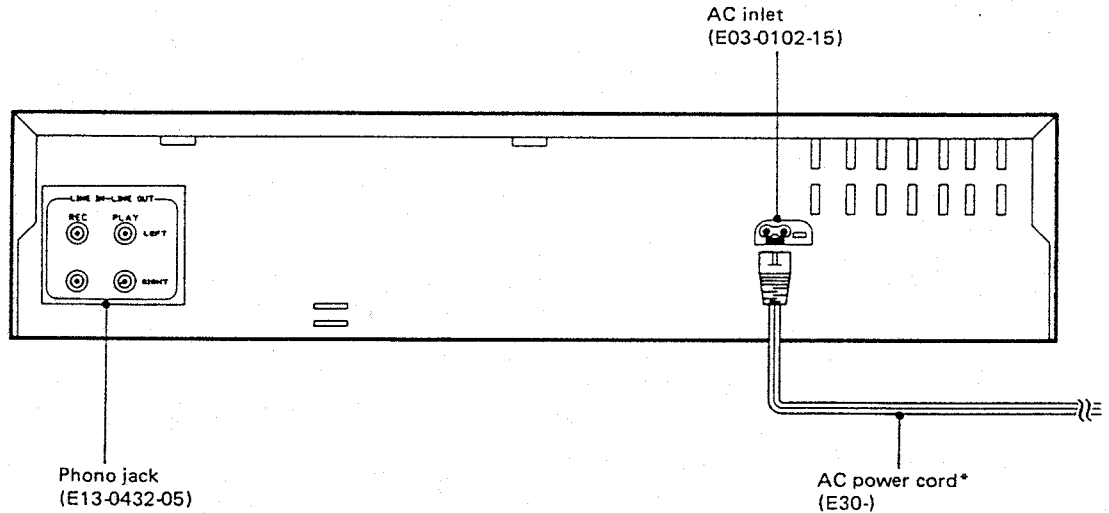
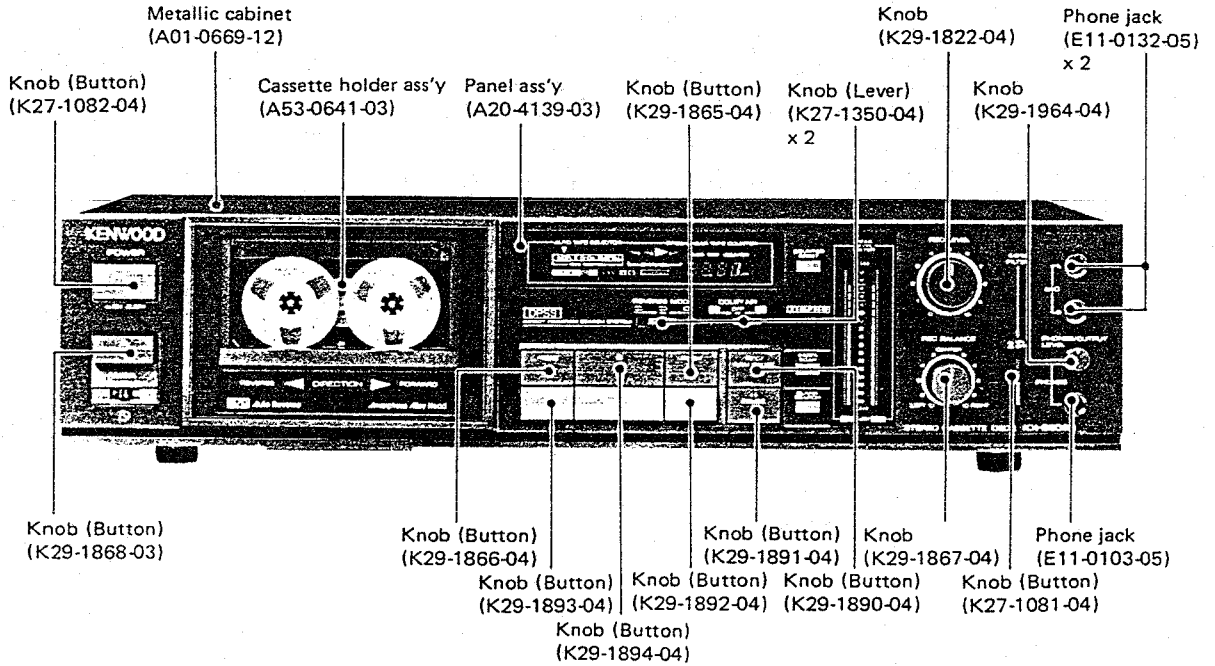


KENWOOD

KX-990SR

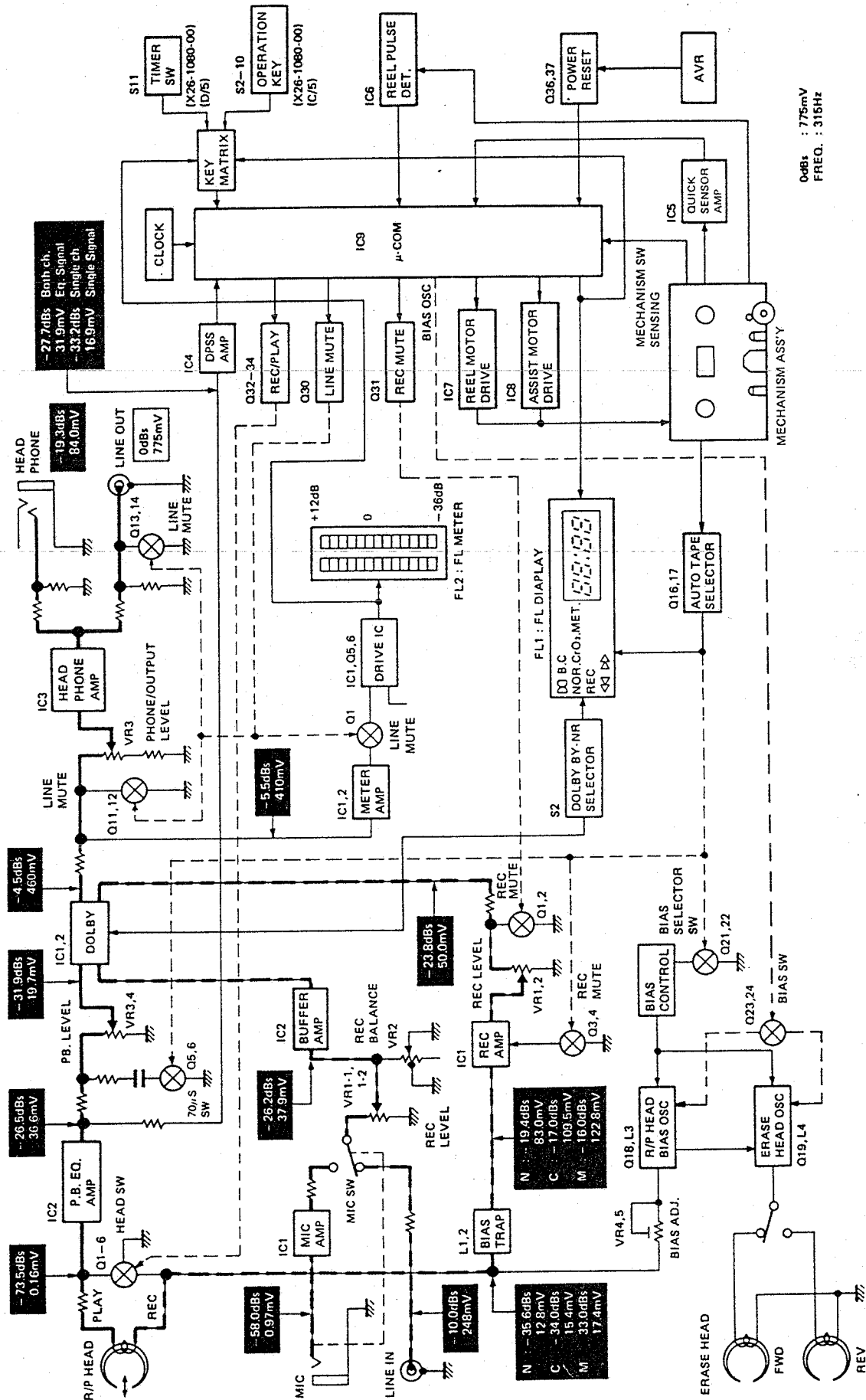
STEREO CASSETTE TAPE DECK



* Refer to parts list on page 20.

NOTE : Make sure to turn the power off before disconnecting the wires from the cassette mechanism when removing the mechanism for repair.
If not, the mechanism will lock itself up and cannot be reset.

BLOCK LEVEL DIAGRAM



CIRCUIT DESCRIPTION

Operation of active elements

METER AMP (X87-1020-00)

Element	Application/function	Operation/conditions
IC1	1/2 multiply compression amp	With respect to the AC input signal, the DC voltage proportional to 1/2 is output.
IC2	DC amp	Amplifies the voltage output from IC1 to the necessary level.
Q1	Meter muting switch	Turns off in PLAY, REC and REC PAUSE modes, and turns on in other modes. (including PLAY PAUSE mode).

REC/PLAY (X87-1030-00)

Element	Application/function	Operation/conditions
IC1	Recording equalizer amp (Equalizer select switch for CrO ₂ and Metal tape is incorporated.)	
IC2	Playback equalizer amp	
Q1,2	REC muting switch	Turn off in REC mode only, and turn on in other modes (including REC PAUSE mode.)
Q3,4	Equalizer select switch for Metal tape	Turn off in Metal tape mode, and turn on in Normal and CrO ₂ tape modes.
Q5,6	Playback equalizer select switch	Turn off in Normal tape mode (120μs) and turn on in CrO ₂ and Metal tape modes (70μs).

CASSETTE (X26-1080-11)

Element	Application/function	Operation/conditions												
IC1	Mic amp													
IC2	MPX buffer amp													
IC3	Headphone amp													
IC4	DPSS amp													
IC5	Quick sensor amp	Turns on or off by the signal from the photo-coupler for quick sensor. At the tape end when the tape shifts from the magnetized portion to the leader tape portion, turns on momentarily.												
IC6	Revolution detection amp	When this IC obtains the switching signal from the photo-couplers of both reel pads in accordance with their speed, pulse is generated at the leading and trailing edges.												
IC7	Reel motor drive													
IC8	Assist motor drive													
IC9	Microcomputer													
Q1~4	Head select switch	Turn off in REC, REC PAUSE modes, and turn on in other modes. High withstand voltage, appropriately low saturation voltage, and low ON resistance are required.												
Q5,6	Head select switch	Turn on in REC, and REC PAUSE modes, and turn off in other modes. (These are complementary with Q1~4.) In the same unit, the same type of transistors as Q1~4 should be used.												
Q7	+ 7.6V power supply	Stabilized power supply for the Dolby circuit.												
Q8	-7.6V power supply	Stabilized power supply for the Dolby circuit.												
Q9	+ 7.6V power supply	Stabilized power supply for the playback equalizer amp.												
Q10	-7.6V power supply	Stabilized power supply for the playback equalizer amp.												
Q11~14	Line out mute switch	Turn off in PLAY, REC, REC PAUSE modes and turn on in other modes (including PLAY PAUSE mode.)												
* Q15	DPSS input sensitivity select switch	Turns on in PLAY, REC, and REC PAUSE modes, and turns off in other modes (including PLAY PAUSE mode.) Since this switch turns on in PLAY search mode, the bypass filter connected to this switch is introduced to the inverting input terminal of the DPSS amp with the result that input sensitivity increases. In CUE & REVIEW mode, the opposite to the above is true with the result that input sensitivity decreases.												
Q16,17	Auto tape select control	<table border="1"> <thead> <tr> <th></th> <th>Normal</th> <th>CrO₂</th> <th>Metal</th> </tr> </thead> <tbody> <tr> <td>Q16</td> <td>OFF</td> <td>OFF</td> <td>ON</td> </tr> <tr> <td>Q17</td> <td>OFF</td> <td>ON</td> <td>OFF</td> </tr> </tbody> </table>		Normal	CrO ₂	Metal	Q16	OFF	OFF	ON	Q17	OFF	ON	OFF
	Normal	CrO ₂	Metal											
Q16	OFF	OFF	ON											
Q17	OFF	ON	OFF											
* Q18	For bias oscillation	Drives the primary winding of the bias oscillation transformer.												
Q19	For erase oscillation	Drives the primary winding of the erase oscillation transformer.												
Q20	Oscillator power supply													

CIRCUIT DESCRIPTION

Element	Application/function	Operation/conditions												
Q21,22	Bias oscillator level select switches	<table border="1"> <thead> <tr> <th></th> <th>Normal</th> <th>CrO₂</th> <th>Metal</th> </tr> </thead> <tbody> <tr> <td>Q21</td> <td>ON</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>Q22</td> <td>OFF</td> <td>ON</td> <td>OFF</td> </tr> </tbody> </table>		Normal	CrO ₂	Metal	Q21	ON	OFF	OFF	Q22	OFF	ON	OFF
	Normal	CrO ₂	Metal											
Q21	ON	OFF	OFF											
Q22	OFF	ON	OFF											
Q23,24	Bias ON/OFF switches	<table border="1"> <thead> <tr> <th></th> <th>REC, REC PAUSE modes</th> <th>Other modes</th> </tr> </thead> <tbody> <tr> <td>Q23</td> <td>OFF</td> <td>ON</td> </tr> <tr> <td>Q24</td> <td>ON</td> <td>OFF</td> </tr> </tbody> </table>		REC, REC PAUSE modes	Other modes	Q23	OFF	ON	Q24	ON	OFF			
	REC, REC PAUSE modes	Other modes												
Q23	OFF	ON												
Q24	ON	OFF												
Q25	Direction switch detection switch	Turns on in forward mode and turns off in reverse mode.												
Q26	Direction switch input controller	The base of this transistor is controlled by pin 29 of the microcomputer and the direction of the direction switch is input to pin 31 of the microcomputer as necessary.												
Q27	Quick sensor input controller	The base of this transistor is controlled by pin 29 of the microcomputer, and the voltage output from the quick sensor is input to pin 30 of the microcomputer.												
Q28	Voltage shift	The high level voltage is shifted to +5V.												
Q29	Reel motor drive Applied voltage controller	Turns on in PLAY mode, and the potential at pin 4 of IC7 becomes about 3.9V. Turns off in other modes, and the potential at pin 4 of IC7 becomes 5.4V~6.0V.												
Q30	Line out mute switch controller	Turns off in PLAY, REC, and REC PAUSE modes, and turns on in other modes (including PLAY PAUSE mode.) Turns on when power is switched on or off.												
Q31	REC mute switch controller	Turns off in REC mode, and turns on in other modes (including REC PAUSE mode.) Turns on when power is switched on or off.												
Q32~34	REC/PLAY select switch controllers	Q33 and Q34 turn on in REC, and REC PAUSE modes, and Q32 turns off. In other modes, Q33 and Q34 turn off, and Q32 turns on.												
Q35	+ 7.6V power supply	Stabilized power supply for the REC/PAUSE select switch controller and auto tape select control circuit.												
Q36,37	Power on/off microcomputer reset													
Q38	+ 5V power supply	Stabilized power supply for the microcomputer, and high voltage, of the FL display circuit.												
Q39	+ 10V power supply	Stabilized power supply for the recording equalizer amp, headphone amp, and DPSS amp.												
Q40,41	+ 12V power supply	Stabilized power supply for the motors (capstan, reel, and assist.)												
Q42	Constant current													
Q43	-10V power supply	Stabilized power supply for the recording equalizer amp, headphone amp, and DPSS amp.												
Q44	Constant voltage													
Q45	-18.5V power supply	Stabilized power supply for the low voltages of the FL display circuit.												
Q46	Q45 controller													
Q47	Constant current													
Q48	Constant current													
Q49	Constant current													

DISPLAY (X25-2250-00)

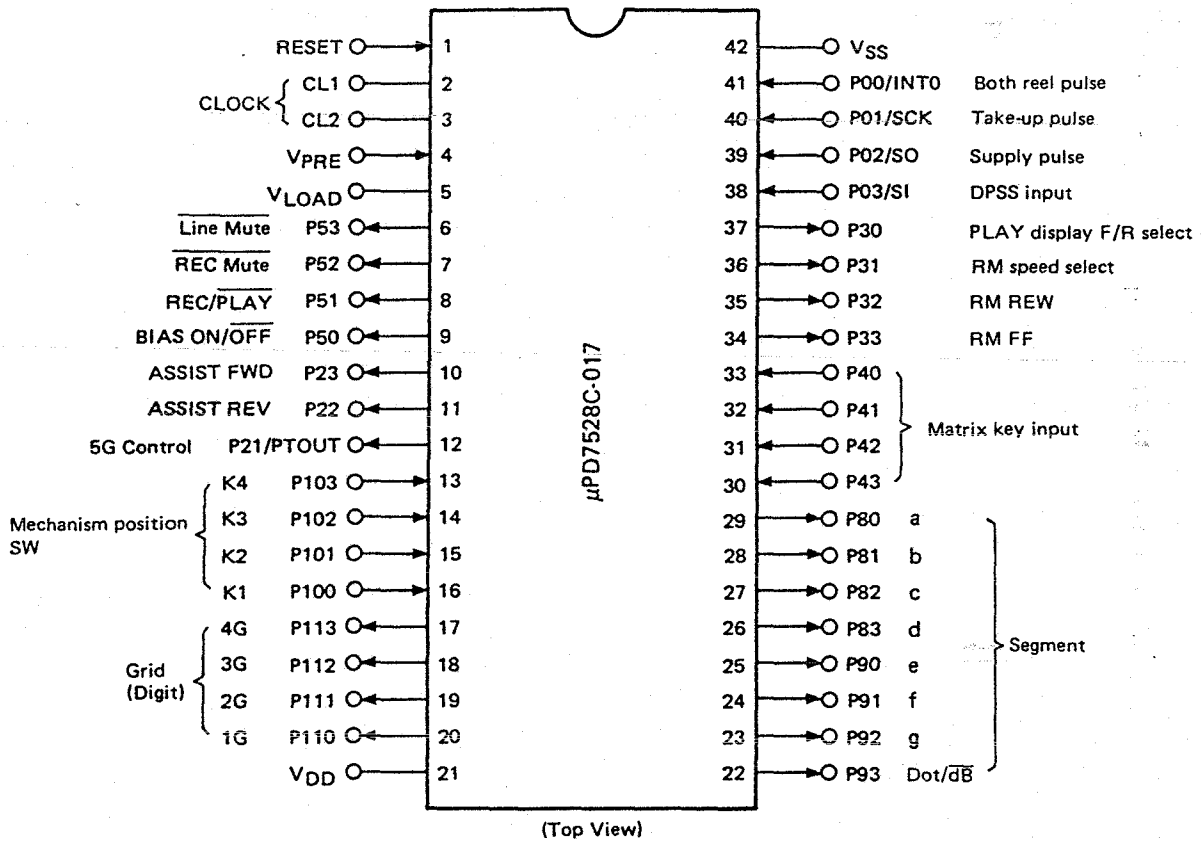
Element	Application/function	Operation/conditions						
TC1	Level meter driver	2-channel dynamic drive.						
Q1	FL display driver	By adding the 1~4 digit control pins of the microcomputer, this driver lights " OPERATION " in dynamic mode.						
Q2	FL display driver	This lights " ◀ " in dynamic mode.						
Q3	FL display driver	This lights " ▶ " in dynamic mode.						
Q4	PLAY FWD/REV select detection switch	<table border="1"> <thead> <tr> <th>Control voltage of pin 37 of the microcomputer</th> <th>FWD (-18.5V)</th> <th>REV (+4.5V)</th> </tr> </thead> <tbody> <tr> <td>Q4</td> <td>OFF</td> <td>ON</td> </tr> </tbody> </table>	Control voltage of pin 37 of the microcomputer	FWD (-18.5V)	REV (+4.5V)	Q4	OFF	ON
Control voltage of pin 37 of the microcomputer	FWD (-18.5V)	REV (+4.5V)						
Q4	OFF	ON						
Q5,6	Peak hold reset	Q5 and Q6 comprise the flip-flop circuit. At 3 sec intervals, Q6 turns on momentarily, then resets.						

CIRCUIT DESCRIPTION

DOLBY NR (X30-1140-00)

Element	Application/function	Operation/conditions
IC1,2	Dolby B-C amp	
Q1~4	MPX filter switches	These are controlled by the MPX filter switch (S1), and when S1 is on, Q1~4 are on the filter is on, too.

Pin configuration and pin functions of IC9 : μ PD7528C-017



NOTE : For details of the matrix, refer to page 8.
 RM : Reel motor
 ASSIST : Assist motor

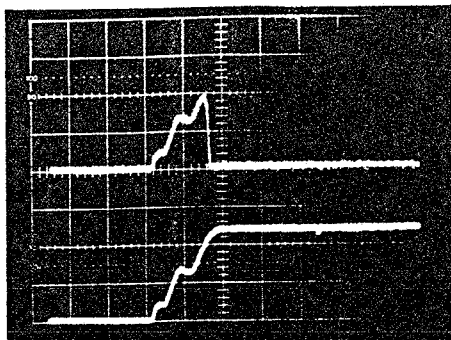
CIRCUIT DESCRIPTION

Pin functions of μ PD7528C-071

Pin No.	Pin name	Input/Output	Function
1	RESET	Input	Active high. Pulse is generated when power is switched on or off (refer to photos 1 and 2.)
2	CL1	Input	Internal clock input by means of CR.
3	CL2	—	Internal clock input by means of CR.
4	VPRE	Input	Pre-driver power supply for high withstand voltage output, $-4V$.
5	VLOAD	Input	Pin for pulling down internal load resistance, $-26V$.
6	P53	Output	Active low. Line mute control signal pin.
7	P52	Output	Active low. Rec mute control signal pin.
8	P51	Output	REC/PLAY select output control signal pin.
9	P50	Output	Bias ON/OFF control signal pin.
10	P23	Output	Assist motor drive forward direction.
11	P22	Output	Assist motor drive reverse direction.
12	P21	Output	5th digit control pin.
13	P103	Input	Mechanism position switch K4.
14	P102	Input	Mechanism position switch K3.
15	P101	Input	Mechanism position switch K2.
16	P100	Input	Mechanism position switch K1.
17	P113	Output	Active high. FIP 4th digit control pin.
18	P112	Output	Active high. FIP 3rd digit control pin.
19	P111	Output	Active high. FIP 2nd digit control pin.
20	P110	Output	Active high. FIP 1st digit control pin.
21	VDD	—	+ 5V
22	P93	Output	Active high. FIP segment dot control pin.
23	P92	Output	Active high. FIP segment g control pin.
24	P91	Output	Active high. FIP segment f control pin.
25	P90	Output	Active high. FIP segment e control pin.
26	P83	Output	Active high. FIP segment d control pin.
27	P82	Output	Active high. FIP segment c control pin.
28	P81	Output	Active high. FIP segment b control pin.
29	P80	Output	Active high. FIP segment a control pin.
30	P43	Input	Matrix key input.
31	P42	Input	Matrix key input.
32	P41	Input	Matrix key input.
33	P40	Input	Matrix key input.
34	P33	Output	Reel motor FF output.
35	P32	Output	Reel motor REW output.
36	P31	Output	Reel motor speed select.
37	P30	Output	FWD/REV PLAY display select.
38	P03	Input	Non-recorded portion detection pin for the DPSS.
39	P02	Input	Supply side reel pulse.
40	P01	Input	Take-up side reel pulse.
41	P00	Input	Active high. Used as external interrupt pin. Edges of both reel pulses are detected. (refer to photos 3 and 4.)
42	VSS	—	GND

CIRCUIT DESCRIPTION

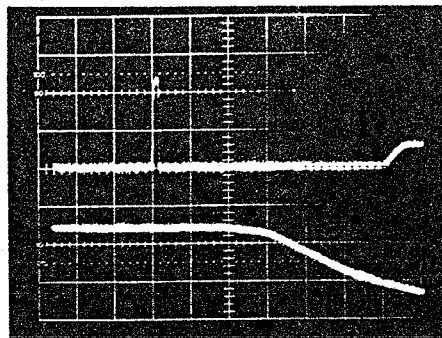
Waveform at RESET pin (pin 1) when power is switched on



Upper : Reset waveform
Lower : VDD waveform
x : 0.2s/div
y : 2V/div

Photo.1

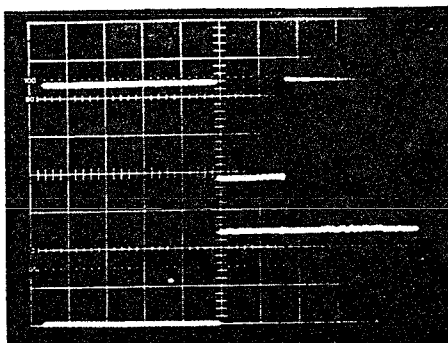
Waveform at RESET pin (pin 1) when power is switched off



Upper : Reset waveform
Lower : VDD waveform
x : 50ms/div
y : 2V/div

Photo.2

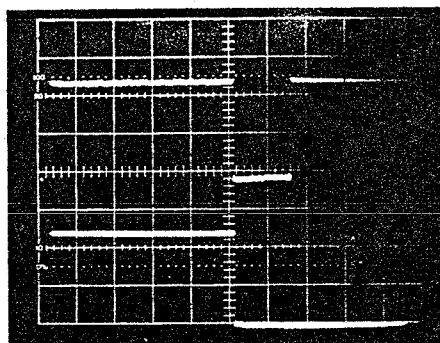
Leading edge of the takeup reel pulse (pins 40 and 41)



Upper : P00/INT0 both
reel pulse edge
detector
Lower : P01 takeup
reel pulse
x : 20µs/div
y : 2V/div

Photo.3

Trailing edge of the takeup reel pulse (pins 40 and 41)



Upper : P00/INT0 both
reel pulse edge
detector
Lower : P01 takeup
reel pulse
x : 20µs/div
y : 2V/div

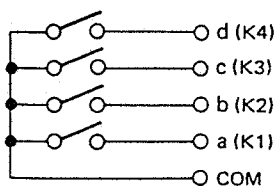
Photo.4

Mechanism position sensor switch positions

		REVERSE			↔	STOP	↔	FF/REW	↔	FOWARD		
		PLAY	↔	PAUSE						PAUSE	↔	PLAY
ROTARY SW	a (K1)	ON	ON	ON	-	-	-	-	-	ON	ON	-
	b (K2)	-	-	ON	ON	ON	ON	-	-	-	ON	ON
	c (K3)	ON	-	-	-	ON	ON	ON	-	-	-	-
	d (K4)	-	-	-	-	-	ON	ON	ON	ON	ON	ON
Code		10	14	12	13	9	1	3	7	6	4	5
Head di- rection switch	Reel	OFF	OFF	OFF	OFF ↔ ON OFF →	ON/OFF	ON/OFF	ON/OFF	↔ ON OFF → ON	ON	ON	ON

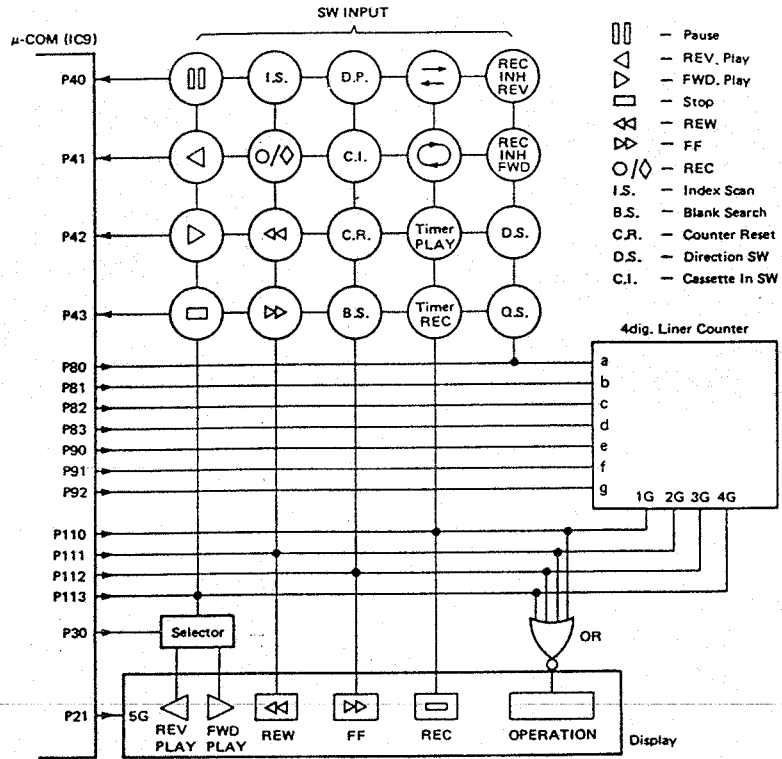
NOTE : The rotary switch code indicates "ON" for "0" and "OFF" for "1"

Rotary circuit

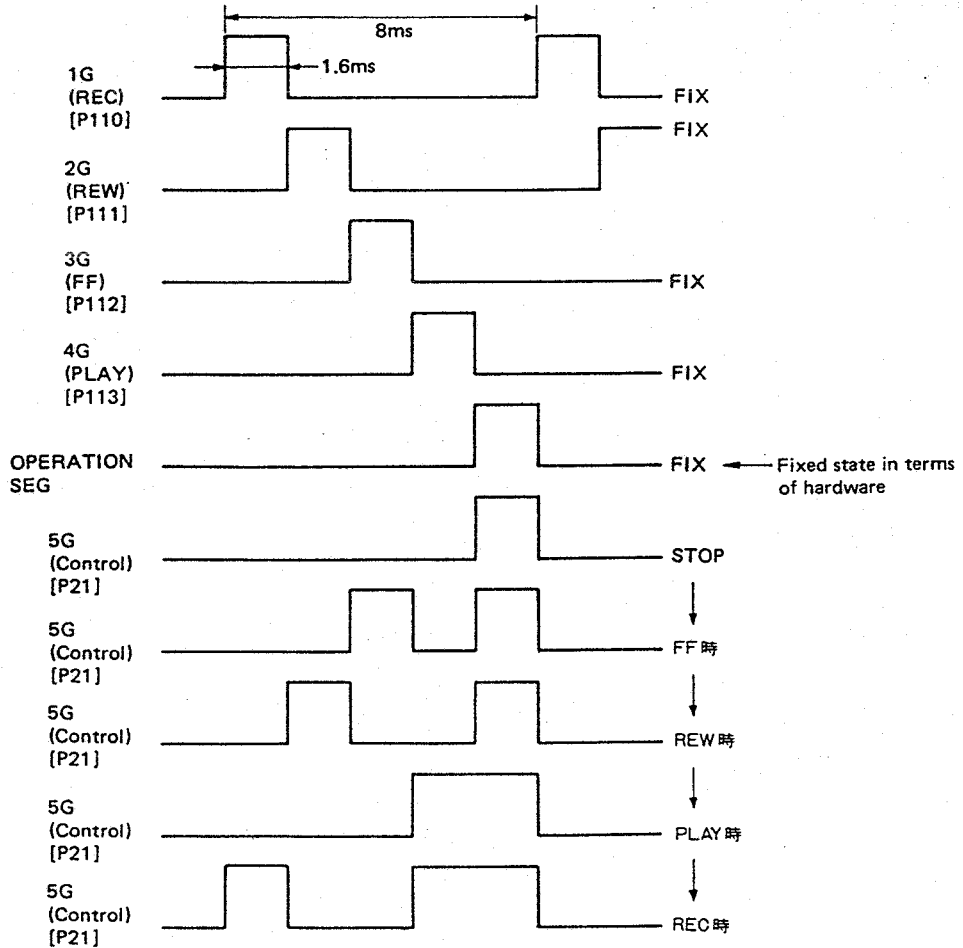


CIRCUIT DESCRIPTION

Key matrix



Timing diagram of the dynamic drive (4-digit counter)

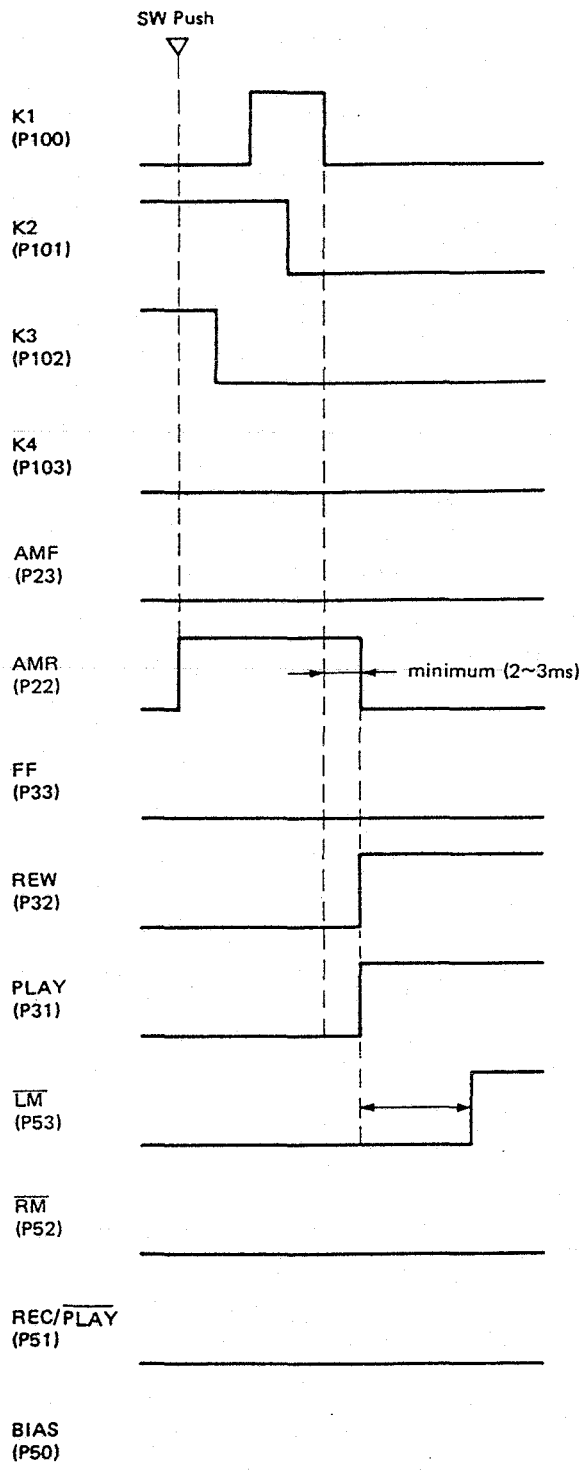


CIRCUIT DESCRIPTION

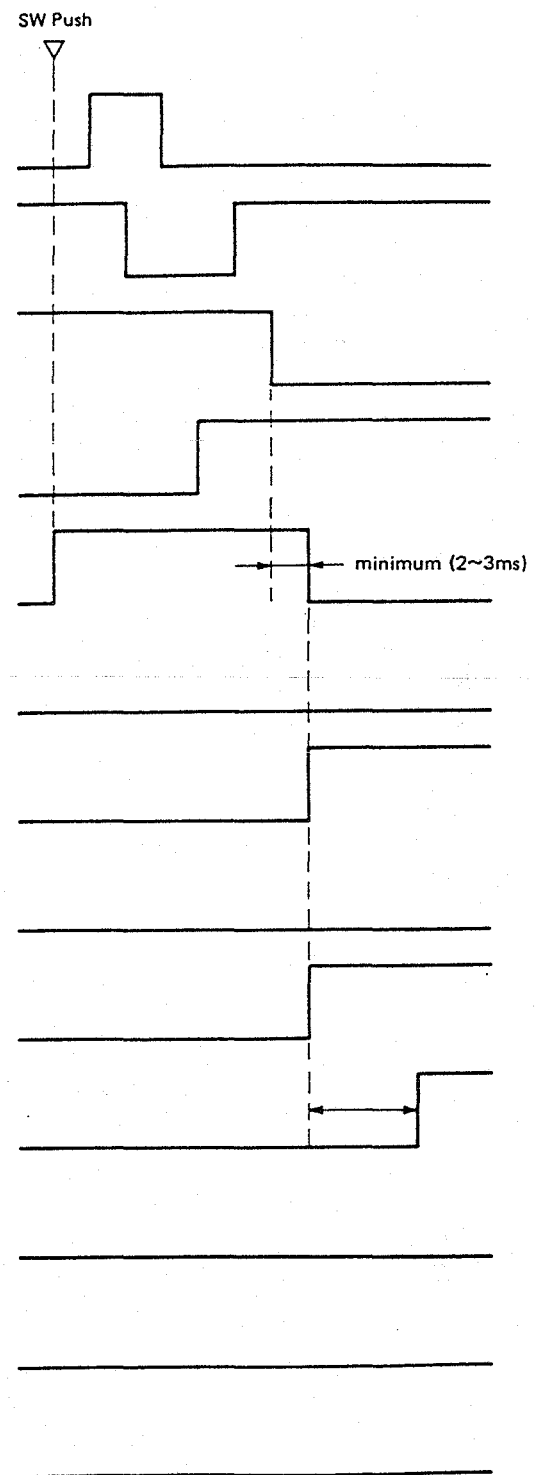
- AMF Assist motor forward
- AMR Assist motor reverse
- LM Line mute
- RM Rec mute

Operation timing diagram

STOP → REV. PLAY

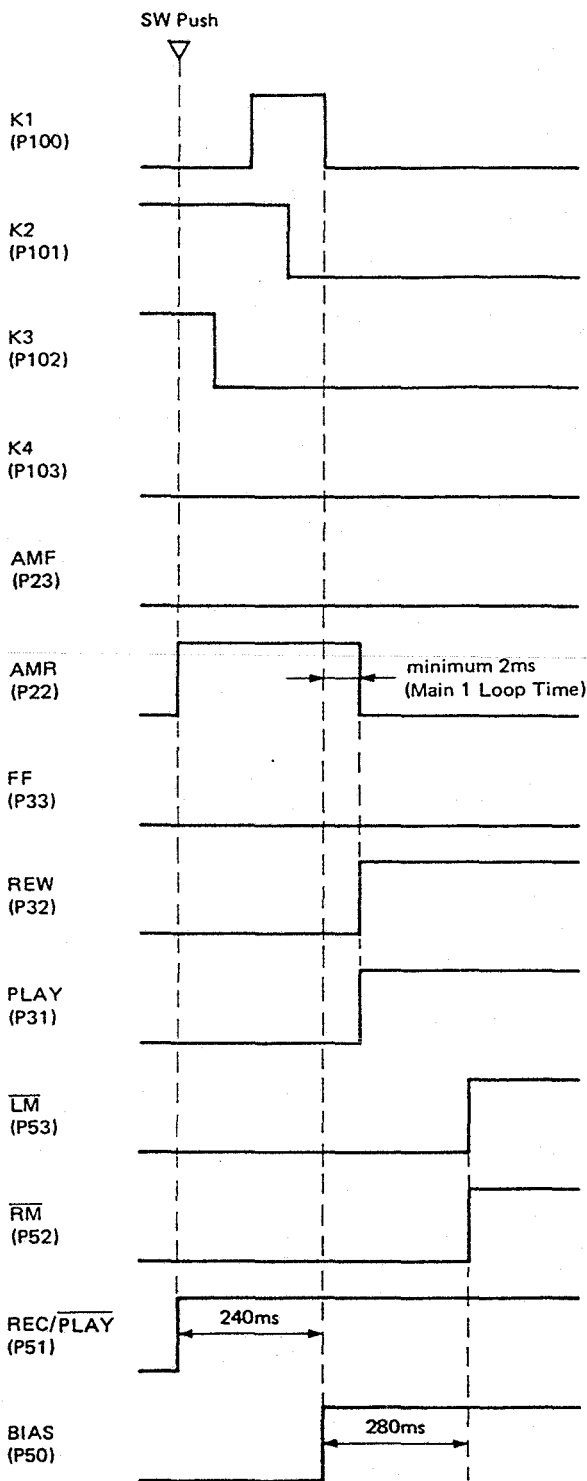


STOP → FWD. PLAY

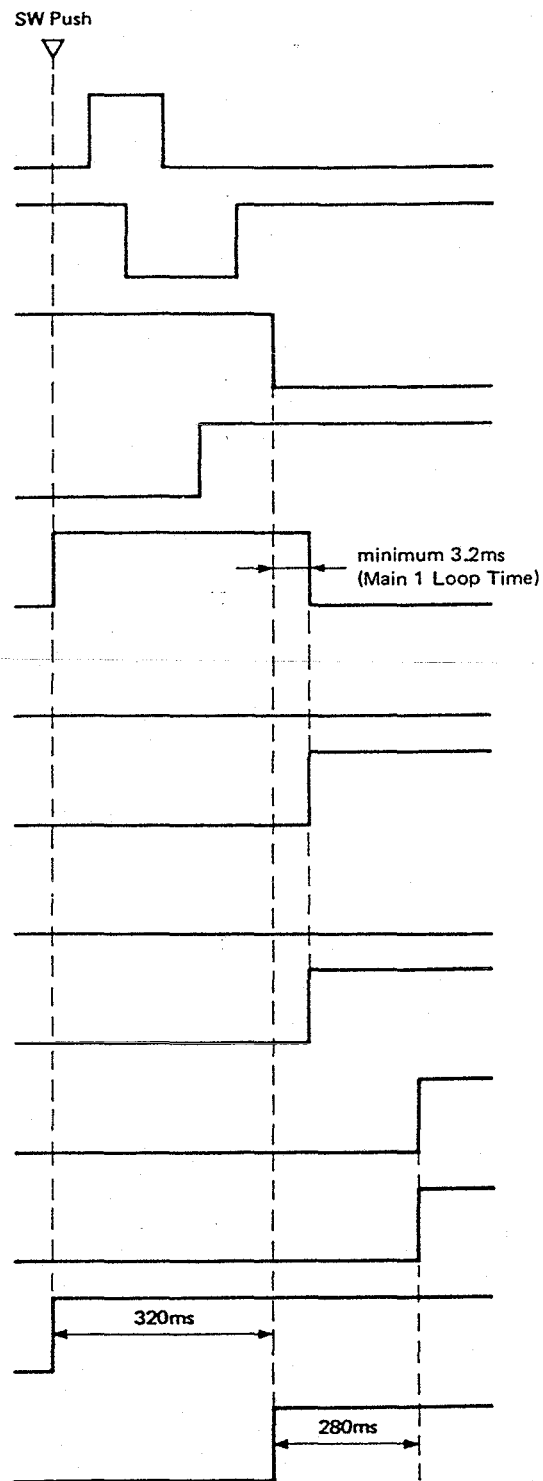


CIRCUIT DESCRIPTION

STOP → REV. REC

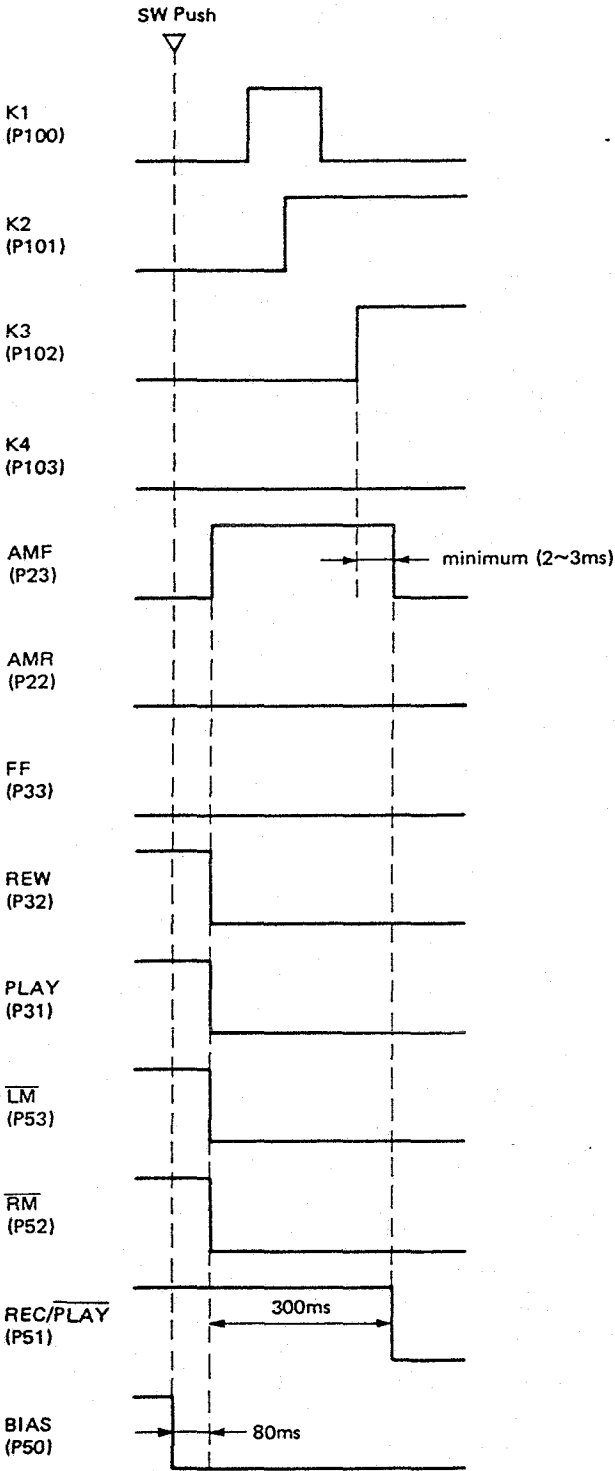


STOP → FWD. REC

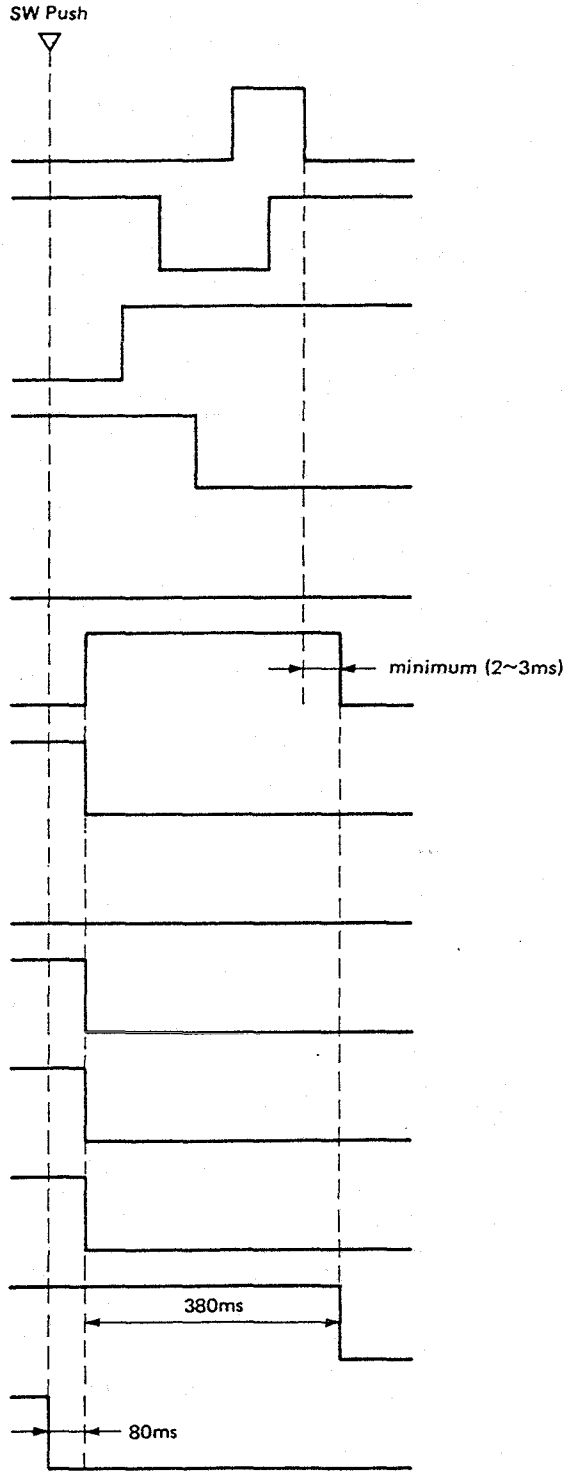


CIRCUIT DESCRIPTION

REV. REC → STOP

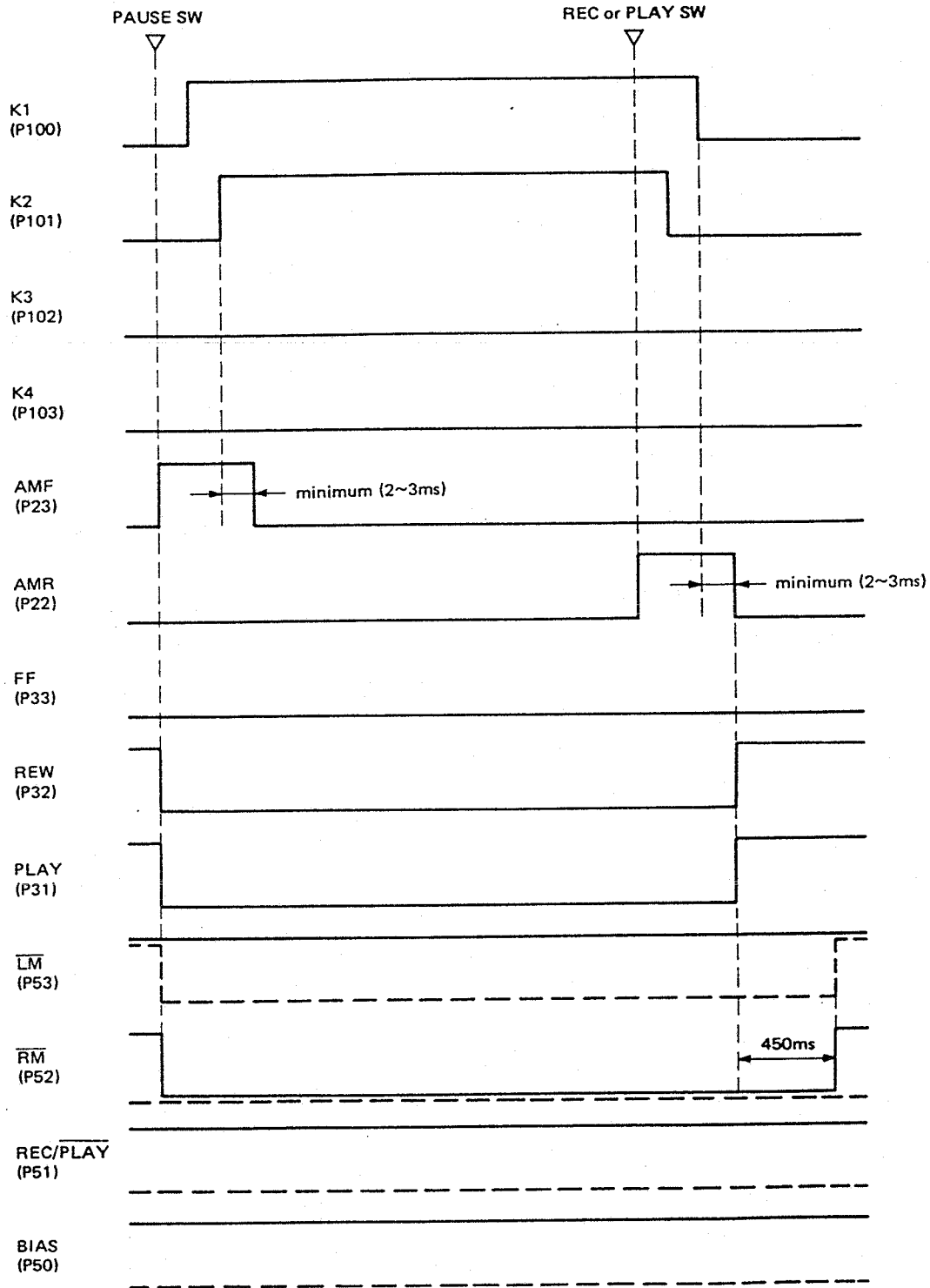


FWD. REC → STOP



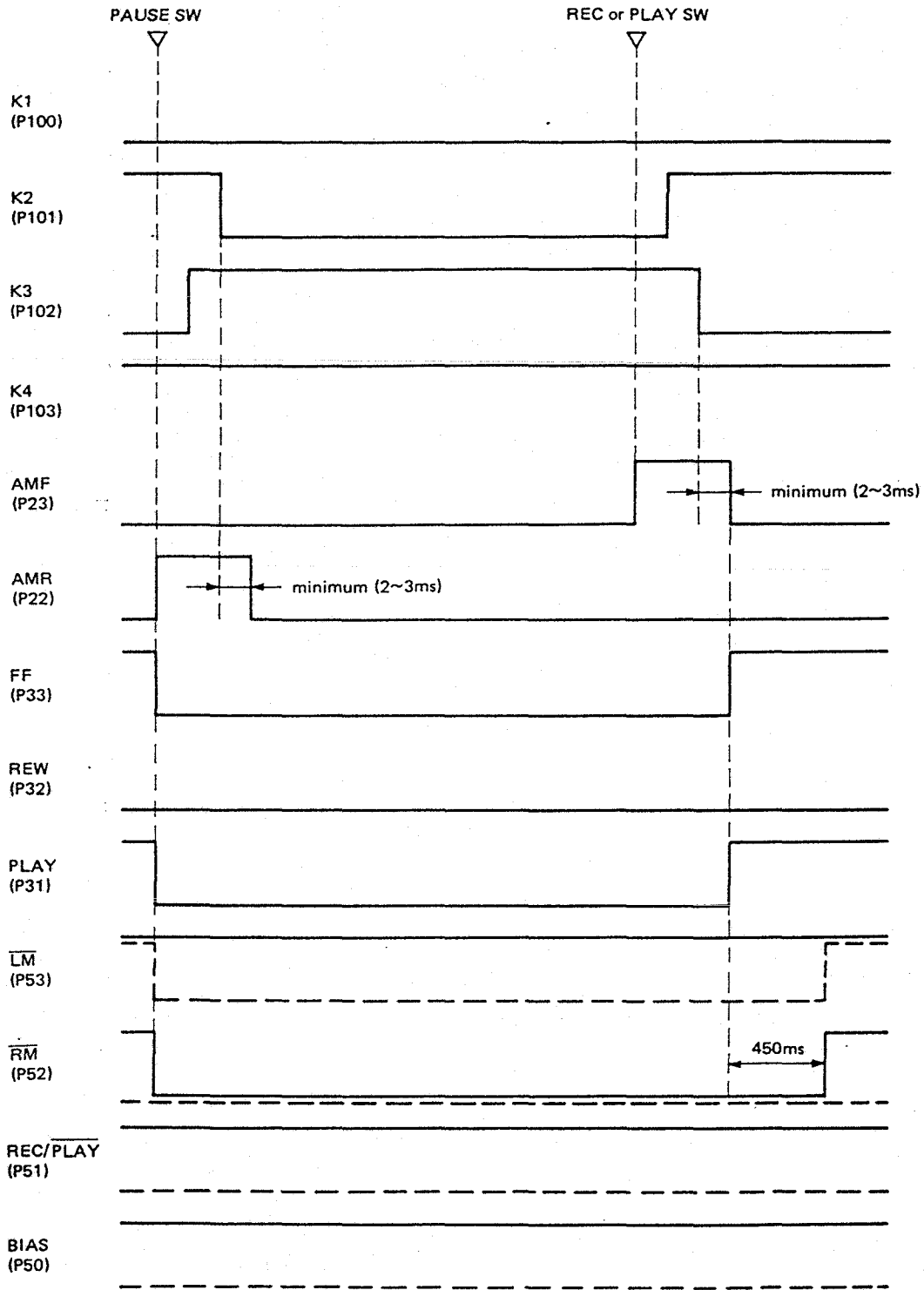
CIRCUIT DESCRIPTION

REV. REC → REV. REC PAUSE → REV. REC
 REV. PLAY → REV. PLAY PAUSE → REV. PLAY (A BROKEN LINE)



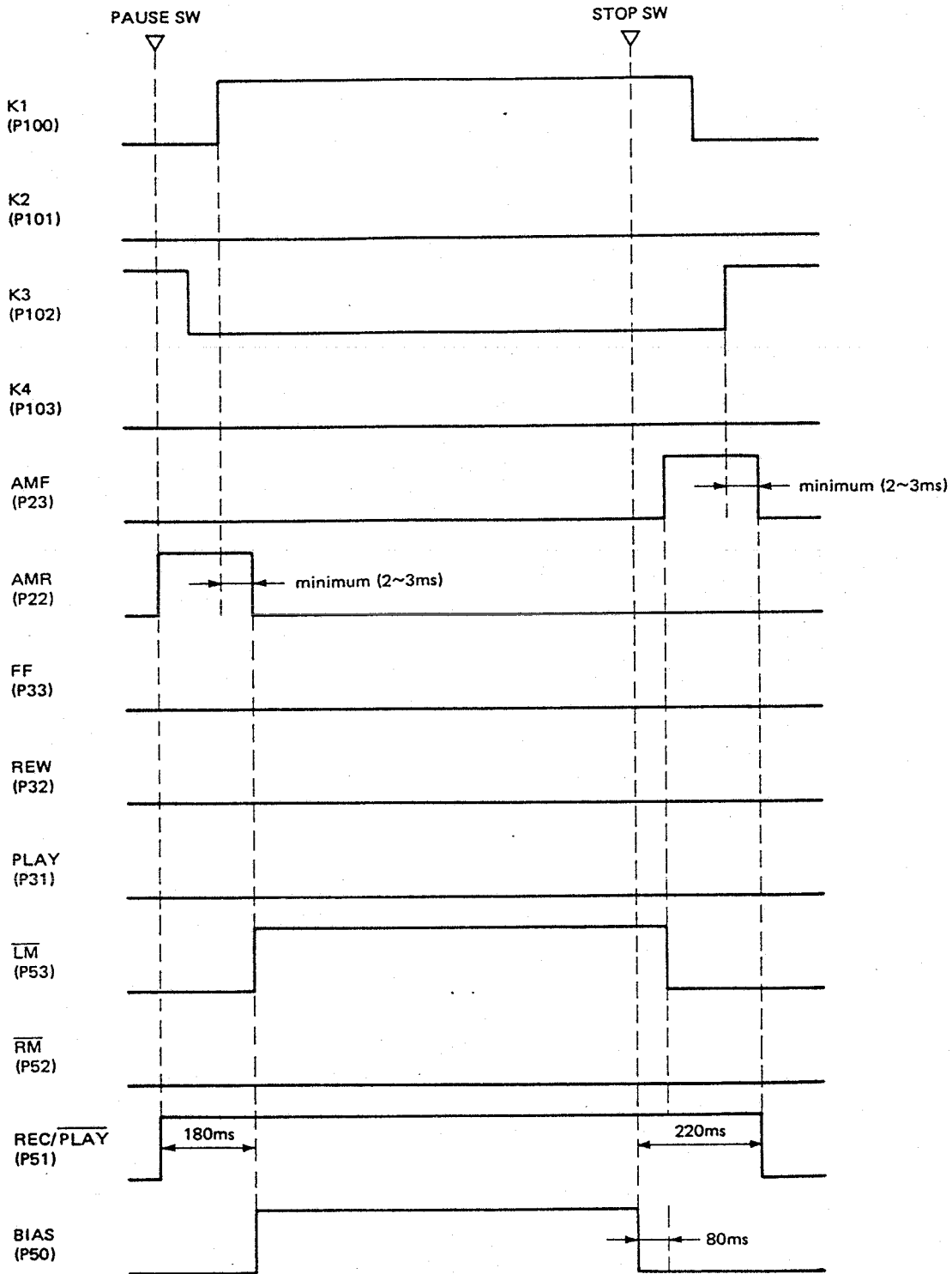
CIRCUIT DESCRIPTION

FWD. REC → FWD. REC PAUSE → FWD. REC
 FWD. PLAY → FWD. PLAY PAUSE → FWD. PLAY (A BROKEN LINE)



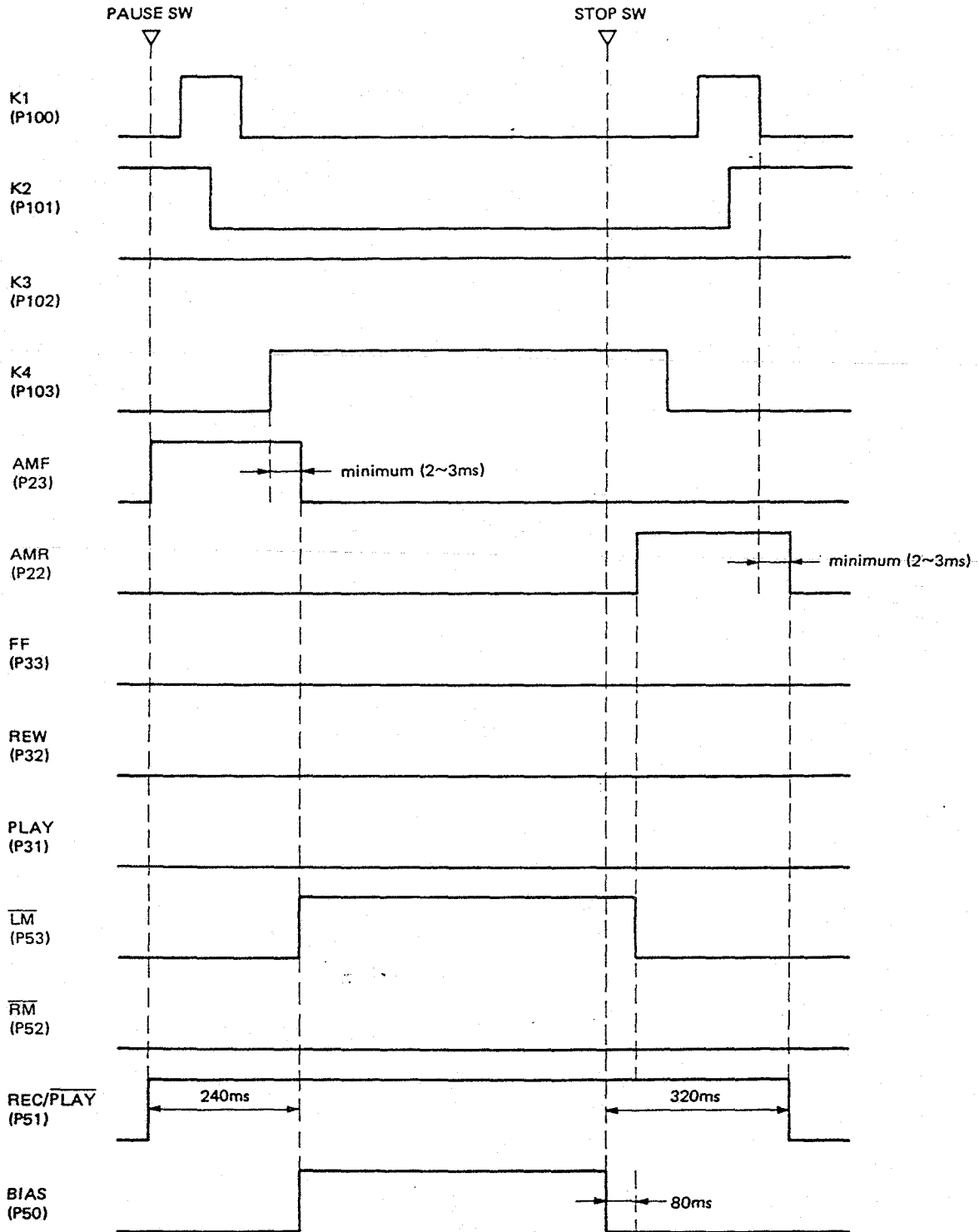
CIRCUIT DESCRIPTION

STOP → REV. REC PAUSE → STOP



CIRCUIT DESCRIPTION

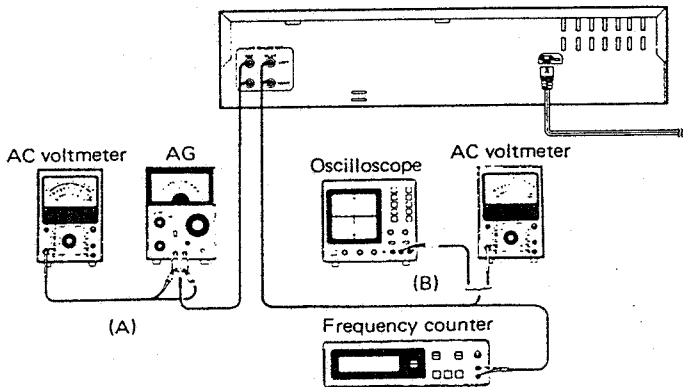
STOP → FWD. REC PAUSE → STOP



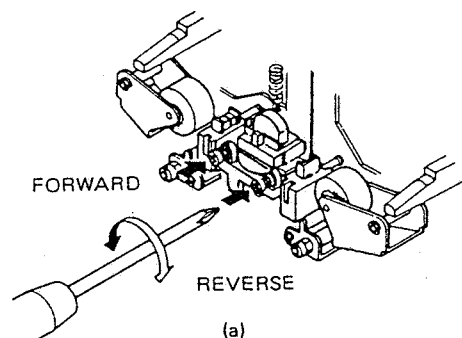
ADJUSTMENT

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	CASSETTE TAPE DECK SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
CASSETTE DECK SECTION TAPE: NORMAL, DOLBY: OFF, INPUT: LINE							0dBs=0.775V
I REC/PLAY HEAD							
[1]	DEMAGNETIZATION	-	-	POWER: OFF Remove the cassette door.	REC/PLAY head	Demagnetize the REC/PLAY head with a head demagnetizer.	
[2]	CLEANING	-	-	PLAY	REC/PLAY head erase head, capstan, pinch roller.	Clean the REC/PLAY head erase head, capstan and pinch roller using a cotton swab slightly damped with alcohol.	
[3]	AZIMUTH	MTT-256 10kHz, -20dB	(B)	PLAY	Azimuth adjust- ment screw	Adjust the azimuth adjustment screw so that the output voltage is maximized in both forward and reverse direction.	(a)
DC MOTOR							
(i)	TAPE SPEED	MTT-111 MTT-111D	(B)	PLAY	Trimming poten- tiometer in the DC motor	Adjust the tape speed so that a 3kHz signal is produced at the center of the tape.	
II PC BOARD							
< 1 >	PLAYBACK LEVEL	MTT-256 315Hz, 0dB	(B)	PLAY	VR3 (L) VR4 (R) (X87-103)	Output level: -0.5dBs	
< 2 >	BIAS CURRENT	(A) 1kHz, -30dBs 10kHz, -30dBs	(B)	Adjust REC and BALANCE so that the REC monitor output becomes -28dBs at 1kHz, then record and reproduce signal of 1kHz and 10kHz in alternation.	VR5 (L) VR4 (R) (X26-108)	Record 1kHz and 10kHz in alternation and adjust the variable resistors which control the bias current so that the same playback level is obtained.	
< 3 >	RECORD LEVEL	(A) 1kHz, -30dBs	(B)	Record and reproduce a 1kHz signal under the conditions set in < 2 >.	VR1 (L) VR2 (R) (X87-103)	Adjust the variable resistors so that a playback level of -20dBs is obtained.	
< 4 >	FL PEAK LEVEL METER	(A) 1kHz, -10dBs	(B)	REC PAUSE Adjust REC and BALANCE so that the monitor output is -8dBs at 1kHz.	VR1 (X87-102)	0dB FL segment is completely lit.	

SYSTEM CONNECTION



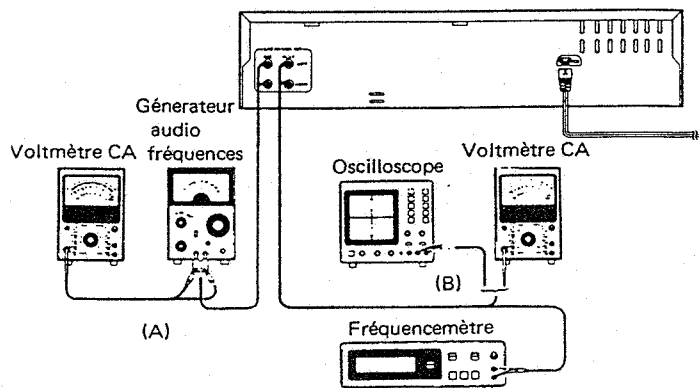
AZIMUTH ADJUSTMENT SCREW



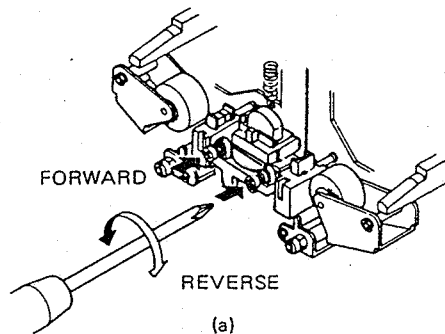
REGLAGE

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU MAGNETO -PHONE A CASSETTE	POINTS DE L'ALIGNEMENT	ALIGNER POUR	FIG.
SECTION DU MAGNETOPHONE TAPE: NORMAL, DOLBY: OFF, ENTREE: LINE 0dBs=0,775V							
I TETE D'ENREGISTREMENT/LECTURE							
[1]	DEMAGNETISATION	-	-	POWER: OFF Eloigner la porte.	Tête D'ENREGISTREMENT/LECTURE	Demagnétiser la tête D'ENREGISTREMENT/LECTURE avec un démagnétiseur de tête.	
[2]	NETTOYAGE	-	-	PLAY	Tête D'ENREGISTREMENT/LECTURE tête d'effacement, cabestan, galetpresseur.	Nettoyer la tête D'ENREGISTREMENT/LECTURE la tête d'effacement, le cabestan et le galetpresseur avec un coton-tige légèrement imbibé d'alcool.	
[3]	AZIMUT	MTT-256 10kHz. -20dB	(B)	PLAY	Vis d'azimut	Ajuster la vis de réglage de l'azimut de façon que la tension de sortie soit maximale à la fois en avant et en arrière, de la bande d'essai.	(a)
MOTEUR CC							
(i)	VITESSE DE DEFILEMENT	MTT-111 MTT-111D	(B)	PLAY	Résistance ajustable du moteur CC	Régler la vitesse de bande de façon qu'un signal de 3kHz soit produit au centre de la bande.	
II PLAQUE IMPRIMEE							
< 1 >	NIVEAU DE LECTURE	MTT-256 315Hz. 0dB	(B)	PLAY	VR3 (C) VR4 (D) (X87-103)	Niveau de sortie: -0,5dBs	
< 2 >	COURANT DE POLARISATION	(A) 1kHz. -30dBs 10kHz. -30dBs	(B)	Régler REC et BALANCE de façon que la sortie de moniteur REC soit de -26dBs à 1kHz, puis enregistrer et reproduire des signaux de 1kHz et 10kHz en alternance.	VR5 (C) VR4 (D) (X26-108)	Enregistrer un signal de 1kHz et 10kHz en alternance et ajuster les résistances variables qui commandent le courant de polarité de façon à obtenir le même niveau de lecture.	
< 3 >	NIVEAU D'ENREGISTREMENT	(A) 1kHz. -30dBs	(B)	Enregistrer et reproduire un signal de 1kHz dans les conditions précisées en < 2 >.	VR1 (C) VR2 (D) (X87-103)	Ajuster les résistances variables de façon à obtenir un niveau de lecture de -20dBs.	
< 4 >	INDICATEUR DE NIVEAU DE CRETE A FL	(A) 1kHz. -10dBs	(B)	REC PAUSE Ajuster REC et BALANCE de façon à ce que la sortie moniteur soit de -8dBs à 1kHz.	VR1 (X87-102)	Le segment de FL 0dB soit complètement allumé.	

RACCORDEMENTS DU SYSTEME



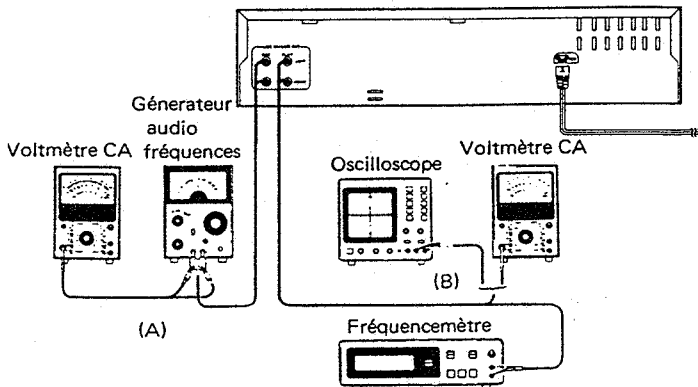
VIS D'AZIMUT



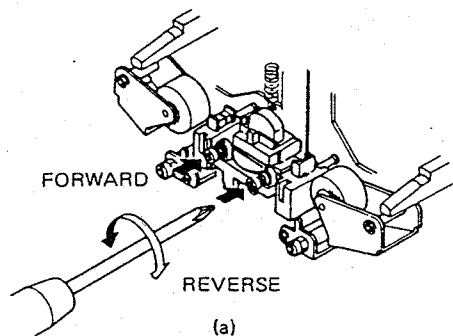
REGLAGE

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU MAGNETO -PHONE A CASSETTE	POINTS DE L'ALIGNEMENT	ALIGNER POUR	FIG.
SECTION DU MAGNETOPHONE TAPE: NORMAL, DOLBY: OFF, ENTREE: LINE							0dBs=0,775V
I TETE D'ENREGISTREMENT/LECTURE							
[1]	DEMAGNETISATION	-	-	POWER: OFF Eloigner la porte.	Tête D'ENREGISTREMENT/LECTURE	Démagnétiser la tête D'ENREGISTREMENT/LECTURE avec un démagnétiseur de tête.	
[2]	NETTOYAGE	-	-	PLAY	Tête D'ENREGISTREMENT/LECTURE tête d'effacement, cabestan, galetresseur.	Nettoyer la tête D'ENREGISTREMENT/LECTURE la tête d'effacement, le cabestan et le galetresseur avec un coton-tige légèrement imbibé d'alcool.	
[3]	AZIMUT	MTT-256 10kHz. -20dB	(B)	PLAY	Vis d'azimut	Ajuster la vis de réglage de l'azimut de façon que la tension de sortie soit maximale à la fois en avant et en arrière, de la bande d'essai.	(a)
MOTEUR CC							
(i)	VITESSE DE DEFILEMENT	MTT-111 MTT-111D	(B)	PLAY	Résistance ajustable du moteur CC	Régler la vitesse de bande de façon qu'un signal de 3kHz soit produit au centre de la bande.	
II PLAQUE IMPRIMEE							
< 1 >	NIVEAU DE LECTURE	MTT-256 315Hz. 0dB	(B)	PLAY	VR3 (C) VR4 (D) (X87-103)	Niveau de sortie: -0,5dBs	
< 2 >	COURANT DE POLARISATION	(A) 1kHz. -30dBs 10kHz. -30dBs	(B)	Régler REC et BALANCE de façon que la sortie de moniteur REC soit de -26dBs à 1kHz, puis enregistrer et reproduire des signaux de 1kHz et 10kHz en alternance.	VR5 (C) VR4 (D) (X26-108)	Enregistrer un signal de 1kHz et 10kHz en alternance et ajuster les résistances variables qui commandent le courant de polarité de façon à obtenir le même niveau de lecture.	
< 3 >	NIVEAU D'ENREGISTREMENT	(A) 1kHz. -30dBs	(B)	Enregistrer et reproduire un signal de 1kHz dans les conditions précisées en <2>.	VR1 (C) VR2 (D) (X87-103)	Ajuster les résistances variables de façon à obtenir un niveau de lecture de -20dBs.	
< 4 >	INDICATEUR DE NIVEAU DE CRETE A FL	(A) 1kHz. -10dBs	(B)	REC PAUSE Ajuster REC et BALANCE de façon à ce que la sortie moniteur soit de -6dBs à 1kHz.	VR1 (X87-102)	Le segment de FL 0dB soit complètement allumé.	

RACCORDEMENTS DU SYSTEME



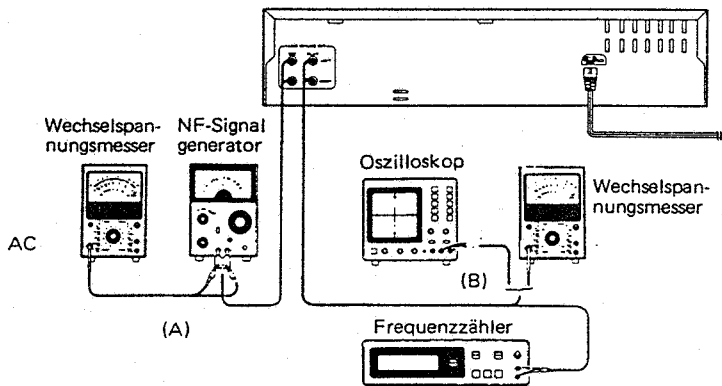
VIS D'AZIMUT



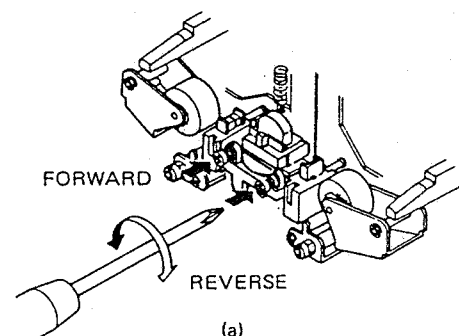
ABGLEICH

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	KASSETTENCERAT-EINSTELLUNG	ABGLEICH PUNKTE	ABGLEICHEN FÜR	ABB.
CASSETTEN-DECK-ABTEILUNG TAPE: NORMAL, DOLBY: OFF, EINGANG: LINE							0dBs=0,775V
I AUFNAHME/WIEDERGABE-KOPF							
[1]	ENTMAGNETISIERUNG	-	-	POWER: OFF Den Kassettenfach deckel oben herausziehen.	AUFNAHME/WIEDERGABE-Kopf	Entmagnetisierung von dem AUFNAHME/WIEDERGABE-Kopf mit einem Tonkopf Entmagnetisierungsdrossel.	
[2]	REINIGUNG	-	-	PLAY	AUFNAHME/WIEDERGABE-Kopf Löschkopf, Tonwelle, Andruckrolle.	AUFNAHME/WIEDERGABE-Kopf, Löschkopf, Tonwelle und Andruckrolle mit einem leicht mit Alkohol befeuch- teten Matteauch reinigen.	
[3]	AZIMUT-EINSTELLUNG	MTT-256 10kHz. -20dB	(B)	PLAY	Azimut-Einstellschraube	Die Azimut-Justierschraube so einstellen, daß die maximale Ausgangsspannung in Vorwärts-Reverserichtung und erzielt.	(a)
GLEICHSTROMMOTOR							
(i)	BANDGESCHWINDIGKEIT	MTT-111 MTT-111D	(B)	PLAY	Trimmer potentiometer am Gleichstrommotor	Die Bandgeschwindigkeit so justieren, daß ein 3kHz Signal auf der Mitte des Bands erzeugt wird.	
II GEDRUCKTE SCHALTPLATTE							
< 1 >	WIEDERGABE-PEGEL	MTT-256 315Hz. 0dB	(B)	PLAY	VR3 (L) VR4 (R) (X87-103)	Ausgangspegel: -0,5dBs	
< 2 >	LEERLAUFSTROM	(A) 1kHz. -30dBs 10kHz. -30dBs	(B)	REC und BALANCE so justieren, daß der REC Monitorausgang -26dBs bei 1kHz wird, und danach abwechselnd Signale von 1kHz und 10kHz aufnehmen und wiedergeben.	VR5 (L) VR4 (R) (X26-108)	Signale von 1kHz und 10kHz abwechselnd aufnehmen und die Regelwiderstände, die den Vormagnetisierungsstrom regeln, so justieren, daß der gleiche Wiedergabepegel erzielt wird.	
< 3 >	AUFNAHMEPEGEL	(A) 1kHz. -30dBs	(B)	Ein 1kHz Signal unter den in Punkt <2> beschriebenen Bedingungen aufnehmen und reproduzieren.	VR1 (L) VR2 (R) (X87-103)	Die Regelwiderstände so justieren, daß ein wiedergabepegel von -20dBs erzielt wird.	
< 4 >	FL SPITZEN-PEGELMESSER	(A) 1kHz. -10dBs	(B)	REC PAUSE REC und BALANCE so einstellen, daß der Monitorausgang bei 1kHz, -6dBs ist.	VR1 (X87-102)	Der Regelwiderstand so justieren, daß das 0dB Segment vollständig leuchtet.	

SYSTEM-ANSCHLUSSE



AZIMUT-EINSTELLSCHRAUBE



PC BOARD

X26-1080-11

	B	C	E
Q3~Q6	-	0V	-
Q7	8.2V	10V	7.6V
Q8	-8.2V	-10.3V	-7.6V
Q9	8.2V	10V	7.6V
Q10	-8.2V	-10.3V	-7.6V
Q11~Q14	-	0V	-
Q15	-	-	0V
Q16	-	-17.5V(NOR-CrO ₂) 6.7V (MET)	-
Q17	-	-17.5V (NOR) 6.7V (CrO ₂) -17.5V (MET)	-
Q20	REC, REC PAUSE : -1.25V (NOR) 1.15V (CrO ₂) 7V (MET) OTHERS : 10.2V	10.1V	REC, REC PAUSE : -1.85V (NOR) 0.55V (CrO ₂) 6.4V (MET) OTHERS : -10.3V
Q21	6.8V (NOR) -10V (CrO ₂) -10V (CrO ₂)	-	-10.3V
Q22~Q24	-	-	-10.3V
Q25, Q28	-	-	0V
Q29	4.6V (PLAY REC) 0V (OTHERS)	-	0V
Q30	5V (PLAY REC, REC PAUSE) 4V (OTHERS)	-17.5V (PLAY REC, REC PAUSE) 4.6V (OTHERS)	4.6V
Q31	-	-3V (REC) 4V (OTHERS)	-
Q32	-	0V (REC, REC PAUSE) 6.4V (OTHERS)	-
Q33	-	-	7.6V
Q34	-	-	0V
Q35	8.2V	10.1V	7.6V
Q36	-	-	0V
Q37	-	15.7V	0V
Q38	5.6V	-	5V
Q39	10.7V	-	10.1V
Q40	-	22V	10V
Q41	13.3V	22V	-
Q43	-10.9V	-	-10.3V
Q45	-19.1V	-40V	-18.5V
Q46	-5.7V	-19.1V	-5.1V
Q50	-	-	5V
	G	D	S
Q42	13.3V	13.3V	22V
Q44	-23.5V	-10.9V	-23.5V
Q47	-40V	-19.1V	-40V
Q48	8.2V	-8.2V	-10.3V
Q49	8.2V	10.0V	8.2V

IC1,2

1	0V
2	0V
3	0V
4	-9.8V
5	0V
6	0V
7	0V
8	9.6V

IC3

1	0V
2	-
3	0V
4	-10.3V
5	0V
6	-
7	0V
8	10V

IC4,5

1	0V
2	0V
3	0V
4	-10.3V
5	0V
6	0V
7	0V
8	10V

IC6

1	5V
6	5V
14	5V

IC7

1	0V
2	-
3	-
4	9.6V
5	-
6	-
7	12V
8	12V
9	-
10	-

IC8

1	0V
2	-
3	-
4	6.0V (FF REW) 5.4V (STOP PAUSE) 3.9V (PLAY REC)
5	-
6	-
7	12V
8	-
9	-
10	-

IC9

6	5V (PLAY REC, REC PAUSE) 4V (OTHERS)
9	4.8V (REC, REC PAUSE) -10.3V (OTHERS)
36	4.6V (PLAY REC) 0V (OTHERS)
37	-18.5V (FWD) 4.5V (REV)

X87-1030-00

IC1	
6	-10V
8	0V
9	5.7V (NOR) 0V (CrO ₂) -6.3V (MET)
11	10V

IC2	
1	0V
2	-
3	-
4	-7.5V
5	7.5V
6	-
7	0V

X87-1020-00

IC1	
1	-
2	-
3	0.7V
4	2V
5	0V
6	2V
7	0.7V
8	-
9	10V

IC2	
1	0V
2	0V
3	0V
4	-10.3V
5	0V
6	0V
8	10V
9	0V

X30-1140-00

IC1	
2	7.6V
9	-5.5V
10	-6.8V
14	0V
17	-7.2V
18	-2.2V
20	-7.2V
21	-7.1V
27	-7.6V

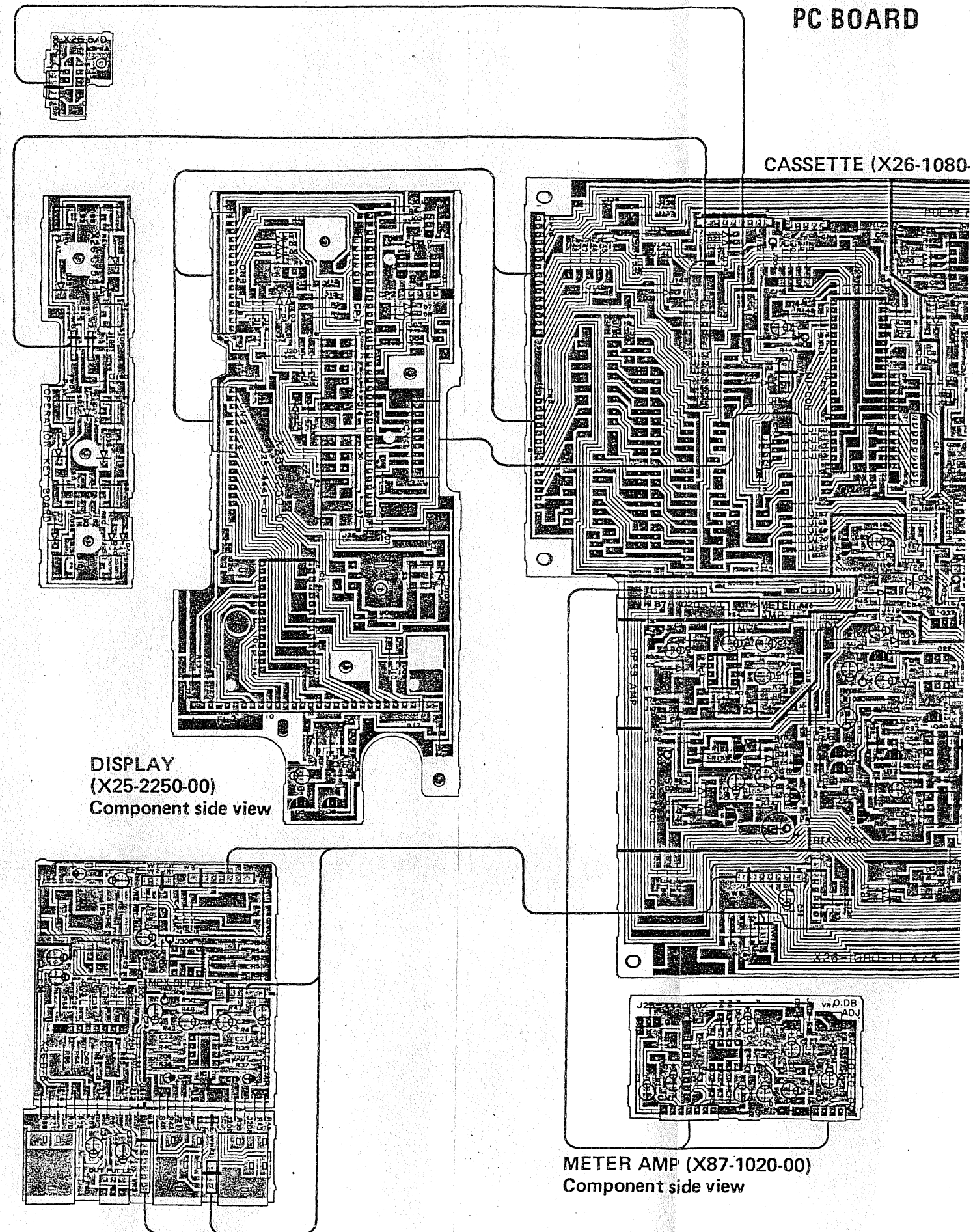
IC2	
2	-7.6V
8	-7.1V
9	-7.2V
11	-2.2V
12	-7.2V
19	-6.8V
20	-5.5V
27	7.6V

X25-2250-00

IC1	
1	18.5V
2	-
3	0V
22	NC
23	NC
24	-
25	-3.2V
26	-15.7V
27	-17.5V
28	-17.5V

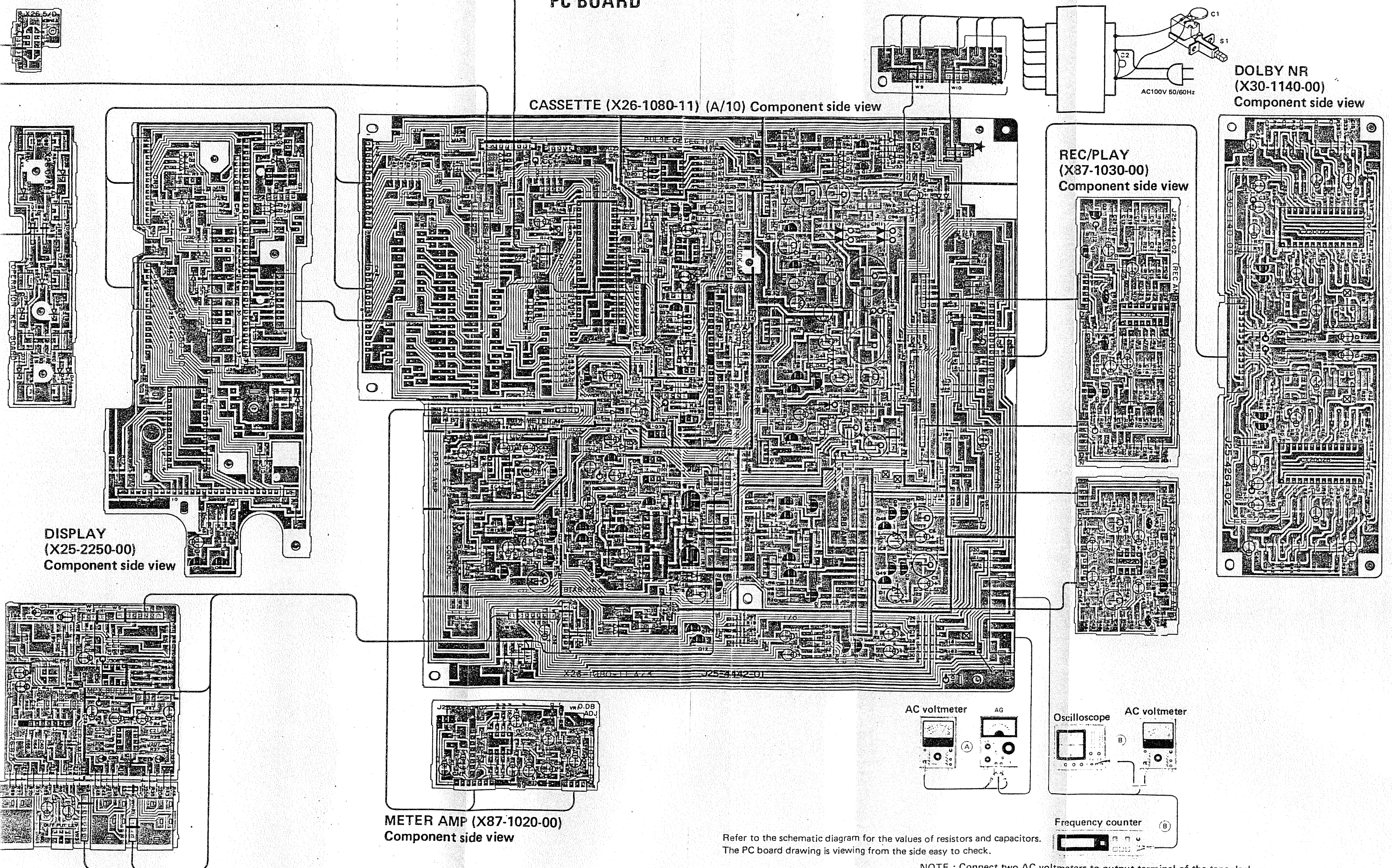
X25-2250-00

	B	C	E
Q1	5V (DOLBY B)	-	-
Q4	-18.5V (FWD)	-	-18.5V
Q5	-	-	-18.5V
Q6	-	-	-18.5V

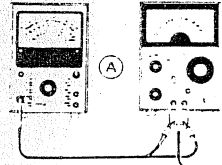


KX-990SR KX-990SR

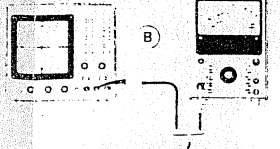
PC BOARD



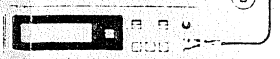
AC voltmeter



Oscilloscope

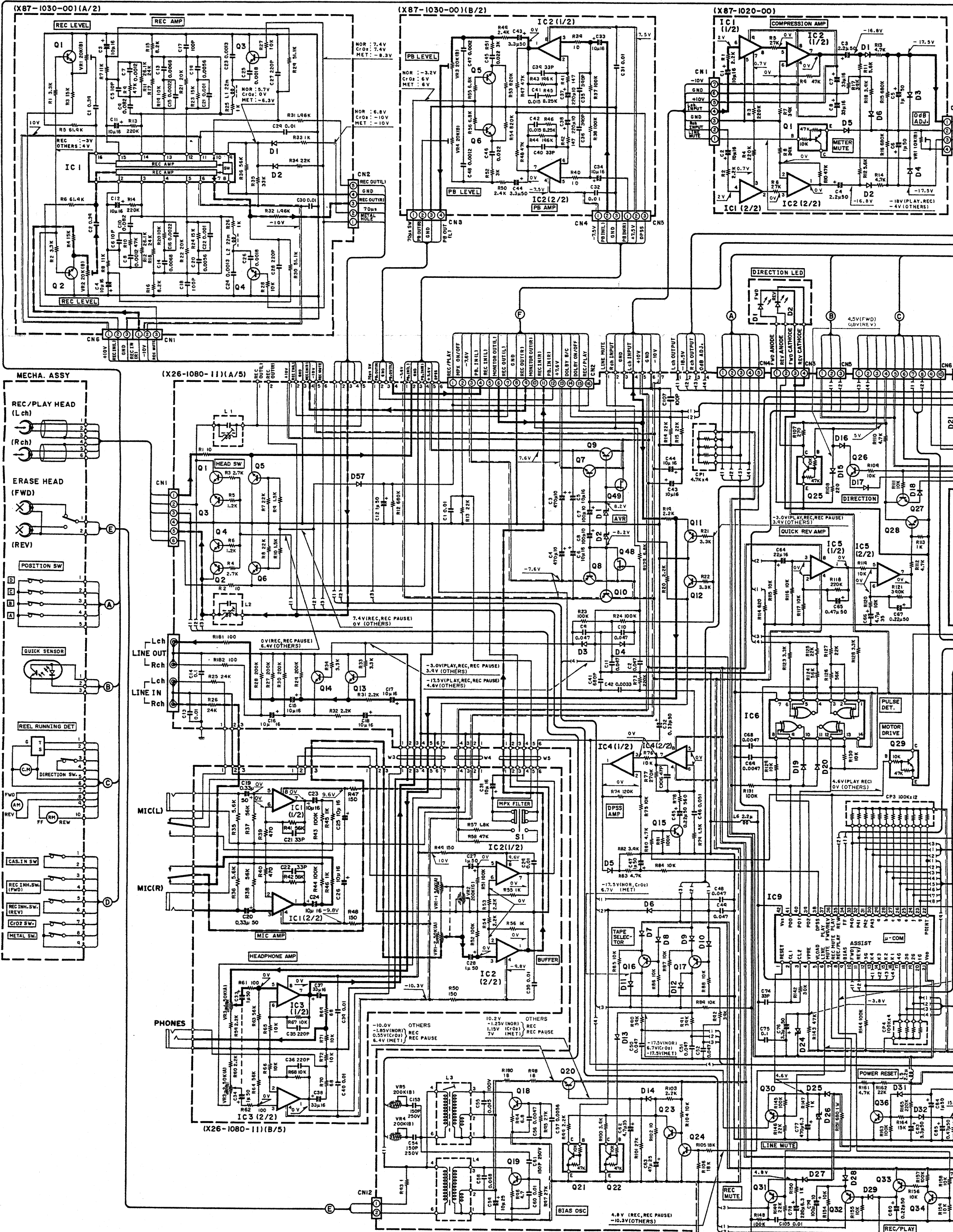


Frequency counter

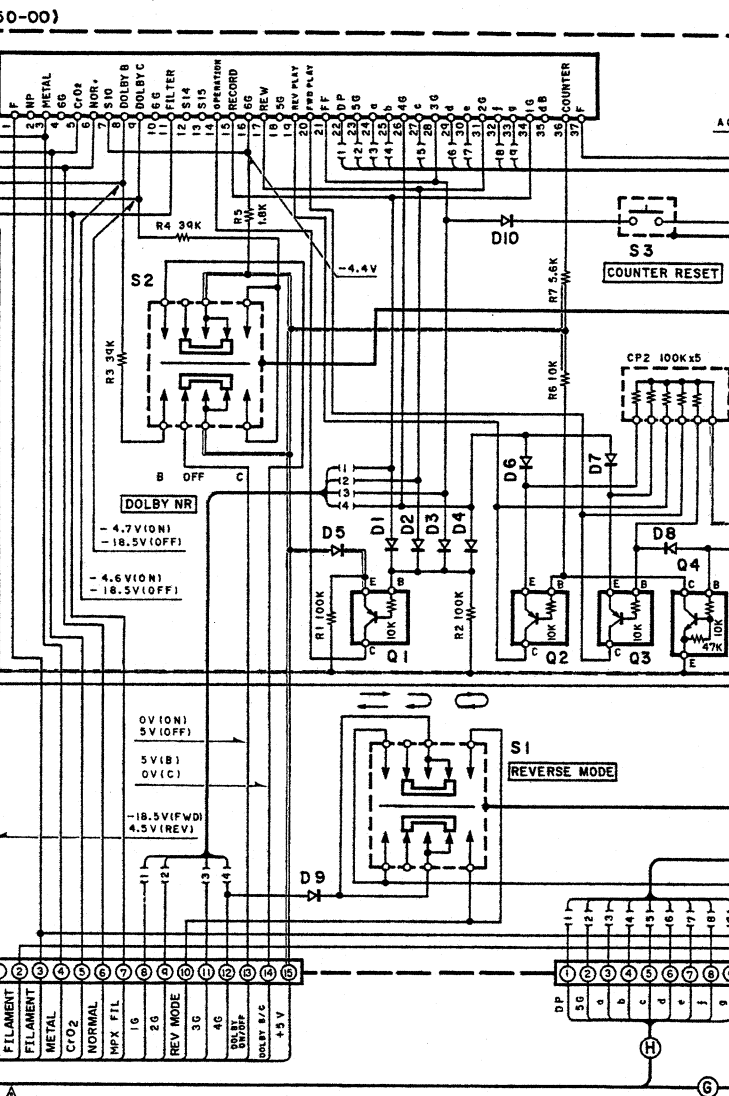
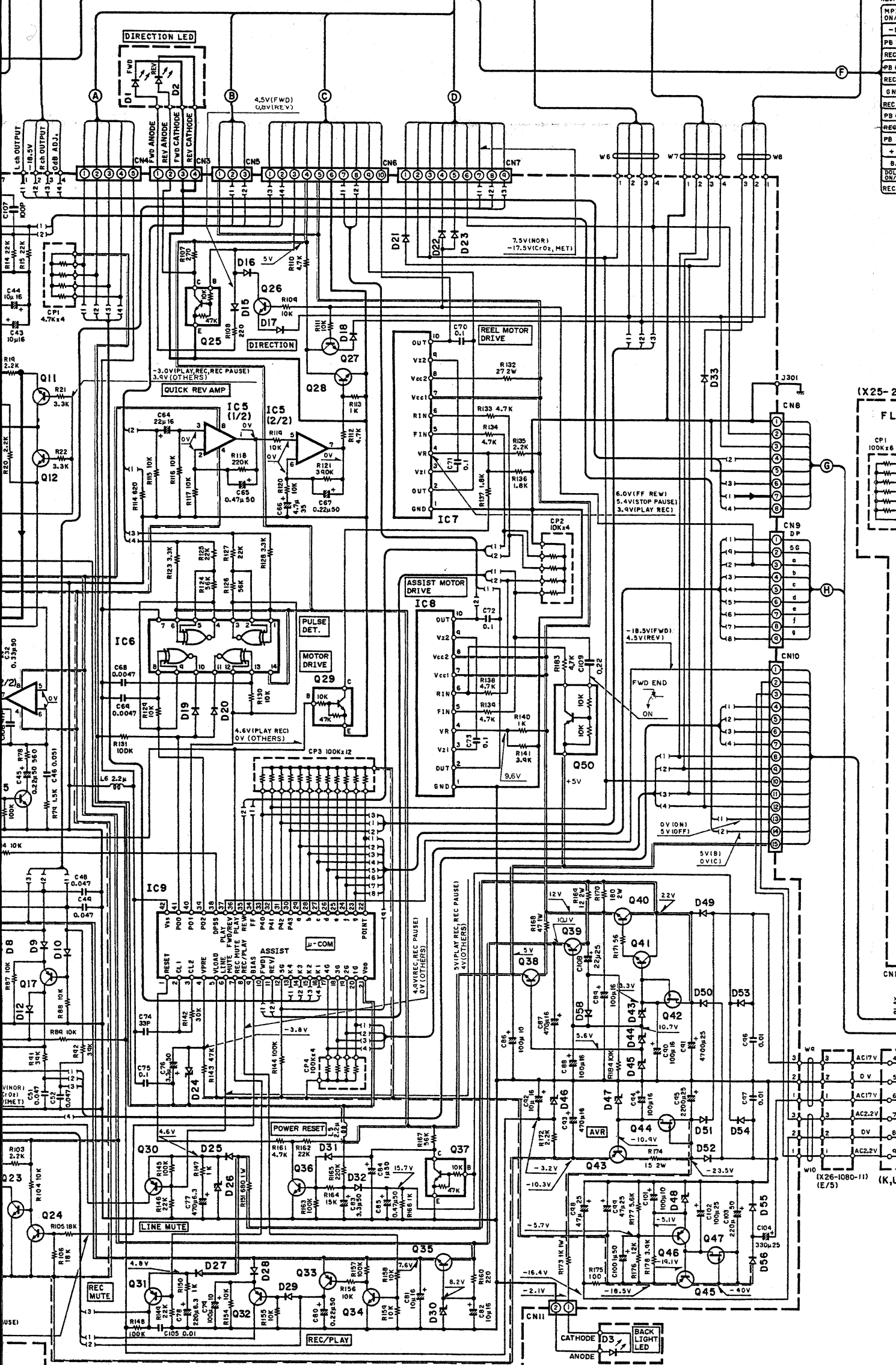
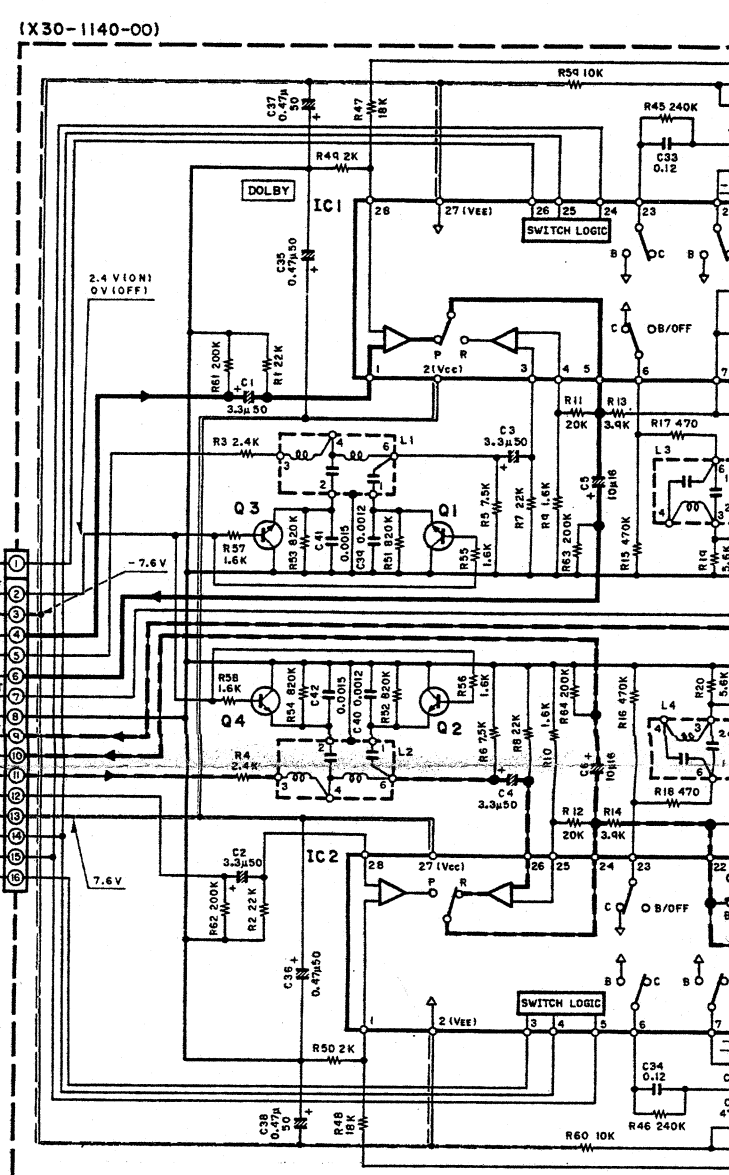
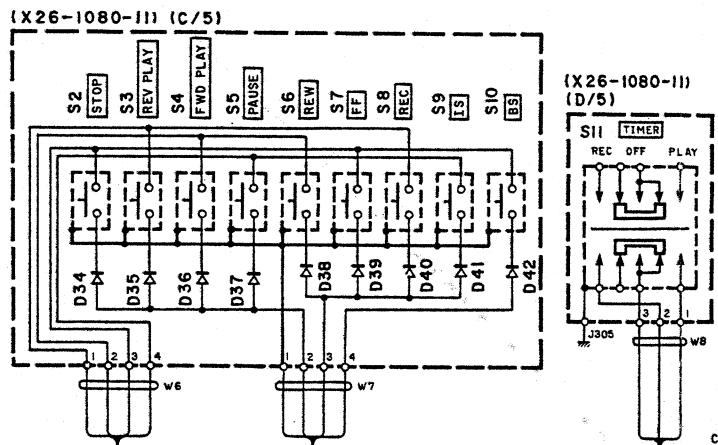
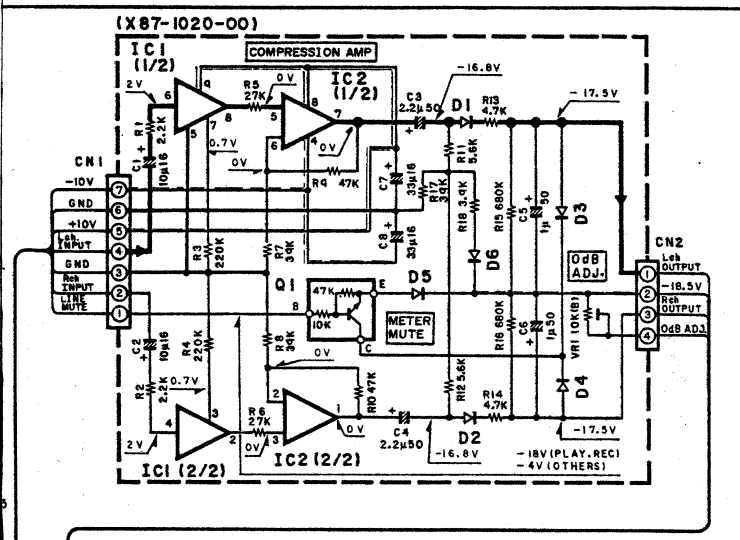


Refer to the schematic diagram for the values of resistors and capacitors. The PC board drawing is viewing from the side easy to check.

NOTE : Connect two AC voltmeters to output terminal of the tape deck when adjusting the recording head azimuth.



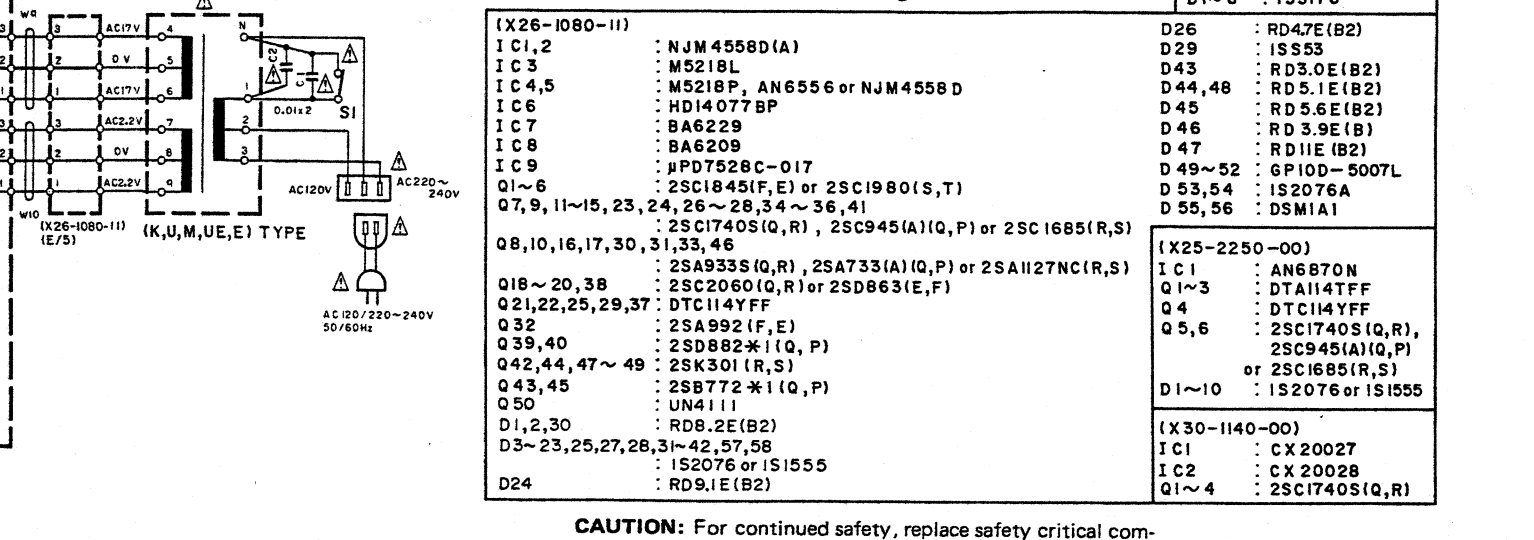
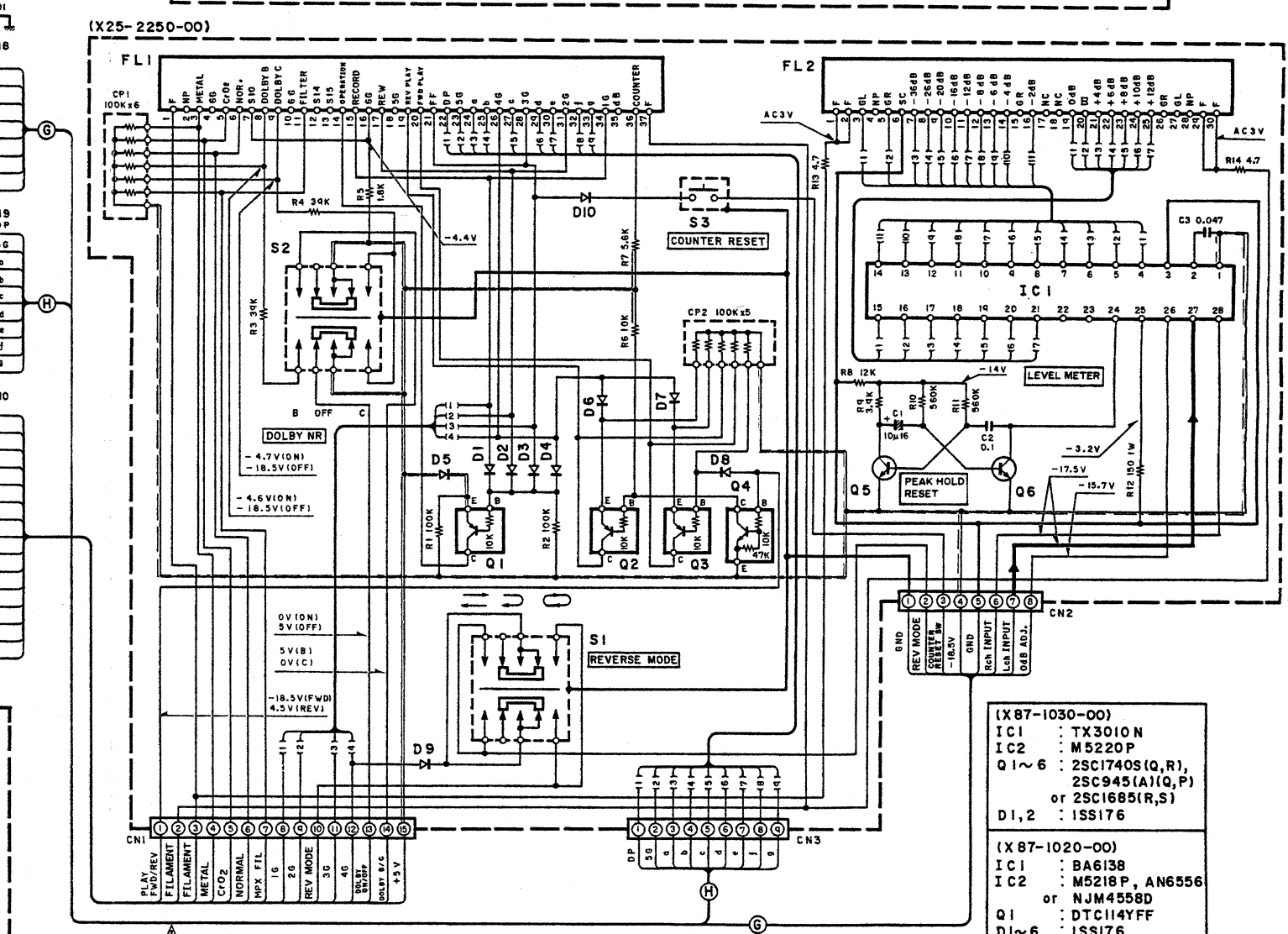
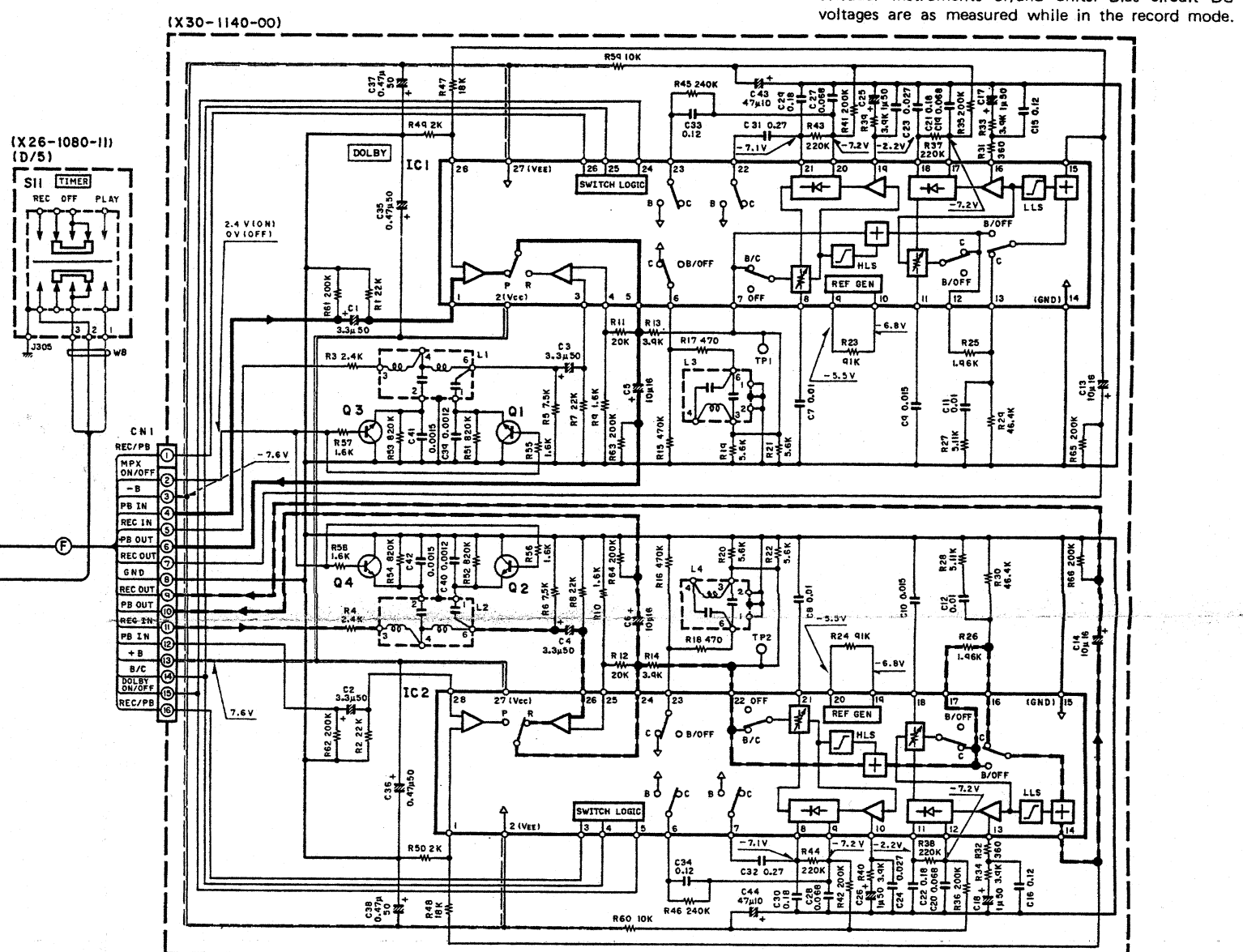
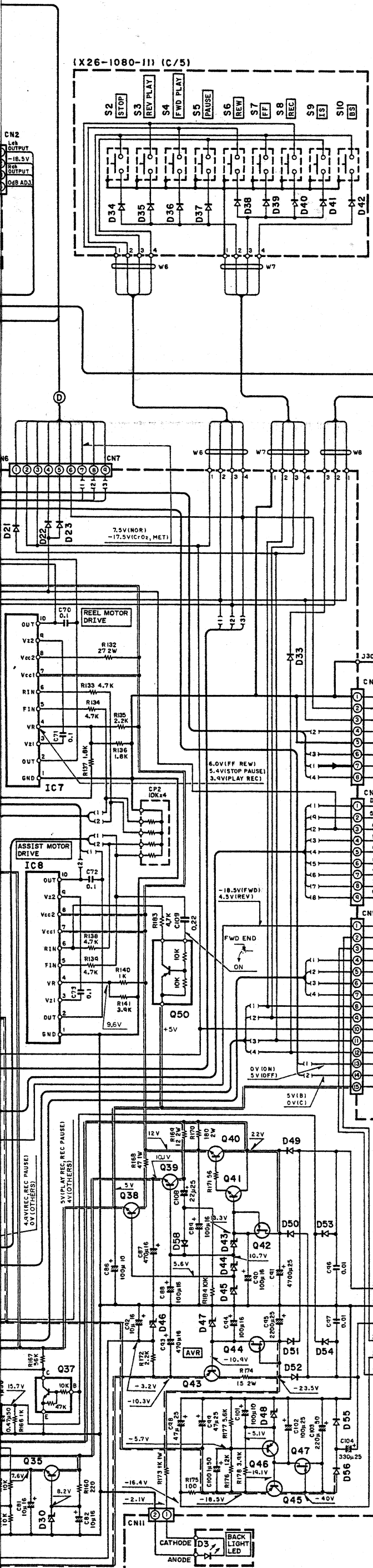
NOTE: Make sure to turn the power off before disconnecting the wires from the cassette mechanism when removing the mechanism for repair. If not, the mechanism will lock itself up and cannot be reset.



- (X26-1080-11)
- IC1, 2 : NJM 4558D (A)
 - IC5 : M5218L
 - IC4, 5 : M5218P, AN6556 or NJM4558
 - IC6 : HD14077BP
 - IC7 : BA6229
 - IC8 : BA6209
 - IC9 : μ PD7528C-017
 - Q1~6 : 2SC1845(F, E) or 2SC1980(F, E)
 - Q7, 9, 11~15, 23, 24, 26~28, 34~36, 41 : 2SC1740S(Q, R), 2SC945A(Q, R)
 - Q8, 10, 16, 17, 30, 31, 33, 46 : 2SA933S(Q, R), 2SA733A(Q, R)
 - Q18~20, 38 : 2SC2060(Q, R) or 2SD863(E)
 - Q21, 22, 25, 29, 37 : DTC114YFF
 - Q32 : 2SA992(F, E)
 - Q39, 40 : 2SD882*(I, Q, P)
 - Q42, 44, 47~49 : 2SK301(R, S)
 - Q43, 45 : 2SB772*(I, Q, P)
 - Q50 : UN4111
 - D1, 2, 30 : RD8.2E(B2)
 - D3~23, 25, 27, 28, 31~42, 57, 58 : 1S2076 or 1S1555
 - D24 : RD9.1E(B2)

CAUTION: For continued safety, replace components only with manufacturer's recommended parts list. Δ Indicates safety components. To reduce the risk of electric shock, leakage current measurements shall be carried out (except for safety components) on the supply circuit and returned to the customer.

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



(X87-1030-00)	
IC1	: TX3010N
IC2	: M5220P
Q1~6	: 2SC1740S(Q,R), 2SC945(A)(Q,P) or 2SC1685(R,S)
D1,2	: 1S1176
(X87-1020-00)	
IC1	: BA6138
IC2	: M5218P, AN6556 or NJM4558D
Q1	: DTC114YFF
D1~6	: 1S1176

(X26-1080-11)		(X25-2250-00)	
IC1,2	: NJM4558D(A)	IC1	: AN6870N
IC3	: M5218L	IC2	: M5218P, AN6556 or NJM4558D
IC4,5	: M5218P, AN6556 or NJM4558D	Q1~3	: DTA114TFF
IC6	: HD14077BP	Q4	: DTC114YFF
IC7	: BA6229	Q5,6	: 2SC1740S(Q,R), 2SC945(A)(Q,P) or 2SC1685(R,S)
IC8	: BA6209	D1~10	: 1S2076 or 1S1555
IC9	: μPD7528C-017	(X30-1140-00)	
Q1~6	: 2SC1845(F,E) or 2SC1980(S,T)	IC1	: CX20027
Q7,9,11~15,23,24,26~28,34~36,41	: 2SC1740S(Q,R), 2SC945(A)(Q,P) or 2SC1685(R,S)	IC2	: CX20028
Q8,10,16,17,30,31,33,46	: 2SC1740S(Q,R), 2SC945(A)(Q,P) or 2SA1127NC(R,S)	Q1~4	: 2SC1740S(Q,R)
Q18~20,38	: 2SC2060(Q,R) or 2SD863(E,F)		
Q21,22,25,29,37	: DTC114YFF		
Q32	: 2SA992(F,E)		
Q39,40	: 2SD882*(I,Q,P)		
Q42,44,47~49	: 2SK301(R,S)		
Q43,45	: 2SB772*(I,Q,P)		
Q50	: UN4111		
D1,2,30	: RD8.2E(B2)		
D3~23,25,27,28,31~42,57,58	: 1S2076 or 1S1555		
D24	: RD9.1E(B2)		

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

KX-990SR



Input Sensitivity/Impedance:	
LINE x 2	77.5mV/50 k ohms
Microphones x 2	0.3 mV/600 ohms
Output Level/Load Impedance:	
LINE x 2	0.77V (0 VU)/50 k ohms
Headphones x 1	0.85 mW/8 ohms
Power Requirements	AC 120/220 ~ 240V (Switchable), 50/60 Hz
Power Consumption	31 watts
Dimensions	
W: 440 mm (17-5/16")	
H: 111 mm (4-3/8")	
D: 322 mm (12-11/16")	
Weight	6.2 kg (13.7 lb)
Supplied Accessories	Audio Connection Cables x 2
Reference Tapes	
Normal:	KENWOOD ND-60 or TDK AD C-60
CrO ₂ :	KENWOOD CD-60 or TDK SA C-60
Metal:	KENWOOD MD-60 or TDK MA C-60

We follow a policy of continuous development.
For this reason specifications may be changed without notice.

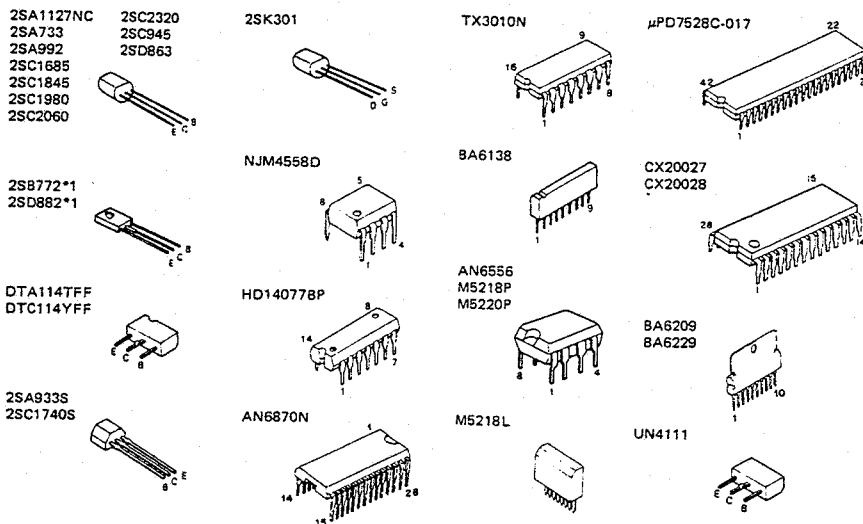
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Noise reduction circuit made under license from Dolby Laboratories Corporation.

STEREO CASSETTE TAPE DECK

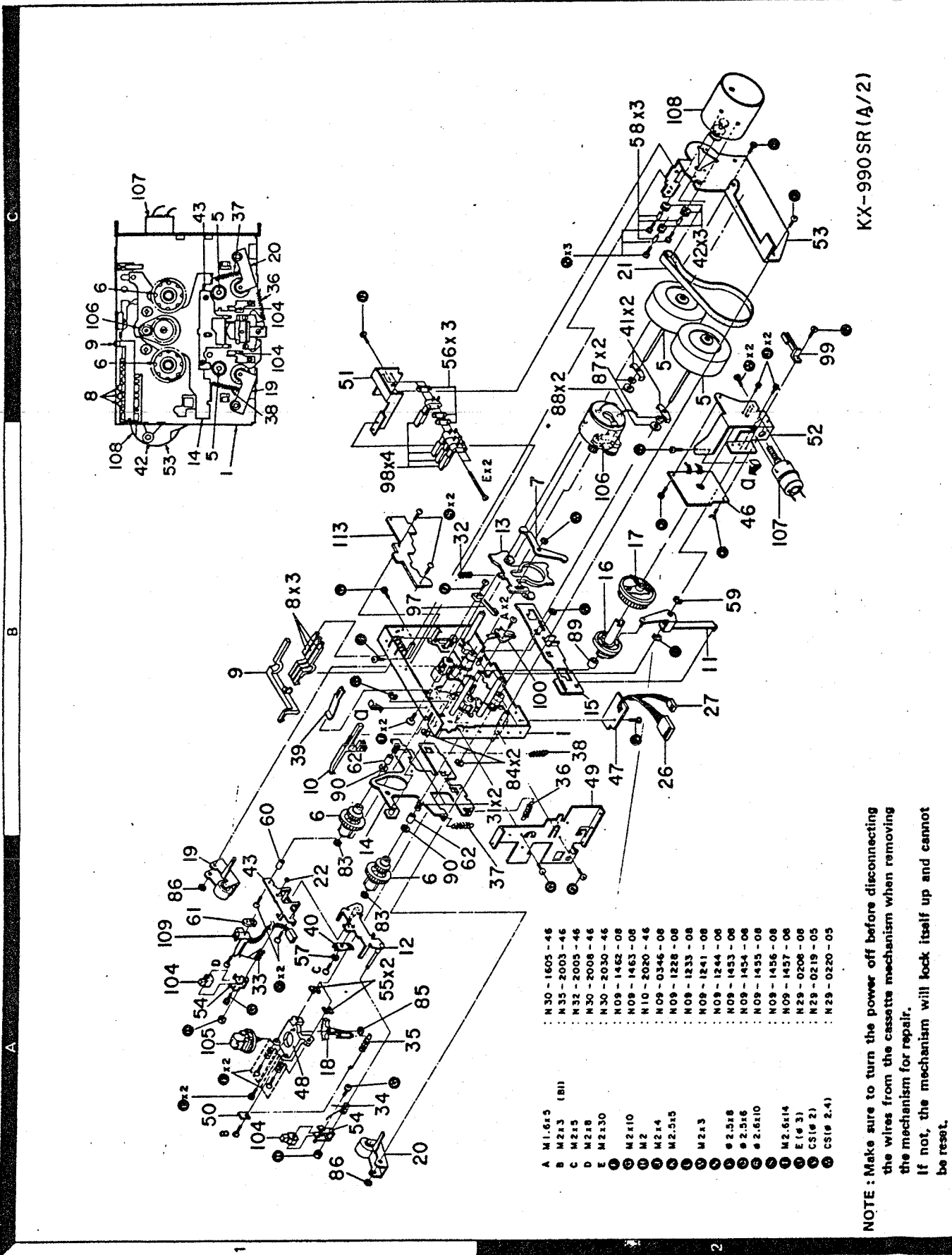
SPECIFICATIONS

Type	Front Loading Auto-Reverse Stereo Cassette Deck with Dolby B,C NR System
Track System	4-Track, 2-Channel Stereo/Mono Recording/Playback/Auto-Reverse in Record & Playback
Recording System	AC Bias System (Bias Frequency: 105 kHz)
Erasing System	AC System
Tape Speed	4.76 cm/sec (1-7/8 ips)
Heads	4-Track/2-Channel Amorphous Alloy Record Head/Playback Head Ease Head x 1 (Double Gap Ferrite with Sendust-Guard)
Motors	Electronically-Controlled DC Motor (For Capstan Drive) Reel Drive: DC Motor Mechanism Drive DC Motor
Fast Winding Time	Approx. 80 seconds with C-60 tape
Frequency Response:	
Normal Tape	20 Hz to 17,000 Hz ± 3 dB
CrO ₂ Tape	20 Hz to 17,000 Hz ± 3 dB
Metal Tape	20 Hz to 19,000 Hz ± 3 dB
Signal to Noise Ratio:	
Dolby C Type NR ON	74 dB (Metal Tape)
Dolby B Type NR ON	67 dB (Metal Tape)
Dolby NR OFF	57 dB (Metal Tape)
Harmonic Distortion	Less than 0.8% (at 1 kHz, 0 VU with Metal Tape)
Wow and Flutter	0.035% (W.R.M.S.) ± 0.09% (DIN)

KENWOOD



EXPLODED VIEW (MECHANISM)



KX-990SR (A/2)

KX-990SR

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. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
KX-990SR						
201	3A		A01-0669-12	METALLIC CABINET		
202	4A	*	A20-4139-03	PANEL ASSY		
203	4A	*	A53-0641-03	CASSETTE HOLDER ASSY		
204	4A	*	A53-0643-13	CASSETTE LID		
208	3B	*	B03-1557-04	DRESSING PLATE(FRONT OF C MECH		
-			B46-0092-03	WARRANTY CARD	K	
-			B46-0094-03	WARRANTY CARD	U	
-			B46-0095-03	WARRANTY CARD	U	
-			B46-0122-03	WARRANTY CARD	E	
-		*	B50-5417-00	INSTRUCTION MANUAL(ENGLISH)		
-		*	B50-5418-00	INSTRUCTION MANUAL(FRENCH)	ME	
-		*	B50-5419-00	INSTRUCTION MANUAL(SPANISH)	M	
-		*	B50-5437-00	INSTRUCTION MANUAL(G,D,I)	E	
-		*	B58-0223-04	CAUTION CARD(PRESET-120V)	U	
-			B58-0269-04	CAUTION CARD	K	
-			B58-0513-04	CAUTION CARD(PRESET-240)	U	
-			B59-0092-00	SERVICE DIRECTORY	U	
-			B59-0094-00	SUB-INSTRUCTION MANUAL(ENGLISH		
-			B59-0095-00	SUB-INSTRUCTION MANUAL(FRENCH)	ME	
-			B59-0096-00	SUB-INSTRUCTION MANUAL(SPANISH		
-			B59-0097-00	SUB-INSTRUCTION MANUAL(G,D,I)	M	
-			B59-0112-00	SUB-INSTRUCTION MANUAL(ARABIC)	E	
D1	2		B30-0499-05	LED(LN0202RP2)TRAVEL DISPLAY	M	
D3	3B		B30-0740-05	LED(SLF-201C) C. HALF WINDOW	M	
△	C1		C91-0023-05	CERAMIC 0.01UF AC250V	UM	
△	C1		C91-0647-05	CERAMIC 0.01UF P	UE	
	213		D39-0168-05	DAMPER ASSY		
	214	*	D40-0320-05	CASSETTE MECHANISM ASSY		
△	217		E03-0102-15	AC INLET		
	218		E30-0505-05	AUDIO CORD		
△	219		E30-0687-05	AC POWER CORD (INLET)	K	
△	219		E30-1305-15	AC POWER CORD (INLET)	UM	
△	219		E30-1329-05	AC POWER CORD (INLET)	E	
	220		F09-0052-14	HEAD PROTECTOR		
	223		G01-1226-14	TORSION COIL SP(C HOLDER)LEFT		
	224		G01-1228-04	EXTENSION SPRING(LEVER-B)		
	225	*	G01-1556-04	EXTENSION SPRING(LEVER-C)		
	226		G02-0123-04	FLAT SPRING(C HOLDER)		
-		*	H01-5260-04	ITEM CARTON CASE		
-		*	H10-1759-02	POLYSTYRENE FOAMED FIXTURE		
-		*	H10-1760-02	POLYSTYRENE FOAMED FIXTURE		
-			H20-0417-04	PROTECTION COVER(460X370X360)	M	
-			H25-0078-04	PROTECTION BAG (235X315)		
-			H25-0224-04	PROTECTION BAG (800X400)	KU	
-			H40-0005-04	RUST PREVENTING PAPER(380X250)	UEE	
	230		J02-0127-05	FOOT		
	231		J31-0176-04	COLLAR(LEVER-A)		
	232	*	J31-0244-04	COLLAR(LEVER-C)		
-			J61-0307-05	WIRE BAND		
	237		K27-1081-04	KN08 (BUTTON) MPX FILTER		

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238	3A		K27-1082-04	KNØB (BUTTON) POWER		
239	4B	*	K27-1350-04	KNØB (LEVER) REV MØDE, DØLBY		
240	4A		K29-1868-03	KNØB (BUTTON) EJECT		
241	4A		K29-1822-04	KNØB REC LEVEL		
242	4A		K29-1865-04	KNØB (BUTTON) FF		
243	4A		K29-1866-04	KNØB (BUTTON) REW		
244	4A		K29-1867-04	KNØB REC BALANCE		
245	4A	*	K29-1890-04	KNØB (BUTTON) REC/ARM PAUSE		
246	4A	*	K29-1891-04	KNØB (BUTTON) PAUSE		
247	4A	*	K29-1892-04	KNØB (BUTTON) FWD		
248	4A	*	K29-1893-04	KNØB (BUTTON) REV		
249	4A	*	K29-1894-04	KNØB (BUTTON) STØP		
250	4A	*	K29-1964-04	KNØB PHØNES/ØUTPUT LEVEL		
A 254	3B	*	L01-3794-05	POWER TRANSFORMER		
260	3B		N19-0824-05	FLAT WASHER (Ø3.2)		
A			N09-1250-05	TAPTITE SCREW (Ø3X6)		
B			N14-0134-05	HEXAGON NUT (M12X1.0)		
C			N29-0208-04	RETAINING RING (Ø3)		
D			N29-0216-05	RIVET(X30-1140-00)		
A S1	3B		S40-1066-05	PUSH SWITCH (POWER TYPE)		
DISPLAY (X25-2250-00)						
C1			CE04FW1C100M	ELECTRØ 10UF 16WV		
C2			CF92FV1H104J	MF 0.10UF J		
C3			CF92FV1H473J	MF 0.047UF J		
CP1		*	R90-0426-05	MULTI-CØMP 100KX6 J 1/6W		
CP2			R90-0203-05	MULTI-CØMP 100KX5 J 1/6W		
R12			RS14KB3A151J	FL-PRØF RS 150 J 1W		
S1 ,2	4B		S31-2313-05	SLIDE SWITCH(REV MØDE, DØLBY NR		
S3	4B		S40-1065-05	PUSH SWITCH (CØUNTER RESET)		
D1 -10			1S1555	DIØDE		
D1 -10			1S2076	DIØDE		
FL1	4B	*	6-BT-33ZK	FLUØRESCENT INDICATOR TUBE		
FL2	4B	*	BG-251ZK	FLUØRESCENT INDICATOR TUBE		
IC1			AN6870N	IC(LEVEL METER DRIVER)		
Q1 -3		*	DTA114TFF	DIGITAL TRANSISTØR		
Q4			DTC114YFF	DIGITAL TRANSISTØR		
Q5 ,6			2SC1685(R,S)	TRANSISTØR		
Q5 ,6			2SC1740S(Q,R)	TRANSISTØR		
Q5 ,6			2SC945(A)(Q,P)	TRANSISTØR		
CASSETTE (X26-1080-11)						
C1			CK45FF1H103Z	CERAMIC 0.010UF Z		
C2			CK45FF1H473Z	CERAMIC 0.047UF Z		
C3 ,4			CE04FW1A471MEL	ELECTRØ 470UF 10WV		
C5 ,6			CE04FW1C100MEL	ELECTRØ 10UF 16WV		
C7 ,8			CE04FW1A101MEL	ELECTRØ 100UF 10WV		
C9 -11			CK45FF1H473Z	CERAMIC 0.047UF Z		
C12			CE04FW1H010MEL	ELECTRØ 1.0UF 50WV		
C13			CK45FF1H103Z	CERAMIC 0.010UF Z		
C14			C91-0699-05	CERAMIC 0.1UF K		
C15 -18			CE04FW1C100MEL	ELECTRØ 10UF 16WV		
C19 ,20		*	CE04JW1HR33M	ELECTRØ 0.33UF 50WV		
C21 ,22			CC45FSL1H330J	CERAMIC 33PF J		

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C23 -26			CE04FW1C100MEL	ELECTRØ 10UF 16WV		
C27 ,28			CE04W1H010MEL	ELECTRØ 1.0UF 50WV		
C29 ,30			CK45FF1H103Z	CERAMIC 0.010UF Z		
C31			CE04JW1C100M	ELECTRØ 10UF 16WV		
C32			CE04FW1HR33MEL	ELECTRØ 0.33UF 50WV		
C33 ,34			CE04FW1H010MEL	ELECTRØ 1.0UF 50WV		
C35 ,36			CC45FSL1H221J	CERAMIC 220PF J		
C37 ,38			CE04W1C330MEL	ELECTRØ 33UF 16WV		
C39 ,40			CK45FF1H103Z	CERAMIC 0.010UF Z		
C41			CK45FB1H681K	CERAMIC 680PF K		
C42			CF92FV1H332J	MF 3300PF J		
C43 ,44			CE04FW1C100MEL	ELECTRØ 10UF 16WV		
C45			CE04FW1HR22MEL	ELECTRØ 0.22UF 50WV		
C46			CF92FV1H513J	MF 0.051UF J		
C47			CE04FW1H010MEL	ELECTRØ 1.0UF 50WV		
C48 -52			CK45FF1H473Z	CERAMIC 0.047UF Z		
C53 ,54			C91-0357-05	POLYSTY 150PF J		
C55		*	CG93HP2A153J	MYLAR 0.015UF J		
C56			CF92FV1H472J	MF 4700PF J		
C57			CF92FV1H562J	MF 5600PF J		
C58			CF92FV1H683J	MF 0.068UF J		
C59			CE04FW1E100MEL	ELECTRØ 10UF 25WV		
C60			CF92FV1H103J	MF 0.010UF J		
C61			C91-0357-05	POLYSTY 150PF J		
C62			CE04FW1V4R7MEL	ELECTRØ 4.7UF 35WV		
C63			CE04FW1E470MEL	ELECTRØ 47UF 25WV		
C64			CE04FW1C220MEL	ELECTRØ 22UF 16WV		
C65			CE04FW1HR47MEL	ELECTRØ 0.47UF 50WV		
C66			CE04FW1V4R7MEL	ELECTRØ 4.7UF 35WV		
C67			CE04FW1HR22MEL	ELECTRØ 0.22UF 50WV		
C68 ,69			CF92FV1H472J	MF 4700PF J		
C70 -73			C91-0700-05	CERAMIC 0.1UF J		
C74			CC45FSL1H330J	CERAMIC 33PF J		
C75			C91-0700-05	CERAMIC 0.1UF J		
C76			CE04FW1H3R3MEL	ELECTRØ 3.3UF 50WV		
C77		*	CE04FW0J471MEL	ELECTRØ 470UF 6.3WV		
C78			CE04FW0J221MEL	ELECTRØ 220UF 6.3WV		
C79			CE04FW1A101MEL	ELECTRØ 100UF 10WV		
C80			CE04FW1HR22MEL	ELECTRØ 0.22UF 50WV		
C81 ,82			CE04FW1C100MEL	ELECTRØ 10UF 16WV		
C83			CE04FW1H3R3MEL	ELECTRØ 3.3UF 50WV		
C84			CE04FW1H010MEL	ELECTRØ 1.0UF 50WV		
C85			CE04FW1HR47MEL	ELECTRØ 0.47UF 50WV		
C86			CE04FW1A101MEL	ELECTRØ 100UF 10WV		
C87			CE04FW1C471MEL	ELECTRØ 470UF 16WV		
C88 -90			CE04FW1C101MEL	ELECTRØ 100UF 16WV		
C91			C90-1284-05	ELECTRØ 4700UF 25WV		
C92			CE04FW1C100MEL	ELECTRØ 10UF 16WV		
C93			CE04FW1C471MEL	ELECTRØ 470UF 16WV		
C94			CE04FW1C101MEL	ELECTRØ 100UF 16WV		
C95			CE04FW1E222MEL	ELECTRØ 2200UF 25WV		
C96 ,97			CK45FF1H103Z	CERAMIC 0.010UF Z		
C98 ,99			CE04FW1E470MEL	ELECTRØ 47UF 25WV		
C100			CE04FW1H010MEL	ELECTRØ 1.0UF 50WV		
C101			CE04FW1A101MEL	ELECTRØ 100UF 10WV		

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C102			CE04FW1E101MEL	ELECTRØ 100UF 25WV		
C103			CE04W1H221MEL	ELECTRØ 220UF 50WV		
C104			CE04FW1E331MEL	ELECTRØ 330UF 25WV		
C105			CK45FF1H103Z	CERAMIC 0.010UF Z		
C106			CC45FSL1H470J	CERAMIC 47PF J		
C107			CC45FSL1H101J	CERAMIC 100PF J		
C108			CE04FW1E220MEL	ELECTRØ 22UF 25WV		
C109			CF92FV1H224J	MF 0.22UF J		
270	4B		E11-0132-05	PHONE JACK(2P)MIC L/R		
271	3C		E23-0125-05	TERMINAL GND		
272	4B		E11-0103-05	PHONE JACK(3P)		
273	3C		E13-0432-05	PHONE JACK(4P)		
L1 ,2			L39-0107-05	TRAP COIL (10SKHZ)		
L3		*	L32-0304-05	BIAS OSCILATING COIL		
L4		*	L32-0305-05	BIAS OSCILATING COIL		
L5 ,6			L40-2292-14	SMALL FIXED INDUCTØR(2.2UH,M)		
E			N09-0295-05	HEXAGON HEAD BØLT(M3X8)		
CP1			R90-0286-05	MULTI-COMP 4.7KX4 J 1/6W		
CP2			R90-0233-05	MULTI-COMP 10KX4 J 1/6W		
CP3			R90-0272-05	MULTI-COMP 100KX12 J 1/6W		
CP4			R90-0291-05	MULTI-COMP 100KX4 J 1/6W		
R94			RD14GB2E6RBJ	FL-PROOF RD 6.8 J 1/4W		
R96			RD14GB2E4R7J	FL-PROOF RD 4.7 J 1/4W		
R98		*	R92-0208-05	CARBØN FILM RESISTØR		
R132			RS14KB3D270J	FL-PROOF RS 27 J 2W		
R151			RS14KB3A681J	FL-PROOF RS 680 J 1W		
R168			RS14KB3A470J	FL-PROOF RS 47 J 1W		
R169		*	RS14KB3D120J	FL-PROOF RS 12 J 2W		
R170		*	RS14KB3D181J	FL-PROOF RS 180 J 2W		
R171			RD14GB2E560J	FL-PROOF RD 56 J 1/4W		
R173			RS14KB3A102J	FL-PROOF RS 1.0K J 1W		
R174			RS14KB3D150J	FL-PROOF RS 15 J 2W		
R180			RD14GB2E180J	FL-PROOF RD 18 J 1/4W		
VR1	4B		RO6-4061-05	PØTENTIØMETER(50KX2)REC LEVEL		
VR2	4B		RO1-5040-05	PØTENTIØMETER(200K)REC BALANCE		
VR3	4B	*	R10-4021-05	PØTENTIØMETER(PH/OUTPUT LEVEL)		
VR4 ,5			R12-5310-05	TRIMMING PØT(200K) BIAS		
S1	4B		S40-2169-05	PUSH SWITCH(MPX FILTER)		
S2 -5	4B		S40-1065-05	PUSH SWITCH(STØP,REV,FWD,PAUSE)		
S6 -10	4B		S40-1065-05	PUSH SW(REW,FF,REC,I.S.,B.S.)		
S11	4A		S31-2062-05	SLIDE SWITCH(TIMER)		
D1 ,2			RD8.2E(B2)	ZENER DIØDE		
D3 -23			1S1555	DIØDE		
D3 -23			1S2076	DIØDE		
D24			RD9.1E(B2)	ZENER DIØDE		
D25			1S1555	DIØDE		
D25			1S2076	DIØDE		
D26		*	RD4.7E(B2)	ZENER DIØDE		
D27 ,28			1S1555	DIØDE		
D27 ,28			1S2076	DIØDE		
D29			1SS53	DIØDE		
D30			RD8.2E(B2)	ZENER DIØDE		
D31 -42			1S1555	DIØDE		

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D31 -42			1S2076	DIODE		
D43		*	RD3.0E(B2)	ZENER DIODE		
D44			RD5.1E(B2)	ZENER DIODE		
D45			RD5.6E(B2)	ZENER DIODE		
D46			RD3.9E(B)	ZENER DIODE		
D47			RD11E(B2)	ZENER DIODE		
D48			RD5.1E(B2)	ZENER DIODE		
D49 -52			GP10D-5007L	DIODE		
D53 ,54			1S2076A	DIODE		
D55 ,56			DSM1A1	DIODE		
D57 ,58			1S1555	DIODE		
D57 ,58			1S2076	DIODE		
IC1 ,2			NJM4558D(A)	IC(OP AMP)		
IC3			M5218L	IC(OP AMP)		
IC4 ,5			AN6556	IC(OP AMP)		
IC4 ,5			M5218P	IC(OP AMP)		
IC4 ,5			NJM4558D	IC(OP AMP)		
IC6			HD14077BP	IC(EX-NOR X4)		
IC7			BA6229	IC(MOTOR DRIVER)		
IC8		*	BA6209	IC(MOTOR INVERT)		
IC9		*	UPD7528C-017	IC(MICROPROCESSOR)		
Q1 -6			2SC1845(F,E)	TRANSISTOR		
Q1 -6			2SC1980(S,T)	TRANSISTOR		
Q7			2SC1685(R,S)	TRANSISTOR		
Q7			2SC1740S(Q,R)	TRANSISTOR		
Q7			2SC945(A)(Q,P)	TRANSISTOR		
Q8			2SA1127NC(R,S)	TRANSISTOR		
Q8			2SA733(A)(Q,P)	TRANSISTOR		
Q8			2SA933S(Q,R)	TRANSISTOR		
Q9			2SC1685(R,S)	TRANSISTOR		
Q9			2SC1740S(Q,R)	TRANSISTOR		
Q9			2SC945(A)(Q,P)	TRANSISTOR		
Q10			2SA1127NC(R,S)	TRANSISTOR		
Q10			2SA733(A)(Q,P)	TRANSISTOR		
Q10			2SA933S(Q,R)	TRANSISTOR		
Q11 -15			2SC1685(R,S)	TRANSISTOR		
Q11 -15			2SC1740S(Q,R)	TRANSISTOR		
Q11 -15			2SC945(A)(Q,P)	TRANSISTOR		
Q16 ,17			2SA1127NC(R,S)	TRANSISTOR		
Q16 ,17			2SA733(A)(Q,P)	TRANSISTOR		
Q16 ,17			2SA933S(Q,R)	TRANSISTOR		
Q18 -20			2SC2060(Q,R)	TRANSISTOR		
Q18 -20			2SD863(E,F)	TRANSISTOR		
Q21 ,22			DTC114YFF	DIGITAL TRANSISTOR		
Q23 ,24			2SC1685(R,S)	TRANSISTOR		
Q23 ,24			2SC1740S(Q,R)	TRANSISTOR		
Q23 ,24			2SC945(A)(Q,P)	TRANSISTOR		
Q25			DTC114YFF	DIGITAL TRANSISTOR		
Q26 -28			2SC1685(R,S)	TRANSISTOR		
Q26 -28			2SC1740S(Q,R)	TRANSISTOR		
Q26 -28			2SC945(A)(Q,P)	TRANSISTOR		
Q29			DTC114YFF	DIGITAL TRANSISTOR		
Q30 ,31			2SA1127NC(R,S)	TRANSISTOR		
Q30 ,31			2SA733(A)(Q,P)	TRANSISTOR		
Q30 ,31			2SA933S(Q,R)	TRANSISTOR		

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Q32			2SA992(F,E)	TRANSISTOR		
Q33			2SA1127NC(R,S)	TRANSISTOR		
Q33			2SA733(A)(Q,P)	TRANSISTOR		
Q33			2SA933S(Q,R)	TRANSISTOR		
Q34 -36			2SC1685(R,S)	TRANSISTOR		
Q34 -36			2SC1740S(Q,R)	TRANSISTOR		
Q34 -36			2SC945(A)(Q,P)	TRANSISTOR		
Q37			DTC114YFF	DIGITAL TRANSISTOR		
Q38			2SC2060(Q,R)	TRANSISTOR		
Q38			2SD863(E,F)	TRANSISTOR		
Q39 ,40			2SD882*1(Q,P)	TRANSISTOR		
Q41			2SC1685(R,S)	TRANSISTOR		
Q41			2SC1740S(Q,R)	TRANSISTOR		
Q41			2SC945(A)(Q,P)	TRANSISTOR		
Q42		*	2SK301(R,S)	FET		
Q43			2SB772*1(Q,P)	TRANSISTOR		
Q44		*	2SK301(R,S)	FET		
Q45			2SB772*1(Q,P)	TRANSISTOR		
Q46			2SA1127NC(R,S)	TRANSISTOR		
Q46			2SA733(A)(Q,P)	TRANSISTOR		
Q46			2SA933S(Q,R)	TRANSISTOR		
Q47 -49		*	2SK301(R,S)	FET		
Q50			UN4111	TRANSISTOR		
DOLBY NR (X30-1140-00)						
C1 -4			CE04FW1H3R3MEL	ELECTRØ	3.3UF	50WV
C5 ,6			CE04FW1C100MEL	ELECTRØ	10UF	16WV
C7 ,8			CF92FV1H103J	MF	0.010UF	J
C9 ,10			CF92FV1H153J	MF	0.015UF	J
C11 ,12			CF92FV1H103J	MF	0.010UF	J
C13 ,14			CE04FW1C100MEL	ELECTRØ	10UF	16WV
C15 ,16			CF92FV1H124J	MF	0.12UF	J
C17 ,18			CE04FW1H010MEL	ELECTRØ	1.0UF	50WV
C19 ,20			CF92FV1H683J	MF	0.068UF	J
C21 ,22		*	CF92FV1H184J	MF	0.18UF	J
C23 ,24			CF92FV1H273J	MF	0.027UF	J
C25 ,26			CE04FW1H010MEL	ELECTRØ	1.0UF	50WV
C27 ,28			CF92FV1H683J	MF	0.068UF	J
C29 ,30		*	CF92FV1H184J	MF	0.18UF	J
C31 ,32			CF92FV1H274J	MF	0.27UF	J
C33 ,34			CF92FV1H124J	MF	0.12UF	J
C35 -38			CE04FW1HR47MEL	ELECTRØ	0.47UF	50WV
C39 ,40			CF92FV1H122J	MF	1200PF	J
C41 ,42			CF92FV1H152J	MF	1500PF	J
C43			CE04FW1A470MEL	ELECTRØ	47UF	10WV
C44			CE04FW1A470MEL	ELECTRØ	47UF	10WV
L1 ,2		*	L79-0189-05	LC FILTER	B. S. F 19K, 38K	
L3 ,4		*	L39-0108-05	TRAP COIL	(20KHZ)	
R25 ,26		*	RN14BK2E1961FTS	RN	1.96K	F 1/4W
R27 ,28		*	RN14BK2C5111FTS	RN	5.11K	F 1/6W
R29 ,30		*	RN14BK2C4642FTS	RN	46.4K	F 1/6W
IC1		*	CX20027	IC(DOLBY B/C)		
IC2		*	CX20028	IC(DOLBY B/C)		
Q1 -4			2SC1685(R,S)	TRANSISTOR		

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Q1 -4			2SC1740S(Q,R)	TRANSISTOR		
Q1 -4			2SC2320(E,F)	TRANSISTOR		
METER AMP (X87-1020-00)						
C1 ,2			CE04FW1C100M	ELECTRO 10UF 16WV		
C3 ,4			CE04FW1H2R2M	ELECTRO 2.2UF 50WV		
C5 ,6			CE04FW1H010M	ELECTRO 1.0UF 50WV		
C7 ,8			CE04FW1C330M	ELECTRO 33UF 16WV		
VR1			R12-3057-05	TRIMMING POT(10K)		
D1 -6			1SS176	DIODE		
IC1		*	BA613B	IC(ROOT AMP)		
IC2		*	AN6556	IC(OP AMP)		
IC2		*	MS218P	IC(OP AMP)		
IC2		*	NJM4558D	IC(OP AMP)		
Q1			DTC114YFF	DIGITAL TRANSISTOR		
REC/PLAY (X87-1030-00)						
C1 ,2		*	CF92FV1H394J	MF 0.39UF J		
C3 ,4			CE04FW1C100MEL	ELECTRO 10UF 16WV		
C5 ,6			CC45FSL1H100D	CERAMIC 10PF D		
C7 ,8			CF92FV1H122J	MF 1200PF J		
C9 ,10			CF92FV1H823J	MF 0.082UF J		
C11 ,12			CE04FW1C100MEL	ELECTRO 10UF 16WV		
C13 ,14			CF92FV1H682J	MF 6800PF J		
C15 ,16			CF92FV1H222J	MF 2200PF J		
C17 ,18			CQ09FS1H101JZS	POLYSTY 100PF J		
C19 ,20			CF92FV1H562J	MF 5600PF J		
C21 ,22			CF92FV1H102J	MF 1000PF J		
C23 ,24			CF92FV1H152J	MF 1500PF J		
C25 ,26			CF92FV1H182J	MF 1800PF J		
C27 ,28			CQ09FS1H221JZS	POLYSTY 220PF J		
C29 -32			CK45FF1H103Z	CERAMIC 0.010UF Z		
C33 ,34			CE04FW1C100MEL	ELECTRO 10UF 16WV		
C35 ,36		*	CQ09FS1H391JZS	POLYSTY 390PF J		
C37 ,38			CE04FW1A221MEL	ELECTRO 220UF 10WV		
C39 ,40			CC45FSL1H330J	CERAMIC 33PF J		
C41 ,42			CF92FV1H153J	MF 0.015UF J		
C43 ,44			CE04FW1H3R3MEL	ELECTRO 3.3UF 50WV		
C45 ,46			CF92FV1H223J	MF 0.022UF J		
C47 ,48			CF92FV1H122J	MF 1200PF J		
L1 ,2			L40-2238-29	SMALL FIXED INDUCTOR(22MH,6)		
R5 ,6		*	RN14BK2C6192FTS	RN 61.9K F 1/6W		
R7 ,8		*	RN14BK2C1102FTS	RN 11.0K F 1/6W		
R11 ,12		*	RN14BK2C2612FTS	RN 26.1K F 1/6W		
R25 ,26		*	RN14BK2C1001FTS	RN 1.00K F 1/6W		
R29 ,30		*	RN14BK2C5112FTS	RN 51.1K F 1/6W		
R31 ,32		*	RN14BK2C1961FTS	RN 1.96K F 1/6W		
R41 ,42		*	RN14BK2C1470FTS	RN 147.0 F 1/6W		
R43 ,44		*	RN14BK2C1963FTS	RN 196K F 1/6W		
R45 ,46		*	RN14BK2C8251FTS	RN 8.25K F 1/6W		
VR1 -4			R12-3058-05	TRIMMING POT(20K)		
D1 ,2			1SS176	DIODE		
IC1		*	TX3010N	IC(RECORD AMP)		
IC2		*	MS220P	IC(OP AMP)		

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Q1 -4			25C1685(R,S)	TRANSISTOR		
Q1 -4			25C1740S(Q,R)	TRANSISTOR		
Q1 -4			25C945(A)(Q,P)	TRANSISTOR		
Q5 ,6			25C1685(R,S)	TRANSISTOR		
Q5 ,6			25C1740S(Q,R)	TRANSISTOR		
Q5 ,6			25C945(A)(Q,P)	TRANSISTOR		
CASSETTE MECHANISM (D40-0320-05)						
1	2B		A10-0792-08	CHASSIS ASSY		
5	2C		D01-0065-08	FLYWHEEL ASSY		
6	1A,1B		D03-0233-08	REEL DISK ASSY		
7	2B		D10-1372-08	LEVER(BRAKE)		
8	1B		D10-1373-08	LEVER(SWITCH)		
9	1B		D10-1374-08	LEVER(METAL SWITCH)		
10	1B		D10-1375-08	LEVER(REC (R))		
11	2B		D10-1376-08	LEVER(SWITCHOVER)		
12	1A		D10-1377-08	ARM ASSY(SW PLATE CALKED ASSY)		
13	2B		D10-1378-08	SLIDER ASSY(BRAKE PLATE)		
14	1A		D10-1379-08	SLIDER ASSY(HEAD BASE CALKED A		
15	2B		D10-1380-08	SLIDER ASSY(SLIDE LEVER ASSY)		
16	2B		D12-0106-08	CAM		
17	2B		D13-0258-08	GEAR ASSY(ROTARY)		
18	1A		D13-0259-08	GEAR(INVERT)		
19	1A		D14-0119-08	PINCH ROLLER ASSY(L)		
20	1A		D14-0120-08	PINCH ROLLER ASSY(R)		
21	2C		D16-0111-08	BELT		
22	1A		D90-0012-03	STEEL BALL(Ø3)		
26	2B		E31-1618-08	CONNECTING WIRE(R/P)		
27	2B		E31-1619-08	CONNECTING WIRE(E)		
31	2B		G01-1601-08	COMPRESSION SPRING		
32	1B		G01-1602-08	COMPRESSION SPRING		
33	1A		G01-1603-08	COMPRESSION SPRING		
34	1A		G01-1604-08	COMPRESSION SPRING		
35	1A		G01-1605-08	TENSION SPRING		
36	2B		G01-1606-08	TENSION SPRING		
37	2A		G01-1607-08	TENSION SPRING		
38	2B		G01-1608-08	TENSION SPRING		
39	1B		G02-0186-08	FLAT SPRING(CASSETTE HOLD)		
40	1A		G02-0187-08	FLAT SPRING		
41	2C		G02-0188-08	FLAT SPRING(THRUST)		
42	2C		G13-0137-08	CUSHION		
43	1A		G02-0189-08	R/P HEAD HOLD PLATE		
46	2B		J25-4539-08	PRINTED WIRING BOARD(MOTOR)		
47	2B		J25-4540-08	PRINTED WIRING BOARD		
48	1A		J19-2504-08	HOLDER ASSY(HEAD)		
49	2B		J21-3531-04	MOUNTING HARDWARE(R)		
50	1A		J21-3594-08	MOUNTING HARDWARE(SPRING)		
51	1C		J21-3595-08	MOUNTING HARDWARE(SWITCH)		
52	2B		J21-3596-08	MOUNTING HARDWARE(MOTOR)		
53	2C		J21-3597-08	MOUNT HARDWARE(CAPSTAN MOTOR)		
54	1A		J21-3598-08	MOUNTING HARDWARE(E HEAD)		
55	1A		J30-0204-08	SPACER		
56	1C		J30-0205-08	SPACER		

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57	1A		J31-0247-08	COLLAR		
58	2C		J31-0183-08	COLLAR		
59	2B		J31-0245-08	COLLAR(Ø4X6)		
60	1B		J31-0246-08	COLLAR(Ø2.6X4)		
61	1A		J39-0088-08	SPACER		
62	1A		J42-0124-08	POWER CORD BUSHING(SPRING)		
-			J61-0307-05	WIRE BAND		
83	1A		N19-0334-08	FLAT WASHER(Ø1.8XØ3.2X0.5)		
84	2B		N19-0344-08	FLAT WASHER(Ø2.5XØ7X0.8)		
85	1A		N19-0907-08	FLAT WASHER		
86	1A		N19-0908-08	FLAT WASHER(Ø2.7XØ6X0.5)		
87	2C		N19-0909-08	FLAT WASHER(Ø2.6XØ4.7X0.25)		
88	2C		N19-0910-08	FLAT WASHER(Ø2.6XØ7X0.13)		
89	2B		N19-0911-08	FLAT WASHER(Ø4.1XØ5.8X0.1)		
90	1A, 1B		N19-0912-08	FLAT WASHER		
F			N09-1462-08	SCREW(BLACK) SPRING		
G			N09-1463-08	SCREW(M2X10)		
H			N10-2020-46	HEXAGON NUT(M2)		
J			N09-0346-08	SCREW(M2X4)		
K			N09-1228-08	SCREW(M2.5X5)		
L			N09-1233-08	SCREW		
M			N09-1241-08	SCREW(M2X3)		
N			N09-1244-08	SCREW		
P			N09-1453-08	SCREW(TAPTITE, Ø2.5X8)		
Q			N09-1454-08	SCREW(TAPTITE, Ø2.5X6)		
R			N09-1455-08	SCREW(TAPTITE, Ø2.6X10)		
S			N09-1456-08	SCREW(TAPTITE)		
T			N09-1457-08	SCREW(M2.6X14)		
U			N29-0208-04	E RING(E3)		
V			N29-0219-05	RETAINING RING(CS2)		
W			N29-0220-05	RETAINING RING(CS2.4)		
97	1B		S46-1050-08	LEAF SWITCH		
98	1B		S46-1051-08	LEAF SWITCH		
99	2C		S46-1052-08	LEAF SWITCH(REVERSE-REC)		
100	2B		S46-1053-08	LEAF SWITCH(E HEAD SWITCHOVER)		
104	1A		T32-0307-05	ERASE HEAD		
105	1A		T34-0309-05	REC/PLAY HEAD		
106	2B		T42-0061-08	DC MOTOR ASSY		
107	2B		T42-0062-08	DC MOTOR ASSY		
108	2C		T42-0063-08	DC MOTOR ASSY		
109	1A		T95-0025-08	PHOTO REFLECTOR		
113	1B		W02-0633-08	ELECTRIC UNIT		

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Note :

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

TRIO-KENWOOD CORPORATION

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