

SPECIFICATIONS

Audio section

Rated power output (FRONT)

105 watts per channel minimum RMS, both channels driven, at 8 ohms from 20 Hz to 20 kHz with no more than 0.05% total harmonic distortion. (FTC)

Rated power output (REAR)

20 watts per channel minimum RMS, both channels driven, at 8 ohms 1 kHz with no more than 0.9% total harmonic distortion.

Dynamic power

Per channel at 2 ohms 240 W
Per channel at 4 ohms 215 W
Per channel at 8 ohms 145 W

Total harmonic distortion (LINE input to SPEAKER output)

Rated output power at 8 ohms, 20 Hz-20,000 Hz 0.05%
1/2 Rated output power at 8 ohms, 20 Hz-20,000 Hz 0.05%
Rated output power at 8 ohms, 1 kHz 0.003%

Frequency response

LINE to SPEAKER 10 Hz to 100 kHz ± 0 , -3 dB

PHONO "RIAA" response

PHONO (MM) input 20 Hz to 20 kHz ± 0.5 dB

Signal to noise ratio

PHONO (MM) (IHF-A) (IHF'66)

78 dB for 2.5 mV input

TUNER/AUX/TAPE/CD/VIDEO

(IHF-A) (IHF'66)

70 dB for 150 mV input

PHONO (MM) (IHF-A)

79 dB

TUNER/AUX/TAPE/CD/VIDEO

(IHF-A)

83 dB

Tone control

Bass ± 10 dB at 100 Hz

Treble ± 10 dB at 10 kHz

Damping factor 150 (50 Hz at 8 ohms)

Input sensitivity/impedance

PHONO (MM) 2.5 mV, 47 kohms

TUNER/AUX/TAPE/CD/VIDEO 150 mV, 47 kohms

PHONO maximum input level (PHONO to TAPE REC)

MM at 1 kHz, 0.05%

T.H.D. 135 mV

Video section

Television format NTSC

Rated input 1 Vp-p, 75 ohms

Rated output 1 Vp-p, 75 ohms

General

Power consumption 4.8 A (USA & Canada)

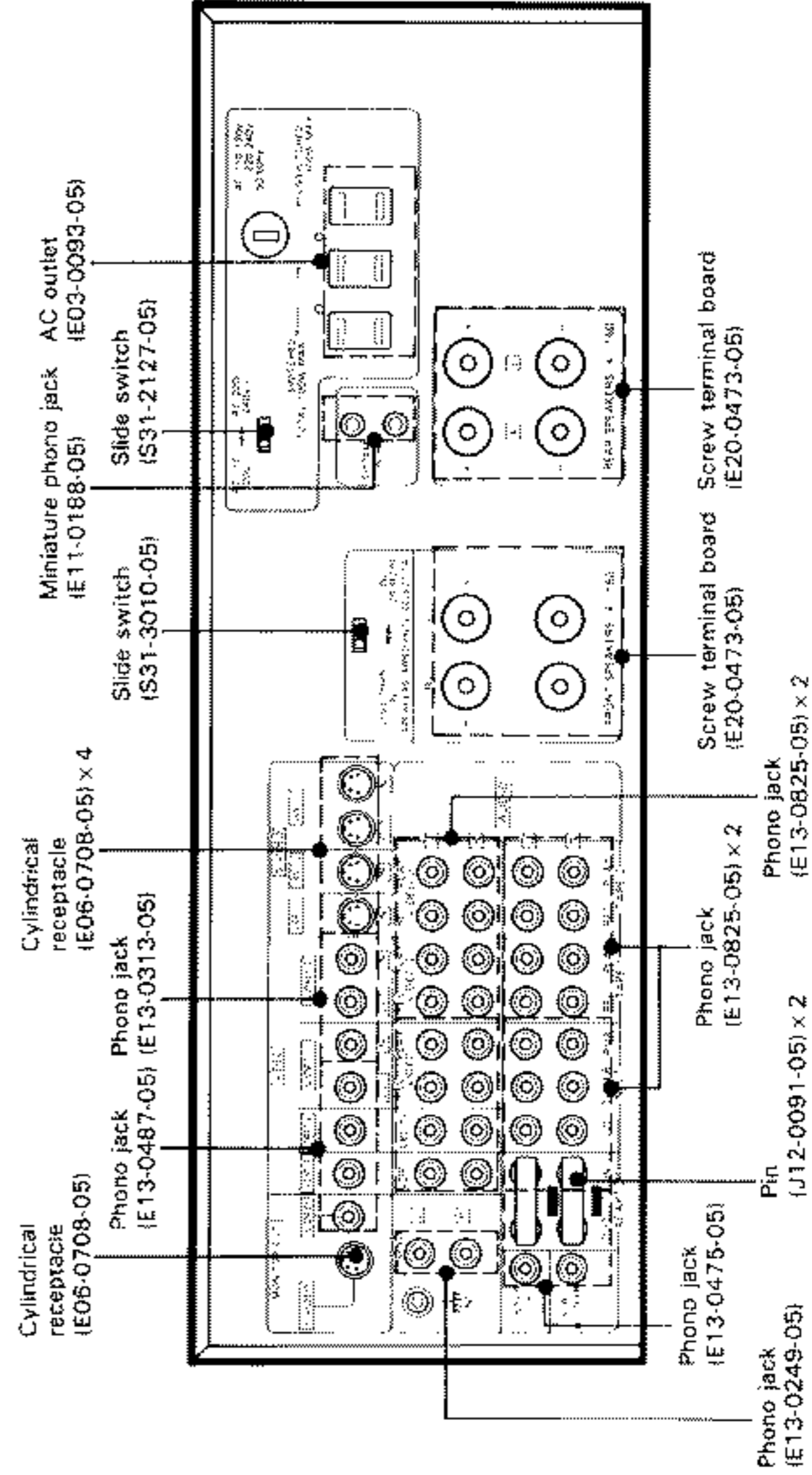
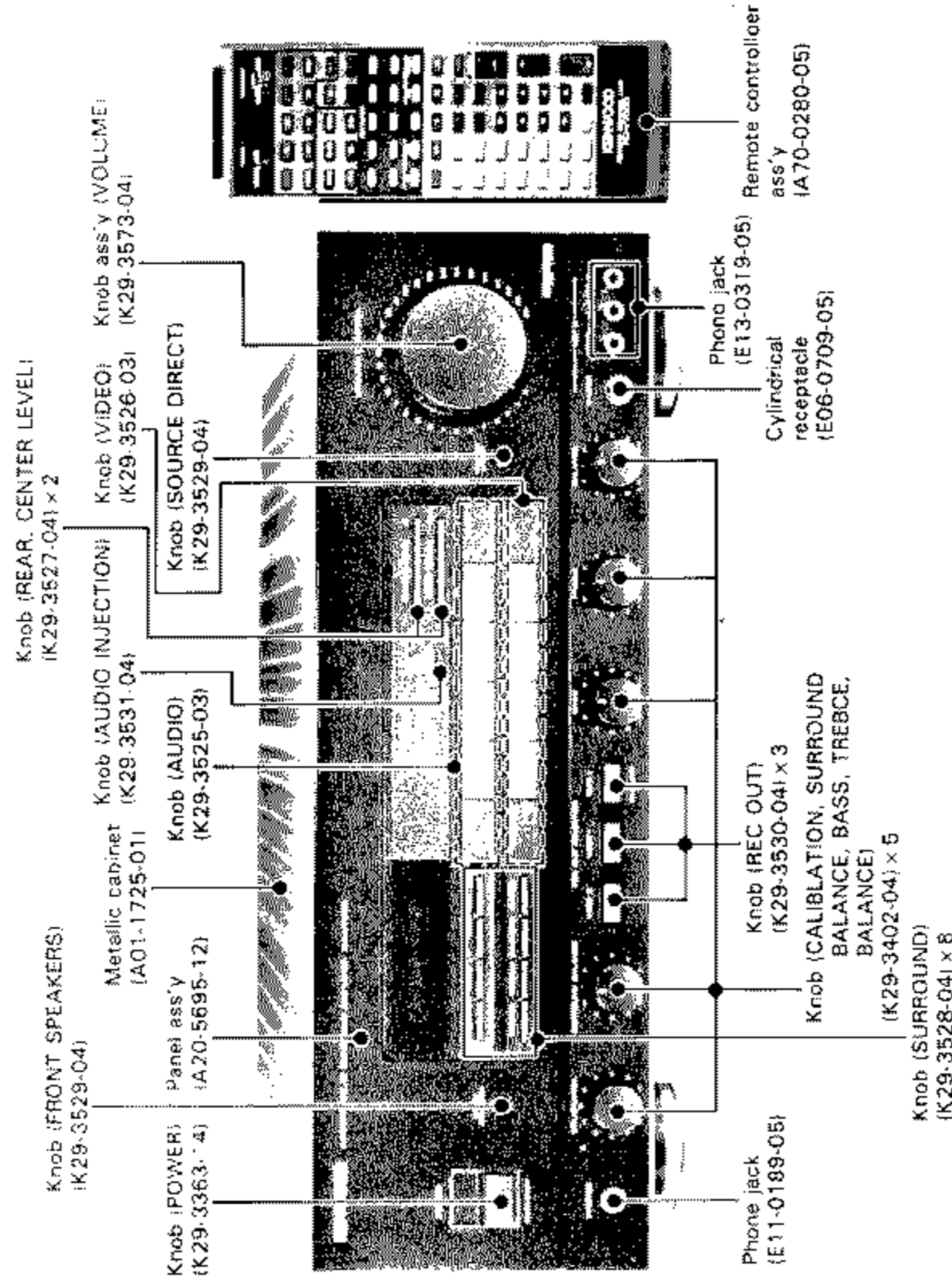
350 W (other countries)

Dimensions W: 440 mm (17-3/8")

H: 164 mm (6-7/16")

D: 428 mm (16-7/8")

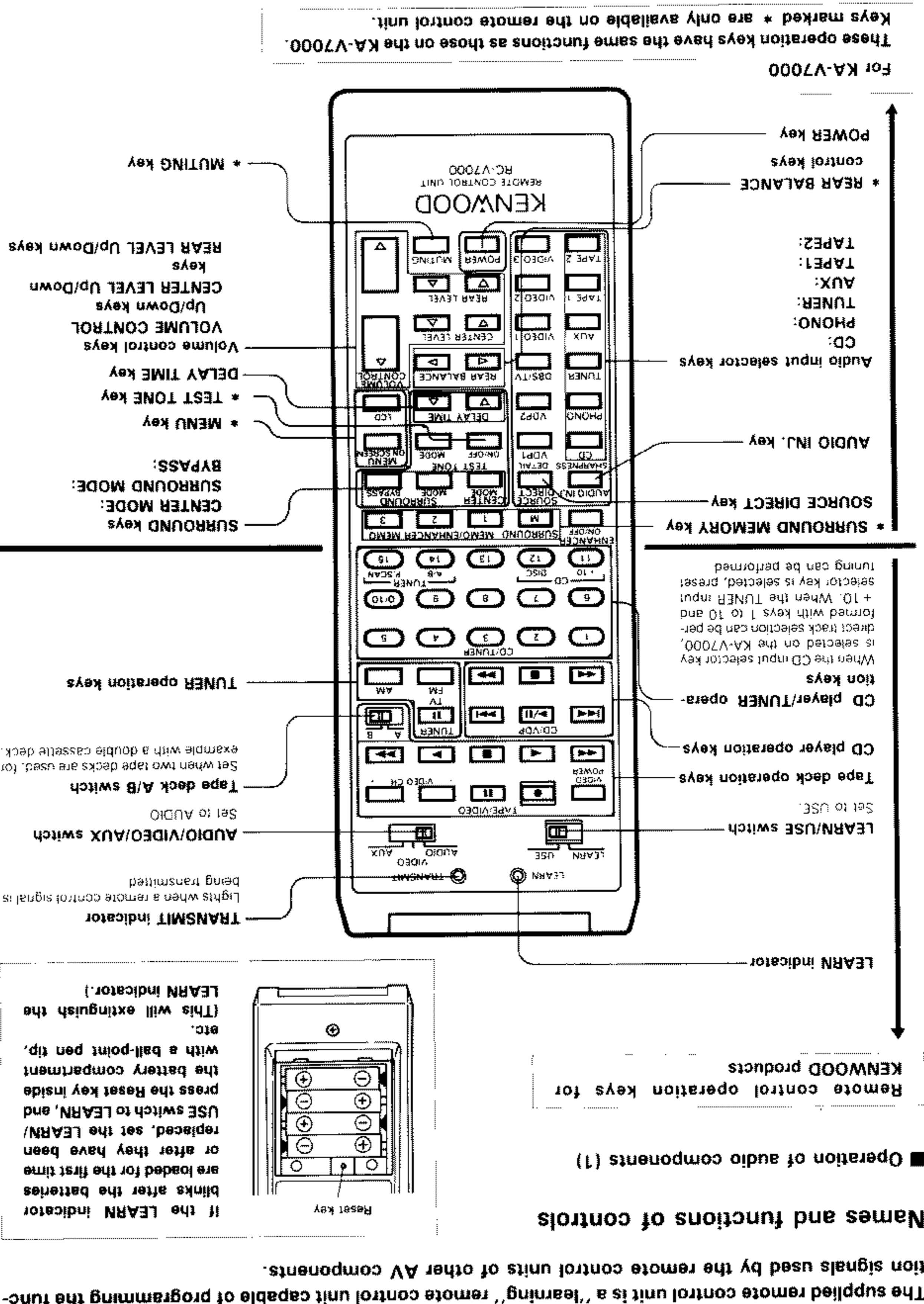
Weight (Net) 15.5 kg (34.1 lbs)



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KENWOOD follows a policy of continuous improvements 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.



Names and functions of controls

Remote control operation keys for KENWOOD products

Operation of audio components (1)

The supplied remote control unit is a "learning" remote control unit capable of programming the function signals used by the remote control units of other AV components.

CD player/TUNER operation keys: When the CD input selector key is selected on the KA-V7000, is selected on the KA-V7000, direct track selection can be performed with keys 10 and 11. When the TUNER input selector key is selected, preset

CD player operation keys: Set to USE.

Tape deck operation keys: Set when two tape decks are used; for example with a double cassette deck.

LEARN/USE switch: Lights when a remote control signal is being transmitted.

LEARN indicator: Lights when a remote control signal is being transmitted.

TRANSMIT indicator: Lights when a remote control signal is being transmitted.

AUDIO/VIDEO/AUX switch: Set to AUDIO.

Tape deck A/B switch: Set when two tape decks are used; for example with a double cassette deck.

Tuner operation keys: Set to AUTO.

SURROUND keys: SURROUND MODE, BYPASS, MENU key, TEST TONE key, DELAY TIME key.

VOLUME control keys: VOLUME control keys, Up/Down keys, REAR LEVEL Up/Down keys.

AUDIO input selector keys: AUDIO input selector keys.

REAR BALANCE control keys: REAR BALANCE control keys.

POWER key: POWER key.

MUTING key: Muting key.

These operation keys have the same functions as those on the KA-V7000. Keys marked * are only available on the remote control unit.

For KA-V7000

Kenwood

RC: V7000

REMOTE CONTROL UNIT

Kenwood

RC: V7000

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RC: V7000

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PARTS LIST

* New Parts
 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.

Ref. No.	Address	Parts No.	Description	Desti- nation	Re- marks
参照番号	位置	部品番号	部品名/規格	仕	備考
D22, 23		HSS104	D100E		
D22, 23		SS133	D100E		
D30 -33		HSS104	D100E		
D30 -33		SS133	D100E		
D50		SS566B	D100E		
D52 -54		HSS104	D100E		
D52 -54		SS133	D100E		
IC1, 2		LM4966	IC(CHMOD LOGIC BILATERAL SW)		
IC3		NJM45600-A	IC(OP AMP X2)		
IC4		M5218P-A	IC(OP AMP X2)		
IC5, 6		NJM45600-A	IC(OP AMP X2)		
IC10		CXD1067P	IC(SERIAL-PARALLEL CONVERTER)		
IC11		M37450M8-104SP	IC(CHORPROCESSOR)		
IC12		M51951ASL	IC(SYSTEM RESET)		
Q1		2SC1740S(Q,R)	TRANSISTOR		
Q1		2SC945(A)(Q,P)	TRANSISTOR		
Q2		2SA733(A)(Q,P)	TRANSISTOR		
Q2		2SA933S(Q,R)	TRANSISTOR		
Q3, 4		2SC1740S(Q,R)	TRANSISTOR		
Q3, 4		2SC945(A)(Q,P)	TRANSISTOR		
Q5		2SA733(A)(Q,P)	TRANSISTOR		
Q5		2SA933S(Q,R)	TRANSISTOR		
Q6		2SC1740S(Q,R)	TRANSISTOR		
Q6		2SC945(A)(Q,P)	TRANSISTOR		
Q10		2SC1740S(Q,R)	TRANSISTOR		
Q10		2SC945(A)(Q,P)	TRANSISTOR		
A1		W02-0776-05	REMOTE CONTROL SENSOR		
MAIN AMPLIFIER UNIT (X89-1020-16)					
C1, 2		CE04KW1H010M	ELECTRO		
C7, 8		CE92FV1H113J	MF		
C9, 10		CC45FSL1H330J	CERAMIC		
C11, 12		CC45FSL1H181J	CERAMIC		
C13, 14		CC45FSL1H220J	CERAMIC		
C15, 16		CK45FB1H561K	CERAMIC		
C17, 18		CE04KW2A2R2M	ELECTRO		
C19, 20		CK45F1H103Z	CERAMIC		
C23		C90-1333-05	NP-ELEC		
C24		CE04KW1C220M	ELECTRO		
C26		CE04KW1C330M	ELECTRO		
C27, 28		CC45FSL1H101J	CERAMIC		
C29, 30		CE04KW1H010M	ELECTRO		
R19		R014GB2E122JTS	FL-PROOF RD		
R20 -22		R014AB2E122JTS	FL-PROOF RD		
R23		R014GB2E181JTS	FL-PROOF RD		
R24		R014AB2E181JTS	FL-PROOF RD		
R29 -32		R014AB2E331JTS	FL-PROOF RD		
R39 -42		R014AB2E220JTS	FL-PROOF RD		
R43 -46		R014AB2E221JTS	FL-PROOF RD		
R47 -50		R014AB2E2R2JTS	FL-PROOF RD		
R51, 52		R014AB2E100JTS	FL-PROOF RD		
R61 -63		R014AB2E101JTS	FL-PROOF RD		
R64		R014GB2E101JTS	FL-PROOF RD		
VR1, 2		R12-1070-05	TRIMMING POT.(1K) BIAS		

E: Scandinavia & Europe K: USA P: Canada
 U: PyFar East (Hawaii) T: England M: Other Areas
 UE: AAFS(Europe) X: Australia

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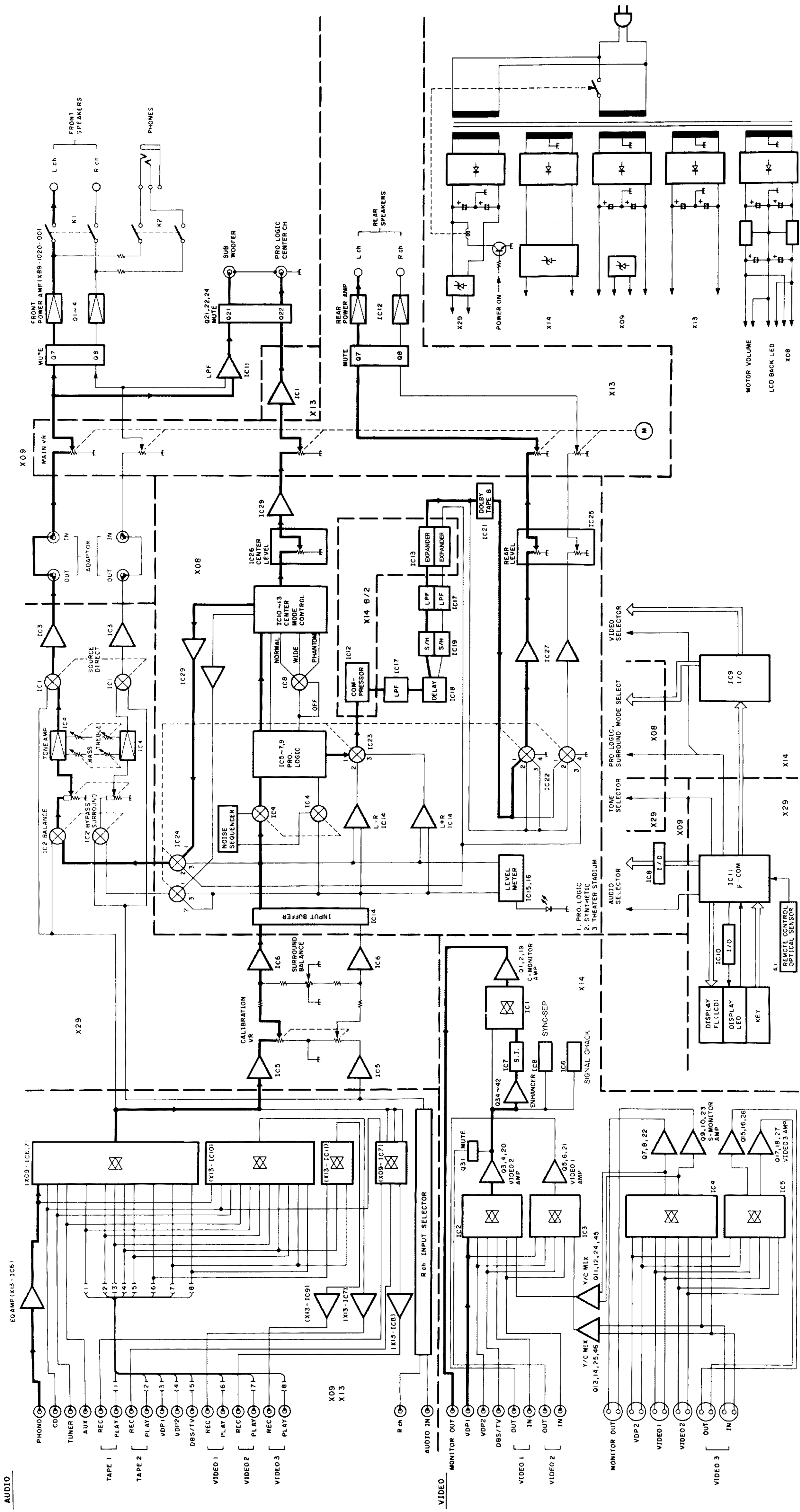
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参照番号	位置	部品番号	部品名/規格	仕	備考
D1, 2		H2S5.1S(B2)	ZENER DIODE		
D1, 2		R05.1JS(B2)	ZENER DIODE		
D3, 4		HSS104	DIODE		
D3, 4		SS133	DIODE		
D5		HSS61	DIODE		
IC1		UPC1237HA	IC(POWER AMP)		
Q1 -4		2SC1845(F,E)	TRANSISTOR		
Q5 -8		2SC2320(E,F)	TRANSISTOR		
Q5 -8		2SC945(A)(Q,P)	TRANSISTOR		
Q9 -12		2SC1845(F,E)	TRANSISTOR		
Q13 -18		2SA992(F,E)	TRANSISTOR		
Q19, 20		2SC1845(F,E)	TRANSISTOR		
Q21, 22		2SC3944(Q,R)	TRANSISTOR		
Q23, 24		2SA1535(Q,R)	TRANSISTOR		
Q25, 26		2SC2631(R,S)	TRANSISTOR		
Q27, 28		2SA1123(R,S)	TRANSISTOR		
Q29		2SA992(F,E)	TRANSISTOR		

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KA-V7000 KA-V7000

BLOCK DIAGRAM



CIRCUIT DESCRIPTION

Ref. No.	Part Name	Use/Function	Operation/Condition/Compatibility
Q32	2S733(A)Q.P 2SA933(Q.R)	Buffer	Horizontal sync signal detection buffer
Q33	2SA733(A)Q.P 2SA933(Q.R)	Monitor signal control	Video monitor output control
Q34, 35	2SC1923(R.O) 2SA933(Q.R)	Video amplifier	IC7's (on-screen IC) buffer and enhancer
Q36	2SC1740S(Q.R)	Video amplifier	IC7's (on-screen IC) buffer and enhancer
Q37 ~ 42	2SK105(F.H)	Enhancer FET switch	Enhancer (sharpness, detail) varying FET switch
Q43	2SC1740S(Q.R) 2SC945(A)Q.P	Buffer	Horizontal sync buffer
Q44	2SC1740S(Q.R) 2SC945(A)Q.P	Buffer	Vertical sync buffer
Q45	2SC1740S(Q.R) 2SC945(A)Q.P	V/C MIX	S-composite video signal (approx. 0 dB gain)
Q46	2SC1740S(Q.R) 2SC945(A)Q.P	V/C MIX	VIDE03(S1)-VIDE01 (approx. 0 dB gain)

Accessory Unit (X13-6160-11)

Ref. No.	Part Name	Use/Function	Operation/Condition/Compatibility
IC1 ~ 5	KAZOI	Static electricity protection	
IC6	#PC4570C-A	EG operation amplifier	
IC7 ~ 9	M5218P	Buffer operation amplifier	
IC10, 11	LC7822	Selector IC	Selection between input and REC OUT
IC12	STK-4142/2	Power amplifier IC	Rear speaker's amplifier
IC13	LB1641	Monitor drive IC	
Q7, 8	2SC2878(B)	Muting	Rear speaker's amplifier muting
Q24	2SA733(A)Q.P 2SA933(Q.R)	Shock noise protection	Power ON/OFF shock noise protection. Normally OFF
Q25	2SA733(A)Q.P 2SA933(Q.R)	Muting control	ON/OFF by mute signal from microprocessor or signal of Q27
Q26	2SA733(A)Q.P 2SA933(Q.R)	Muting control	IC12 power ON/OFF shock noise protection muting control
Q27	2SC1740S(Q.R) 2SC945(A)Q.P	Muting control	ON with output shorted against power of higher than specified level. Normally OFF
Q28	2SD1266(Q.P)	Constant voltage	5.6 V constant voltage
Q29	2SC3666	Relay drive	Main power ON/OFF relay drive

CIRCUIT DESCRIPTION

Ref. No.	Part Name	Use/Function	Operation/Condition/Compatibility
Q17, 18	2SC3981	Logarithmic amplifier input stage	Transistor nonlinear operation for differential logarithmic operation
Q19, 20	2SC1740S(Q.R) 2SC945(A)Q.P	Constant current	For constant current for Q17 and Q18
Q21, 22	2SJ748(L.V)	Constant current regulation circuit	This controls to keep the constant current to differential transistors Q17 and Q18 against the input signal

Control Circuit Unit (X29-2010-00)

Ref. No.	Part Name	Use/Function	Operation/Condition/Compatibility
IC1	LC4966	Analog signal selection	Source direct ON/OFF selection
IC2	LC4966	Analog signal selection	Bypass ON/OFF selection
IC3	NJM4560D-A	Buffer	Tone control output buffer
IC4	M5218P-A	Amplifier	Tone control amplifier
IC5	NJM4560D-A	Buffer	Calibration control input buffer
IC6	NJM4560D-A	Amplifier	Surround effect balance control output amplifier
IC10	CXD1067P	LED driver	LED drive by signal from microprocessor
IC11	M37450M8-103SP	Microprocessor	System control for display, operation, etc. for this unit
IC12	M51951ASL	Reset	Microprocessor initialization
Q1, 3, 4, 6	2SC1740S(Q.R) 2SC945(A)Q.P	Level shifter	Control signal voltage level change
Q2, 5	2SA733(A)Q.P 2SA933(Q.R)	Level shifter	Control signal voltage level change
Q10	2SC1740S(Q.R) 2SC945(A)Q.P	Reset	Microprocessor initialization
LC01	838-0120-05	Display module	LCD display of operation status of this unit
A1	W02-0776-05	Infrared remote control light receiver	Conversion to electric signals of light data sent from remote control

CIRCUIT DESCRIPTION

Ref. No.	Part Name	Use/Function	Operation/Condition/Compatibility
IC1	TC74HC4053AP	Video signal selection	On-screen (impose) ON/PASS selection, VIDE02
IC2	TC74HC4051AP	Video signal selection	VIDE02 monitor signal selection
IC3	TC74HC4051AP	Video signal selection	VIDE01 signal selection
IC4	TC74HC4052AP	Video signal selection	Monitor (S-VIDE0) signal selection
IC5	TC74HC4052AP	Video signal selection	VIDE03 signal selection
IC6	NJM2220S	Video signal detection	Detection by video horizontal sync signal
IC7	M88823A-K2	On-screen	Display of system information on monitor output
IC8	LA7820	Video sync signal separation	Separation of horizontal and vertical sync signals from video signal to frequency lock
IC9	M50791SP	Extension port	Communication with IC11 (microprocessor) on PC board (X29-1) to perform video signal, surround mode, test tone, etc. hancer, source direct and bypass controls
IC10	LM2940CT-5.0	For power supply	For power supply
IC11	AN795F	For power supply	-5 V 3-terminal regulator
IC12	#PC1571C	Compressor	1/2 compression in decibel (0 dB = 1.2 Vrms)
IC13	#PC1571C	Expander	2 X expansion in decibel (0 dB = 1.2 Vrms)
Q1, 2	2SC1923(R.O)	Video amplifier	For MONITOR OUT (approx. 5 dB gain)
Q3, 4	2SC1923(R.O)	Video amplifier	For VIDE02 OUT (approx. 7 dB gain)
Q5, 6	2SC1923(R.O)	Video amplifier	For MONITOR OUT (S-VIDE0) (approx. 7 dB gain)
Q7 ~ 10	2SC1923(R.O)	Video amplifier	For MONITOR OUT (S-VIDE0) (approx. 7 dB gain)
Q11, 12	2SC1740S(Q.R) 2SC945(A)Q.P	V/C MIX	S-composite video signal (gain approx. 0 dB)
Q13, 14	2SC1740S(Q.R) 2SC945(A)Q.P	V/C MIX	VIDE03(S1)-VIDE01 (approx. 0 dB gain)
Q15 ~ 18	2SC1923(R.O)	Video amplifier	For VIDE03(S1) (approx. 7 dB gain)
Q19	2SC2003(L.K)	Video amplifier	For MONITOR OUT (approx. 5 dB gain)
Q20	2SC2003(L.K)	Video amplifier	For VIDE02 OUT (approx. 7 dB gain)
Q21, 23	2SC1923(L.K)	Video amplifier	For MONITOR OUT (S-VIDE0) (approx. 7 dB gain)
Q24	2SC1740S(Q.R) 2SC945(A)Q.P	V/C MIX	S-composite video signal (approx. 0 dB gain)
Q25	2SC1740S(Q.R) 2SC945(A)Q.P	V/C MIX	VIDE03(S1)-VIDE01 (approx. 0 dB gain)
Q26, 27	2SC2003(L.K)	Video amplifier	For VIDE03(S) (approx. 7 dB gain)
Q28 ~ 30	2SC2878(B)	Video signal muting	Video signal muting
Q31	2SC2878(B)	Video signal muting	VIDE02 output signal muting

Video Control Unit (X14-2490-00)

CIRCUIT DESCRIPTION

Ref. No.	Part Name	Use/Function	Operation/Condition/Compatibility
IC18	YM3428	Digital delay	One-chip delay with one A/D converter, two D/A converters and RAM built in
IC19	#PC4072C	Buffer amplifier	This receives the voltage charged by C89 and C90 at a high input impedance.
IC20	NJM4560D-A	Inverting amplifier and Dolby gain control	1/2: -26 dB inverting amplifier 2/2: Dolby curve setting subtractor
IC21	LA2730	Dolby B	Different from Dolby curve for cassette decks due to constant given by external connection
IC22	TC4052BP	Surround effect selection	For pro-logic mode, pin 7 of IC20 is selected, while for theater, stadium or synthetic mode, pins 1 of CN6 and of CN7 are selected.
IC23	TC4052BP	Surround source selection	For pro-logic mode, pin 7 of IC13 is selected, while for theater, stadium or synthetic mode, pin 14 of IC14 is selected.
IC24	TC4052BP	Surround front output selection	For pro-logic mode, pins 8 and 14 of IC29 are selected, while for synthetic mode, pin 1 of CN6 is selected.
IC25	LC7535	Electronic volume control	Volume control for surround side (rear speaker side), which is operated on serial data from microprocessor.
IC26	LC7535	Electronic volume control	Volume control for center speaker side, which is operated on serial data from microprocessor.
IC27	#PC4074C	Buffer amplifier	1/4, 2/4: Impedance conversion for IC25 3/4: Output buffer for IC25
IC28	TC4052BP	Center mode selection	For wide mode, connection is made with R171, for phantom mode with R167, and for normal mode with C122 At OFF, no connection is made.
IC29	#PC4574C	Amplifier	1/4, 2/4, 3/4: Inverting addition amplifier 4/4: Voltage follower
IC30	LM2940CT-1.5	Regulated-voltage power supply	+5 V power supply
IC31	AN7805F	Regulated-voltage power supply	+5 V power supply
Q1	2SC1740S(Q.R)	Inverter drive	This inverts the MUTE signal to control INH (pin 6) of IC12.
Q2	2SC1740S(Q.R) 2SC945(A)Q.P	Inverter drive	This inverts the NO/SO signal to control A (pin 10) of IC4.
Q3, 4	2SC945(A)Q.P 2SC1740S(Q.R)	Inverter drive	These invert the N ROT A and N ROT B signals to control A and B (pins 9 and 10) of IC3.
Q5, 10, 11, 16	2SA733(A)Q.P 2SA933(Q.R)	Rectifier devices of OP amplifier rec-ification circuit	ON when output of IC6 becomes higher than the voltage of positive input pin, and OFF when it becomes lower.
Q7, 8, 13, 14	2SA733(A)Q.P 2SA933(Q.R)	Current mirror for collector current control	Current mirror for collector current control of Q5, Q10, Q11 and Q16.
Q6, 9, 12, 15	2SA733(A)Q.P 2SA933(Q.R)	Rectifier devices of OP amplifier rec-ification circuit	OFF when output of IC6 becomes higher than the voltage of positive input pin, and ON when it becomes lower.

Ref. No.	Part Name	Use/Function	Operation/Condition/Compatibility
IC1-5	KAZ01	Measure against static electricity	
IC6,7	LC7821	Input selection	
IC8	CXD1067P	Control IC	Relay, mute and motor VR control
IC9	μC7815HF	Regulated power supply	+15 V
IC10	μC7915HF	Regulated power supply	-15 V
IC11	MS218P	For super woofer	
Q1,2	2SD178*5	Final transistors	
Q3,4	2SB1163*5	Final transistors	
Q5,6	2SC4137	Temperature compensation	
Q7,8,21,22	2SC2878(B)	For muting	
Q23,24	2SA733(A)(Q,P)	For muting	
Q27	2SC1845(F,E)	Relay control	
Q28	2SB941(Q,P)	For regulated power supply	-16 V
Q29	2SD1266(Q,P)	For regulated power supply	+16 V
Q30	2SA733(A)(Q,P)	For regulated power supply	-16 V
Q31	2SC1740S(Q,R)	For regulated power supply	+16 V

Audio Unit (X09-2820-11)

Ref. No.	Part Name	Use/Function	Operation/Condition/Compatibility
Q30	2SC1740S(Q,R)	INVERTER	POWER DATA
D1,2	HSS104, 1SS133	Shock noise protection	
D3,4	HSS104, 1SS133	Output signal half-wave rectification	
D5,6	HSS104, 1SS133	For OR circuit	
D21	HSS104, 1SS133	For reset	
D25,28,29	HSS104, 1SS133	For control	
D26,27	HSS104, 1SS133	Power OFF reverse current protection	
D30	HSS104, 1SS131	For chemical capacitor charge discharging	
D31	HZS15N(B)	For constant voltage	-15 V
D32	RBV-402LFA	Rectification bridge	
D33,34	S5566B	Half-wave rectification	
D35	HZS6 2N(B2)	For constant voltage	+6.2 V
D36	HZS6 1N(B2)	For constant voltage	-5.1 V
D37	HSS104, 1SS133	Relay reverse induced voltage absorption	
D38,39	HSS104, 1SS133	For serial communication	
D40-43	HSS104, 1SS133	Static electricity protection	

CIRCUIT DESCRIPTION

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CIRCUIT DESCRIPTION

Ref. No.	Part Name	Use/Function	Operation/Condition/Compatibility
Q32	2SA733(A)(Q,P)	For Regulated power supply	-16 V
Q33	2SC1740S(Q,R)	For Regulated power supply	+16 V
Q34	2SC945(A)(Q,R)	Relay control	
D21-24	S3V20	Rectification	
D25-28	S5566B	Rectification	
D29	HSS104, 1SS131	Protection	
D30	HZS5 1S(B2)	For Regulated power supply	+5.1 V
D31,32	HSS104, 1SS131	For relay	
D33	HZS4 7N(B)	For reset	
D34,35	RD4 7ES(B)	For muting	
D38-41	HSS104, 1SS133	For muting circuit power supply	

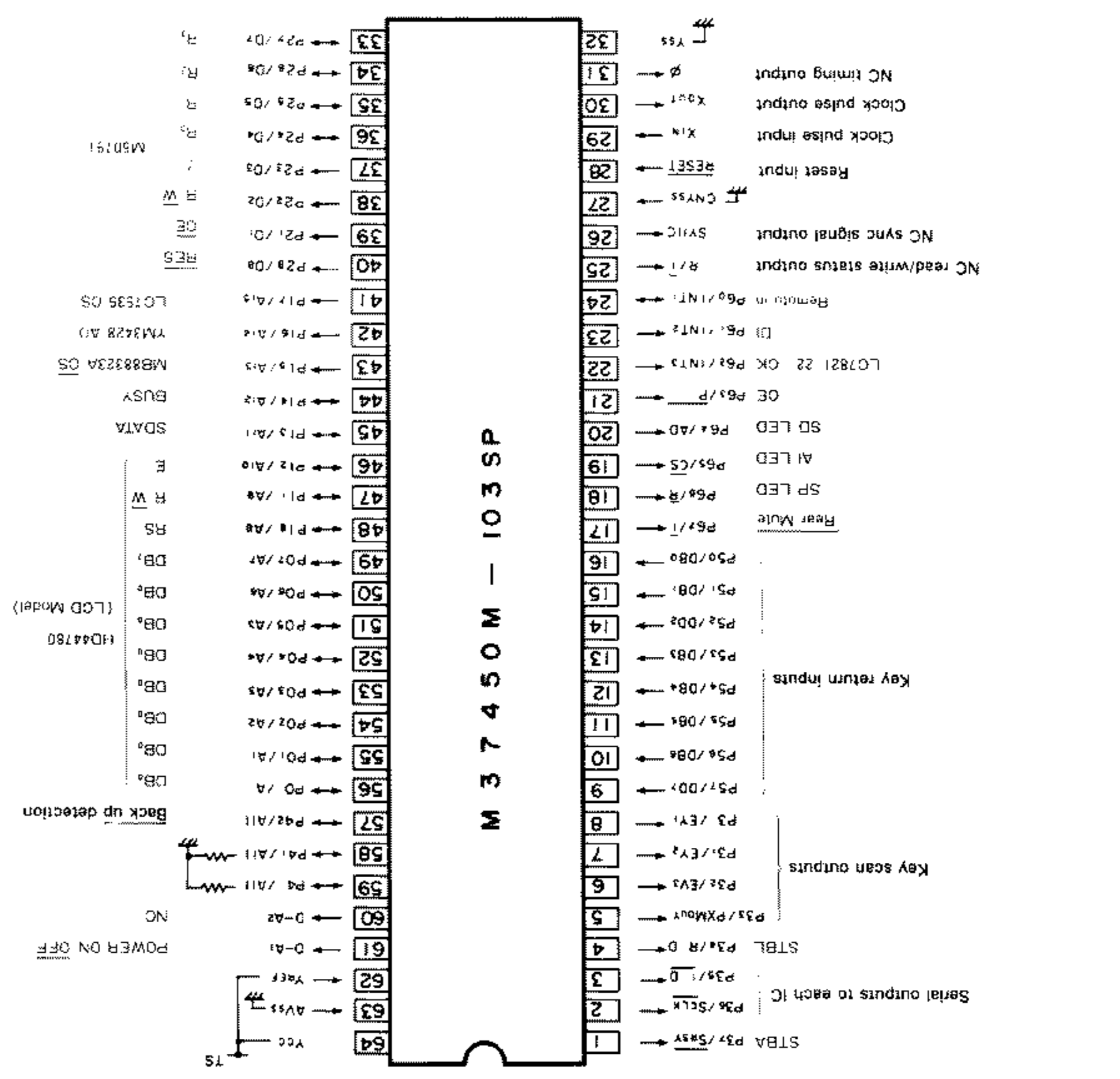


Fig. 1

IC1: M37450M8-103SP (X29-2010-00)

(1) Set it to Off (standby mode) from the energized ON state by the power switch.

(2) Connect the microprocessor reset pin to GND. TP1 of X14-2490 (video board) is thus connected with the reset pin of the microprocessor. Therefore, with a short-circuit made by a metal rod piece inserted from the top plate, the microprocessor can be reset unless the case is opened. (TP1 of X14-24-90 is located near just by the volume board. "GND" is written on the silkscreen.)

(3) Set the power switch to ON again to check that the microprocessor is completely reset. (Rear level and center level are -10 dB.)

In addition, for SN930001 and after, same as KA-V1000R, reset is applied by unplugging and plugging the power cord holding the power switch pressed.

CIRCUIT DESCRIPTION

KA-V7000

Table 1

Pin No.	Pin Name	I/O	Name	Function
1	P3 _A	O	STBA	Extension port IC CXD1067P for signal strobe
2	P3 _A	O	CLK	Serial clock pulse output to each IC
3	P3 _A	O	DATA	Serial data output to each IC
4	P3 _A	O	STBL	Extension port IC CXD1067P (for LED) strobe
5-8	P3 _A -P3 _B	I	KEY SCAN	Key scan outputs
9-16	P5 _A -P5 _B	I	KEY IN	Key return inputs (Active "H")
17	P6 _A	O	R MUTE	Rear mute output
18	P6 _A	O	SP LED	Speaker ON/OFF LED
19	P6 _A	O	AI LED	Audio Injection LED
20	P6 _A	O	SD LED	Source Direct LED
21	P6 _B	O	CE	Audio selector IC LC7821/22 strobe
22	P6 _B	O	CK	Audio selector IC LC7821/22 clock pulse
23	P6 _B	O	DI	Audio selector IC LC7821/22 data
24	P6 _B	I	REMOTE	Remote control input
25,26	R _W -S _{YN} C	-	-	Not connected
27	CN _V SS	-	-	GND
28	RES _{ET}	I	RES _{ET}	Microprocessor reset input
29	X _{IN}	I	OSC IN	Clock pulse input
30	X _{OUT}	O	OSC OUT	Clock pulse output
31	0	0	0	Not connected
32	V _{SS}	-	-	GND
33-36	P2 ₁ -P2 ₄	I/O	(MSB) (LSB) EXTENSION I/O M50791	Extension I/O M50791 parallel data
37	P2 ₃	O	0	Extension I/O M50791 timing clock pulse
38	P2 ₂	O	R/W	Extension I/O M50791 read/write
39	P2 ₁	O	CE	Extension I/O M50791 chip enable
40	P2 ₀	O	RES	Extension I/O M50791 reset output
41	P1 ₇ /A ₁	I	LC7535 chip selection	LC7535 chip selection
42	P1 ₆ /A ₂	I	YM3428 chip selection	YM3428 chip selection
43	P1 ₅ /A ₃	I	CS	MB88323A chip selection
44	P1 ₄ /B _{LSY}	I	BLSY	External equipment, serial communication busy
45	P1 ₃ /SDATA	I/O	SDATA	External equipment, serial communication data
46	P1 ₂ /E	O	E	LC7 module HD44780 timing clock pulse
47	P1 ₁ /R/W	O	R/W	LC7 module HD44780 read/write

Pin Functions:

CIRCUIT DESCRIPTION

Pin No.	Pin Name	I/O	Name	Function
48	P1 ₀	O	RS	LC7 module HD44780 reset
49-56	P0 ₇ -P0 ₀	I/O	DB ₇ -DB ₀	LC7 module HD44780 parallel data
57	P2 ₂	I	BACK UP	Backup detection
58-59	P4 ₁ -P4 ₀	I	-	Not connected
60	D-A ₂	O	-	Not connected
61	D-A ₁	O	POWER	Power ON/OFF
62	V _{KE} R	-	-	A/D and D/A reference power (+5 V)
63	A _V SS	-	-	A/D and D/A reference power GND
64	V _{DD}	-	-	Supply voltage (+5 V) Backup hold

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CIRCUIT DESCRIPTION

Application Circuit Example:
Connection with M37450M8:
 The connection between this I/O expander M50791SP and the M37450M8-XXXXSP is made as shown in Fig. 1. Addresses as shown on Table 1 are reserved for this I/O expander M50791SP, which therefore permits data read/write exactly as in an internal port of M37450-XXXXSP. However, of data, the low-order 4 bits are effective. The timing and control signals are automatically generated in the M37450M8-103SP. Next, let us deal with the operation. Due to the RESET OUT signal from the M37450-XXXXSP, an output port enters the OFF state and an I/O port enters the high-impedance state. A port input or output is executed according to the same instruction as for another zero page memory of the M37450M8-103SP. When output port P40 to P44 is read, the contents of that output latch can be read out. In case of I/O port P45 to P49, it is possible to determine which use as an output latch or an input port is engaged for the data to be read, according to the contents of its associated direction register. Of this direction register, the bit at '1' means output and at '0' means input. In addition, a direction register is a write only type, whose contents cannot be read out. This should be set by the store instruction. Table 2 shows the code written in each direction register and its I/O bit state for its corresponding I/O port. Moreover, each I/O port is configured as shown in Fig. 2. When an address as shown on Table 2 is accessed, it takes twice the time normally consumed in instruction execution. This fact should be noted in calculating the process time. A port input or output is executed according to the same instruction as for another zero page memory of the M37450M8-103SP. When calculation is performed to ensure a margin for interacting with this I/O expander M50791SP.

CIRCUIT DESCRIPTION

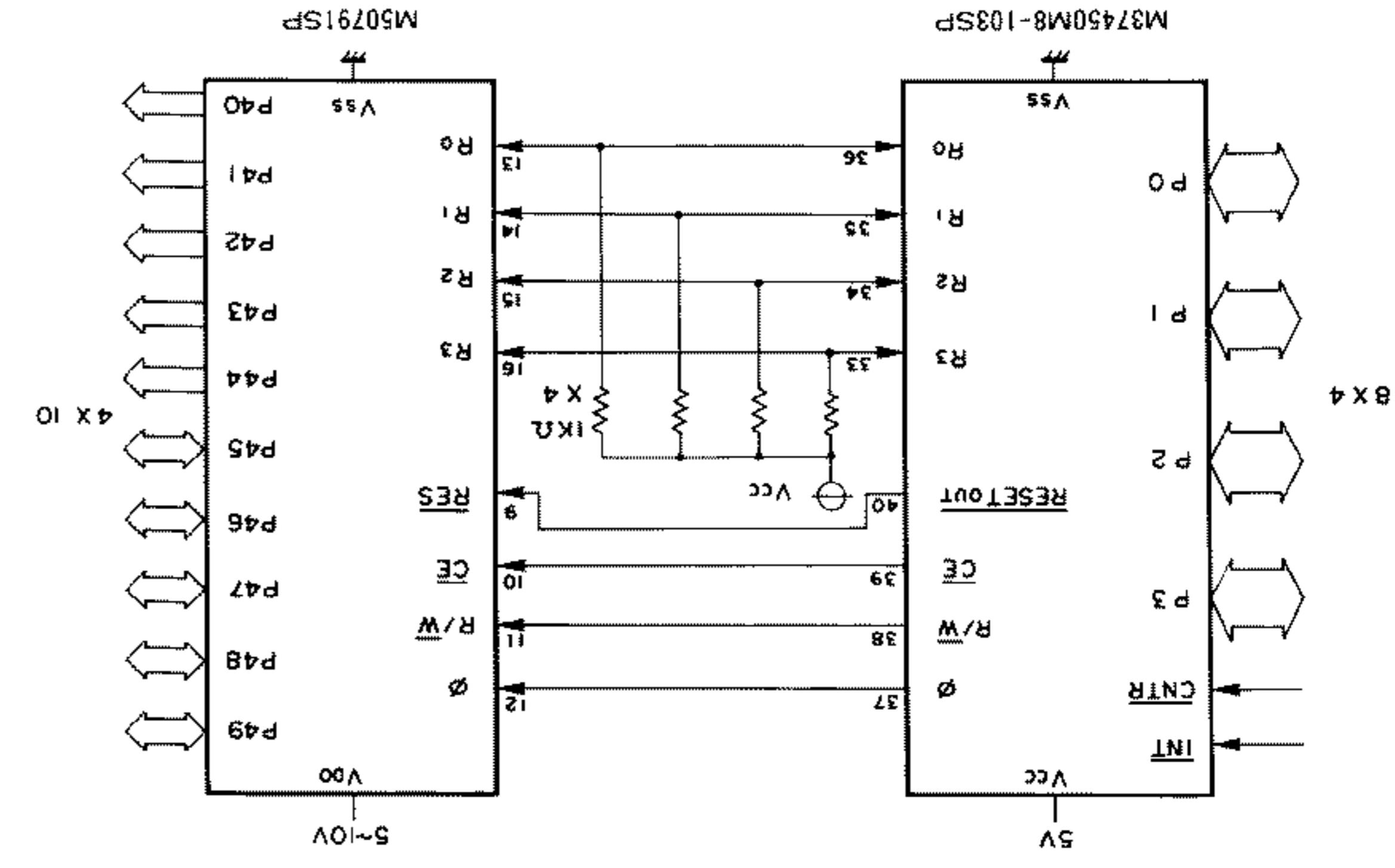


Fig. 3: Connection of M37450M8-103SP and M50791SP

IC9: M50791SP (X14-2490-00): Extension Port IC

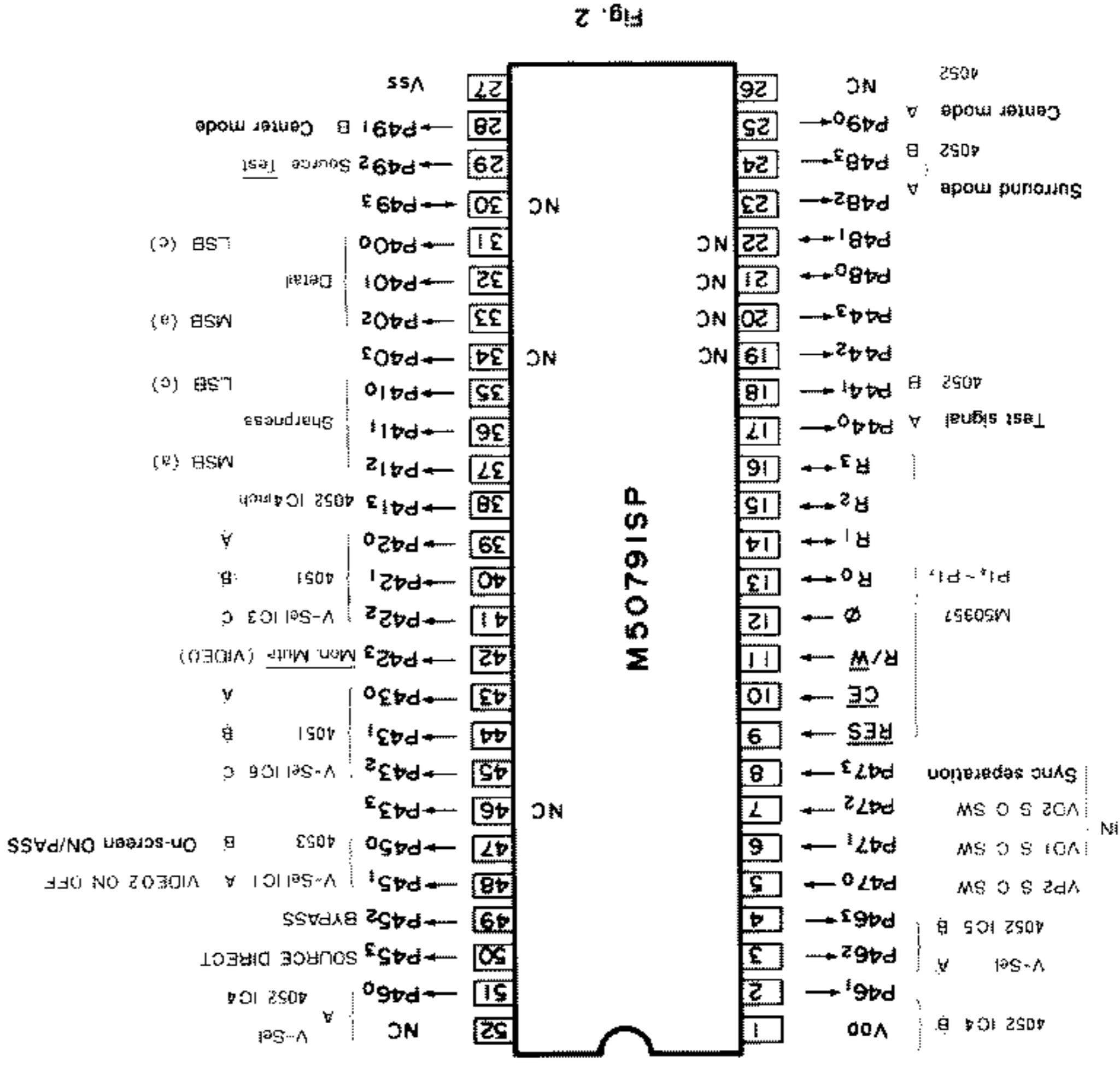
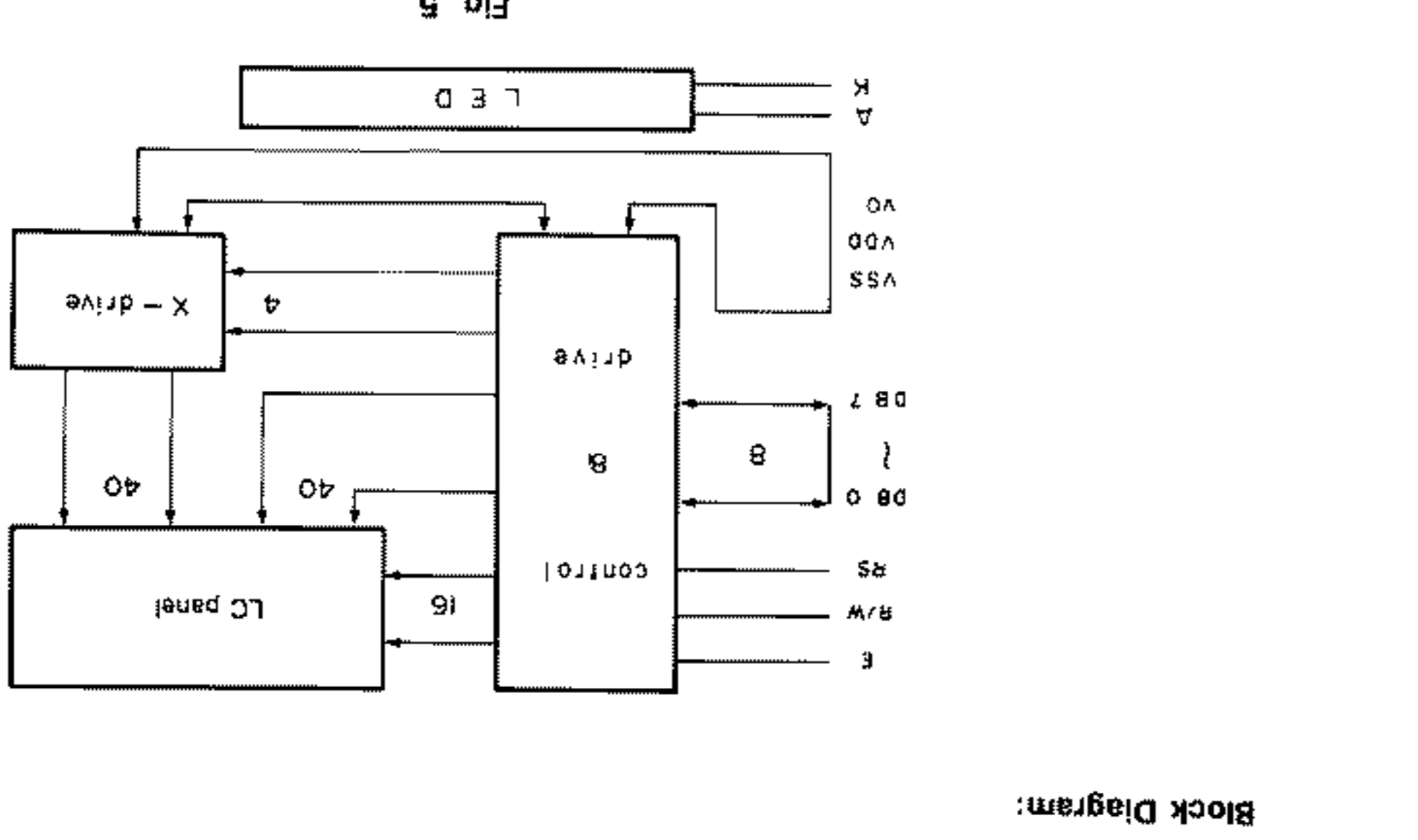


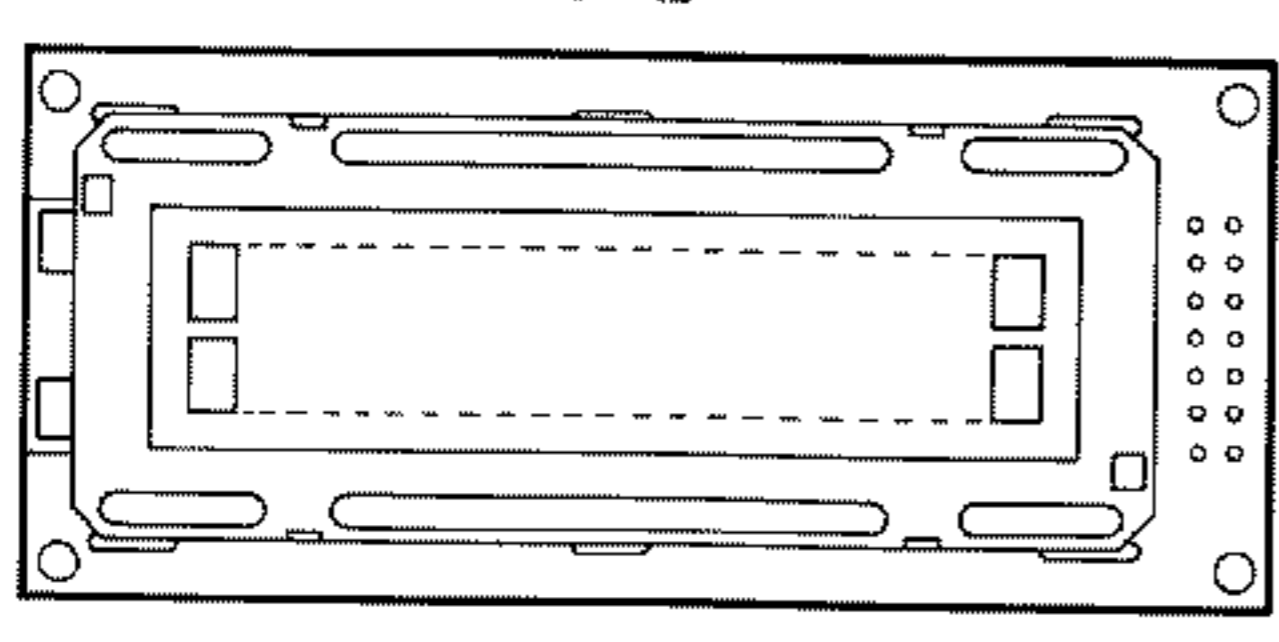
Fig. 2

CIRCUIT DESCRIPTION



Block Diagram:

LCD1 (16 characters x 2 lines) is a dot matrix module consisting of liquid crystal, CMOS driver, control CMOS LSI. This module employs a 5 x 7 dot matrix pattern capable of displaying alphanumeric characters. Of this module, every function such as control, refresh, display, etc. is operated by the control on the port. Furthermore, it is capable of displaying 160 kinds of JIS double-byte characters.



LCD1: (X29-2010-00) Dot Matrix Liquid Crystal Display Module (16 characters x 2 lines)

CIRCUIT DESCRIPTION

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CIRCUIT DESCRIPTION

Table 3

Pin No.	Signal	Pin No.	Signal
1	VSS	8	DB 1
2	VDD	9	DB 2
3	VEE	10	DB 3
4	RS	11	DB 4
5	R/W	12	DB 5
6	E	13	DB 6
7	DB 0	14	DB 7

LED Pin Arrangement:

Signal	Pin No.	Signal	Pin No.
+	3		
N.C.	2		
-	1		

Table 4

Pin Name	I/O	Function
GND	0 V	
VSS		
VDD	+5 V	
VEE		Liquid crystal drive voltage
RS	I	Register select signal "0": Instruction register (write) "1": Data register (read/write)
R/W	I	Read (R)/write (W) select signal "0": Write from MPU to LC module "1": Read to MPU from LC module
E	I	Signal to start data read/write
DB 0 - DB 7	I/O	The low-order 4 bit bidirectional lines of the data bus are used in data transfer between the MPU and the LCD1 module. These lines are not used in 4-bit operation. The high-order 4 bit bidirectional lines of the data bus are used in data transfer between the MPU and the LCD1 module. DB7 is also available for a busy flag.

Pin Functions:

CIRCUIT DESCRIPTION

1. Data input method
The specified serial data is input to the CL, DI and CE pins which serve to control LC7821, LC7822 and LC7823. The data configuration is of 12 bits, 4 address bits and 8 data bits.

Address				Data											
1st bit	2nd bit	3rd bit	4th bit	A0	A1	A2	A3	SW1	2	3	4	5	6	7	8
LC7821	L	0	1	0	1	0	1	1	0	1	1	1	1	1	1
LC7822	L	0	0	0	1	1	1	1	1	1	1	1	1	1	1
LC7823	L	0	1	0	1	1	1	1	1	1	1	1	1	1	1

Accordingly, the bit corresponding to a switch to be set to ON is set to "1".
"0": OFF
"1": ON

The 4 address bits are used in selection between switch units which are connected balanced in common. The address data to be transmitted is as follows according to the state of the 5 pin.

Table 6

Switch unit name	S pin	A0	A1	A2	A3
LC7821	L	0	1	0	1
LC7822	L	0	0	0	1
LC7823	L	0	1	1	1

Note: For LC7823, the bit (SW8) corresponding to switch No. 8 needs no care (it may be "0" or "1"). The reason is that 7 circuits x 2 are incorporated for analog switches in LC7823.

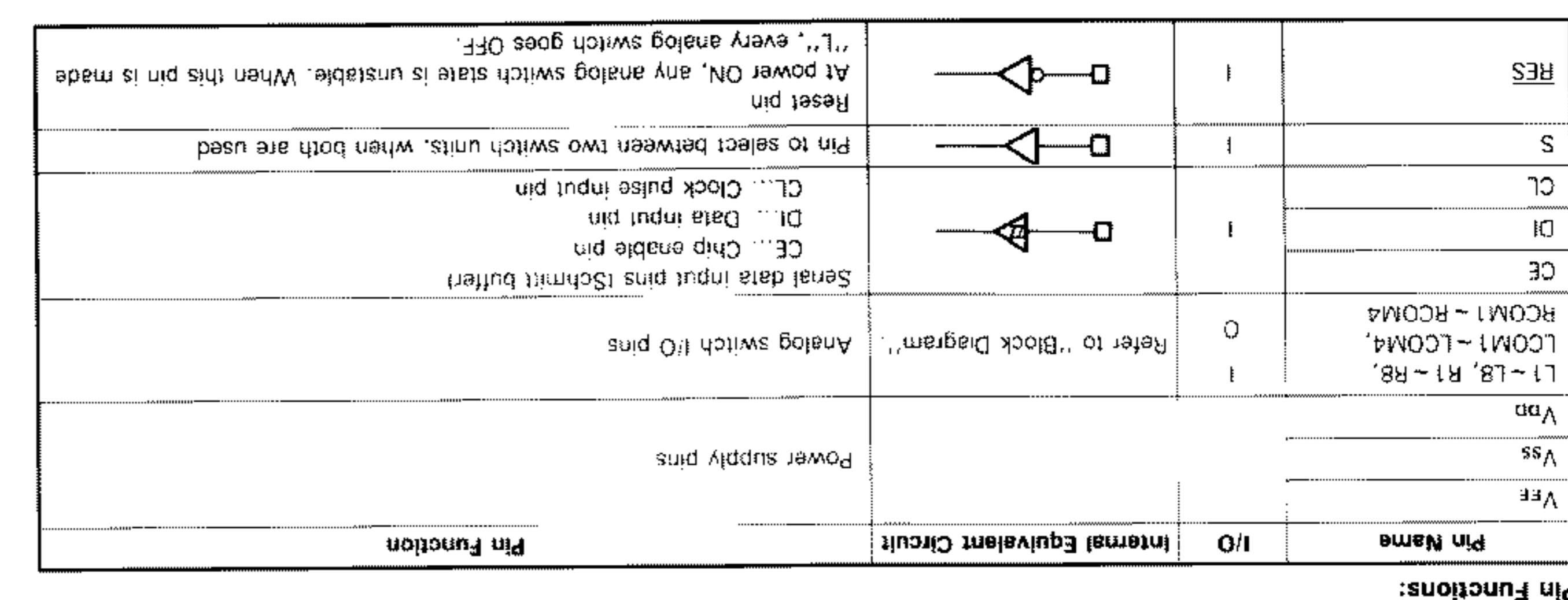
KA-V7000

CIRCUIT DESCRIPTION

Pin Functions:

Pin Name	I/O	Internal Equivalent Circuit
VEE		
VSS		
VDD		
L1 ~ L8, R1 ~ R8, LCOM1 ~ LCOM4, RCOM1 ~ RCOM4	I	Refer to "Block Diagram"
CE	I	Serial data input pins (Schmitt buffer)
DI	I	Chip enable pin
CL	I	Clock input pin
S	I	Pin to select between two switch units, when both are used
RES	I	Reset pin At power ON, any analog switch state is unstable. When this pin is made "L", every analog switch goes Off.

Table 5



2. Timing between DI, CL and CE

CIRCUIT DESCRIPTION

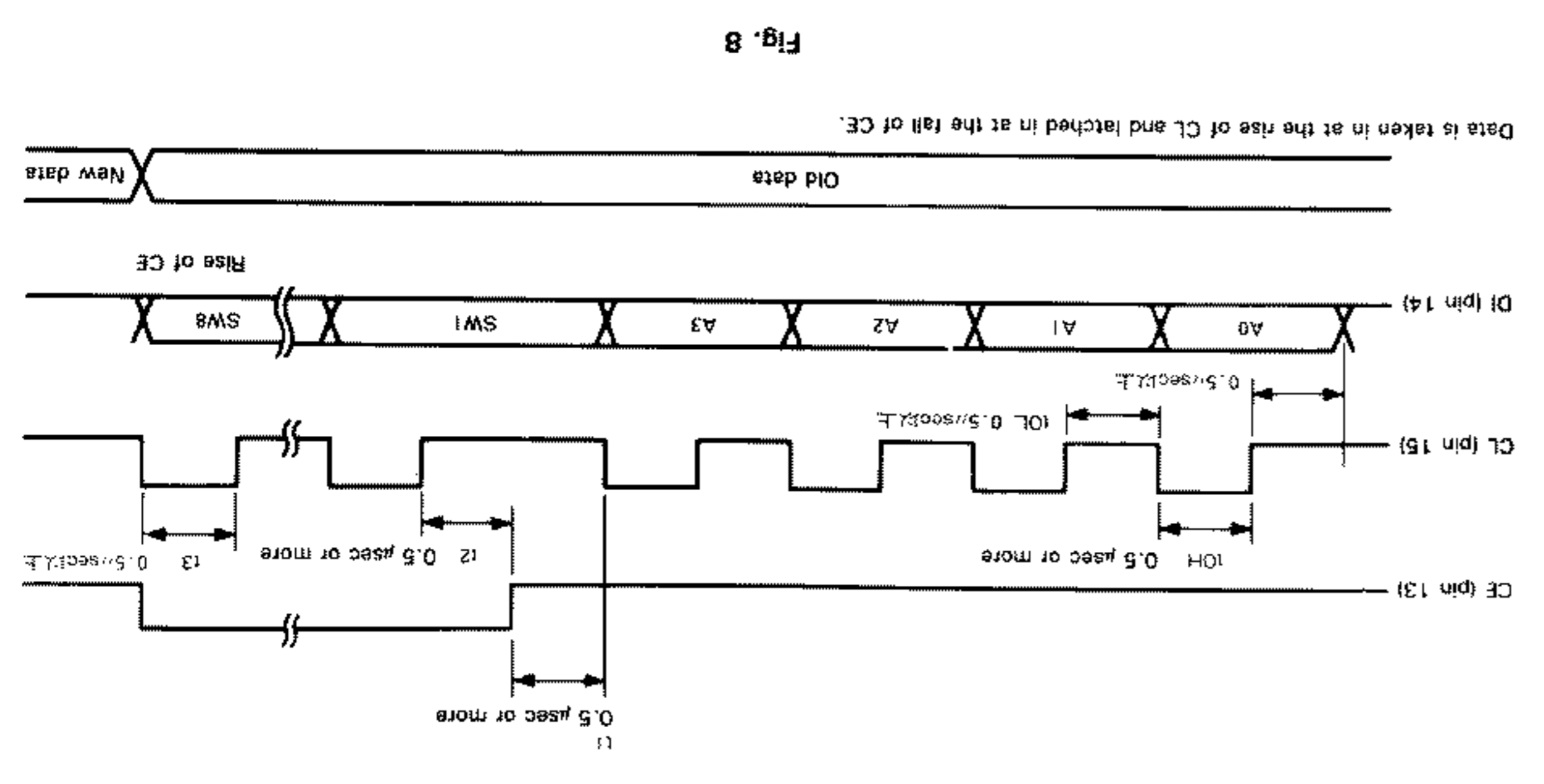


Fig. 8

3. On reset (RES) pin
At power ON, the state of an analog switch becomes unstable. With C and R externally connected to the reset pin, every analog switch can be turned Off.

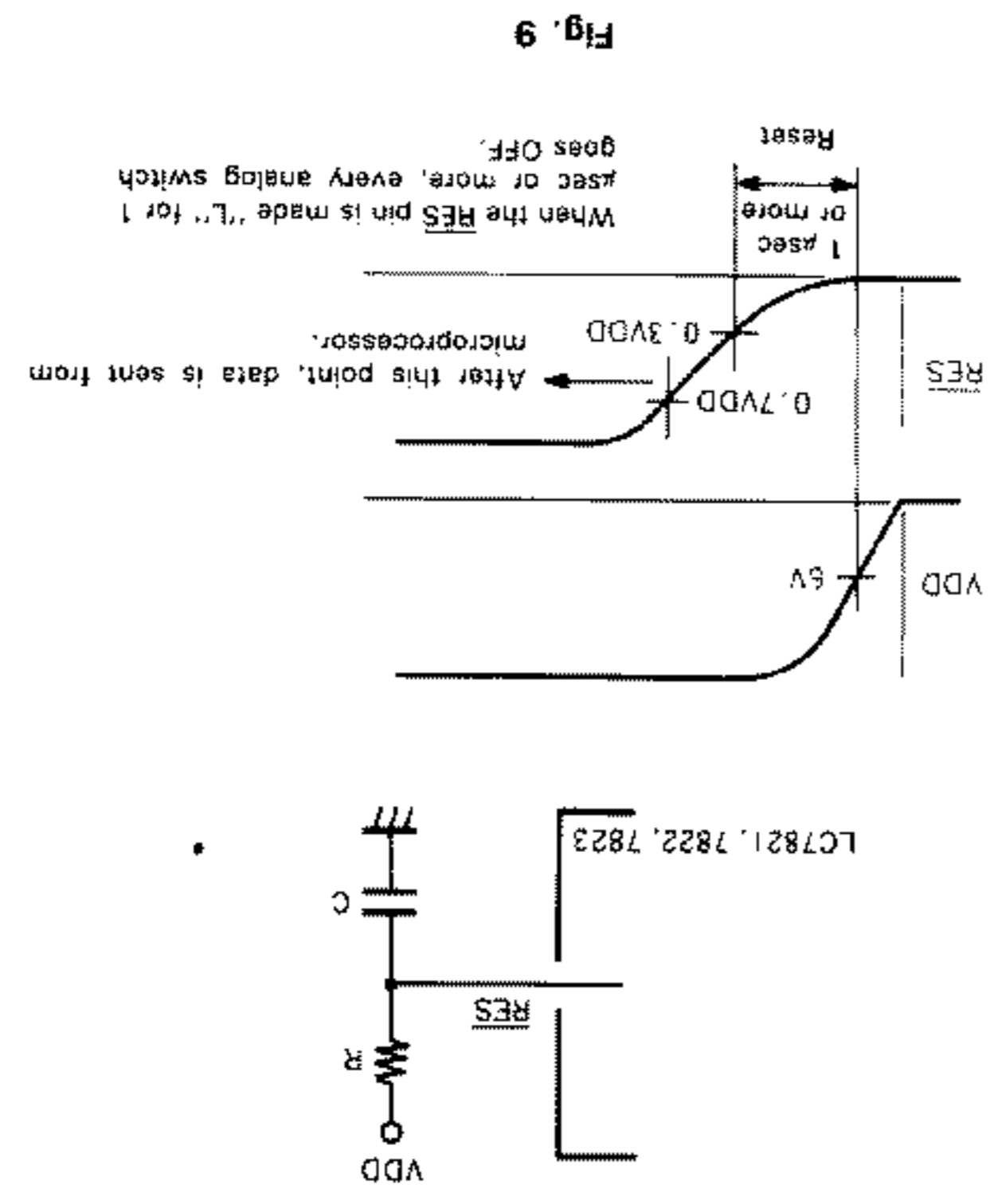


Fig. 9

CIRCUIT DESCRIPTION

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IC6, IC7: LC7821 (X09-2820-11)
IC10, IC11: LC7822 (X13-6160-11)
Analog Function Switches:

Pin Layout:

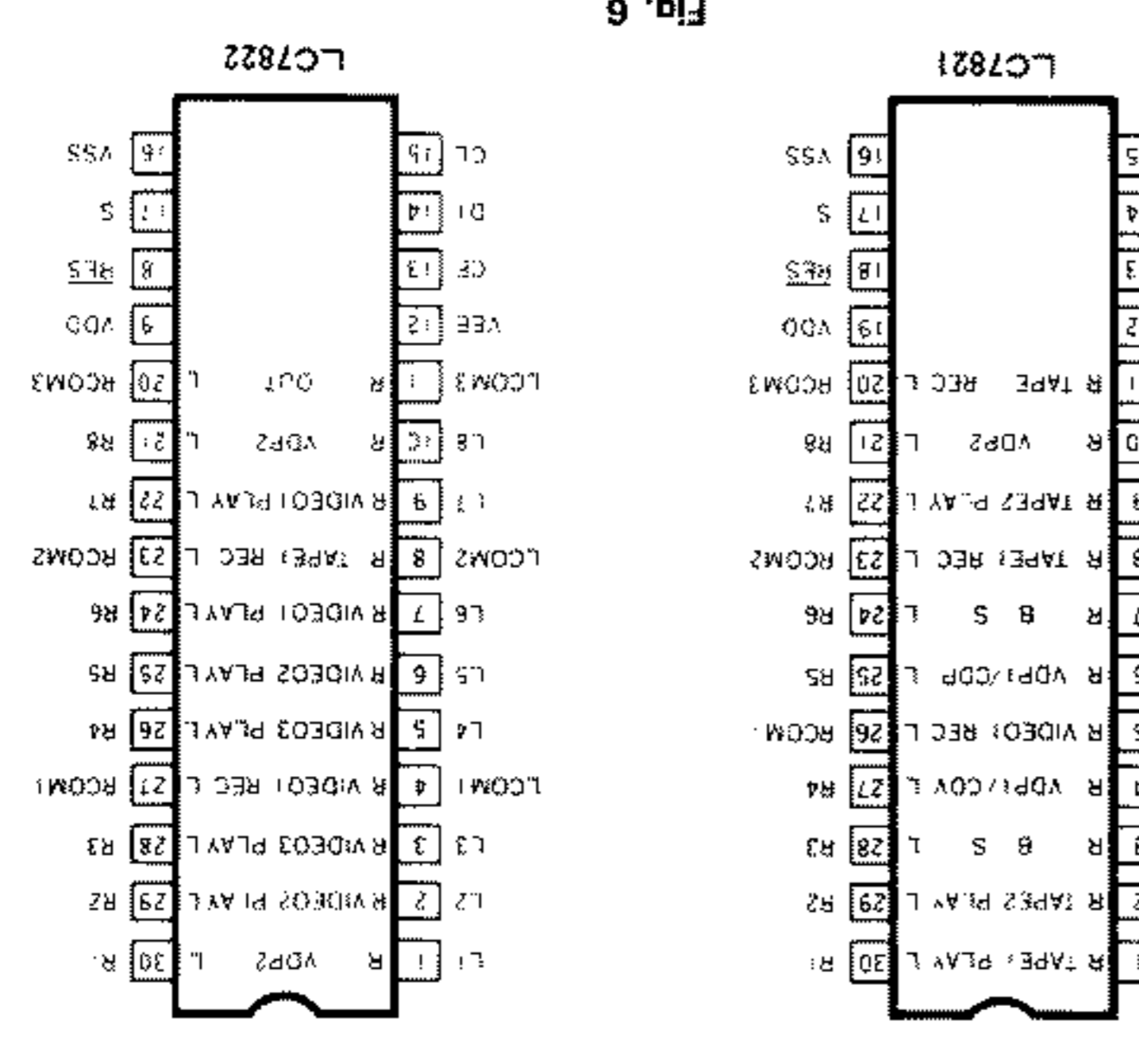


Fig. 6

Equivalent Circuit Block Diagram:

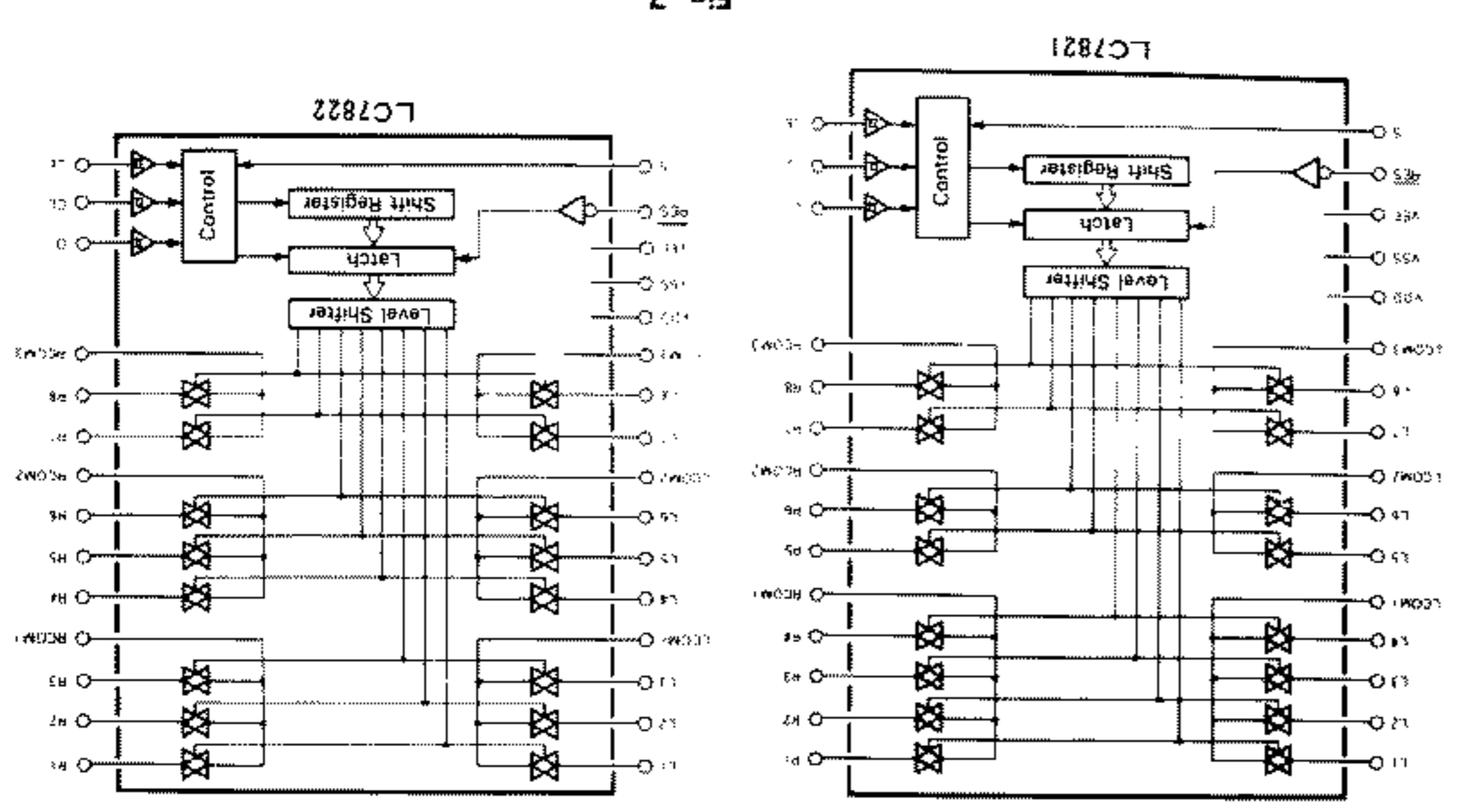


Fig. 7

KA-V7000

CIRCUIT DESCRIPTION

IC1-IC5: TC74HC4051A/4052A/4053A (X14-2490-00)
Video Signal Select IC:

Outline: The TC74HC4051A, 4052A or 4053A is a high-speed analog multiplexer/multiplexer using a silicon gate CMOS technology, which permits high-speed switching of analog or digital signals at a low power consumption that is a dominant property to CMOS.

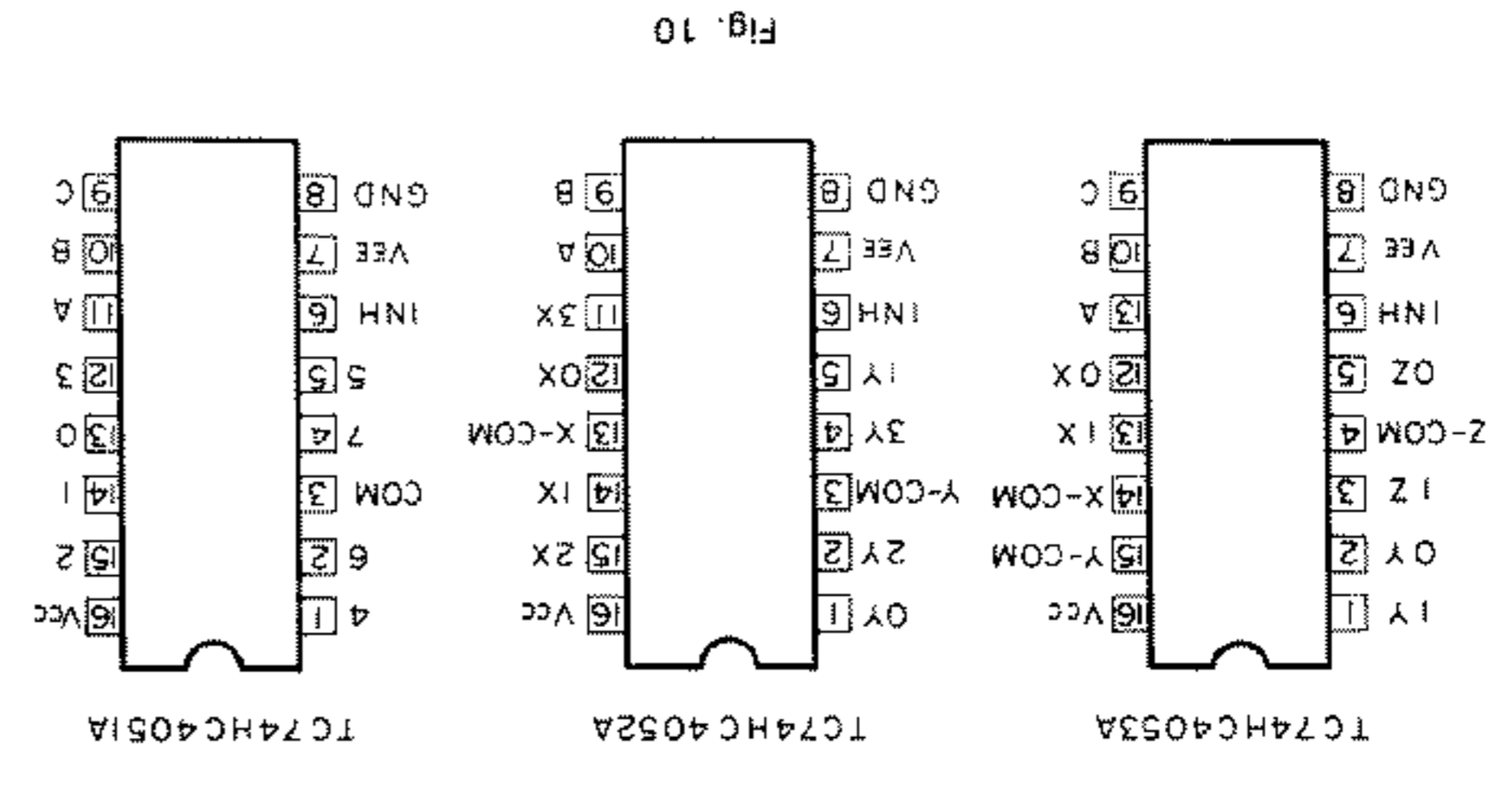
The TC74HC4051A, 4052A or 4053A is also a multiplexer capable of analog/digital signal selection or combination. 4051A has a configuration of 8 channels, 4052A of 4 channels x 2, and 4053A of 2 channels x 3.

According to the states of the digital signals of the control pins, the respective switches corresponding to each channel turn ON.

In addition, even with a small logic amplitude (V_{CC}-GND) of a control signal, it is possible to switch a signal with a large amplitude (V_{CC}-V_{EE}).

For example, provided that V_{CC}=5 V, GND=0 V and V_{EE}=-5 V, it is possible to switch signals of -5 V to +5 V through the logic circuit operating on a single power of 5 V. Since the ON resistance of each switch is low, it is also permitted to connect with a circuit of a low input impedance.

Pin Connections:



Truth Table:

INHIBIT	C	B	A	HC4051A	HC4052A	HC4053A
L	L	L	L	0	0X, 0Y	0X, 0Y, 0Z
L	L	L	H	1	1X, 1Y	1X, 0Y, 0Z
L	L	H	L	2	2X, 2Y	0X, 1Y, 0Z
L	L	H	H	3	3X, 3Y	1X, 1Y, 0Z
L	H	L	L	4	—	0X, 0Y, 1Z
L	H	L	H	5	—	1X, 0Y, 1Z
L	H	H	L	6	—	0X, 1Y, 1Z
L	H	H	H	7	—	1X, 1Y, 1Z
H	X	X	X	NONE	NONE	NONE

X: DON'T CARE, * : Except HC4052A

Table 7

System Diagram:

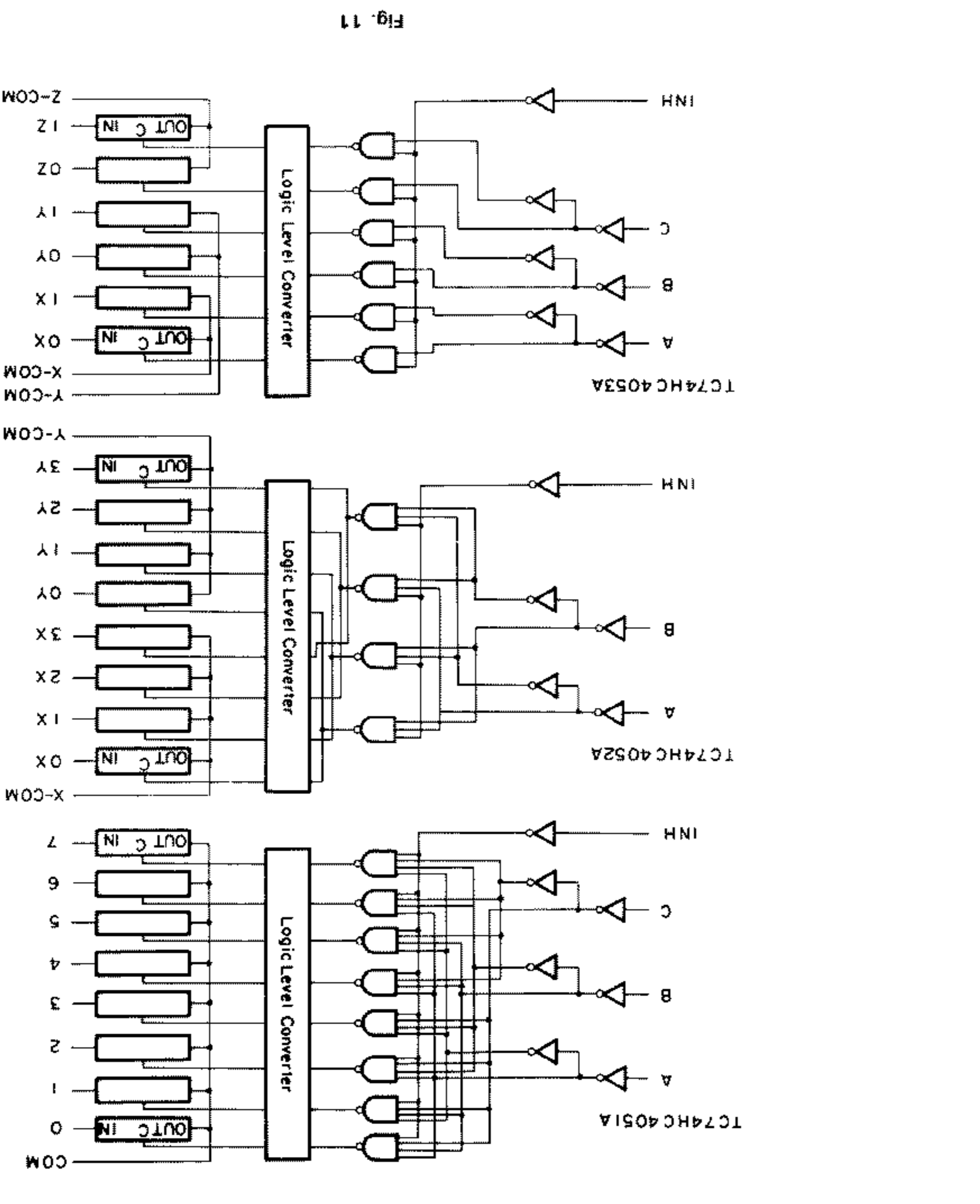


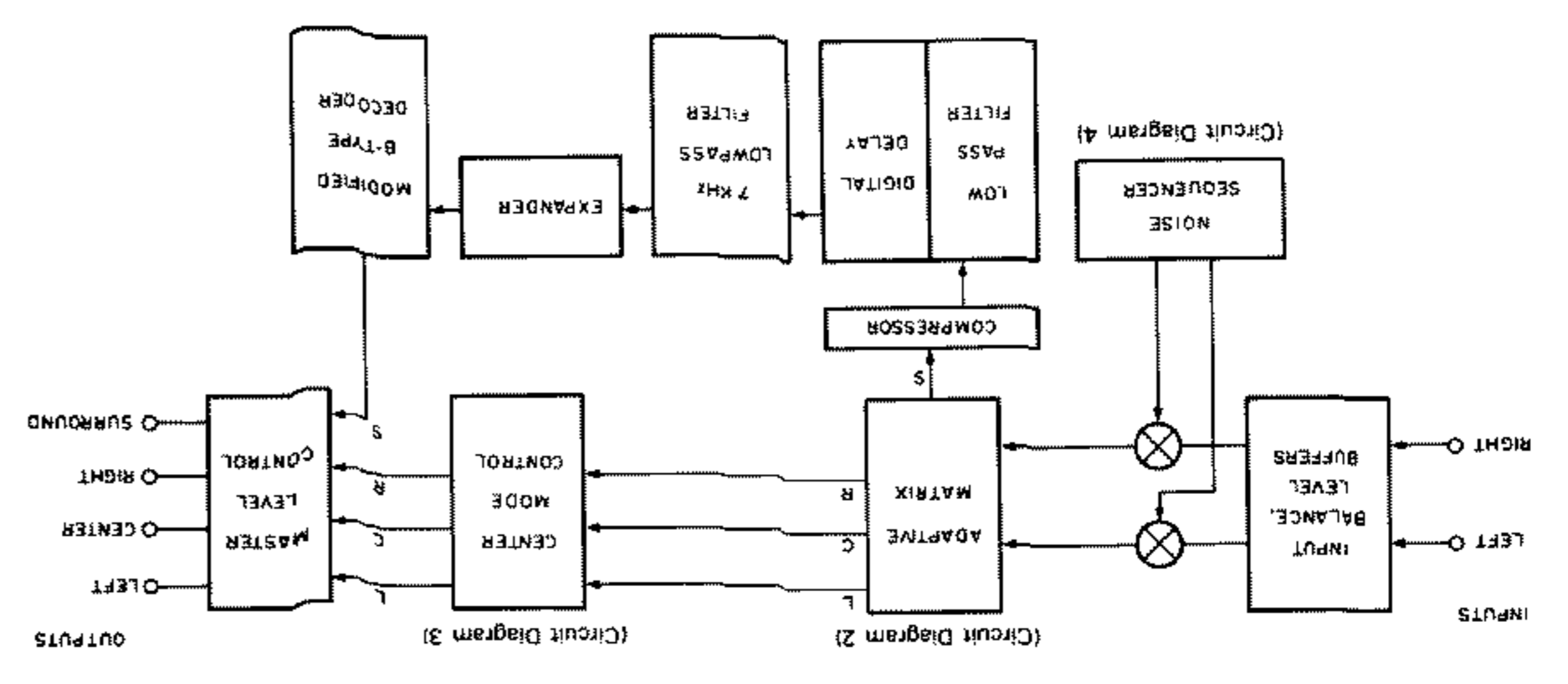
Fig. 11

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CIRCUIT DESCRIPTION

Block Diagram 2: Dolby Pro-Logic System

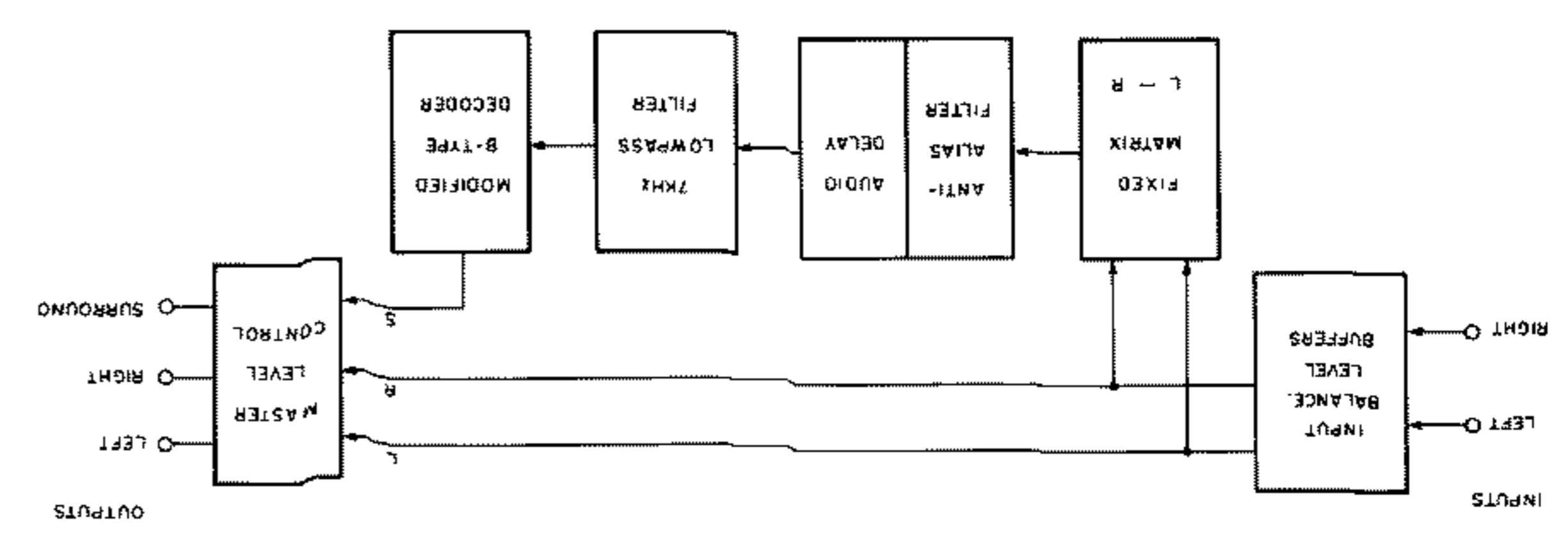
The pro-logic system is a change of a theater type Dolby stereo system into home use, that is an emphasized directionally circuit. This system, having a configuration of 4 channels for L-ch and R-ch inputs, detects four of L-ch, R-ch and S-ch signals in a symmetric mode.



Block Diagram 2:

Block Diagram 1: Conventional Dolby Surround System

For L-ch and R-ch, signals are sent out without any process, and for S-ch, "L-R" signals are passed through as a delay Dolby NR B type.



Block Diagram 1:

In case of a conventional surround system, localization is unclear in respect to front, back, left and right. In case of the pro-logic system, signals as shown in Fig. 12 - 14 are subject to analog detection to control the VCA (voltage controlled amplifier) to separate out front, rear and left and right signals. As regards the detection circuit as shown in Block Diagram 3, are arranged L-ch, R-ch, C-ch and S-ch detections through four full-wave rectifiers in this order from above. As regards the logarithmic differential amplifiers, each being a logarithmic conversion subtractor, the upper one deals with comparison in logarithmic level between L-ch and R-ch, and the lower one, between C-ch and S-ch.

Block Diagram 3: Adaptive Matrix System

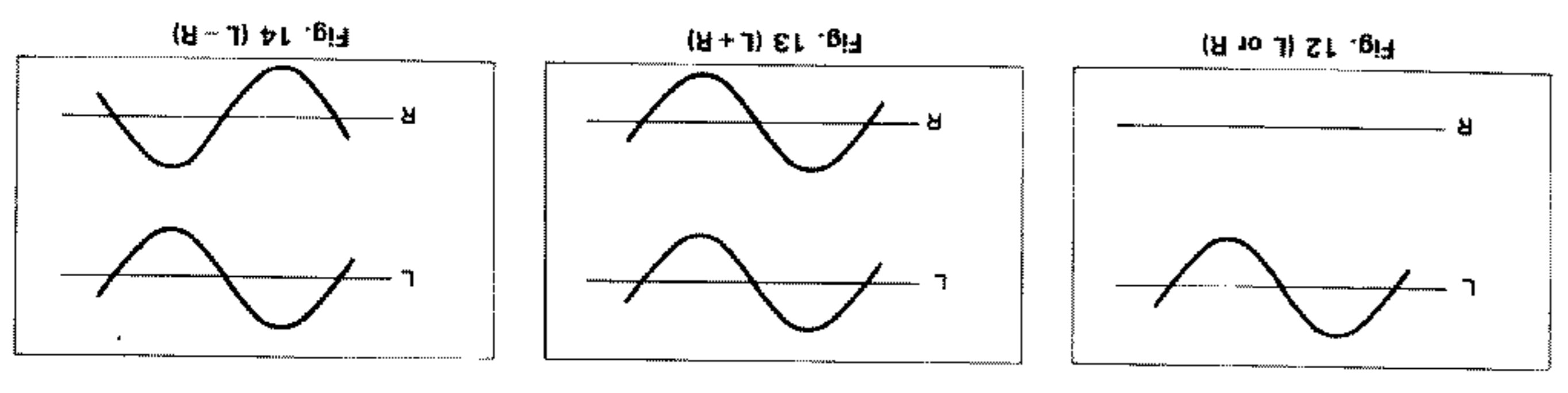
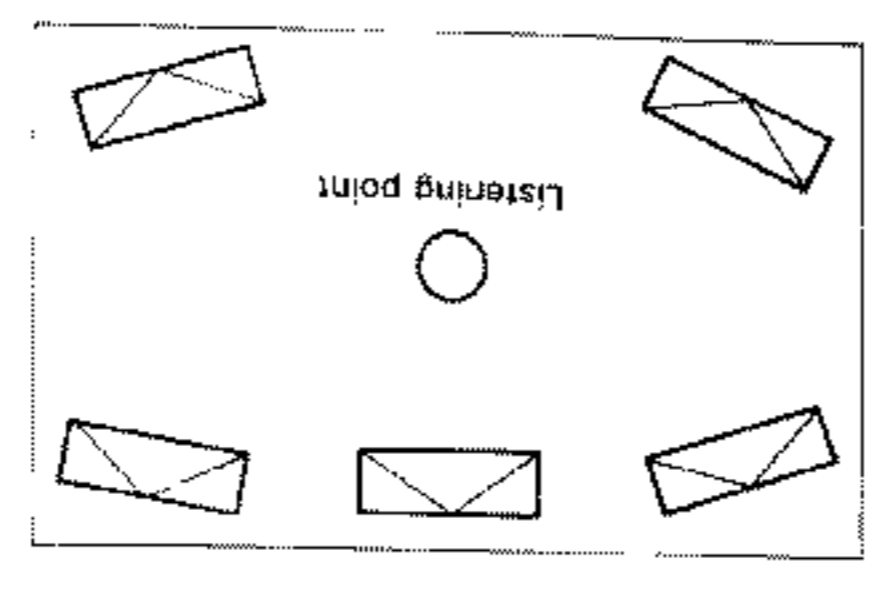


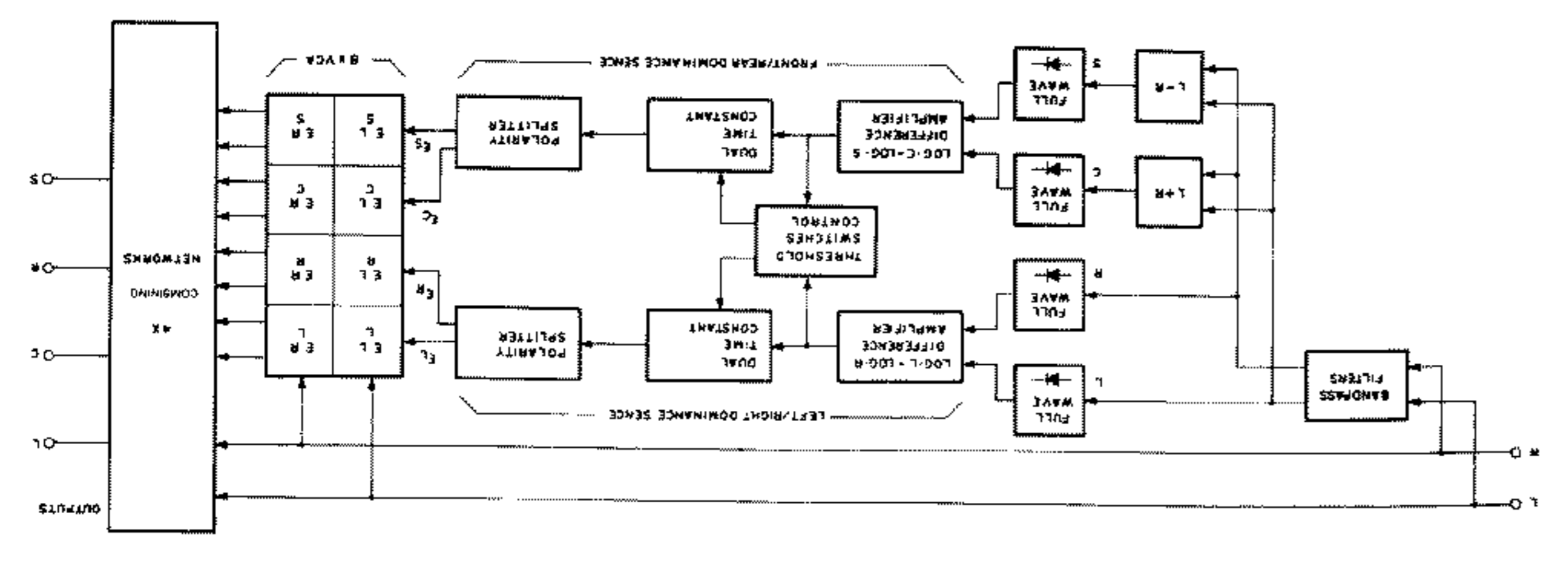
Fig. 12: With an L-ch input only, the L-ch speaker alone sounds.
 Fig. 13: With L-ch and R-ch in phase only, the C-ch speaker alone sounds.
 Fig. 14: With L-ch and R-ch in opposite phase, the S-ch speaker alone sounds.

Fig. 15



CIRCUIT DESCRIPTION

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Block Diagram 3:

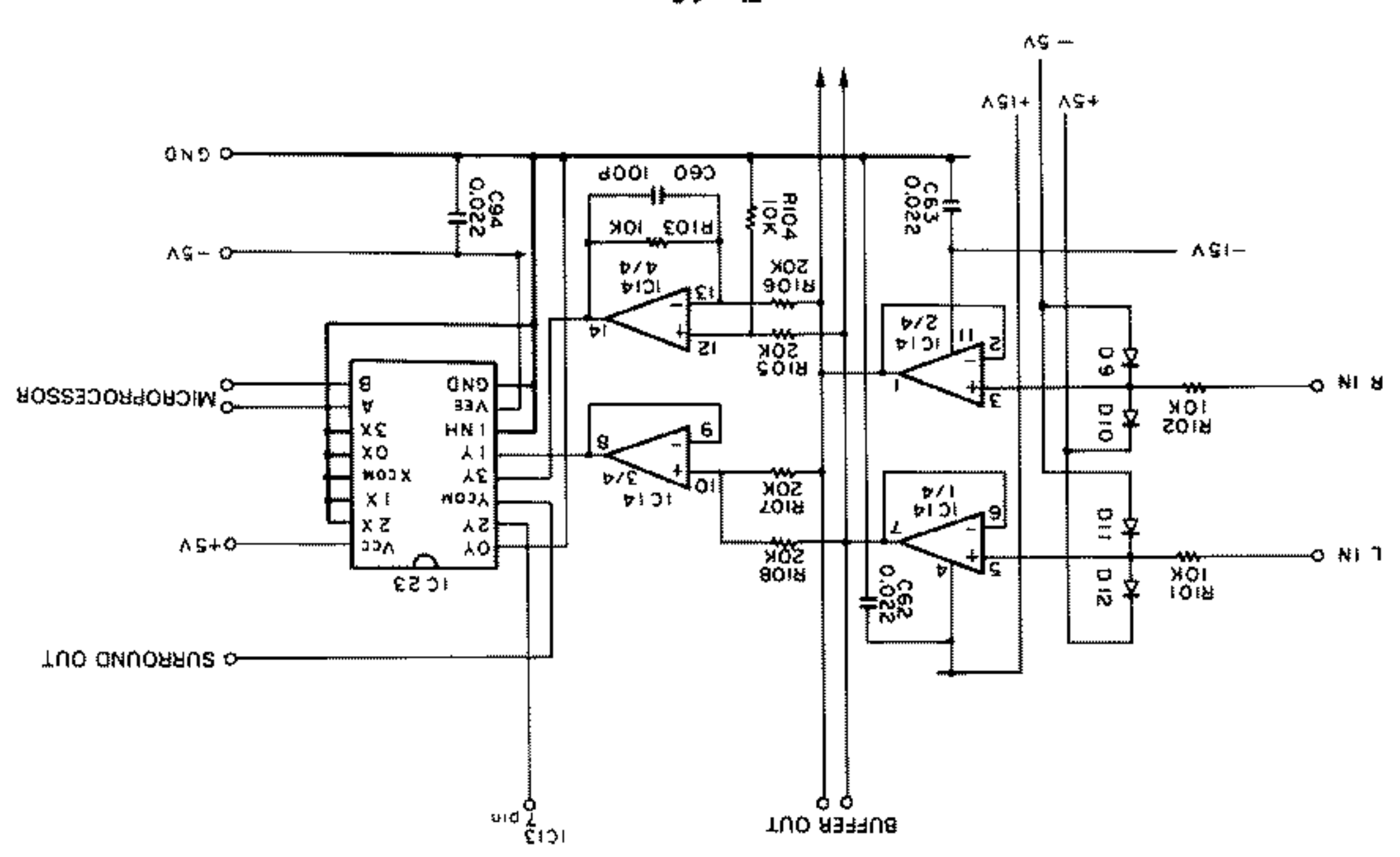


Fig. 16

IC14: NJM2058D (X08-2280-00)
IC23: TC4052BP (X08-2280-00)
Input Buffer and Surround Input Selector
 The L-ch and R-ch inputs are level-limited by D9-D12. A buffer output signal goes to a level meter and a pro-logic circuit. IC14 3/4 deals with L + R addition, and 4/4 with L - R subtraction. Concerning IC23, 2Y is engaged for pro-logic mode, 3Y is for theater or stadium mode, and 1Y for synthetic mode.

CIRCUIT DESCRIPTION

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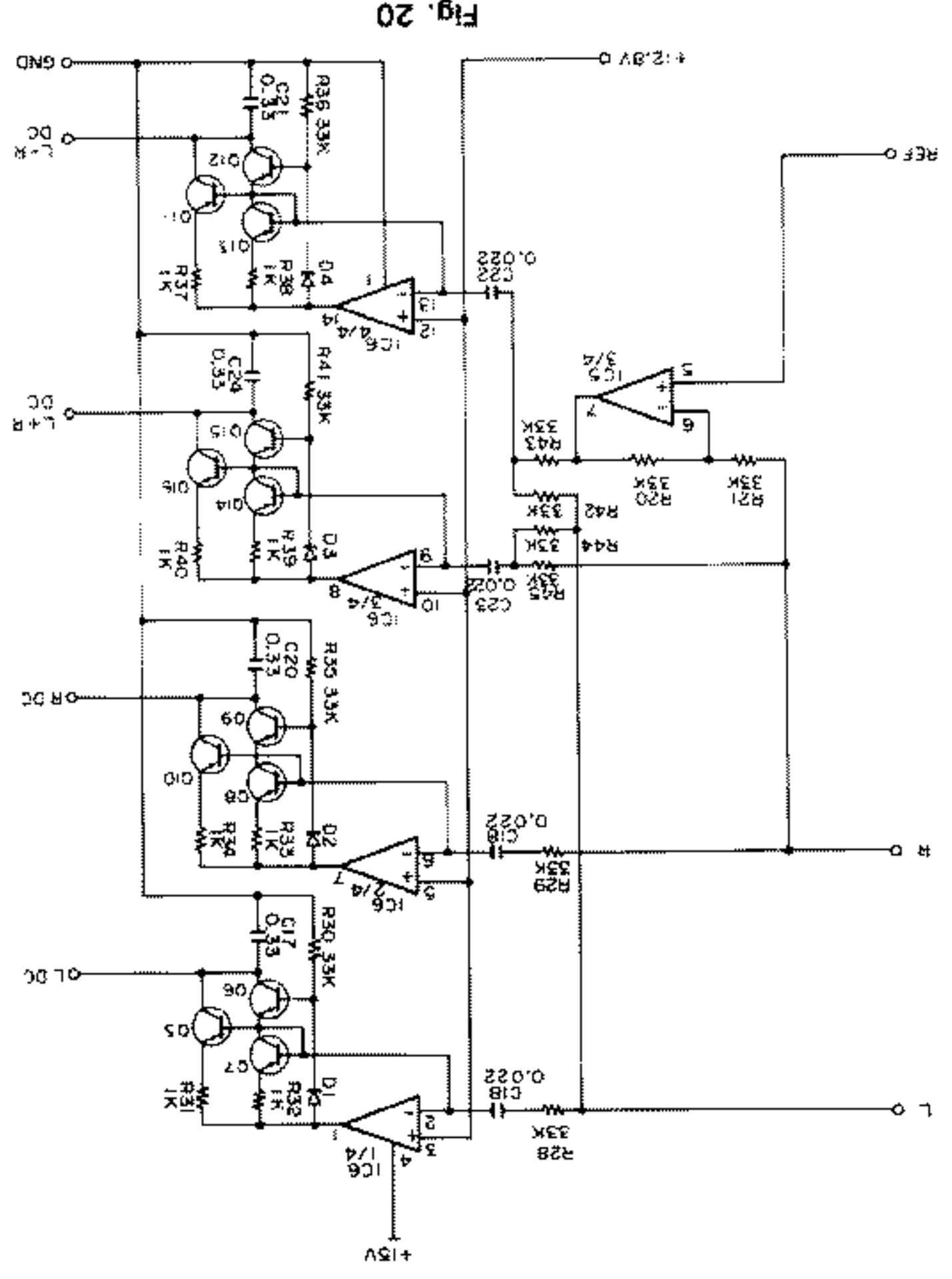


Fig. 19

IC6: μPC4074 (X08-2280-00)
Signal Full-wave Rectifier Circuit (directionality DC level converter)
 This is a full-wave rectifier circuit using operation amplifiers. IC6 1/4 deals with L-ch rectification, 2/4 its deals with R-ch rectification, and 3/4 adds the L-ch and R-ch signals together into "L + R" by R44 and R45 and deals with C-ch rectification, and 4/4 adds the R-ch signal inverted in IC5 3/4 and the L-ch signal together into "L-R" by R42 and R43 and deals with S-ch rectification. In addition, C17, C20, C21, C24 are smoothing capacitors which work after rectification. Any of these capacitors provides a DC output for each channel.

CIRCUIT DESCRIPTION

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IC4: TC4052BP (X08-2280-00)
IC5: NJM4052BP (X08-2280-00)
Noise/Source Selection and Band Pass Filters
 IC4 acts to select between the source signal and the noise sequencer output signal. 1X and 1Y are inputs of the noise sequencer output signal, and 0X and 0Y are of the source signal. IC5 1/4 and 2/4 are band pass filters of 100 Hz to 7 kHz.

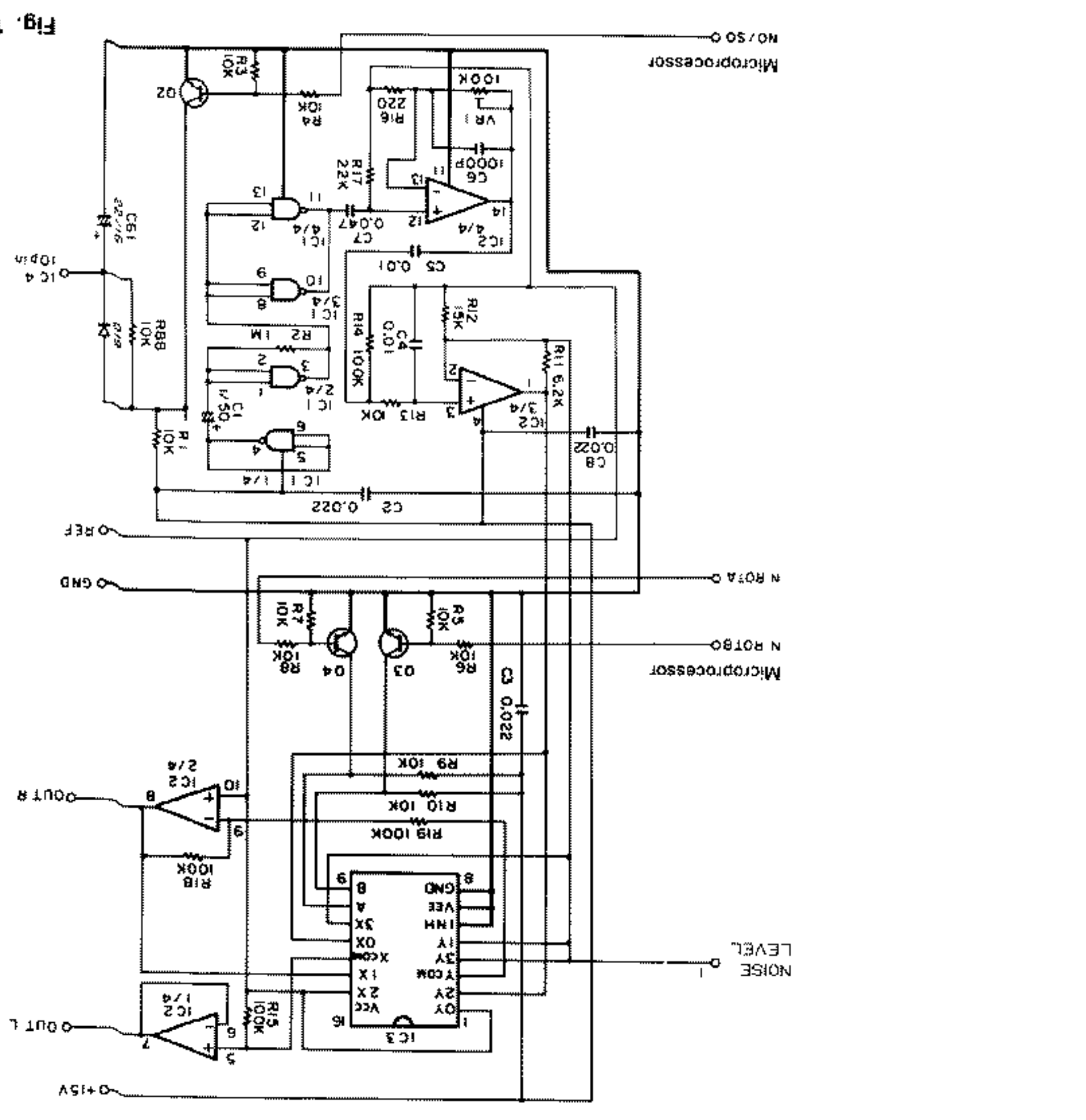


Fig. 18

LCH	FCII	2X, 2Y	1X, 1Y	0X, 0Y
	CCH	3X, 3Y		
	SCM			

IC1 is the white noise generation, **IC2** 4/4 is an amplifier and **IC2** 3/4 is a buffer amplifier serving as a band pass filter of which 500 Hz appearing like a summit is characteristic. In addition, the output voltage is available in +3 dB or 0 dB. **IC3**, which is an analog switch unit, is controlled by **NROT**A and **NROT**B of the microprocessor to encode C-ch, S-ch, L-ch and R-ch signals.
 The encoded signals are as follows:
 R-ch signals:
 0X, 0Y
 1X, 1Y
 2X, 2Y
 3X, 3Y
 LCH
 FCII
 2X, 2Y
 1X, 1Y
 0X, 0Y
 SCM

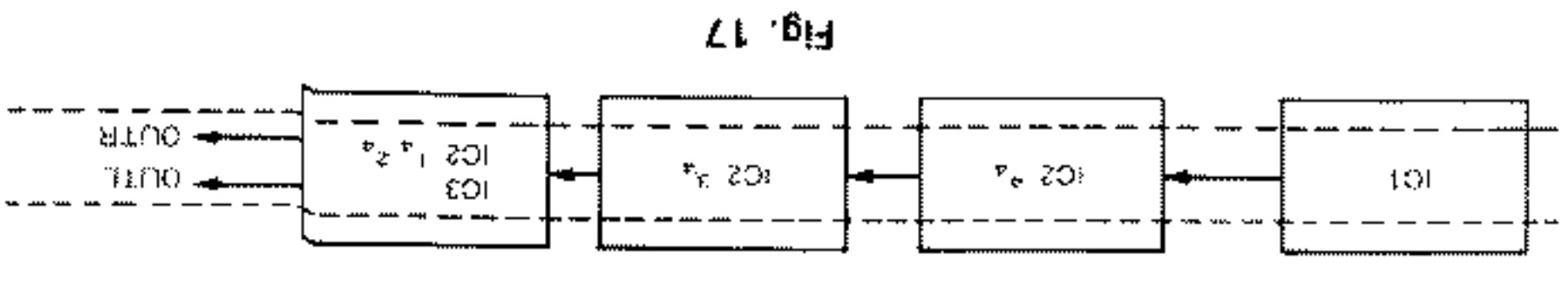


Fig. 17

IC1-IC3: TC40110BP/NJM2058/TC4052BP (X08-2280-00)
Noise Sequencer

CIRCUIT DESCRIPTION

KA-V7000

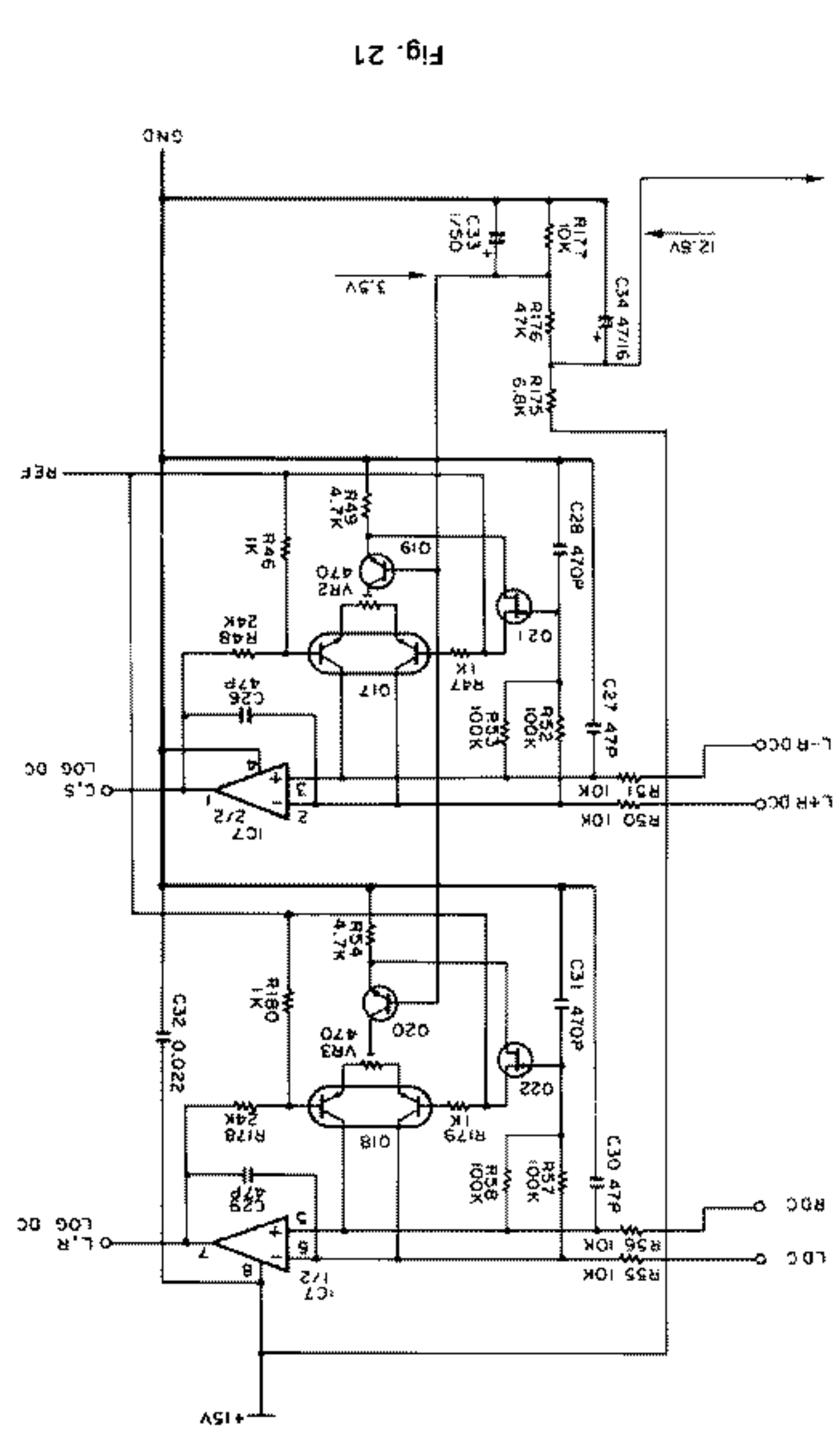


Fig. 21

IC7: μPC4072C (X08-2280-00)
Differential Logarithmic Amplifiers
 The difference between inputs **LDC** and **RDC** appears as a positive. Likewise, when **L + RDC > L - RDC**, it is negative while when **L + RDC < L - RDC**, it is positive. The logarithmic output, in this way, when **LDC > RDC**, it is negative against the reference voltage, while when **LDC < RDC**, it is positive against the reference voltage.

CIRCUIT DESCRIPTION

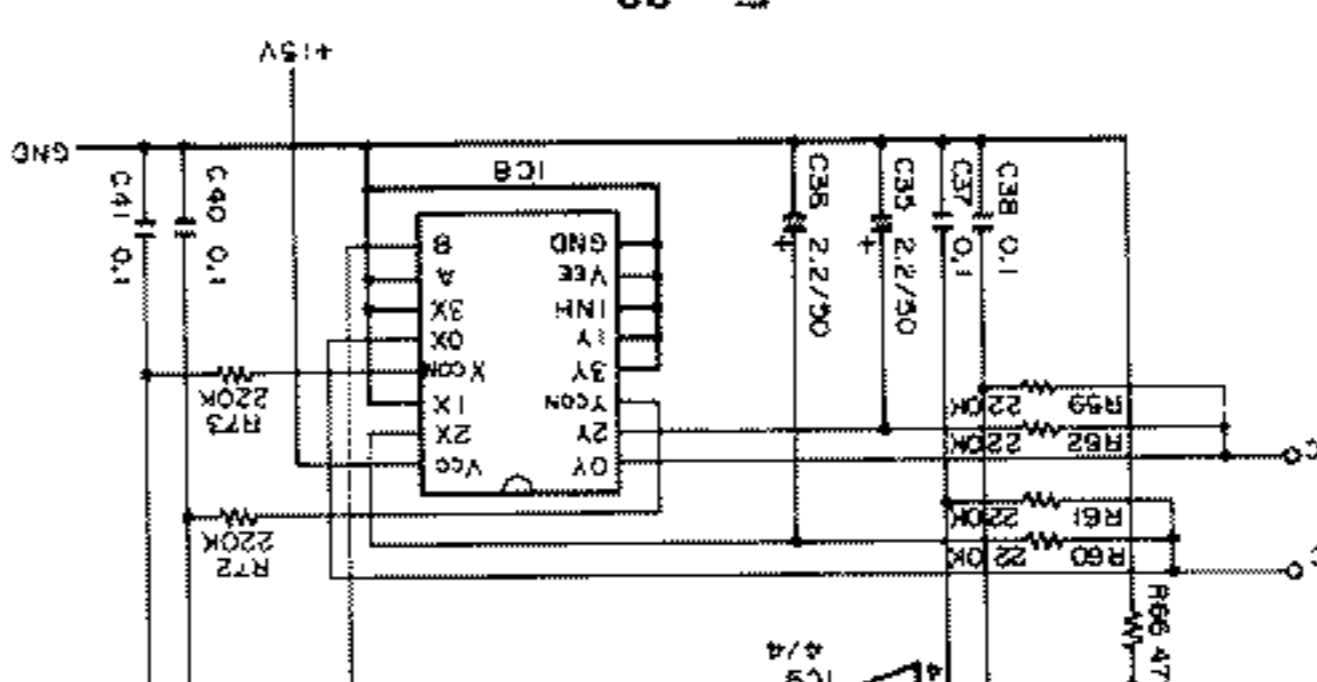
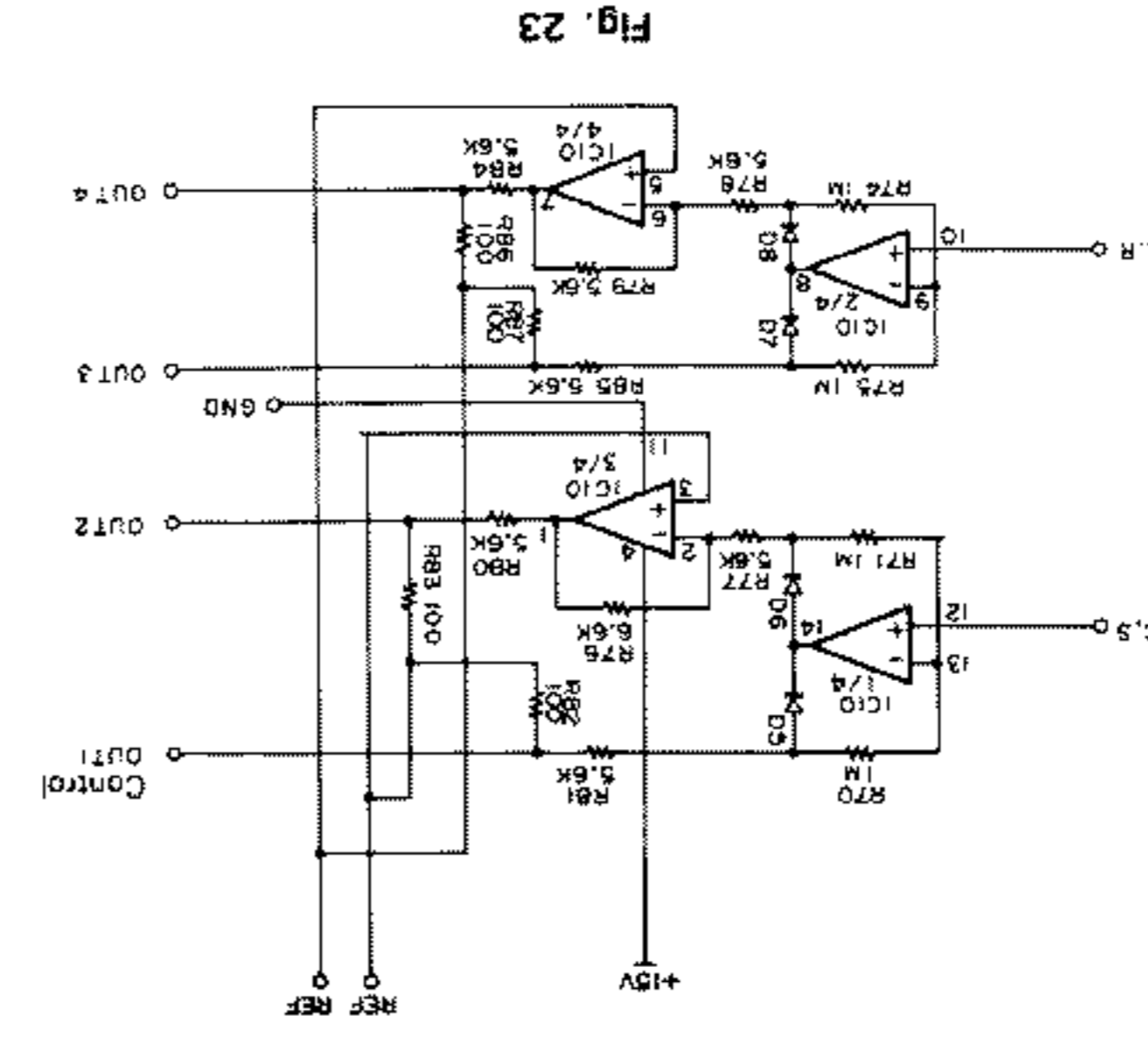
KA-V7000

The signals emitted from the window comparator and time constant selection circuit becomes inputs to this VCA drive circuit.

IC10 2/4, when the L-ch/R-ch input is negative against the reference voltage, half-wave rectifies by D7 and R8 the negative voltage. Whereas when it is positive, IC10 2/4 half-wave rectifies by D8 and R8 the positive half in like manner, and then the half-wave rectification signal is inverted as being negative against the reference level.

Likewise, the C-ch/S-ch input is processed in the like manner. In this drive, OUT1-OUT4 are thus set negative against the reference level to control IC11.

VCA Drive
IC10: μ PC4074 (X08-2280-00)



Block Diagram:

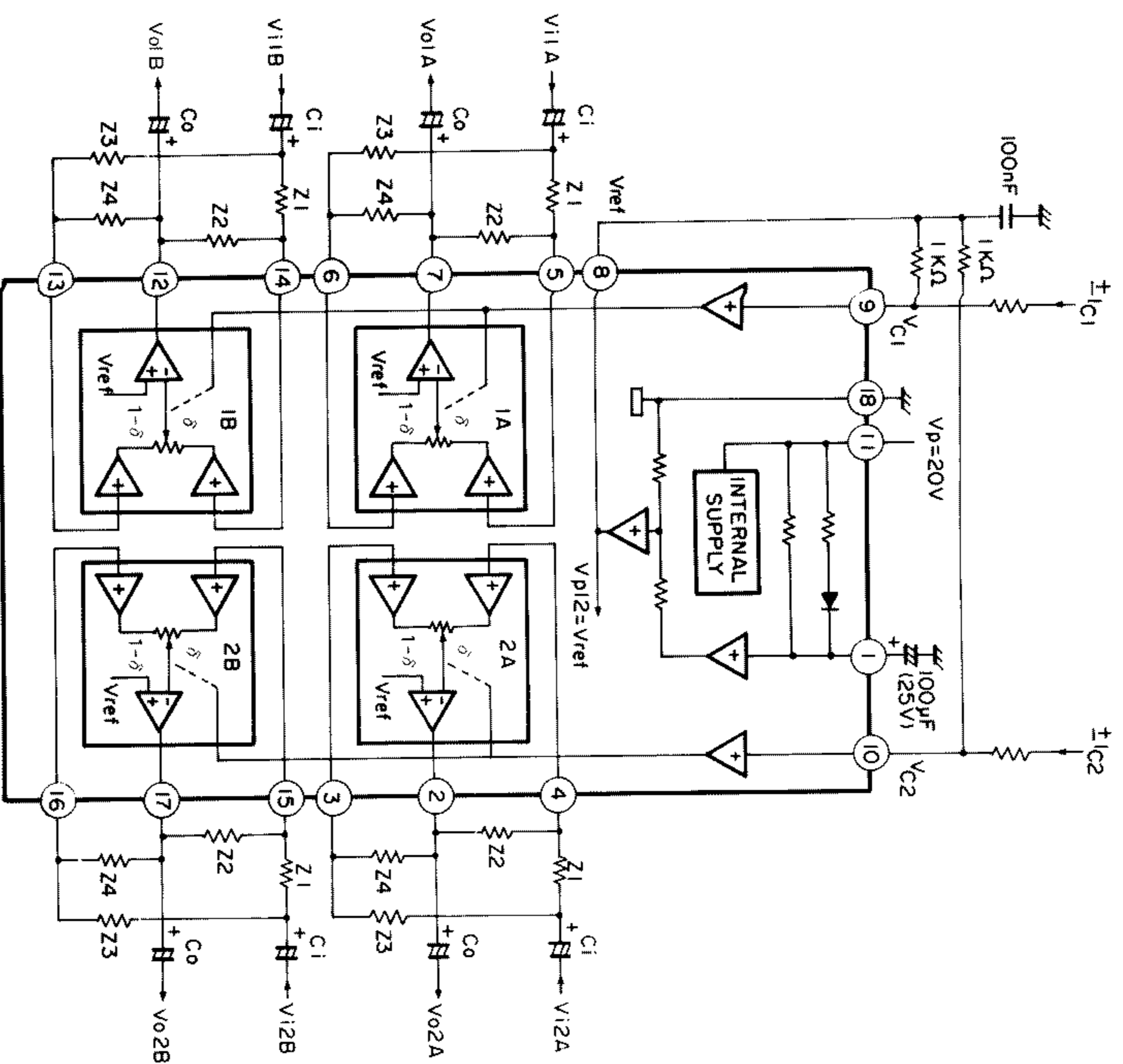


Fig. 25

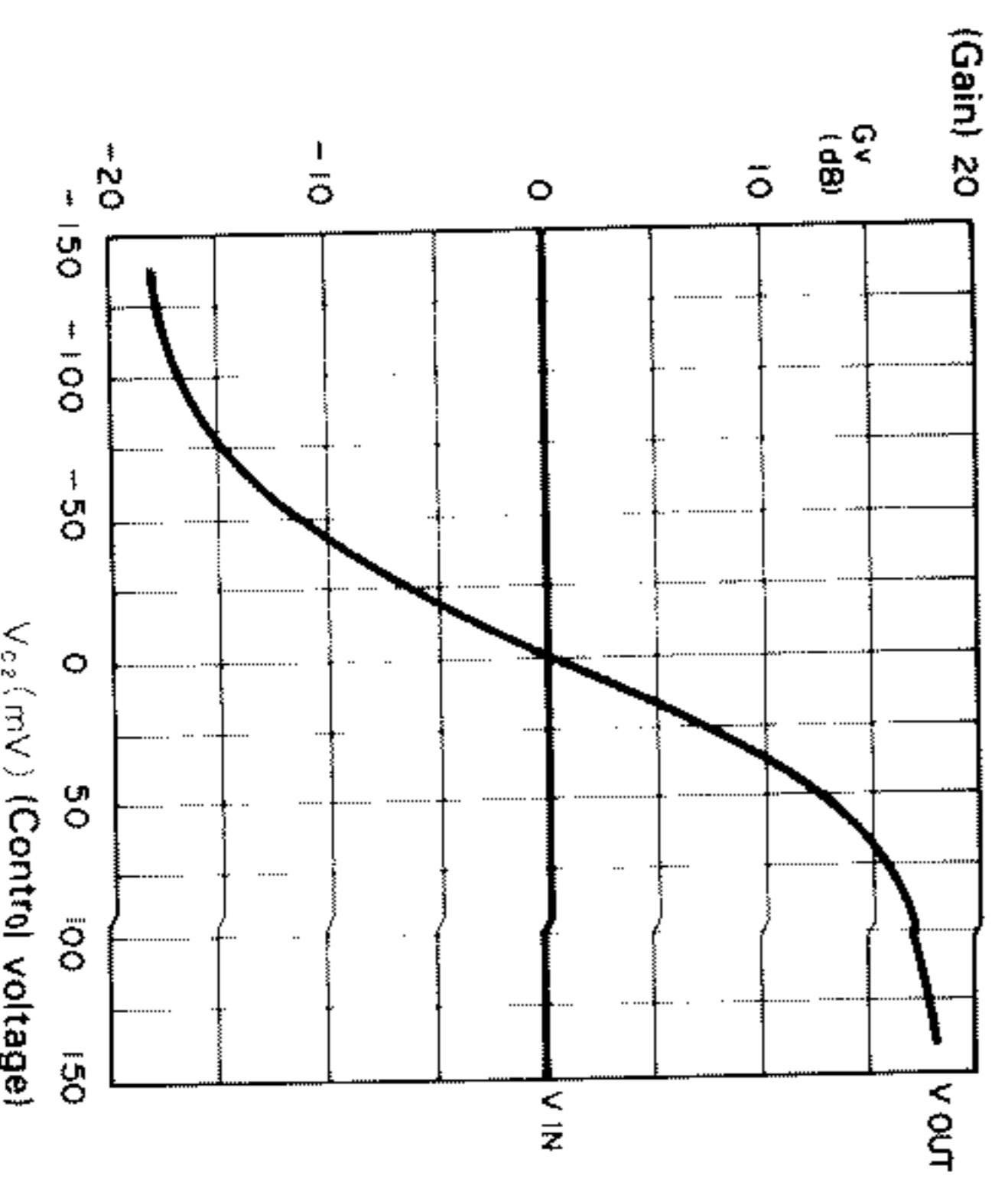


Fig. 26

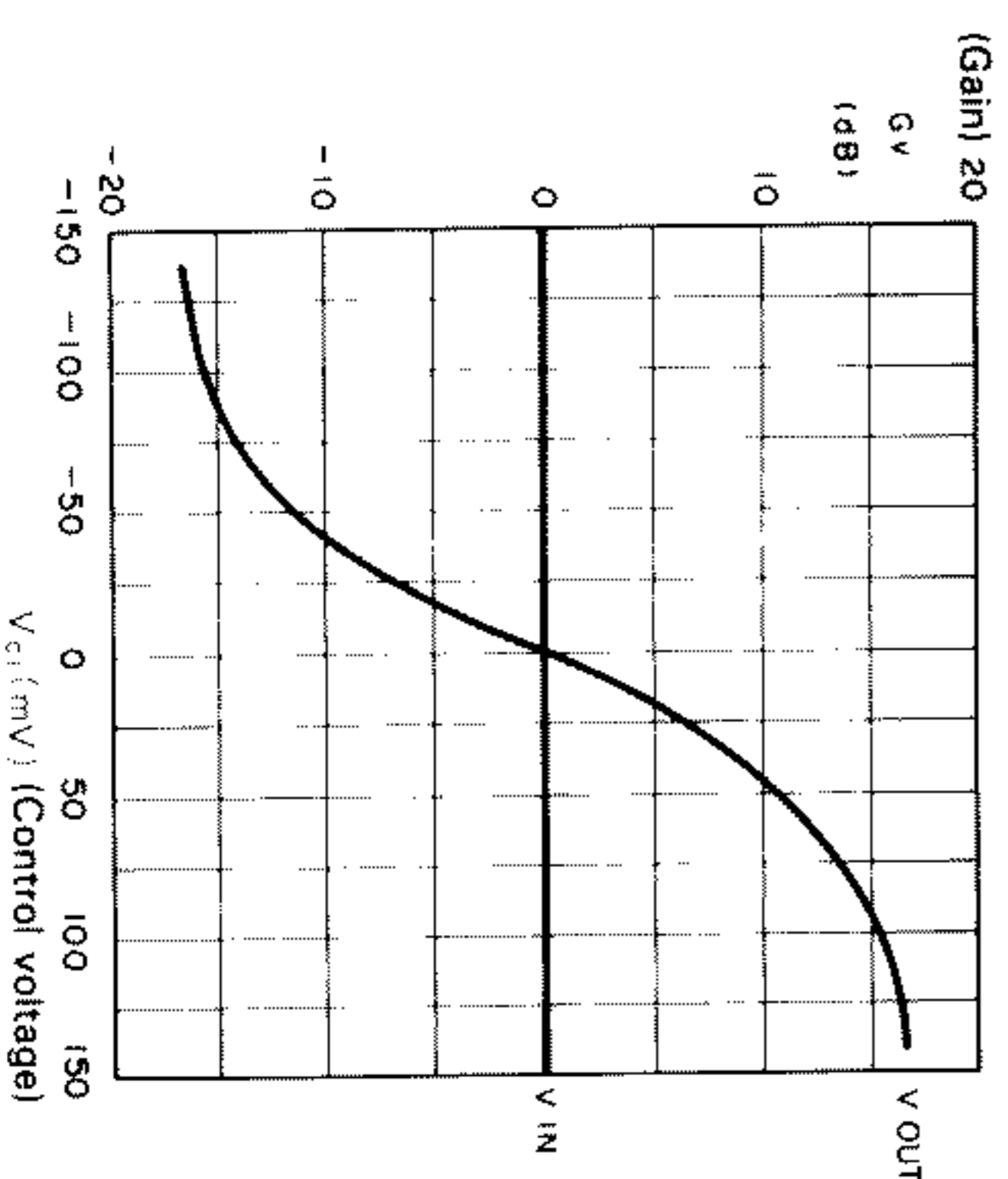


Fig. 27

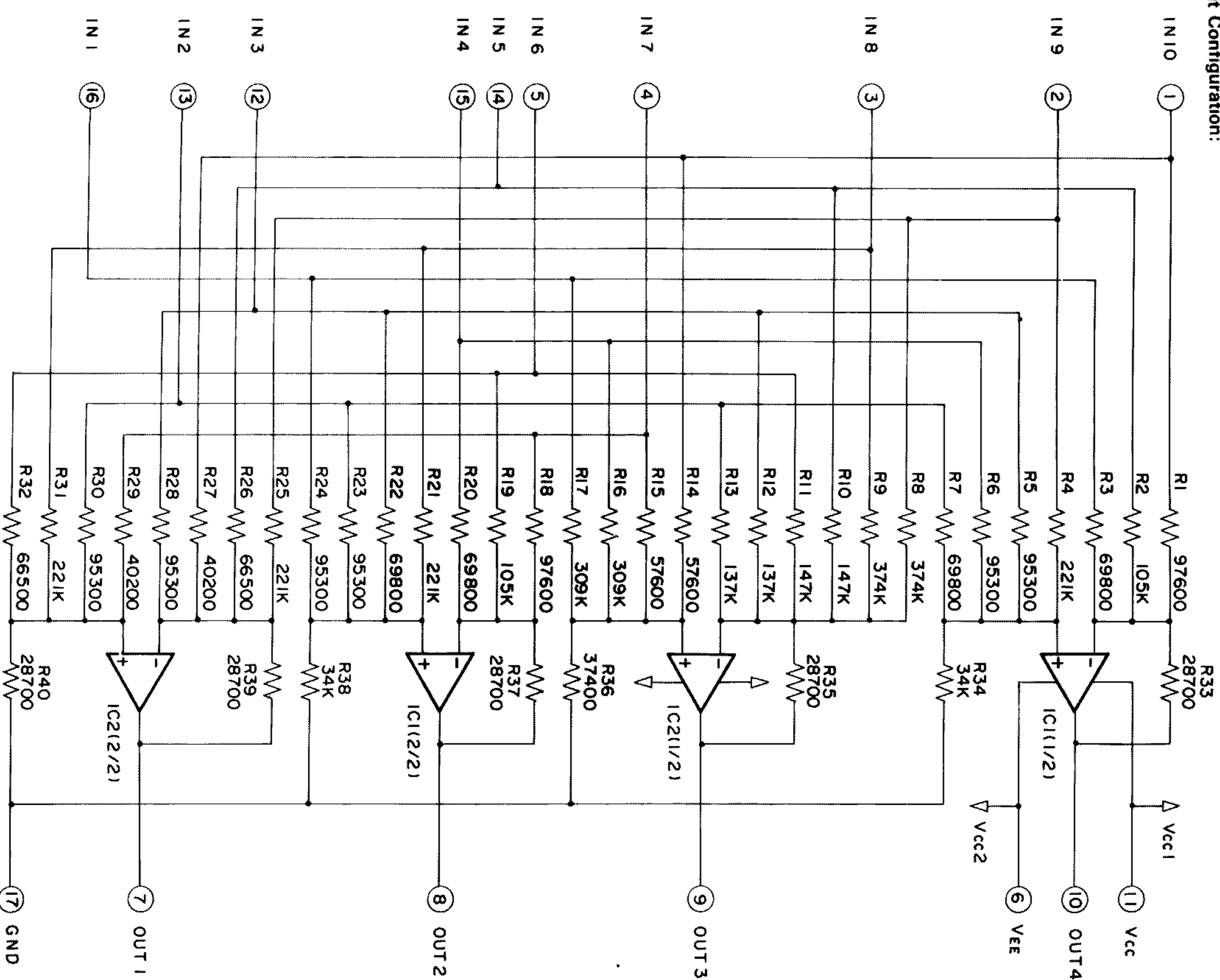


Fig. 27

IC13: ASR102 (X08-2280-00)

Addition and Subtraction Circuit

The eight signals created by the VCA circuit are input to pins 1~4, 12, 13, 15 and 16. L-ch, C-ch, R-ch and S-ch signals thus appear as combined outputs in pins 10, 9, 8 and 7, respectively.

Combining Network (DSR102):

Circuit Configuration:

KA-V7000

CIRCUIT DESCRIPTION

DSR102 IN-OUT LEVEL & MODE
INPUT 10 V (-) = INVERTER OUT

Pin No.	Function	Pin No.	Function
1	Rect 1	9	THD Trim 2
2	Rect IN 1	10	OUT 2
3	ΔG Cell IN 1	11	R ₂
4	GND	12	I ₁ 2
5	I ₁ 1	13	V _{CC}
6	R ₁ 1	14	ΔG Cell IN 2
7	OUT 1	15	Rect IN 2
8	THD Trim 1	16	C _{rect}

Table 8

Pin No.	Function	Pin No.	Function
1	0	1	3.0
2	3.0	2	-2.0
3	-3.0	3	3.0
4	0	4	0.9
5	-4.3	5	-2.0
6	4.3	6	-2.0
7	7.2	7	-2.9
8	-1.3	8	-0.8
9	-1.3	9	-0.8
10	-7.2	10	5.0

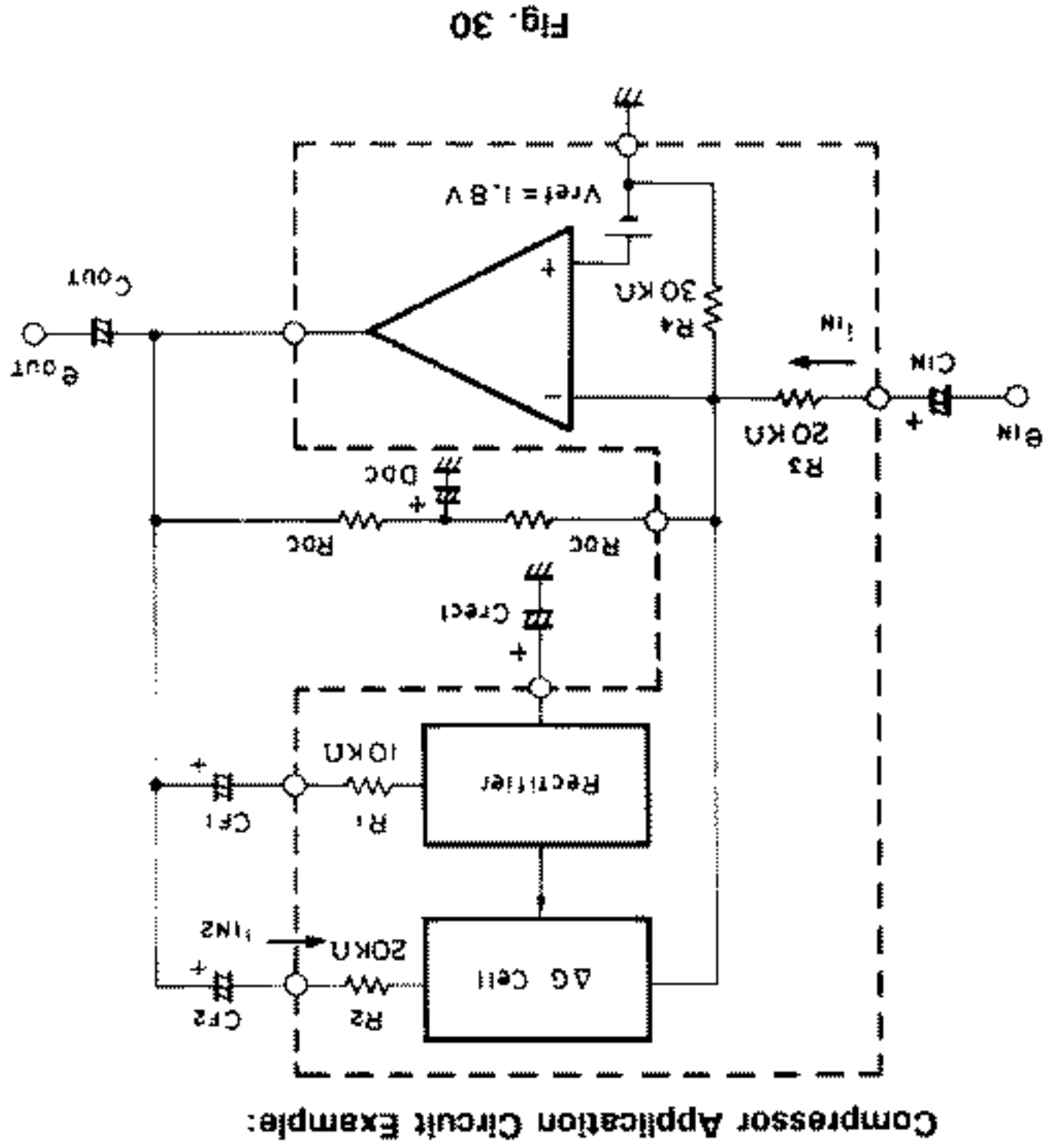
KA-V7000

CIRCUIT DESCRIPTION

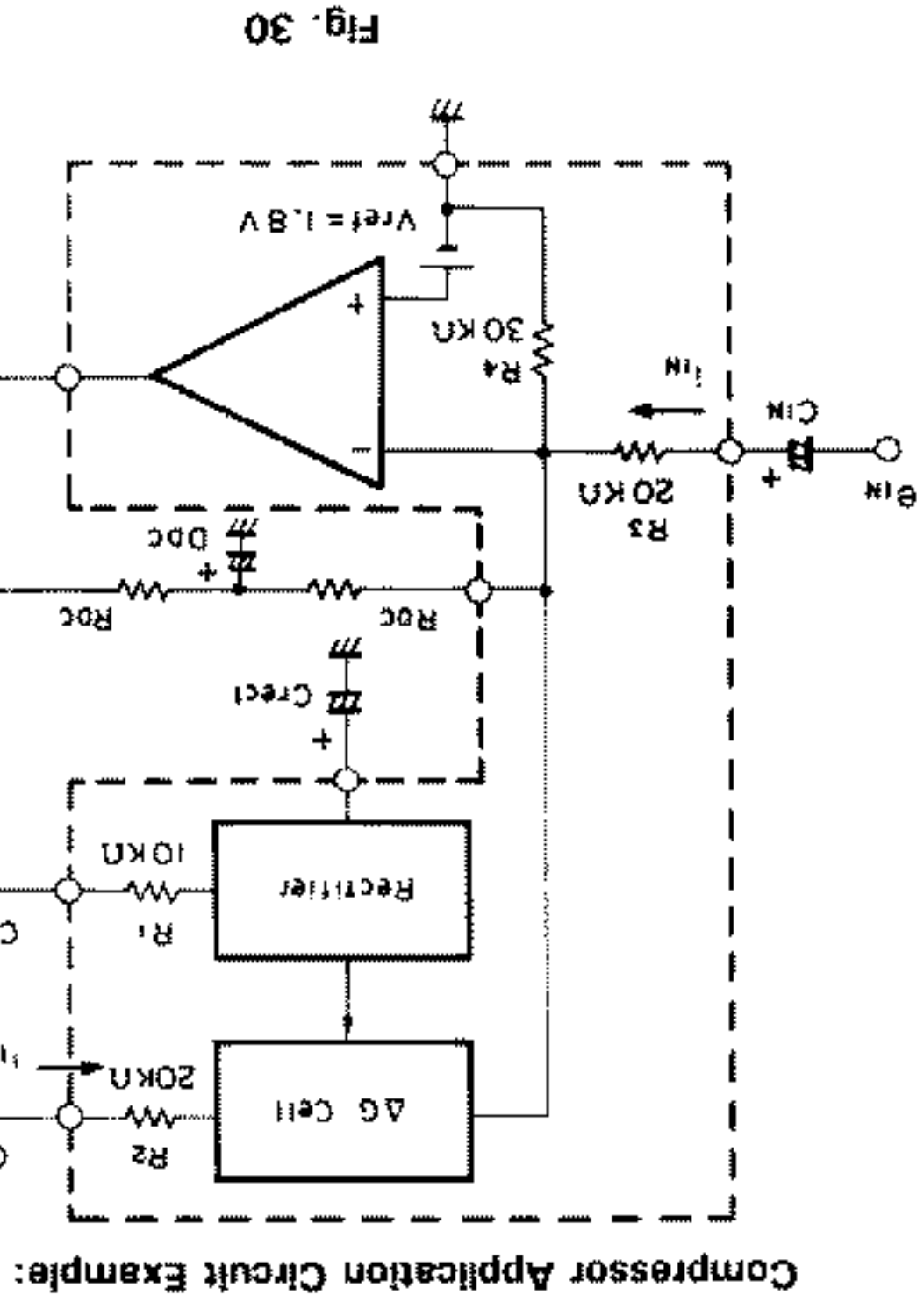
Pin Connections:

Pin No.	Function	Pin No.	Function
1	Rect 1	9	THD Trim 2
2	Rect IN 1	10	OUT 2
3	ΔG Cell IN 1	11	R ₂
4	GND	12	I ₁ 2
5	I ₁ 1	13	V _{CC}
6	R ₁ 1	14	ΔG Cell IN 2
7	OUT 1	15	Rect IN 2
8	THD Trim 1	16	C _{rect}

Table 9



Compressor Application Circuit Example:



Operation as Expander:

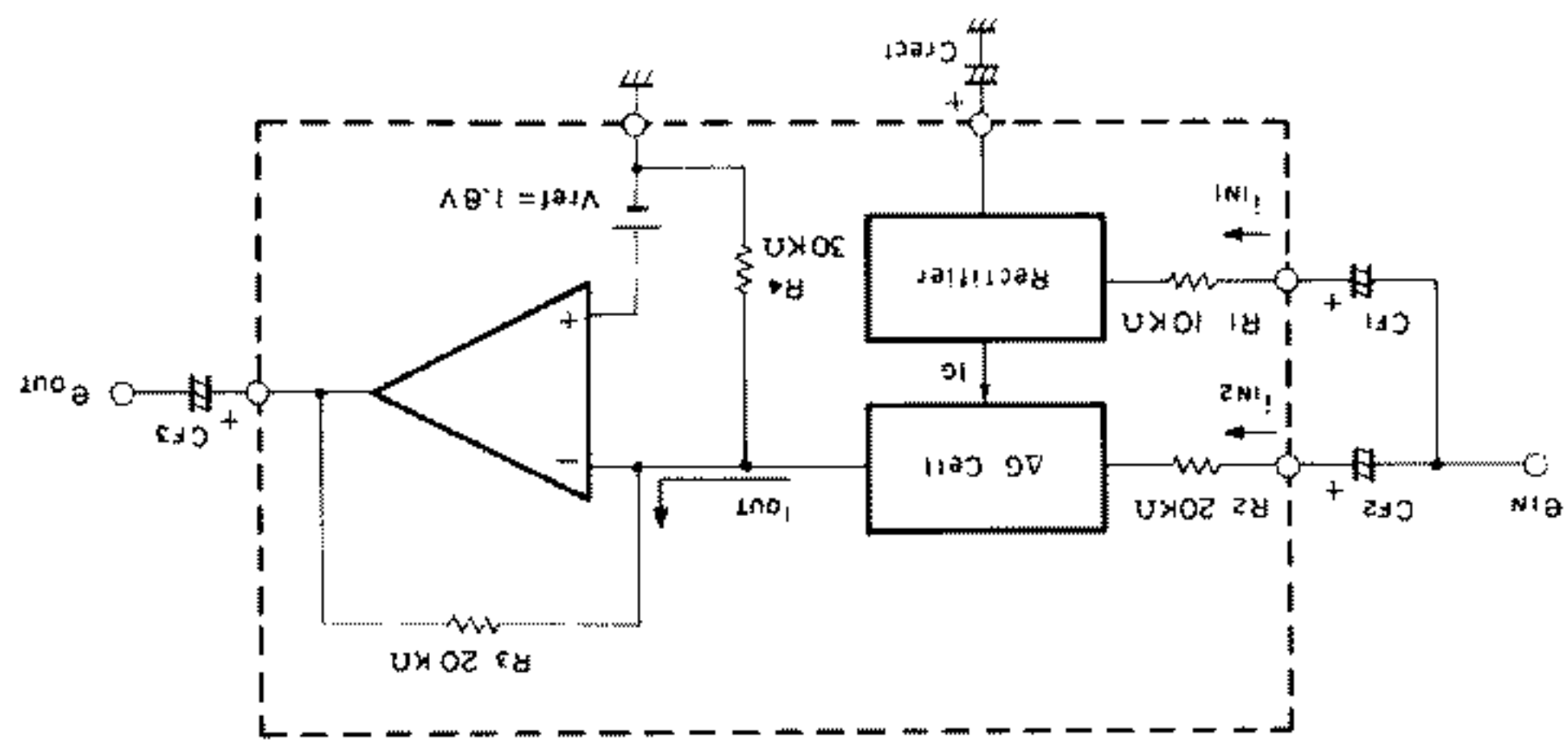


Fig. 31

CIRCUIT DESCRIPTION

KA-V7000

CIRCUIT DESCRIPTION

KA-V7000

IC12, IC13: μPC1671C (X14-2490-00)
Compressor and Expander

Analog Compressor Circuit:
Here, noise reduction is applied to offset the drop in S/N through the digital delay circuit. In the compressor circuit, the input signal is compressed down to 1/2 in dynamic range and passed through a digital delay circuit. After that, in the expander circuit, it is expanded up to 2 times to ensure the original dynamic range. This μPC1671 is a high-performance integrated circuit which permits the configuration of a high-precision analog compressor with a small number of parts connected externally. Within one package, this unit has a reference voltage circuit, operation amplifiers, gain cells and rectifiers for two systems. This unit permits such applications as limiter, voltage controlled amplifier, home-use equipment noise reduction circuit, etc. including a telephone system compressor.

Standard Transmission Characteristics:

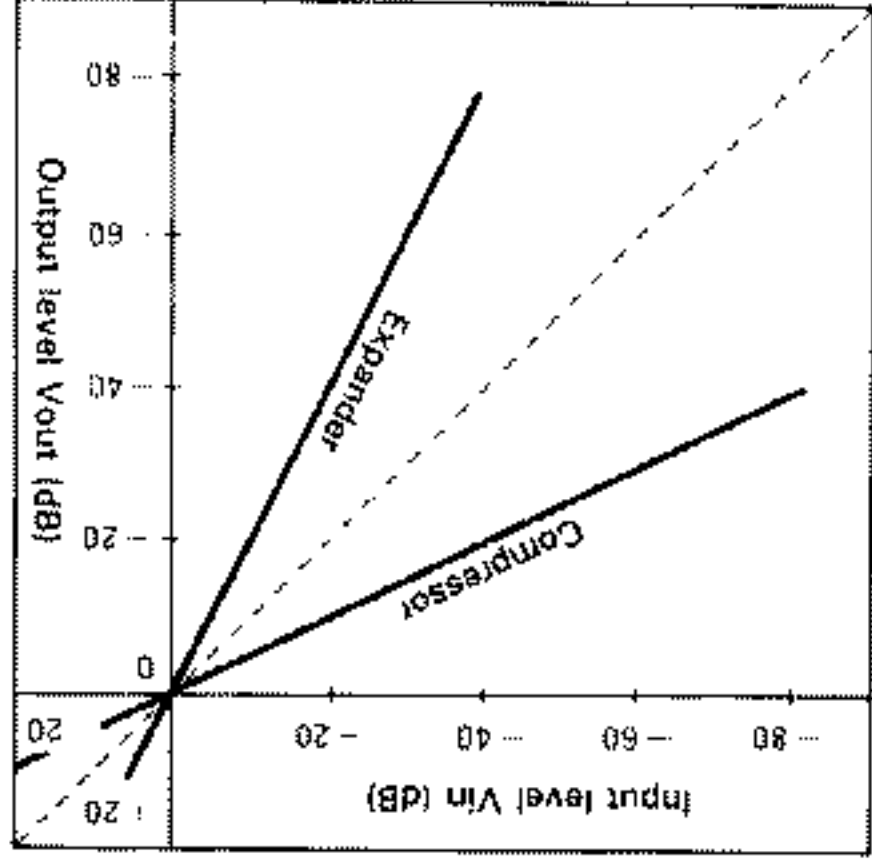


Fig. 28

Standard Application Circuit Example:

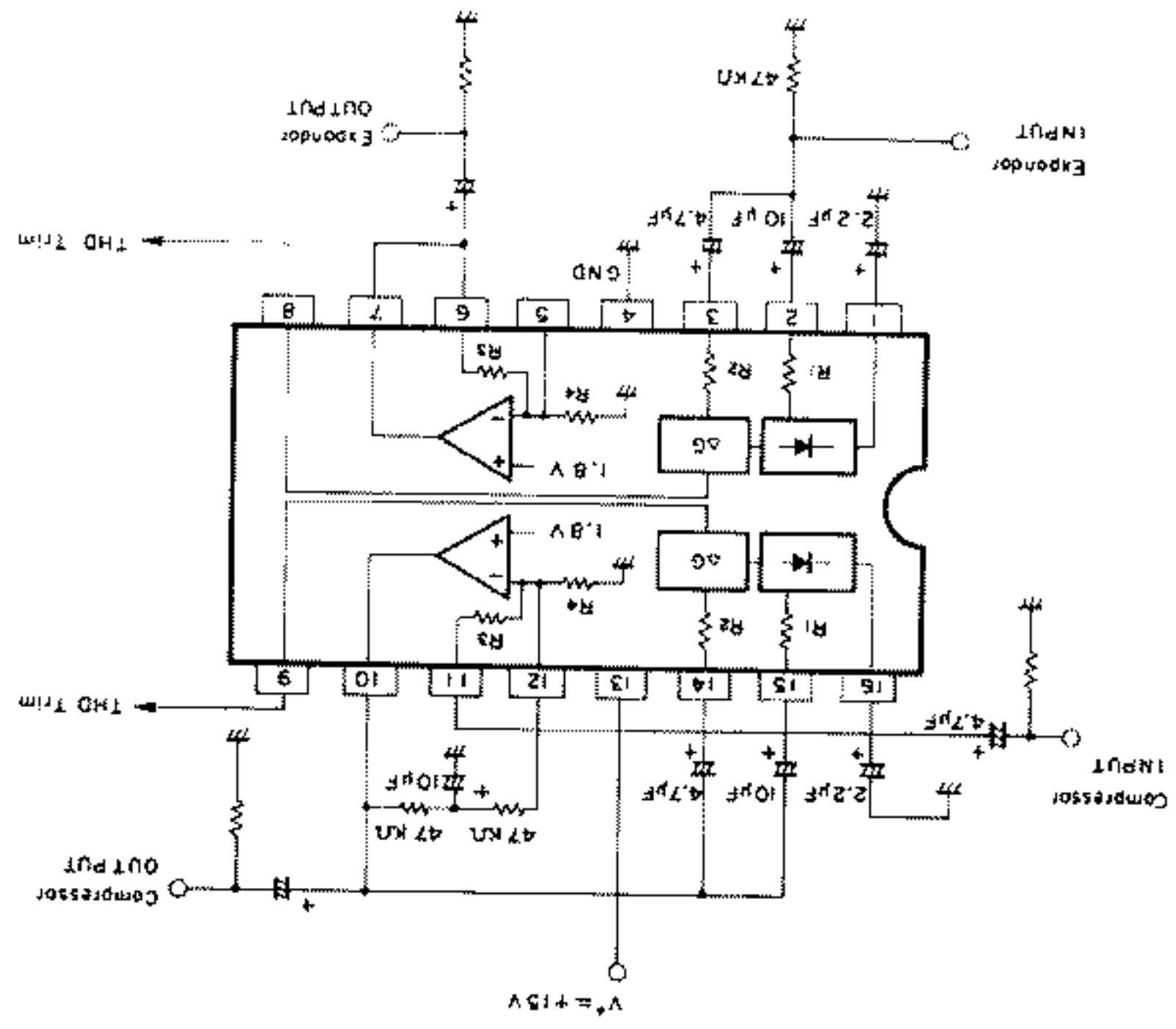


Fig. 29

Head Room and Noise Level Theoretical Values for Compressor and Expander Circuit

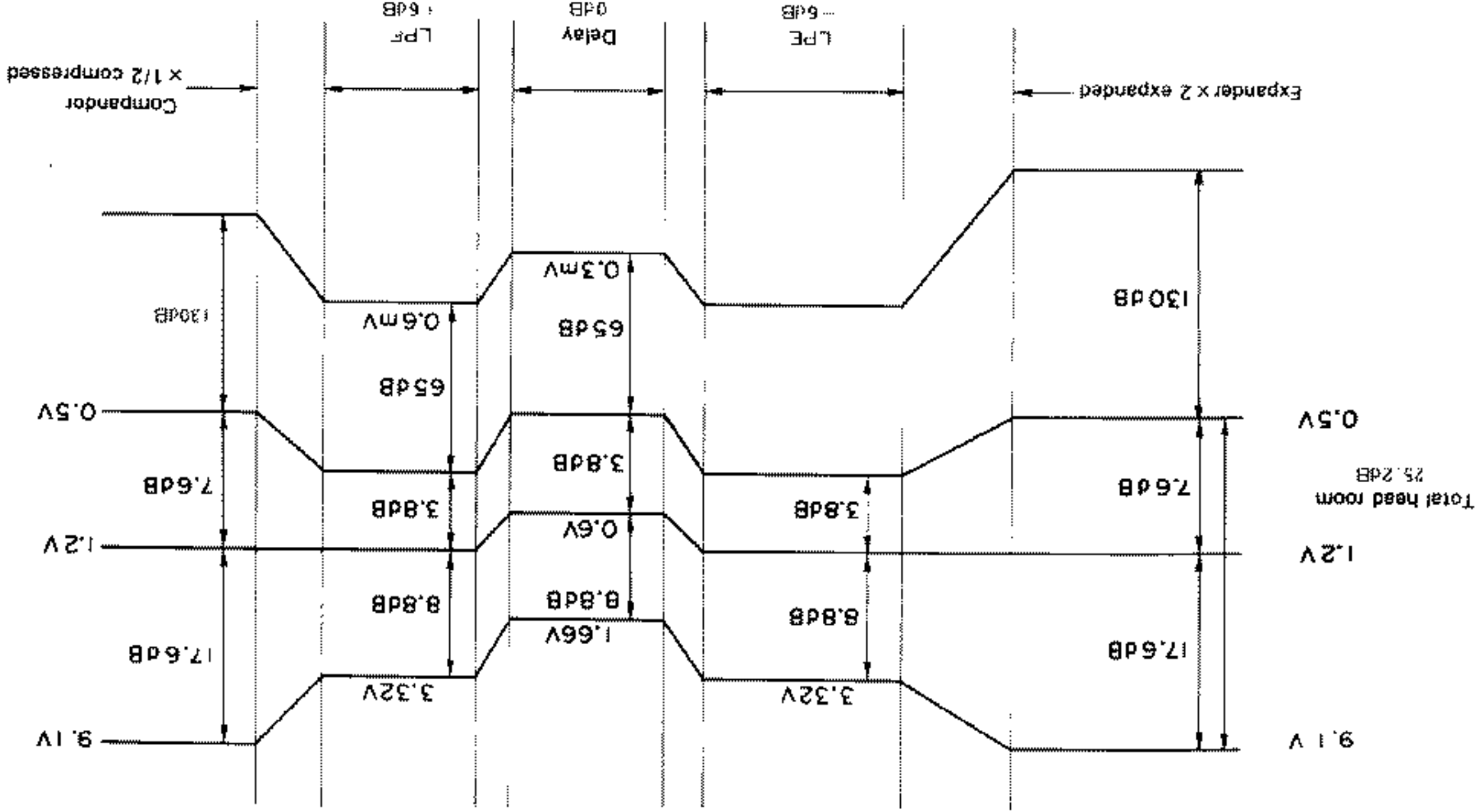
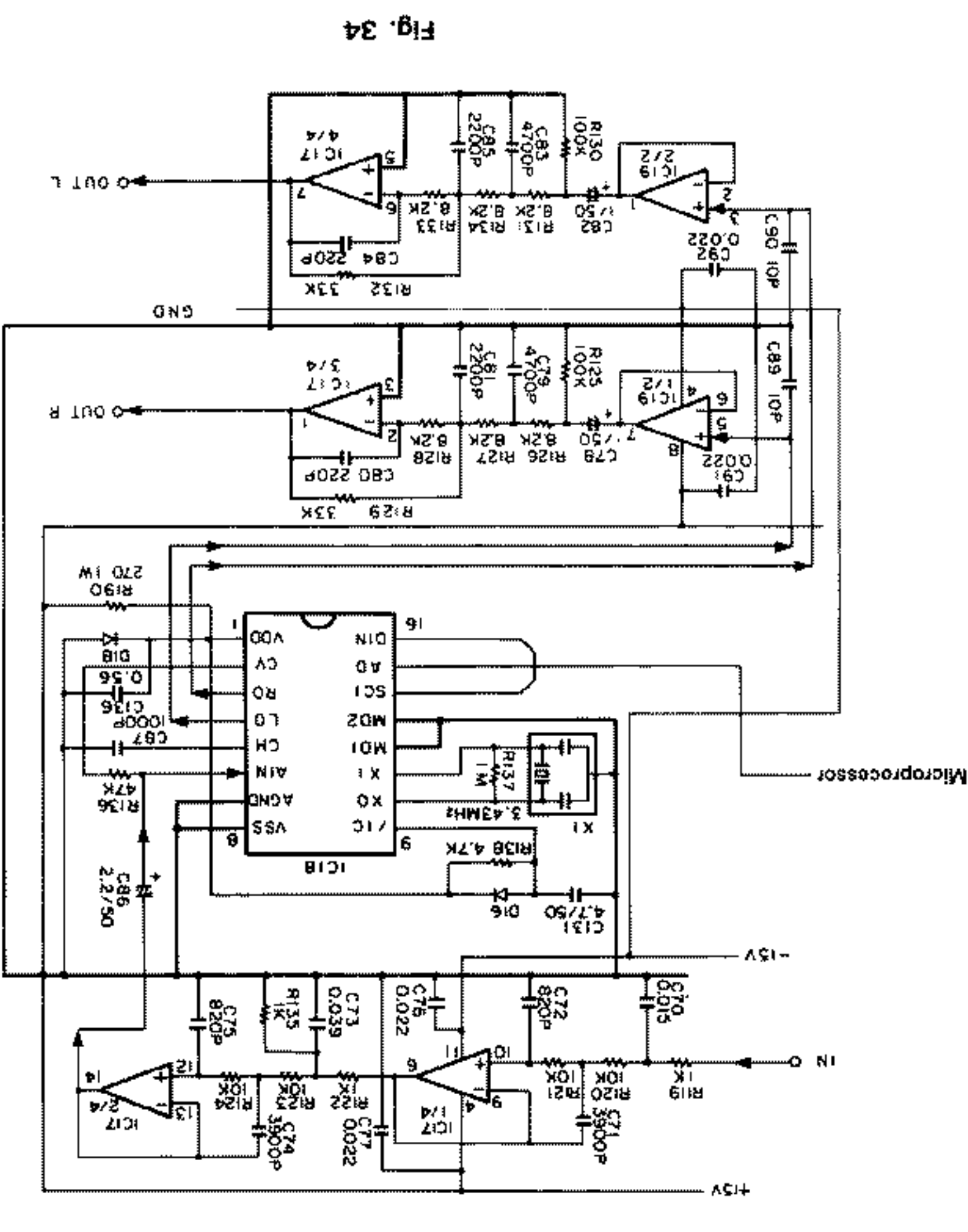
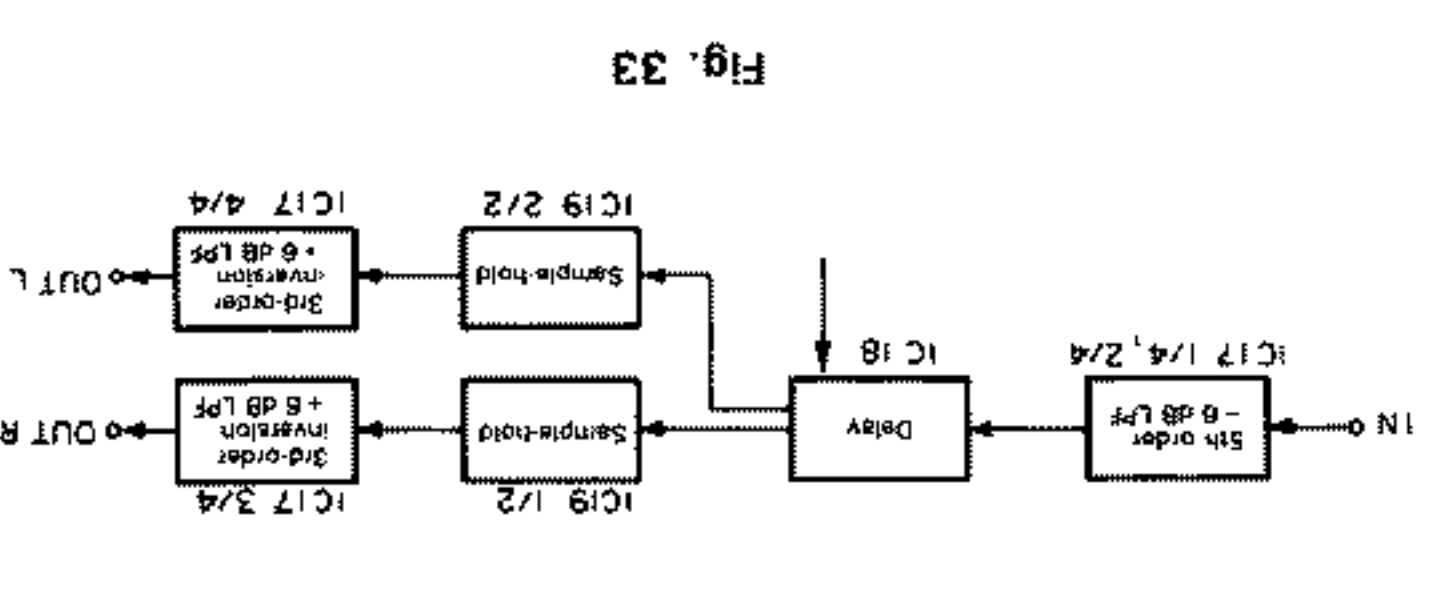


Fig. 32



In the pro-logic mode, the delay output from IC17 4/4 is engaged for the rear speaker side. In the theater mode, the delay outputs from IC17 3/4 and 4/4 are engaged for the rear speaker side. In the stadium mode, the delay outputs from IC17 3/4 and 4/4 are engaged for the rear speaker side.



IC18: YM3428 (X08-2280-00) Digital Delay IC18, which is a 1-chip delay unit with 1 input system and 2 output systems, is all controlled by the serial data from the microprocessor. Here is employed a PCM method in a 14-bit mode.

CIRCUIT DESCRIPTION

KA-V7000

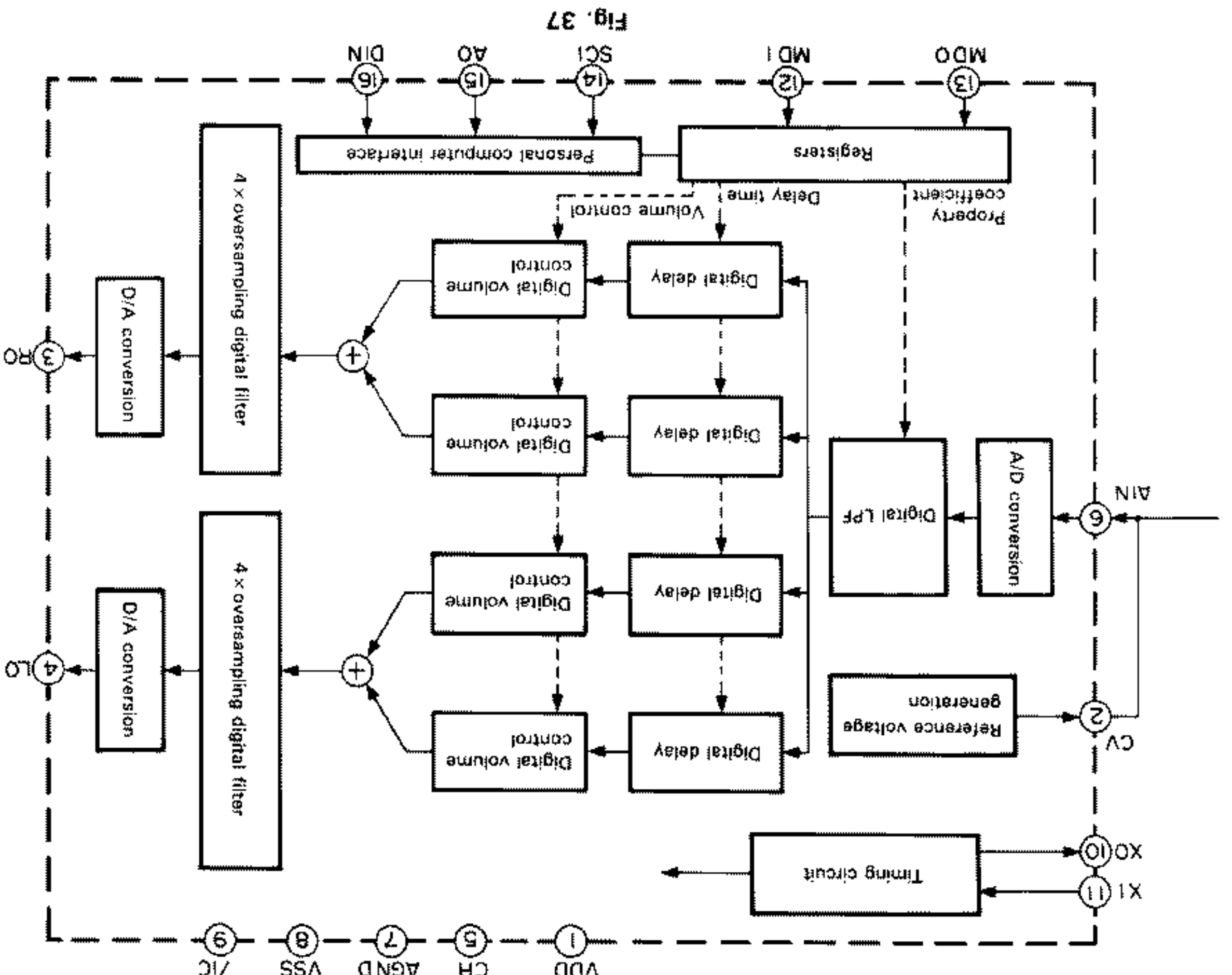


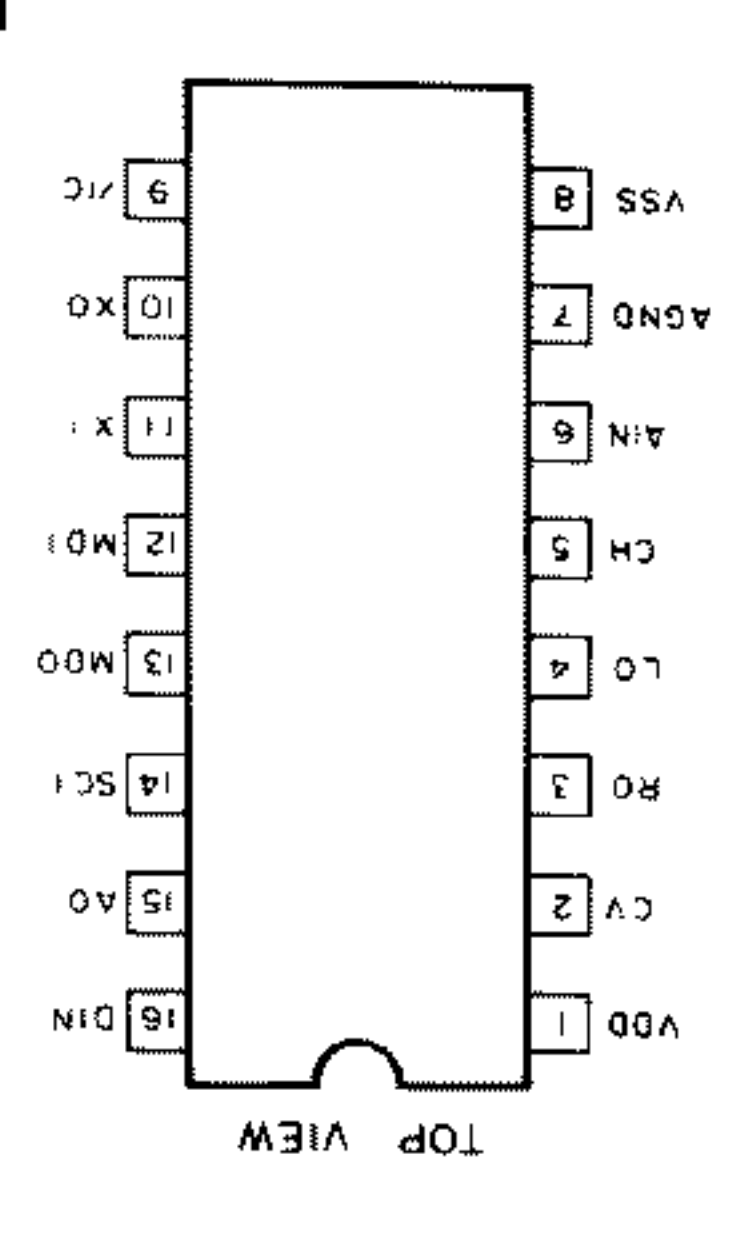
Table 9

Pin No.	Pin Name	I/O	Function
1	VDD	-	+5 V power supply
2	CV	O	A/D conversion reference voltage (+2.5 V) output
3	RO	O	R-ch output (D/A conversion analog output)
4	LO	O	L-ch output (D/A conversion analog output)
5	CH	O	Pin to externally connect sample-and-hold capacitor
6	AIN	I	Analog signal input (with the reference of CV voltage)
7	AGND	-	A/D and D/A converters grounding (External connection with VSS is necessary.)
8	VSS	-	System grounding of this LSI for digital system
9	/IC	* I	Reset
10	XO	O	Pin to connect crystal oscillator
11	XI	I	(XI is the clock pulse input pin when an external clock is used.)
12	MD 1	* I	Mode setting
13	MD 0	* I	Mode setting
14	SCI	I	Data shift clock pulse input when personal computer is used
15	AO	I	Address/data identification signal input when personal computer is used
16	DIN	I	Data input when personal computer is used

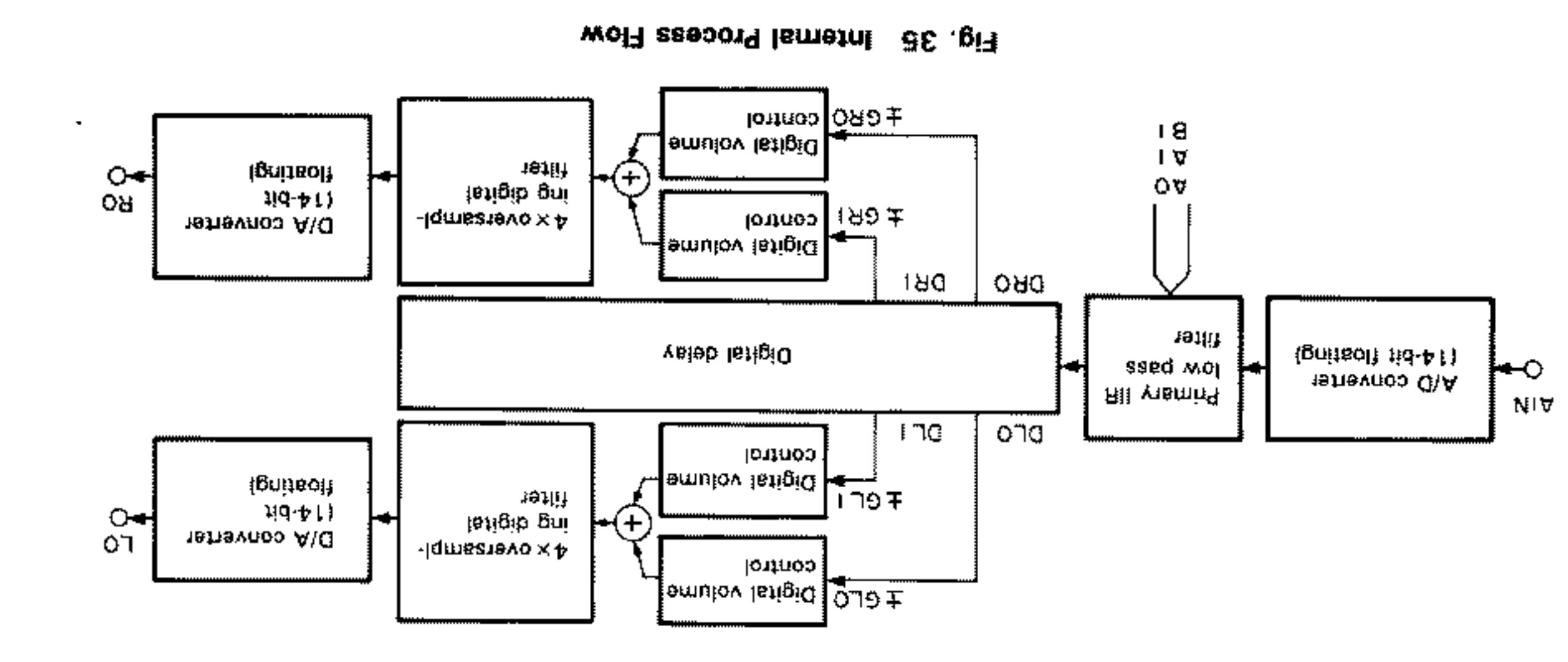
Any pin marked * has a built-in pull-up resistance.

CIRCUIT DESCRIPTION

KA-V7000



Notes: 1. This diagram is a top view.
2. A pin marked * is pulled up to VDD by a pull-up resistor.
3. (NC) means a not connected pin. (This pin should be unconnected for use.)



Function Outline: As shown in Fig. 35 Internal Processing Flow, the input analog signal from the AIN terminal is converted into a floating log digital form at a sampling rate of 24.9 kHz by the A/D converter operating in a 14-bit floating method, and is then entered to the primary IIR low pass filter in the next stage. This filter permits the cut-off frequency to be controlled by the input of coefficients to registers A0, A1 and B1 from the personal computer connected. The digital delay unit, which is made up of RAM, is provided with four output taps, each tap position switcheable by its associated one of registers DL0, DL1, DR0 or DR1. The outputs of these four taps are entered respectively to the four digital volume controls, and are therein subject to digital attenuation at coefficients given by their associated volume control. The digital input to a D/A converter is made at a sampling rate of 99.4 kHz, four times the original rate. In practice, these digital process systems are of DSP process. For a ROM program in an LSI, necessary parameters are set in a ROM as to obtain carefully selected properties with no coefficient so as to obtain a reflect band property of approx. -25 dB to neutralize the necessity for externally connected output low pass filters. The digital input to a D/A converter is made at a sampling rate of 99.4 kHz, four times the original rate. In practice, these digital process systems are of DSP process. For a ROM program in an LSI, necessary parameters are set in a ROM as to obtain a reflect band property of approx. -25 dB to neutralize the necessity for externally connected output low pass filters.

CIRCUIT DESCRIPTION

KA-V7000

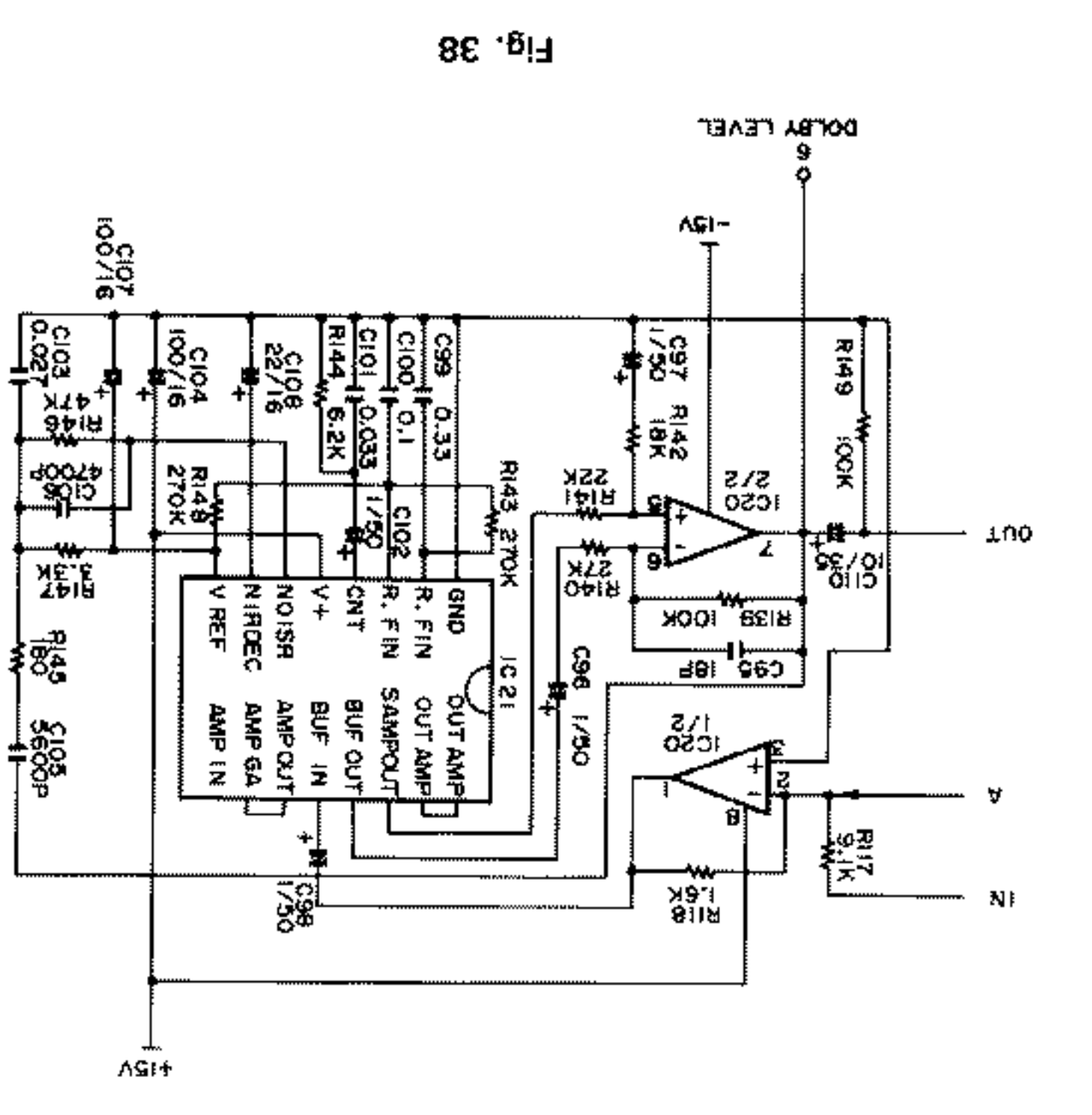


Table 10

Modified B-type processor decode characteristics.

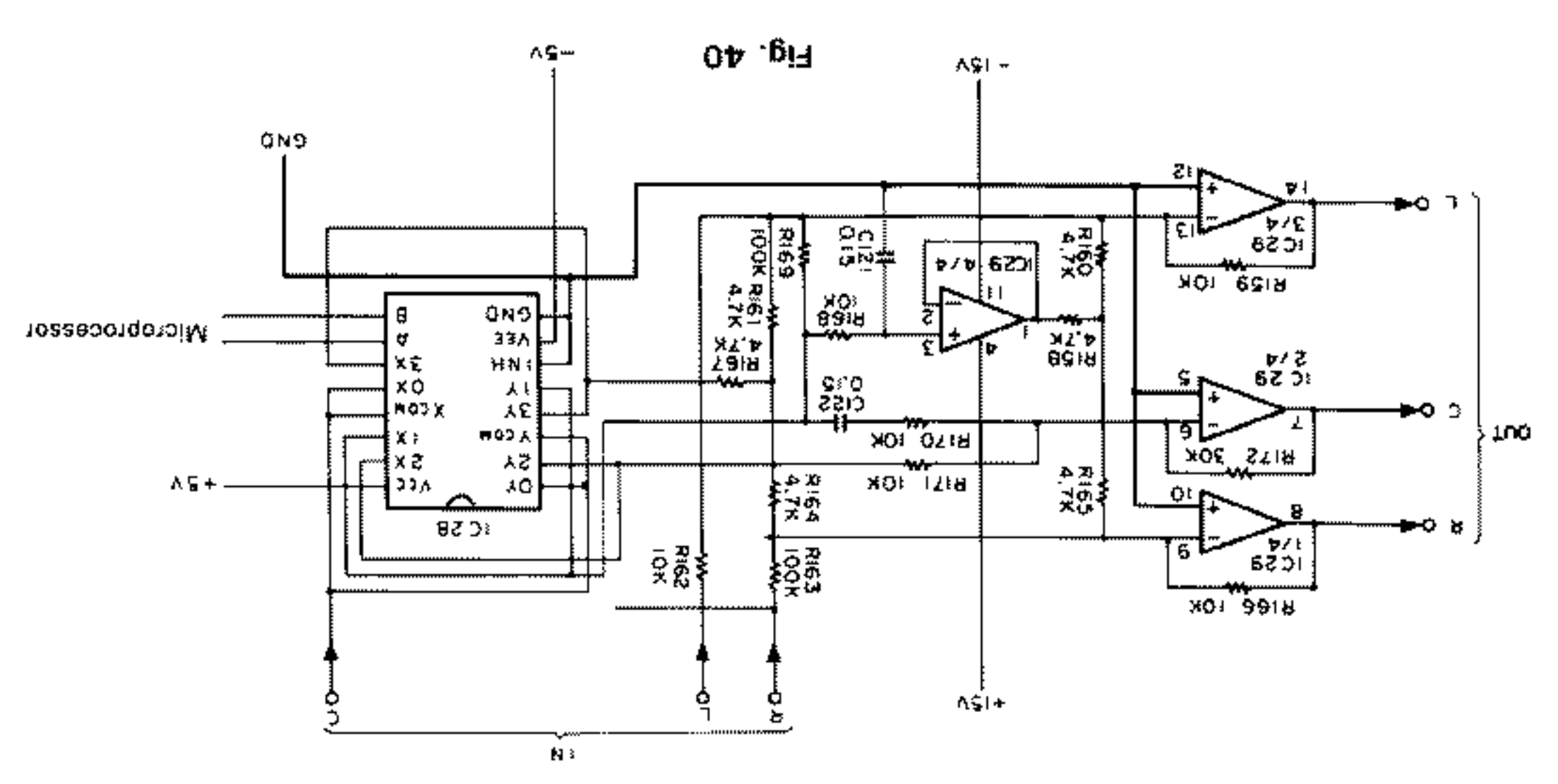
f _H	100	200	500	700	1.0K	1.5K	2.0K	3.0K	5.0K	7.0K	10.0K
dB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
dB	-5.0	-0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
dB	-10.0	0.0	-0.3	-0.4	-0.4	-0.4	-0.4	-0.3	-0.3	-0.3	-0.3
dB	-15.0	0.0	-0.8	-1.1	-1.4	-1.3	-1.2	-0.9	-0.7	-0.7	-0.7
dB	-20.0	0.0	-1.6	-2.4	-3.0	-2.4	-1.6	-0.8	-0.4	-0.4	-0.4
dB	-25.0	0.0	-3.8	-6.4	-9.9	-6.4	-2.8	-1.7	-0.9	-0.9	-0.9
dB	-30.0	0.0	-8.1	-17.7	-28.8	-17.7	-8.1	-4.9	-2.9	-2.9	-2.9
dB	-35.0	0.0	-17.7	-41.0	-65.0	-41.0	-17.7	-10.9	-6.4	-6.4	-6.4
dB	-40.0	0.0	-40.0	-80.0	-120.0	-80.0	-40.0	-25.0	-15.0	-15.0	-15.0

IC20: NJM45600-A (X08-2280-00)
IC21: LA2730 (X08-2280-00)

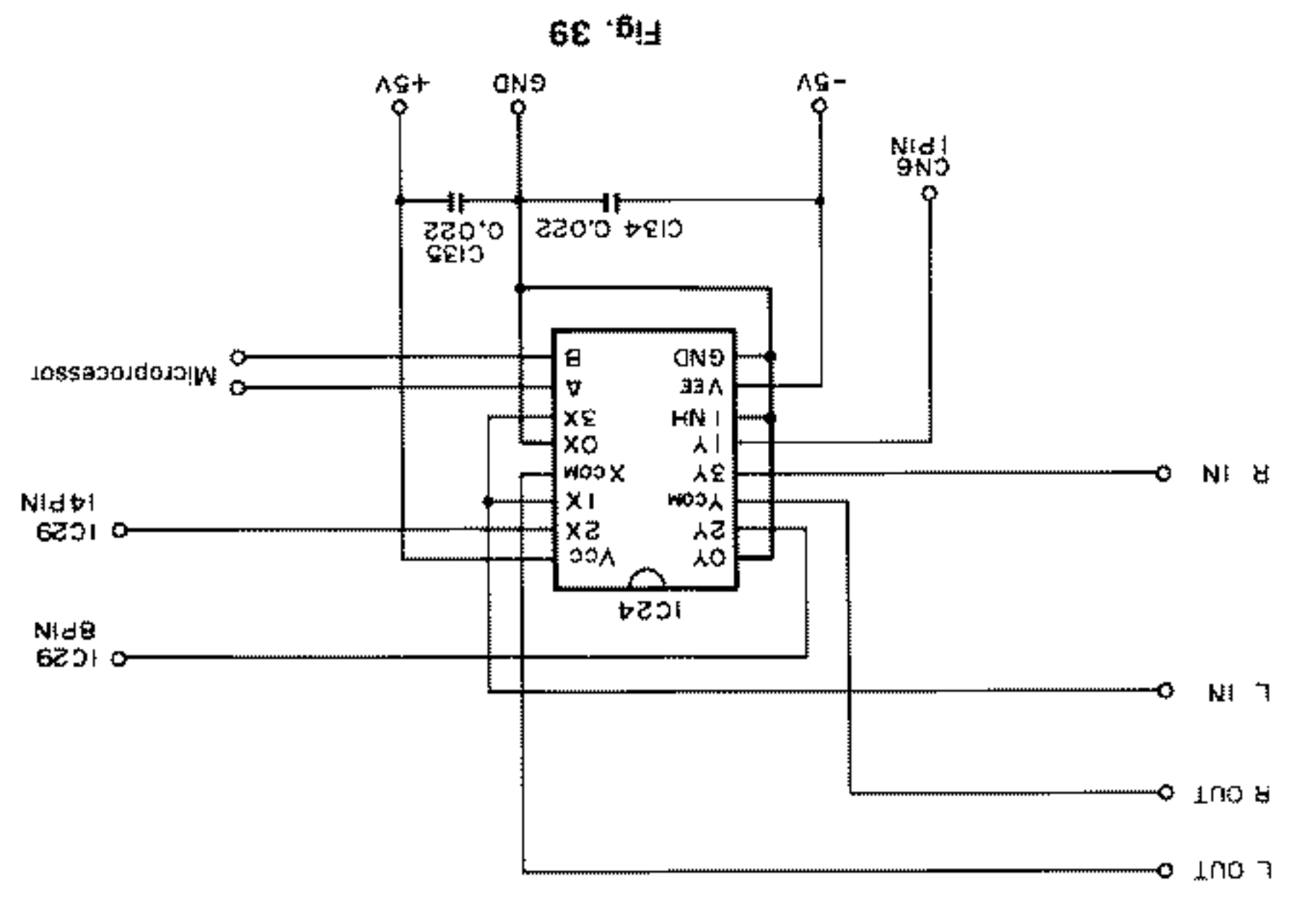
Dolby B Type Noise Reduction
This type noise reduction circuit is entirely different in frequency characteristic from a Dolby B noise reduction circuit for cassette decks.
A1 Dolby level point 6, 500 mV refers to 0 dB.
IC20 1/2 works to match between IN and OUT in gain to provide the same level. Therefore, IN is of 500 mV/0 dB.
For measurement only in this circuit, the frequency response can be measured using an oscillator with 9.1-kohm resistance connected at point A.
Table 10 deals with input vs. output characteristics, error being within ±10dB.

CIRCUIT DESCRIPTION

KA-V7000



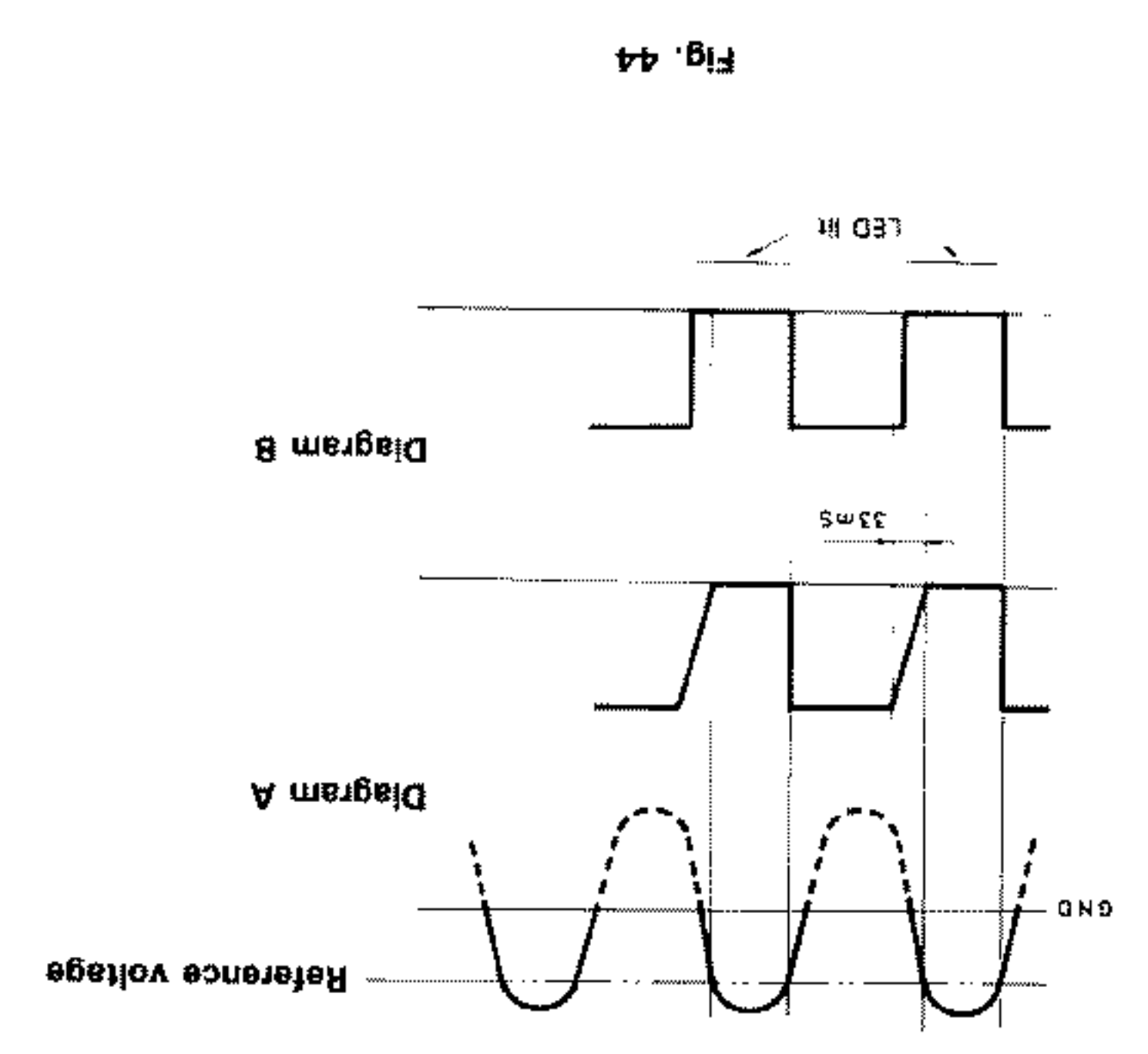
IC28: TC4052BP (X08-2280-00)
Center Mode Control
 This control operates only in the pro-logic mode. L-ch and R-ch signals are output inverted at gain 1, and C-ch signal only is processed.
Wide mode: For CIN, 2X and 2Y are selected, through which CIN is thus output from IC29 2/4 via R171.
Phantom mode: For CIN, 3X and 3Y are selected, through which CIN is thus output from IC29 1/4 and 3/4 divided via R167, R161 and R164. In this case, however, COUT does not appear.
Off mode: For CIN, even when 0X and 0Y are selected, nothing is connected. Thus, COUT does not appear.



IC24: TC4052BP (X08-2280-00)
Front Signal Selector
 This is an analog switch unit to select between front speaker signals in a surround effect mode.
 For the synthetic mode, 1X and 1Y are selected. For the pro-logic mode, 2X and 2Y. For the theater or stadium mode, 3X and 3Y. In any case, an engaged pair are output to L-OUT and R-OUT.

CIRCUIT DESCRIPTION

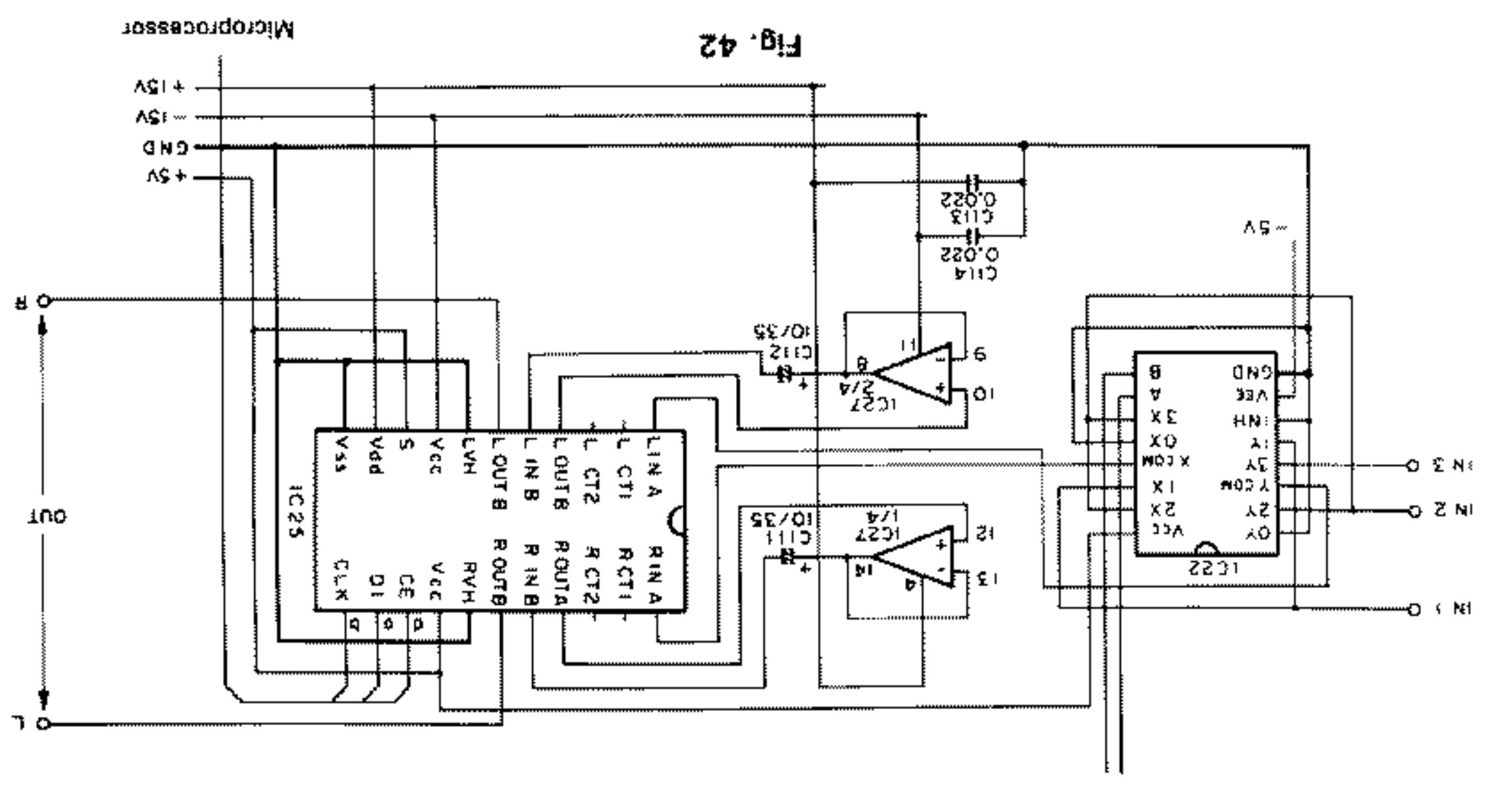
KA-V7000



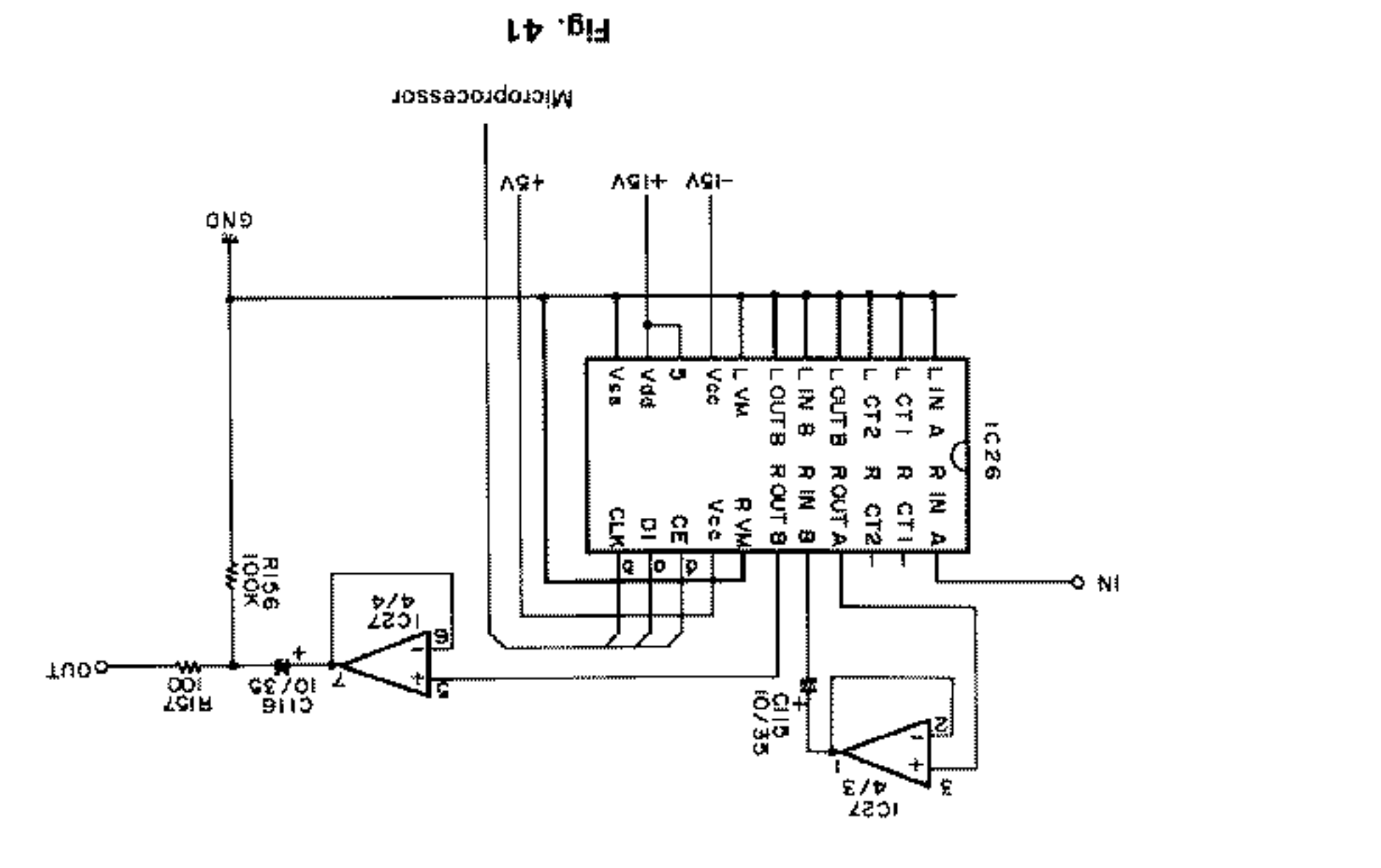
IC16: NJM2901N (X08-2280-00)
Calibration Level Meter
 Explanation is made only on L-ch.
 IC15 2/2 is a +16 dB half-wave rectifier, through which an input of a sine wave to LIN.
 IC16 2/4 is a comparator with the reference of the voltage set by VR6, of which the output at pin 13 gives rise to a section of discharge for 33 msec, as represented by Diagram B in Fig. 44. Due to the existence of this section, the LED lighting time is prolonged.
 In addition, IC16 4/4 shapes waveform as represented in Fig. 44. The simultaneous connection between pins 1 and 2 provides the output. LEDs are directly driven.
 IC16 is an open-collector output.

CIRCUIT DESCRIPTION

KA-V7000



IC2: IC28: TC4052BP (X08-2280-00)
Surround Effect Selector and Rear Electronic Volume Control
Surround Effect Selector:
 IN 1, IN 2 and IN 3 are connected respectively from pin 7 of IC 20-2, pin 1 of CN7 and pin 1 of CN6.
 For the pro-logic mode, 1X and 1Y are selected. For the theater or stadium mode, 3X and 3Y. For the synthetic mode, 2X and 2Y.
Rear Electronic Volume Control:
 A signal as selected above is level-controlled in 1 dB steps of 0 to -78 dB by the serial data from the microprocessor.



IC27: μPC4074 (X08-2280-00)
Center Electronic Volume Control
 From IC29 2/4, IN is connected. The signal level is controlled in 1 dB steps of 0 to -78 dB by the serial data from the microprocessor.

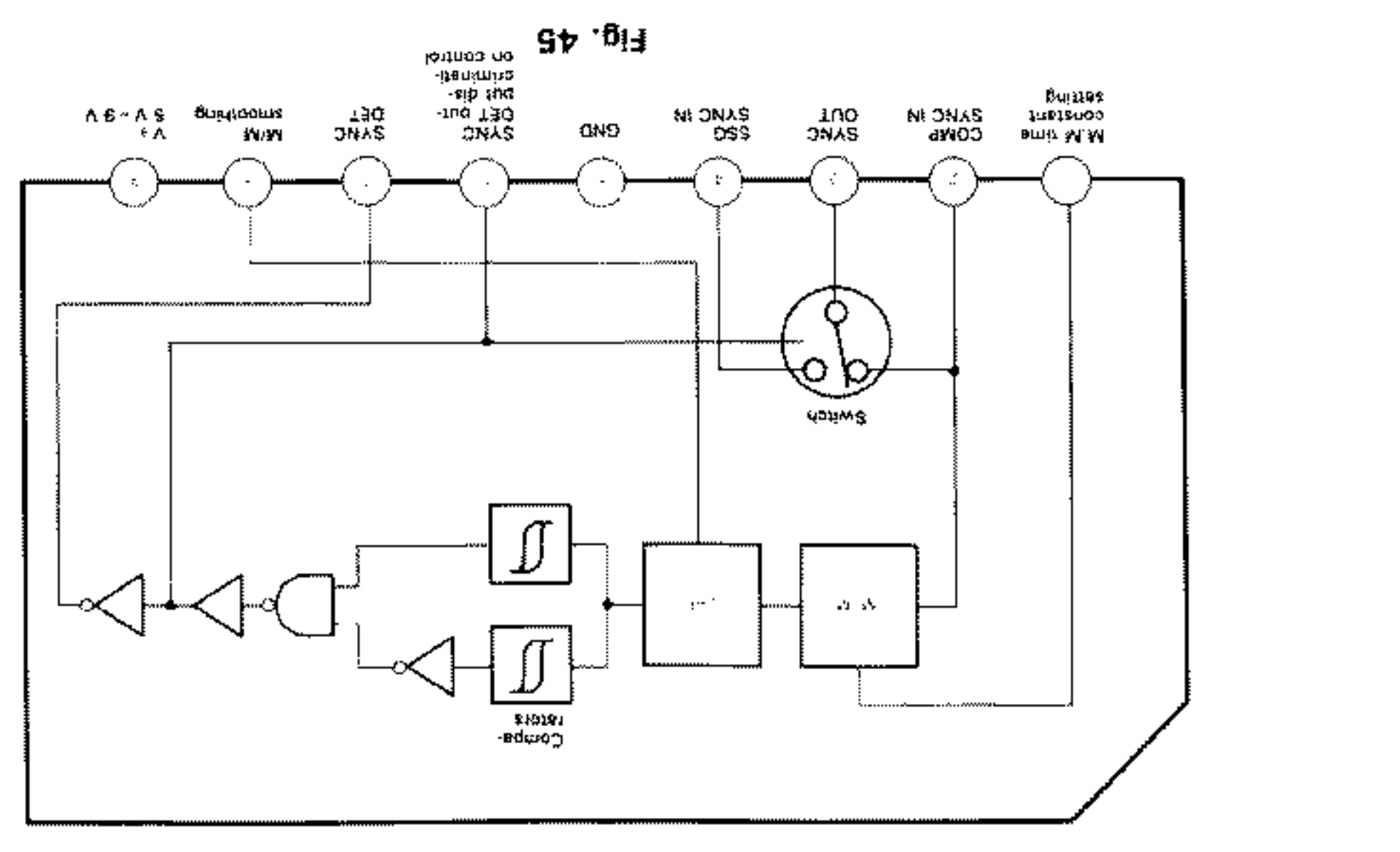
CIRCUIT DESCRIPTION

KA-V7000

Table 11

Pin No.	Function
1	Pin to connect resistor and capacitor which determine the time constant of M.M. (The time constant varies according to the type of the sync signal that is input to pin 2.)
2	Pin to which the sync signal (COMP SYNC, H, SYNC or V, SYNC) separated synchronously from the video signal is input
3	Pin from which the signal input to pin 2 or pin 4 is output selectively depending upon the status of the sync signal input to pin 2.
4	Pin to which the sync signal input to pin 2 is abnormal = the sync signal input to pin 4 is output
5	Grounding pin
6	Pin from which "H" or "L" DC voltage is output depending upon the status of the sync signal input to pin 2. With the switch set to "1", the sync signal input to pin 2 is compulsorily output from pin 3.
7	Pin from which "H" or "L" DC voltage is output depending upon the status of the sync signal input to pin 2. When the sync signal input to pin 2 is normal = "L". When the sync signal input to pin 2 is abnormal = "H".
8	Pin to connect M smoothing capacitor. (The time constant varies according to the type of the sync signal input to pin 2.) For initial setting, the value of the resistance connected externally to pin 1 is adjusted so that 2 V (V+ = 5 V) appears with the sync signal input to pin 2.
9	V+ 5 V-9 V

M.M.: The duty cycle of the output signal is changed according to the status (signal disturbance, no signal) of the input sync signal.
LPF: The M.M. output signal is converted to DC. The greater the duty cycle, the higher the DC level (voltage at pin 8). The DC level is clamped at $V_{T+} + 0.7$ (V) for reduced discrimination time.)
Switch: By the discrimination signal from the comparator circuit or the control signal from pin 6, selection is made between the input sync signal and the SSG sync signal, and the selected one is output from pin 3 (SYNC OUT).



IC6: NJM220S (X14-2490-00)
Video Signal Discrimination IC
Pin Connections and Each Block operation

CIRCUIT DESCRIPTION

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KA-V7000

CIRCUIT DESCRIPTION

Sync Signal Discriminator:
 Transistor Q32, which serves to separate out the horizontal sync signal, turns ON for the horizontal sync portion of the video signal input from VIDEO IN. IC6 acts to discriminate whether or not the sync signal is normal, and its discrimination signal output is 'H' when a normal sync signal as represented by Fig. 46-1 is input, whereas when the sync signal is separated out more than normal as represented by Fig. 46-2 due to noise with a low S/N ratio of the video signal or when no sync signal is separated out, the discrimination signal output is 'L'.
 When this 'L' output is input to the SYNC pin (pin 6) of the microprocessor, the video sync signal is removed and the blue screen (blue back) is selected by the internal sync.

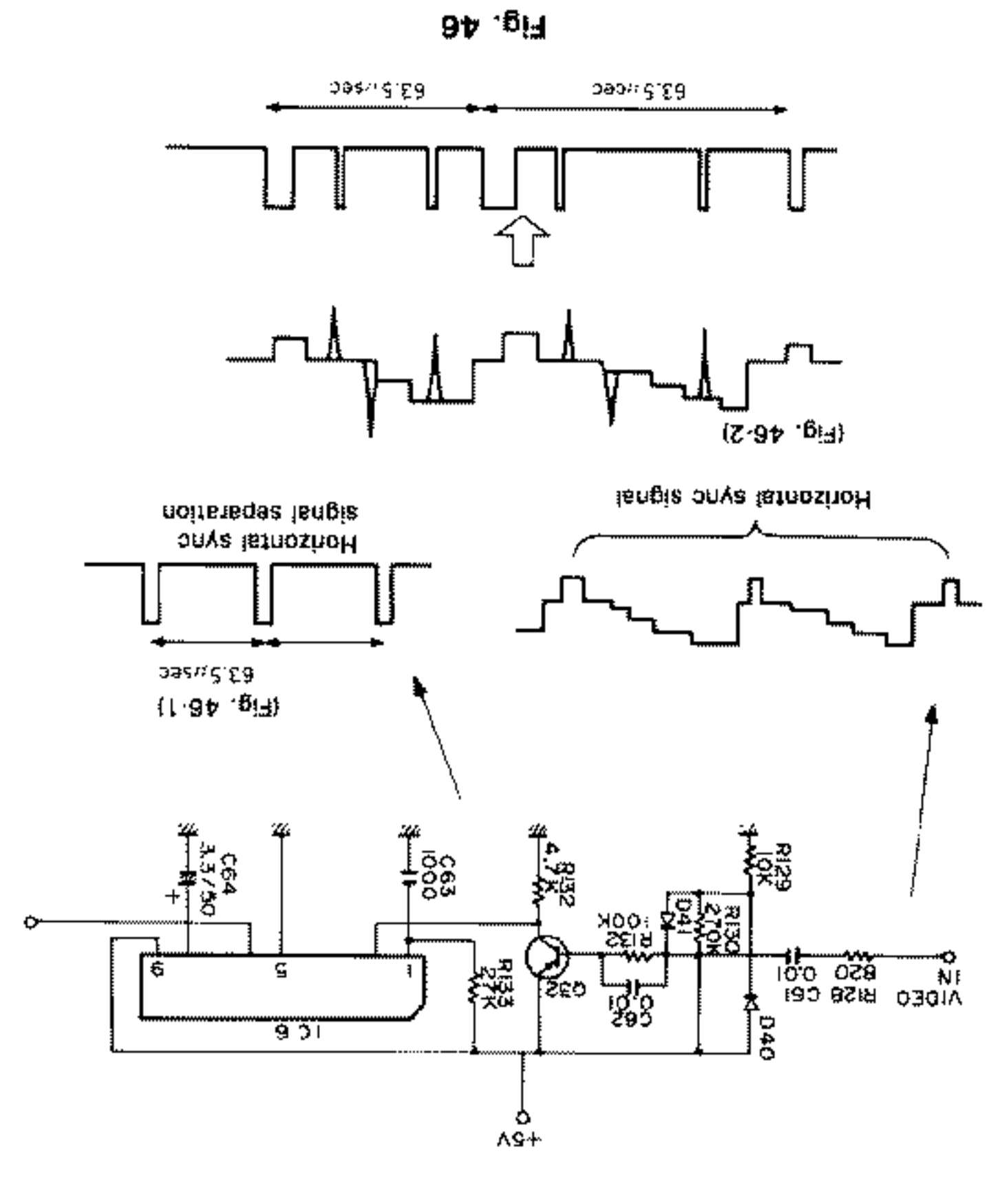


Fig. 46

Outline:
 IC7: MB88323A-K2 (X14-2490-00)
 The MB88323A-K2 is a display controller CMOS LSI to display characters X 9 lines.
 This LSI with a built-in character generator ROM creating 64 kinds of characters is capable of displaying alphanumeric characters, katakana and special characters as well as Japanese characters such as kanji, hiragana.
 Moreover, this LSI has a built-in character generator RAM creating programmable 62 kinds of characters, too. With character patterns set in this RAM, it is also capable of a wide variety of usages such as semi-graphic displays, etc. by combining character patterns in sequence, including alphanumeric characters, katakana and special characters, in addition to Japanese characters of kanji, hiragana.
 This LSI is also provided with a dot interpolation feature for fineness of oblique lines and can expand the character size for example to 16 X 16 dots in units of 8 dots.
 This display output can be combined with the TV picture signal or the VTR output signal, and that combined image can be recorded to a VTR.

Internal Block Diagram:

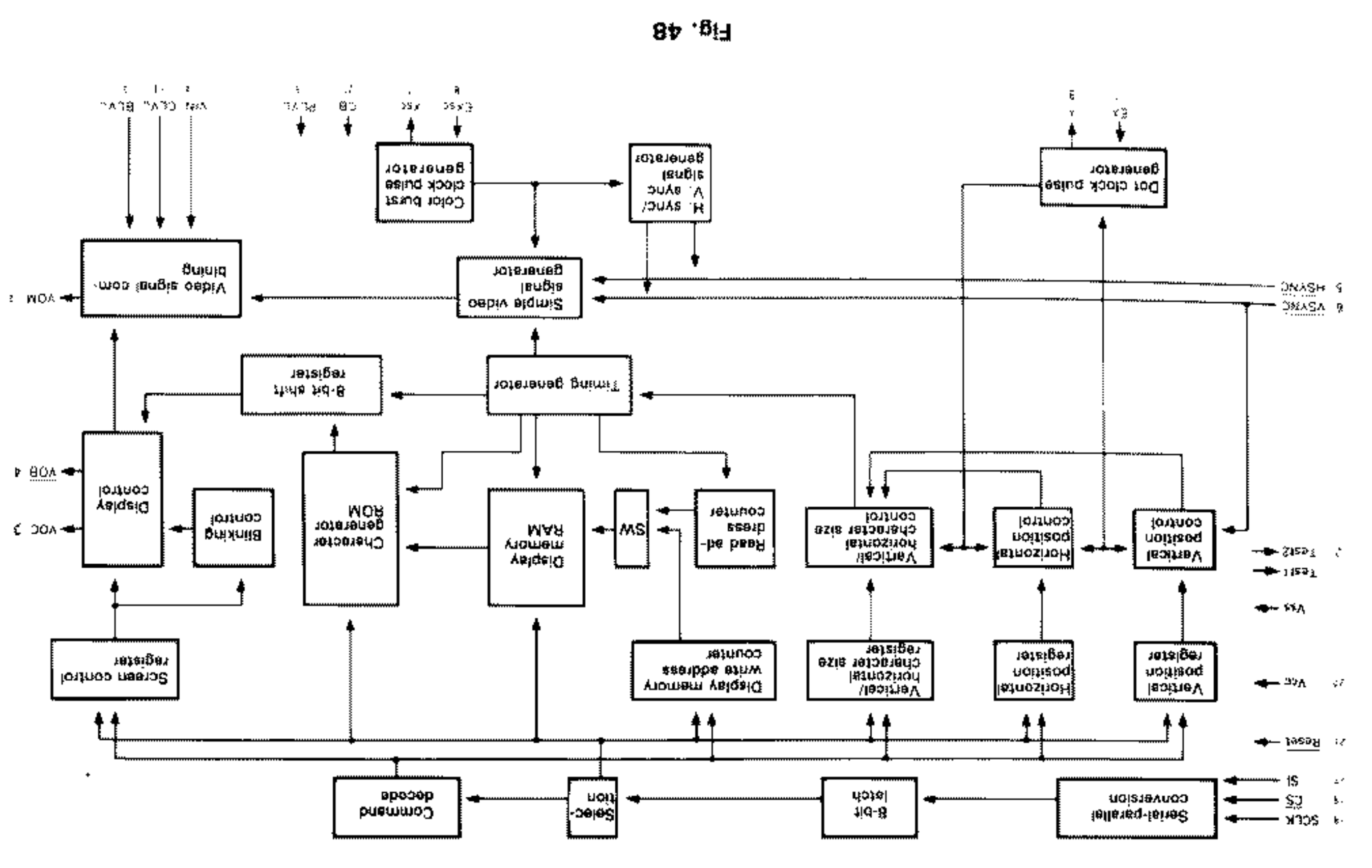


Fig. 48

CIRCUIT DESCRIPTION

KA-V7000

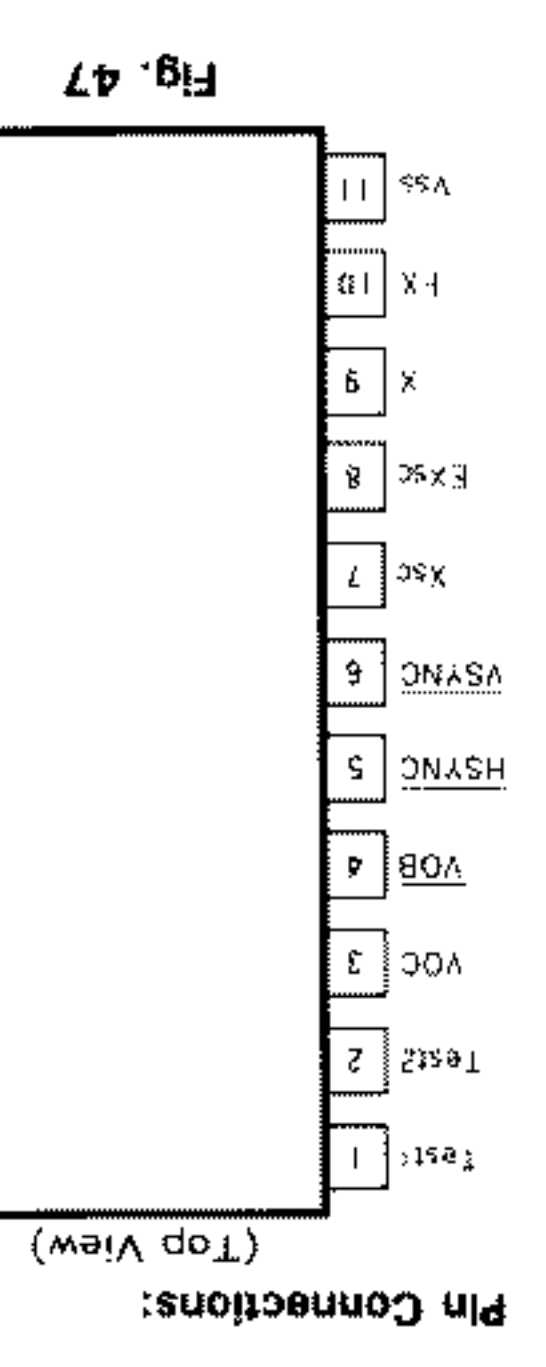


Fig. 47

CIRCUIT DESCRIPTION

KA-V7000

For Superimposing Characters on External Video Signal:
 The video signal input from pin 4 of IC6 is output to pin 12 (VOM) through analog switch ②, in which way analog switch ③ turns OFF and switch ④ turns ON at a position at which characters are superimposed.
 At this time, the voltage at pin 15 is output to VOM. When this voltage level is lower, the black signal appears. Subsequently, switch ② turns OFF and ④ turns ON. Thus, the level of pin 12 is higher than pin 15, in which case a signal near to white appears.
 Like this, by the ON/OFF operation of analog switches ②, ③, and ④, signals of two different levels (character signal and character outline signal) are superimposed on the video signal.
For Generating Internal Video Signal:
 When no video signal is input, an IC generates video signal to output it. At this time, analog switch ① turns ON and the rest turn OFF. The internal video signal is generated from the dividing process of frequency 7.15909 MHz (twice the frequency of the color subcarrier).

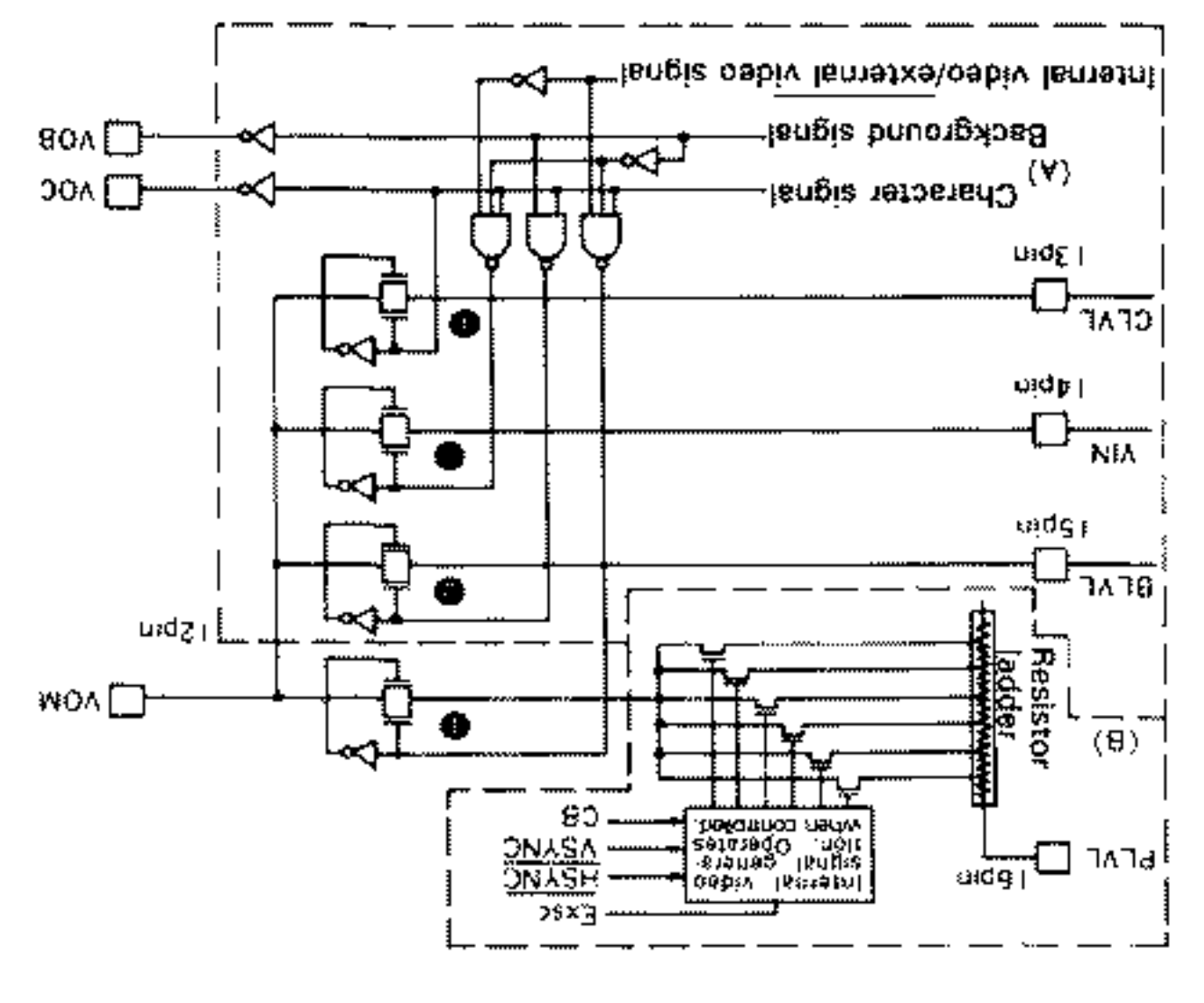


Fig. 49 Analog Switches of IC7 (MB88323A-K2)

KA-V7000

CIRCUIT DESCRIPTION

Symbol	Pin No.	I/O	Function Description
Exial	10	I	Pins to externally connect the dot clock pulse generator
Reset	21	I	TVDC reset input. With Reset 'L', TVDC is initialized. For power ON, the vertical sync signal must be input to the VSYNC pin.
VSYNC	6	I	Horizontal sync signal input
HSYNC	5	I	Hysteresis input
VSYNC	6	I	Vertical sync signal input
CS	19	I	Chip select input, which becomes 'L' for serial transfer.
CS	19	I	Hysteresis input
SCLK	18	I	Shift clock pulse input for serial transfer
SCLK	18	I	Hysteresis input (At its rise, SI is read in.)
SI	17	I	Data input for display control
VIN	14	I	Video signal input (Analog input)
CLVL	13	I	Character level input (Analog input)
BLVL	15	I	Frame/background level input (Analog input)
VOM	12	O	Combined signal output of video signal, character signal and outline or background signal (Analog output)
VOC	3	O	Character signal output
VOB	4	O	Outline or background signal output
Exsc	8	I	Pins to externally connect color burst (7.15909 MHz or 14.31818 MHz) clock pulse generator.
Xsc	7	O	Also used to generate the internal sync signal for video mode 2
CB	20	I	Selection between existence and nonexistence of color burst signal when video mode 2 is engaged.
PLVL	16	I	Pedestal level input, which when video mode 2 is engaged serves to match the pedestal level of the internal sample video signal and that of the external video signal.
Vcc	22	I	+5 V power supply external connection pin
Vss	11	I	GND
Test1	1	I	Chip test pin
Test2	2	I	Normally open

Table 12

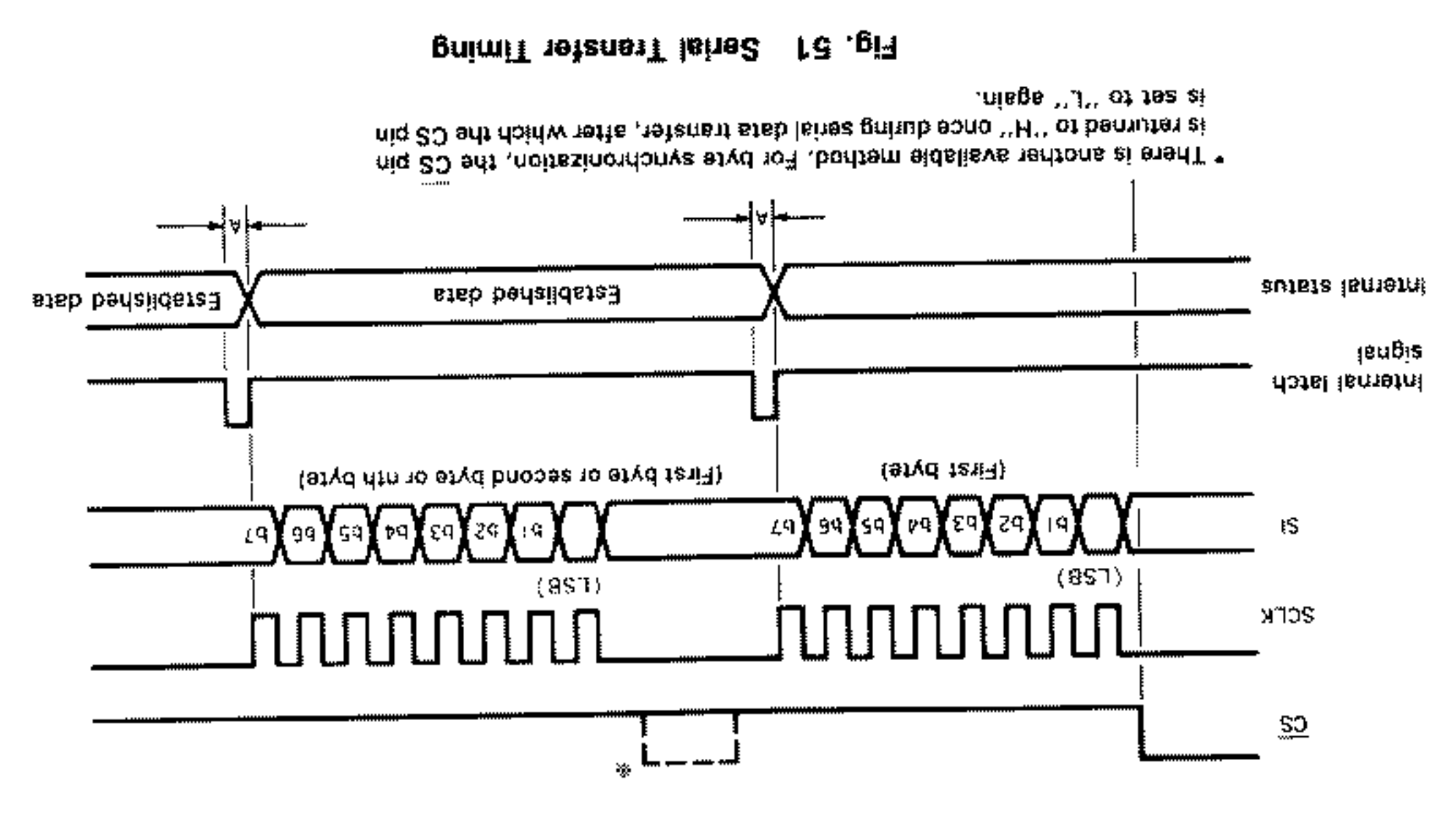


Fig. 51 Serial Transfer Timing

Data Transfer Method and Command Write Method:
 The display control command and data writing is performed in a manner of 8-bit serial transfer.
 For serial transfer, the CS pin is made "L". While the CS pin is "L", any data whatever in the first byte, the second byte, ... the nth byte of each command can be transferred.

CIRCUIT DESCRIPTION

Check point		Center mode selection	
Q3 collector-emitter	Q4 collector-emitter	Output in normal mode	Output in wide mode
Shorted	Shorted	L CH, R CH	No output
OPEN	OPEN	+	+
Shorted	Shorted	+	+
Shorted	Shorted	+	+

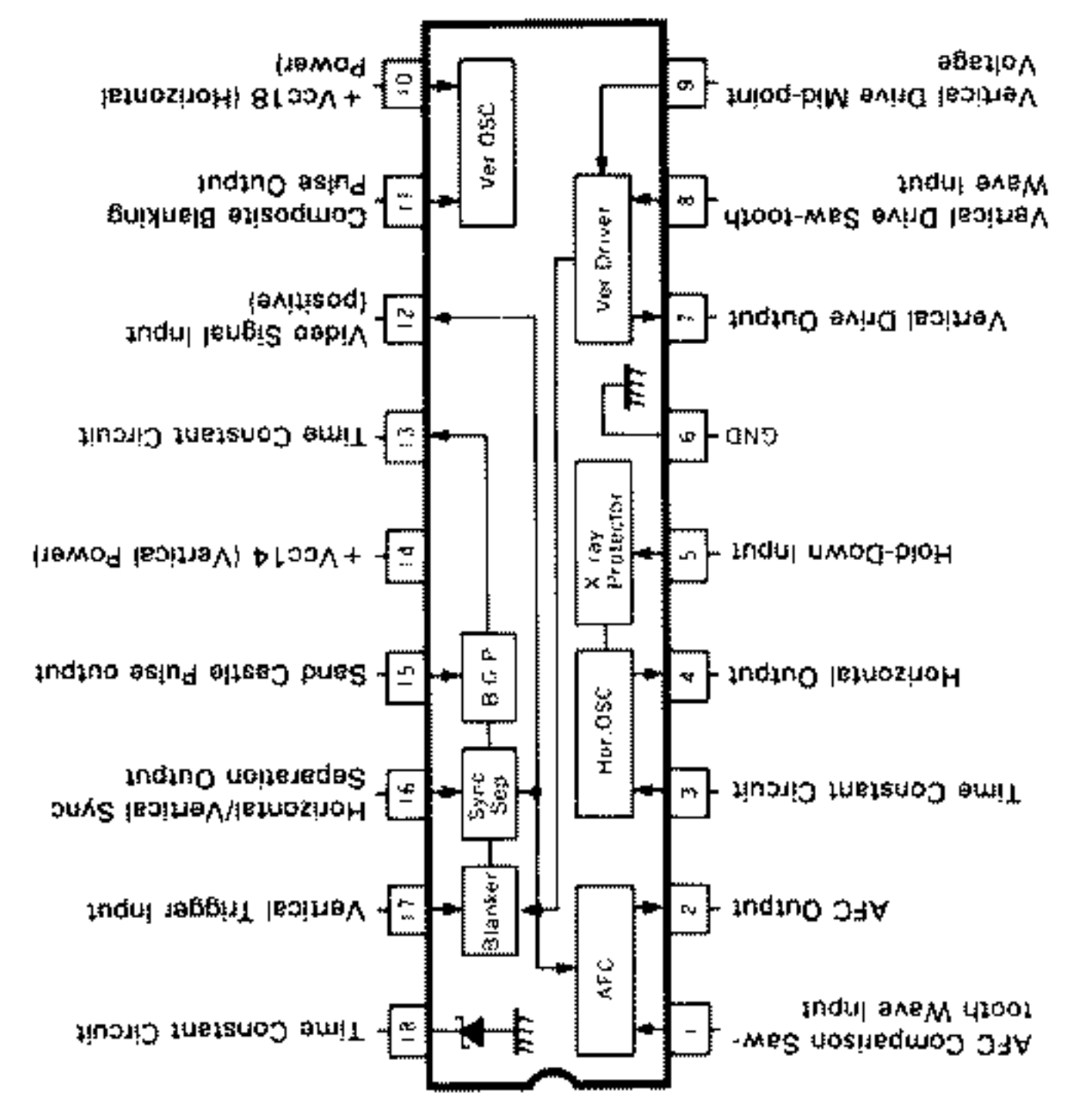
- In the pro-logic mode, set the center channel to the wide mode.
- Short between the collector and emitter (GND) of Q2 in X08. (This setting provides the same effect as when test noise is turned ON by the remote control.)
- Short between R5 and R7. (At this time, the rear channel output is engaged.)
- As shown on the table below, vary the output mode by the control over Q3 and Q4.

Test Tone Generation Procedure (without remote control):

NO.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	AMPLIFIER SETTINGS	ALIGNMENT POINTS	ALIGN FOR FIG.
(1)	Noise level	—	Output: Pin 1 (NOISE LEVEL) 3 REF1 AC voltmeter	—	VR1 (X08-228)	(a)
(2)	L-R channel separation	Generate L-ch and R-ch signals as test tone in Dolby pro-logic mode.	Test pin CN5, Rear-ence REF1, Output AC voltmeter	Perform operations (2) ~ (5) by remote control.	VR2 (X08-228)	(b)
(3)	C-S channel separation	Generate L-ch and R-ch signals as test tone in Dolby pro-logic mode.	Test pin CN5, Rear-ence REF1, Output AC voltmeter	Perform operations (2) ~ (5) by remote control.	VR3 (X08-228)	(c)
(4)	L/R-ch DC offset	Generate L-ch and R-ch signals as test tone in Dolby pro-logic mode.	Test pin CN5, Rear-ence REF1, Output DC voltmeter	Perform operations (2) ~ (5) by remote control.	VR4 (X08-228)	(d)
(5)	C/S-ch DC offset	Generate center and rear signals as test tone in Dolby pro-logic mode.	Test pin CN5, Rear-ence REF1, Output DC voltmeter	Perform operations (2) ~ (5) by remote control.	VR5 (X08-228)	(e)
(6)	Meter ADJ	Apply sinewave of 1 kHz, 1 Vrms to CD input terminal.	Test pin CN5, Rear-ence REF1, Output AC voltmeter	Rotate calibration VR6 so that output is 500 mV.	VR6 (X08-228)	(f)
(7)	horizontal sync	Superimpose VDP input signal to horizontal sync.	Connect TV to monitor output terminal.	Apply horizontal sync to its center of stability.	VR1 (X14-249)	(g)
(8)	vertical sync	Superimpose VDP input signal to vertical sync.	Connect TV to monitor output terminal.	Adjust vertical sync to its center of stability.	VR2 (X14-249)	(g)
(9)	No-signal current	—	Connect a DC voltmeter between CP1 (L-ch) and CP2 (R-ch).	Volume control at 0	VR1 (X08-102)	(g)

ADJUSTMENT

Fig. 52



IC8: LA7820 (X14-2490-00)
 Color TV Synchronizing/Deflection Circuit
 Equivalent Circuit Block Diagram:

CIRCUIT DESCRIPTION

Point de vérification		Sélection de mode central	
Collecteur Q3	Collecteur Q4	Sortie en mode normal	Sortie en mode élargi
OUVERT	OUVERT	Centre	Canaux G, U
Cour-circuité	Cour-circuité	Canal D	Pas de sortie
Canal G	Canal G	Arrière	—

- Processus de génération de tonalité test (sans télécommande):**
- En mode prologue, régler le canal central sur le mode large.
 - Cour-circuiter entre le collecteur et l'émetteur (GND) de Q2 dans X08. (Ce réglage donne le même effet que quand le bruit test est mis sur ON par la télécommande.)
 - Cour-circuiter entre R5 et R7 (la sortie de canal arrière est alors engagée).
 - Comme indiqué dans le tableau ci-dessous, faire varier le mode de sortie par le contrôle sur Q3 et Q4.

REGLAGES

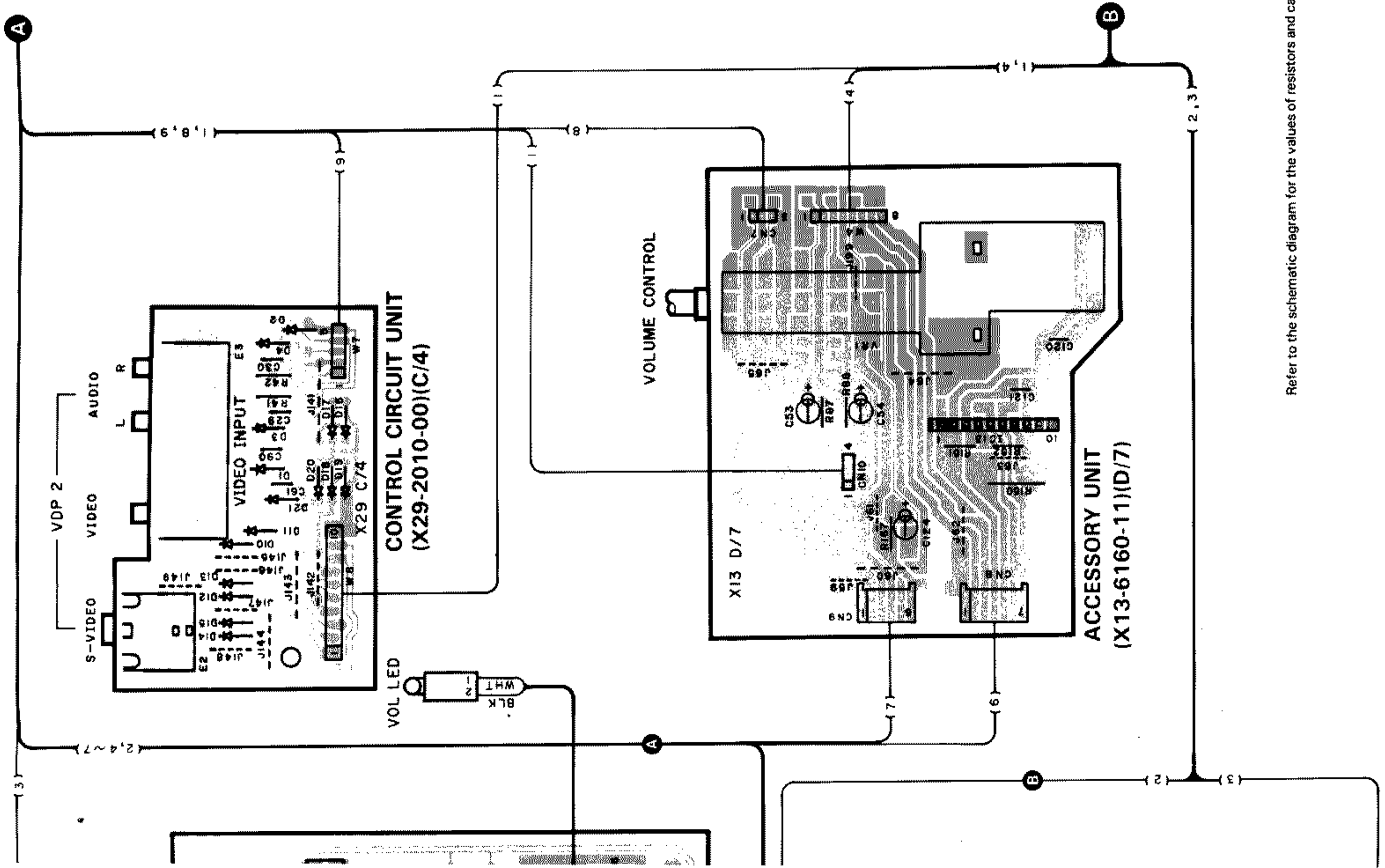
N°.	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DE L'AMPLIFICATEUR	POINTS DE L'ALIGNEMENT	ALIGNER POUR FIG.
(1)	Niveau de bruit	—	Sortie: Broche 1 (NOISE LEVEL) 3 REF1 Côté de référence: Broche 3 (REF1) AC voltmètre CA	—	VR1 (X08-228)	(a)
(2)	Séparation des canaux G-D	Générer les signaux en mode prologue comme tonalité test.	Broche test CN5, référence REF1, sortie canal G/D, AC voltmètre CA	Effectuer les opérations (2) ~ (5) par télécommande.	VR2 (X08-228)	(b)
(3)	Séparation des canaux C-S	Générer les signaux en mode prologue comme tonalité test.	Broche test CN5, référence REF1, sortie canal C/S, AC voltmètre CA	Effectuer les opérations (2) ~ (5) par télécommande.	VR3 (X08-228)	(c)
(4)	Offset CC	Générer les signaux en mode prologue comme tonalité test.	Broche test CN5, référence REF1, sortie canal G/D, AC voltmètre CA	Effectuer les opérations (2) ~ (5) par télécommande.	VR4 (X08-228)	(d)
(5)	Offset C/S	Générer les signaux en mode prologue comme tonalité test.	Broche test CN5, référence REF1, sortie canal C/S, AC voltmètre CA	Effectuer les opérations (2) ~ (5) par télécommande.	VR5 (X08-228)	(e)
(6)	compteur	Appliquer une fréquence RF1, sinusoïdale de 1 kHz, 1 Vrms sur la borne d'entrée CD.	Broche test CN5, référence REF1, sortie canal C/S, AC voltmètre CA	Tourner la VR6 de calibration pour que la sortie soit 500 mV.	VR6 (X08-228)	(f)
(7)	Superposer la synchronisation vidéo à la borne d'entrée VDP	Appliquer un signal vidéo à la borne d'entrée VDP.	Connecter un téléviseur sur la borne de sortie de contrôle.	Superposer la synchronisation vidéo à la borne d'entrée VDP.	VR1 (X14-249)	(g)
(8)	verticale	Appliquer un signal vidéo à la borne d'entrée VDP.	Connecter un téléviseur sur la borne de sortie de contrôle.	Superposer la synchronisation vidéo à la borne d'entrée VDP.	VR2 (X14-249)	(g)
(9)	Courant non signal	—	Raccorder un voltmètre CC entre CP1 (L-ch) et CP2 (R-ch).	Commande de volume à 0	VR1 (X08-102)	(g)

ACCESSORY UNIT (X13-6160-11)

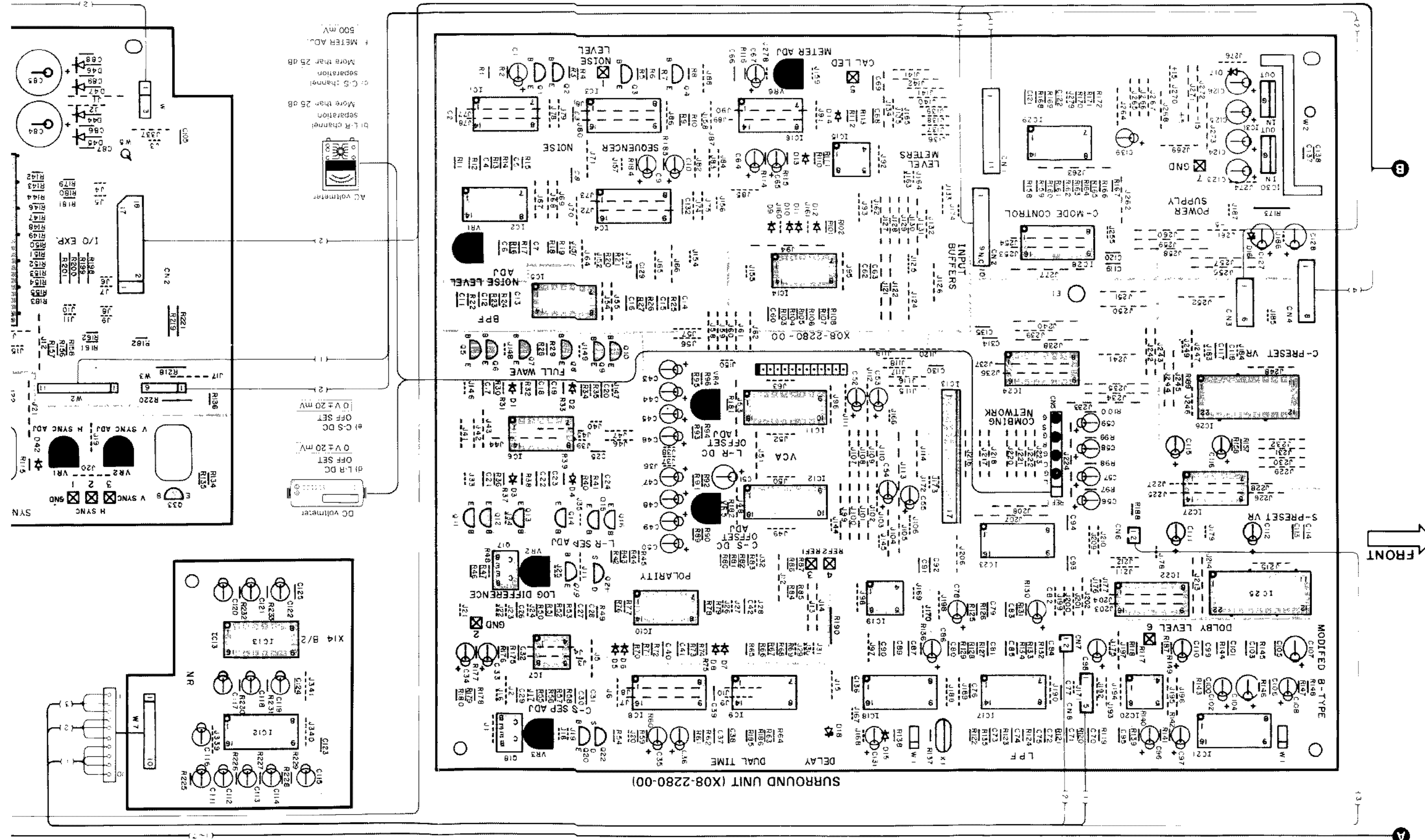
Ref. No.		Address
IC	Q	
13		5AD

CONTROL UNIT (X29-2010-00)

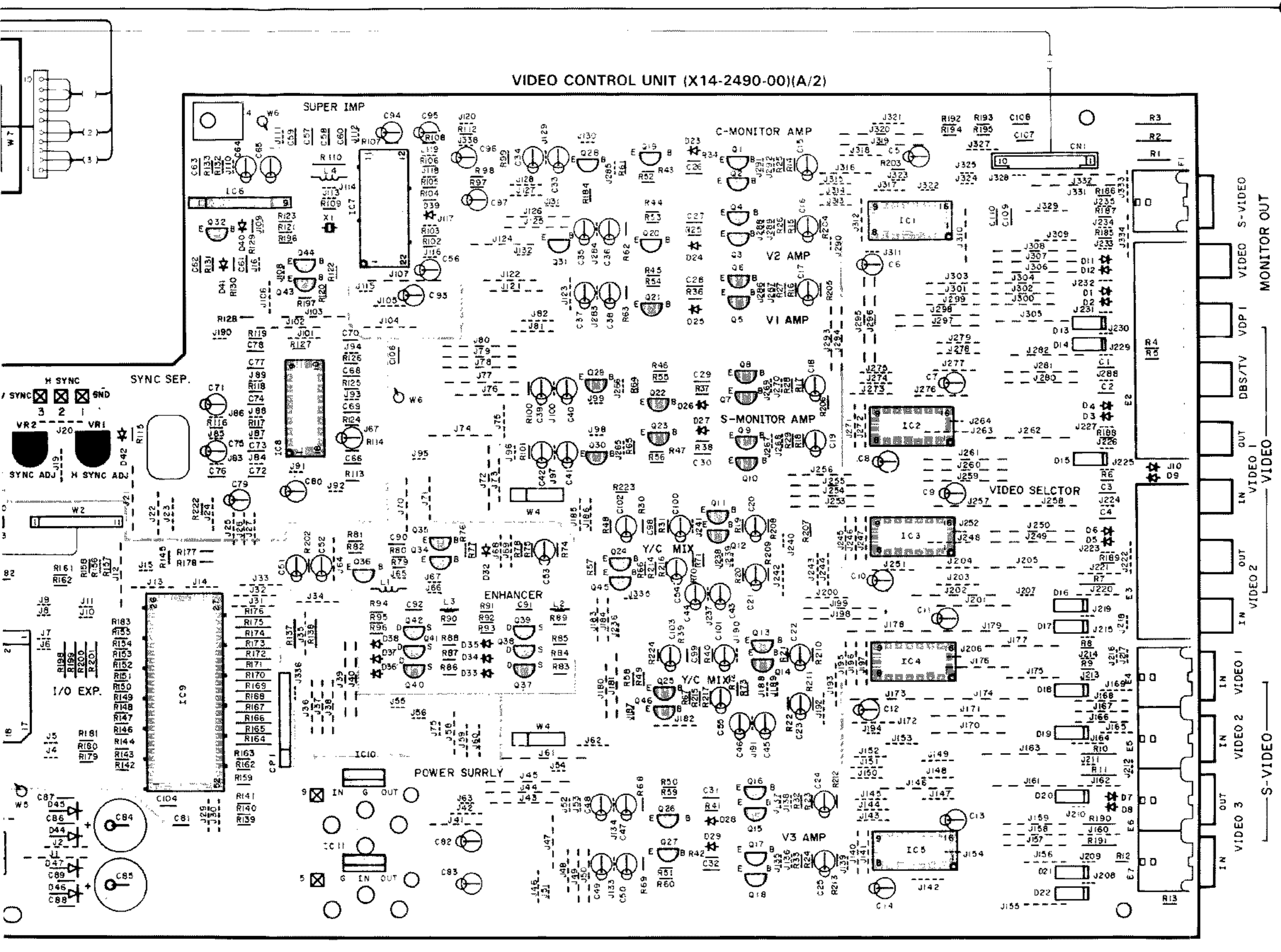
Ref. No.		Address
IC	Q	
	1	7AB
	2	6AB
	3	6AB
	4	7AB
	5	6AB
	6	6AB
	10	3Z
1		6AA
2		6Z
3		6AA
4		5AB
5		6Y
6		5X
10		3V
11		3Y



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

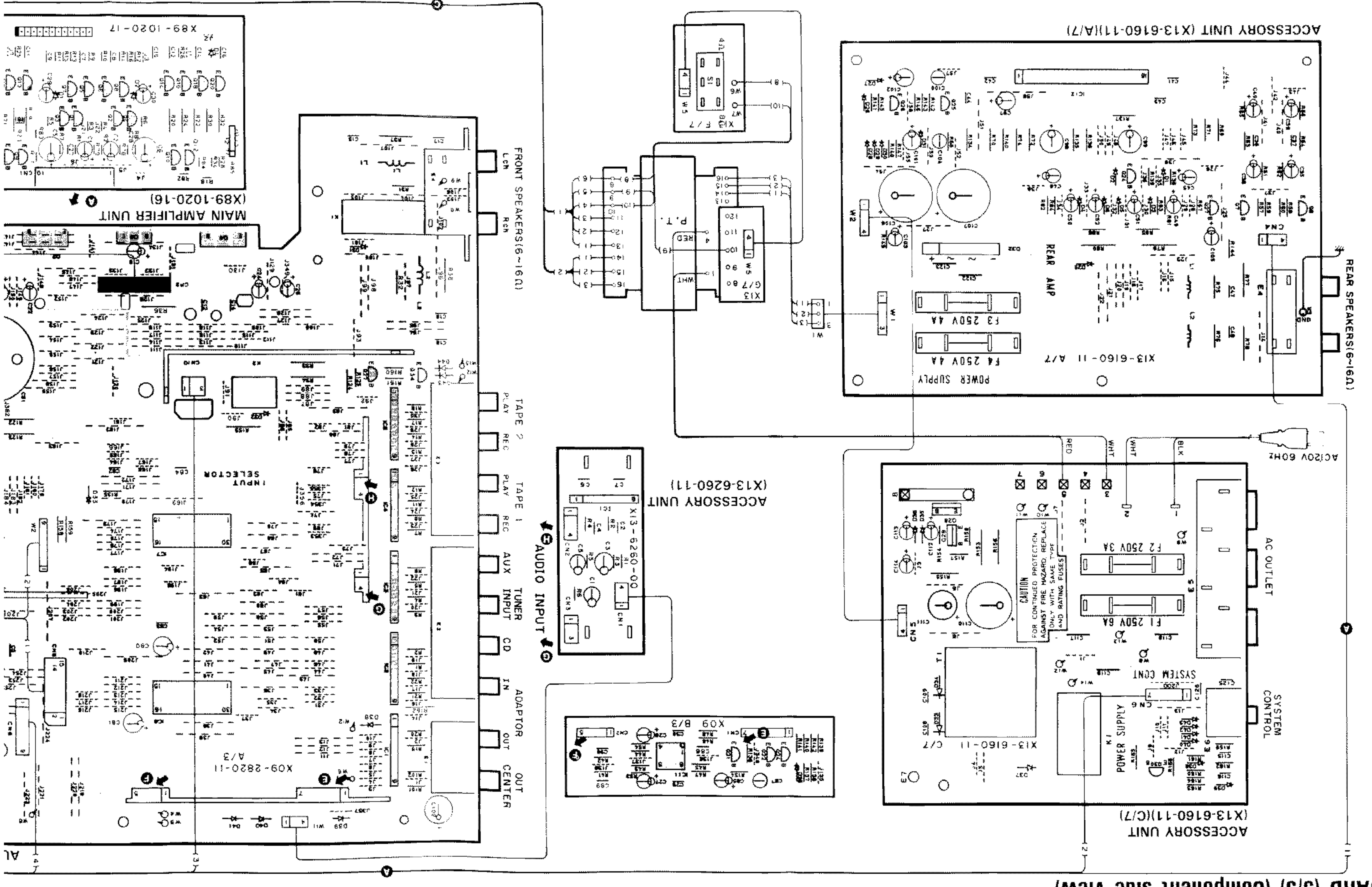


PC BOARD (2/3) (Foil Side View)

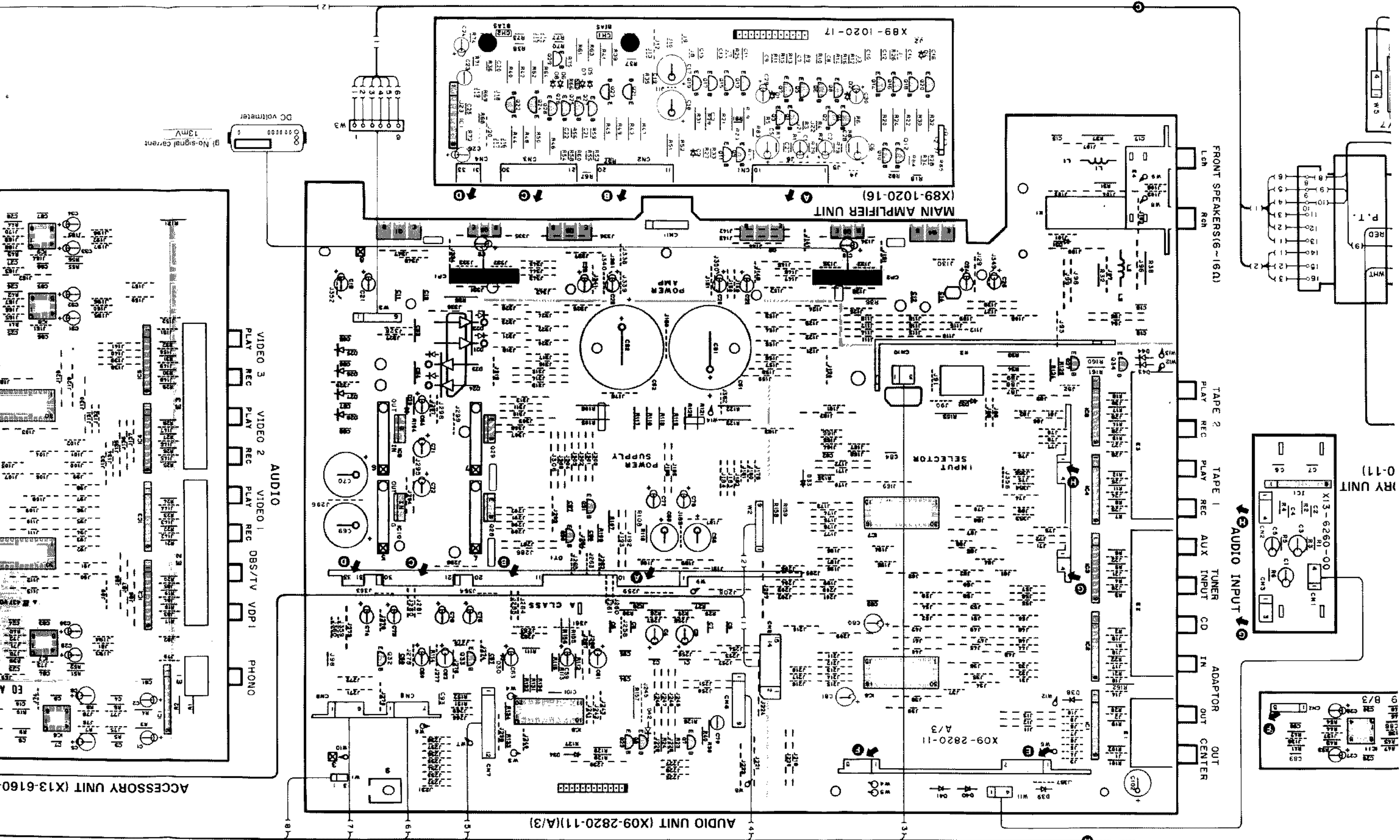


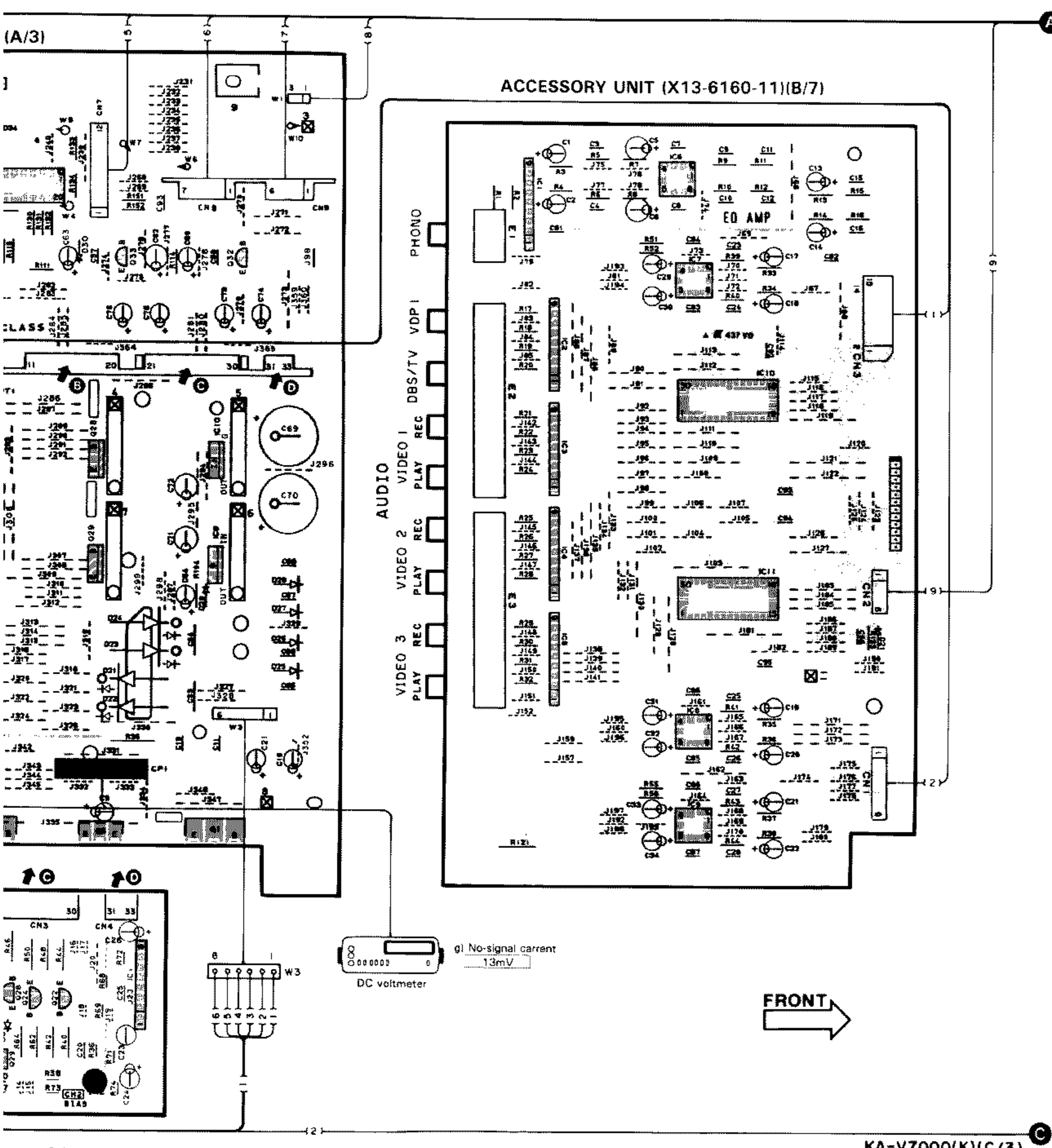
VIDEO CONTROL UNIT (X14-2490-00)		SURROUND UNIT (X08-2280-00)	
Ref. No.	Address	Ref. No.	Address
1	2BU	1	78N
2	2BU	2	78N
3	2BU	3	78M
4	2BU	4	78M
5	3BU	5	58N
6	3BU	6	58N
7	3BU	7	58N
8	3BU	8	58N
9	4BU	9	58N
10	4BU	10	58N
11	4BU	11	38U
12	4BU	12	38N
13	5BU	13	38N
14	5BU	14	38N
15	6BU	15	38N
16	6BU	16	38N
17	6BU	17	38N
18	7BU	18	28N
19	2BU	19	38N
20	2BU	20	28N
21	3BU	21	38N
22	3BU	22	28N
23	4BU	1	68N
24	5BU	2	68N
25	5BU	3	68M
26	6BU	4	68M
27	6BU	5	58N
28	2BU	6	48N
29	3BU	7	28N
30	4BU	8	28M
31	2BT	9	28M
32	2BR	10	38M
33	3BT	11	48L
34	4BT	12	38L
35	4BT	13	48K
36	5BS	14	58L
37	5BT	15	68L
38	5BT	16	68L
39	5BT	17	28K
40	5BS	18	28L
41	5BS	19	38L
42	5BS	20	28J
43	3BS	21	28I
44	3BS	22	38J
45	5BU	23	38K
46	2BU	24	48K
1	5BU	25	38I
2	4BU	26	48I
3	4BU	27	38I
4	5BU	28	58J
5	6BU	29	68J
6	2BS	30	68I
7	2BS	1	68I
8	4BS	13	28P
9	5BR	12	28P
10	6BS		
11	6BS		
12	2BP		
13	2BP		

PC BOARD (3/3) (Component side view)



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





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

ACCESSORY UNIT (X13-6160-11)

Ref. No.	Q	Address
7	6CE	
8	6CF	
24	6CG	
25	6CG	
26	6CG	
27	6CE	
28	3CG	
29	3CG	
30	2CR	
1	2CR	
2	3CR	
3	3CR	
4	4CR	
5	4CR	
6	2CR	
7	2CR	
8	5CR	
9	5CR	
10	3CS	
11	4CS	
12	6CF	

MAIN AMPLIFIER UNIT (X89-1020-16)

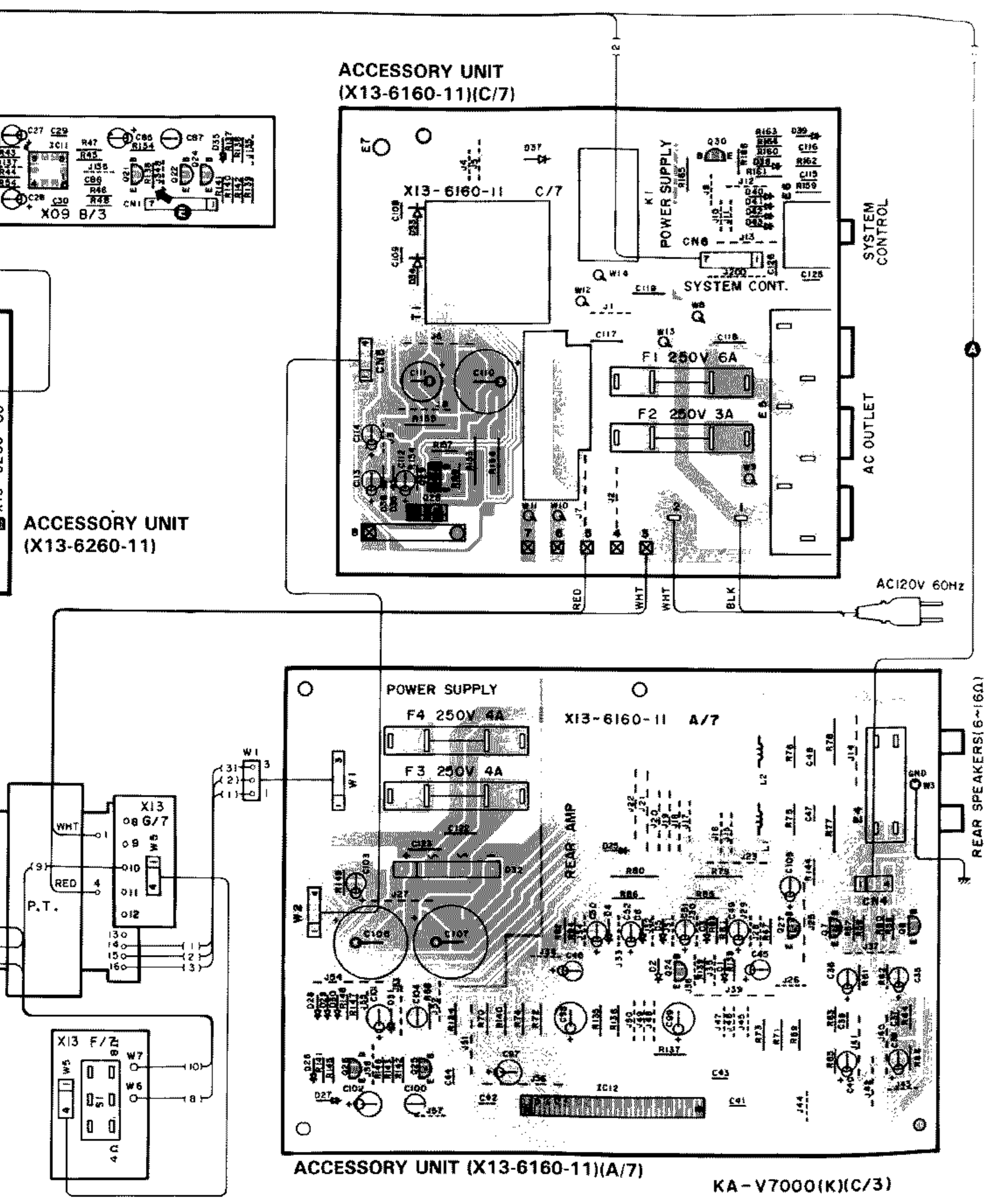
Ref. No.	Q	Address
1	6CM	
2	6CM	
3	6CM	
4	6CM	
5	6CM	
6	6CM	
7	6CM	
8	6CM	
9	6CM	
10	6CL	
11	6CM	
12	6CL	
13	6CM	
14	6CL	
15	6CM	
16	6CL	
17	6CN	
18	6CL	
19	6CN	
20	6CL	
21	6CN	
22	6CO	
23	6CN	
24	6CO	
25	6CO	
26	6CO	
27	6CN	
28	6CO	
29	7CO	
1	6CO	

AUDIO UNIT (X09-2820-11)

Ref. No.	Q	Address
1	5CP	
2	5CM	
3	5CO	
4	5CL	
5	5CO	
6	5CM	
7	2CN	
8	2CN	
21	2CH	
22	2CH	
23	2CN	
24	2CH	
27	4CK	
28	3CO	
29	4CO	
30	3CO	
31	3CO	
32	2CP	
33	2CO	
34	4CK	
1	2CK	
2	2CK	
3	3CK	
4	3CK	
5	4CK	
6	2CL	
7	3CL	
8	2CO	
9	4CO	
10	3CO	
11	2CI	

ACCESSORY UNIT (X13-6260-11)

Ref. No.	Q	Address
1	3CI	



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

ACCESSORY UNIT (X13-6160-11)

Ref. No.	Q	Address
7	6DN	
8	6DN	
24	6DM	
25	6DL	
26	6DL	
27	6DL	
28	3DL	
29	3DL	
30	2DM	
1	2DA	
2	3DA	
3	3DA	
4	4DA	
5	4DA	
6	2DA	
7	2DA	
8	5DA	
9	5DA	
10	3CZ	
11	4CZ	
12	6DM	

MAIN AMPLIFIER UNIT (X89-1020-16)

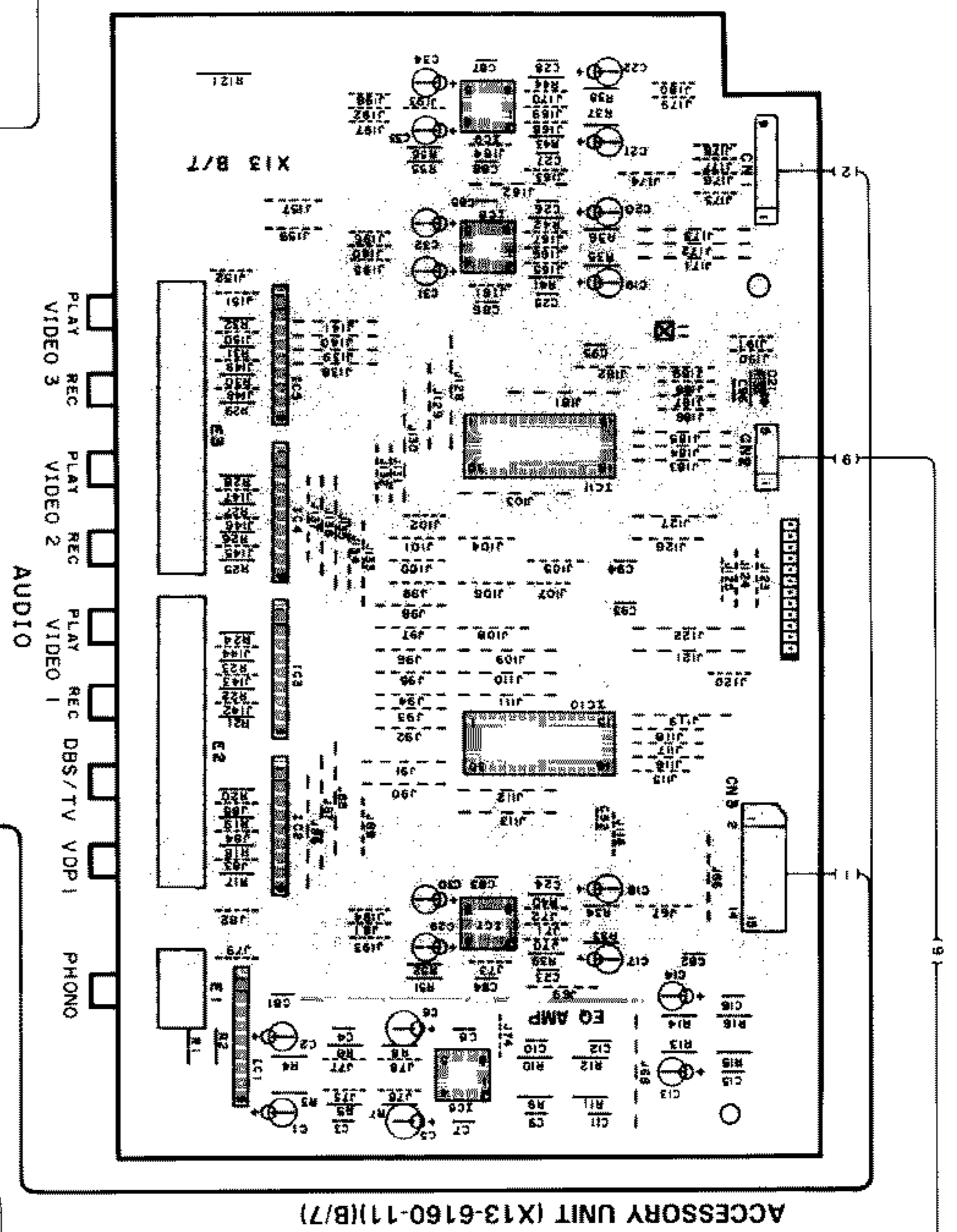
Ref. No.	Q	Address
1	6DF	
2	6DF	
3	6DF	
4	6DF	
5	6DF	
6	6DF	
7	6DF	
8	6DF	
9	6DF	
10	6DG	
11	6DF	
12	6DG	
13	6DF	
14	6DG	
15	6DF	
16	6DG	
17	6DE	
18	6DG	
19	6DE	
20	6DG	
21	6DE	
22	6DD	
23	6DE	
24	6DD	
25	6DD	
26	6DD	
27	6DE	
28	6DD	
29	7DD	
1	6DD	

AUDIO UNIT (X09-2820-11)

Ref. No.	Q	Address
1	5DF	
2	5DF	
3	5DF	
4	5DG	
5	5DD	
6	5DF	
7	2DE	
8	2DE	
21	2DK	
22	2DK	
23	2DE	
24	2DK	
27	4DH	
28	3DD	
29	4DD	
30	3DD	
31	3DE	
32	2DC	
33	2DD	
34	4DH	
1	2DH	
2	2DH	
3	3DH	
4	3DH	
5	4DH	
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7	3DG	
8	2DD	
9	4DC	
10	3DC	
11	2DJ	

ACCESSORY UNIT (X13-6260-11)

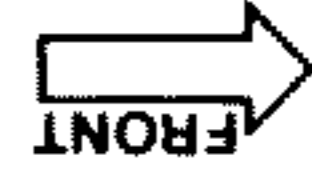
Ref. No.	Q	Address
1	3DJ	



ACCESSORY UNIT (X13-6160-11)(B/7)

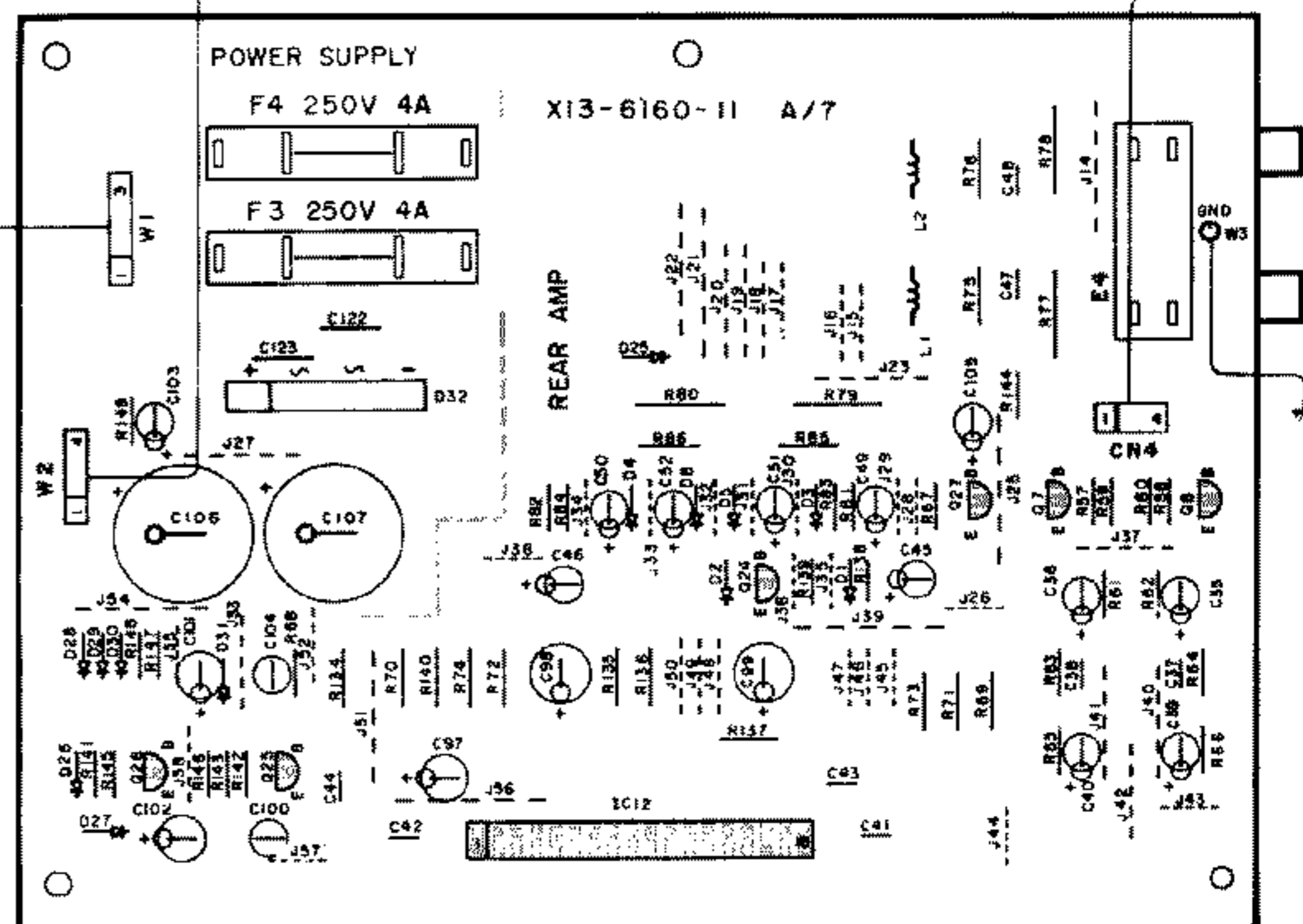
X13 B/7

PHONO
VIDEO 1
VIDEO 2
VIDEO 3
AUDIO



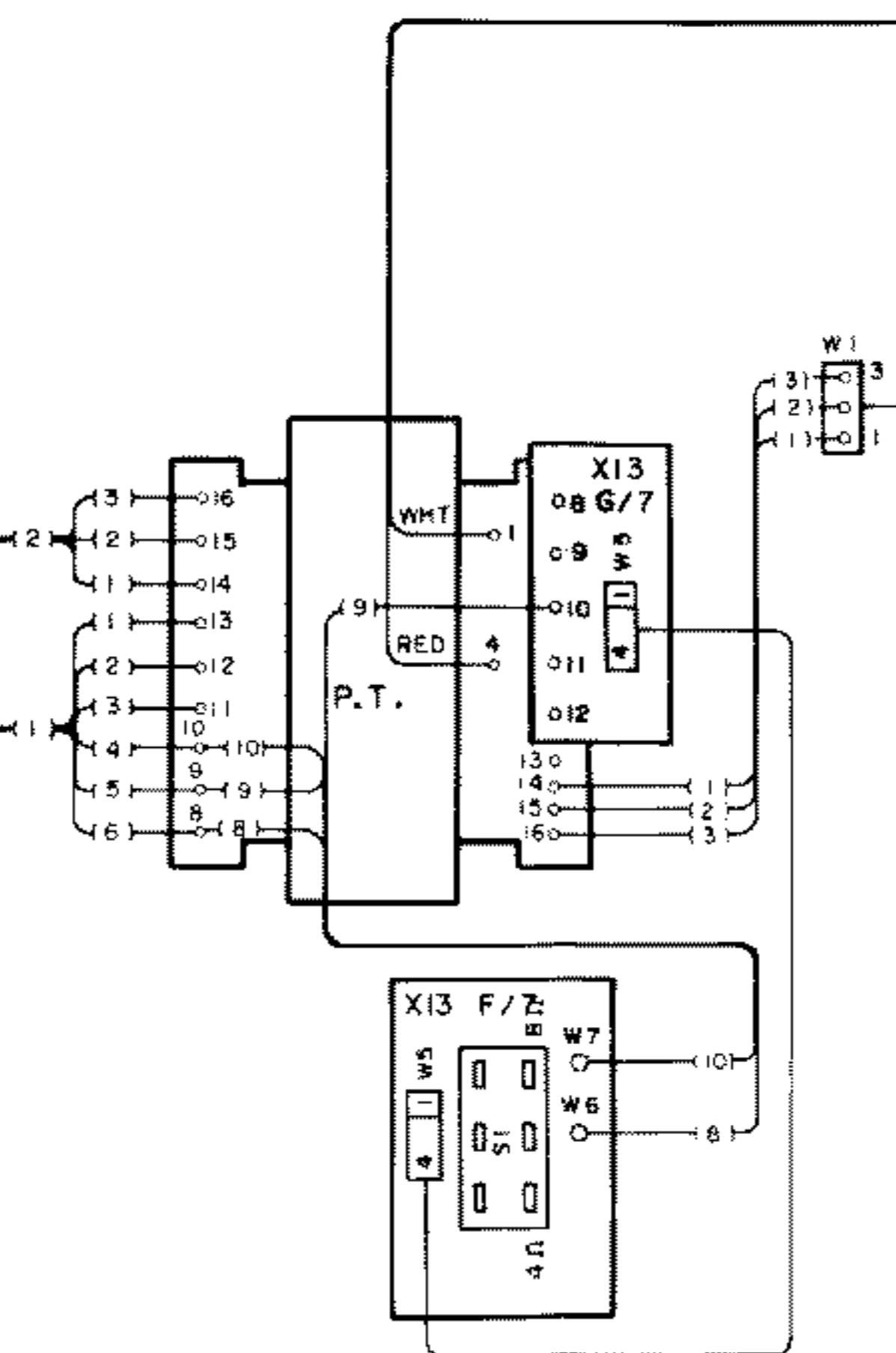
DC Voltmeter
No signal current
1.5mV

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

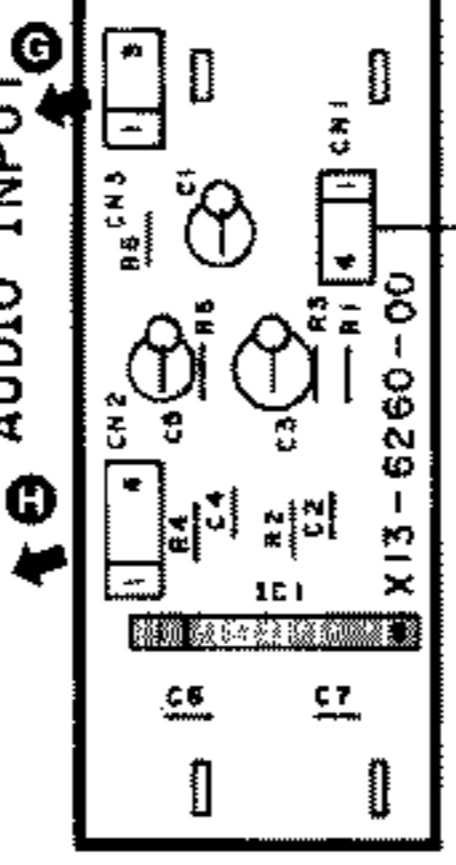


ACCESSORY UNIT (X13-6160-11)(A/7)

KA-V7000(K)(C/3)

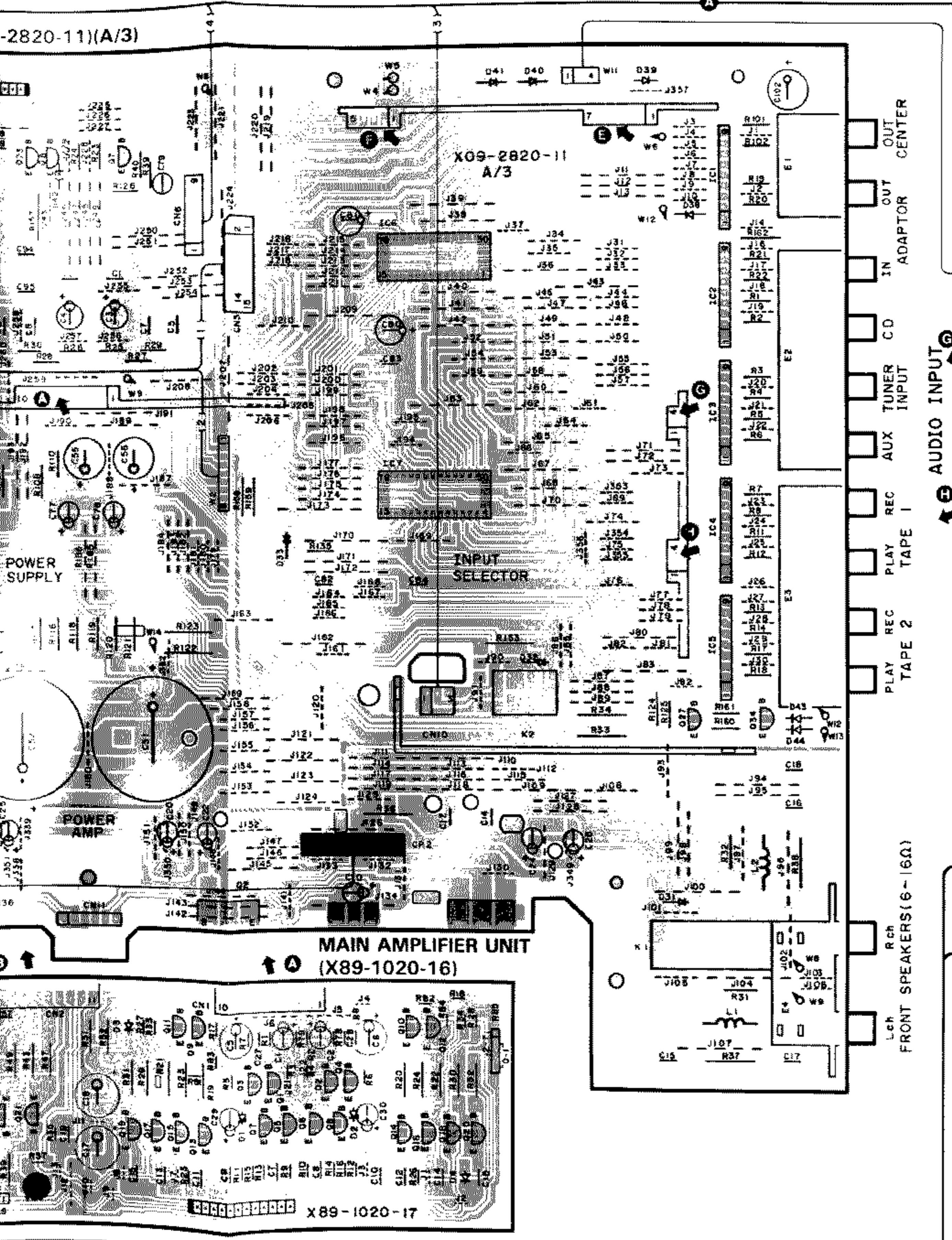
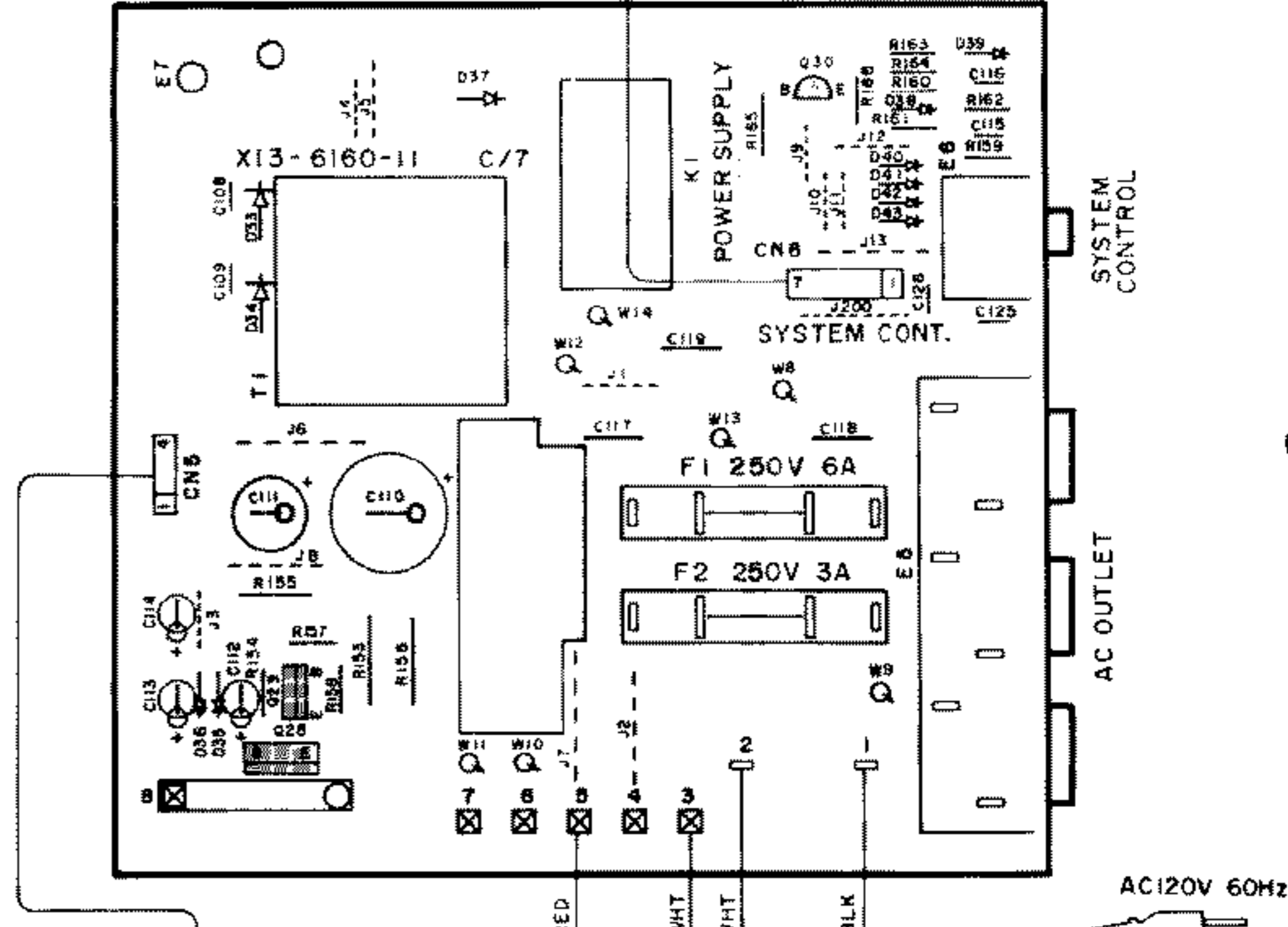


ACCESSORY UNIT (X13-6260-11)



ACCESSORY UNIT (X13-6260-00)

ACCESSORY UNIT (X13-6160-11)(C/7)



MAIN AMPLIFIER UNIT (X89-1020-16)

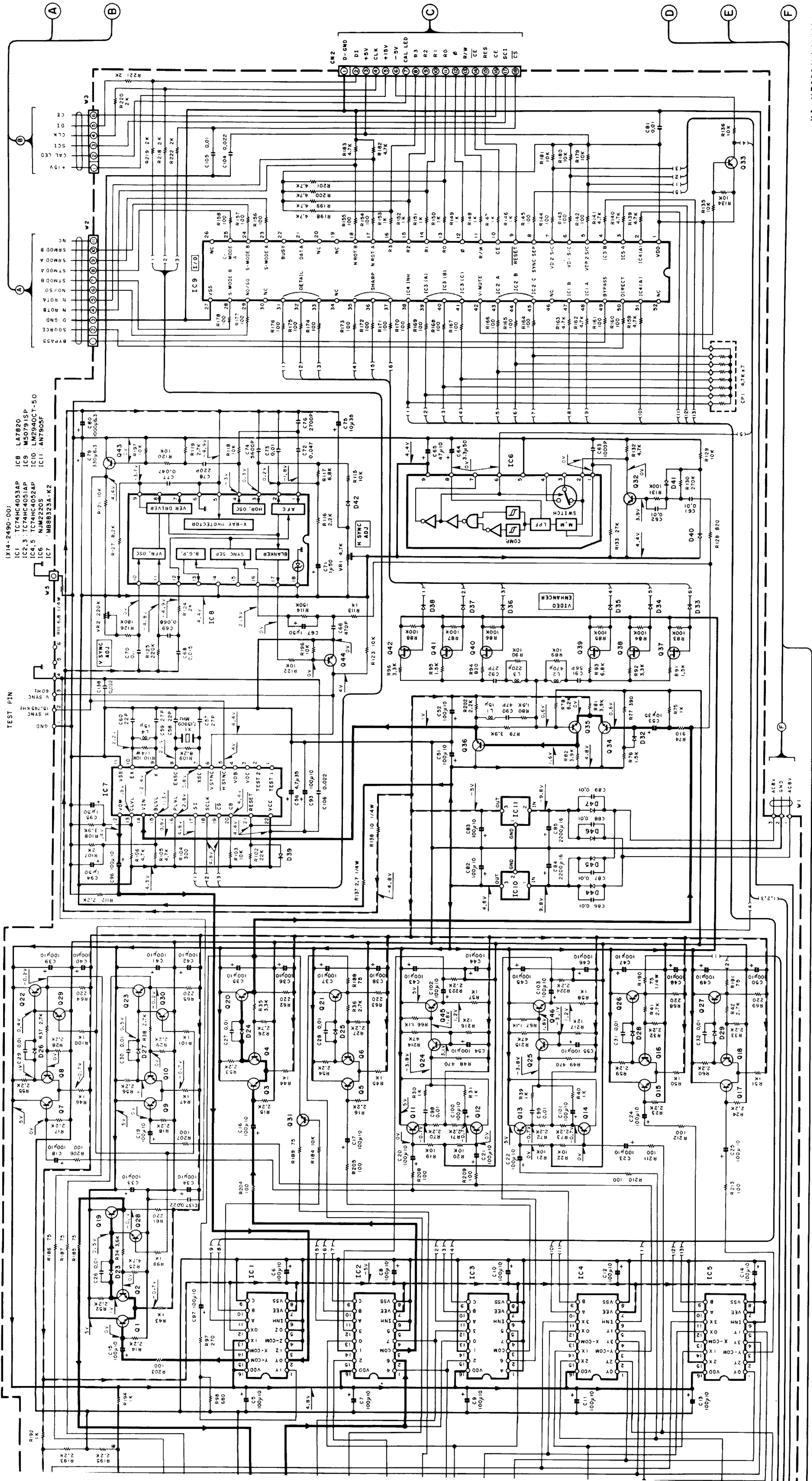
MAIN AMPLIFIER UNIT (X89-1020-16)

MAIN AMPLIFIER UNIT (X89-1020-16)

INPUT SELECTOR

A/3

AUDIO UNIT (X09-2820-11)(A/3)



KA-V7000(K) (1/4)

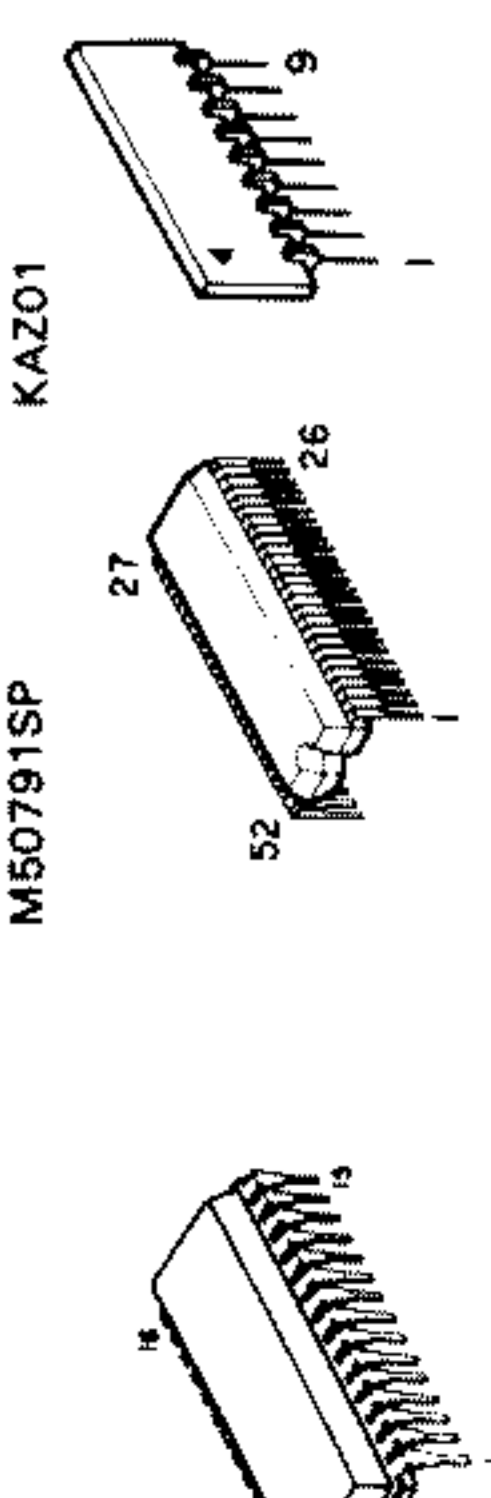
CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). **⚠** Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably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

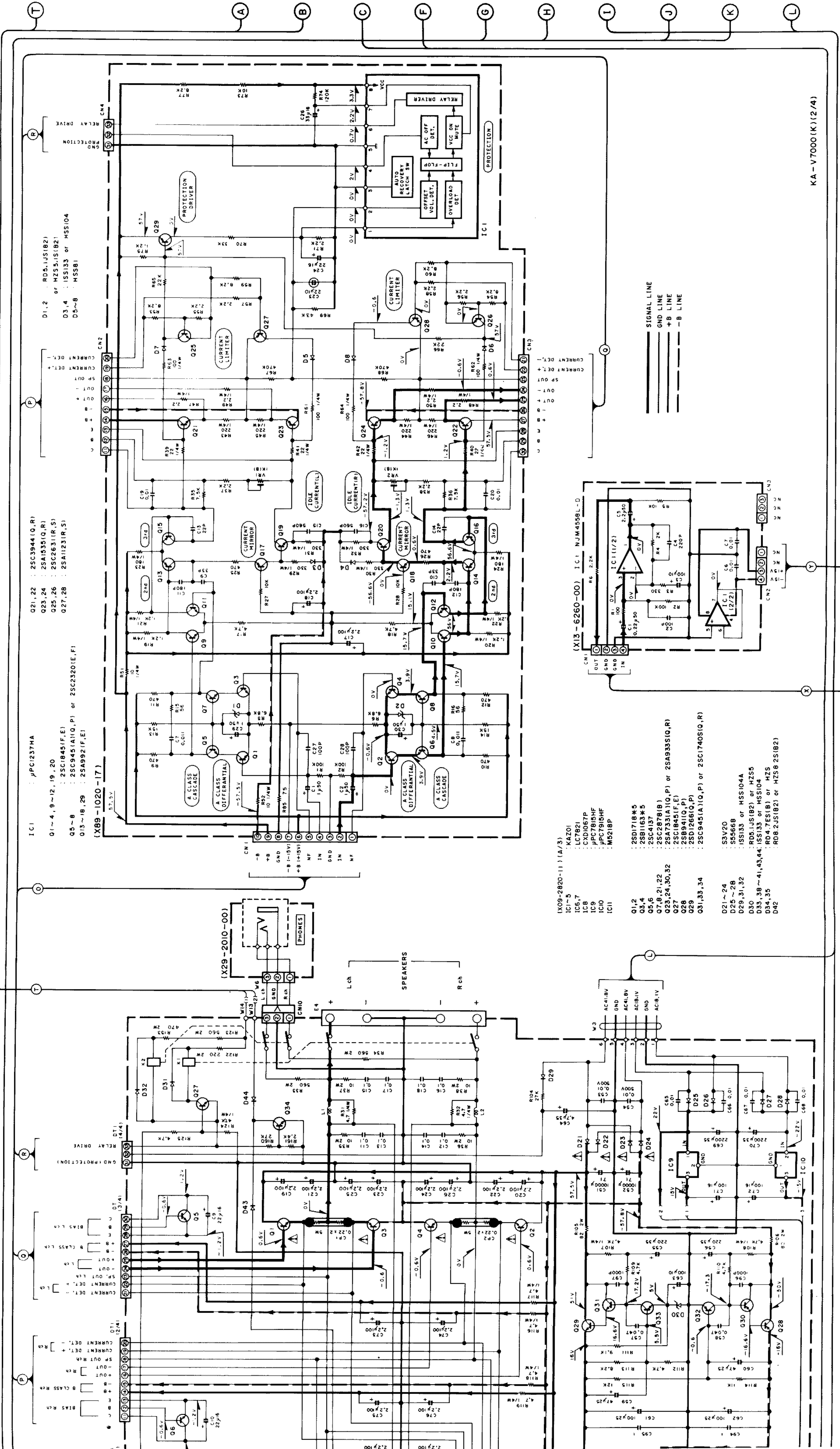
Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.

DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

KA-V7000
KENWOOD

Y08-3640-11





KA-V7000(K)(2/4)

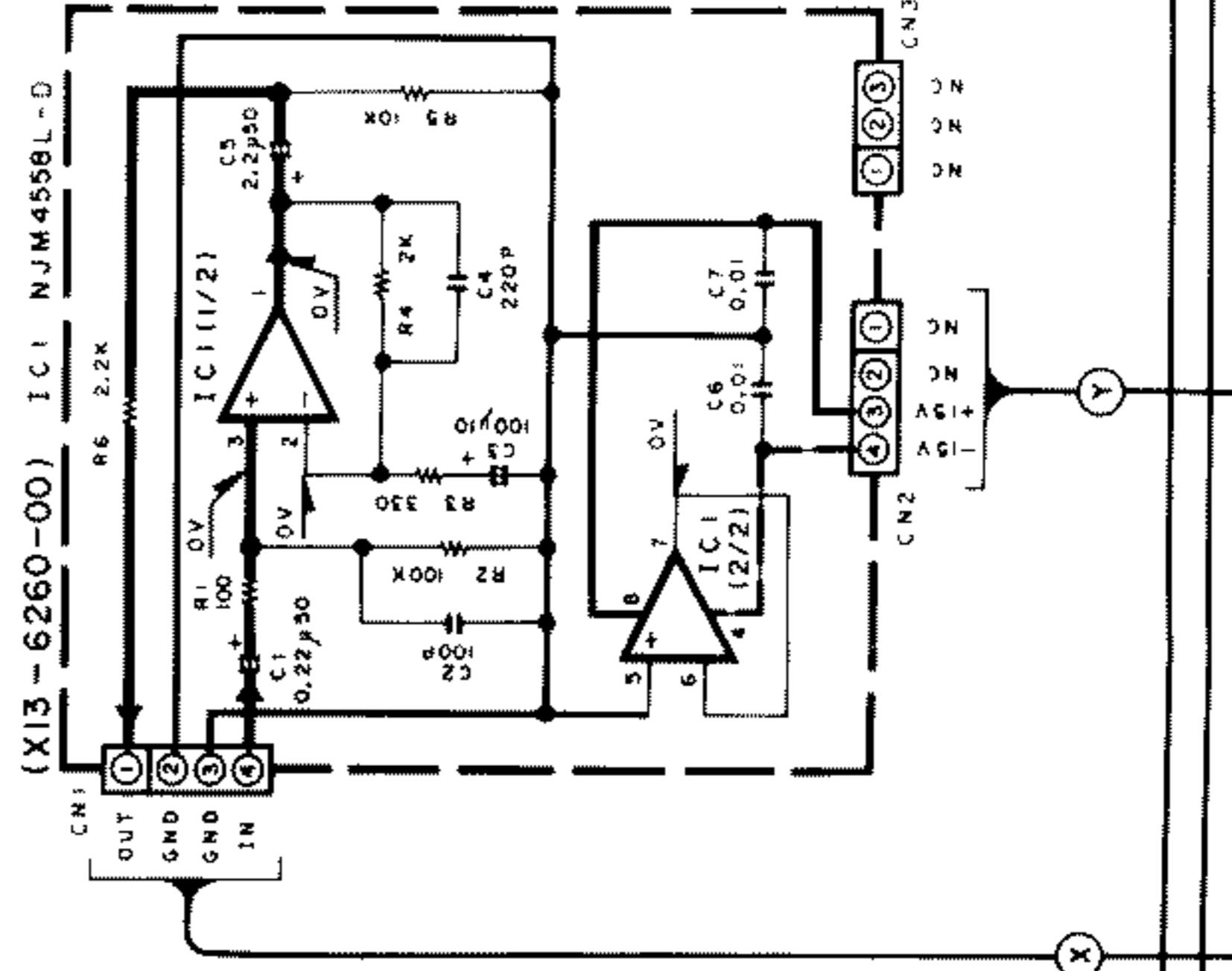
CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably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

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

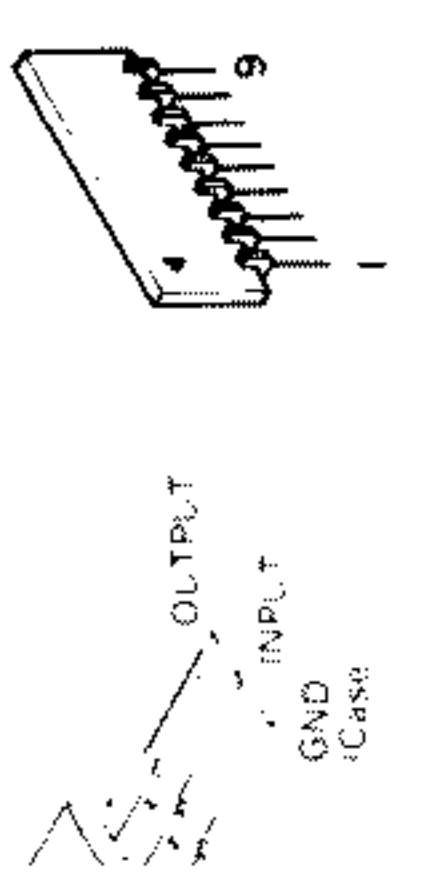
Les tensions c.c. doivent être mesurées avec un volt-mètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

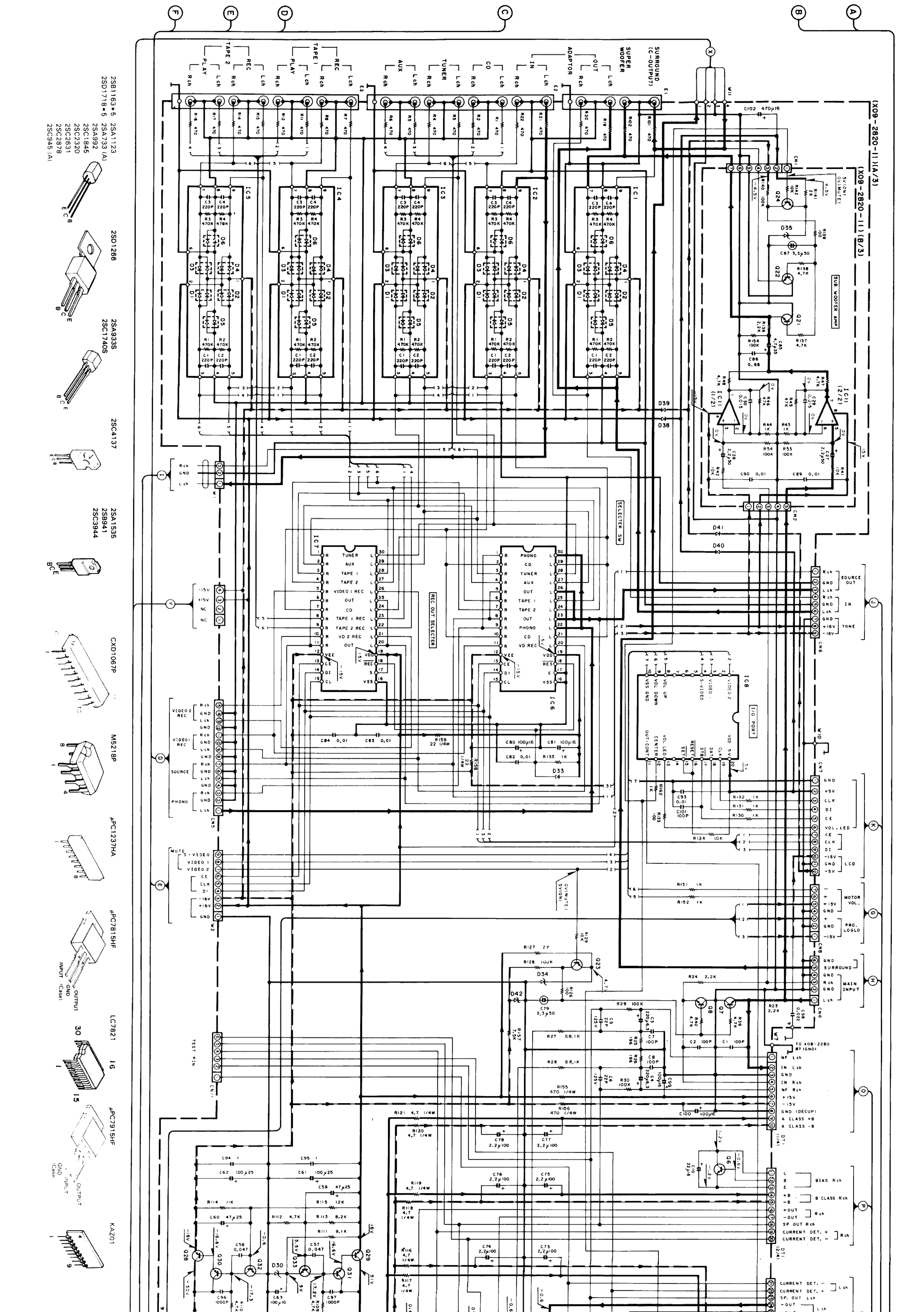
DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or and units.

- (X09-2820-11) (A/3)
- IC1-5 : KAZ01
 - IC6,7 : LC7821
 - IC8 : CYD1067P
 - IC9 : JPC7815HF
 - IC10 : JPC7915HF
 - IC11 : M5218P
- Q1,2 : 2SD1718*5
 - Q3,4 : 28B1163*5
 - Q5,6 : 25C413T
 - Q7,8,21,22 : 2SA7331A (I,Q,P) or 2SA933S (I,Q,R)
 - Q23 : 25C1845 (I,F,E)
 - Q24 : 25C945 (A,I,Q,P) or 25C2320 (E,F)
 - Q25 : 25D1266 (I,Q,P)
 - Q26 : 25C1740S (I,Q,R)
 - Q27 : 25C1740S (I,Q,R)
 - Q28 : 25C1740S (I,Q,R)
 - Q29 : 25C1740S (I,Q,R)
 - Q30 : 25C1740S (I,Q,R)
 - Q31 : 25C1740S (I,Q,R)
 - Q32 : 25C1740S (I,Q,R)
 - Q33 : 25C1740S (I,Q,R)
 - Q34 : 25C1740S (I,Q,R)
 - Q35 : 25C1740S (I,Q,R)
 - Q36 : 25C1740S (I,Q,R)
 - Q37 : 25C1740S (I,Q,R)
 - Q38 : 25C1740S (I,Q,R)
 - Q39 : 25C1740S (I,Q,R)
 - Q40 : 25C1740S (I,Q,R)
 - Q41 : 25C1740S (I,Q,R)
 - Q42 : 25C1740S (I,Q,R)
 - Q43 : 25C1740S (I,Q,R)
 - Q44 : 25C1740S (I,Q,R)
- D21-24 : 53V20
 - D25-28 : 555668
 - D29,31,32 : 1SS133 or HSS104A
 - D30 : RD51JS182 or HZS5
 - D33,38 ~ 41,43,44 : 1SS133 or HSS104
 - D34 : RD4.7ES18 or HZS
 - D35 : RD6.2JS182 or HZS6.2S182
 - D42 : RD6.2JS182 or HZS6.2S182

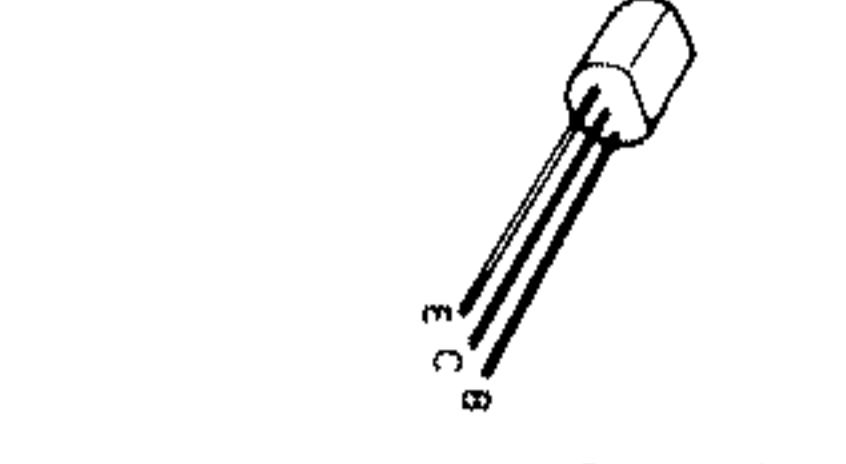


KAZ01

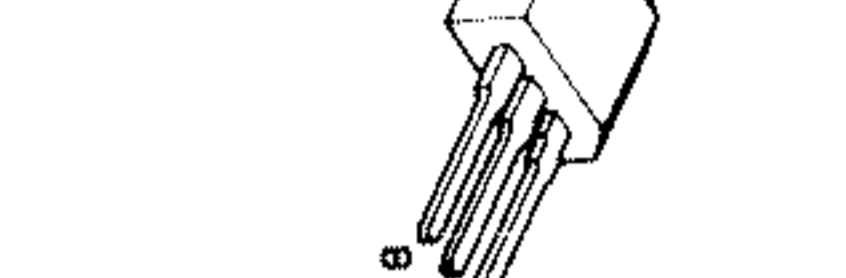




2S81163 *5 2SA1123
 2SD1718 *5 2SA733 (A)
 2SA992
 2SC1845
 2SC2320
 2SC2631
 2SC2878
 2SC945 (A)



2SD1286



2SA9335
 2SC1740S



2SC4137



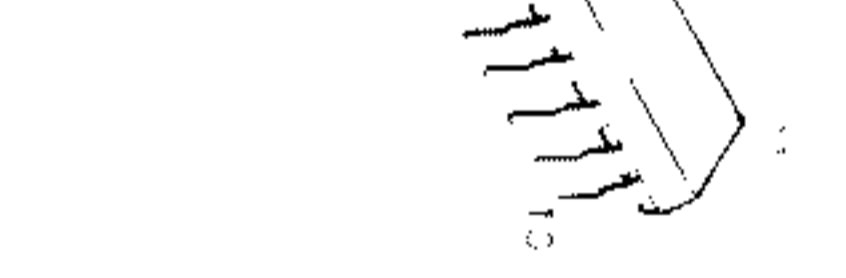
2SA1535
 2SB941
 2SC3944



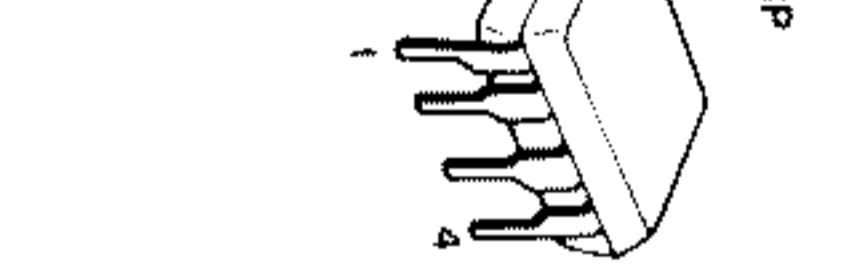
CXD1067P



MS218P



#PC1237HA



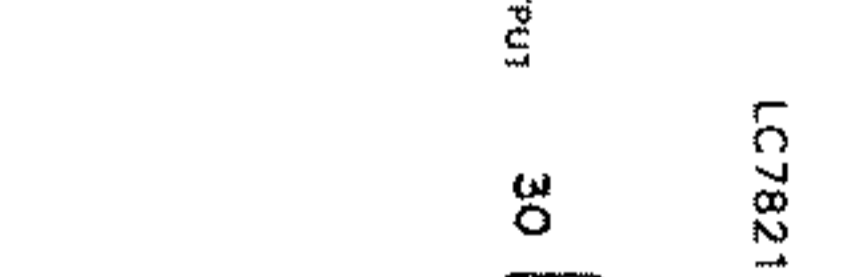
#PC7815HF



LC7821 1G



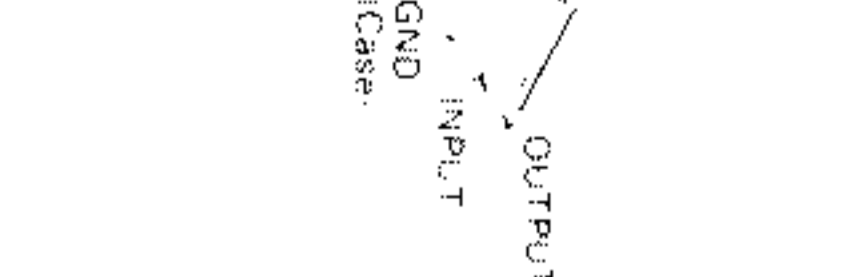
#PC7915HF



KAZ01



LC7821 1G

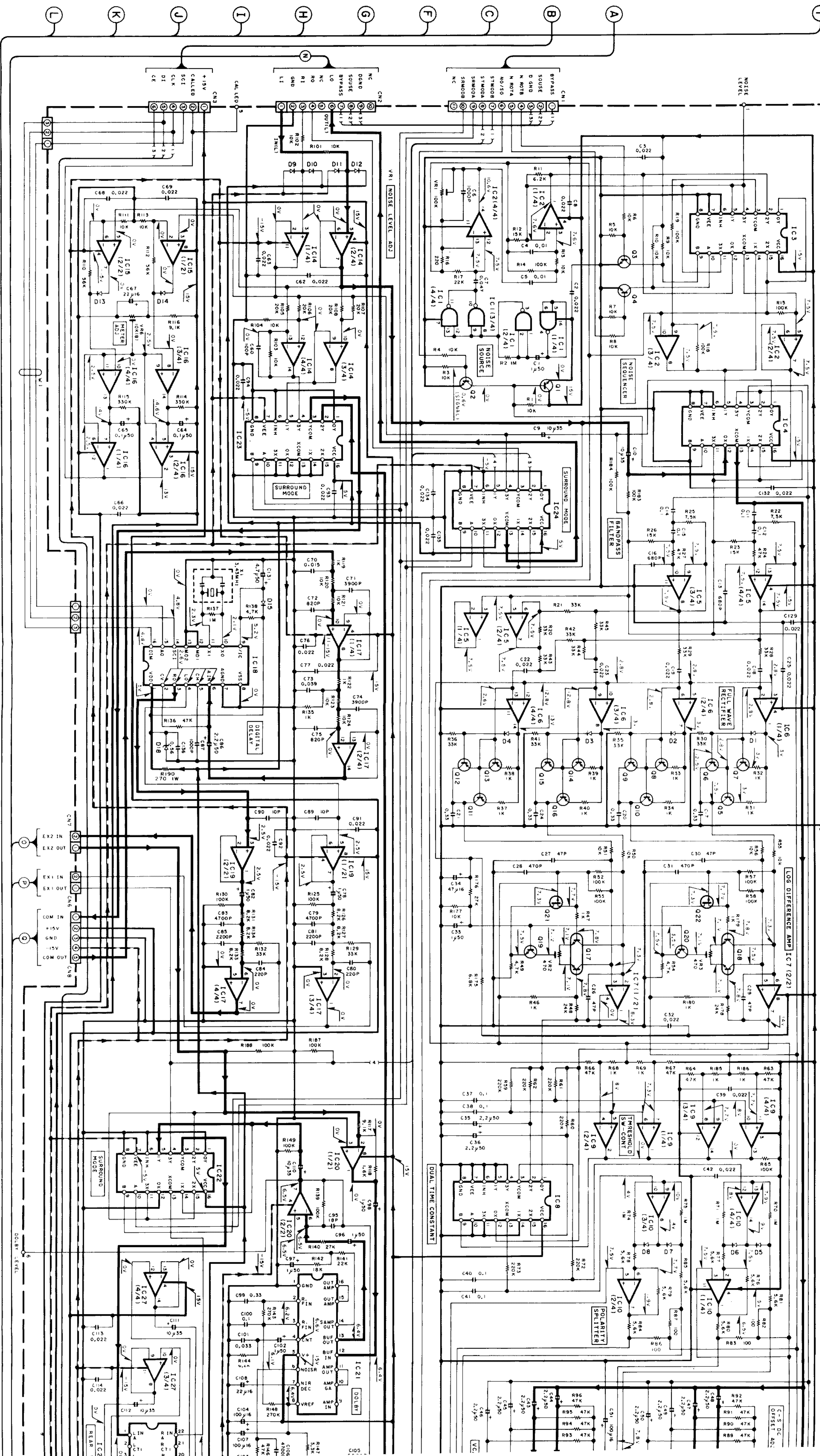


KAZ01

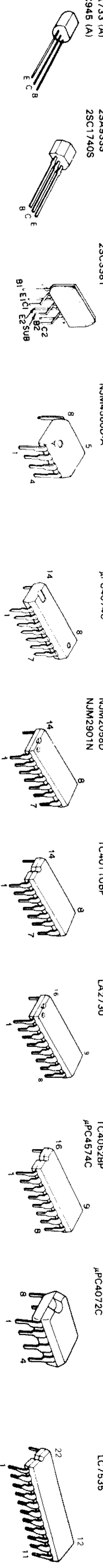


KAZ01





- 2SA1733 (A)
- 2SC945 (A)
- 2SA9335
- 2SC1740S
- 2SC3381
- NUM4560D-A
- μPC4074C
- NUM2058D
- NUM2901N
- TC4011UBP
- LA2730
- TC4082BP
- μPC4574C
- μPC4072C
- LC7535



A
B
C
D
E
F
G
H
I
J
K
L
T

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.

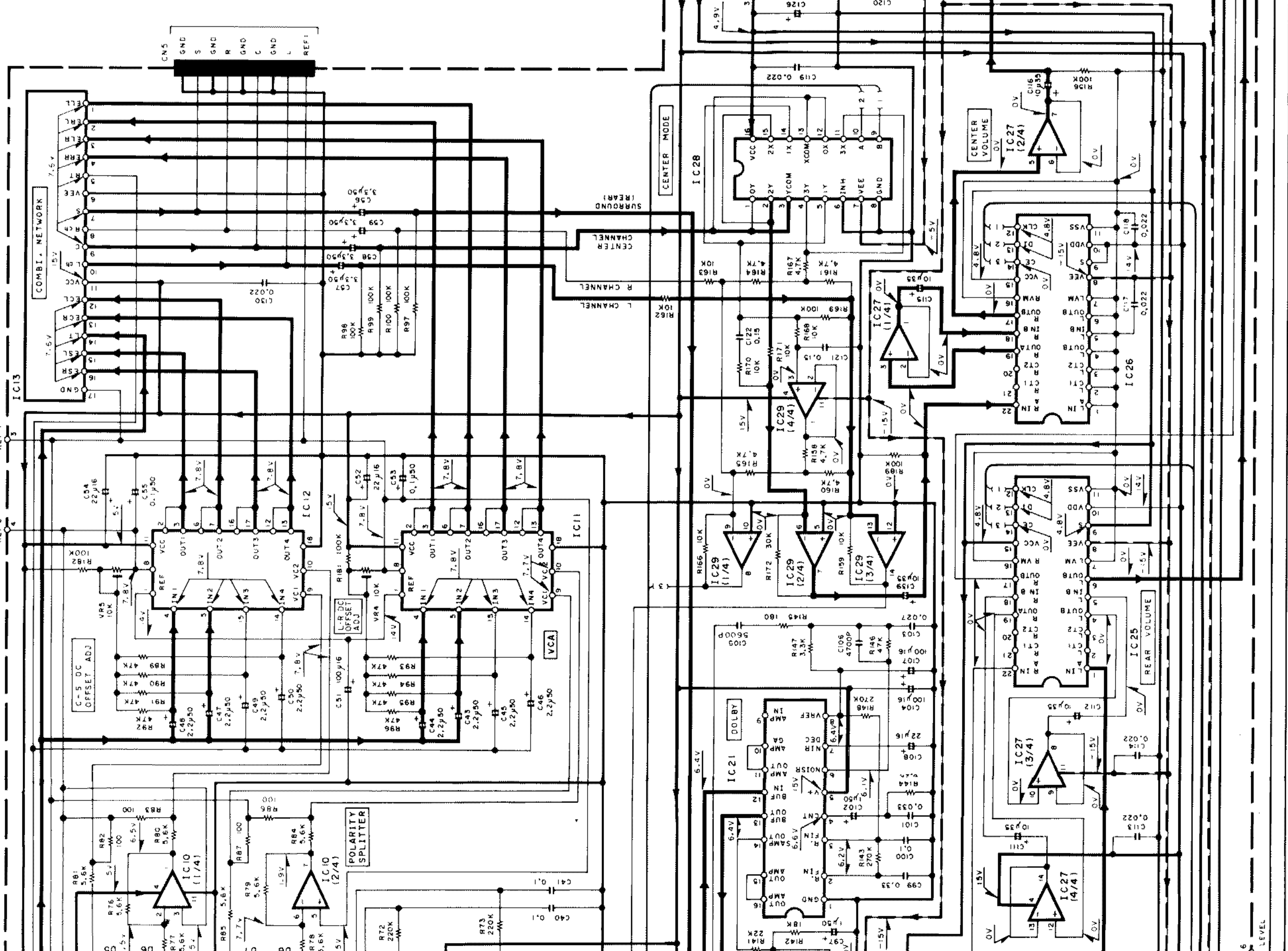
DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units

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

- IX08 - 2280 - 001
- IC1 : IC4011UBP
- IC2, 5, 14, 17, 29 : NJM2068D or μ PC4574C
- IC3, 4, 6, 22 - 24, 28 : TC4052BP
- IC6, 10, 27 : μ PC4074C
- IC7, 19 : μ PC4072C
- IC9, 16 : NJM2901N
- IC11, 12 : TDA1074A
- IC13 : DS9102
- IC15, 20 : NJM4560D-4
- IC18 : FM3428
- IC21 : LC7535
- IC25 - 26 : LM2940CT-15
- IC30 : AN7805F
- IC31 : AN7805F
- Q1 - 4, 19, 20 : 2SC9451(A)(Q,P) or 2SC1740S(Q,R)
- Q5 - 16 : 2SA7331(A)(Q,P) or 2SA933S(Q,R)
- Q17, 18 : 2SC3381
- Q21, 22 : 2SJ74 (BL, V1)
- D1 - 15, 17 : 1SS133 or HSS104
- D16 : RD5.1ES(B2) or HZ55.1S(B2)
- D18 : RD5.1US(B2) or HZ55.1S(B2)

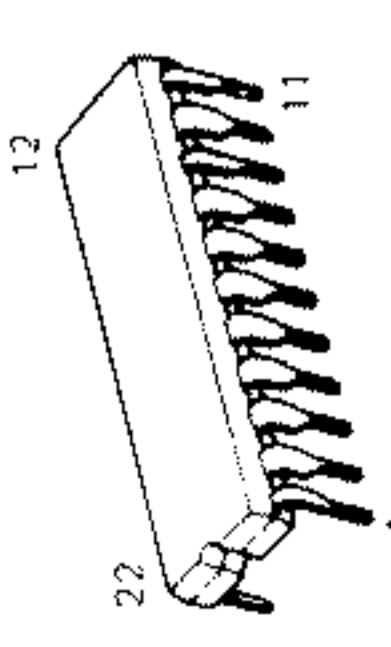
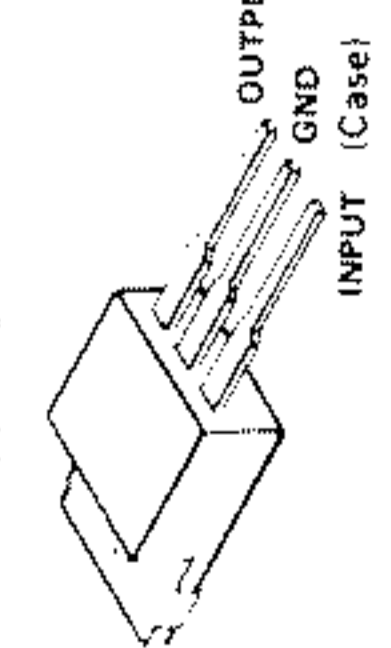
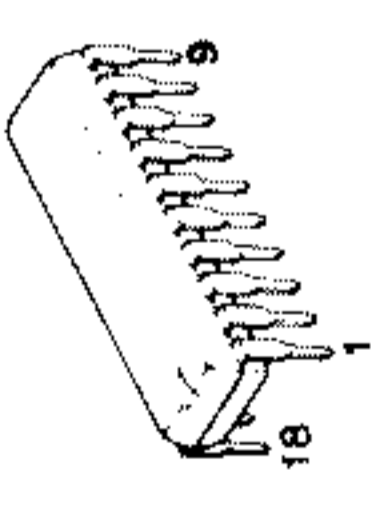
CONTROL		ON CHANNEL	
C	B	A	4051
L	L	L	X0
L	L	L	X1
L	L	L	X2
L	L	L	X3
L	L	L	X4
L	L	L	X5
L	L	L	X6
L	L	L	X7



TDA1074A

AN7805F
LM2940CT-15

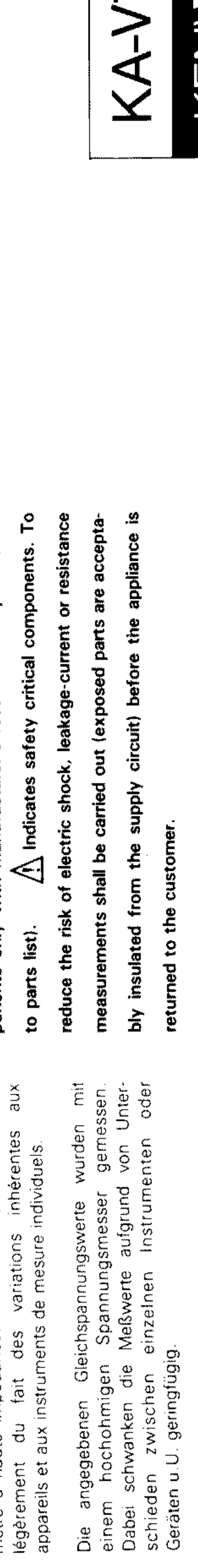
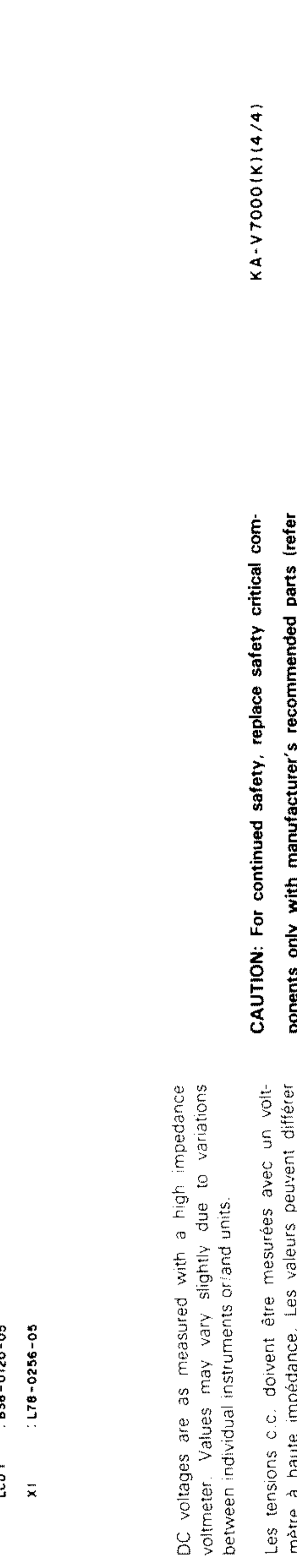
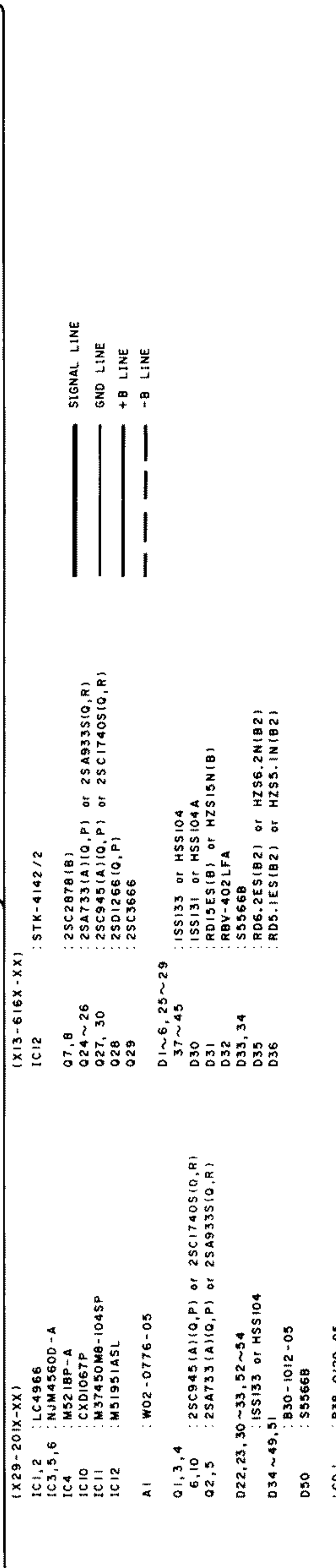
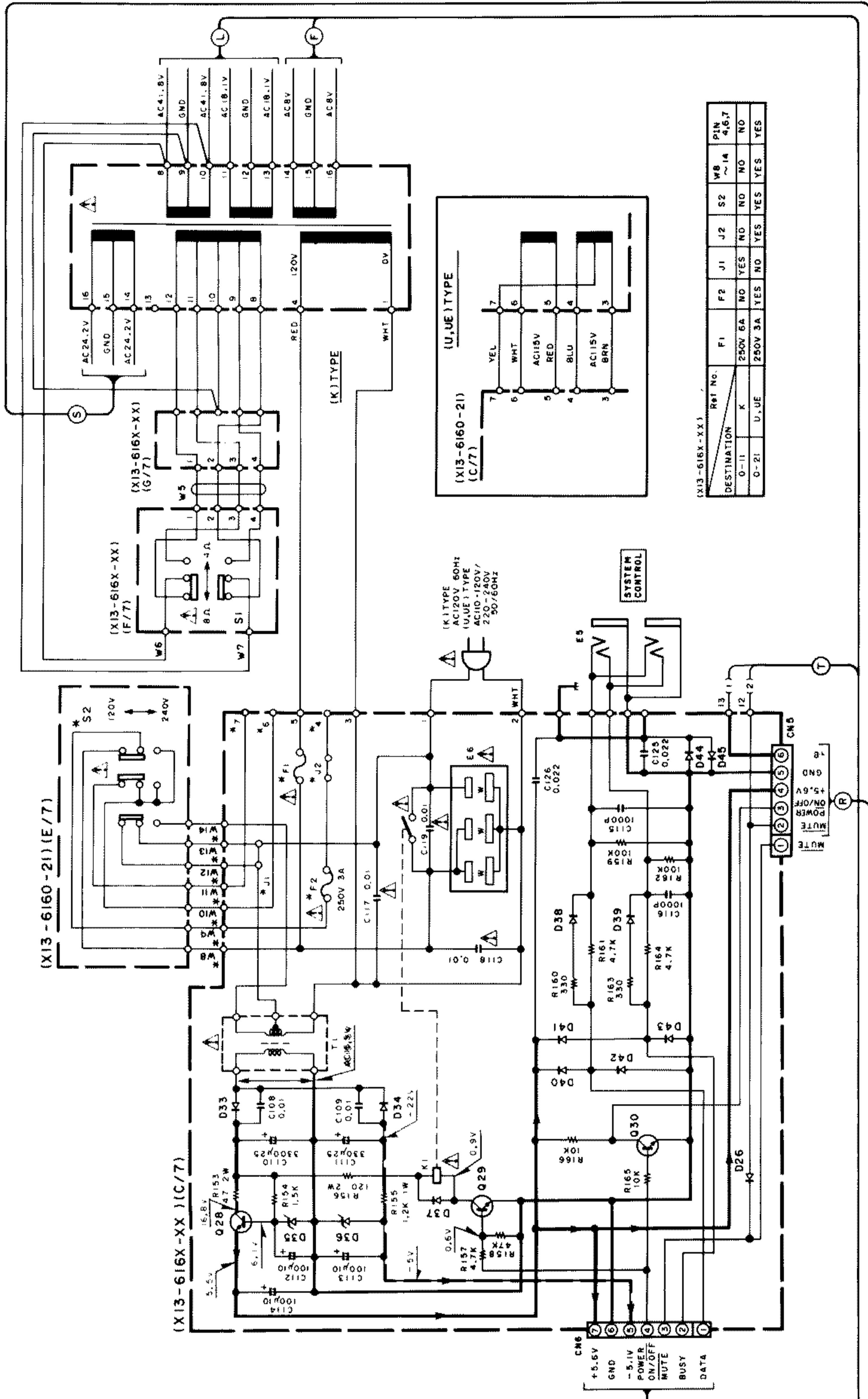
LC7535



KA-V7000 (K13.74)

KA-V7000
KENWOOD

Y08-3640-11



KA-V7000(K)(4/4)

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. Values may vary slightly due to variations between individual instruments or/and units.

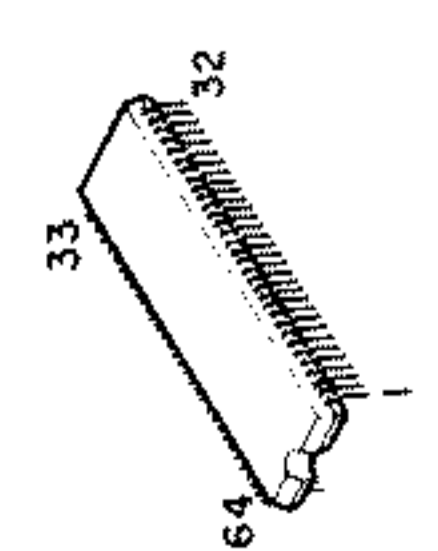
Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent varier légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

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

- (X29-201X-XX)
- IC1,2 : LC4966
 - IC3,5,6 : NJM4560D-A
 - IC4 : M521BP-A
 - IC10 : CXD1067P
 - IC11 : M37450MB-104SP
 - IC12 : M51951A5L
- A1 : W02-0776-05
- D1,3,4 : ISS133 or HSS104
- D2,5 : 2SA733(A)(Q,P) or 2SC1740S(Q,R)
- D22,23,30~33,52~54 : ISS133 or HSS104
- D34~49,51 : B30-1012-05
- D50 : S5566B
- LCD1 : B38-0120-05
- X1 : L78-0256-05

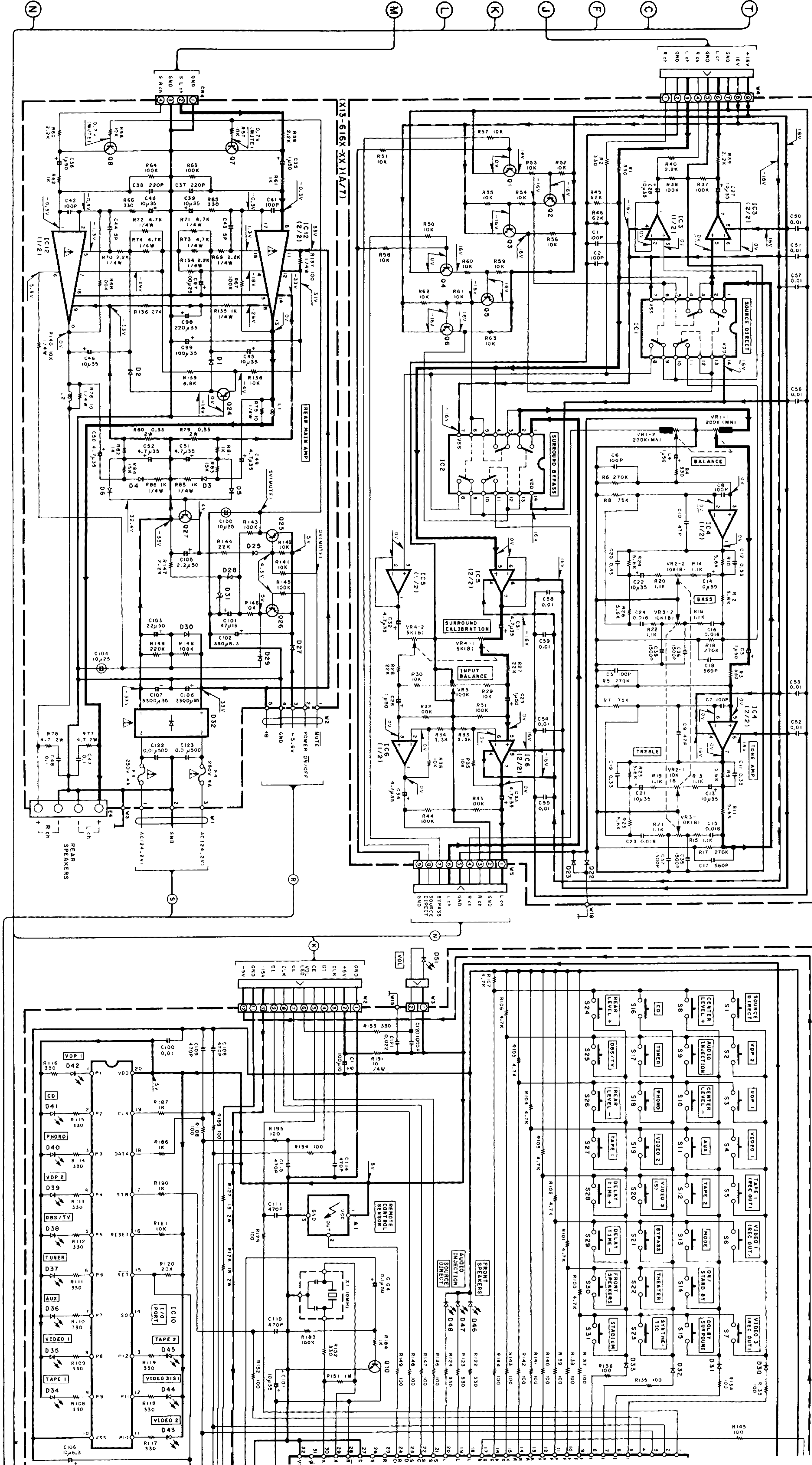
- (X13-616X-XX)
- IC12
- 07,8 : 2SC2878(B)
 - 024~26 : 2SA733(A)(Q,P) or 2SA933S(Q,R)
 - 027,30 : 2SC945(A)(Q,P) or 2SC1740S(Q,R)
 - 028 : 2SD1266(Q,P)
 - 029 : 2SC3666
- D1~6,25~29 : ISS133 or HSS104
- D30 : ISS131 or HSS104A
- D31 : RD15ES(B) or HZS15N(B)
- D32 : RBV-402LFA
- D33,34 : S5566B
- D35 : RD6,2ES(B2) or HZS6,2N(B2)
- D36 : RD5,1ES(B2) or HZS5,1N(B2)

M37450MB-104SP

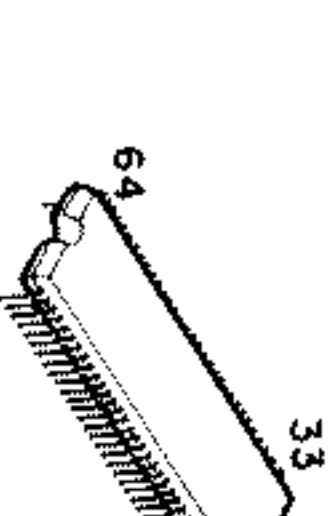
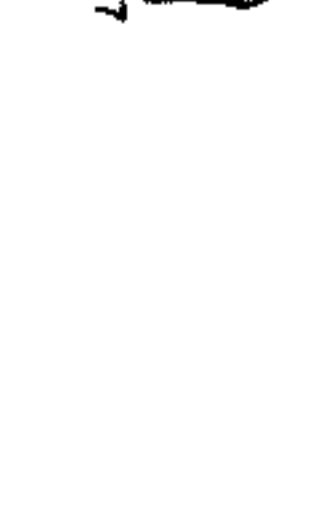
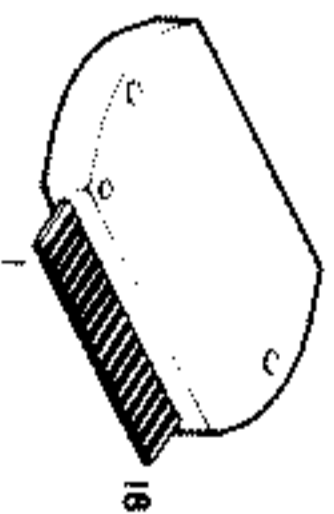
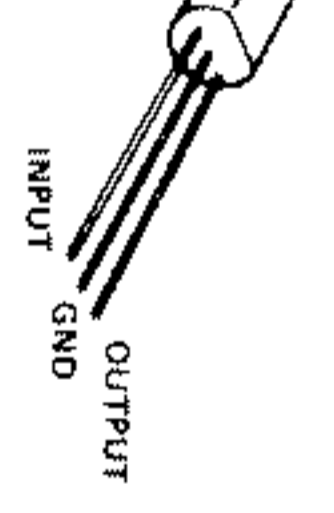
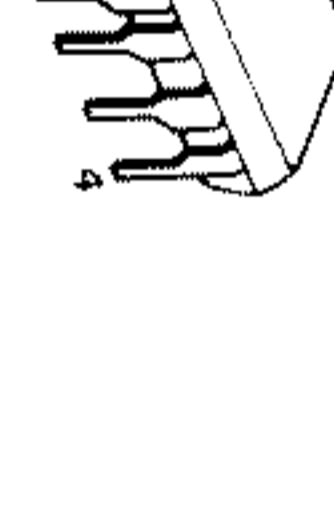
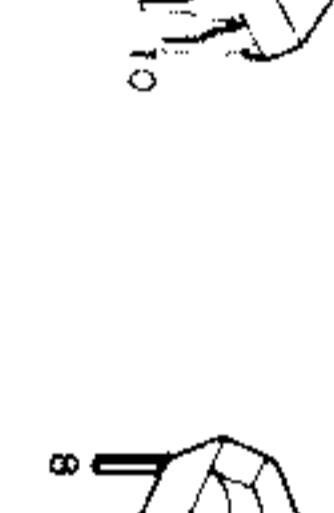
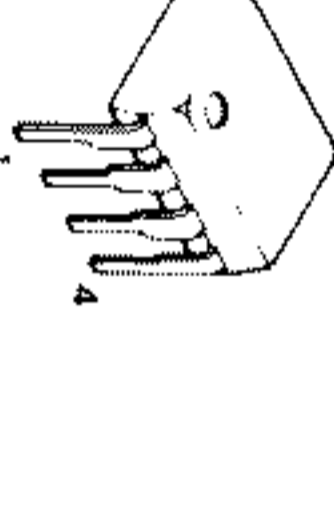
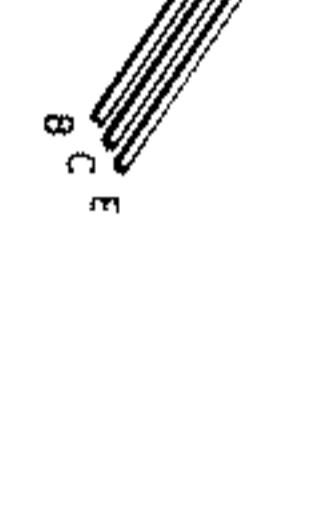
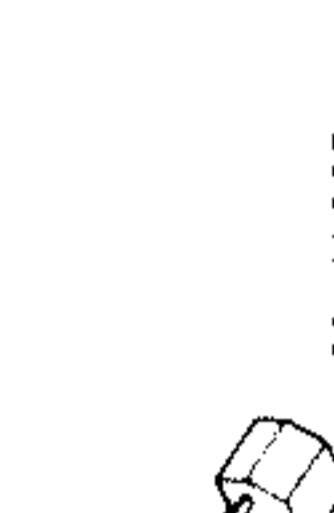
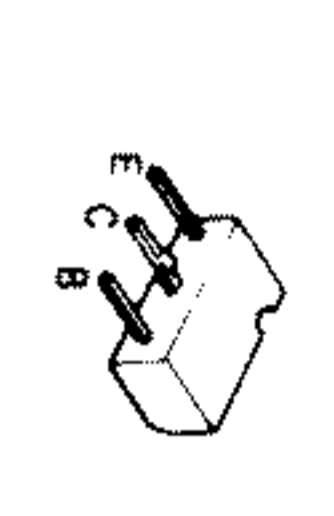
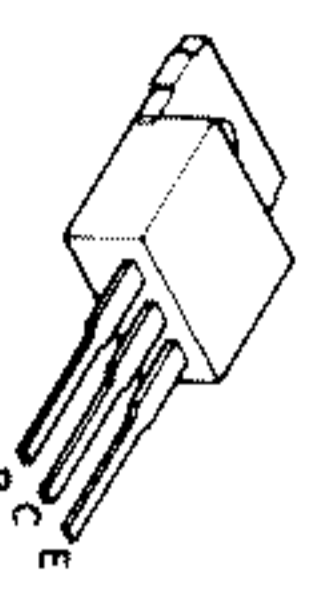
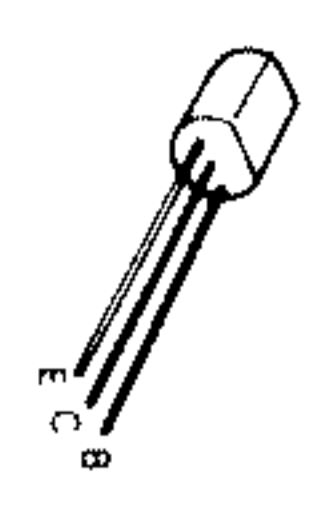


(X29-2010-00)(B/4)

(X29-2010-00)(A/4)

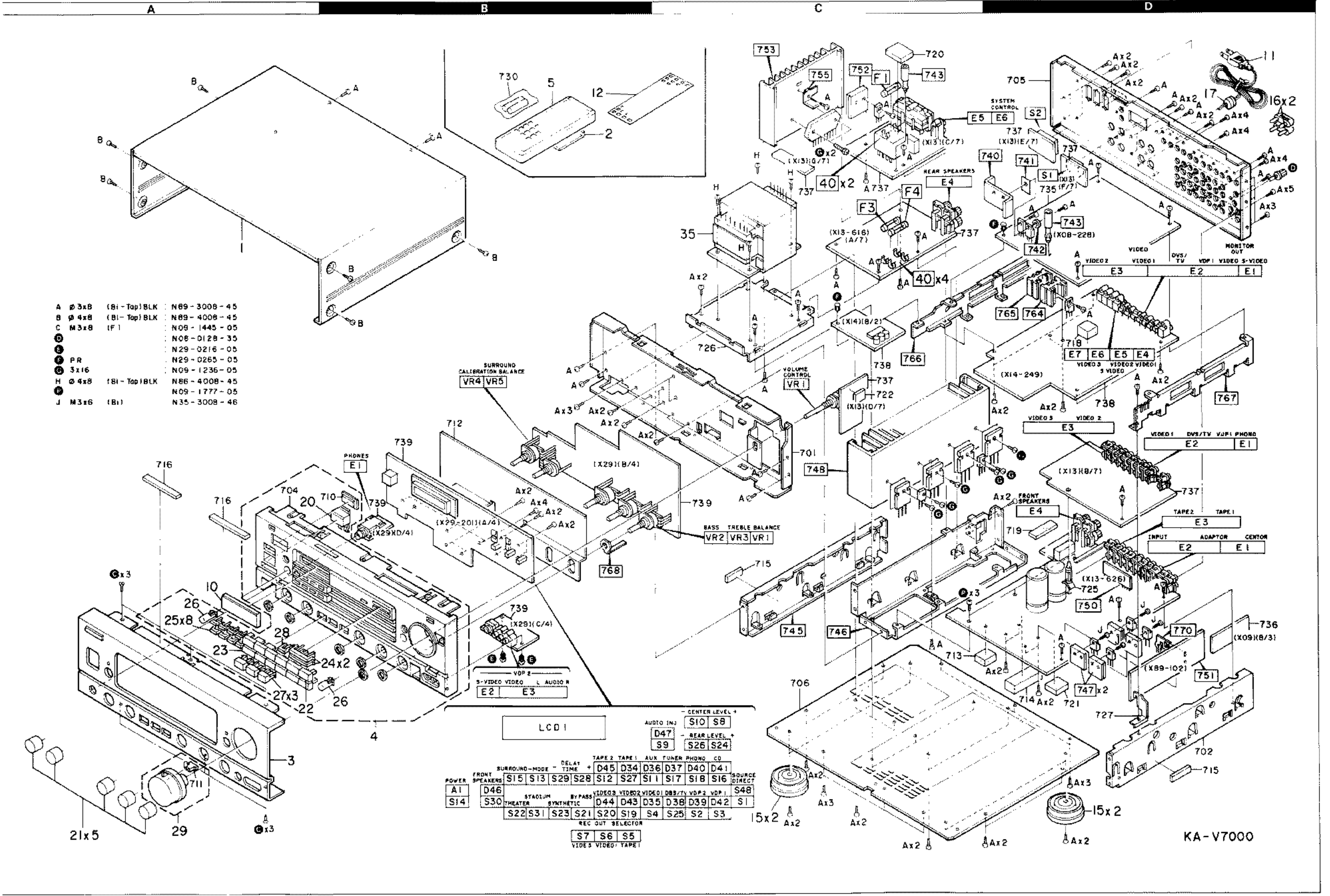


- 2SA733 (A)
- 2SC878
- 2SC945 (A)
- 2SD1266
- 2SC3686
- 2SA933S
- 2SC1740S
- NUM4560D-A
- CXD1067P
- MS218P-A
- MB1951ASL
- STK-4142/2
- LC4966
- M37450M8-104SP



KA-V7000 KA-V7000

EXPLODED VIEW



105

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

△ indicates safety critical components.

U: Pacific East (Hawaii) T: England M: Other Areas
 E: Scandinavia & Europe K: USA P: Canada
 UE: Africa(South) X: Australia

108

△ indicates safety critical components.

U: Pacific East (Hawaii) T: England M: Other Areas
 E: Scandinavia & Europe K: USA P: Canada
 UE: Africa(South) X: Australia

107

Ref. No.	Parts No.	Description	Quantity
C9	CE04KW1100M	ELECTRO	10UF 35WV
C10	CF92FV1H104J	MF	0.33UF Z
C11	CF92FV1H104J	MF	0.10UF Z
C12	CF92FV1H104J	MF	0.10UF Z
C13	CF92FV1H104J	MF	0.10UF Z
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C88	CF92FV1H334J	MF	0.33UF Z
C89	CF92FV1H334J	MF	0.33UF Z

Ref. No.	Parts No.	Description	Quantity
1A	A01-1725-01	METALLIC CABINET	1
2	A09-0086-08	BATTERY CASE(REMOTE CONT.)	1
3	A20-5695-12	PANEL ASSY	1
4	A22-1061-02	SUB PANEL ASSY	1
5	A70-0280-05	REMOTE CONTROLLER ASSY	1
10	B10-0989-04	FRONT GLASS	1
11	B46-0094-03	WARRANTY CARD	1
12	B46-0094-03	WARRANTY CARD	1
13	B50-9356-00	INSTRUCTION MANUAL	1
14	B58-0223-04	CAUTION CARD (PRE-SET 120V)	1
15	E30-0978-05	AC POWER CORD	1
16	E30-0685-05	AC POWER CORD	1
17	F42-0083-05	POWER CORD BUSHING	1
18	F61-0307-05	WIRE BAND	1
19	K29-3363-14	KNOB (POWER)	1
20	K29-3402-04	KNOB (BASS,BALANCE,TREBLE)	1
21	K29-3525-03	KNOB (AUDIO)	1
22	K29-3525-03	KNOB (AUDIO)	1
23	K29-3525-03	KNOB (AUDIO)	1
24	K29-3525-03	KNOB (AUDIO)	1
25	K29-3525-04	KNOB (SUPP)	1
26	K29-3529-04	KNOB (SP DIRECT)	1
27	K29-3530-04	KNOB (REC/STP)	1
28	K29-3531-04	KNOB (AUDIO IN)	1
29	K29-3573-04	KNOB ASSY(VOLUME)	1
30	L01-5731-05	POWER TRANSFORMER	1
31	L01-5735-05	POWER TRANSFORMER	1
32	N89-3008-45	BINDING HEAD TAPRITE SCREW	10
33	N89-4008-45	BINDING HEAD TAPRITE SCREW	10
34	N89-4008-45	BINDING HEAD TAPRITE SCREW	10
35	N89-4008-45	BINDING HEAD TAPRITE SCREW	10
36	N89-4008-45	BINDING HEAD TAPRITE SCREW	10
37	N89-4008-45	BINDING HEAD TAPRITE SCREW	10
38	N89-4008-45	BINDING HEAD TAPRITE SCREW	10
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89	N89-4008-45	BINDING HEAD TAPRITE SCREW	10
90	N89-4008-45	BINDING HEAD TAPRITE SCREW	10

PARTS LIST

KA-V7000 KA-V7000

PARTS LIST

* New Parts
 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.

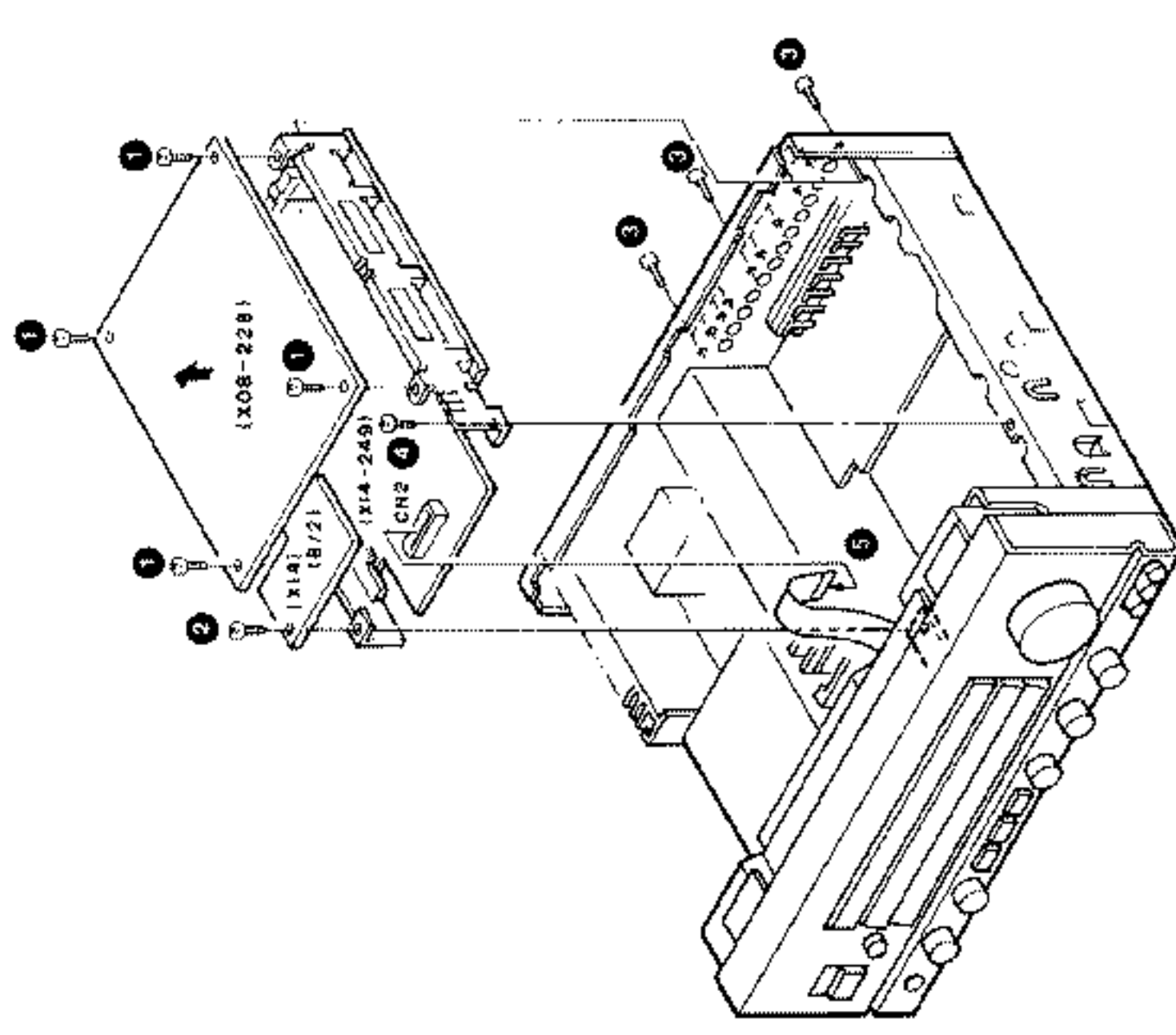
PARTS LIST

x New Parts
 Parts without Parts No. are not supplied.
 Les articles non mentionnés dans le Parts No. ne sont pas fournis.
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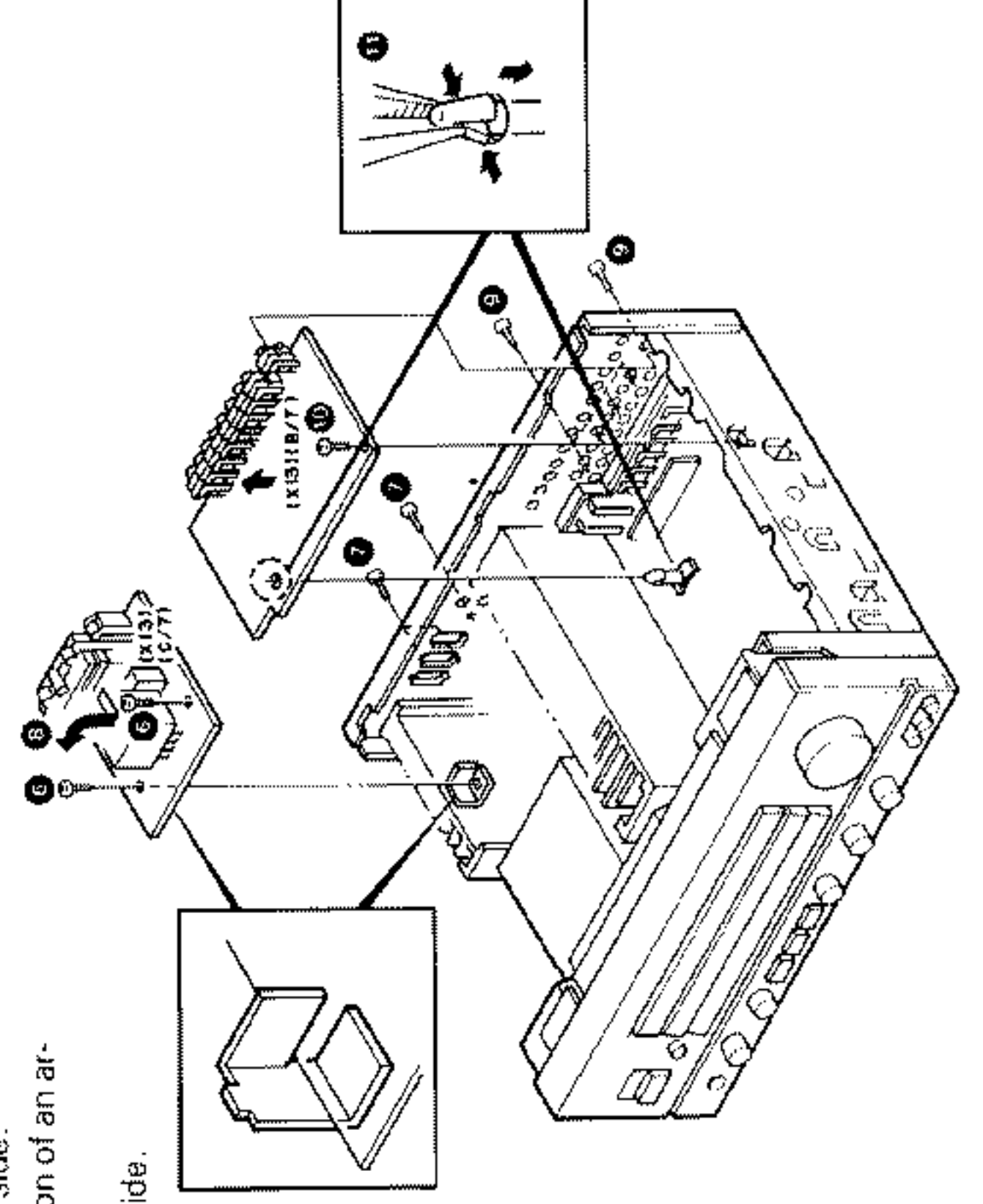
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C95			CC45FSL1H180J	CERAMIC		
C96 -98			CE04KW1H010M	ELECTRO		
C99			CF92FV1H334J	MF		
C100			CF92FV1H104J	MF		
C101			CF92FV1H333J	MF		
C102			CE04KW1H010M	ELECTRO		
C103			CF92FV1H273J	MF		
C104			CE04KW1C101M	ELECTRO		
C105			CF92FV1H562J	MF		
C106			CF92FV1H472J	MF		
C107			CE04KW1C101M	ELECTRO		
C108			CE04KW1C220M	ELECTRO		
C109			CK45FF1H223Z	CERAMIC		
C110-112			CE04KW1V100M	ELECTRO		
C113,114			CK45FF1H223Z	CERAMIC		
C115,116			CE04KW1V100M	ELECTRO		
C117-120			CK45FF1H223Z	CERAMIC		
C121,122			CF92FV1H154J	MF		
C123			CE04KW1C101M	ELECTRO		
C124,125			CE04KW1C101M	ELECTRO		
C126,127			CE04KW0J331M	ELECTRO		
C128			CE04KW1C102M	ELECTRO		
C129,130			CK45FF1H223Z	CERAMIC		
C131			CE04KW1H4R7M	ELECTRO		
C132			CK45FF1H223Z	CERAMIC		
C134,135			CK45FF1H223Z	CERAMIC		
C136			CF92FV1H564J	MF		
C137,138			CK45FF1H223Z	CERAMIC		
C139			CE04KW1V100M	ELECTRO		
X1		*	L78-0255-05	RESONATOR		
A			N89-3008-46	BINDING HEAD TAPTITE SCREW		
R173		*	RS14KB3A122JTE	FL-PROOF RS 1.2K J 1W		
R190		*	RS14KB3A271JTE	FL-PROOF RS 270 J 1W		
VR1		*	R12-5058-05	TRIMMING POT. (NOISE LEVEL)		
VR2,3		*	R12-0118-05	TRIMMING POT. (SEPARATION)		
VR4 -6		*	R12-3126-05	TRIMMING POT. (OFFSET/METER)		
D1 -15			HSS104	DIODE		
D1			ISS133	DIODE		
D16			HZ55-1N(B2)	ZENER DIODE		
D16			RD5-1ES(B2)	ZENER DIODE		
D17			HSS104	DIODE		
D17			ISS133	DIODE		
D18			AZ55-1S(B2)	ZENER DIODE		
D18			RD5-1JS(B2)	ZENER DIODE		
D19			HSS104	DIODE		
D19			ISS133	DIODE		
IC1			TC4011UBP	IC (VAND X4)		
IC2			NJM2058D	IC (OP AMP X2)		
IC2			UPC4574C	IC (OP AMP X4)		
IC3,4			TC4052BP	IC (4CH MPX/DE-MPX)		
IC5			NJM2058D	IC (OP AMP X4)		
IC5			UPC4574C	IC (OP AMP X4)		

DISASSEMBLY FOR REPAIR

- Remove the four screws (1), then detach the PC board (X08-228).
- Remove the one screw (2), then detach the PC board (X14) (B12).
- Remove the ten screws (3) from the rear side.
- Remove the one screw (4).
- Disconnect the connector CN2 (5), then detach the PC board (X14-249).



- Remove the two screws (6).
- Remove the three screws (7) from the rear side.
- Detach the PC board (X13) (C7) in the direction of an arrow (8).
- Remove the five screws (9) from the rear side.
- Remove the one screw (10).
- Undo the unit holder... (11)
- Detach the PC board (X13) (B7).



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.

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UE: AAFS(Europe) K: USA P: Canada

Table with columns: Ref. No., Address, Parts No., Description, and Dest. - Re- nation marks. Includes sub-section 'AUDIO UNIT (X09-2820-11)' and various electronic components like capacitors, resistors, and ICs.

PARTS LIST

KA-V7000

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

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Table with columns: Ref. No., Address, Parts No., Description, and Dest. - Re- nation marks. Includes sub-section 'ACCESSORY UNIT (X13-6160-11)' and various electronic components like capacitors, resistors, and ICs.

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Table with columns: Ref. No., Address, Parts No., Description, and Dest. Marks. Includes sections for VIDEO CONTROL UNIT (X14-2490-00) and ACCESSORY UNIT (X13-6260-11).

PARTS LIST

U: P: X: M: Other Areas
T: England
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F: Canada

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K: USA
F: Canada

Table with columns: Ref. No., Address, Parts No., Description, and Dest. Marks. Includes sections for CONTROL CIRCUIT UNIT (X29-2010-00) and VIDEO CONTROL UNIT (X14-2490-00).

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F: Canada

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Table with columns: Ref. No., Address, Parts No., Description, and Dest. Marks. Includes sections for VIDEO CONTROL UNIT (X14-2490-00) and ACCESSORY UNIT (X13-6260-11).

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Table with columns: Ref. No., Address, Parts No., Description, and Dest. Marks. Includes sections for VIDEO CONTROL UNIT (X14-2490-00) and ACCESSORY UNIT (X13-6260-11).

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