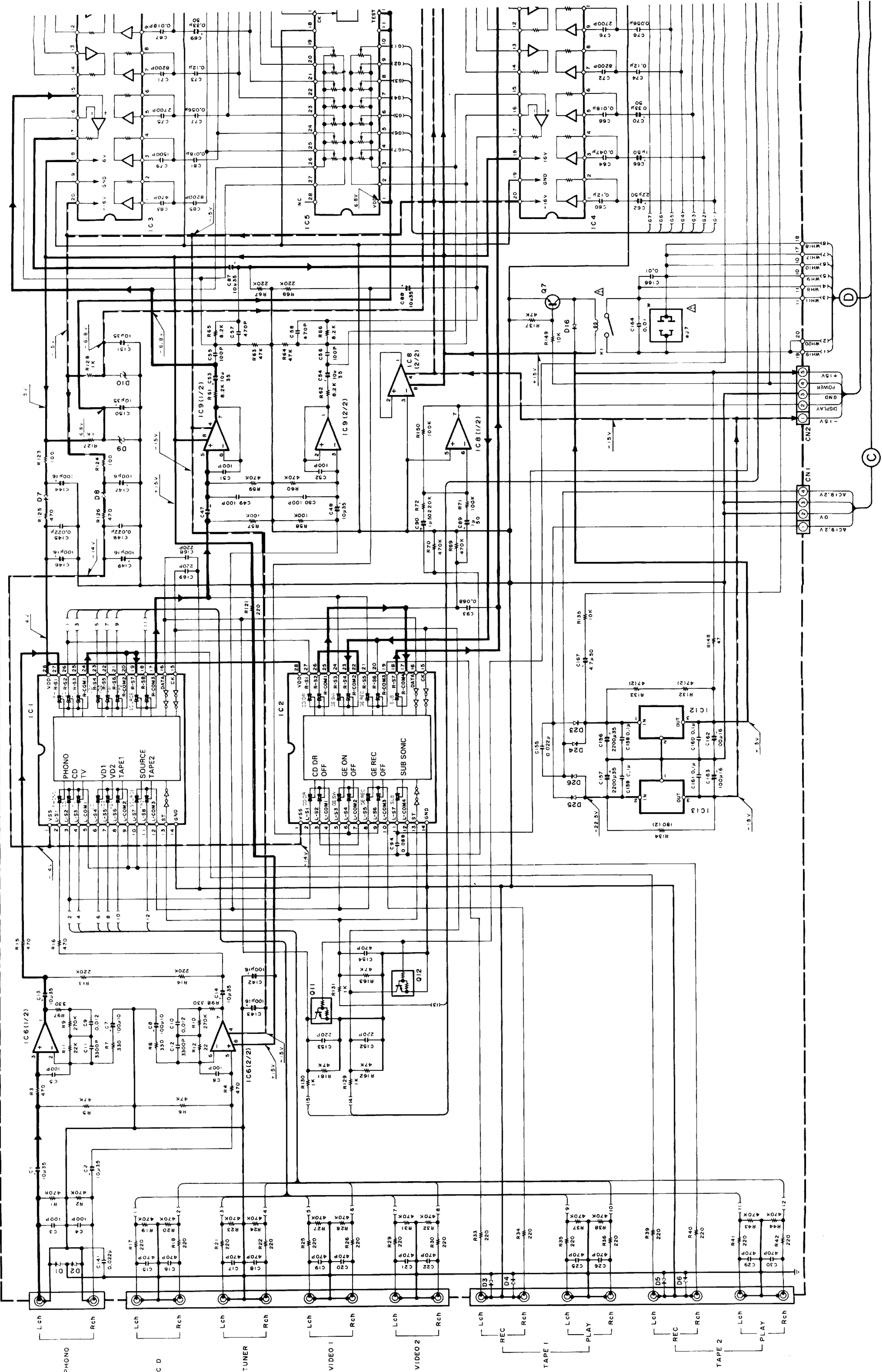


KC-991

KENWOOD

Y08-4300-10

(X09-332X-XX)



PHONO

CD

TUNER

VIDEO 1

VIDEO 2

TAPE 1

TAPE 2

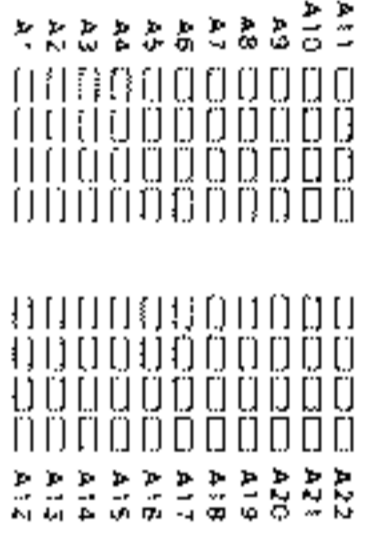
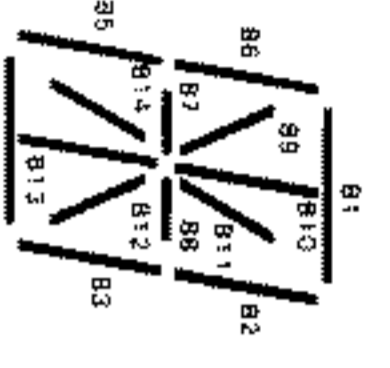
REC

PLAY

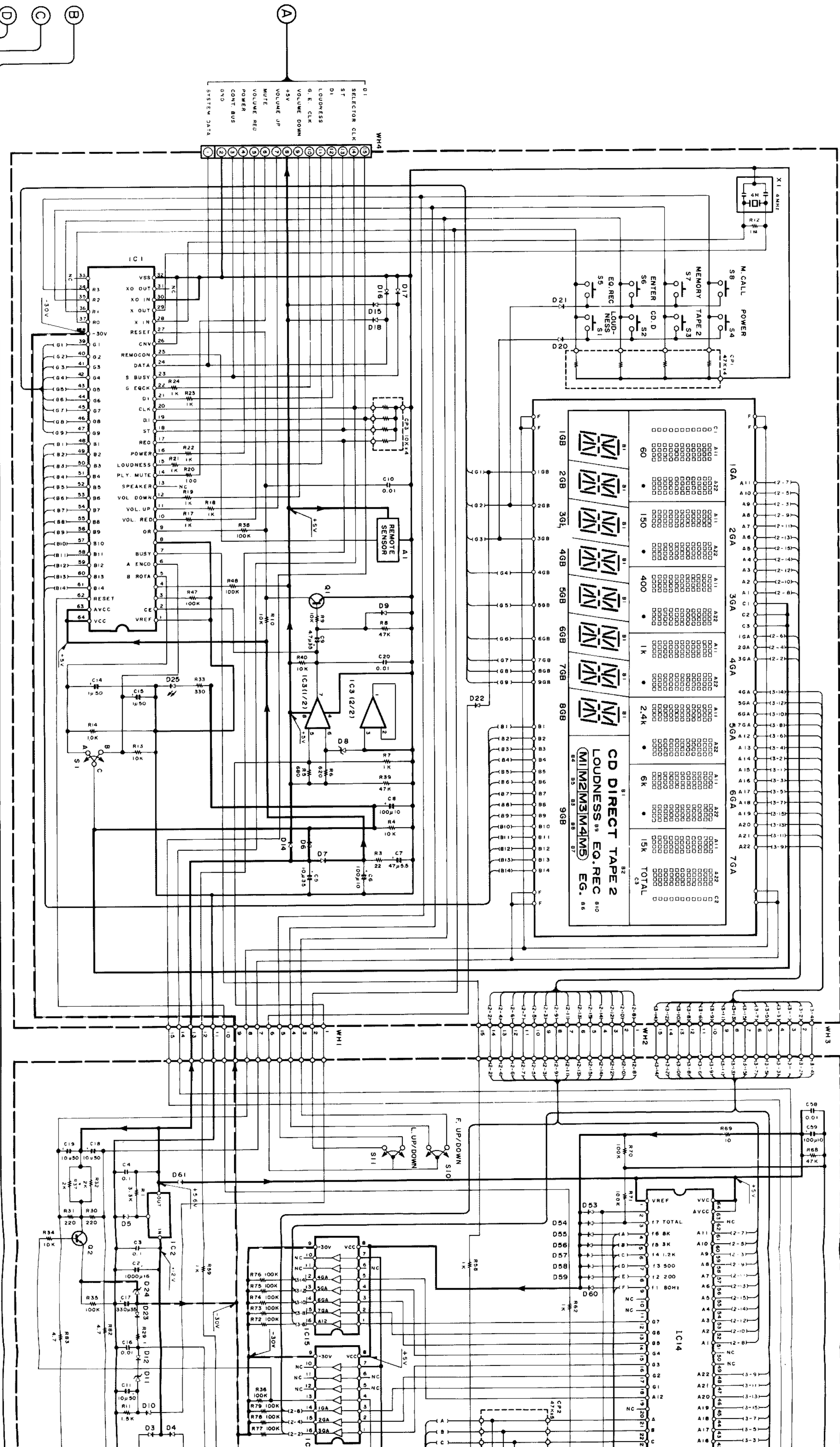
REC

PLAY

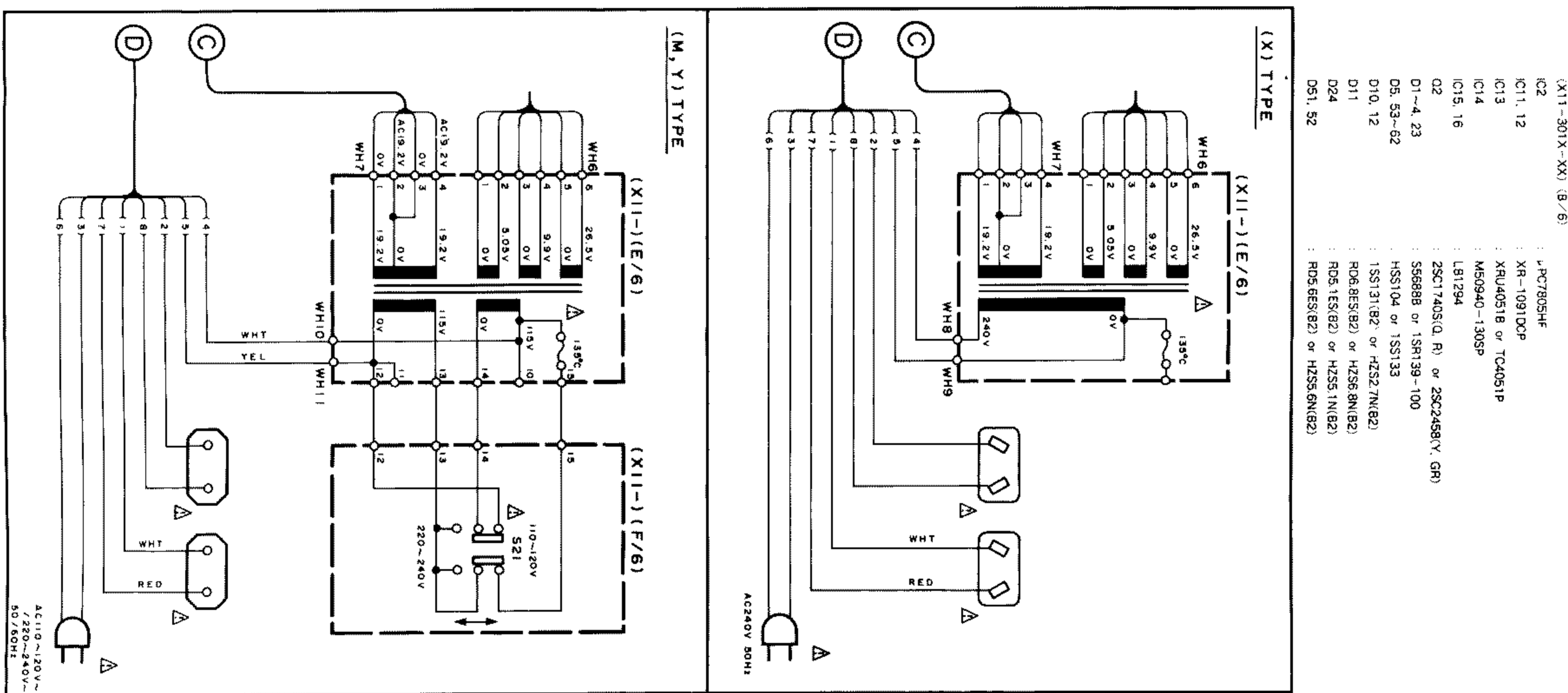
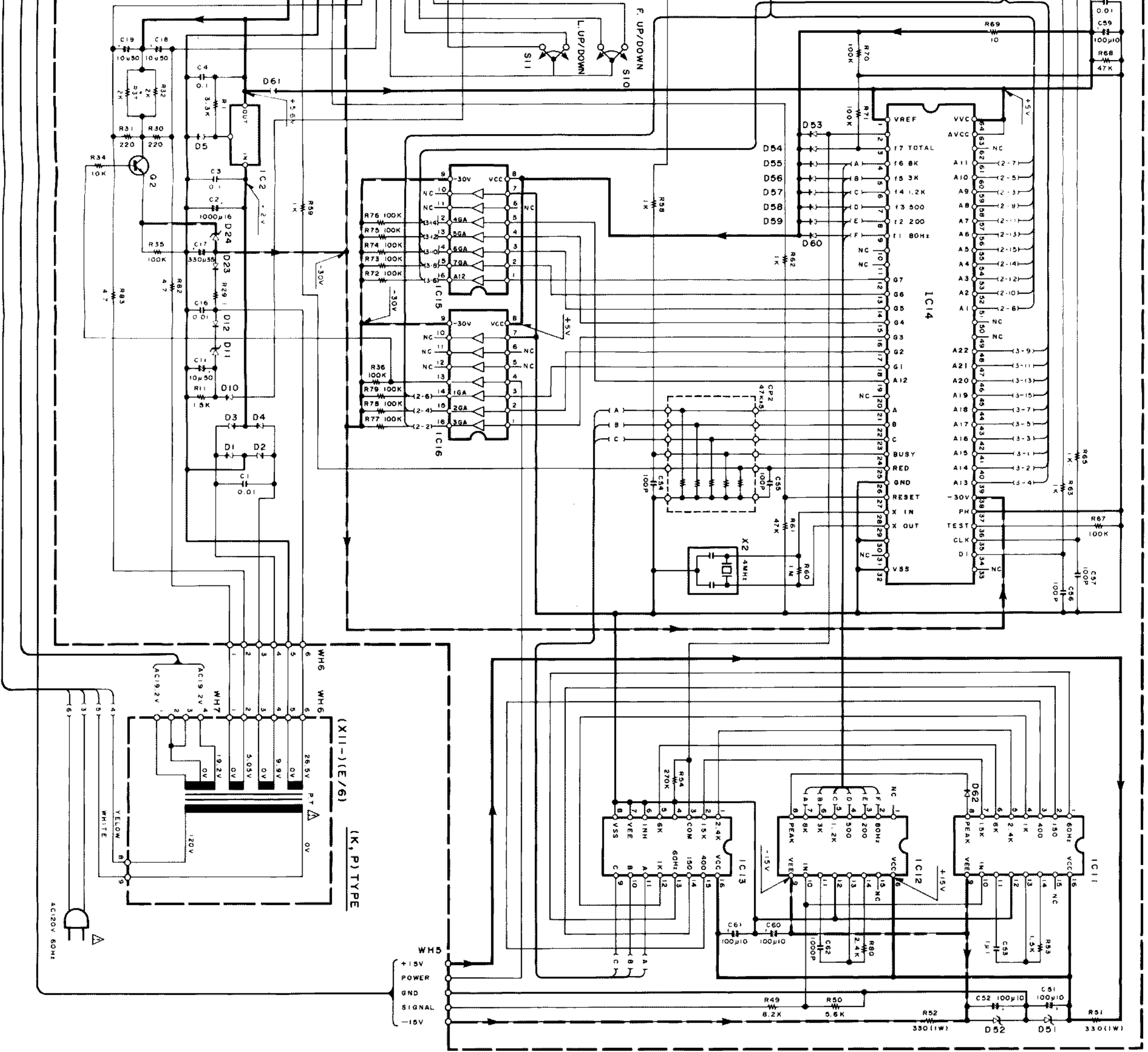
(X11-)(A/6)



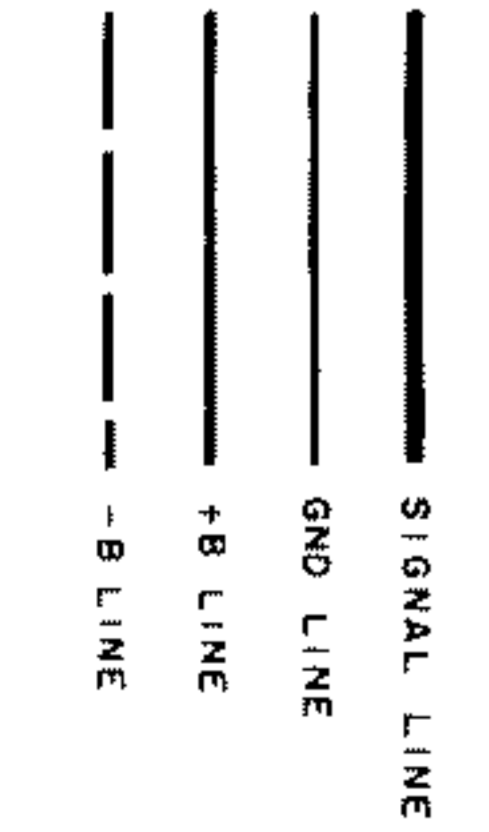
(X11-)(B/6)



IC1 : M50941-5785P
IC3 : BA1033 or AN8914
IC9 : 2SC1745(Q, R) or 2SC245R(V, GR)
DB : RDZ75(B2) or H2527N(B2)
DB, T, 9, 14-18, 20-22 : HSS104 or 1SS133
D25 : BS0-1291-05



- (X11-301X-XX) (B/6)
- IC2 : PC7055HF
 - IC11, 12 : XR-10910CP
 - IC13 : XRJ4051B or TC4051P
 - IC14 : MS0940-130SP
 - IC15, 16 : L81294
 - IC2 : ZSC17405(Q, R) or ZSC2458(Y, GR)
 - SS5888B or 1SR139-100
 - HSS104 or 1SS133
 - SS131(B2) or HZS27N(B2)
 - D10, 12 : RDS-BES(B2) or HZS68M(B2)
 - D11 : RDS-1ES(B2) or HZS51M(B2)
 - D24 : RDS-6ES(B2) or HZS56M(B2)
 - D51, 52



CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (re parts list). **⚠** Indicates safety critical components. To reduce risk of electric shock, leakage-current or resistance measurer shall be carried out (exposed parts are acceptably insulated the supply circuit) before the appliance is returned to the customer.

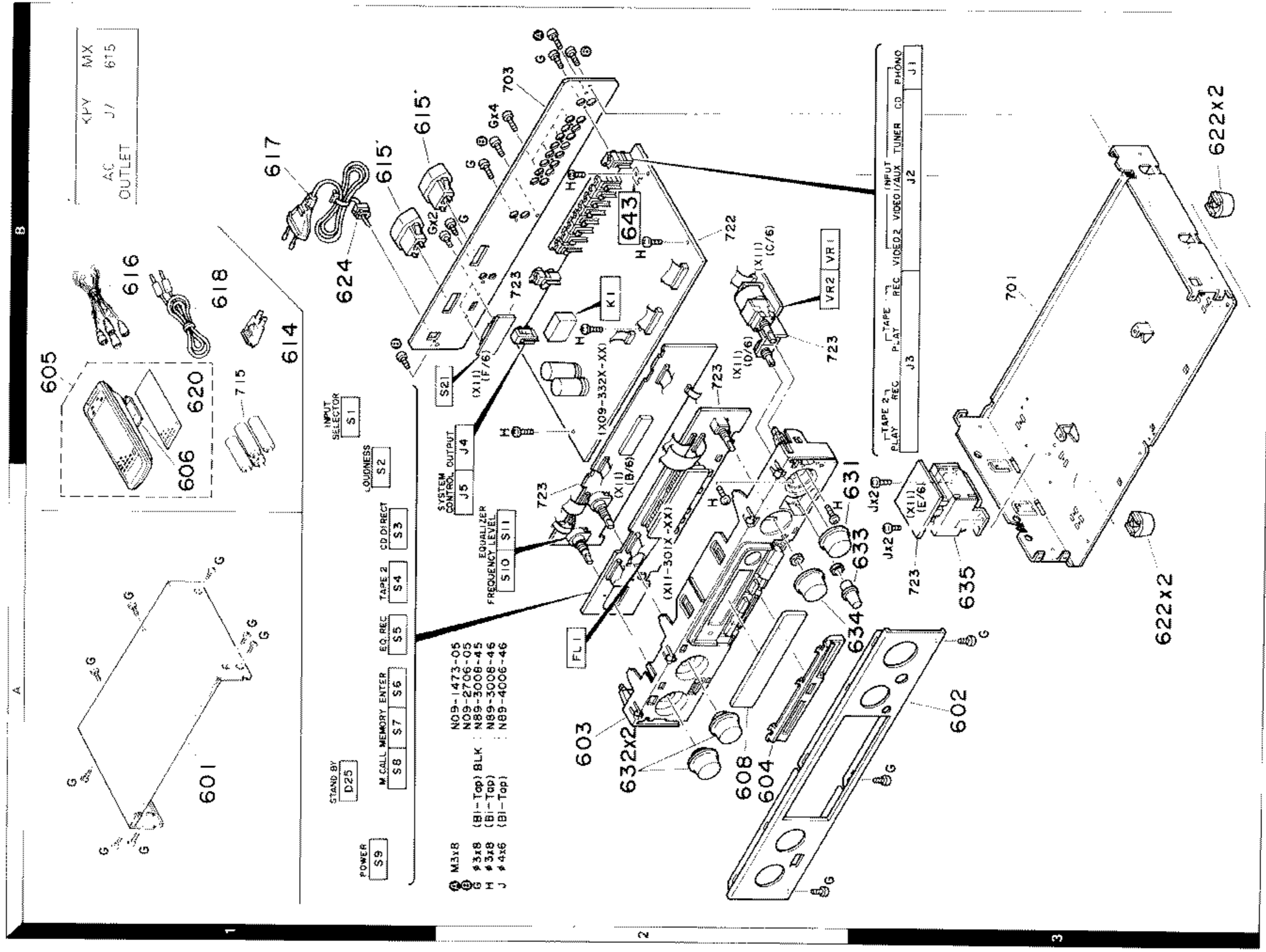
DC voltages are as measured with a high impedance voltmeter with a cassette loaded at playback mode. Values may vary slightly due to variations between individual instrument or/and units. Bias circuit DC voltages are as measured while the record mode.

Les tensions c.c. doivent être mesurées avec un voltmètre haute impédance, une cassette étant insérée en mode de lecture. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

Les tensions c.c. du circuit de polarité doivent être mesurées l'appareil étant en mode d'enregistrement.

Die angegebenen Gleichspannungswerte wurden bei eingesetzter Cassette in der Wiedergabe mit einem hochohmig Spannungsmesser gemessen. Dabei schwanken die Messwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u. U. geringfügig. Die angegebenen Gleichspannungswerte der Vormagnetsierungsschaltkreise wurden in der Aufnahme-Betriebsart gemessen.

EXPLODED VIEW (MECHANISM)




PARTS LIST

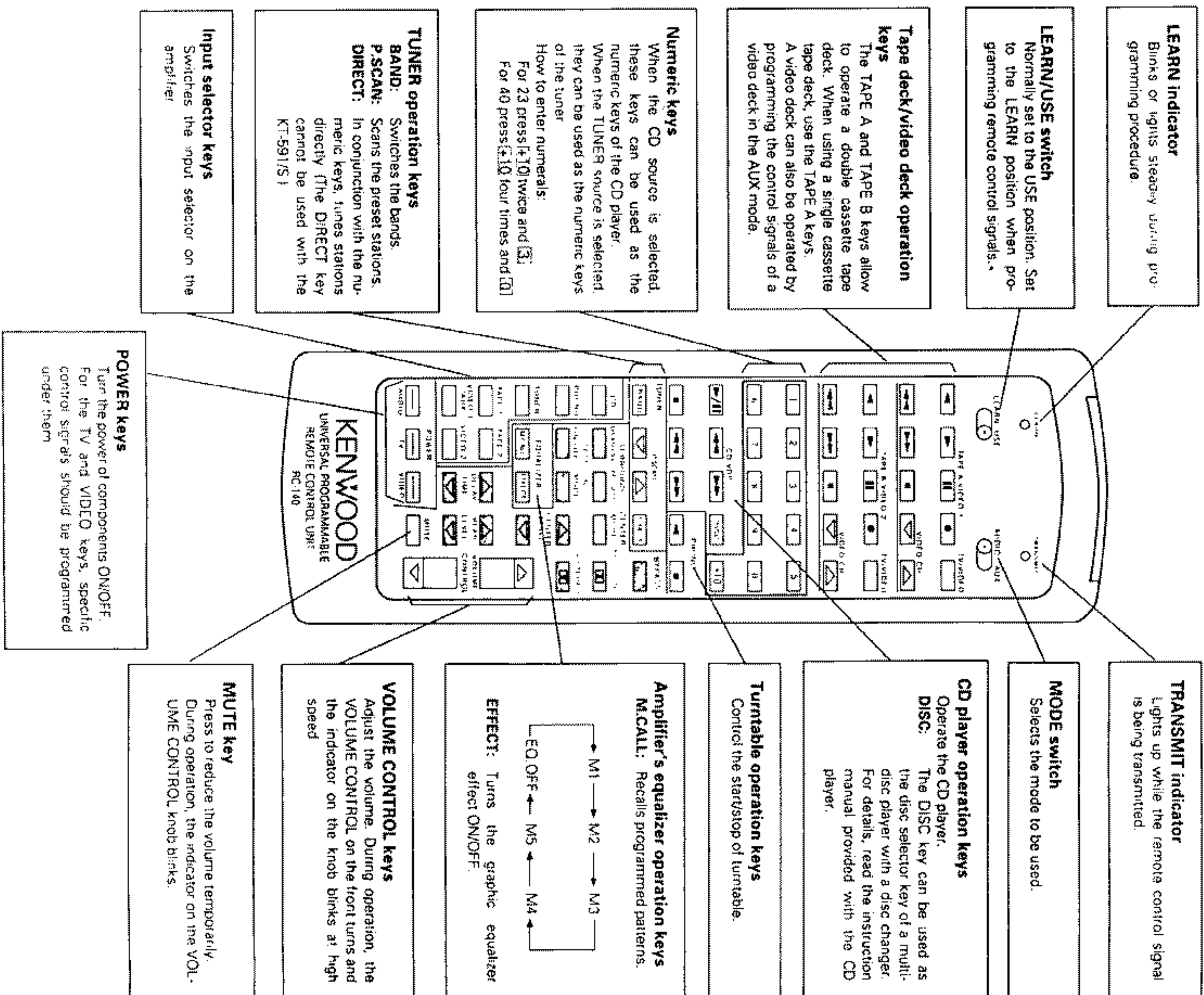
| Ref. No. | Part No. | Description | Quantity | Notes |
|----------|-------------|-------------|----------|-------|
| C51 | R05.65S(B2) | ZENER DIODE | 1 | |
| C52 | H5S104 | DIODE | 1 | |
| C53 | H5S133 | DIODE | 1 | |
| C54 | H5S104 | DIODE | 1 | |
| C55 | H5S133 | DIODE | 1 | |
| C56 | H5S104 | DIODE | 1 | |
| C57 | H5S133 | DIODE | 1 | |
| C58 | H5S104 | DIODE | 1 | |
| C59 | H5S133 | DIODE | 1 | |
| C60 | H5S104 | DIODE | 1 | |
| C61 | H5S133 | DIODE | 1 | |
| C62 | H5S104 | DIODE | 1 | |
| C63 | H5S133 | DIODE | 1 | |
| C64 | H5S104 | DIODE | 1 | |
| C65 | H5S133 | DIODE | 1 | |
| C66 | H5S104 | DIODE | 1 | |
| C67 | H5S133 | DIODE | 1 | |
| C68 | H5S104 | DIODE | 1 | |
| C69 | H5S133 | DIODE | 1 | |
| C70 | H5S104 | DIODE | 1 | |
| C71 | H5S133 | DIODE | 1 | |
| C72 | H5S104 | DIODE | 1 | |
| C73 | H5S133 | DIODE | 1 | |
| C74 | H5S104 | DIODE | 1 | |
| C75 | H5S133 | DIODE | 1 | |
| C76 | H5S104 | DIODE | 1 | |
| C77 | H5S133 | DIODE | 1 | |
| C78 | H5S104 | DIODE | 1 | |
| C79 | H5S133 | DIODE | 1 | |
| C80 | H5S104 | DIODE | 1 | |
| C81 | H5S133 | DIODE | 1 | |
| C82 | H5S104 | DIODE | 1 | |
| C83 | H5S133 | DIODE | 1 | |
| C84 | H5S104 | DIODE | 1 | |
| C85 | H5S133 | DIODE | 1 | |
| C86 | H5S104 | DIODE | 1 | |
| C87 | H5S133 | DIODE | 1 | |
| C88 | H5S104 | DIODE | 1 | |
| C89 | H5S133 | DIODE | 1 | |
| C90 | H5S104 | DIODE | 1 | |
| C91 | H5S133 | DIODE | 1 | |
| C92 | H5S104 | DIODE | 1 | |
| C93 | H5S133 | DIODE | 1 | |
| C94 | H5S104 | DIODE | 1 | |
| C95 | H5S133 | DIODE | 1 | |
| C96 | H5S104 | DIODE | 1 | |
| C97 | H5S133 | DIODE | 1 | |
| C98 | H5S104 | DIODE | 1 | |
| C99 | H5S133 | DIODE | 1 | |
| C100 | H5S104 | DIODE | 1 | |

| Ref. No. | Part No. | Description | Quantity | Notes |
|----------|----------|---------------|----------|-------|
| C9 | 602 | CHASSIS | 1 | |
| C10 | 603 | CONTROL PANEL | 1 | |
| C11 | 604 | CHASSIS | 1 | |
| C12 | 608 | CHASSIS | 1 | |
| C13 | 632x2 | CHASSIS | 2 | |
| C14 | 634 | CHASSIS | 1 | |
| C15 | 635 | CHASSIS | 1 | |
| C16 | 643 | CHASSIS | 1 | |
| C17 | 701 | CHASSIS | 1 | |
| C18 | 702 | CHASSIS | 1 | |
| C19 | 703 | CHASSIS | 1 | |
| C20 | 722 | CHASSIS | 1 | |
| C21 | 723 | CHASSIS | 1 | |
| C22 | 723 | CHASSIS | 1 | |
| C23 | 723 | CHASSIS | 1 | |
| C24 | 723 | CHASSIS | 1 | |
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| C27 | 723 | CHASSIS | 1 | |
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| C47 | 723 | CHASSIS | 1 | |
| C48 | 723 | CHASSIS | 1 | |
| C49 | 723 | CHASSIS | 1 | |
| C50 | 723 | CHASSIS | 1 | |

Parts without Parts No. are not supplied. Les articles non mentionnés dans le Parts No. ne sont pas fournis. Teile ohne Parts No. werden nicht geliefert.

Names of controls (AUDIO mode)

Keys masked with  are functions which are not supported with this product.



LEARN indicator
Blinks or lights steady during programming procedure.

LEARN/USE switch
Normally set to the USE position. Set to the LEARN position when programming remote control signals.

Tape deck/video deck operation keys
The TAPE A and TAPE B keys allow to operate a double cassette tape deck. When using a single cassette tape deck, use the TAPE A keys. A video deck can also be operated by programming the control signals of a video deck in the AUX mode.

Numeric keys
When the CD source is selected, these keys can be used as the numeric keys of the CD player. When the TUNER source is selected, they can be used as the numeric keys of the tuner.
How to enter numerals:
For 23 press [2] twice and [3].
For 40 press [4] four times and [0].

TUNER operation keys
BAND: Switches the bands.
P-SCAN: Scans the preset stations.
DIRECT: In conjunction with the numeric keys, tunes stations directly. (The DIRECT key cannot be used with the KT-591/S1)

Input selector keys
Switches the input selector on the amplifier.

POWER keys
Turn the power of components ON/OFF. For the TV and VIDEO keys, specific control signals should be programmed under them.

TRANSMIT indicator
Lights up while the remote control signal is being transmitted.

MODE switch
Selects the mode to be used.

CD player operation keys
Operate the CD player.
DISC: The DISC key can be used as the disc selector key of a multi-disc player with a disc changer. For details, read the instruction manual provided with the CD player.

Turntable operation keys
Control the start/stop of turntable.

Amplifier's equalizer operation keys
M-CALL: Recalls programmed patterns.
EFFECT: Turns the graphic equalizer effect ON/OFF.

VOLUME CONTROL keys
Adjust the volume. During operation, the VOLUME CONTROL on the front turns and the indicator on the knob blinks at high speed.

MUTE key
Press to reduce the volume temporarily. During operation, the indicator on the VOLUME CONTROL knob blinks.

Performance

| | |
|--|--|
| Input Sensitivity | 2.5 mV/47 K Ω |
| PHONO | 200 mV/47 K Ω |
| TUNER/TAPE/CD/VIDEO | |
| Signal-to-Noise Ratio (IHF-A) | |
| PHONO | 80 dB for 2.5 mV input |
| TUNER/TAPE/CD/VIDEO | 101 dB |
| Phono Maximum Input Level | 100 mV, T.H.D. 0.3% at 1 kHz |
| Total Harmonic Distortion | |
| 20 Hz to 20 kHz | 0.005% at rated output |
| Loudness Control | +8 dB at 100 Hz (at -30 dB VOLUME Level) |
| Graphic equalizer control | |
| (60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz, 15 kHz) | \pm 10 dB |
| Output Voltage and Impedance | |
| Tape REC | 200 mV/220 Ω |
| PRE OUT | 1 V/2.2 K Ω |

General

Power Consumption 15 W

AC outlets

SWITCHED

Dimensions

For USA and Canada: 2: (Total 680 W, 5.6 A max.)
For other countries: 2: (Total 420 W)

Weight (Net)

W: 440 mm (17.5/6")
H: 85 mm (3.3/8")
D: 277 mm (10.7/8")
3.8 kg (8.4 lb)

Accessories

| | |
|---|--|
| Remote control unit 1 (A70-0512-05) LA09-0111-08: Battery Cover | AC plug adaptor 1 (except for some areas) For the unit with a European AC plug in areas other than Europe (E03-0115-05) |
| Battery ("AAA" or "R03") 4 | Overlay sheet 1 (G16-0772-08) |
| Audio cord 1 (E30-0459-05) | System control cord 1 (E30-392-05) |

Note:
KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

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