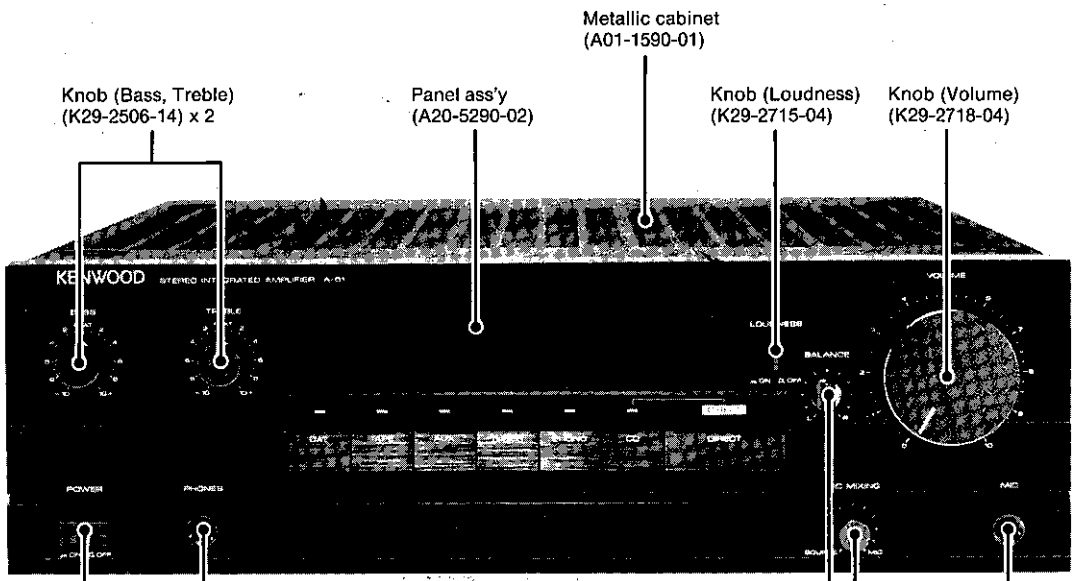
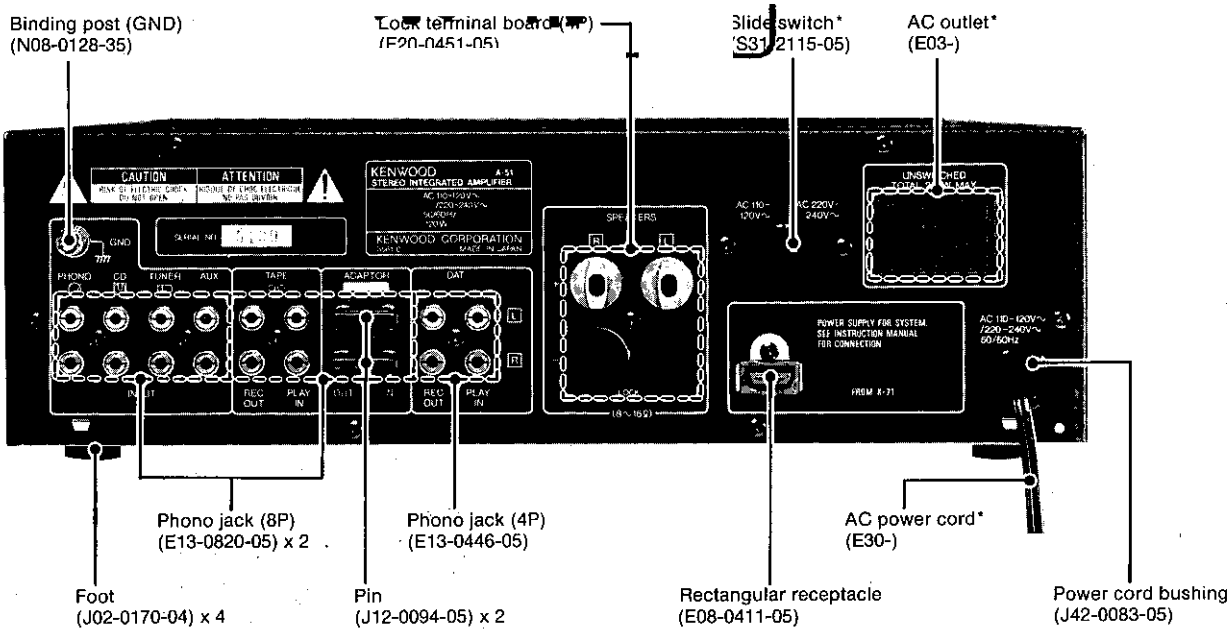
STEREO INTEGRATED AMPLIFIER

A-51

SERVICE MANUAL

KENWOOD





*** Refer to Parts List on page 24.**

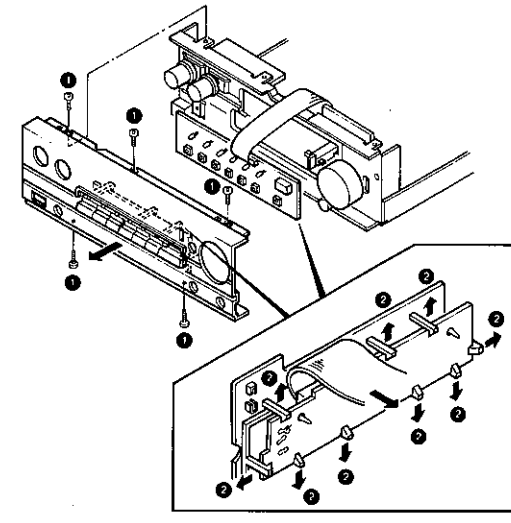
CONTENTS

Note: The rectangular receptacle (E08-0411-05) at the rear supplies AC 16V to X-71. This receptacle cannot be used to supply power to the unit of MIDI X series.

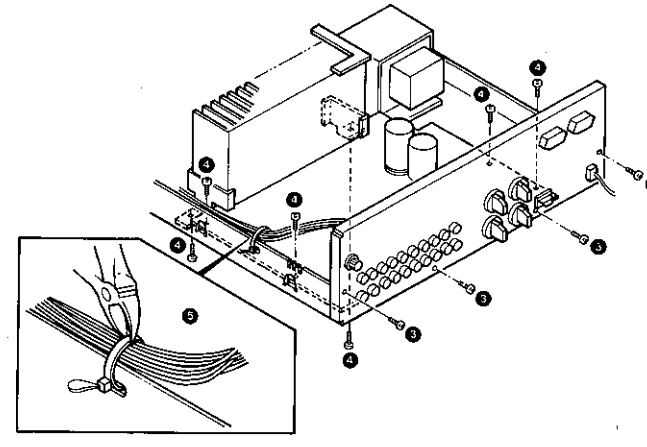
DISASSEMBLY FOR REPAIR

(Remove the metallic cabinet before performing the following operations.)

1. Remove the 5 screws (upper side: 3, lower side: 2) fixing the front panel to the sub panel, and take out the front panel in the direction of the arrow (❶).
2. Disengage 9 claws on the escutcheon attached to the front panel, and remove the Audio Unit (X09-2512-70) (F/8) in the direction of the arrow (❷).

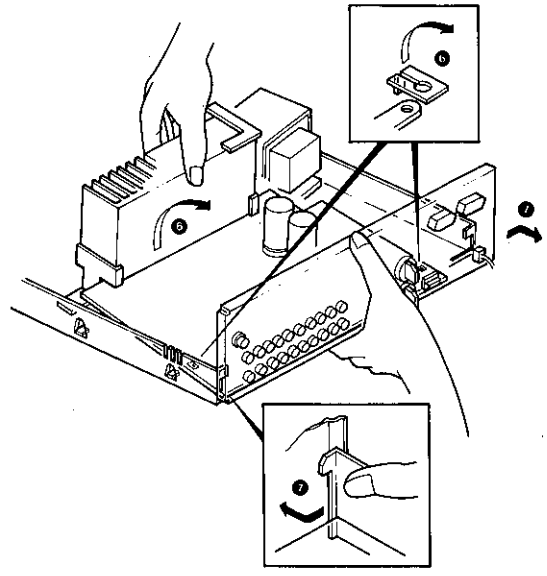


3. Remove the 4 screws fixing the rear panel to the chassis (❸).
4. Remove the 4 screws fixing the Audio Unit (X09-) (A/8) to the chassis, and remove the 2 screws fixing the mounting hardware (heat sink) to the chassis (❹).
5. Cut off the wire band attaching the bundle of lead wires onto the chassis (❺).

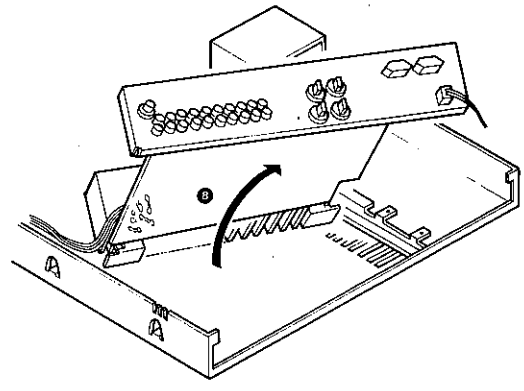


DISASSEMBLY FOR REPAIR

6. Hold the heat sink with your right hand and rear panel with your left hand, lift the Audio Unit (X09-) (A/8) with heat sink in the direction of the arrow. At this time, take care so that the terminals (E8, E9) of the Audio Unit (X09-) (A/8) does not contact the chassis (❻).
7. Next, pull out the Audio Unit (X09-) (A/8) in the direction of the arrow, pushing the chassis so that it does not contact the Audio Unit (X09-) (A/8) (❼).

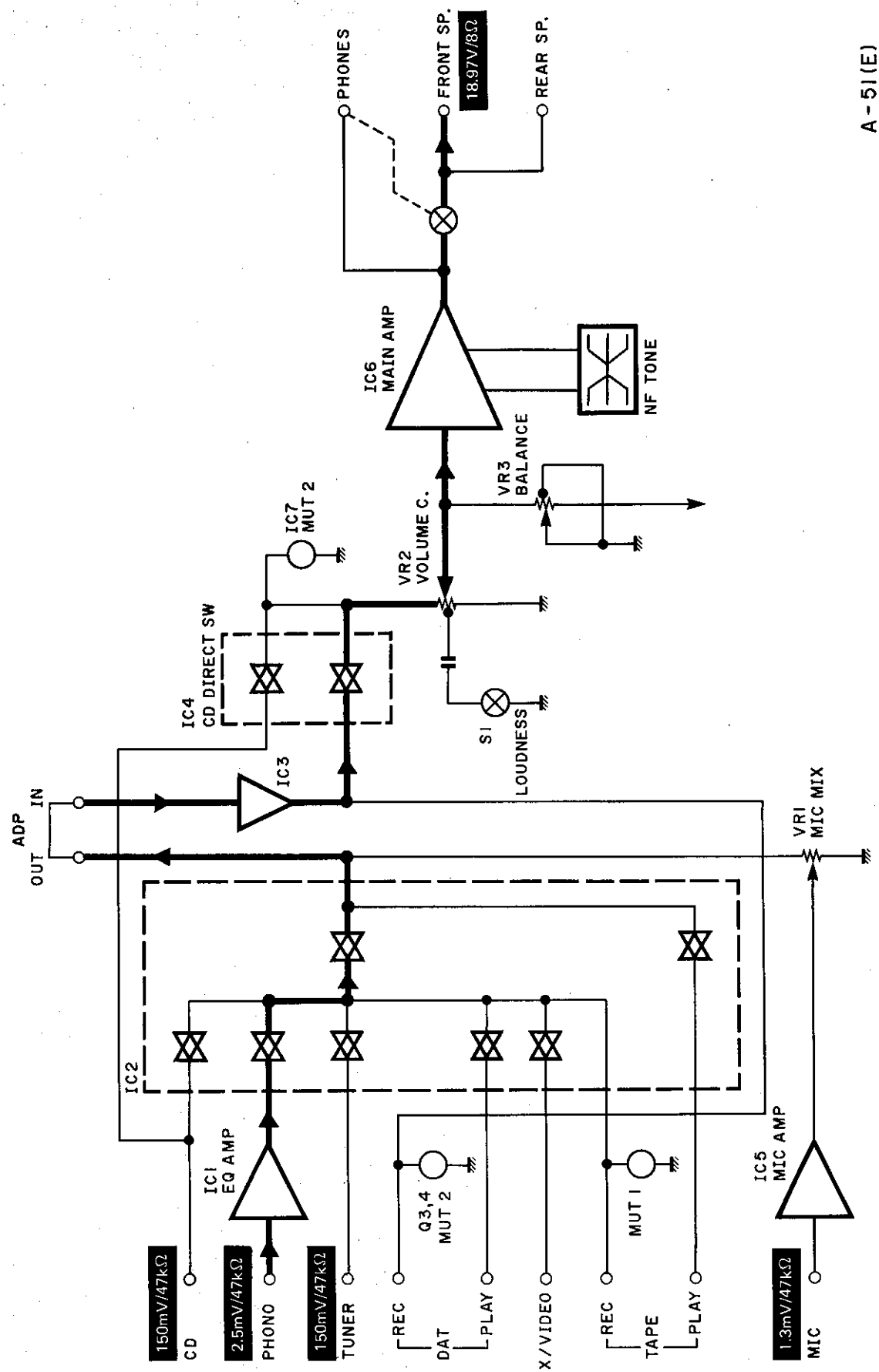


8. Lift the Audio Unit (with heat sink and rear panel) (X09-) (A/8) in the direction of the arrow and remove (❽).



Note: For an accurate electrical characteristics, connect the terminals (E8, E9) and the chassis using an alligator clip.

BLOCK & LEVEL DIAGRAM



CIRCUIT DESCRIPTION

DESCRIPTION OF COMPONENTS

Audio Unit (X09-2512-70)

Component	Use/Function	Operation/Condition/Compatibility
Q1, 2	Muting	ADP OUT pop noise prevention during switching selector switch.
Q3, 4	Muting	DAT REC OUT control and pop noise prevention.
Q5, 6	Muting	Main amplifier pop noise prevention during switching selector switch.
Q7	Muting	Main amplifier pop noise prevention during switching power switch.
Q8	Muting control	Muting control signal generation during switching selector switch.
Q9	Muting control	DAT REC OUT muting control signal generation.
Q10	CD DIRECT SW control	DIRECT switch (CD) drive and LED drive control.
Q11	CD DIRECT SW control	DIRECT switch (LINE) drive control.
Q12	Regulated power supply	Output transistor for +15V constant voltage supply.
Q13	Error amplifier	−15V error amplification.
Q14	Regulated power supply	Output transistor for −15V constant voltage supply.
IC1 (M5218P-A)	EQ amplifier	Equalizer amplifier for PHONO (MM).
IC2 (LC7818)	Input Selector SW	Analog switch array for input selector switches.
IC3 (M5218P)	Buffer amplifier	Buffer amplifier for LINE and DAT REC OUT.
IC4 (LC4966)	CD DIRECT SW	Analog switch for CD/LINE switching.
IC5 (M5218P)	MIC amplifier	Mic amplifier
IC6 (STK-4171/5 or STK-4172/2)	MAIN amplifier	Main amplifier (2 ch)
IC7 (uPD4011BC)	CD DIRECT SW control	Logic control and muting control signal generation for CD DIRECT switch.

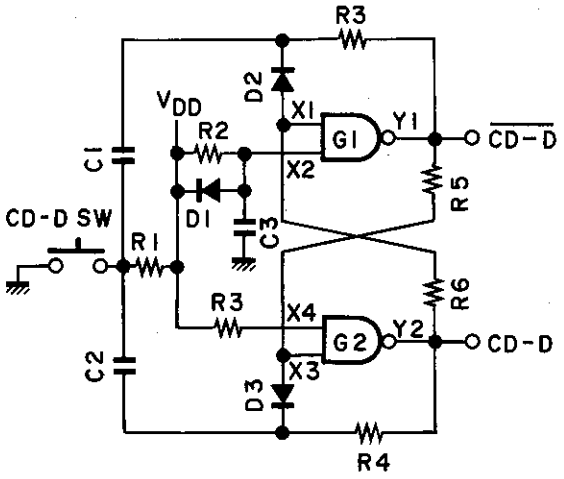
CIRCUIT DESCRIPTION

CD DIRECT Switch Control Circuit

1. Outline

Figure below shows the CD DIRECT switch control circuit. Basically, this circuit consists of a T flip-flop, which is a modification of an R-S flip-flop (R-S FF) using NAND gates, and a power-ON initialization circuit.

Every time the CD DIRECT switch (CD-D SW) is pressed, NAND gates G1 and G2 output "H" alternately.



CD DIRECT Control Citcuit

2. Initialization Circuit

The initialization circuit has been set so that gate G1 output "$\overline{\text{CD-D}}$" goes "H" every time the power is turned ON.

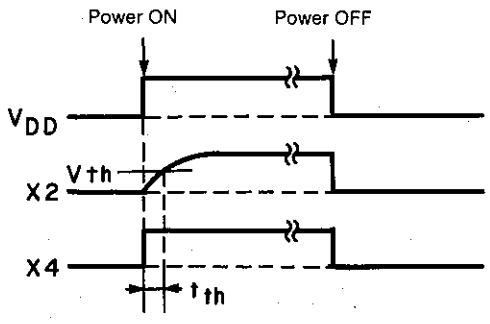
The circuit is composed of D1, R2 and C3 on the side of gate G1 and of R3 on the side of gate G2.

When power (V_{DD}) is turned ON, the voltage input to X2 of gate G1 increases with the formula:

$$V_{X2} = V_{DD}\ (1 - e^{-\frac{t}{C3R2}}) \qquad \text{..... (1).}$$

Meanwhile, the voltage input to X4 of gate G2 becomes as follows at the same time as power is turned ON.

$$V_{X4} = V_{DD} \qquad \text{..... (2).}$$



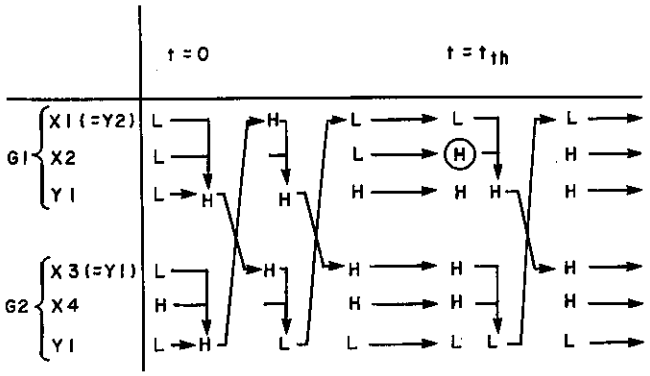
Timing Chart

Assuming that the input to gate G1 is judged to be "H" when it attains V_{th}, t_{th} is the time required before the following relation is met;

$$V_{X2} = V_{th} \qquad \text{..... (3).}$$

Input X2 to gate G1 is "L" until time t_{th} has passed.

Assumption: If the outputs at gates G1 and G2 are "L" when power is turned ON (t = 0), the outputs of G1 and G2 vary as shown in the following diagram.



Input/Output Status Change Table

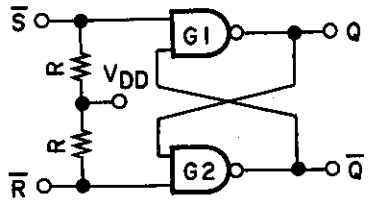
As a result, the gate outputs are fixed at Y1 (=$\overline{\text{CD-D}}$) = "H", and Y2 (=CD-D) = "L".

Similarly, even if the initial values of gate outputs Y1 and Y2 are "L, H", "H, L" and "H, H", the final statuses are still Y1 = "H" and Y2 = "L", which mean that the initial statuses are fixed.

As described above, when power is turned ON, the initialization circuit maintains the CD DIRECT control output on the "$\overline{\text{CD-D}}$" side at "H".

3. T Flip-Flop (T-FF) Circuit

Figure below shows the R-S FF circuit.

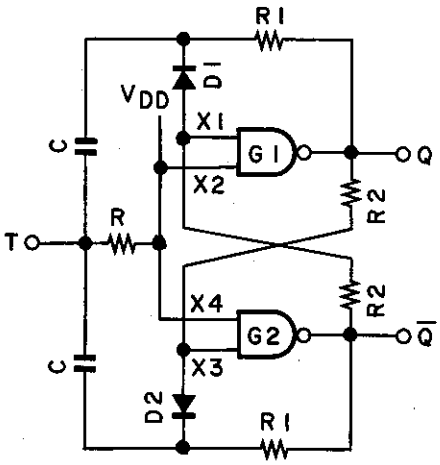


R-S FF Circuit

When input terminals are "$\overline{S}$ = L, $\overline{R}$ = H", the outputs are "Q = H, $\overline{Q}$ = L". When input terminals are "$\overline{S}$ = H, $\overline{R}$ = L", the outputs are "Q = L, $\overline{Q}$ = H". The status of output Q can be controlled by setting the input terminal $\overline{S}$ or $\overline{R}$ to "L".

CIRCUIT DESCRIPTION

However, as this R-S FF circuit requires two control signals $\overline{S}$ and $\overline{R}$, it cannot be controlled with only one tact SW. To make the use of only one tact SW possible, the T-FF circuit as shown in below figure is necessary; by entering the control signal from the tact SW to input terminal T, T-FF outputs Q and $\overline{Q}$ can be varied in cycles.



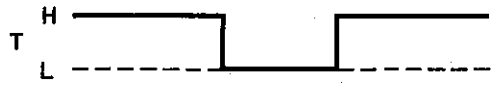
T-FF Circuit

The T-FF circuit is composed of the R-S FF circuit to which a differentiation circuit (C and R1), switching diodes (D1, D2) and bias resister (R2) are added.
The setting condition is:

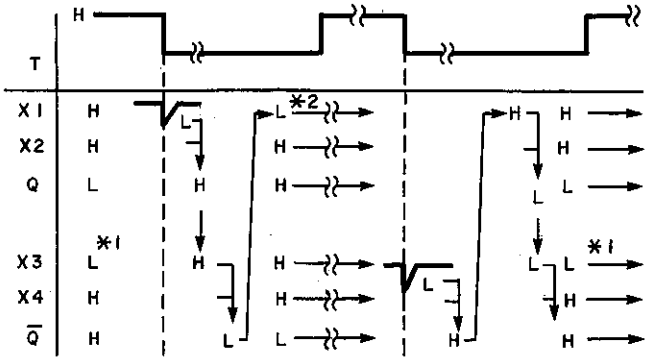
$$Vth << \frac{R2}{R1 + R2} (V_{DD} - Vd) \quad \text{..... (4)}$$

(where Vd: Forward voltage drop of diode,
Vth: Threshold voltage)

Assumption: With the T-FF outputs of "Q = L, $\overline{Q}$ = H" (L = 0, H = V_{DD}),
when a negative pulse as shown in below figure is applied to input terminal T, the statuses becomes as follows.



Input Pulse (Negative Pulse) Waveform



*1 D2 is OFF because of reverse biasing.
*2 D1 is OFF because of reverse biasing.

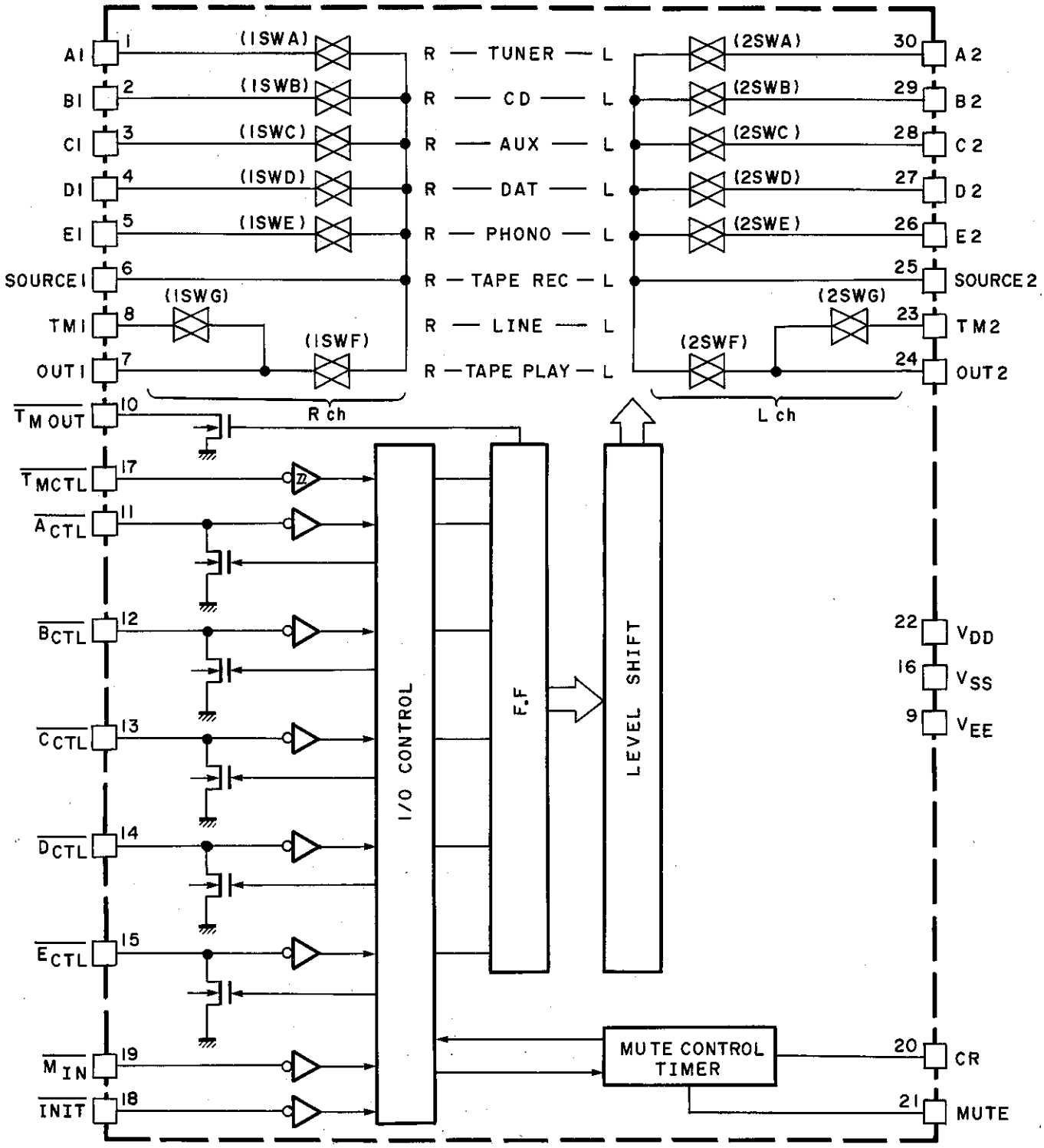
Input/Output Status Change

In this way, T-FF outputs Q and $\overline{Q}$ can be varied in cycles by applying pulse signal to input terminal T.

CIRCUIT DESCRIPTION

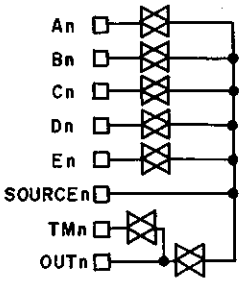
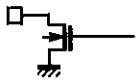
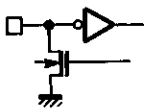
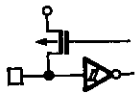
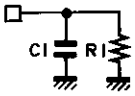
IC2: LC7818 Input Selector IC

Equivalent Circuit Block Diagram



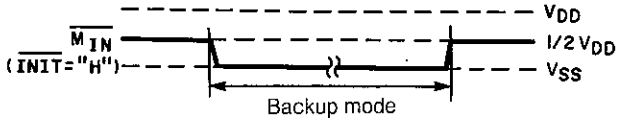
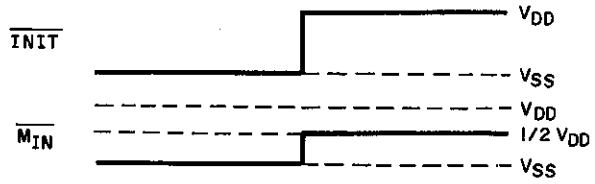
CIRCUIT DESCRIPTION

Explanation of Pins

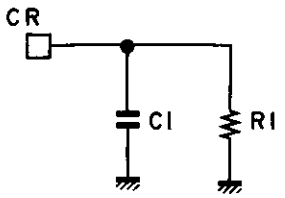
Pin No.	Pin Name	Input/Output Type	Function
9 16 22	V_{EE} V_{SS} V_{DD}		• Power supply terminals With 1 power supply (+): $V_{SS} = V_{EE} =$ GND. With 2 power supplies (±): V_{SS} = GND, $V_{EE} = (-)$ V.
1, 2 3, 4 5, 8 6 7 23, 26 24 25 27, 28 29, 30	A1, B1 C1, D1 E1, TM1 SOURCE1 OUT1 TM2, E2 OUT 2 SOURCE2 D2, C2 B2, A2		• A to E and TM are audio signal input terminals. • SOURCE are recording output terminals. • OUT are audio signal output terminals.
10	$\overline{TMOUT}$		• TM ON/OFF display LED driver output.
11 12 13 14 15	$\overline{ACTL}$ $\overline{BCTL}$ $\overline{CCTL}$ $\overline{DCTL}$ $\overline{ECTL}$		• Input/output terminals with shared use of analog switch control and their status display LED driver outputs.
17	$\overline{TMCTL}$		• TM control input terminal.
18	$\overline{INIT}$		• Mode setting input terminal.
19	$\overline{MIN}$		• Mode setting input terminal.
20	CR		• Clock oscillation input terminal. Connect C1 and R1. 
21	MUTE		• Muting control output terminal.

CIRCUIT DESCRIPTION

Operations by Combination of $\overline{INIT}$ (pin ⑱) and $\overline{MIN}$ (pin ⑲) inputs

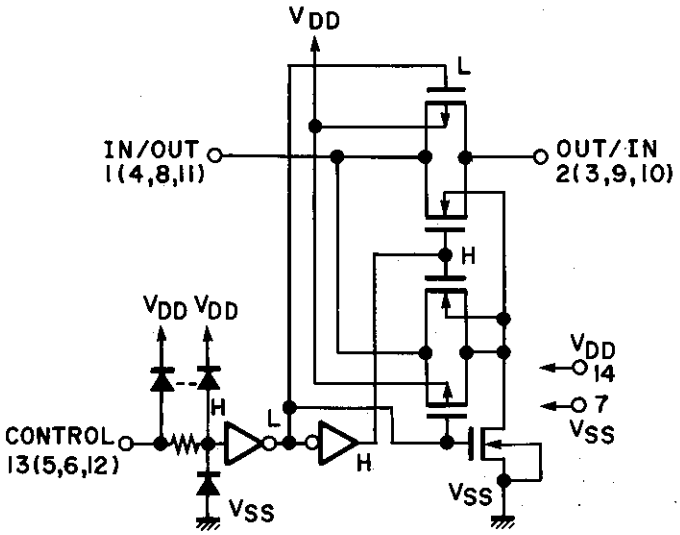
$\overline{INIT}$	$\overline{MIN}$	Operation	Detailed Function Description
H	L	Backup mode	• The backup mode occurs with the following status. 
L	L	Initialize (A circuit ON)	• Turn TM OFF and let the A circuit perform initialization.  • For initialization, hold the status for a longer period than oscillation period x 3.

Enters the initialize mode when being backed up.
Enters the backup mode in normal status in which potential is charged in the backup capacitor.

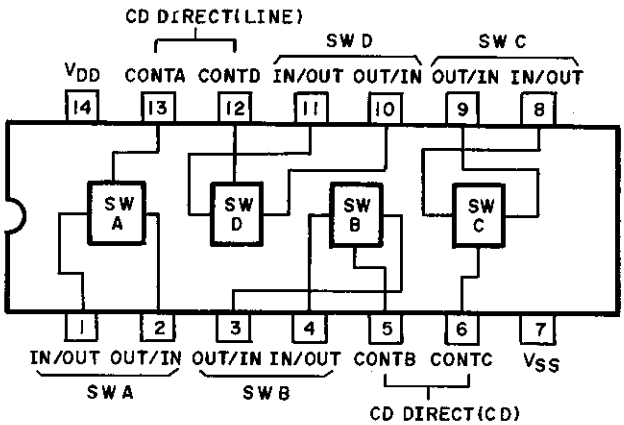


IC4: LC4966 CMOS Logic Quad Bilateral Switch

Equivalent Circuit (¼)



Pin Location and Equivalent Circuit Diagram



Truth Table

Control (CA ~ CD)	Switch (A ~ D)
H	ON
L	OFF

CIRCUIT DESCRIPTION

IC6: STK-4172/2 or STK-4171/5 2 Ch AF Power Amplifier

Use: 40W audio output
Features: Built-in muting transistor

Operational Characteristics

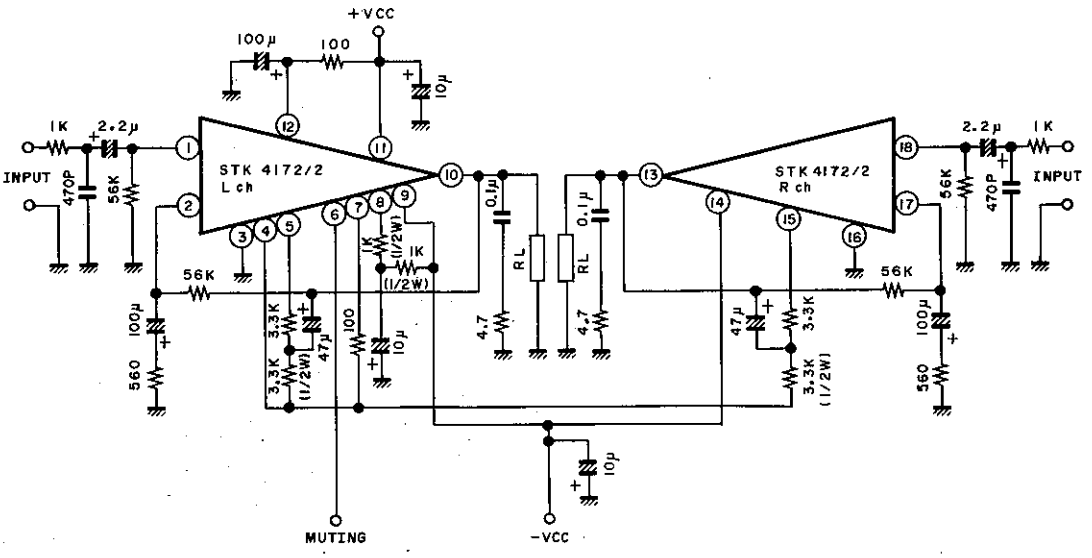
Ta = 25°C, RL = 8 ohms, Rg = 600 ohms, VC = 40 dB, RL is a non-inductive load.

Item	Symbol	Measurement Condition					Rating			Unit
		V_{CC} (V)	f (Hz)	Po (W)	THD (%)		min.	typ.	max.	
Power output	Po (1)	±32	20~20k		0.4		40			W
	Po (2)	±29	1k		1.0	RL=4Ω	45			
	Po (3)									
Total harmonic distortion	THD (1)	±32	1k	1.0					0.3	%
	THD (2)									
Frequency response	fL, fH	±32		1.0		+0 −3 dB	20 ~ 50k			Hz
Input impedance	ri	±32	1k	1.0				55		kΩ
Output noise voltage	V_{NO}	±38.5				Rg = 10kΩ			1.2	mV rms
Current in silent period	I_{CCO}	±38.5					20	40	100	mA
Mid-point voltage	V_N	±38.5					−70	0	+70	mV
Muting voltage	V_M						−2	−5	−10	V

Notes:

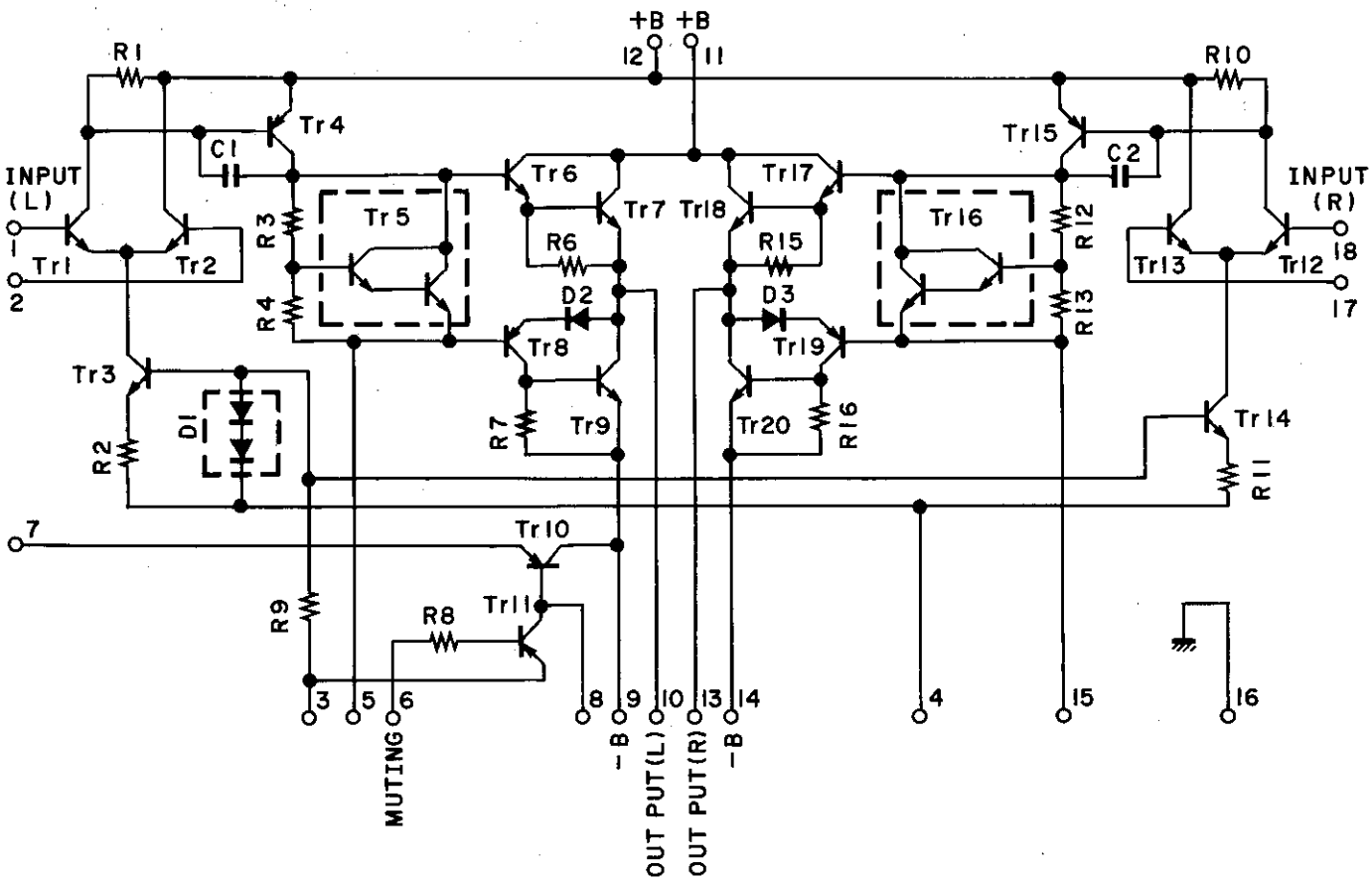
- For the testing, use a constant-voltage regulated power supply unless otherwise specified.
- In the measurements of allowable load short-circuiting time and output noise voltage level, use the specified transformer power supply.
- The output noise voltage refers to the peak value read from the RMS scale indicating mean value (VTVM). However, to eliminate influence of the flickering noise from the AC primary line, be sure to use an AC regulated power supply (50 Hz).

Measuring Circuit



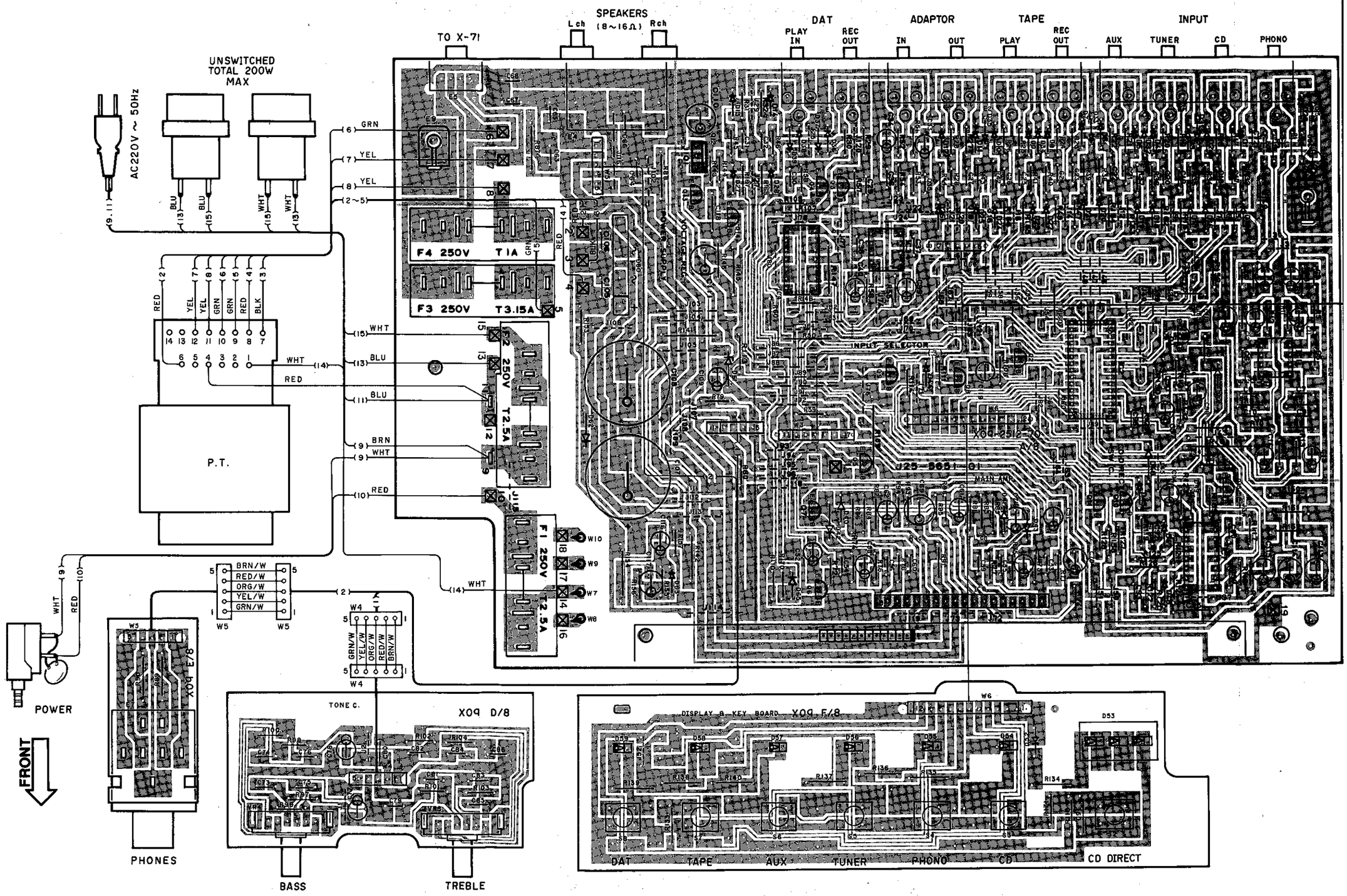
CIRCUIT DESCRIPTION

Internal Equivalent Circuit



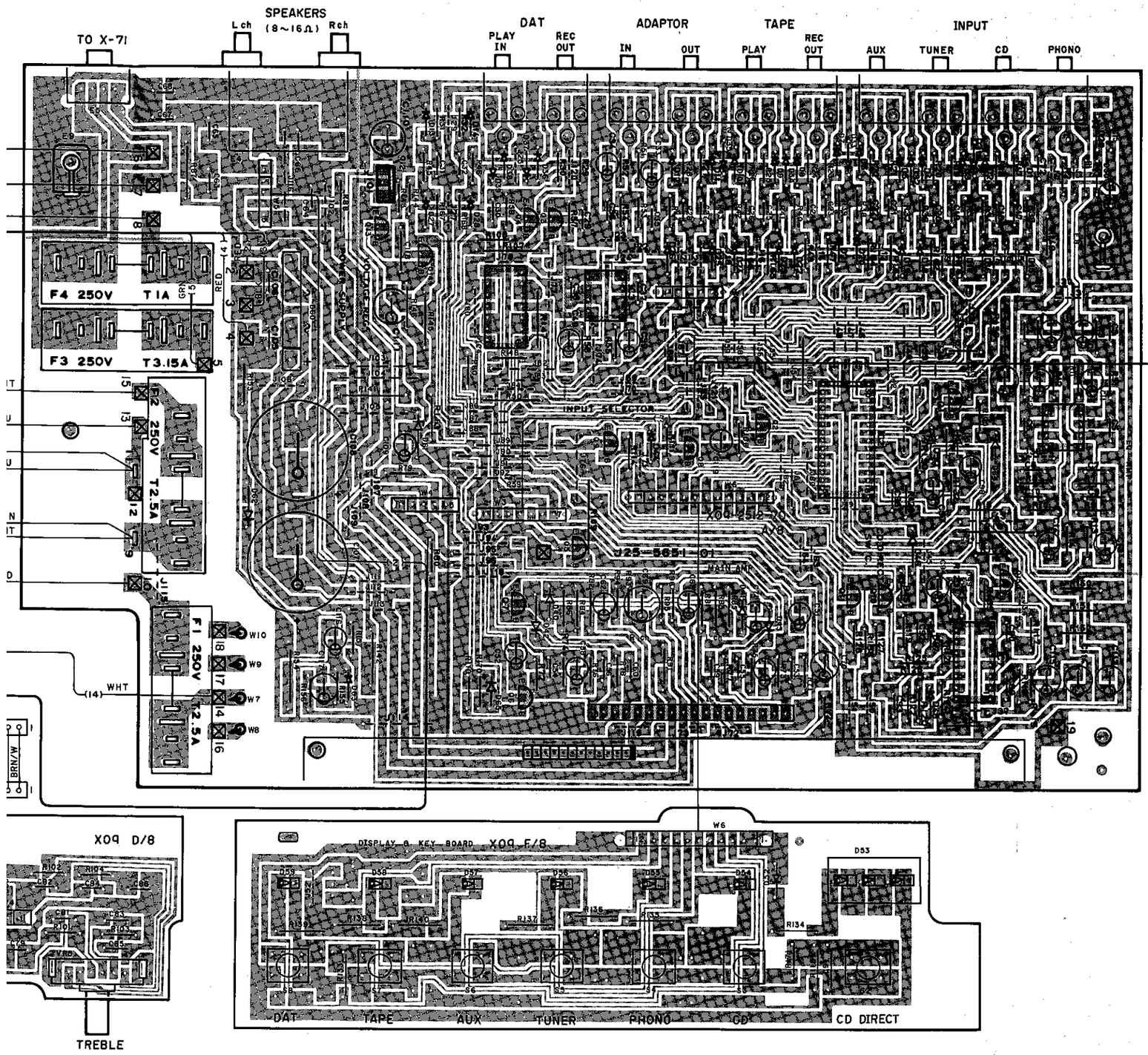
PC BOARD (Component side view)

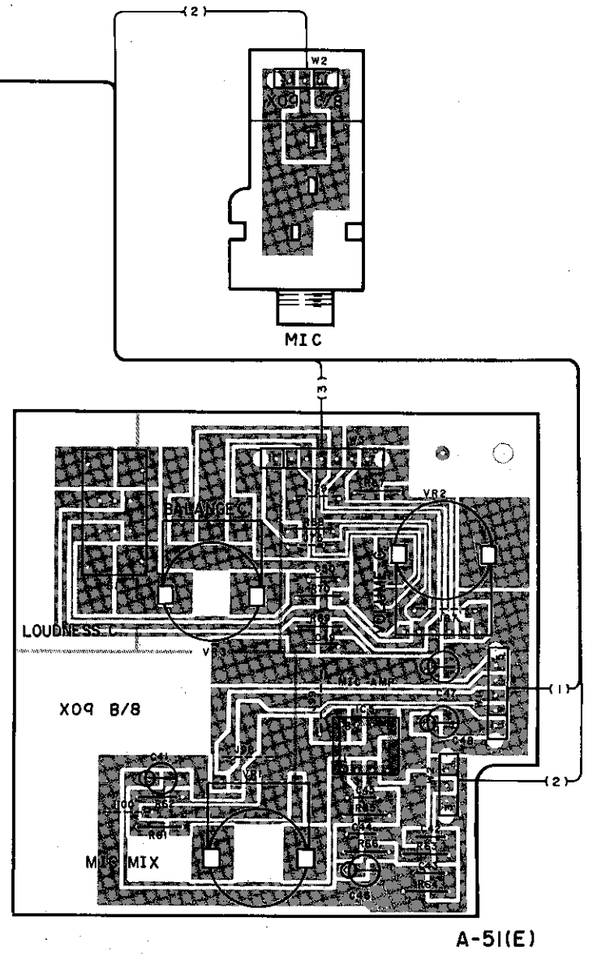
AUDIO UNIT (X09-2152-70)



PC BOARD (Component side view)

AUDIO UNIT (X09-2152-70)

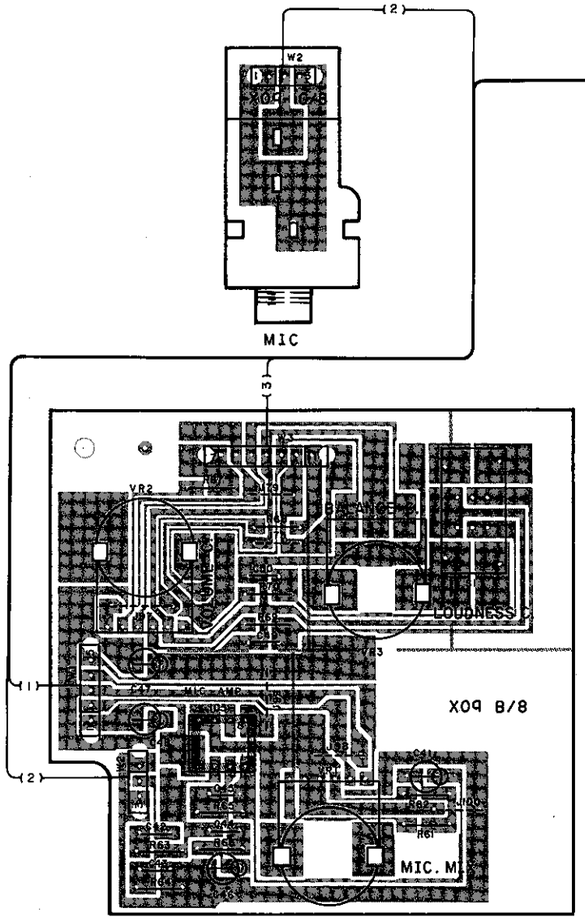


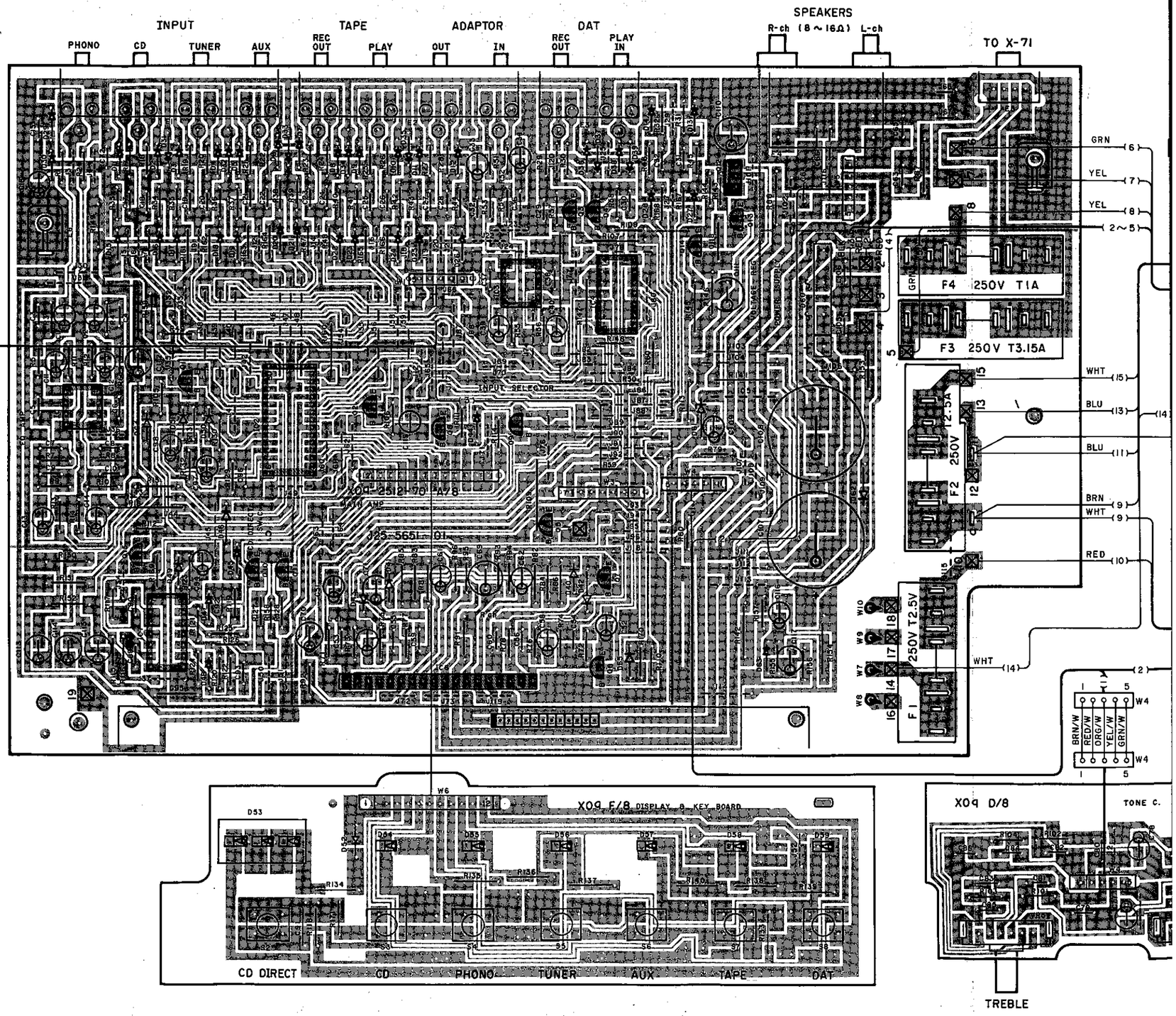


A-5I(E)

PC BOARD (Foil side view)

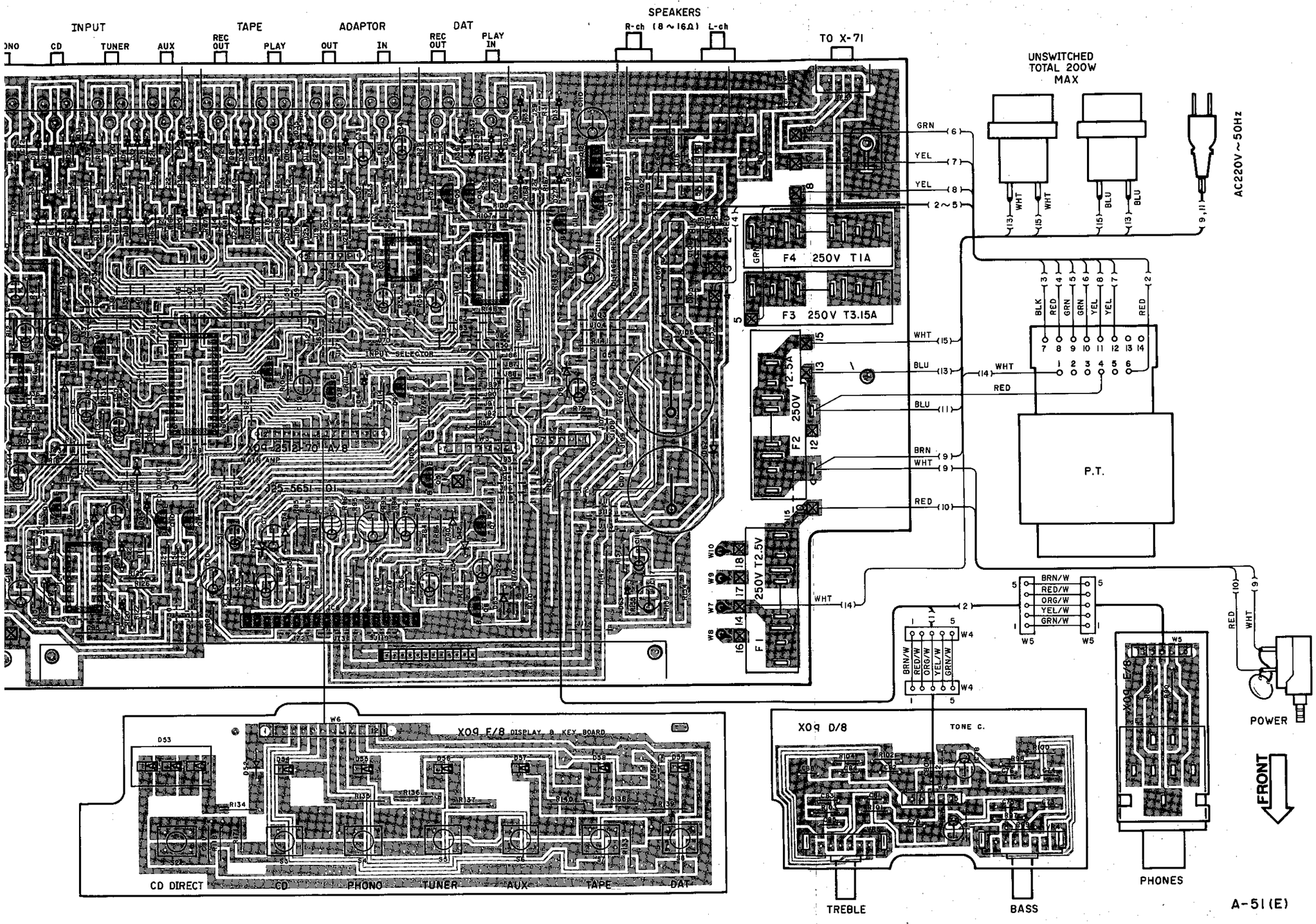
AUDIO UNIT (X09-2152-70)



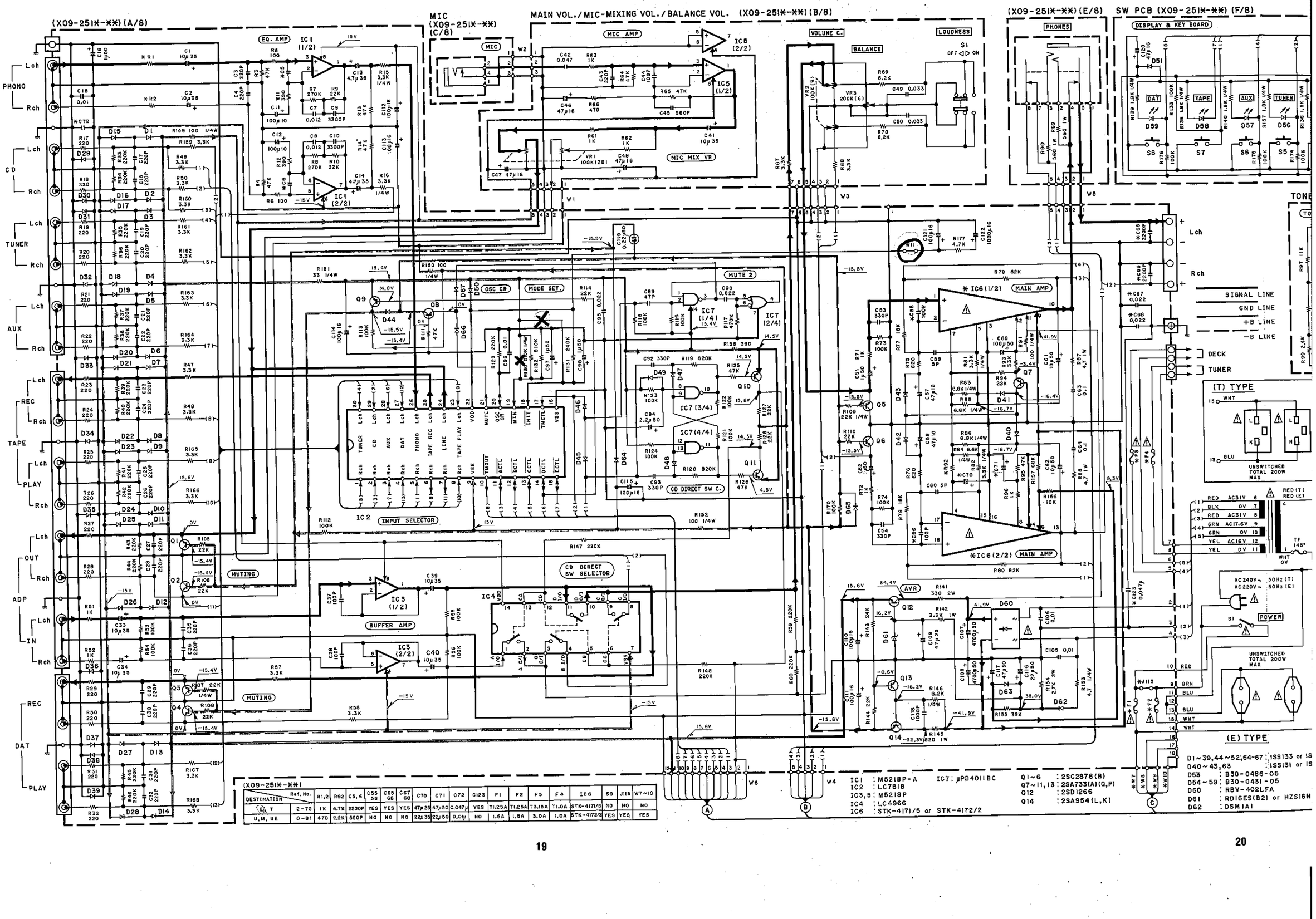


PC BOARD (Foil side view)

AUDIO UNIT (X09-2152-70)



CIRCUIT DIAGRAM



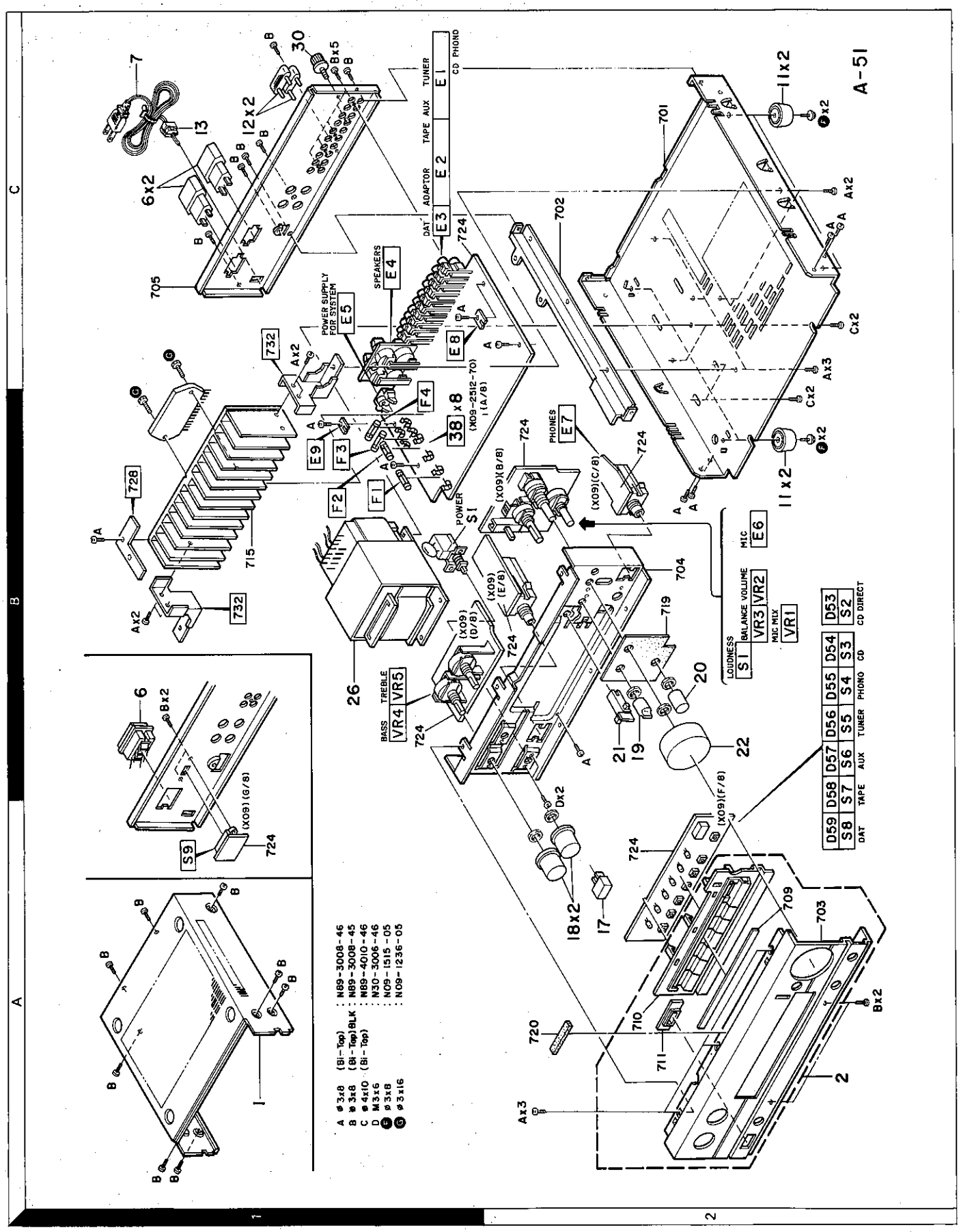
(X09-251※-※)																		
DESTINATION	Ref. No.	R1,2	R92	C5, 6	C55 56	C65 66	C67 68	C70	C71	C72	C123	F1	F2	F3	F4	IC6	S9	J115	W7~10
E, T	2~70	1K	4.7K	2200P	YES	YES	YES	47μ25	47μ50	0.047μ	YES	T1.25A	T1.25A	T3.15A	T1.0A	STK-4171/5	NO	NO	NO
U, M, UE	0~91	470	2.2K	560P	NO	NO	NO	22μ35	22μ50	0.01μ	NO	1.5A	1.5A	3.0A	1.0A	STK-4172/2	YES	YES	YES

IC1 : M5218P-A
IC2 : LC7818
IC3,5 : M5218P
IC4 : LC4966
IC6 : STK-4171/5 or STK-4172/2
IC7 : μPD4011BC

Q1~6 : 2SC2878(B)
Q7~11,13 : 2SA733(A)(Q,P)
Q12 : 2SD1266
Q14 : 2SA954(L,K)

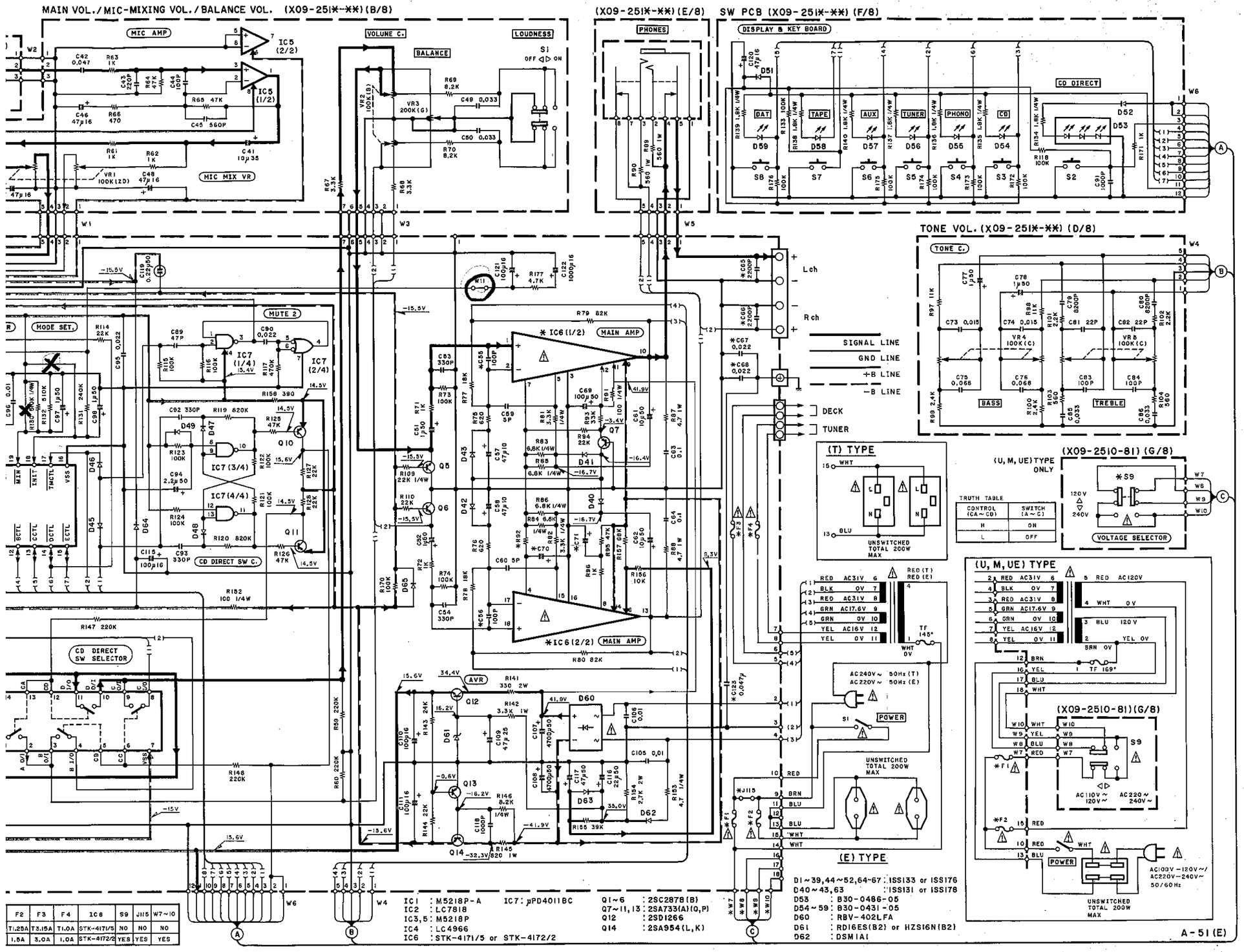
D1~39,44~52,64~67 : 1SS133 or IS
D40~43,63 : 1SS131 or IS
D53 : B30-0486-05
D54~59 : B30-0431-05
D60 : RBV-402LFA
D61 : RD16ES(B2) or HZS16N
D62 : DSM1A1

EXPLODED VIEW



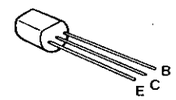
Parts with the exploded numbers larger than 700 are not supplied.

CIRCUIT DIAGRAM

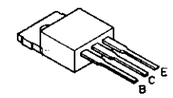


F2	F3	F4	IC6	S9	JN5	W7~10
T1.25A	T3.15A	T1.0A	STK-4171/5	NO	NO	NO
1.5A	3.0A	1.0A	STK-4172/2	YES	YES	YES

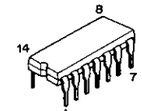
2SA733 (A)
2SA954
2SC2878



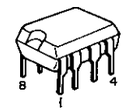
2SD1266



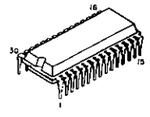
μPD4011BC



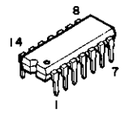
M5218P
M5218P-A



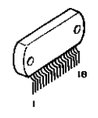
LC7818



LC4966



STK-4171/5
STK-4172/2



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

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

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

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.

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VOLTAGE TABLES

	B	C	E
Q1	–15.4V	—	0V
Q2	–15.4V	—	0V
Q3	–15.4V	—	0V
Q4	–15.4V	—	0V
Q5	–15.5V	—	—
Q6	–15.5V	—	—
Q7	—	–16.4V	–3.4V
Q8	0V	–15.4V	0V
Q9	14.8V	–15.5V	15.4V
Q10	14.5V	15.6V	14.5V
Q11	14.5V	—	14.5V
Q12	16.2V	34.4V	15.6V
Q13	–0.6V	–16.2V	—
Q14	–16.2V	–32.3V	–15.6V

PARTS LIST

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	Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
				A-51			
	1	1A	*	A01-1590-01	METALLIC CABINET		
	2	2A	*	A20-5290-02	PANEL ASSY		
	-			B46-0094-03	WARRANTY CARD	UUE	
	-			B46-0095-03	WARRANTY CARD	UUE	
	-			B46-0122-13	WARRANTY CARD	E	
	-			B46-0143-03	WARRANTY CARD	T	
	-		*	B50-6920-00	INSTRUCTION MANUAL(E,F,D,G,I)	E	
	-		*	B50-6921-00	INSTRUCTION MANUAL(ENGLISH)	UUEM	
	-		*	B50-6922-00	INSTRUCTION MANUAL(F,S,A)	M	
	-		*	B50-6923-00	INSTRUCTION MANUAL(ENGLISH)	T	
	-		*	B52-0245-00	CONNECTING DIAGRAM		
	-			B58-0223-04	CAUTION CARD (PRE-SET 120V)	U	
	-			B58-0513-04	CAUTION CARD (PRESET220-240)	UE	
	-			B58-0803-03	CAUTION CARD	E	
	-			B59-0092-00	SERVICE DIRECTORY	UUE	
	C1			C91-0023-05	CERAMIC 0.01UF AC250V	UUEM	
	C1			C91-0647-05	CERAMIC 0.01UF P	ET	
⚠	6	1C	*	E03-0049-05*	AC OUTLET	T	
⚠	6	1C		E03-0055-05	AC OUTLET	E	
⚠	6	1B		E03-0072-05	AC OUTLET	UUEM	
⚠	6	1C		E03-0085-05	AC OUTLET	T	
	7	1C		E30-0459-05	AC POWER CORD	E	
	7	1C		E30-0812-05	AC POWER CORD	UUEM	
	7	1C		E30-1416-05	AC POWER CORD	T	
	-		*	H01-7622-04	ITEM CARTON CASE		
	-		*	H10-3367-12	POLYSTYRENE FOAMED FIXTURE		
	-			H10-3368-02	POLYSTYRENE FOAMED FIXTURE		
	-			H25-0181-04	PROTECTION BAG (150X260X0.05)	T	
	-			H25-0223-04	PROTECTION BAG (750X350X0.03)		
	-			H25-0232-04	PROTECTION BAG (235X350X0.03)		
	11	2B,2C		J02-0170-04	FOOT		
	12	1C		J12-0094-05	PIN		
	13	1C		J42-0083-05	POWER CORD BUSHING		
	-			J61-0307-05	WIRE BAND		
	17	2A	*	K27-1825-14	KNOB (BUTTON) POWER		
	18	2A		K29-2506-14	KNOB (BASS,TREBLE)		
	19	2B		K29-2507-04	KNOB (BALANCE)		
	20	2B		K29-2661-04	KNOB (MIC MIXING)		
	21	2B	*	K29-2715-04	KNOB (BUTTON) LOUDNESS		
	22	2B	*	K29-2718-04	KNOB (VOLUME)		
⚠	26	1B	*	L01-7952-05	POWER TRANSFORMER	E	
⚠	26	1B	*	L01-7955-05	POWER TRANSFORMER	UUEM	
⚠	26	1B	*	L01-7957-05	POWER TRANSFORMER	T	
	30	1C		N08-0128-35	BINDING POST (GND)		
	F	2B,2C		N09-1515-05	TAPPING SCREW (Ø3X8) FOOT		
⚠	S1	1B		S40-1073-05	PUSH SWITCH (POWER)		
				AUDIO UNIT (X09-2512-70)			
	D53	2B		B30-0486-05	LED(SLF-106D)CD DIRECT		

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

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格			Destination 仕向	Remarks 備考
D54 -59	2A,2B		B30-0431-05	LED(LN21CPH) DAT,TAPE,ETC.				
C1 ,2			CE04KW1V100M	ELECTRO	10UF	35WV		
C3 ,4			CC45FSL1H221J	CERAMIC	220PF	J		
C5 ,6			CK45FB1H222K	CERAMIC	2200PF	K	ET	
C5 ,6			CK45FB1H561K	CERAMIC	560PF	K	UUEM	
C7 ,8			CF92FV1H123J	MF	0.012UF	J		
C9 ,10			CF92FV1H332J	MF	3300PF	J		
C11 ,12			CE04KW1A101M	ELECTRO	100UF	10WV		
C13 ,14			CE04KW1V4R7M	ELECTRO	4.7UF	35WV		
C15			CK45FF1H103Z	CERAMIC	0.010UF	Z	UUEM	
C16			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C17 -32			CC45FSL1H221J	CERAMIC	220PF	J		
C33 ,34			CE04KW1V100M	ELECTRO	10UF	35WV		
C35 ,36			CC45FSL1H221J	CERAMIC	220PF	J		
C37 ,38			CC45FSL1H101J	CERAMIC	100PF	J	ET	
C39 -41			CE04KW1V100M	ELECTRO	10UF	35WV		
C42			CF92FV1H473J	MF	0.047UF	J		
C43			CC45FSL1H221J	CERAMIC	220PF	J		
C44			CC45FSL1H101J	CERAMIC	100PF	J		
C45			CK45FB1H561K	CERAMIC	560PF	K		
C46			CE04JW1C470M	ELECTRO	47UF	16WV		
C47 ,48			CE04KW1C470M	ELECTRO	47UF	16WV		
C49 ,50			CF92FV1H333J	MF	0.033UF	J		
C51 ,52			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C53 ,54			CC45FSL1H331J	CERAMIC	330PF	J		
C55 ,56			CC45FSL1H101J	CERAMIC	100PF	J	ET	
C57 ,58			CE04KW1A470M	ELECTRO	47UF	10WV		
C59 ,60			CC45FSL1H050C	CERAMIC	5.0PF	C		
C61 ,62			CE04KW1H100M	ELECTRO	10UF	50WV		
C63 ,64			CF92FV1H104J	MF	0.10UF	J		
C65 ,66			CK45FB1H222K	CERAMIC	2200PF	K	ET	
C67 ,68			CK45FF1H223Z	CERAMIC	0.022UF	Z	ET	
C69			CE04KW1H101M	ELECTRO	100UF	50WV		
C70			CE04KW1E470M	ELECTRO	47UF	25WV	ET	
C70			CE04KW1V220M	ELECTRO	22UF	35WV	UUEM	
C71			CE04KW1H220M	ELECTRO	22UF	50WV	UUEM	
C71			CE04KW1H470M	ELECTRO	47UF	50WV	ET	
C72			CK45FF1H103Z	CERAMIC	0.010UF	Z	UUEM	
C72			CK45FF1H473Z	CERAMIC	0.047UF	Z	ET	
C73 ,74			CF92FV1H153J	MF	0.015UF	J		
C75 ,76			CF92FV1H683J	MF	0.068UF	J		
C77 ,78			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C79 ,80			CF92FV1H822J	MF	8200PF	J		
C81 ,82			CC45FSL1H220J	CERAMIC	22PF	J		
C83 ,84			CC45FSL1H101J	CERAMIC	100PF	J		
C85 ,86			CF92FV1H333J	MF	0.033UF	J		
C89			CC45FSL1H470J	CERAMIC	47PF	J		
C90			CF92FV1H223J	MF	0.022UF	J		
C91			C91-0757-05	CERAMIC	0.001UF	K		
C92 ,93			CC45FSL1H331J	CERAMIC	330PF	J		
C94			CE04KW1H2R2M	ELECTRO	2.2UF	50WV		
C95			C91-0085-05	CERAMIC	0.022UF	N		
C96			CF92FV1H103J	MF	0.010UF	J		
C97 ,98			CE04KW1H010M	ELECTRO	1.0UF	50WV		

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	C105,106			CK45FF1H103Z	CERAMIC 0.010UF Z		
	C107,108			C90-1588-05	ELECTRO 4700UF 50WV		
	C109			CE04KW1E470M	ELECTRO 47UF 25WV		
	C110-115			CE04KW1C101M	ELECTRO 100UF 16WV		
	C116			CE04KW1H220M	ELECTRO 22UF 50WV		
	C117			CE04KW1H470M	ELECTRO 47UF 50WV		
	C118			C91-0757-05	CERAMIC 0.001UF K		
	C119			C90-1456-05	NP-ELEC 0.22UF 50WV		
	C120			CE04JW1C470M	ELECTRO 47UF 16WV		
	C121			CE04KW1C101M	ELECTRO 100UF 16WV		
	C122			CE04KW1C102M	ELECTRO 1000UF 16WV		
	C123			CK45F1H473Z	CERAMIC 0.047UF Z	ET	
	E1 ,2	1C	*	E13-0820-05	PHONO JACK (ADAPTER,TAPE)		
	E3	1C		E13-0446-05	PHONO JACK(4P) DAT		
	E4	1C		E20-0451-05	LOCK TERMINAL BOARD(4P)SPKRS		
	E5	1C		E08-0411-05	RECTANGULAR RECEPTACLE		
	E6	2B		E11-0159-05	PHONE JACK(3P) MIC		
	E7	2B		E11-0160-05	PHONE JACK(7P) PHONES		
	E8 ,9	1C	*	E23-0159-05	TERMINAL	ET	
⚠	F1 ,2	1B		F05-2521-05	FUSE (250V 2.5A)	UUEM	
⚠	F1 ,2	1B		F05-2525-05	FUSE (SEMKO) (250V T2.5A)	ET	
⚠	F3	1B		F05-3022-05	FUSE (250V 3A)	UUEM	
⚠	F3	1B		F05-3121-05	FUSE (SEMKO) (250V T3.15A)	ET	
⚠	F4	1B		F05-1023-05	FUSE (250V 1A)	UUEM	
	F4	1B		F06-1022-05	FUSE (SEMKO) (250V T1A)	ET	
	38	1B		J13-0041-05	FUSE CLIP	UUEM	
	38	1B		J13-0054-05	FUSE CLIP	ET	
	G	1C		N09-1236-05	TAPPING SCREW (Ø3X16)		
	R87 ,88			RS14DB3A4R7J	FL-PROOF RS 4.7 J 1W		
	R89 ,90			RS14DB3A561J	FL-PROOF RS 560 J 1W		
	R91			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
	R141			RS14DB3D331J	FL-PROOF RS 330 J 2W		
	R142			RS14DB3A332J	FL-PROOF RS 3.3K J 1W		
	R145			RS14DB3A821J	FL-PROOF RS 820 J 1W		
	R149,150			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
	R151			RD14AB2E330J	FL-PROOF RD 33 J 1/4W		
	R152			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
	R153			RD14AB2E4R7J	FL-PROOF RD 4.7 J 1/4W		
	R154			RS14DB3D272J	FL-PROOF RS 2.7K J 2W		
	VR1	2B		R06-5165-05	POTENTIOMETER(100KZD)MIC MIX		
	VR2	2B		R06-5156-15	POTENTIOMETER(100KB) VOLUME		
	VR3	2B		R01-5056-05	POTENTIOMETER(200KG) BALANCE		
	VR4 ,5	1B		R06-5164-05	POTENTIOMETER(100KC) BASS,TREB		
	S1	2B		S40-2351-05	PUSH SWITCH (LOUDNESS)		
	S2 -8	2A,2B		S40-1064-05	PUSH SWITCH (DAT,TAPE,ETC.)		
⚠	S9	1A		S31-2115-05	SLIDE SWITCH (VOLTAGE SELECTOR	UUEM	
	D1 -39			1SS133	DIODE		
	D1 -39			1SS176	DIODE		
	D40 -43			1SS131	DIODE		
	D40 -43			1SS178	DIODE		
	D44 -52			1SS133	DIODE		

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	D44 -52			1SS176	DIODE		
⚠	D60			RBV-402LFA	DIODE		
	D61			HZS16N(B2)	ZENER DIODE		
	D61			RD16ES(B2)	ZENER DIODE		
	D62			DSM1A1	DIODE		
	D63			1SS131	DIODE		
	D63			1SS178	DIODE		
	D64 -67			1SS133	DIODE		
	D64 -67			1SS176	DIODE		
	IC1			M5218P-A	IC(OP AMP X2)		
	IC2			LC7818	IC(ELECTRO CONTROL SWITCH (2H)		
	IC3			M5218P	IC(OP AMP X2)		
	IC4			LC4966	IC(CMOS LOGIC BILATERAL SW)		
	IC5			M5218P	IC(OP AMP X2)		
⚠	IC6		*	STK-4171/5	IC(AF POWER AMP/ 40W X2)	ET	
	IC6			STK-4172/2	IC(AF POWER AMP/ 40W X2)	UUEM	
	IC7			UPD4011BC	IC(NAND X4)		
	Q1 -6			2SC2878(B)	TRANSISTOR		
	Q7 -11			2SA733(A)(Q,P)	TRANSISTOR		
	Q12			2SD1266	TRANSISTOR		
	Q13			2SA733(A)(Q,P)	TRANSISTOR		
	Q14			2SA954(L,K)	TRANSISTOR		

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SPECIFICATIONS

Power Output

Maximum continuous output power (IEC) from 60 Hz to 12,500 Hz, 0.7% THD at 8 ohms ..... 45 W + 45 W
Total Harmonic Distortion (1 kHz 8 ohms)/
At rated output 0.08%
At 1/2 rated output 0.07%
Intermodulation distortion (60 Hz: 7 kHz = 4:1) ..... 0.08% at rated output into 8 ohms
Signal-to-Noise ratio (IHF-A)
PHONO MM (2.5 mV) ..... 70 dB
TUNER, AUX, TAPE PLAY ..... 97 dB
Signal-to-Noise ratio at unweighted, 50 mW output (DIN)
PHONO (MM) ..... 57 dB
TUNER, AUX, TAPE PLAY ..... 58 dB
Tone Control
Bass ..... ±10 dB at 100 Hz
Treble ..... ±10 dB at 10 kHz
Damping Factor ..... 50 at 50 Hz
Channel Separation (DIN) at 1,000 Hz
PHONO (Terminated with 2.2 kΩ) ..... 59 dB
TUNER, AUX, TAPE (Terminated with 47 kΩ + 250 pF) ..... 68 dB
Input sensitivity/impedance
PHONO MM ..... 2.5 mV/47 kohms
TUNER, AUX., TAPE PLAY ..... 150 mV/47 kohms
MIC ..... 1.4 mV/47 kohms

General

Power consumption ..... 120 W
Dimensions ..... W: 340 mm
H: 109 mm
D: 367 mm
Weight (Net) ..... 6.0 kg

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

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

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

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

KENWOOD CORPORATION
Shionogi Shibuya Building, 17-5, 2-chome Shibuya, Shibuya-ku, Tokyo 150, Japan

KENWOOD U.S.A. CORPORATION
2201 East Dominguez Street, Long Beach, CA 90810;
550 Clark Drive Mount Olive, NJ 07828, U.S.A.

KENWOOD ELECTRONICS CANADA INC.
P.O. Box 1075 959 Gana Court, Mississauga, Ontario, Canada L4T 4C2

KENWOOD ELECTRONICS BENELUX N.V.
Mechelsesteenweg 418 B-1930 Zaventem, Belgium

KENWOOD ELECTRONICS DEUTSCHLAND GMBH
Rembrücker-Str. 15, 6056 Heusenstamm, West Germany

TRIO-KENWOOD FRANCE S.A.
Hi-Fi·VIDEO·CAR Hi-Fi
13, Boulevard Ney, 75018 Paris, France

TRIO-KENWOOD U.K. LTD.
17 Bristol Road, The Metropolitan Centre, Greenford, Middx. UB6 8UP England

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.
4E Woodcock Place, Lane Cove, N.S.W. 2066, Australia

KENWOOD & LEE ELECTRONICS, LTD.
Wang Kee Building, 4th Floor, 34-37, Connaught Road, Central, Hong Kong