

STEREO INTEGRATED AMPLIFIER

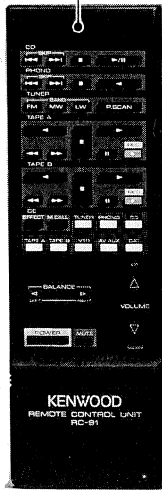
A-91

SERVICE MANUAL

KENWOOD

©1987-10 PRINTED IN JAPAN
B51-3341-00(B)2147

Remote controller ass'y
(A70-0182-05)

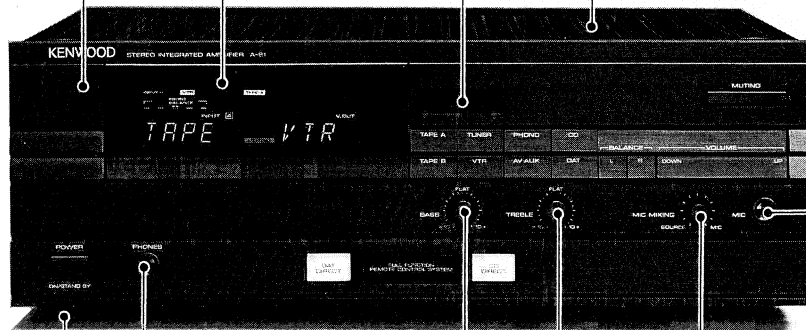


Panel
(A20-5314-02)

Dressing plate (FL)
(B03-2322-03)

Dressing plate
(Remote control)
(B03-2323-04)

Metallic cabinet
(A01-1580-01)



Phone jack (Mic)
(E11-0159-05)

Foot
(J02-0366-05) × 4

Phone jack (Phones)
(E11-0160-05)

Knob (Bass, Treble)
(K29-2736-04) × 2

Knob (Mic mixing)
(K29-2737-04)

Screw terminal board (4P)
(E20-0455-05)

Binding post (GND)
(N08-0128-35)

Slide switch*
(S31-2113-05)

Phono jack (3P)
(E13-0309-05)

Rectangular
receptacle
(E08-0411-05)

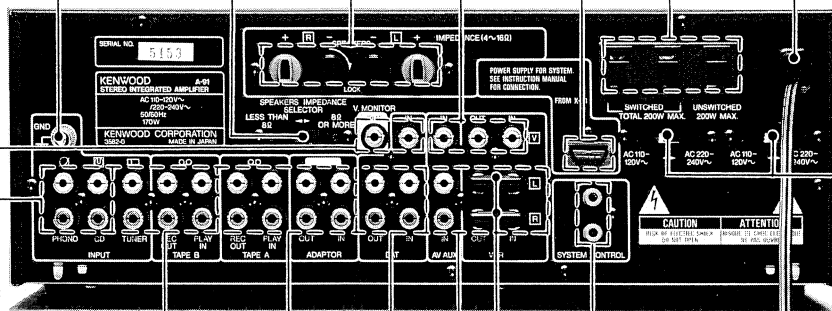
AC outlet*
(E03-)

Power cord bushing
(J42-0083-05)

Phono jack (2P)
(E13-0297-05)

Phono jack (4P)
(E13-0497-05)

Slide switch*
(S31-2083-05) × 2



Phono jack (8P)
(E13-0814-05)

Pin
(J12-0094-05) × 2

Phono jack (6P)
(E13-0621-05)

Phono jack (4P)
(E13-0497-05)

Phono jac (6P)
(E13-0621-05)

Miniature phone jack*
(E11-)

AC power cord*
(E30-)

* Refer to parts list on 47.

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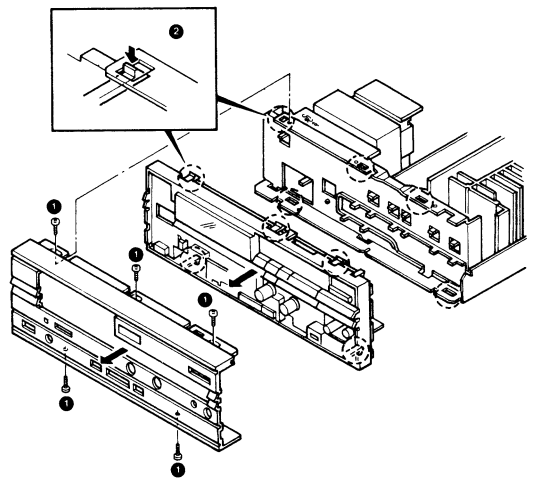
CAUTION

- The AC power supply for the X-91 on the rear panel outputs 16 V AC. Therefore, it cannot be used for supplying AC power to the X Series.
- In addition to conventional audio circuitry, this unit is equipped with 4 video input systems and 2 video output systems.

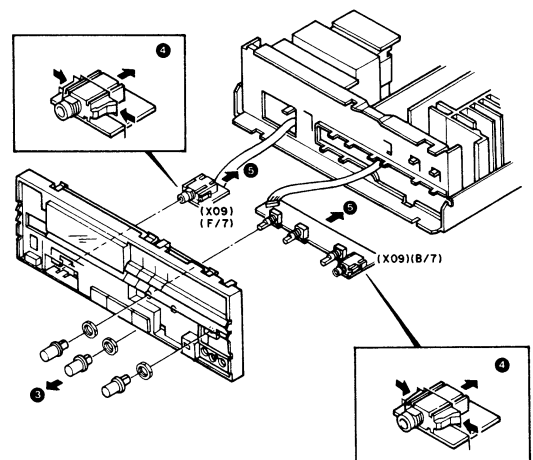
DISASSEMBLY FOR REPAIR

(Remove the case before proceeding to the following.)

1. Remove the 5 screws holding the front panel to the upper and lower sides, and then take out the front panel in the direction of the arrow (1).
2. Disengage the lugs (upper side: 3, lower side: 2) holding the panel escutcheon to the sub-panel, and then draw the panel escutcheon toward the front (2).

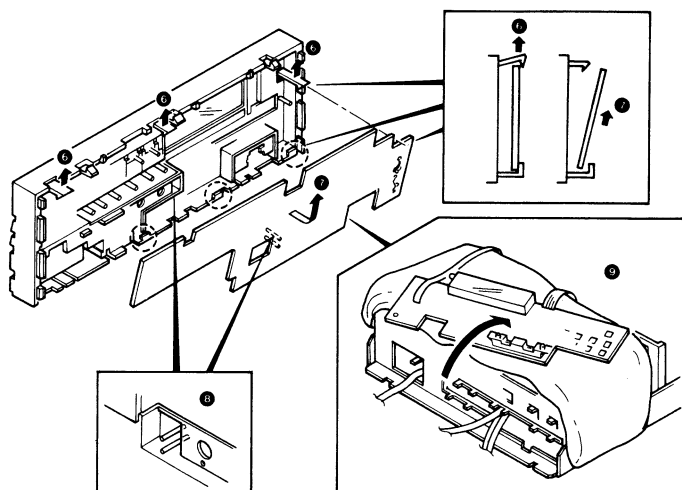


3. Remove the BASS, TREBLE and MIC MIXING knobs and their hex nuts from the panel escutcheon (3).
4. Disengage the lugs holding the PHONES and MIC jacks to the panel escutcheon as shown in the illustration (4).
5. Remove the Audio Unit (X09-2500-11) (B/7) and (F/7) PC boards in the direction of the arrow (5).

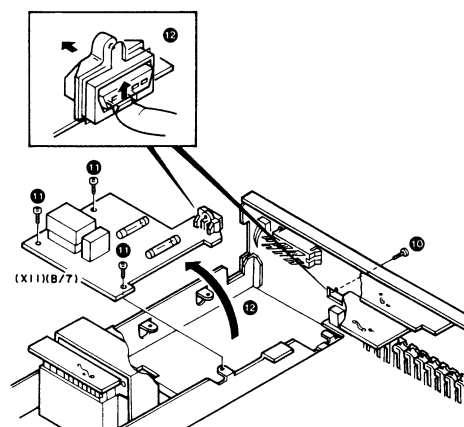


DISASSEMBLY FOR REPAIR

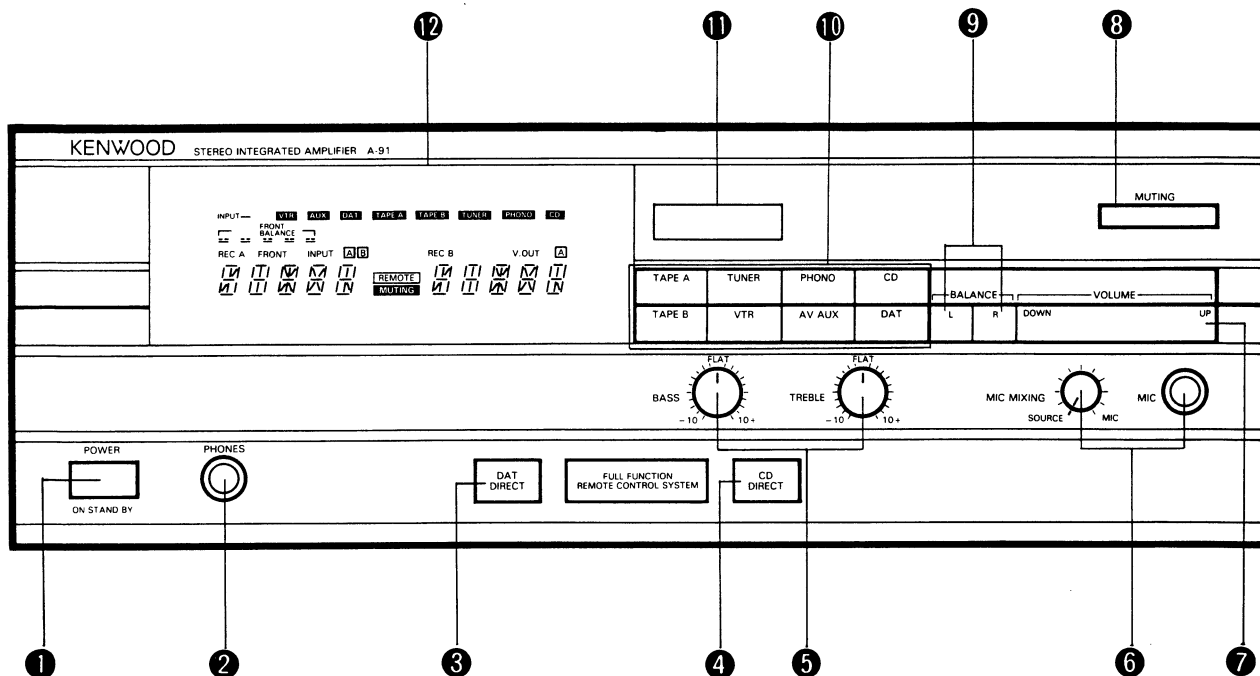
6. Disengage the 3 lugs holding the Control Unit (X11-2440-11) (A/7) to the panel escutcheon (6).
7. Paying attention to the 3 lugs on the bottom side of the panel escutcheon, remove the Control Unit (X11-) (A/7) in the direction of the arrow (7).
8. When attaching the Control Unit (X11-) (A/7) to the panel escutcheon, make sure that the 2 pins of the Control Unit fit into the holes on the panel escutcheon (8).
9. Spread a cloth over the set, and then place the Control Unit (X11-) (A/7) on it, as shown in the illustration (9).



10. Remove the screw holding the rectangular receptacle (Power supply) to the rear panel (10).
11. Remove the 3 screws holding the Control Unit (X11-) (B/7) to the frame and chassis (11).
12. Disengage the claws of the rectangular receptacle (Power supply), and then remove the Control Unit (X11-) (B/7) in the direction of the arrow (12). When attaching the Control Unit (X11-) (B/7) to the rear panel, pay attention to the position of the rectangular receptacle (Power supply).



FUNCTION OF AMPLIFIER



1 POWER switch

Press this switch to turn power to the entire system ON. Press it again to set it in STAND BY mode. This switch functions in the same way as the POWER switch on the tuner.

2 PHONES jack

Connect stereo headphones to this jack to listen in private. Sound from the speakers will automatically be cut-off.

Note:

Be sure to lower the volume level before plugging or unplugging the headphones.

3 DAT DIRECT switch

When this switch is set to ON (the indicator lights up), the signal input to the DAT jacks is selected over the other input signals. This allows you to listen to high quality digital sound from a DAT (Digital Audio Tape). With this switch ON, no controls, except for VOLUME and MUTING on the amplifier front panel, function. To release DAT direct mode, press this switch again to set it to OFF, or select the desired source with the Input Selector switches (other than the DAT switch).

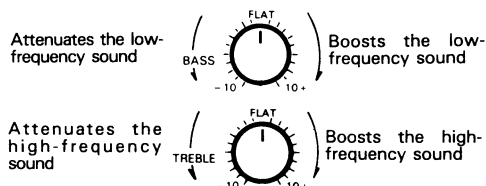
4 CD DIRECT switch

When the DP-710 CD player is connected using the system control cord and the CD input selector switch is selected, pressing the CD DIRECT switch allows to play the DP-710 CD player.

When this switch is set to ON (the indicator lights up), the signal input to the CD jacks is selected over the other input signals. This allows you to listen to high quality digital sound from a Compact Disc. With this switch ON, no controls except for VOLUME and MUTING on the amplifier front panel, function. To release CD direct mode, press this switch again to set it to OFF, or select the desired source with the Input Selector switches (other than the CD switch).

5 BASS/TREBLE controls

Adjust the acoustic characteristics of the listening room or compensate for speaker response.



6 MIC jack and MIC MIXING control

Connect a monaural microphone to the MIC jack.

The signal from the microphone is decreased while the source signal is increased.



The signal from the microphone is increased while the source signal is decreased.

When the microphone is not in use, be sure to set the MIC MIXING control to its SOURCE position and unplug the microphone. When plugging or unplugging a microphone, set the MIC MIXING knob to the SOURCE position, and lower the volume level with the VOLUME key.

7 VOLUME control key

This key is used to adjust the volume level of both the speakers and headphones. Be sure to lower the volume level before turning the power OFF.

When muting is activated, pressing the VOLUME key will automatically release the muting function.

Note:

When power resumes after an interruption, or power cord disconnection, the volume level is automatically set to the lowest level.

8 MUTING key

When this key is pressed, the volume level is instantaneously attenuated. Pressing it again will resume the previous volume level.

FUNCTION OF AMPLIFIER

9 BALANCE control key

Adjust the balance between the left and right channels. Press the left side (L) to lower the right-channel sound and press the right side (R) to lower the left-channel sound.

10 Input selector switches

- TAPE B:** Press this to play the B cassette deck.
- VTR (VCR):** Press this to listen to sound from a VCR.
- AV AUX:** Press this to play the program source connected to the rear panel AV AUX jacks.
- DAT:** Press this to play the DAT deck.
- CD:** Press this to play the CD player.
- PHONO:** Press this to play the turntable.
- TUNER:** Press this to listen to broadcasts.
- TAPE A:** Press this to play the A cassette deck.

Notes:

1. These input selector switches permit the selection of the input source and either TAPE A or TAPE B recording mode at the same time.
Before recording, check that the display indicator indicates the required input source.
2. When recording sound onto a video or DAT recorder, first press the AV AUX switch, then press the input selector switch of the required source.

11 Remote sensor (remote control signal receptor)

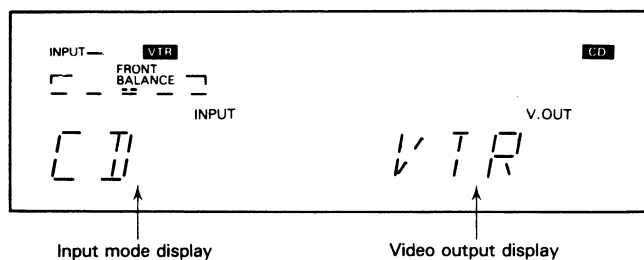
12 Display window

- ① **INPUT display (VTR, AUX, DAT, TAPE A, TAPE B, TUNER, PHONO, CD)**
Shows the source selected by the Input Selector switches.
- ② **FRONT BALANCE indicator**
Shows the volume balance between the left (L) and right (R) speakers.
- ③ **REC A indicator**
Lights when recording with the A cassette deck.
- ④ **FRONT indicator**
Lights when adjusting the volume level output to the speakers.
- ⑤ **INPUT indicator**
Lights when the display indicator is set to input mode.
- ⑥ **[A], [B] indicator**
The A indicator lights when the A cassette deck is operated, and the B indicator lights when the B deck is operated.
- ⑦ **Display**
The following three types of display functions are available:

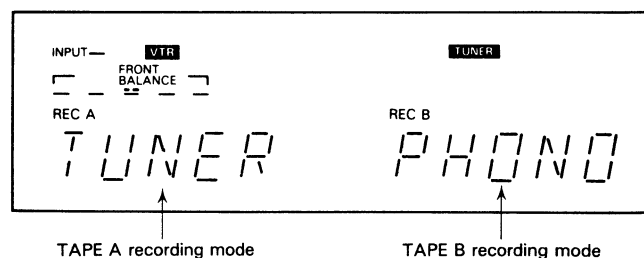
The following three types of display functions are available:

1. Normal display mode
2. Rec out display mode
3. Volume level display mode

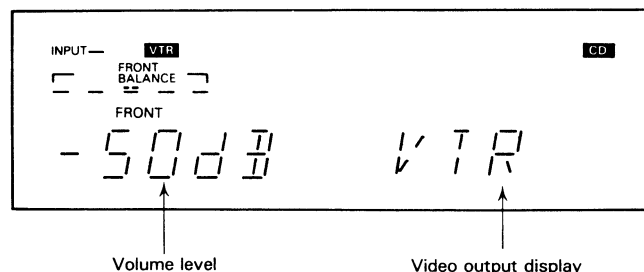
(1) Normal display mode



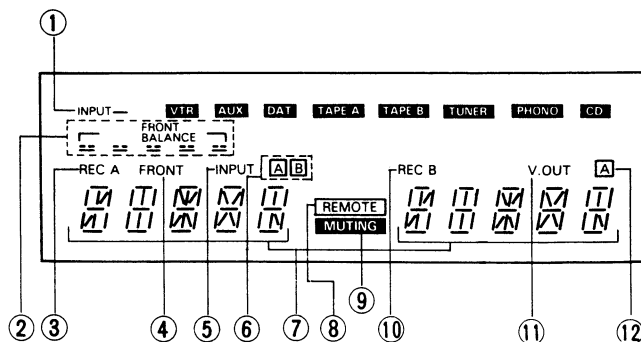
(2) Rec Out display mode



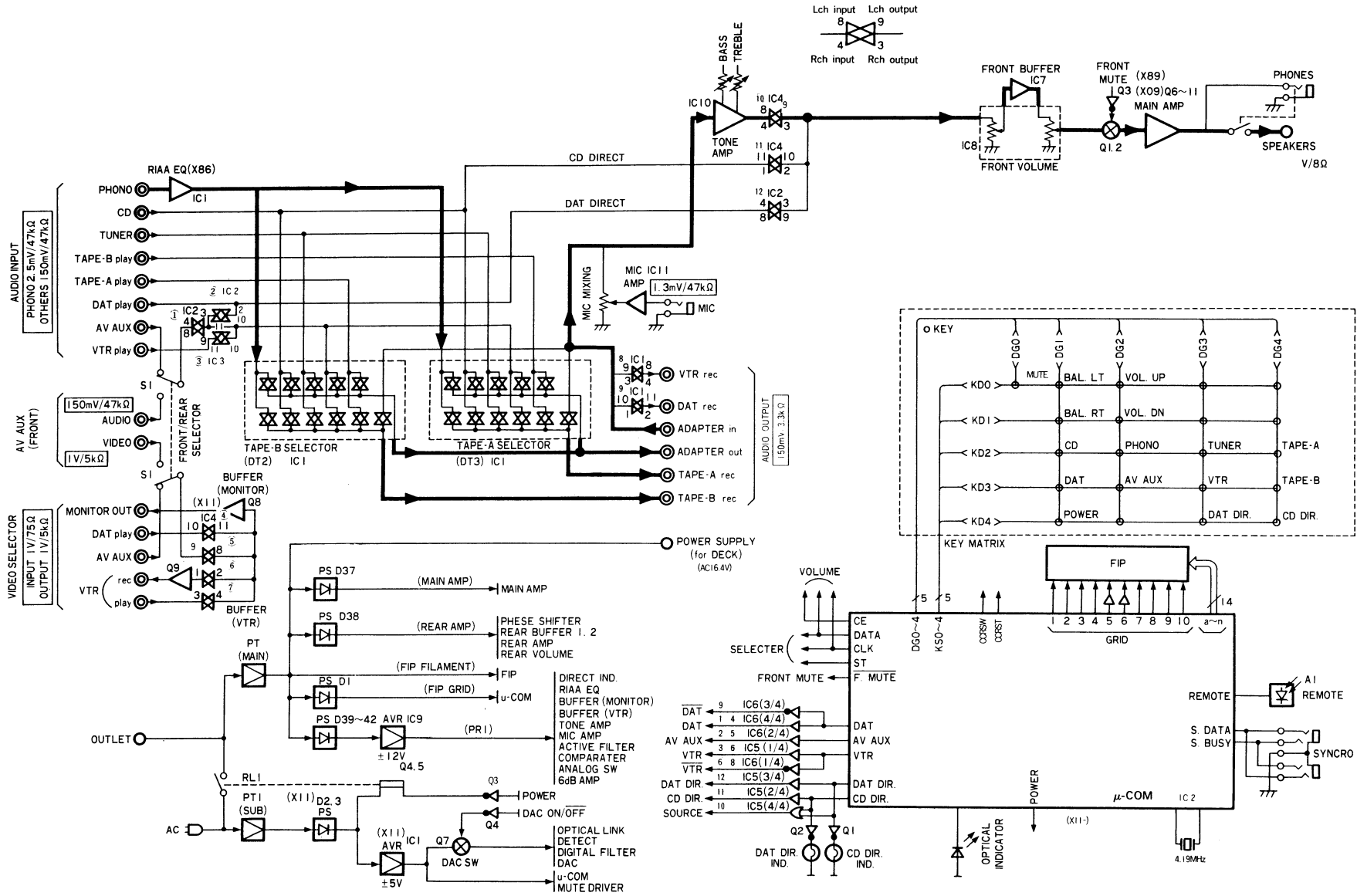
(3) Volume display mode



- ⑧ **REMOTE indicator**
Blinks when the remote control unit is operated.
- ⑨ **MUTING indicator**
Blinks when the MUTING button is engaged.
- ⑩ **REC B indicator**
Lights when recording with the B cassette deck.
- ⑪ **V.OUT indicator**
Lights when the display indicator is set to visual mode.
- ⑫ **[A] indicator**
Lights when dubbing (manual dubbing) from the A deck to the B deck.



BLOCK LEVEL DIAGRAM



CIRCUIT DESCRIPTION

Description of Components

AUDIO UNIT (X09-2500-11)

Component	Use/Function	Operation/Condition/Interchangeability
IC1(LC4066BH)	Selector	VTR and DAT REC switching.
IC2(LC4066BH)	Selector	AUX and DAT switching.
IC3(LC4066BH)	Selector	DAT-D and VTR switching.
IC4(LC4066BH)	Selector	CD-D and SOURCE switching.
IC5(UPC339C)	Comparator	Pin No. 9 "H" and No. 14 "H": VTR control.
		Pin No. 7 "H" and No. 1 "H": CD-D.
		Pin No. 11 "H" and No. 13 "H": DAT-D.
		Pin No. 4 "H" and No. 2 "L": SOURCE.
IC6(UPC339C)	Comparator	Pin No. 10 "H" and No. 13 "L": VTR.
		Pin No. 5 "H" and No. 2 "H": AUX.
		Pin No. 8 "H" and No. 14 "L": DAT.
		Pin No. 7 "H" and No. 1 "H": DAT.
IC7(UPC4570C)	Buffer	Buffer for Electronic VR. (IC8).
IC8(LC7535)	Electronic VR	Variation of REC OUT signal level, from 0 to 7 dB.
IC9(UPC78M12H)	Constant-voltage supply	3-pin regulator, for +12 V constant voltage.
IC10(UPC4570C)	Tone amplifier	Output configuration.
IC11 (AN6556)	Microphone amplifier	
Q1, 2	Muting	
Q3	Muting driver	ON and OFF of Q1 and Q2.
Q4, 5	Constant-voltage supply	For -12 V.
Q6, 7	Final Tr	
Q8, 9	Final Tr	
Q10, 11	Bias current compensation	

CONTROL UNIT (X11-2440-11)

Component	Use/Function	Operation/Condition/Interchangeability
IC1(UPC78M05H)	3-pin regulator, for +5 V supply to digital circuitry	IC from any maker can be used if it is a 78M05.
IC2(CXP5014-211S)	Microprocessor	Refer to page xx.
IC3(M51951ASL)	System reset	A high reset signal is output every time the power plug is connected or disconnected.
IC4(LC4066BH)	Video electronic VR	LC4906 is also usable.
Q1	CD-DIRECT lamp driver	ON in CD DIRECT mode. Interchangeability: 2SC3246
Q2	DAT DIRECT lamp driver	ON in DAT DIRECT mode. Interchangeability: 2SC3246
Q3	Power relay drive	ON when power is turned ON. Interchangeability: 2SC3246
Q5, 6	FL current booster	
Q8	Video buffer, for MONITOR OUT	No interchangeability.
Q9	Video buffer, for REC OUT	No interchangeability.

CIRCUIT DESCRIPTION

MAIN AMPLIFIER UNIT (X89-1010-03) <DT4 >

Component	Use/Function	Operation/Condition/Interchangeability
Q1~4	Class A 1st-stage differential amplifier	
Q5~8	Class A 2nd-stage differential amplifier	
Q9, 10	Class A current Miller circuit	
Q11~14	Predriver	
Q15, 16	Current limiter	Limits the current of the final Tr in overloaded drive.
Q17		
Q18, 19		

PRE-AMPLIFIER UNIT (X85-1030-11) <DT1 >

Component	Use/Function	Operation/Condition/Interchangeability
IC(AN6556)	Equalizer amplifier	

SUB-CIRCUIT UNIT (X13-5520-00) <DT2, 3 >

Component	Use/Function	Operation/Condition/Interchangeability
IC1(CX7977)	Selector IC	Refer to page 20.

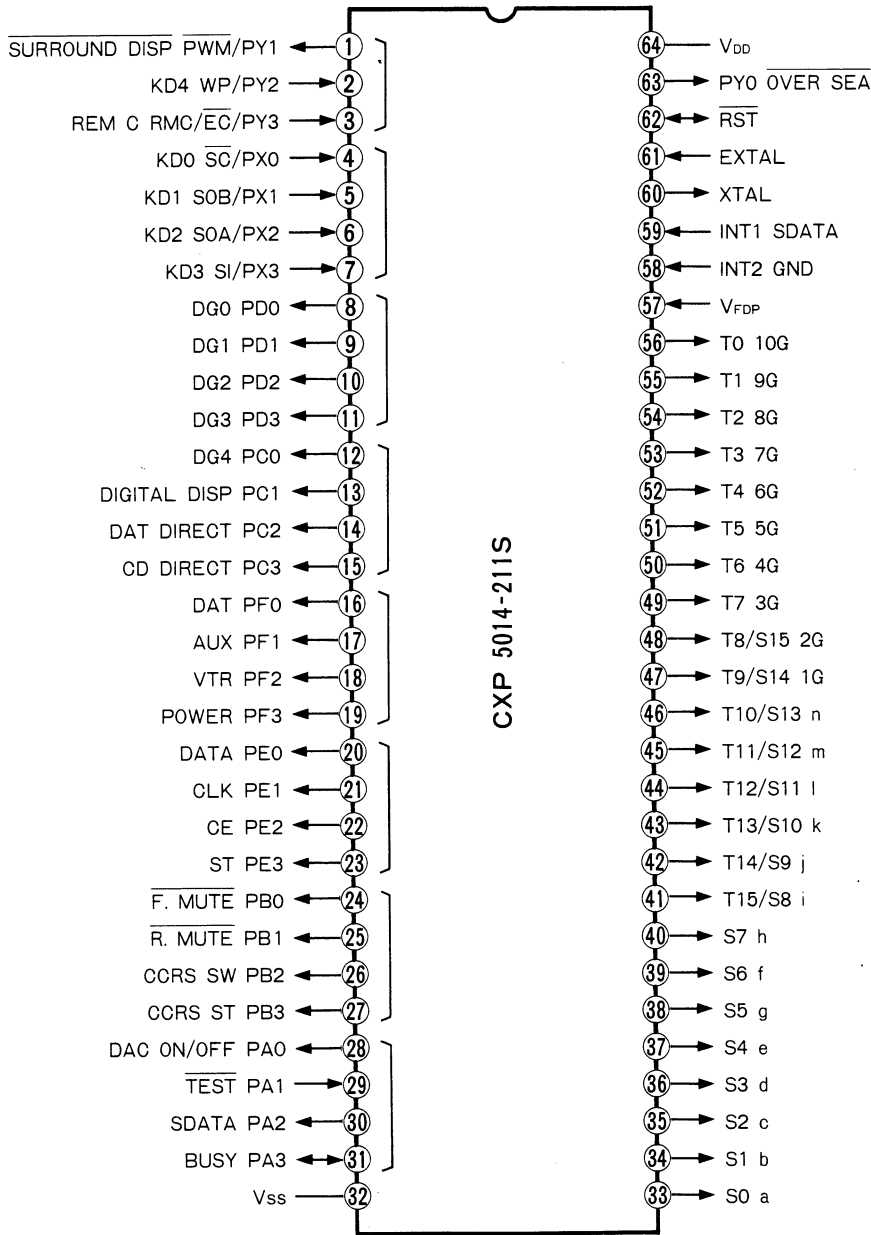
BUFFER UNIT (X13-5800-00) <DT5 >

Component	Use/Function	Operation/Condition/Interchangeability
IC1(UPC4570C)	Buffer amplifier	

CIRCUIT DESCRIPTION

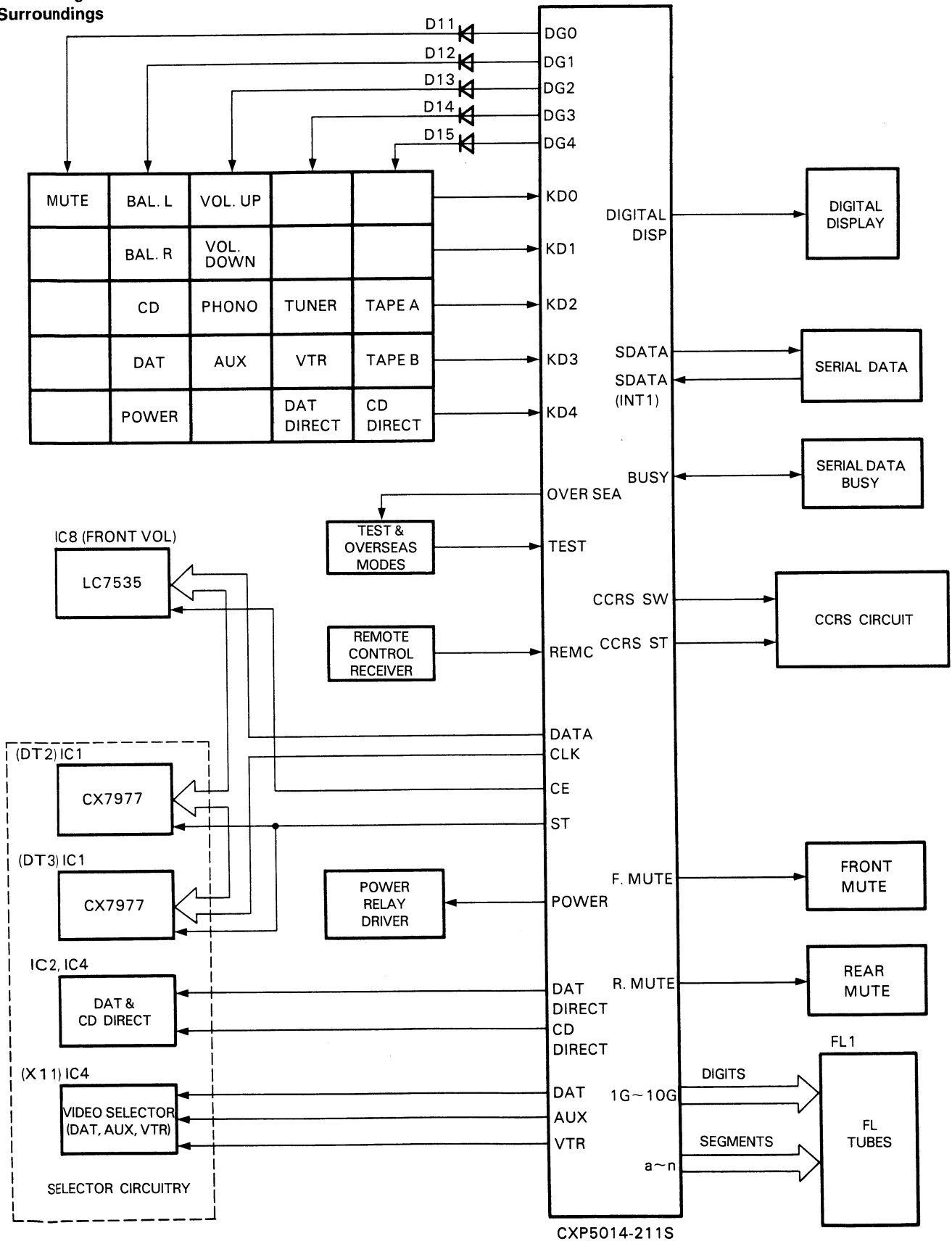
IC2: CXP5014-211S (X11-2440-11)

Microprocessor IC
Pin Configuration Diagram



CIRCUIT DESCRIPTION

Block Diagram of the Microprocessor and Its Surroundings



CIRCUIT DESCRIPTION

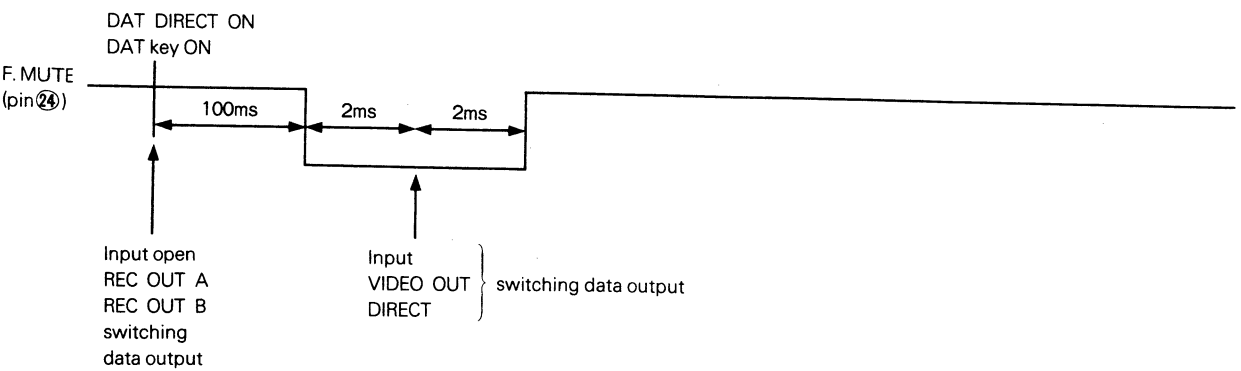
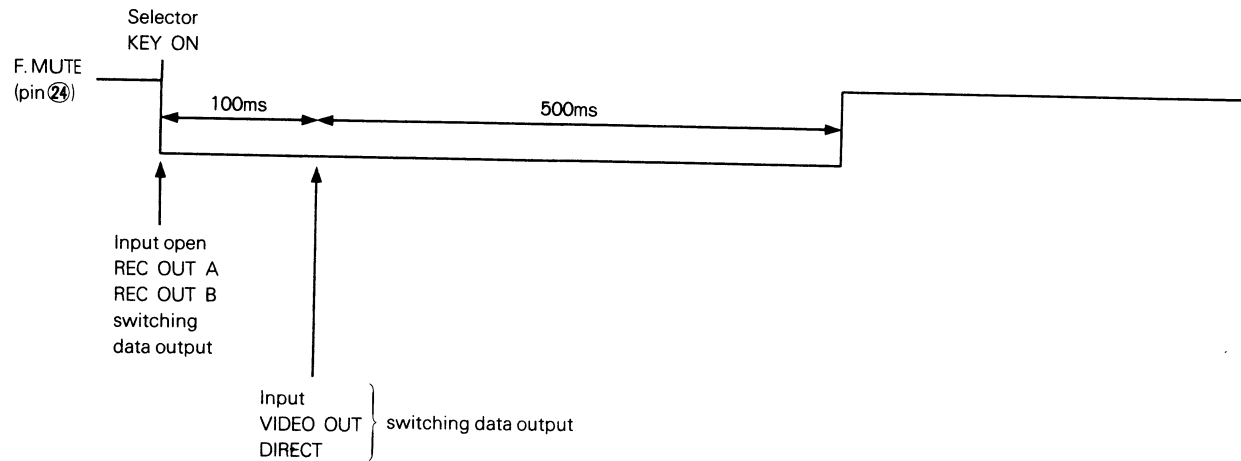
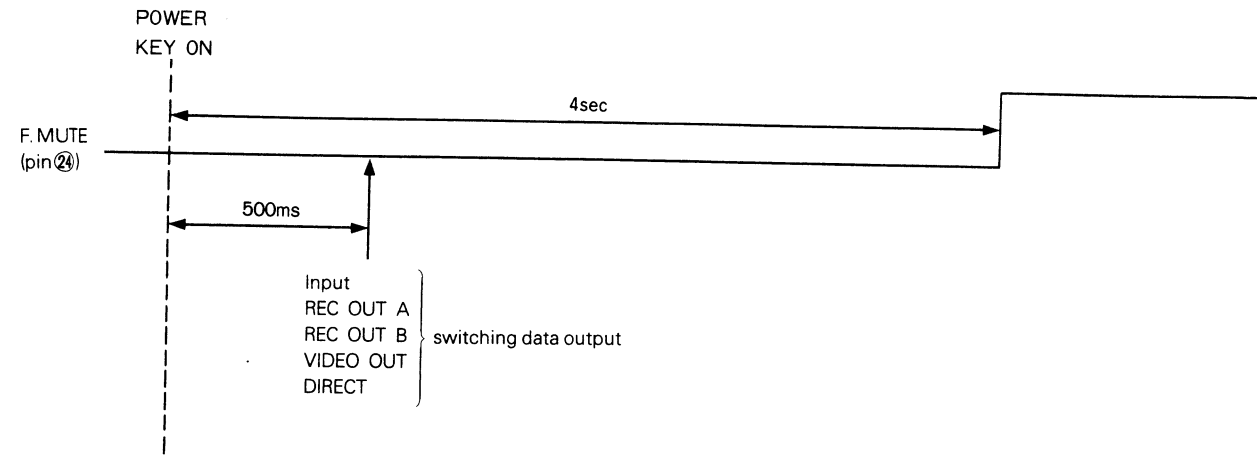
Explanation of Pins

Pin No.	Pin Name	Symbol	I/O	Function
1	PY1	SURROUND DISP	O	Surround display LED direct-drive port. Surround ON: L, Surround OFF: H.
2	PY2	KD4	I	Key scanning input ports. Active H.
4	PX0	KD0	I	
5	PX1	KD1	I	
6	PX2	KD2	I	
7	PX3	KD3	I	
3	RMC	REMC	I	
8	PD0	DG0	O	Key scanning output ports. Normally H, scanning is performed when a key is ON.
9	PD1	DG1	O	
10	PD2	DG2	O	
11	PD3	DG3	O	
12	PD4	DG4	O	
13	PC1	DIGITAL DISP	O	Optical-communication indicator LED direct-drive port. LED ON: H, LED OFF: L. (Blinking at a 62.4 ms interval)
14	PC2	DAT DIRECT	O	DAT direct ON/OFF port. DAT DIRECT ON: H, DAT DIRECT OFF: L.
15	PC3	CD DIRECT	O	CD direct ON/OFF port. CD DIRECT ON: H, CD DIRECT OFF: L.
16	PF0	DAT	O	Video output select ports. DAT output: H. AUX output: H. VTR output: H.
17	PF1	AUX	O	
18	PF2	VTR	O	
19	PF3	POWER	O	POWER ON/OFF port. POWER ON: H, POWER OFF: L.
20	PE0	DATA	O	Serial data output port, for selector IC (CX7977) × 2 and electronic VR IC (LC7535) × 2.
21	PE1	CLK	O	Clock output port for serial data of the selector IC and electronic VR IC.
22	PE2	CE	O	CE output port for serial data of the electronic VR IC.
23	PE3	ST	O	ST output port for serial data of the selector IC.
24	PB0	F. MUTE	O	Front speaker muting port. Muting ON: L, muting OFF: H.
25	PB1	R. MUTE	O	Rear (Surround) speaker muting port. Muting ON: L, muting OFF: H.
26	PB2	CCRS SW	O	CCRS switch output port. H during CCRS and after setting CCRS.
27	PB3	CCRS ST	O	CCRS strobe output port. H during CCRS.
28	PA0	DAC ON/OFF	O	DAC ON/OFF output port. H with DAC ON.
29	PA1	TEST	I	Test & overseas mode setting input port.
30	PA2	SDATA	O	Inter-system serial data output port.
31	PA3	BUSY	I/O	Inter-system serial data BUSY input/output port.
32	Vss			Microprocessor ground.
33~46	S0~S13	a~n	O	FL tube segment outputs.
47~56	T9~T0	1G~10G	O	FL tube digit outputs.
57	VfDP			FL tube power supply terminal.
58	INT2			Not used (grounded).
59	INT1	SDATA	I	Inter-system serial data input port.
60	XTAL			Clock generator output terminal.
61	EXTAL			Clock generator input terminal.
62	RST			Reset signal input & built-in power-on reset circuit output terminal.
63	PY0	OVER SEA	O	Overseas mode setting output port.
64	VDD			Microprocessor positive power supply terminal.

CIRCUIT DESCRIPTION

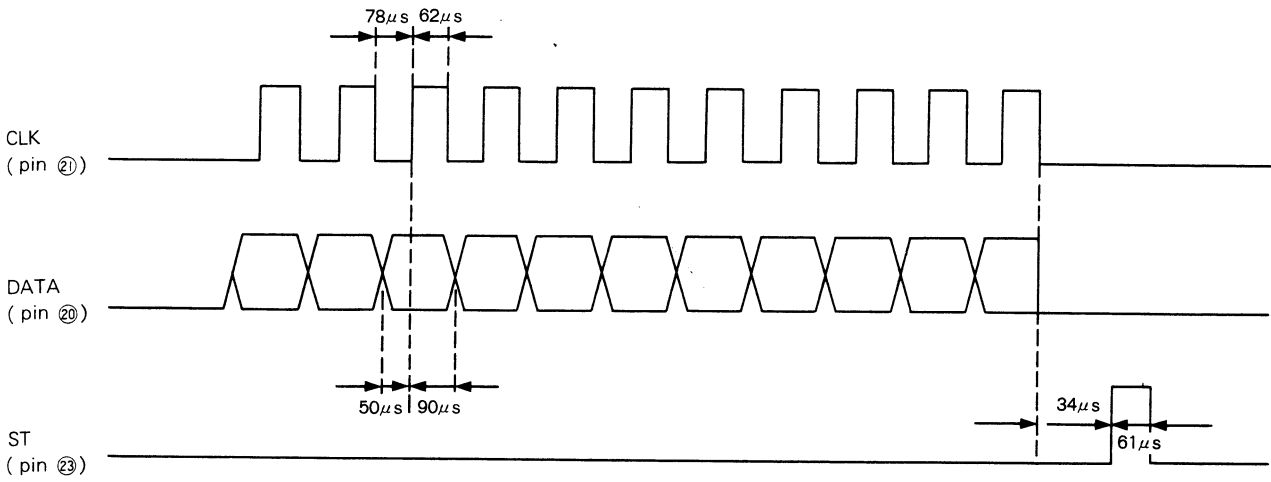
Timing Charts

Muting Timing

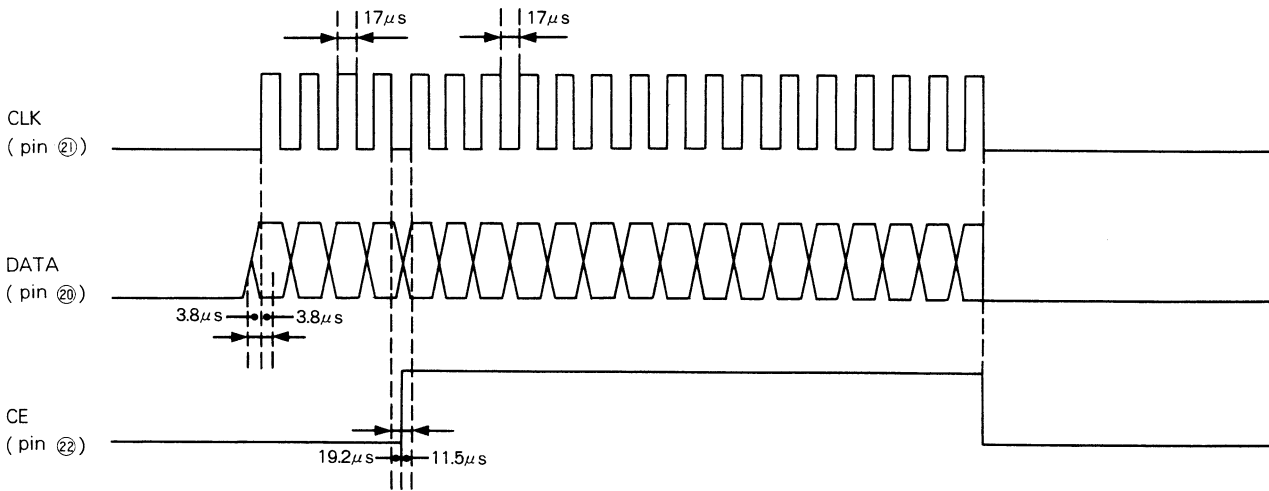


CIRCUIT DESCRIPTION

Selector Data Timing

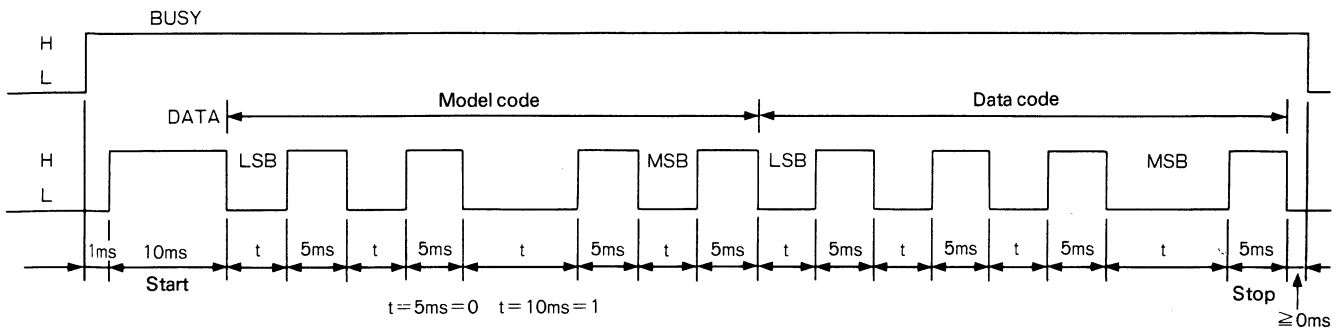


Electronic VR Data Timing



CIRCUIT DESCRIPTION

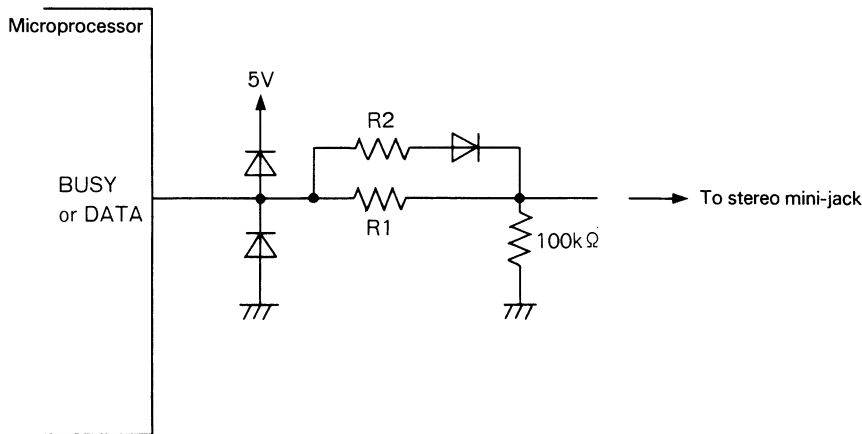
Explanation of Serial Data Communication



The accompanying chart shows the serial data communication format, which uses a 2-wire bidirectional bus system of BUSY and DATA. Each word is composed of 8 bits, with the first 4 bits representing the transmitter model code (in this example, 4 = CD player) and the last 4 bits the data code (in this example, 8 = PLAY) (48H). In the DATA signal, the first H period lasting 10 ms indicates the start of the serial data. The data is determined by the L

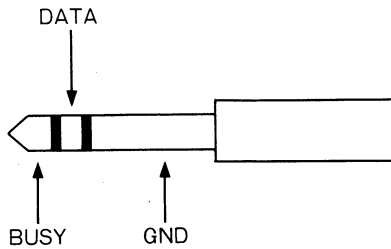
length, i.e. 0 for 5 ms and 1 for 10 ms. The 5 ms H periods indicate data sections. BUSY rises at the same time as, or before, the start of DATA, and goes L at the same time as or after, the end of DATA. BUSY is provided to prevent the collision of data outputs from different units, and thus the output of serial data can be started only when BUSY is L. If BUSY is H, data is output after BUSY becomes L.

Explanation of Serial Communication Interface



Both BUSY and DATA are transferred using the interface circuit shown in the diagram. (However, when the micro-

processor uses C MOS outputs, the R1 and R2 constants vary depending on the microprocessor.)







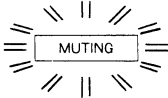
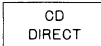
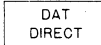




BUSY and DATA are connected using a stereo mini-plug as shown in the diagram. The GND connection is obtained

from the amplifier, and other units are grounded via a capacitor.

CIRCUIT DESCRIPTION

Explanation of Keys

Key Name	Function	Display
Selector CD	<ul style="list-style-type: none"> Switches the input selector to CD. Sets REC OUT A to CD, unless Deck A is being used for recording. Sets REC OUT B to CD, unless Deck B is being used for recording. 	<p>INPUT  V. OUT No change.</p> <p>If Deck A is used for recording, the display shows the above for only 3 seconds, after which it shows the following.</p> <p>REC A </p>
Selector PHONO TUNER TAPE A TAPE B	Same operation as CD above.	
Selector PHONO TUNER TAPE A TAPE B	Same operation as CD above.	
Selector DAT	<ul style="list-style-type: none"> Switches the input selector to DAT. Switches the video output (V. OUT) to DAT. Sets REC OUT A to DAT, unless Deck A is being used for recording. Sets REC OUT B to DAT, unless Deck B is being used for recording. <p>The DAT key is not accepted while the deck is recording the audio portion of another audio/visual source.</p>	<p>INPUT  V. OUT </p> <p>If Deck A is used for recording, the display shows the above for only 3 seconds, after which it shows the following.</p> <p>REC A </p> <p>If Deck B is used for recording, the display shows the above for only 3 seconds, after which it shows the following.</p> <p>REC B </p>
Selector AUX VTR	Same operation as DAT above.	
MUTE	This is the muting key. Pressing it once activates muting and pressing it again release muting. Muting is also released when a VOLUME key is pressed.	 <p>The indicator flashes during muting.</p>
CD DIRECT	<ul style="list-style-type: none"> Pressing this key once selects CD direct input, and pressing the again releases it. Direct input mode is also released by pressing a selector key other than CD. 	 <p>The indicator lights during CD direct input mode.</p>
DAT DIRECT	Same operation as CD DIRECT above.	 <p>The indicator lights during DAT direct input mode.</p>
VOLUME UP/DOWN	<ul style="list-style-type: none"> Each press of the VOLUME UP/DOWN key changes the speaker volume by 1 dB. Holding it depressed changes the volume every 64 ms (between 0 and -78 dB). 	 <p>The display shows the above for 3 seconds, then returns to the previous content.</p>
BALANCE L/R	<ul style="list-style-type: none"> Each press attenuates the speaker volume of the opposite channel by -2 dB in 10 steps. At the Leftmost or Rightmost setting, the volume of the opposite channel is attenuated to -79 dB. 	 <p>Center Leftmost Between center and leftmost position</p>
POWER	<ul style="list-style-type: none"> Pressing this key once turns power on, and pressing it again turns it off. This key must be pressed with an interval of at least 1 second. 	All displays and indicators go off when power is turned OFF.

CIRCUIT DESCRIPTION

Initial Status

Status	Explanation	Display
After connection to an Acc power outlet	<ul style="list-style-type: none"> The input selectors and both REC OUT A and B are set to TUNER. The video output (V. OUT) is set to VTR. CD DIRECT and DAT DIRECT are OFF. MUTING is OFF. Volume is set to -50 dB. Balance is set to the center. POWER is OFF. 	All displays and indicators are OFF when the power cord is connected to an Acc outlet.
After pressing the POWER key ON	<ul style="list-style-type: none"> The input selectors, video output, volume and balance, MUTING, CD DIRECT and DAT DIRECT their last status. REC OUT A and B are set to the same condition as the input selectors. 	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> INPUT TUNER </div> <div style="text-align: center;"> V. OUT VTR </div> </div> <p>The display shows the above when POWER is turned ON after having connected the power cord to an Acc outlet.</p>

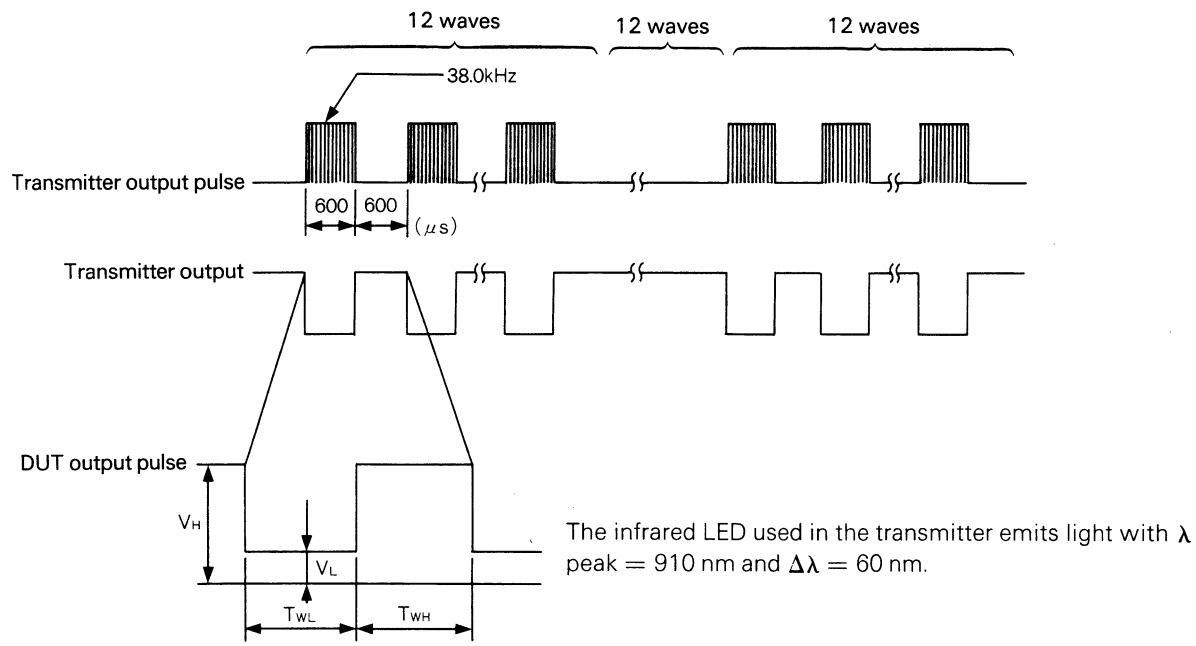
Test Mode

Status	Explanation	Display
Test mode start procedure	<ul style="list-style-type: none"> Connect the power cord to an Acc outlet while shortcircuiting the test pins. 	
Function of test mode	<ul style="list-style-type: none"> All display-tube segments are illuminated. The VOL UP/DOWN keys do not operate in ± 1 dB, step but between $-\infty \leftrightarrow -26$ dB $\leftrightarrow 0$ dB. The BAL L/R keys do not operate in -2 dB steps, but between L \leftrightarrow Center \leftrightarrow R. CCRS ST and CCRS SW ports go High. 	All FL tubes light.
Test mode finish procedure	<ul style="list-style-type: none"> Lighting of the display tubes and High status indicators of the CCRS ST and SW ports can be cleared by pressing the POWER key. The volume and balance variation steps can be cleared by disconnecting the power cord from the Acc outlet. 	

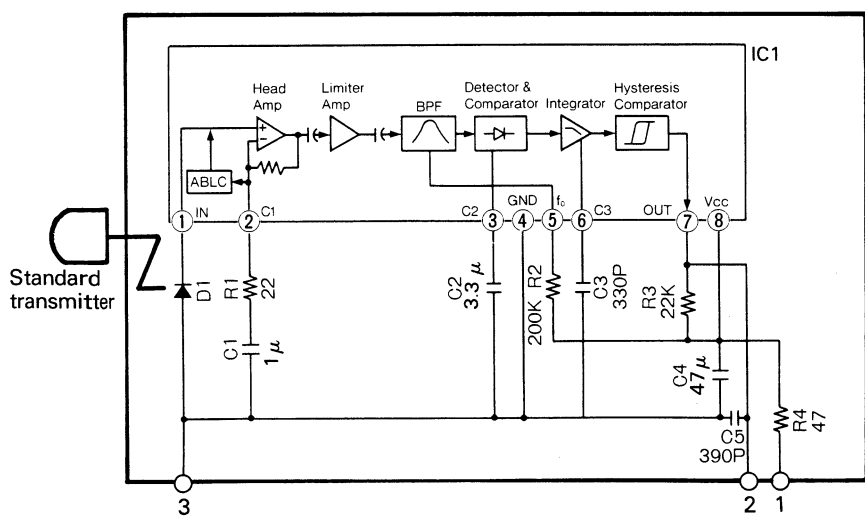
CIRCUIT DESCRIPTION

A1: W02-0776-05 (X11-2440-11)

Remote Control Reception Module



Block Diagram



- IC1: CX20106A
 - D1: PIN photodiode
 - C1, C2, C4: Aluminum electrolytic capacitors
 - C3, C5: SL characteristic $\pm 5\%$
 - R2: $\pm 1\%$ (regulating resistor)
 - R (other than R2): $\pm 5\%$
1. Vcc
 2. Output
 3. GND, case fin
 4. GND, case fin

CIRCUIT DESCRIPTION

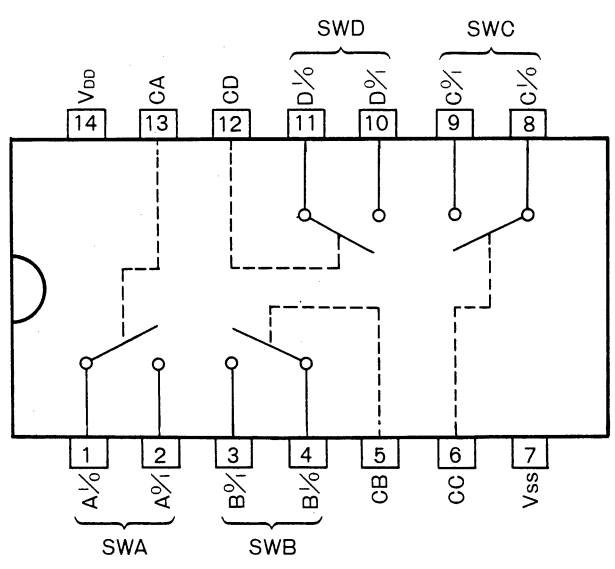
Electrical Characteristics

(Ta = 25°C, Vcc = 5 V)

Item	Symbol	Condition	Minimum	Maximum	Unit
Current consumption	I _{cc}	No signal input	1.1	2.5	mA
Maximum attainable length	L	*1. With reference to the light axis	8.0		m
		Assuming the light emitting point as the summit. Within the conic range of 30° above and below the light axis:	6.5		
		Within the conic range of 45° above and below the light axis:	5.0		
Low level output voltage	V _L	*2. At a distance of 30 cm on the light axis		0.5	V
High level output voltage	V _H	*2. At a distance of 30 cm on the light axis	4.5		V
Low level pulse duration	T _{WL}	*1. Duration of T _{WL} output period, measured between 5 cm and maximum attainable distance	410	910	μs
High level pulse duration	T _{WH}	*1. Duration of T _{WH} output period, measured between 5 cm and maximum attainable distance	290	790	μs

IC1 ~4 (X09-2500-11), IC4 (X11-2440-11): LC4066BH Analog Switch IC

Pin Configuration and Internal Block Diagram

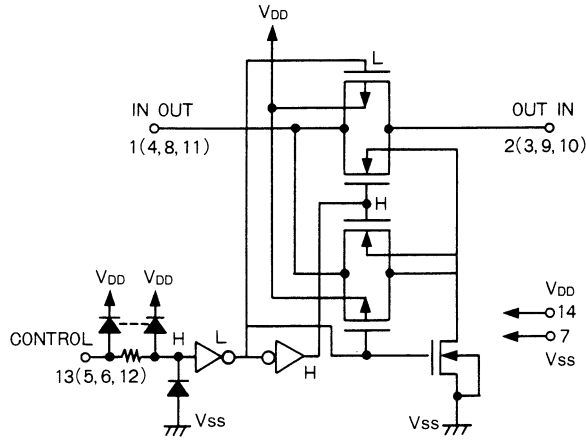


Truth table

Control (CA - CD)	Switches (A ~ C)
H	ON
L	OFF

CIRCUIT DESCRIPTION

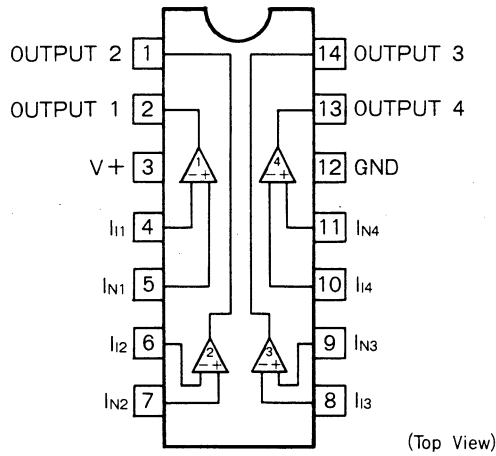
Equivalent Circuit Diagram (1/4)



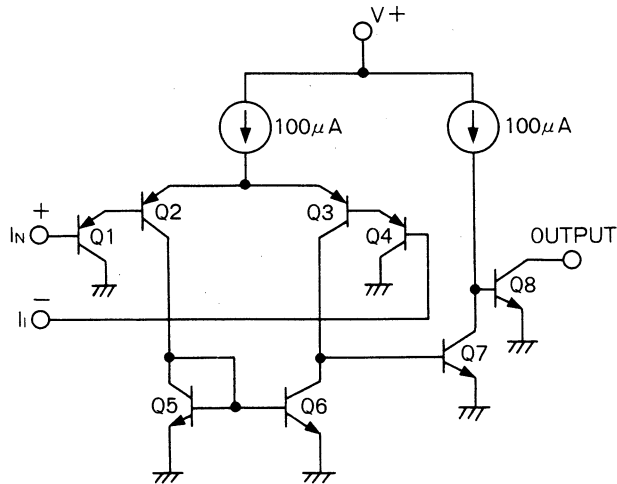
ICs 5, 6: μ PC339C (X09-2500-11)

Quad-Comparator ICs

Pin Connection



Equivalent Circuit Diagram (1/4)

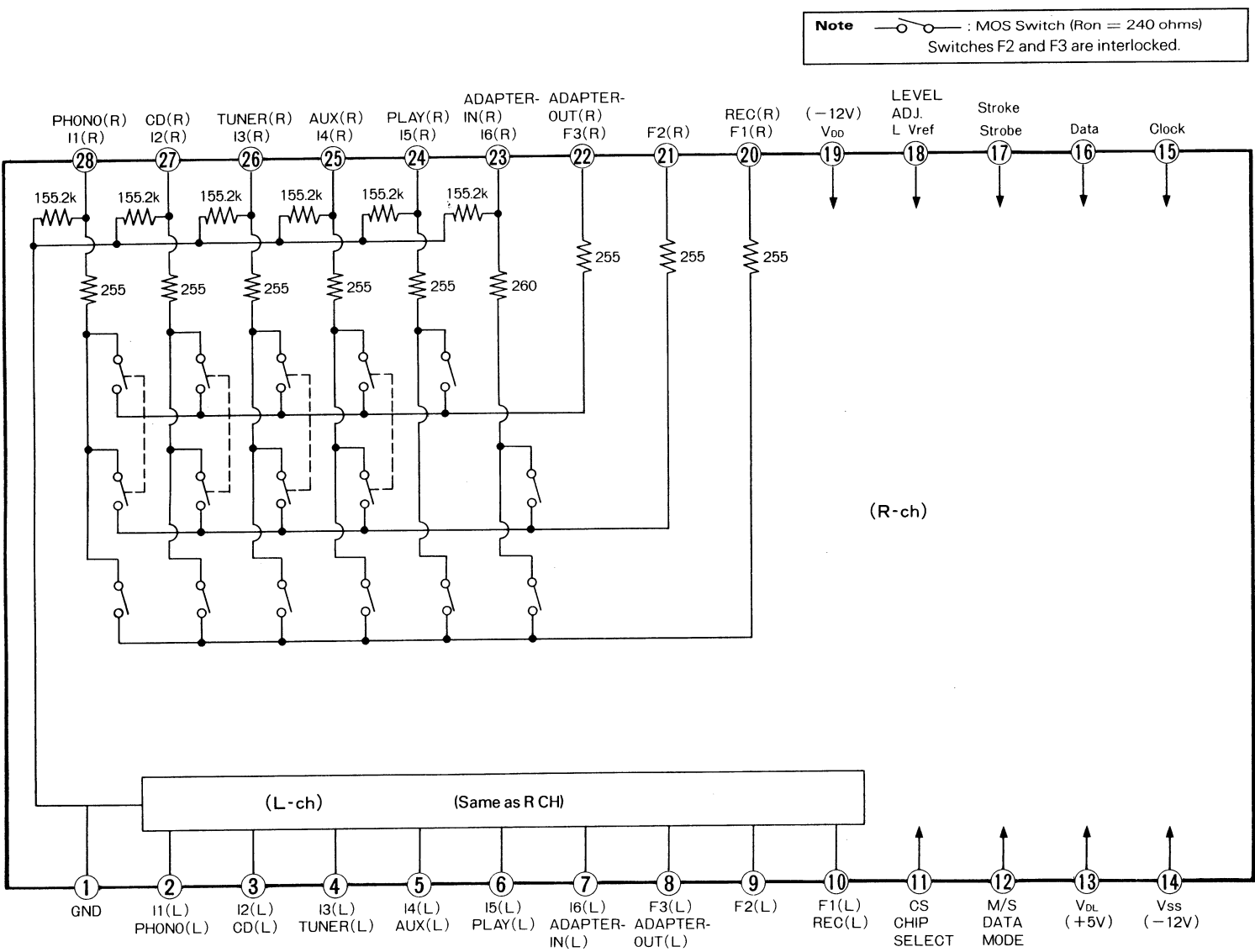


CIRCUIT DESCRIPTION

IC1: CX7977 (X13-5520-00)

Selector IC

Equivalent Circuit Diagram of the Analog Circuitry

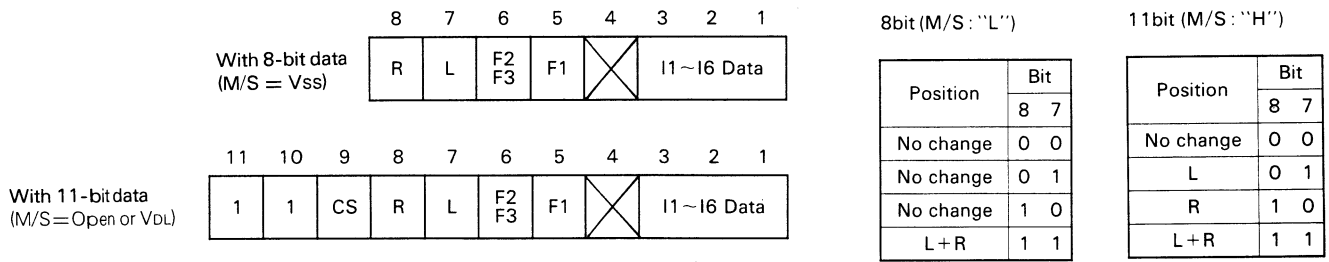


CIRCUIT DESCRIPTION

Explanation of Pins

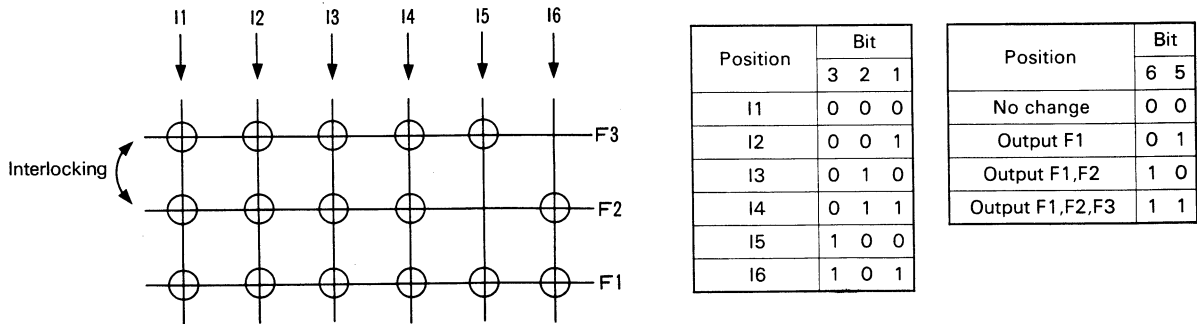
Pin No.	Pin Name	I/O	Function
1	GND		Audio signal reference voltage (0 V).
2~7	I1(L)~I6(L)	I	L CH audio signal input terminals (6 inputs).
8~10	F3(L)~F1(L)	O	L CH audio signal output terminals (3 outputs).
11	CS	I	Chip Select terminal. The chip is selected when serial data bit (9) coincides with the level at the CS terminal. That is, when CS = bit (9). CS = Vss when the level is "0". CS = open or VDL when it is "1".
12	M/S	I	Serial data input mode switching terminal. The input is 8-bit when the M/S terminal is fixed at Vss, and is 11-bit when it is open or at VDL.
13	VDL		Logic circuitry power supply (Vss + 5 V).
14	Vss		IC board potential (-14 V).
15	Clock	I	Serial data input clock. The data is 11-bit or 8-bits, and is input at the rise of the clock.
16	Data	I	11-bit or 8-bit serial data.
17	Strobe	I	The serial data input in the analog switch status set pulse (1-bit) IC is latched at the rise of the Strobe pulse, turning ON the switch indicated by the data.
18	L Vref	I	Sets the control signal (Clock, Data and Strobe) input level.
19	VDD		Switch driver power (+14 V).
20~22	F1(R)~F3(R)	O	R CH audio signal output terminals (3 outputs).
23~28	I6(R)~I1(R)	I	R CH audio signal input terminals (6 inputs).

Control Data Configuration



* : The F2 output control and F3 output control are interlocked. The 15 signal input is not output from F2, and that of I6 is not output from F3.

The following diagram indicates this relationship.



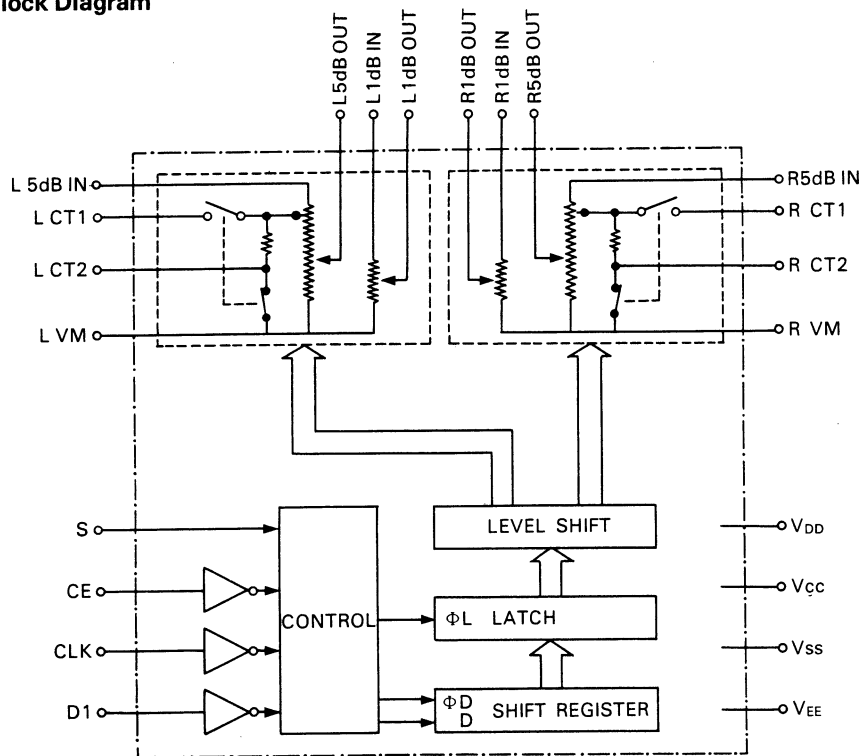
: Indicates a switch.

CIRCUIT DESCRIPTION

IC8 (X09-2500-11): LC7535

Electronic VR IC

Equivalent Circuit Block Diagram



Explanation of Pins

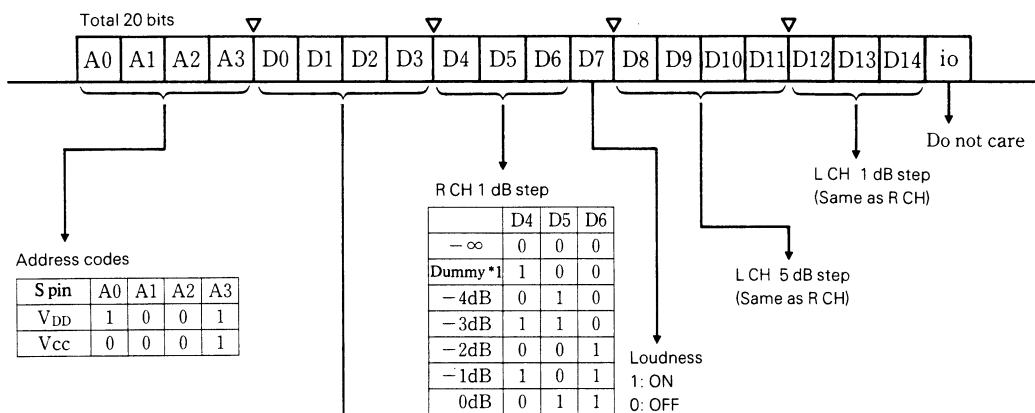
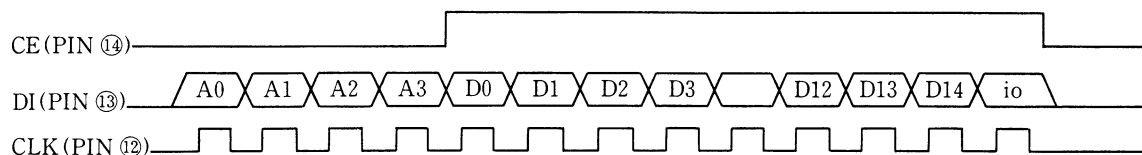
Pin. No.	Pin Name	I/O	Function	Remark
1	L5dB IN	I	5 dB step attenuator input terminals. Shall be driven with low impedance signal.	Total resistance of 75 kilohms
22	R5dB IN			
2	LCT 1		Loudness control terminals. High-frequency compensation capacitors are connected between CT 1 and 5 dB IN, and low-frequency compensation capacitors are connected between CT2 and VM.	
3	LCT 2			
21	RCT 1			
20	RCT 2			
4	L5dB OUT			
19	R5dB OUT			
5	L1dB IN	I	1 dB step attenuator input terminals. Each shall be driven with a low impedance signal.	Total resistance of 20 kilohms.
18	R1dB IN			
6	L1dB OUT	O	1 dB step attenuator output terminals. Shall be connected to a load between 47 kilohms and 1 megohm.	
17	R1dB OUT			
7	L VM		Volume common terminals. The patterns connected to these terminals shall have as small an impedance as possible. As the L VM, R VM and Vss are not connected internally, they shall be connected externally according to the specifications. Specially, in the case of a single power supply, use care in determining the capacitance of the capacitor between VM and Vss, because it may become the residual resistance component when the volume is lowered.	
16	R VM			
9	S		Selects the address code in the data format. Data is accepted with address code "9" when this terminal is connected to VDD, and with address code "B" when it is connected to VCC.	

CIRCUIT DESCRIPTION

Explanation of Pins

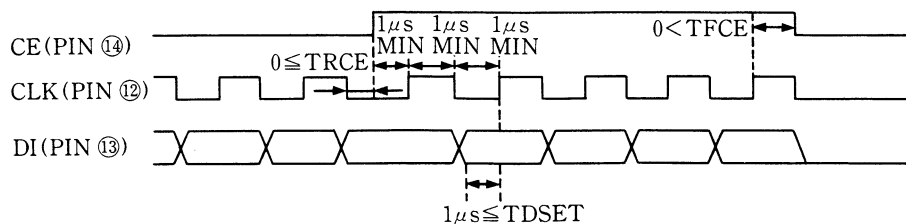
Pin No.	Pin Name	I/O	Function	Remark
12	CLK	I	Input terminals for controlling LC7535 with serial data.	
13	DI		Input with an amplitude from 0 to 5 V.	
14	CE		When the CLK, DI or CE of the controlled microprocessor goes High in the backup status ($V_{DD} = V_{CC} = 0V$), insert a resistor of more than 2 kilohms in series with the signal line.	
8	V_{EE}		Power supply connection terminals. Be careful that V_{CC} does not rise before V_{DD} when power is turned ON.	
10	V_{DD}			
11	V_{SS}			
15	V_{CC}			

Data Format



R CH 5 dB step

	D0	D1	D2	D3
-75dB	0	0	0	0
-70dB	1	0	0	0
-65dB	0	1	0	0
-60dB	1	1	0	0
-55dB	0	0	1	0
-50dB	1	0	1	0
-45dB	0	1	1	0
-40dB	1	1	1	0
-35dB	0	0	0	1
-30dB	1	0	0	1
-25dB	0	1	0	1
-20dB	1	1	0	1
-15dB	0	0	1	1
-10dB	1	0	1	1
-5dB	0	1	1	1
0dB	1	1	1	1

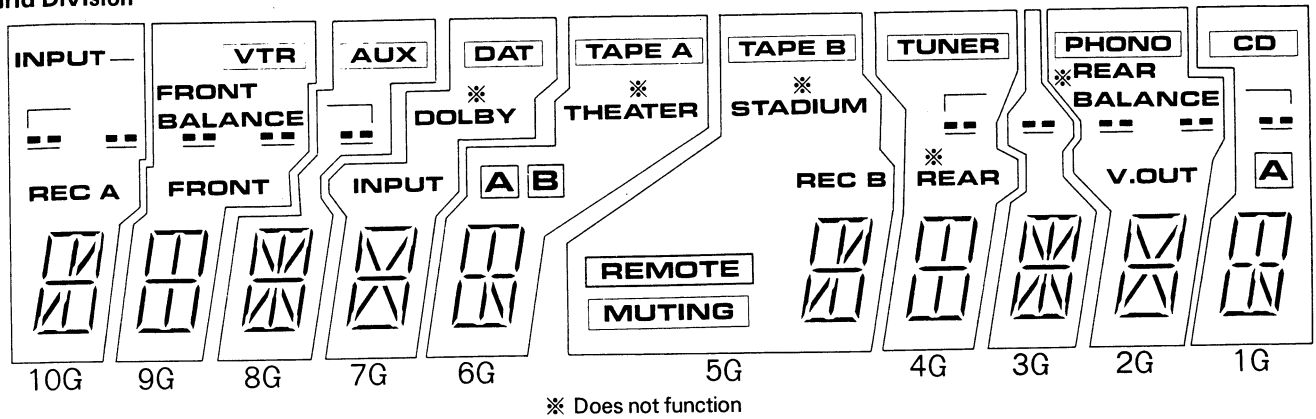


CIRCUIT DESCRIPTION

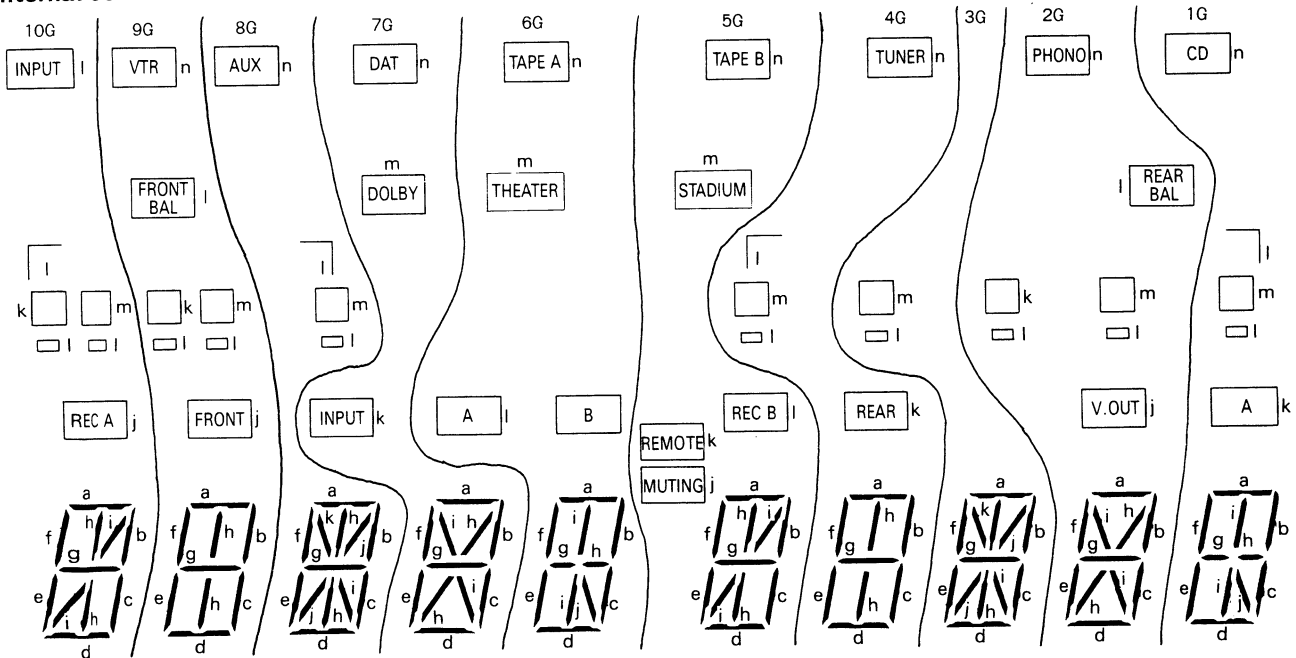
FL1: FIP11EM8 (X11-2440-11)

FL display tube

Grid Division



Internal Connection



Terminal Connection

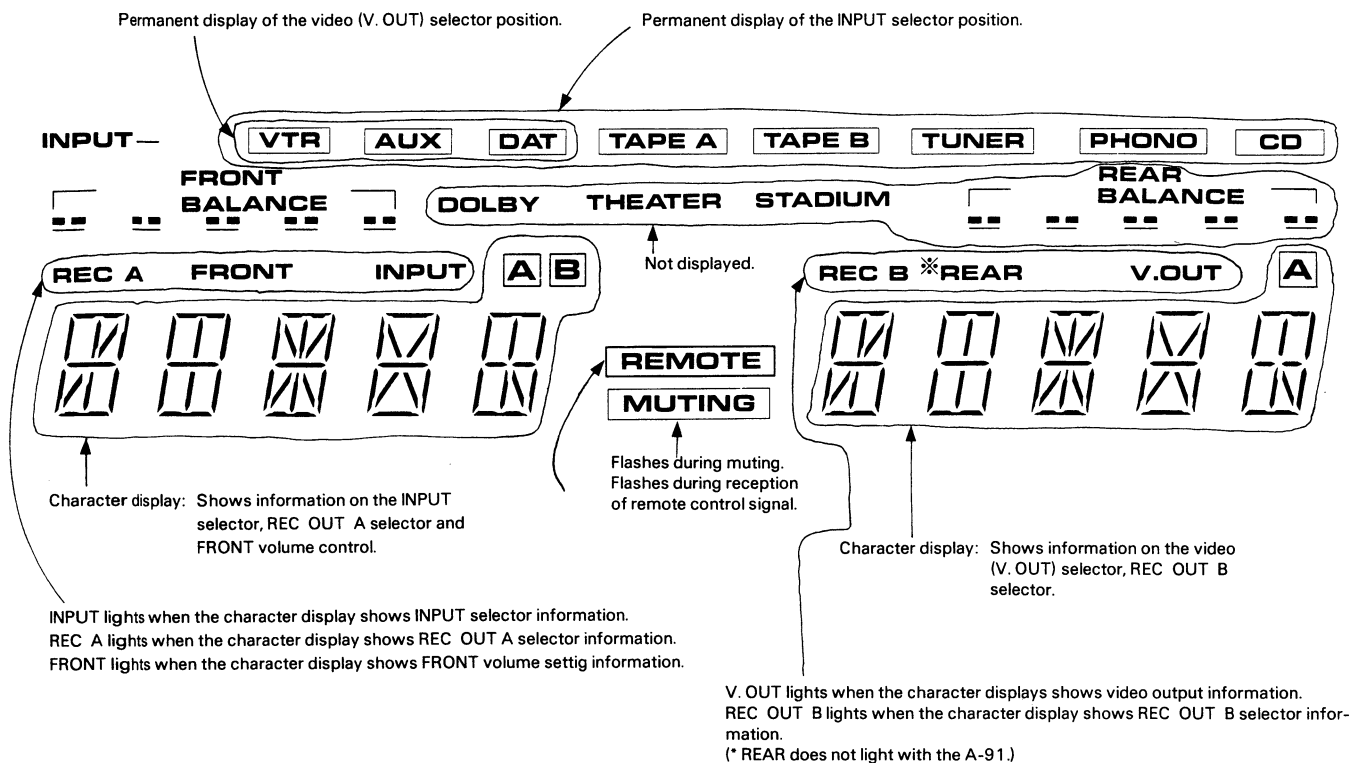
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13																								
Electrode	F	F	NP	NP	10G	NP	NP	NP	NP	9G	NP	NP	NP																								
Pin No.														14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33				
Electrode														NP	8G	NP	P(a)	7G	P(b)	NP	P(c)	6G	P(d)	P(e)	P(f)	P(g)	P(f)	5G	P(h)	P(i)	P(i)	P(h)	4G	NP			
Pin No.																										34	35	36	37	38	39	40	41	42	43	44	45
Electrode																										3G	P(j)	P(k)	2G	P(l)	P(m)	P(n)	1G	NP	NP	F	F

Notes F: Filament NP: No Pin G: Grid P: Anode

(Note) Pins 28 and 31 (h segment) and pins 29 and 30 (i segment) are respectively connected inside the FL tubes.

CIRCUIT DESCRIPTION

Explanation of Display



ADJUSTMENT/REGLAGE/ABGLEICH

ADJUSTMENT

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	AMPLIFIER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
1	IDLE CURRENT	—	Connect a DC voltmeter across CP13 (L) CP12 (R) (X09-)	VOLUME: 0	VR1 (L) VR2 (R) (X89-)	18mV	(a)

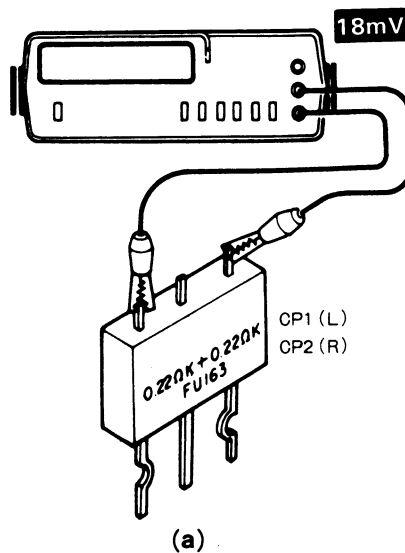
REGLAGE

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DE L'AMPLIFICATEUR	POINT L'ALIGNEMENT	ALIGNER POUR	
1	COURANT DE POLARISATION	—	Connecter un voltmètre de CC sur CP13 (G) CP12 (D) (X09-)	VOLUME: 0	VR1 (G) VR2 (D) (X89-)	18mV	(a)

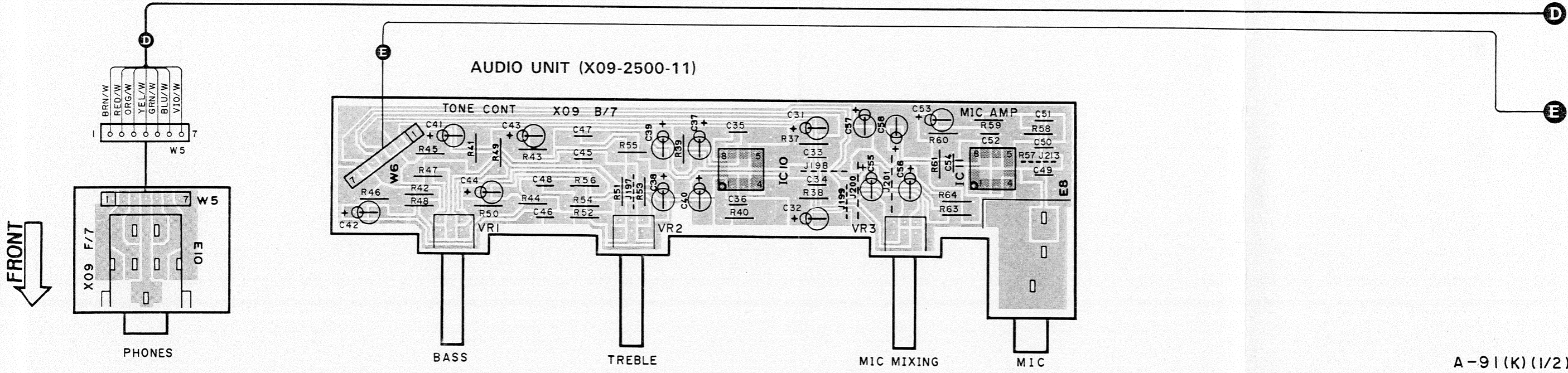
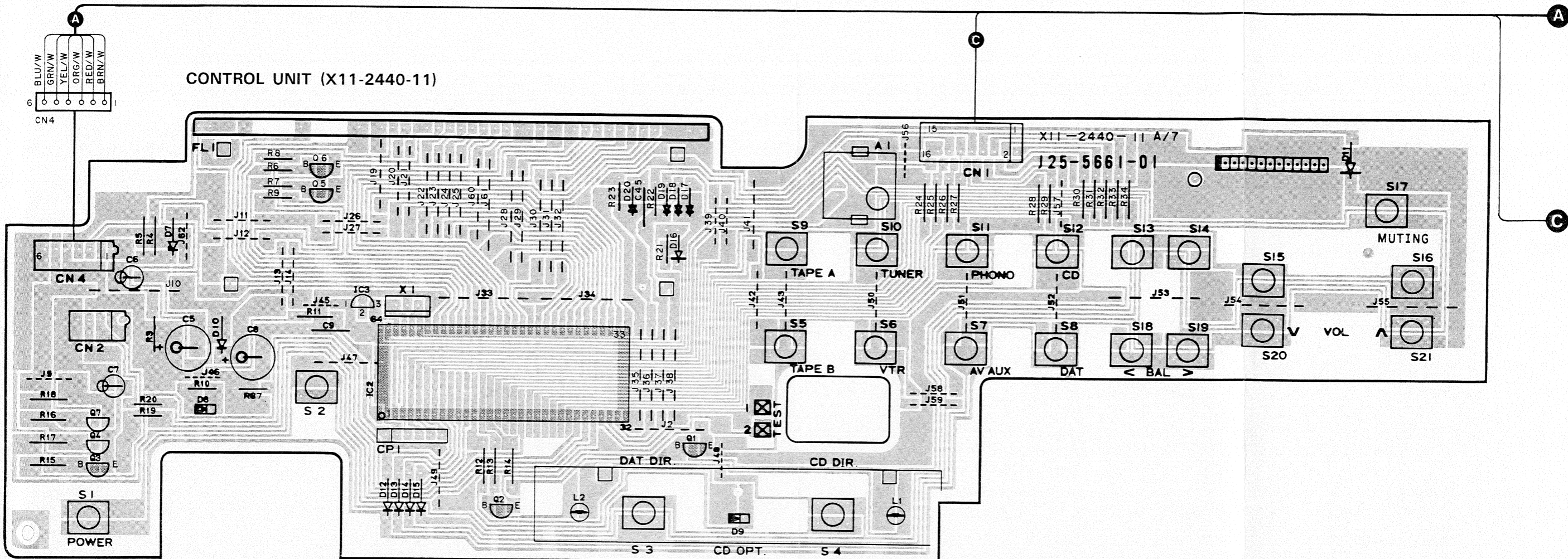
ABGLEICH

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	VERSTÄRKER EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB.
1	LEERLAUFSTROM	—	Einen Gleichspannungsmesser über CP13 (L) CP12 (R) anschließen. (X09-)	VOLUME: 0	VR1 (L) VR2 (R) (X89-)	18mV	(a)

DC voltmeter
Voltmètre de CC
Gleichspannungsmesser

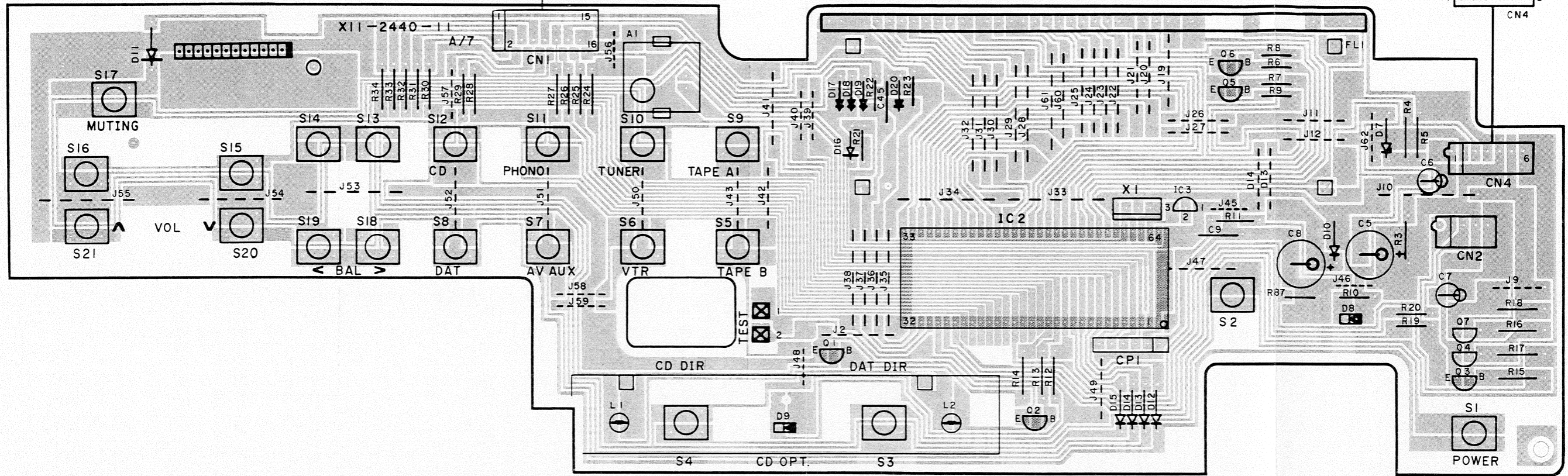


PC BOARD (COMPONENT SIDE)

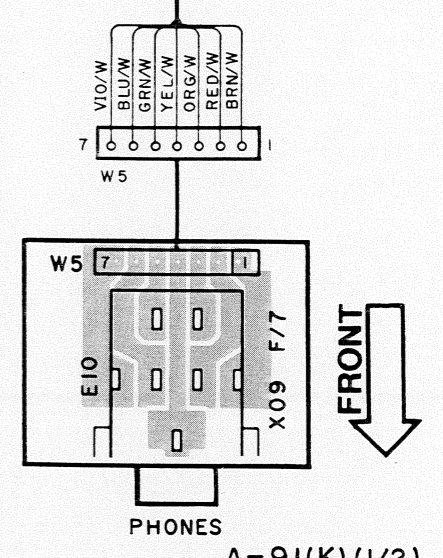
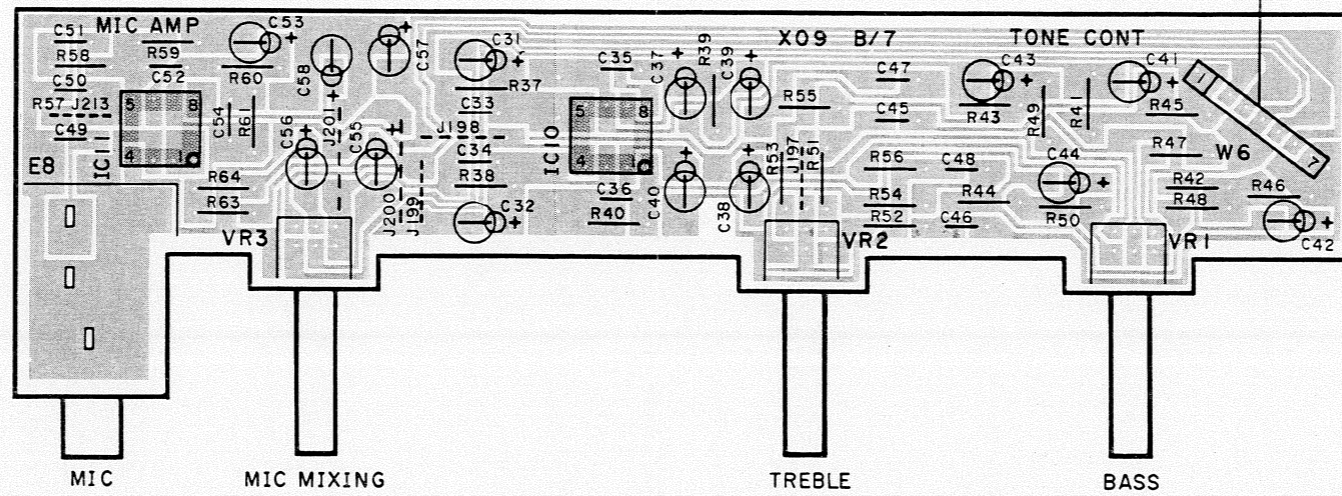


PC BOARD (FOIL SIDE)

CONTROL UNIT (X11-2440-11)



AUDIO UNIT (X09-2500-11)

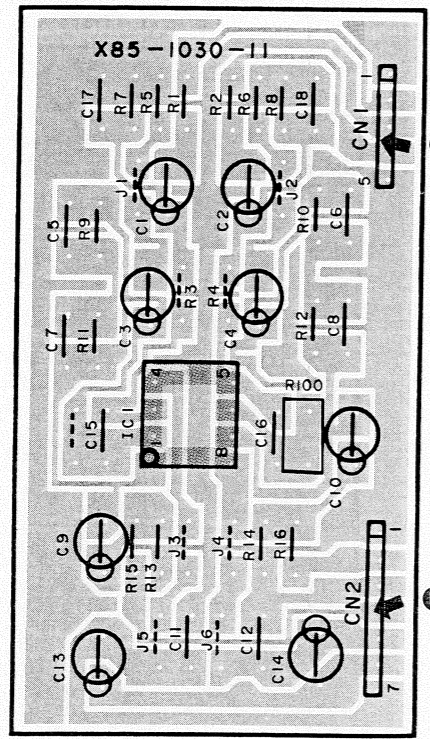


A-91(K) (1/2)

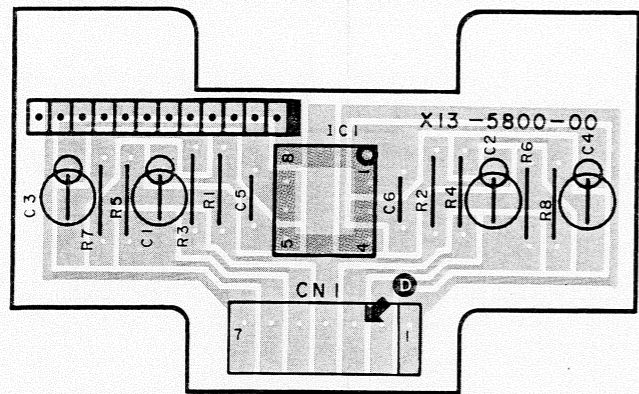
Refer to the schematic diagram for the values of resistors and capacitors.

PC BOARD (FOIL SIDE)

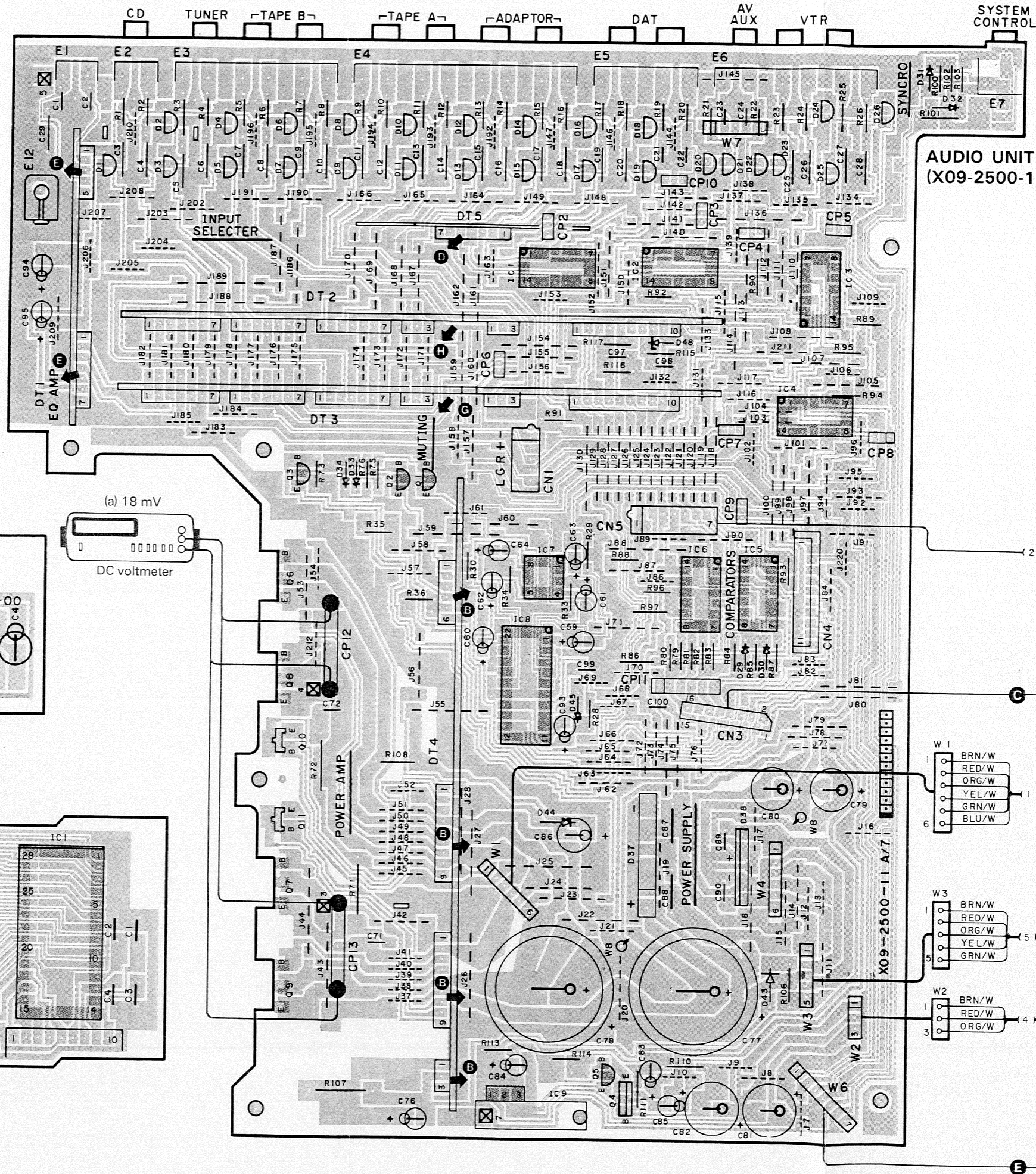
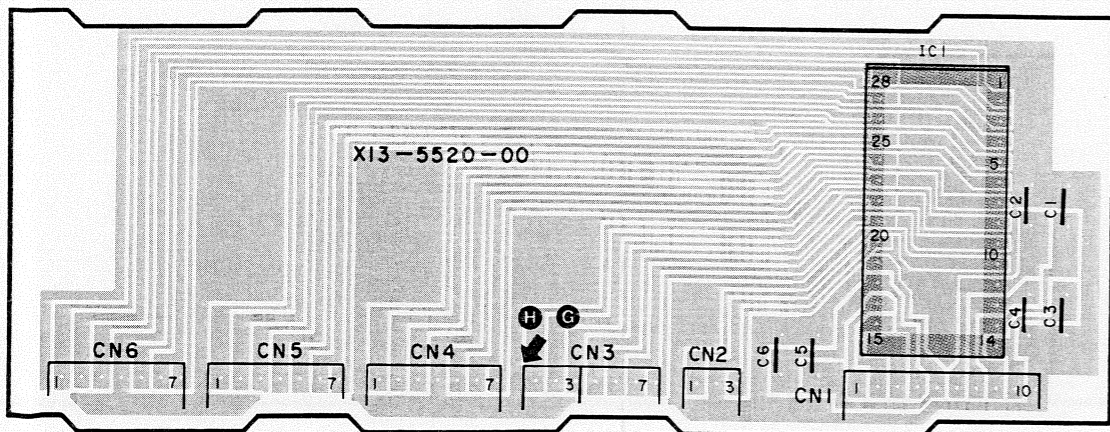
PRE-AMPLIFIER UNIT (X85-1030-11)



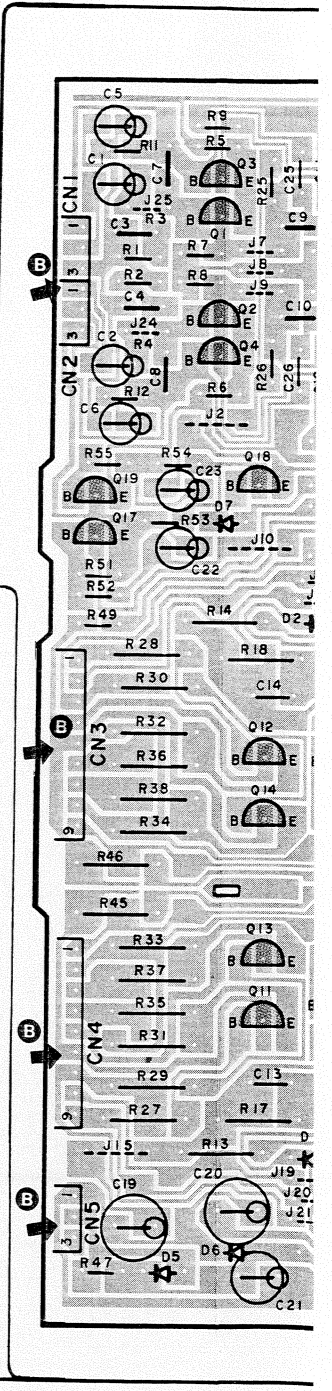
BUFFER UNIT (X13-5800-00)



SUB-CIRCUIT UNIT (X13-5520-00)



AUDIO UNIT (X09-2500-11)



V. MONITOR OUT

2

3

4

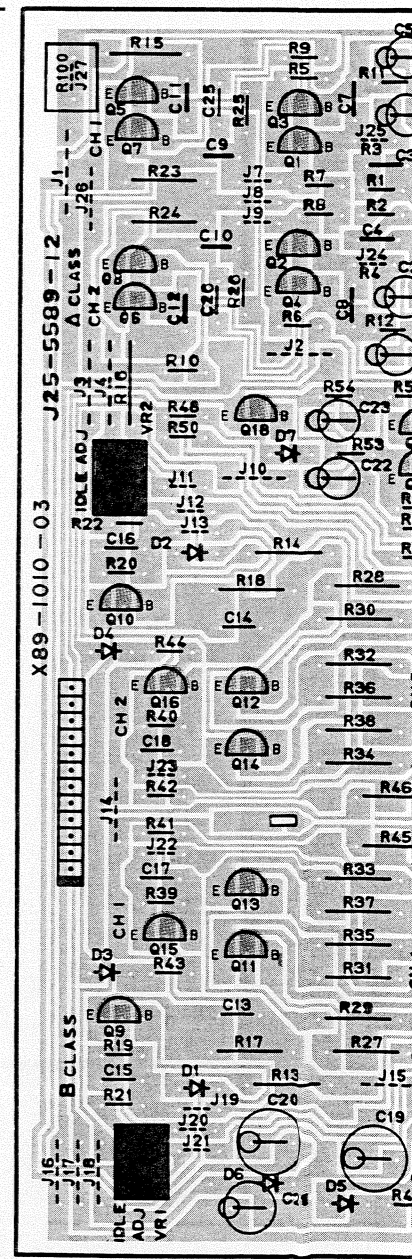
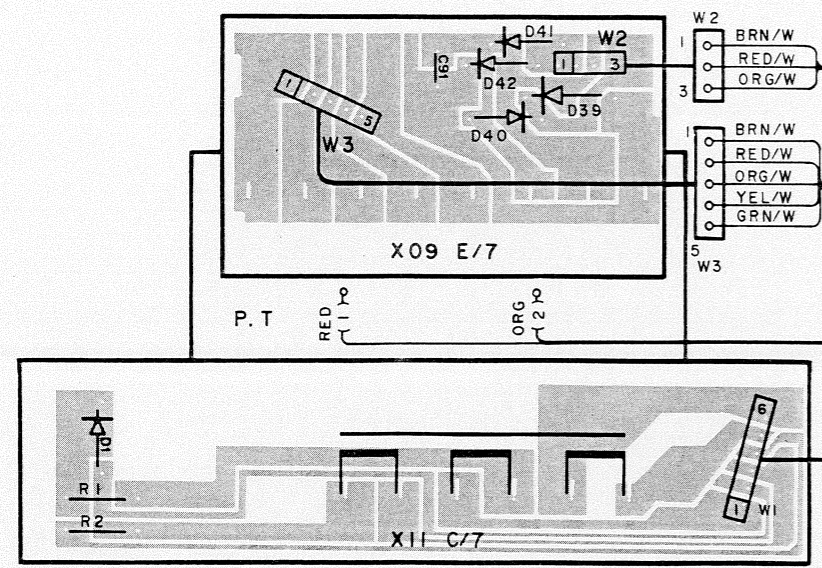
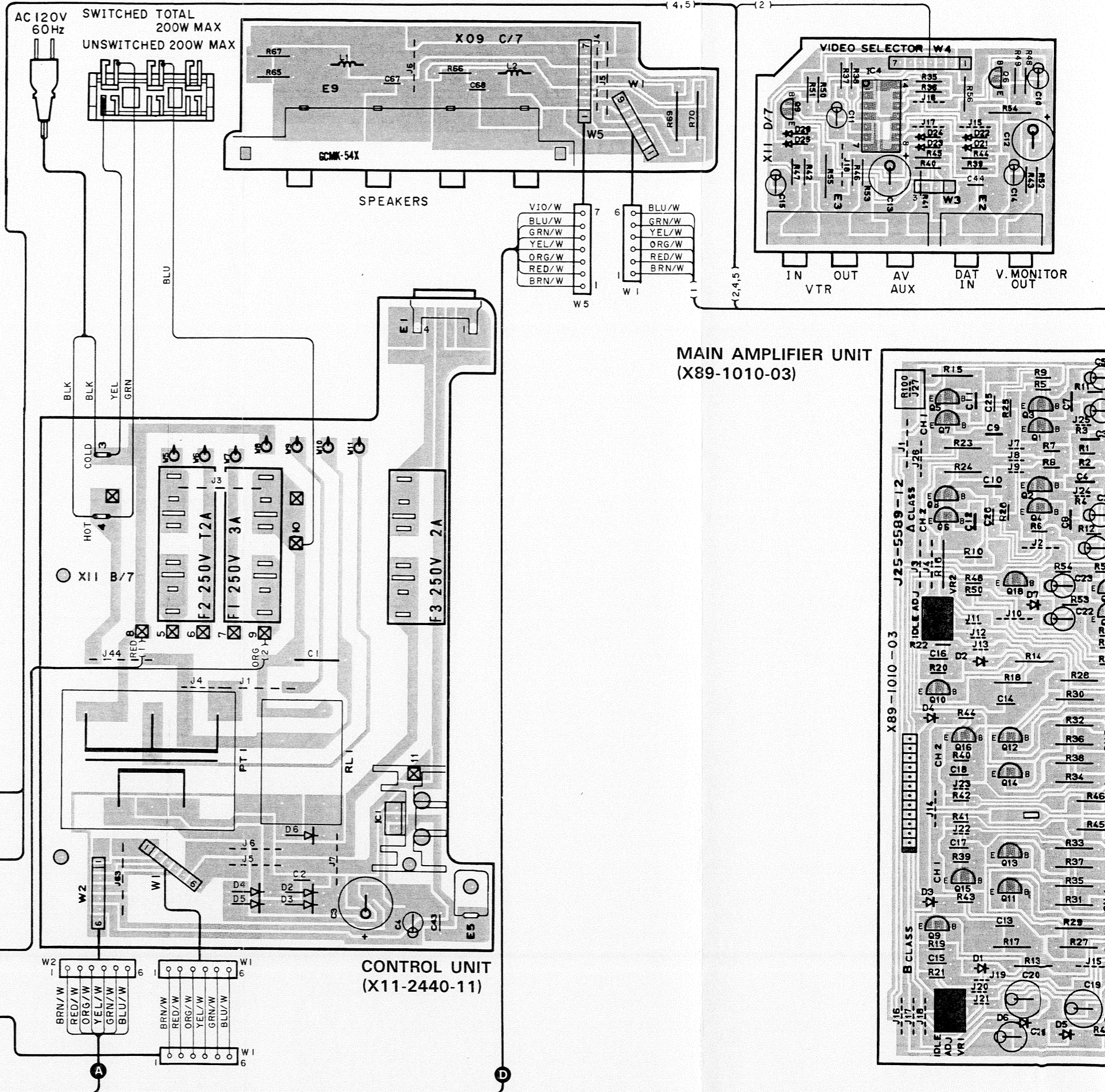
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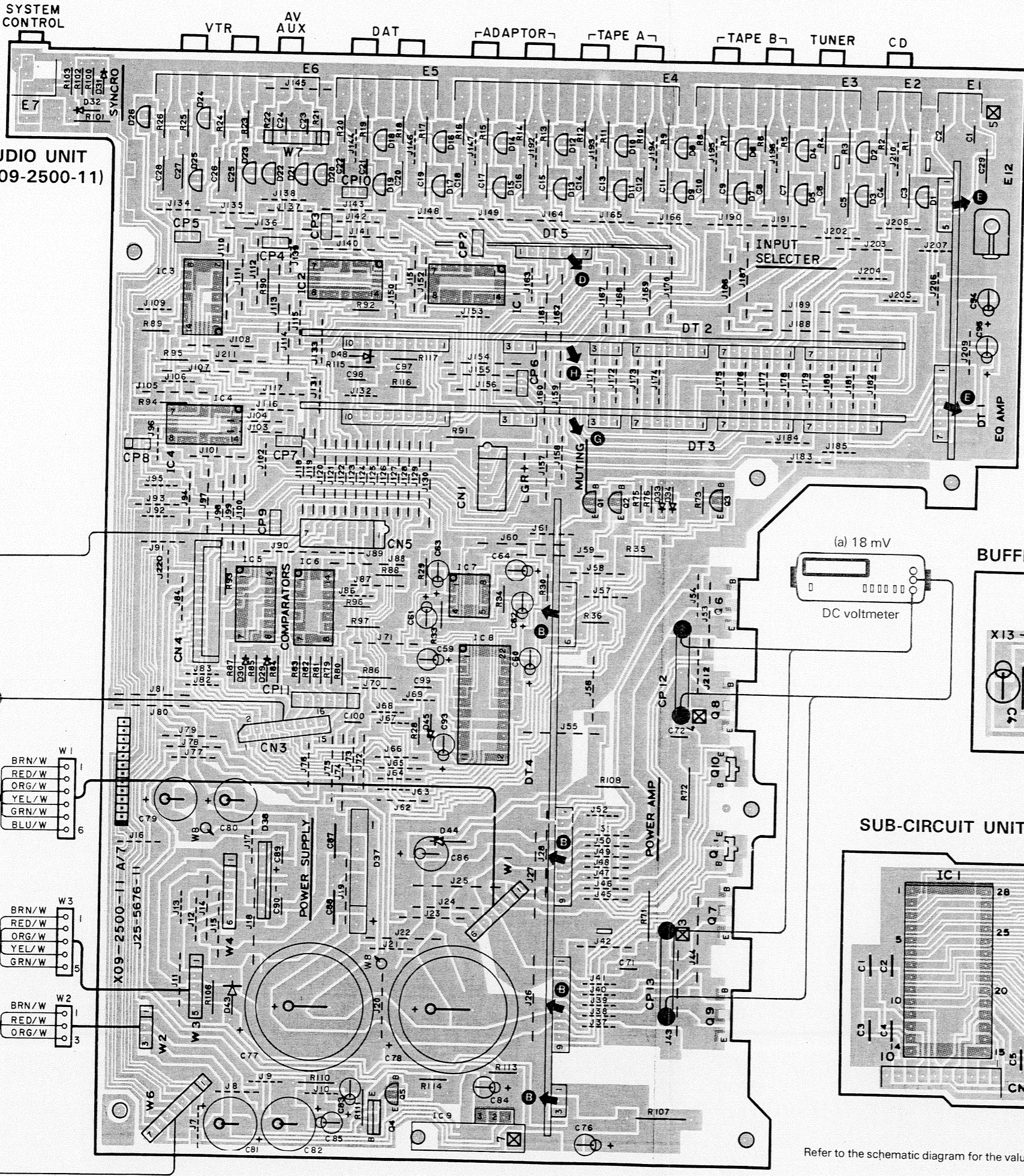
6

7

PC BOARD (COMPONENT SIDE)

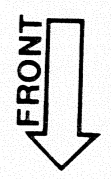
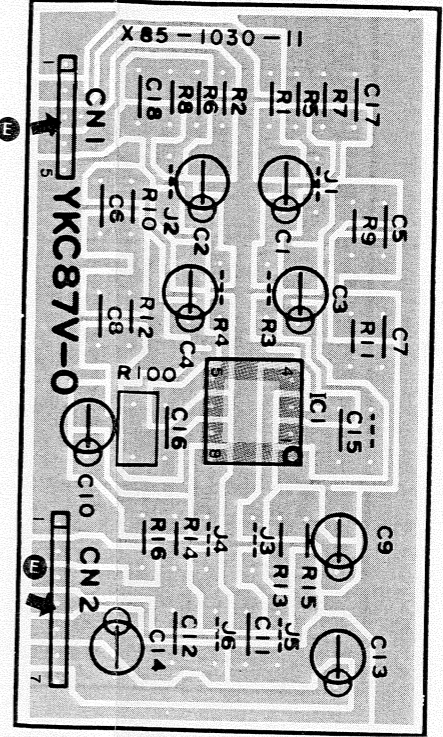
A
C
D
E



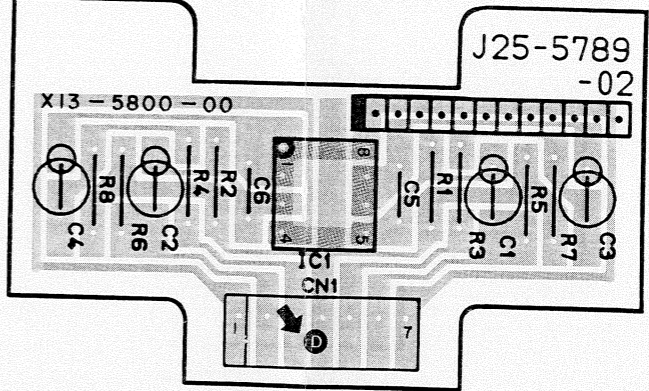


AUDIO UNIT (X09-2500-11)

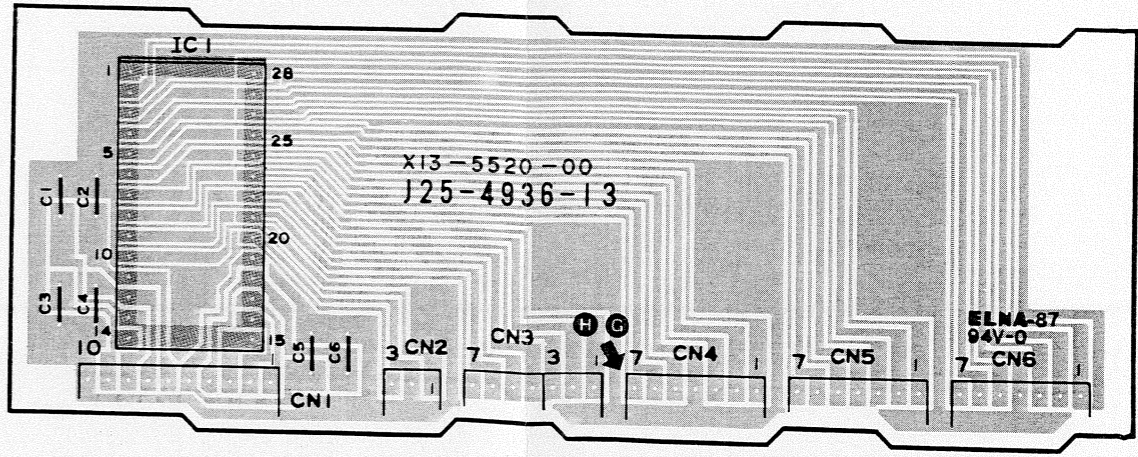
PRE-AMPLIFIER UNIT (X85-1030-11)



BUFFER UNIT (X13-5800-00)

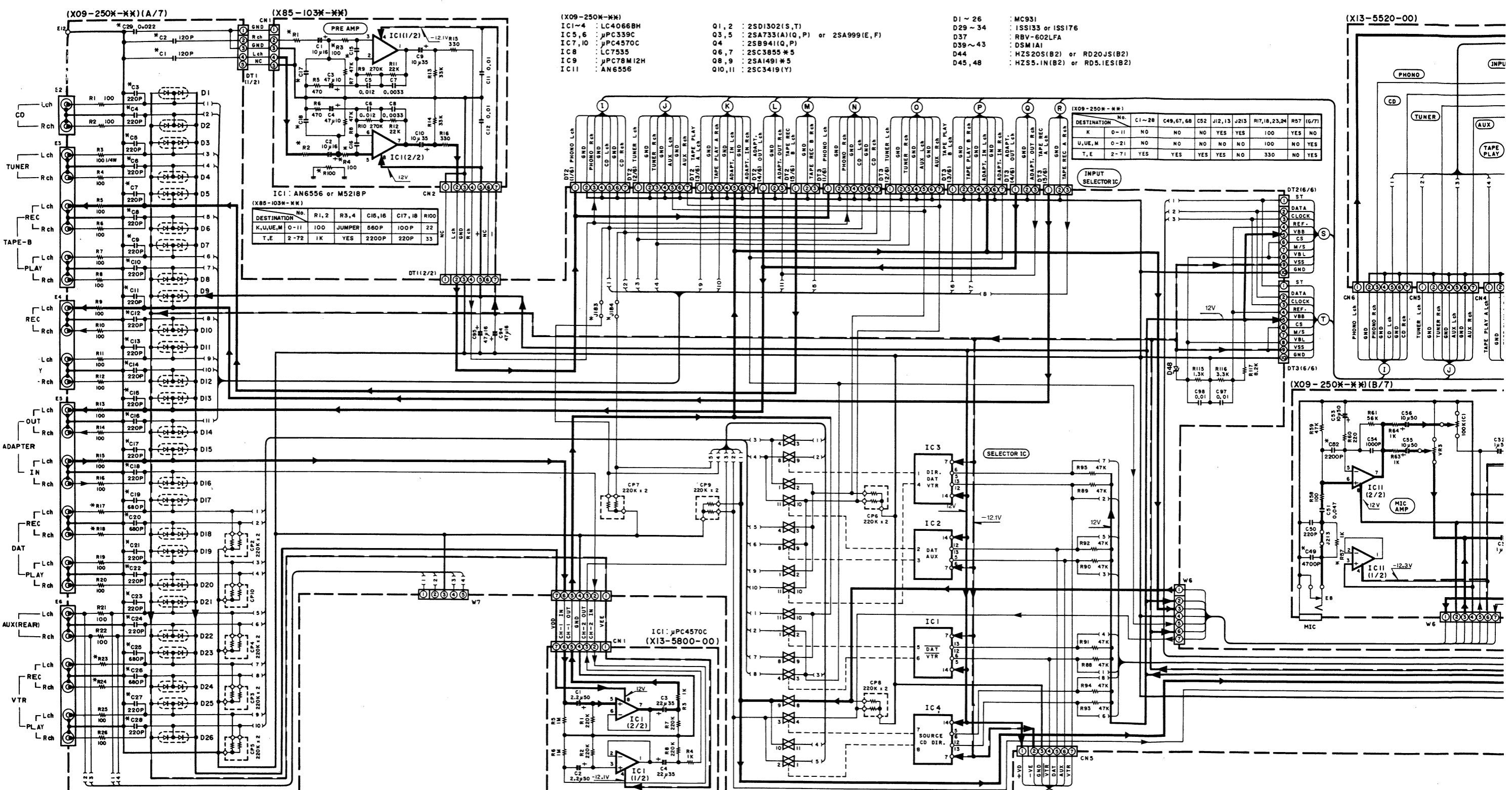


SUB-CIRCUIT UNIT (X13-5520-00)



Refer to the schematic diagram for the values of resistors and capacitors.

2
3
4
5
6
7



- (X09-250X-XX)
 IC1~4 : LC4066BH
 IC5,6 : μ PC339C
 IC7,10 : μ PC4570C
 IC8 : LC7535
 IC9 : μ PC78M12H
 IC11 : AN6556
- Q1,2 : 2SD1302(S,T)
 Q3,5 : 2SA733(A)(Q,P) or 2SA999(E,F)
 Q4 : 2SB941(Q,P)
 Q6,7 : 2SC3855*5
 Q8,9 : 2SA1491*5
 Q10,11 : 2SC3419(Y)
- D1~26 : MC931
 D29~34 : ISS133 or ISS176
 D37 : RBV-602LFA
 D39~43 : DSM1A1
 D44 : HZ520S(B2) or RD20JS(B2)
 D45,48 : HZ55-IN(B2) or RD5.1ES(B2)

IC1 : AN6556 or M5218P

DESTINATION	No.	R1,2	R3,4	C16,16	C17,18	R100
K,U,U,M	0-11	100	JUMPER	560P	100P	22
T,E	2-72	1K	YES	2200P	220P	33

(X09-250X-XX)

DESTINATION	No.	C1~28	C49,67,68	C52	J12,13	J213	R17,18,23,24	R57	(G/7)
K	0-11	NO	NO	NO	YES	YES	100	YES	NO
U,U,E,M	0-21	NO	NO	NO	NO	NO	100	NO	YES
T,E	2-71	YES	YES	YES	YES	NO	330	NO	YES

- 2SA733(A)
 2SA992
 2SA999
 2SC1845
 2SC2003
 2SC2320
 2SC945(A)
 2SD1302

- 2SA1110
 2SC2590

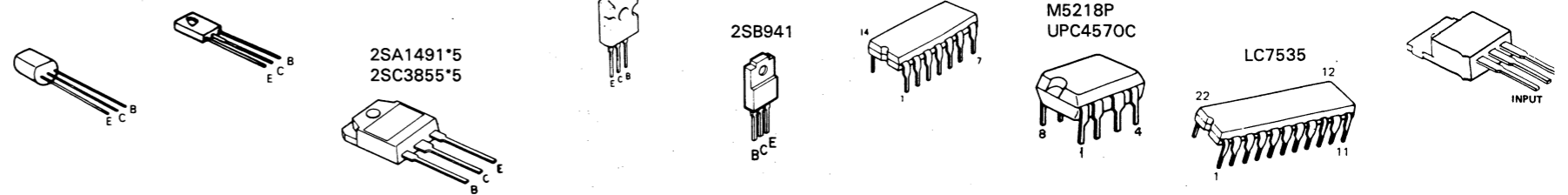
- 2SC3419

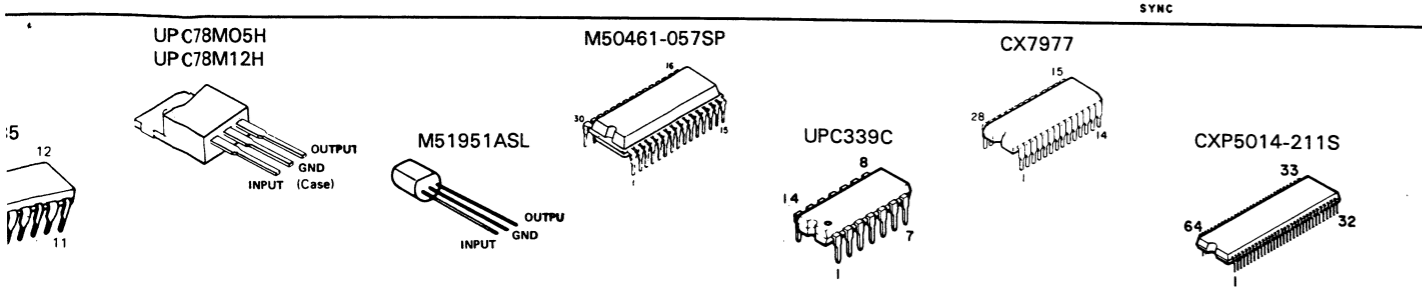
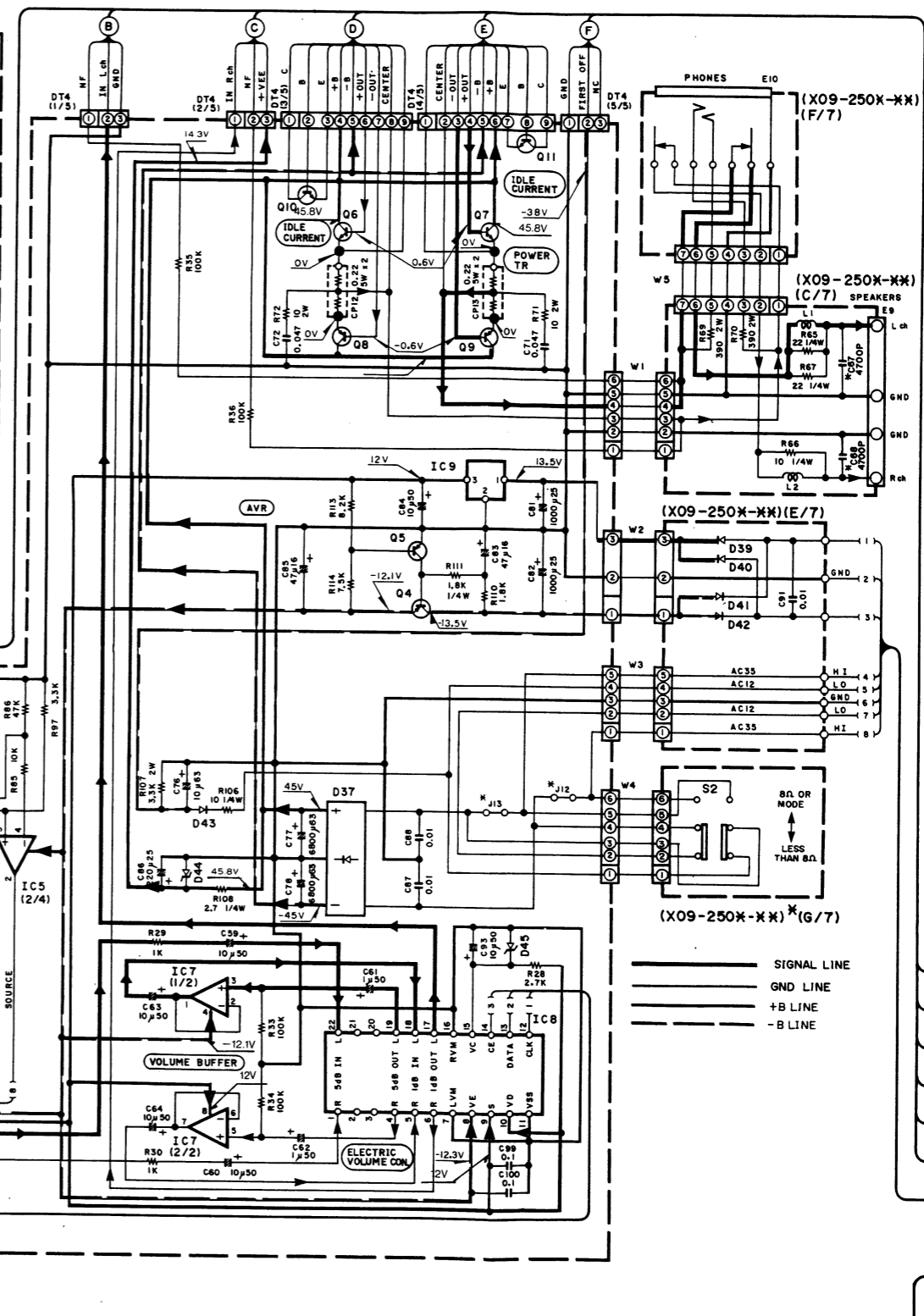
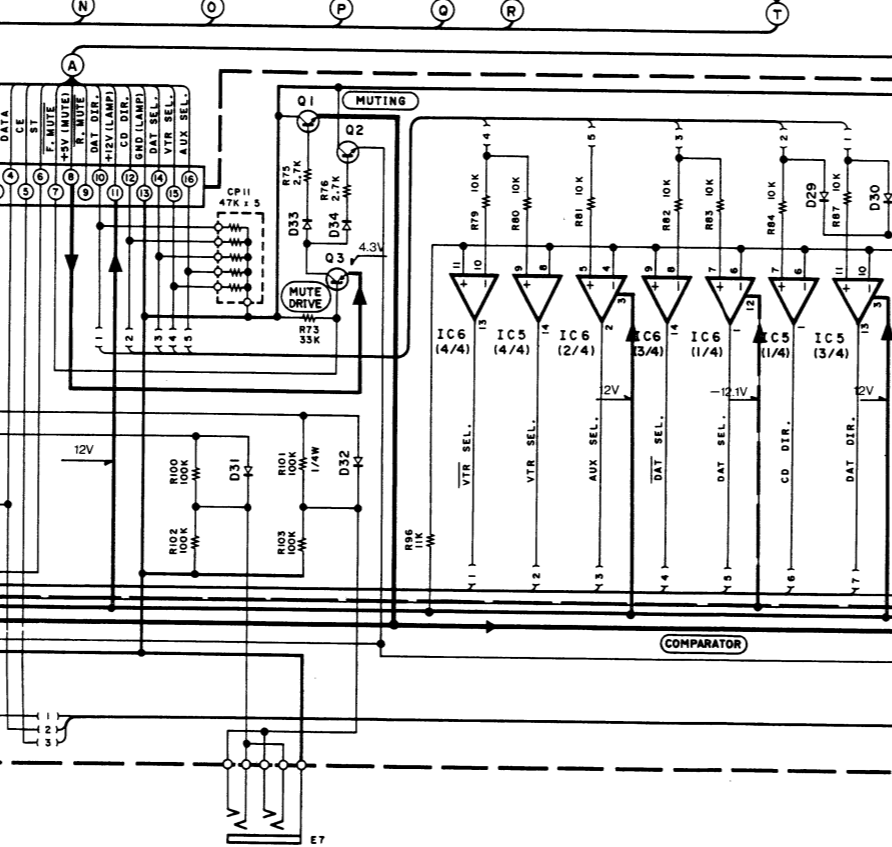
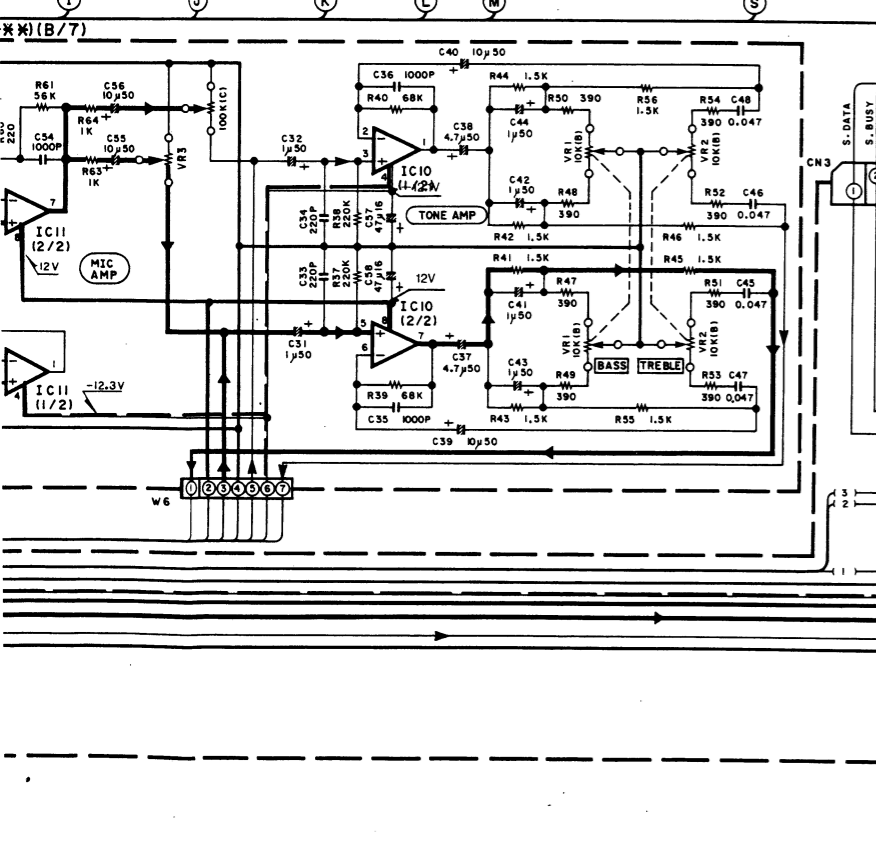
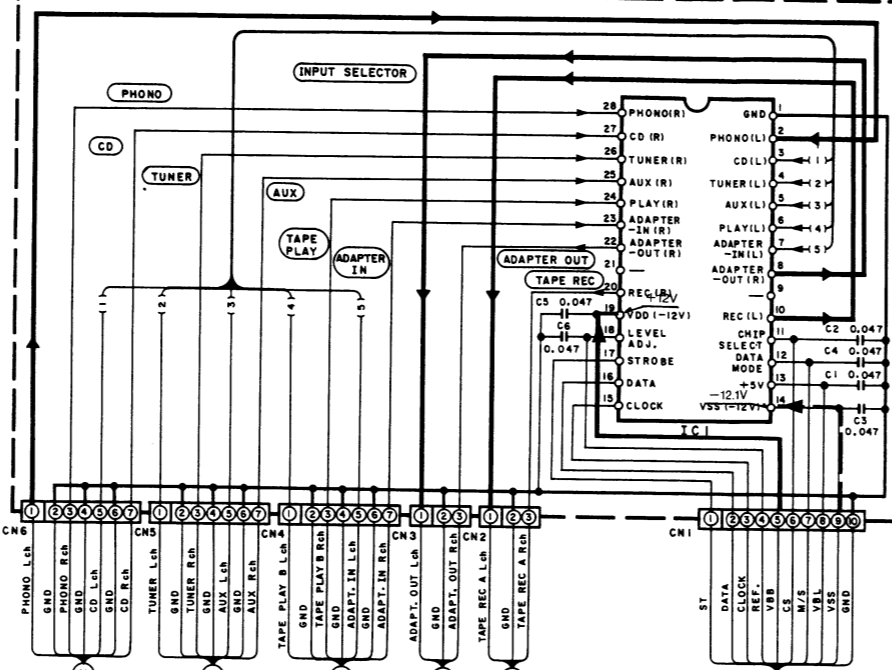
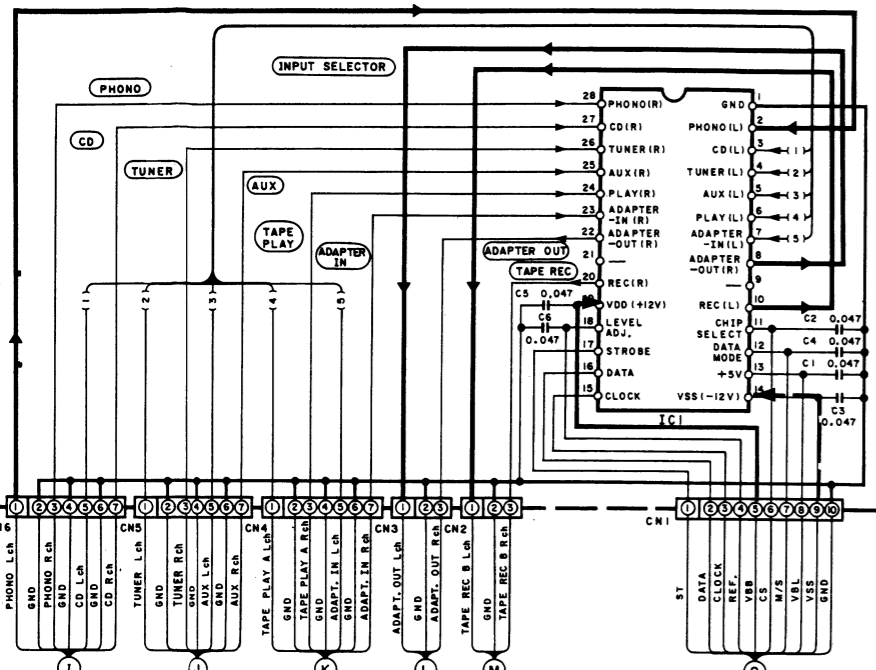
- LC4066BH

- AN6556
 M5218P
 μ PC4570C

- LC7535

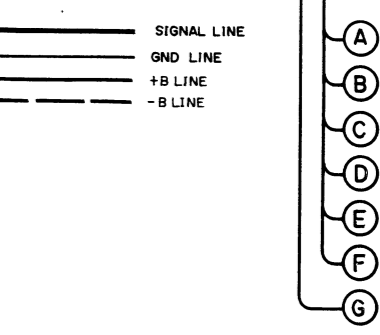
- UPC78M05H
 UPC78M12H



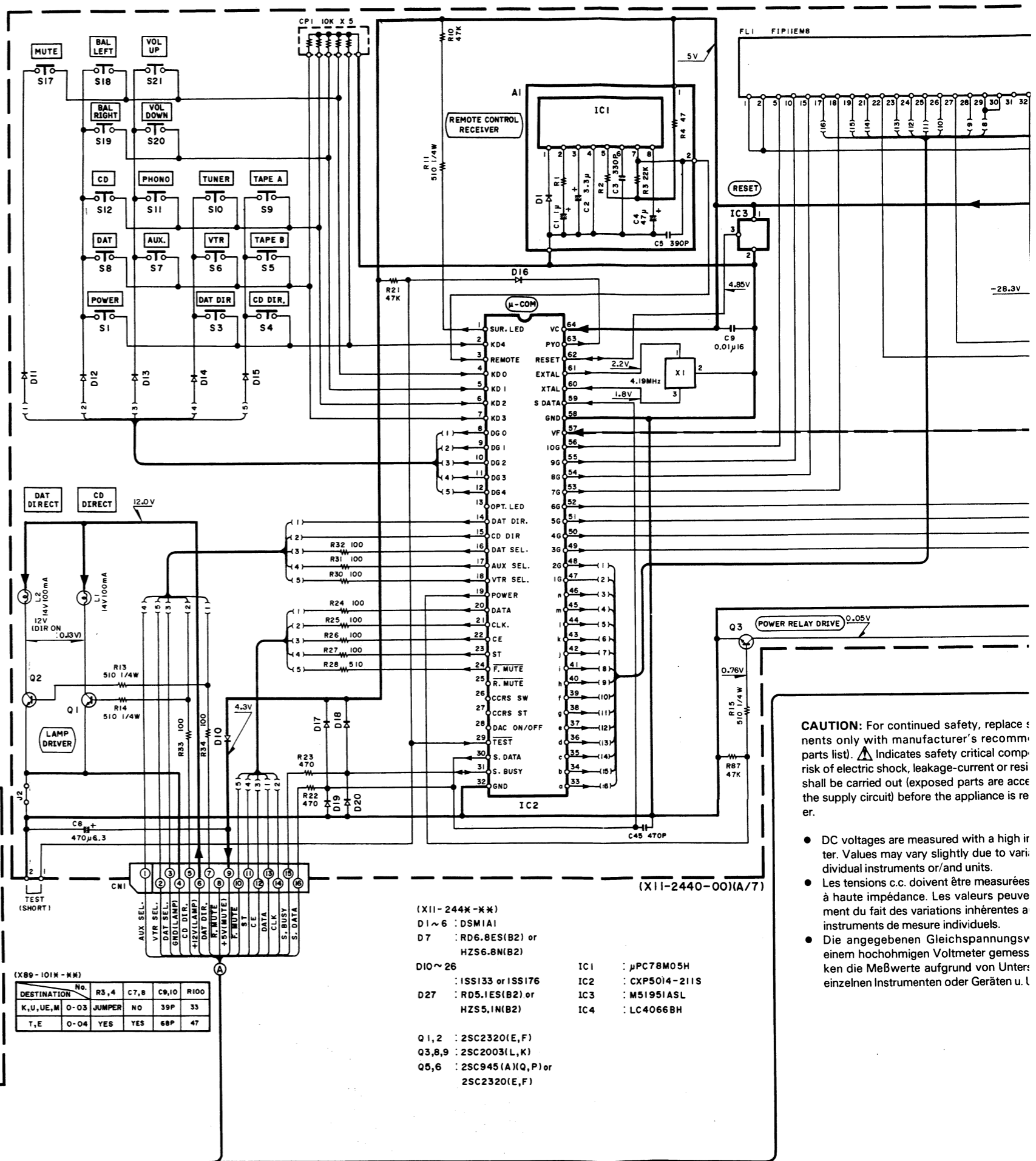
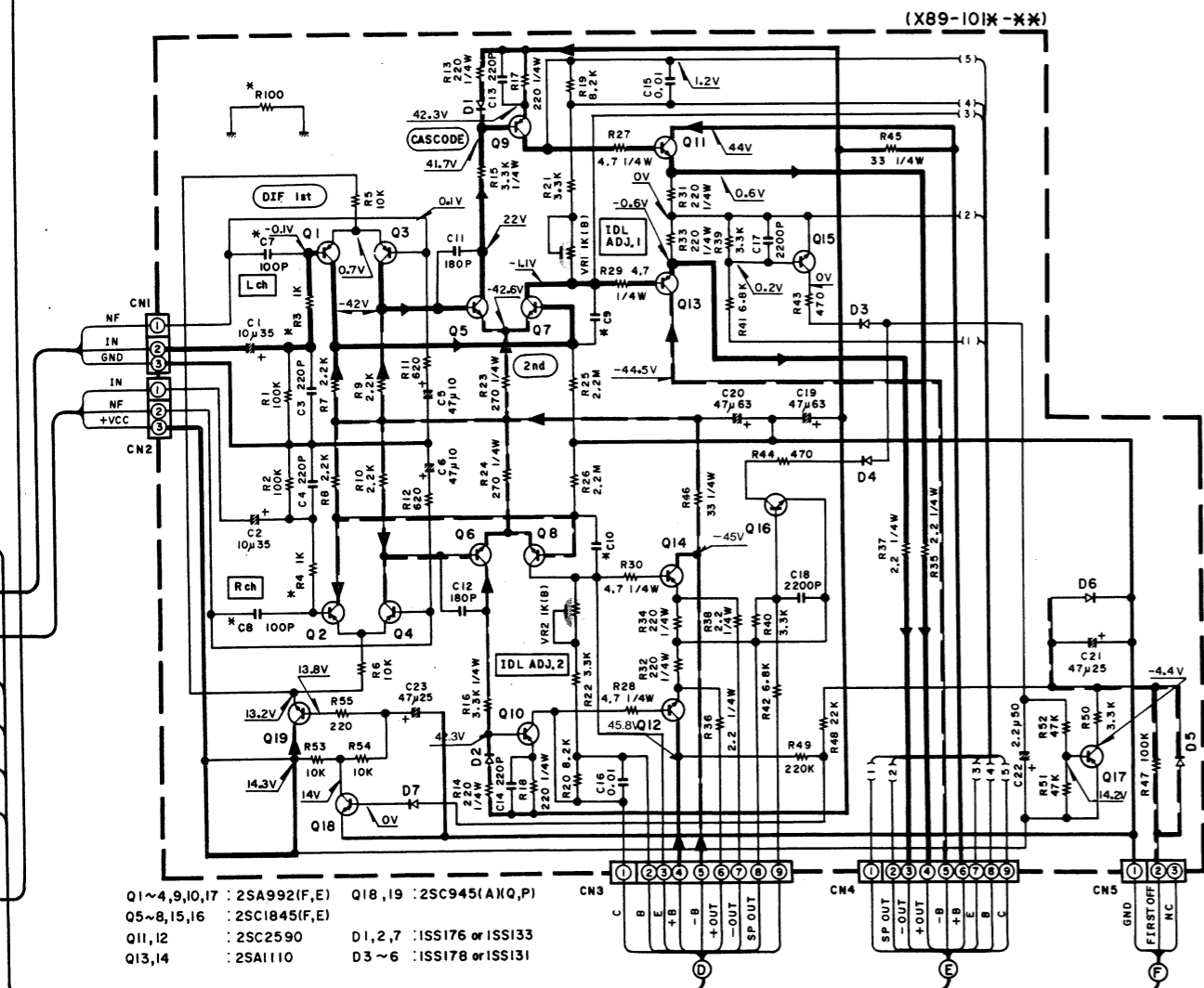
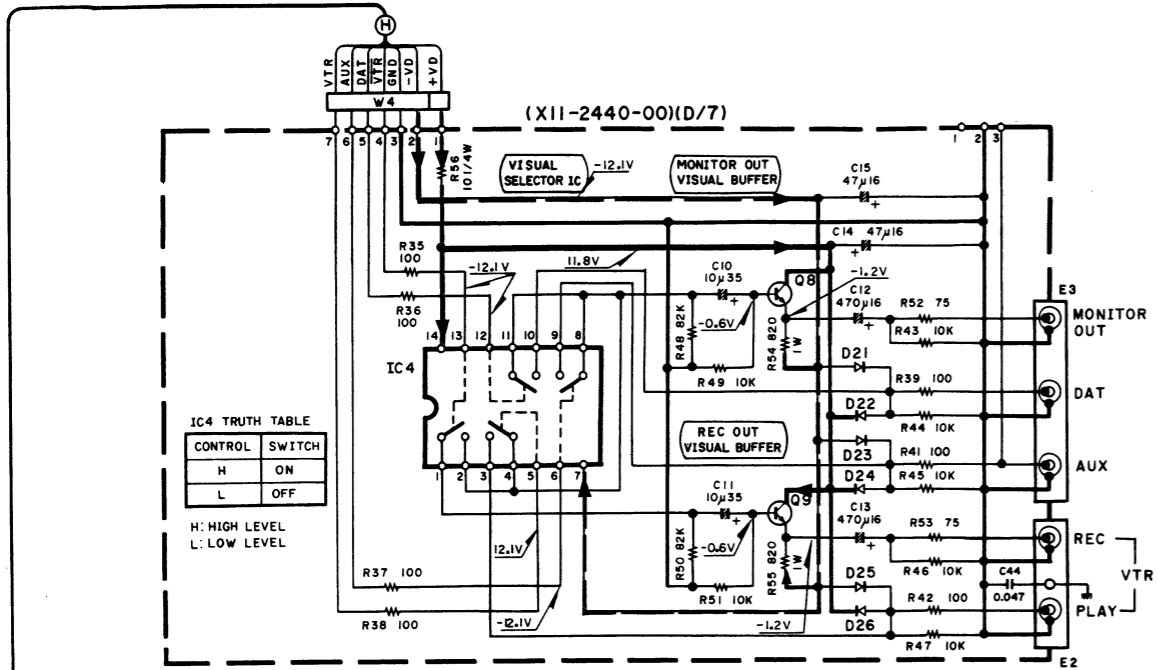


CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Δ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably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

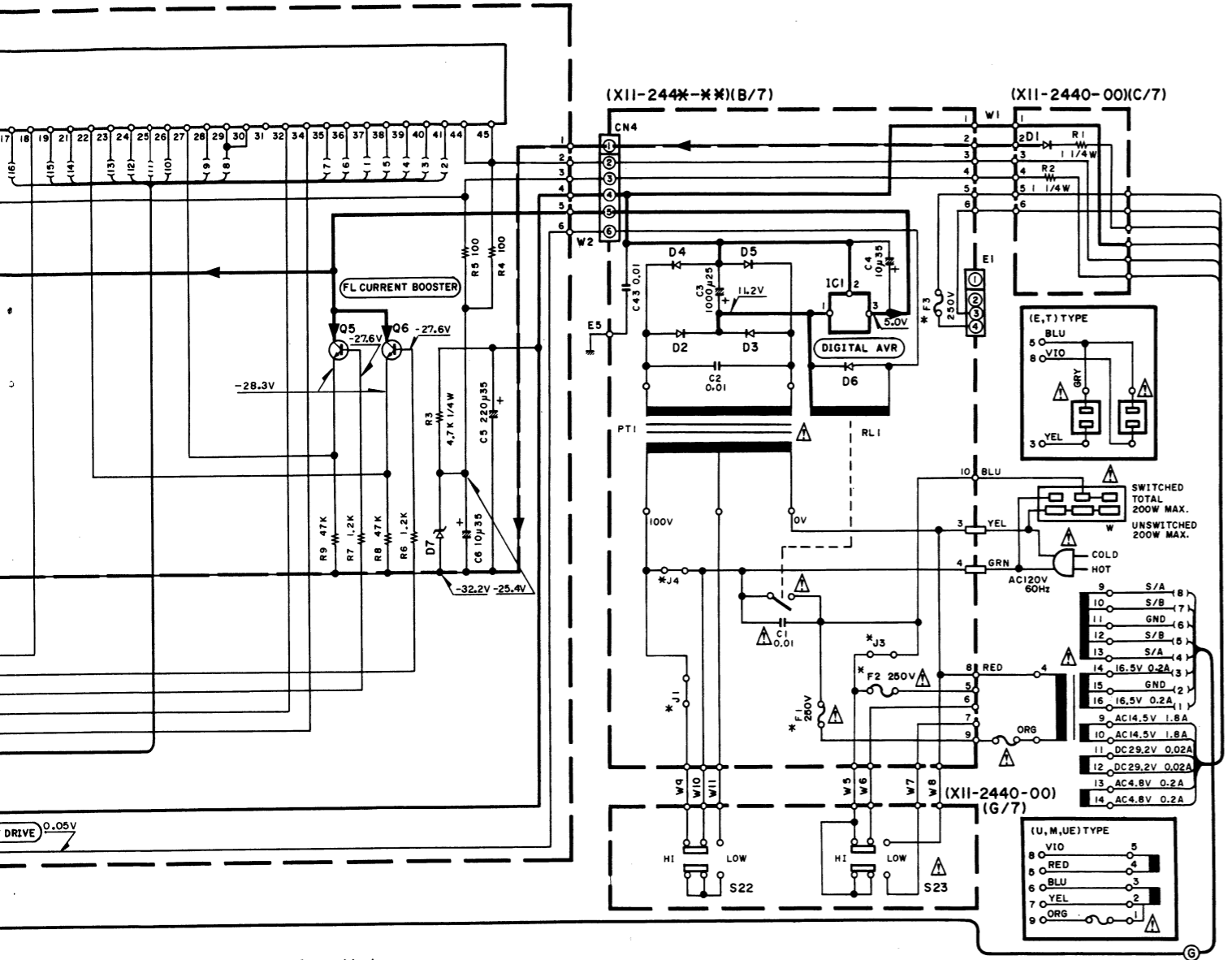
- DC voltages are measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.
- Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.
- Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Voltmeter gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u. U. geringfügig.



A-91(K)(1/2)



EXPLODED VIEW

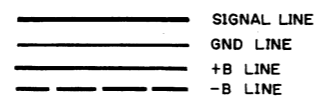


(X11-244*-*)

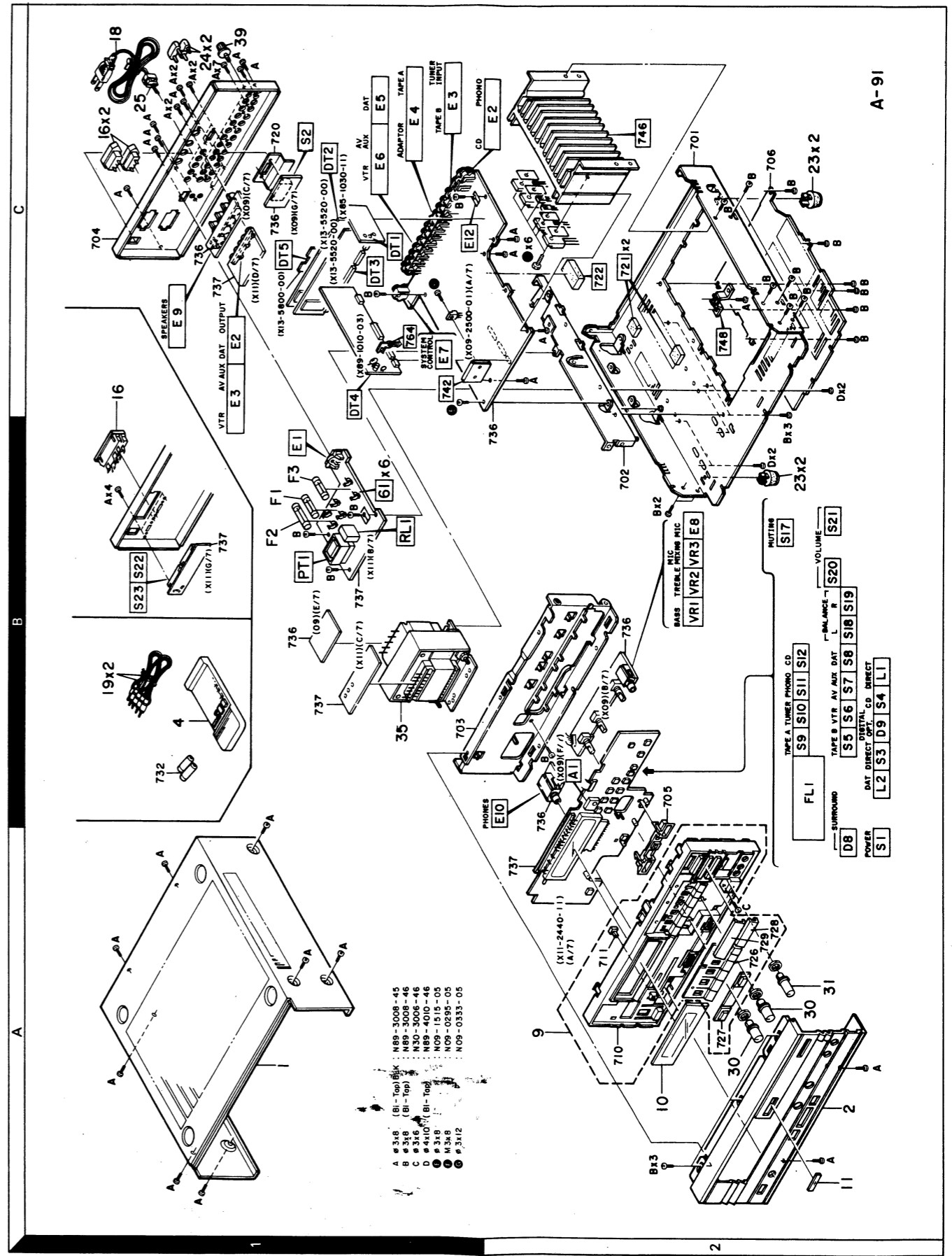
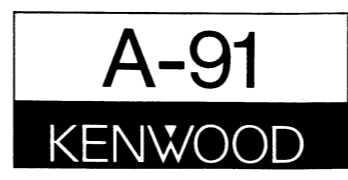
DESTINATION	No.	F1	F2	F3	J1	J3	J4
K	0-11	UL3A	NO	T3+15A	NO	NO	YES
U, UE, M	0-21	T3A	T1+5A	3A	YES	NO	NO
T, E	2-71	T1+25A	T2A	3A	NO	YES	YES

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 measured with a high impedance voltmeter. 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. 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 Voltmeter gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u. U. geringfügig.



A-91(K)(2/2)



- A # 318 (Bl-Top) Blk
- B # 318 (Bl-Top)
- C # 316
- D # 410 (Bl-Top)
- E # 218
- F # 318
- G # 312
- H # 312
- I # 312
- J # 312
- K # 312
- L # 312
- M # 318
- N # 312
- O # 312
- P # 312
- Q # 312
- R # 312
- S # 312
- T # 312
- U # 312
- V # 312
- W # 312
- X # 312
- Y # 312
- Z # 312

Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

× New Parts

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Telle ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
A-91						
1	1A	*	A01-1580-01	METALLIC CABINET		
2	2A	*	A20-5314-02	PANEL		
4	1B	*	A70-0182-05	REMOTE CONTROLLER ASSY		
-		*	B52-0251-00	CONNECTING DIAGRAM		
9	2A	*	B01-0362-02	PANEL ESCUTCHEON ASSY		
10	2A	*	B03-2322-03	DRESSING PLATE (FL)		
11	2A		B03-2323-04	DRESSING PLATE (REMOTE CONTROL)		
-			B46-0092-03	WARRANTY CARD		K
-			B46-0094-03	WARRANTY CARD		UUE
-			B46-0095-03	WARRANTY CARD		UUE
-			B46-0122-13	WARRANTY CARD		E
-			B46-0143-03	WARRANTY CARD		T
-		*	B50-6955-00	INSTRUCTION MANUAL (ENGLISH)		
-		*	B50-6956-00	INSTRUCTION MANUAL (FRENCH)		ME
-		*	B50-6957-00	INSTRUCTION MANUAL (SPANISH)		M
-		*	B50-6959-00	INSTRUCTION MANUAL (G.D.I)		E
-		*	B50-8780-00	INSTRUCTION MANUAL		E
-			B58-0223-04	CAUTION CARD (PRE-SET 120V)		U
-			B58-0269-04	CAUTION CARD		K
-			B58-0513-04	CAUTION CARD (PRESET220-240)		UUE
-			B58-0803-03	CAUTION CARD		E
-			B59-0092-00	SERVICE DIRECTORY		UUE
16	1C		E03-0049-05	AC OUTLET		T
△	16		E03-0055-05	AC OUTLET		E
△	16		E03-0068-05	AC OUTLET		KUUEM
△	16		E03-0085-05	AC OUTLET		T
△	18		E30-0459-05	AC POWER CORD		E
18	1C		E30-0812-05	AC POWER CORD		UUEM
18	1C		E30-0974-05	AC POWER CORD		K
18	1C		E30-1416-05	AC POWER CORD		T
19	1B		E30-1392-05	CORD WITH PLUG (SYNCR0)		
△	F1		F05-1222-05	FUSE (SEMKO) (250V T1.25A)		TE
△	F1		F06-3023-05	FUSE (UL) (250V 3A)		K
△	F1	,3	F05-3022-05	FUSE (250V 3A)		UUEM
△	F2		F05-1521-05	FUSE (250V 1.5A)		UUEM
△	F2		F06-2021-05	FUSE (SEMKO) (250V T2A)		TE
△	F3		F05-3121-05	FUSE (SEMKO) (250V T3.15A)		TE
△	F3		F06-3023-05	FUSE (UL) (250V 3A)		K
-		*	H01-7631-04	ITEM CARTON CASE		
-			H10-3502-02	POLYSTYRENE FOAMED FIXTURE		
-			H10-3503-02	POLYSTYRENE FOAMED FIXTURE		
-			H25-0181-04	PROTECTION BAG (150X260XD.05)		
-			H25-0232-04	PROTECTION BAG (235X350XD.03)		
-			H25-0304-04	PROTECTION BAG		
23	2B,2C	*	J02-0366-05	FOOT		
24	1C		J12-0094-05	PIN		
△	25		J42-0083-05	POWER CORD BUSHING		
-			J61-0307-05	WIRE BAND		
30	2A	*	K29-2736-04	KN0B (BASS, TREBLE)		
31	2A		K29-2737-04	KN0B (MIC MIXING)		

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PARTS LIST

× New Parts

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
△ △ △ △	35	1B	* L01-4631-05	POWER TRANSFORMER	K T UUEM E	
	35	1B	* L01-4632-05	POWER TRANSFORMER		
	35	1B	* L01-4635-05	POWER TRANSFORMER		
	35	1B	* L01-4637-05	POWER TRANSFORMER		
39 E	1C 1C		N08-0128-35 N09-1515-05	BINDING POST (GND) TAPPING SCREW (Ø3X8)		
-			M50461-057SP	IC (REMOTE CONTROLLER)		
AUDIO UNIT (X09-2500-11)						
C1 ,2			CC45FSL1H121J	CERAMIC 120PF J	TE	
C3 -18			C91-0749-05	CERAMIC 220PF K	TE	
C19 ,20			C91-0755-05	CERAMIC 680PF K	TE	
C21 -23			CC45FSL1H221J	CERAMIC 220PF J	TE	
C24			CC45FSL1H221J	CERAMIC 220PF J	TE	
C25 ,26			C91-0755-05	CERAMIC 680PF K	TE	
C27 ,28			C91-0749-05	CERAMIC 220PF K	TE	
C29			C91-0085-05	CERAMIC 0.022UF N		
C31 ,32			CE04KW1H010M	ELECTRØ 1.0UF 50WV		
C33 ,34			CC45FSL1H221J	CERAMIC 220PF J		
C35 ,36			CF92FV1H102J	MF 1000PF J		
C37 ,38			CE04KW1H4R7M	ELECTRØ 4.7UF 50WV		
C39 ,40			CE04KW1H100M	ELECTRØ 10UF 50WV		
C41 -44			CE04KW1H010M	ELECTRØ 1.0UF 50WV		
C45 -48			CF92FV1H473J	MF 0.047UF J		
C49			CK45FF1H472Z	CERAMIC 4700PF Z	TE	
C50			CC45FSL1H221J	CERAMIC 220PF J		
C51			CF92FV1H473J	MF 0.047UF J		
C52			CK45FB1H222K	CERAMIC 2200PF K	TE	
C53			CE04KW1H100M	ELECTRØ 10UF 50WV		
C54			CF92FV1H102J	MF 1000PF J		
C55 ,56			CE04KW1H100M	ELECTRØ 10UF 50WV		
C57 ,58			CE04KW1C470M	ELECTRØ 47UF 16WV		
C59 ,60			CE04KW1H100M	ELECTRØ 10UF 50WV		
C61 ,62			CE04KW1H010M	ELECTRØ 1.0UF 50WV		
C63 ,64			CE04KW1H100M	ELECTRØ 10UF 50WV		
C67 ,68			CK45FF1H472Z	CERAMIC 4700PF Z	TE	
C71 ,72			CF92FV1H473J	MF 0.047UF J		
C76			CE04KW1J100M	ELECTRØ 10UF 63WV		
C77 ,78		*	C90-1590-05	ELECTRØ 6800UF 63WV		
C81 ,82			CE04KW1E102M	ELECTRØ 1000UF 25WV		
C83			CE04KW1C470M	ELECTRØ 47UF 16WV		
C84			CE04KW1H100M	ELECTRØ 10UF 50WV		
C85			CE04KW1C470M	ELECTRØ 47UF 16WV		
C86			CE04KW1E221M	ELECTRØ 220UF 25WV		
C87 ,88			CK45FE2H103P	CERAMIC 0.010UF P		
C91			CK45FF1H103Z	CERAMIC 0.010UF Z		
C93			CE04KW1H100M	ELECTRØ 10UF 50WV		
C94 ,95			CE04KW1C470M	ELECTRØ 47UF 16WV		
C97 ,98			CK45FF1H103Z	CERAMIC 0.010UF Z		
C99 ,100			CF92FV1H104J	MF 0.10UF J		
CN3		*	E10-1604-05	FLAT CABLE CONNECTOR		
E2	1C		E13-0497-05	PHONO JACK (4P) PHONO, CD		
E3	1C		E13-0621-05	PHONO JACK (6P) TAPE B, INPUT		
E4	1C		E13-0814-05	PHONO JACK (8P) TAPE A, ADAPTER		

E: Scandinavia & Europe K: USA P: Canada

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PARTS LIST

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
E5	1C		E13-0497-05	PHONE JACK(4P) DAT	KULJEM TE	
E6	1C		E13-0621-05	PHONE JACK(6P) VTR,AV AUX		
E7	1C		E11-0165-05	MINIATURE PHONE JACK(SYNCRØ)		
E7	1C		E11-0168-05	MINIATURE PHONE JACK(SYNCRØ)		
E8	2B		E11-0159-05	PHONE JACK(3P) MIC		
E9	1C		E20-0455-05	SCREW TERMINAL BOARD(4P)SP		
E10	2B		E11-0160-05	PHONE JACK(7P) PHONES		
E12	1C		E23-0149-05	TERMINAL		
L1 ,2			L39-0085-05	PHASE-COMPENSATION COIL		
F	1C		N09-0295-05	HEXAGON HEAD BOLT(M3X8,+)		
G	2C		N09-0333-05	TAPPING SCREW (3X12)		
CP2 -10			R90-0490-05	MULTI-COMP 220KX2 J 1/6W		
CP11			R90-0274-05	MULTI-COMP 47KX5 J 1/6W		
CP12,13			R90-0187-05	MULTI-COMP 0.22X2 K 5W		
R65			RD14AB2E220J	FL-PROOF RD 22 J 1/4W		
R66			RD14AB2E100J	FL-PROOF RD 10 J 1/4W		
R67			RD14AB2E220J	FL-PROOF RD 22 J 1/4W		
R69 ,70			RS14DB3D391J	FL-PROOF RS 390 J 2W		
R71 ,72			RS14DB3D100J	FL-PROOF RS 10 J 2W		
R106			RD14AB2E100J	FL-PROOF RD 10 J 1/4W		
R107			RS14DB3D332J	FL-PROOF RS 3.3K J 2W		
R108		*	RD14AB2E272J	FL-PROOF RD 2.7K J 1/4W		
VR1 ,2	2B	*	R10-3029-05	POTENTIOMETER(10KB)BASS,TREBLE		
VR3	2B		R10-5025-05	POTENTIOMETER(100KC)MIC MIXING		
S2	1C		S31-2113-05	SLIDE SWITCH(SP IMPEDANCE SEL)	UJEMTE	
D1 -26			MC931	DIODE		
D29 -34			1SS133	DIODE		
D29 -34			1SS176	DIODE		
D37			RBV-602LFA	DIODE		
D39 -43			DSM1A1	DIODE		
D44			HZ920S(B2)	ZENER DIODE		
D44			RD20J5(B2)	ZENER DIODE		
D45			HZ95.1N(B2)	ZENER DIODE		
D45			RD5.1ES(B2)	ZENER DIODE		
D48			HZ95.1N(B2)	ZENER DIODE		
D48			RD5.1ES(B2)	ZENER DIODE		
IC1 -4			LC4066BH	IC(BILATERAL SWITCH X4)		
IC5 ,6			UPC339C	IC(QUAD COMPARTOR)		
IC7			UPC4570C	IC(OP AMP X2)		
IC8		*	LC7535	IC(VOLUME,BALANCE,LOUDNESS)		
IC9			UPC78M12H	IC(VOLTAGE REGULATOR/+12V)		
IC10			UPC4570C	IC(OP AMP X2)		
IC11			AN6556	IC(OP AMP X2)		
Q1 ,2			2SD1302(S,T)	TRANSISTOR		
Q3			2SA733(A)(Q,P)	TRANSISTOR		
Q3			2SA999(E,F)	TRANSISTOR		
Q4			2SB941(Q,P)	TRANSISTOR		
Q5			2SA733(A)(Q,P)	TRANSISTOR		
Q5			2SA999(E,F)	TRANSISTOR		
Q6 ,7			2SC3855*5	TRANSISTOR		
Q8 ,9			2SA1491*5	TRANSISTOR		
Q10 ,11			2SC3419(Y)	TRANSISTOR		

E: Scandinavia & Europe K: USA P: Canada
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PARTS LIST

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕 向	Re- marks 備考
CONTROL UNIT (X11-2440-11)						
L1 ,2	2A		B30-1196-05	LAMP (DAT DIRECT, CD DIRECT)		
C1			C91-0647-05	CERAMIC 0.01UF P	TE	
C1		*	C91-0971-05	FILM 0.01UF 250WV	KUUEM	
C2			CK45FF1H103Z	CERAMIC 0.010UF Z		
C3			CE04KW1E102M	ELECTRØ 1000UF 25WV		
C4			CE04KW1V100M	ELECTRØ 10UF 35WV		
C5			CE04KW1V221M	ELECTRØ 220UF 35WV		
C6			CE04KW1V100M	ELECTRØ 10UF 35WV		
C8			CE04KWOJ471M	ELECTRØ 470UF 6.3WV		
C9			C91-0769-05	CERAMIC 0.01UF M		
C10 ,11			CE04KW1V100M	ELECTRØ 10UF 35WV		
C12 ,13			CE04KW1C471M	ELECTRØ 470UF 16WV		
C14 ,15			CE04KW1C470M	ELECTRØ 47UF 16WV		
C43			CK45FF1H103Z	CERAMIC 0.010UF Z		
C44			CK45FF1H473Z	CERAMIC 0.047UF Z		
C45			C91-0753-05	CHIP C 470PF K		
CN1		*	E10-1605-05	FLAT CABLE CONNECTOR		
E1	1B		E08-0411-05	RECTANGULAR RECEPTACLE		
E2	1C		E13-0297-05	PHONE JACK (2P) MONITOR, DAT		
E3	1C		E13-0309-05	PHONE JACK (3P) VTR		
61	1B		J13-0041-05	FUSE CLIP	KUUEM	
61	1B		J13-0054-05	FUSE CLIP	TE	
PT1	1B	*	L01-4781-05	POWER TRANSFORMER	K	
PT1	1B		L01-4782-05	POWER TRANSFORMER	TE	
PT1	1B		L01-4784-05	POWER TRANSFORMER	UUEM	
X1			L78-0209-05	RESONATOR (4.194MHZ)		
X1			L78-0218-05	RESONATOR		
CP1			R90-0228-05	MULTI-COMP 10KX5 J 1/6W		
R1 ,2			RD14AB2E1R0J	FL-PROOF RD 1.0 J 1/4W		
R54 ,55			RS14DB3AB21J	FL-PROOF RS 820 J 1W		
R56			RD14AB2E100J	FL-PROOF RD 10 J 1/4W		
RL1	1B		S51-1036-05	MAGNETIC RELAY		
S1	2B		S40-1064-05	PUSH SWITCH (POWER)		
S3 -12	2B		S40-1064-05	PUSH SWITCH (DIR, TAPE)		
S17 -21	2B		S40-1064-05	PUSH SWITCH (MUTE, BAL, VOL)		
S22 ,23	1C		S31-2083-05	SLIDE SWITCH (POWER)	UUEM	
D1 -6			DSM1A1	DIODE		
D7			HZS6.8N(B2)	ZENER DIODE		
D7			RD6.8ES(B2)	ZENER DIODE		
D10 -26			1SS133	DIODE		
D10 -26			1SS176	DIODE		
FL1	2B	*	FIP11EMØ	FLUORESCENT INDICATOR TUBE		
IC1			UPC78M05H	IC(VOLTAJE REGULATOR/ +5V)		
IC2		*	CXP5014-211S	IC(MICROPROCESSOR)		
IC3			MS1951ASL	IC(SYSTEM RESET)		
IC4			LC4066BH	IC(BILATERAL SWITCH X4)		
Q1 ,2			2SC2320(E,F)	TRANSISTOR		
Q3			2SC2003(L,K)	TRANSISTOR		
Q5 ,6			2SC2320(E,F)	TRANSISTOR		
Q5 ,6			2SC945(A)(D,P)	TRANSISTOR		
Q8 ,9			2SC2003(L,K)	TRANSISTOR		

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
A1	2B		W02-0776-05	ELECTRIC CIRCUIT MODULE		
SUB-CIRCUIT UNIT (X13-5520-00)						
C1 -6			CF92FV1H473J	MF 0.047UF J		
IC1		*	CX7977	IC(FUNCTION SW FOR AUDIO)		
BUFFER UNIT (X13-5800-00)						
C1 .2			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C3 .4			CE04KW1V220M	ELECTRO 22UF 35WV		
IC1			UPC4570C	IC(OP AMP X2)		
PRE-AMPLIFIER UNIT (X85-1030-11)						
C1 .2			CE04FW1C100M	ELECTRO 10UF 16WV		
C3 .4			CE04FW1A470M	ELECTRO 47UF 10WV		
C5			CF92FV1H123J	MF 0.012UF J		
C6			CF92FV1H123J	MF 0.012UF J		
C7			CF92FV1H332J	MF 3300PF J		
C8			CF92FV1H332J	MF 3300PF J		
C9 .10			CE04KW1V100M	ELECTRO 10UF 35WV		
C11 .12			CK45FF1H103Z	CERAMIC 0.010UF Z		
C15 .16			CK45FB1H222K	CERAMIC 2200PF K	TE	
C15 .16			CK45FB1H561K	CERAMIC 560PF K	KUUJEM	
C17 .18			CC45FSL1H101J	CERAMIC 100PF J	KUUJEM	
C17 .18			CC45FSL1H221J	CERAMIC 220PF J	TE	
IC1			AN6556	IC(OP AMP X2)		
IC1			M5218P	IC(OP AMP X2)		
MAIN AMPLIFIER UNIT (X89-1010-03)						
C1 .2			CE04KW1V100M	ELECTRO 10UF 35WV		
C3 .4			CC45FSL1H221J	CERAMIC 220PF J		
C5 .6			CE04KW1A470M	ELECTRO 47UF 10WV		
C7 .8			CC45FSL1H101J	CERAMIC 100PF J	TE	
C9 .10			CC45FSL1H390J	CERAMIC 39PF J	KUUJEM	
C9 .10			CC45FSL1H680J	CERAMIC 68PF J	TE	
C11 .12			CC45FSL1H181J	CERAMIC 180PF J		
C13 .14			CC45FSL1H221J	CERAMIC 220PF J		
C15 .16			CK45FF1H103Z	CERAMIC 0.010UF Z		
C17 .18			CK45FB1H222K	CERAMIC 2200PF K		
C19			CE04KW1J470M	ELECTRO 47UF 63WV		
C20			CE04KW1J470M	ELECTRO 47UF 63WV		
C21			CE04KW1E470M	ELECTRO 47UF 25WV		
C22			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C23			CE04KW1E470M	ELECTRO 47UF 25WV		
R13 .14			RD14AB2E221J	FL-PROOF RD 220 J 1/4W		
R17 .18			RD14AB2E221J	FL-PROOF RD 220 J 1/4W		
R23 .24			RD14AB2E271J	FL-PROOF RD 270 J 1/4W		
R27 -30			RD14AB2E4R7J	FL-PROOF RD 4.7 J 1/4W		
R31 -34			RD14AB2E221J	FL-PROOF RD 220 J 1/4W		
R35 -38			RD14AB2E2R2J	FL-PROOF RD 2.2 J 1/4W		
R45 .46			RD14AB2E330J	FL-PROOF RD 33 J 1/4W		
VR1 .2			R12-1070-05	TRIMMING PNT. (1K) IDLE ADJ		
D1 .2			1SS133	DIODE		
D1 .2			1SS176	DIODE		
D3 -6			1SS131	DIODE		
D3 -6			1SS178	DIODE		

E: Scandinavia & Europe K: USA P: Canada
 U: PX(Far East, Hawaii) T: England M: Other Areas
 UE: AAFES(Europe) X: Australia

indicates safety critical components.

PARTS LIST

× New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Telle ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
D7			1SS133	DIODE		
D7			1SS176	DIODE		
Q1 -4			2SA992(F,E)	TRANSISTOR		
Q5 -8			2SC1845(F,E)	TRANSISTOR		
Q9 ,10			2SA992(F,E)	TRANSISTOR		
Q11 ,12			2SC2590	TRANSISTOR		
Q13 ,14			2SA1110	TRANSISTOR		
Q15 ,16			2SC1845(F,E)	TRANSISTOR		
Q17			2SA992(F,E)	TRANSISTOR		
Q18 ,19			2SC945(A)(Q,P)	TRANSISTOR		

E: Scandinavia & Europe K: USA


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 indicates safety critical components.

SPECIFICATIONS

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 0.09% total harmonic distortion.

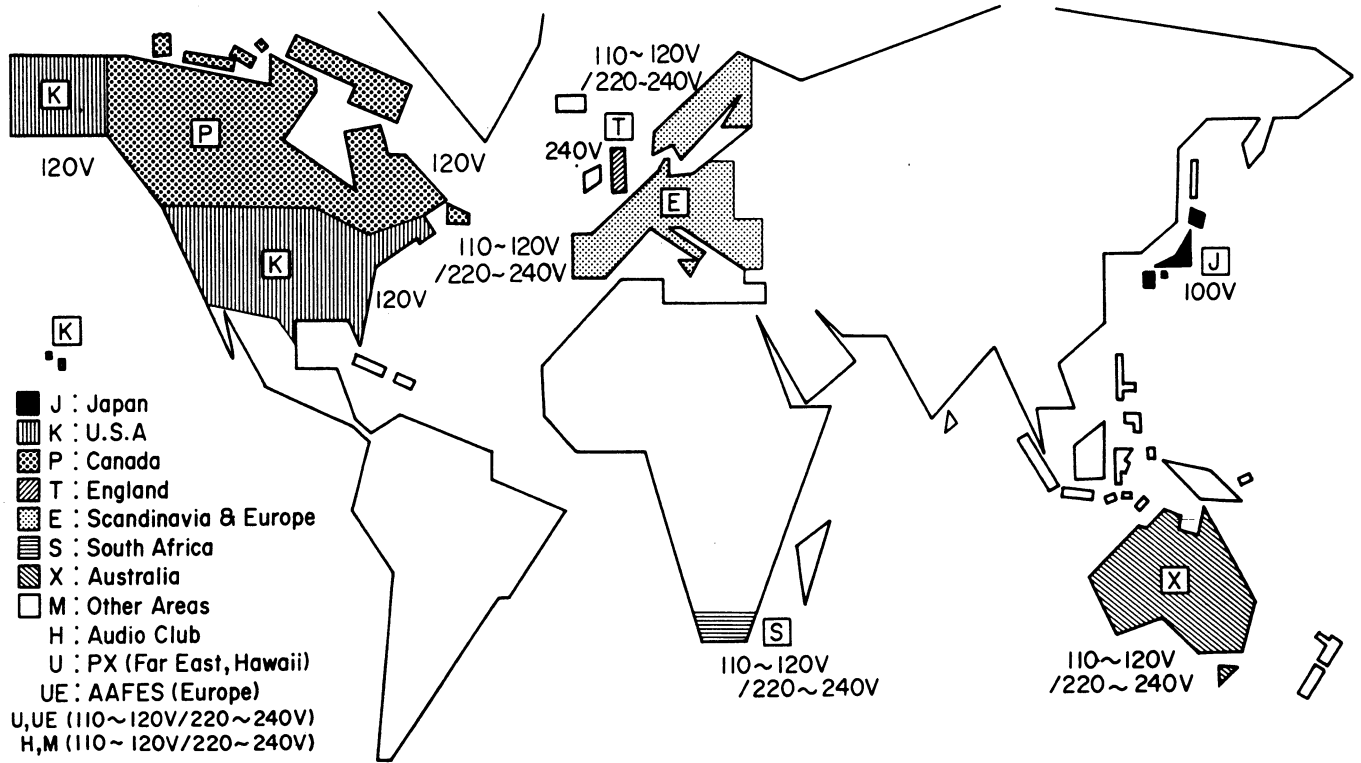
Maximum continuous output power (IEC) from 60 Hz to 12,500 Hz, 0.7% THD at 8 ohms	81 W + 81 W
Total Harmonic Distortion (20 Hz to 20,000 Hz 8 ohms)/ At rated output	0.09%
At 1/2 rated output	0.04%
Intermodulation distortion (60 Hz: 7 kHz = 4:1)	0.02% at rated output into 8 ohms
Signal-to-Noise ratio (IHF-A)	
PHONO MM (2.5 mV)	75 dB
TUNER, AUX, TAPE PLAY	98 dB
MIC	67 dB
Signal-to-Noise ratio at unweighted, 50 mW output (DIN)	
PHONO (MM)	55 dB
TUNER, AUX, TAPE PLAY	56 dB
Tone Control	
Bass	± 10 dB at 100 Hz
Treble	± 10 dB at 10 kHz
Damping Factor	53 at 50 Hz
Channel Separation (DIN) at 1,000 Hz	
PHONO (Terminated with 2.2 kΩ)	60 dB
AUX (Terminated with 47 kΩ + 250 pF)	50 dB
Input sensitivity/impedance	
PHONO MM	2.5 mV/47 kohms
TUNER, AUX, TAPE PLAY	150 mV/47 kohms
MIC	1.3 mV/47 kohms
General	
Power consumption	2.5 A (U.S.A. models) 170 W (Other country models)
Dimensions	W: 340 mm (13-3/8") H: 119 mm (4-11/16") D: 363 mm (14-5/16")
Weight (Net)	7.9 kg (17.4 lb)
Remote control unit (RC-91)	
Maximum remote-control label distance	6 m (on an axis of optical sensor)
Remote control system	Infrared control system
Battery for remote control unit	Size "AA" (R6) × 2

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

Kenwood poursuit une politique de progrès constants en ce qui concerne le développement.
Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

Kenwood strebt ständige Verbesserungen in der Entwicklung an.
Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

WORLD MAP & AREA CODE



Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the U.S. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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