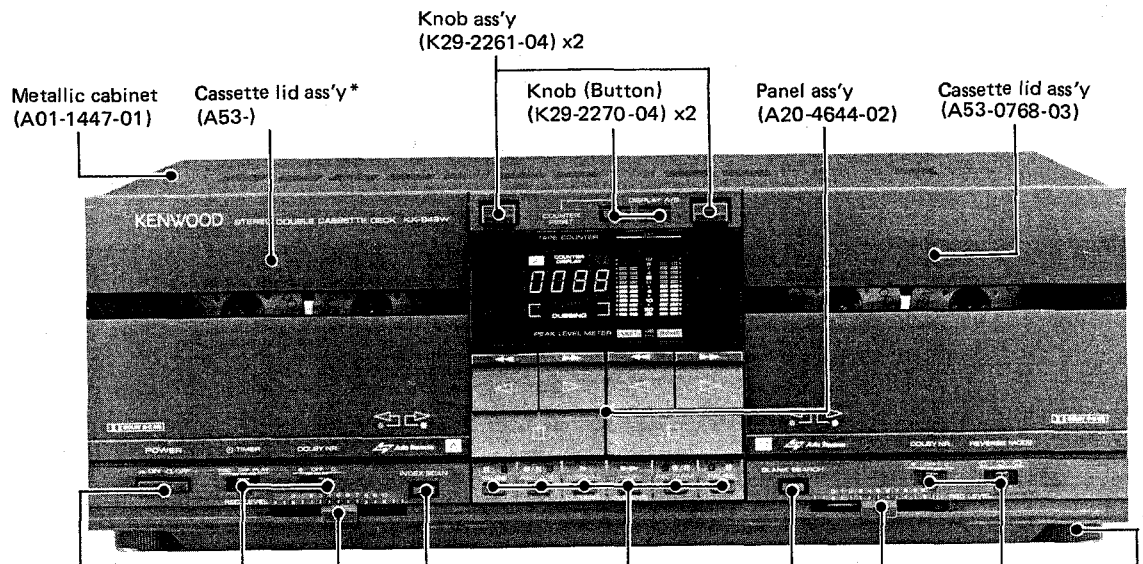
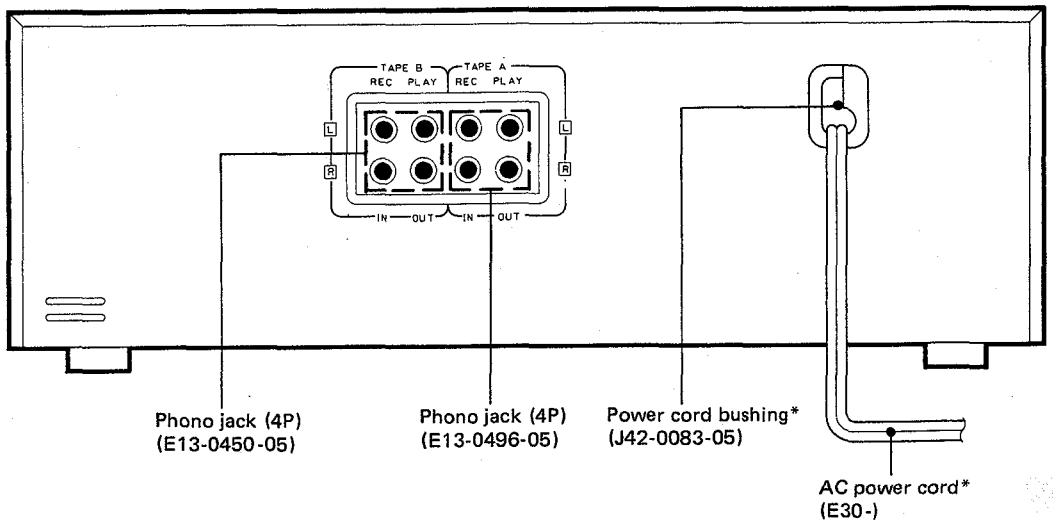
SERVICE MANUAL

KENWOOD

KX-949W

STEREO DOUBLE CASSETTE DECK



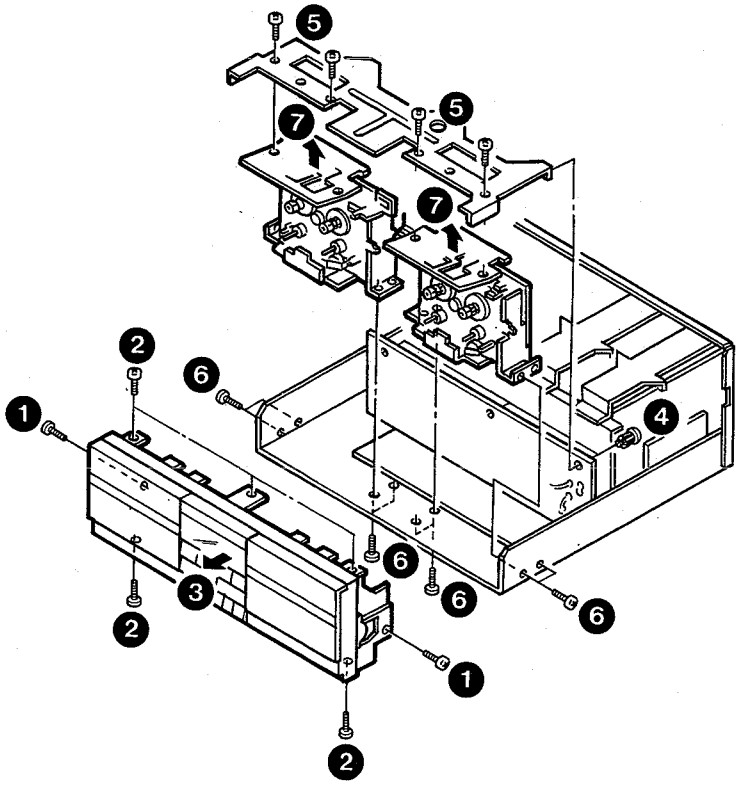


*Refer to parts list on page 21.

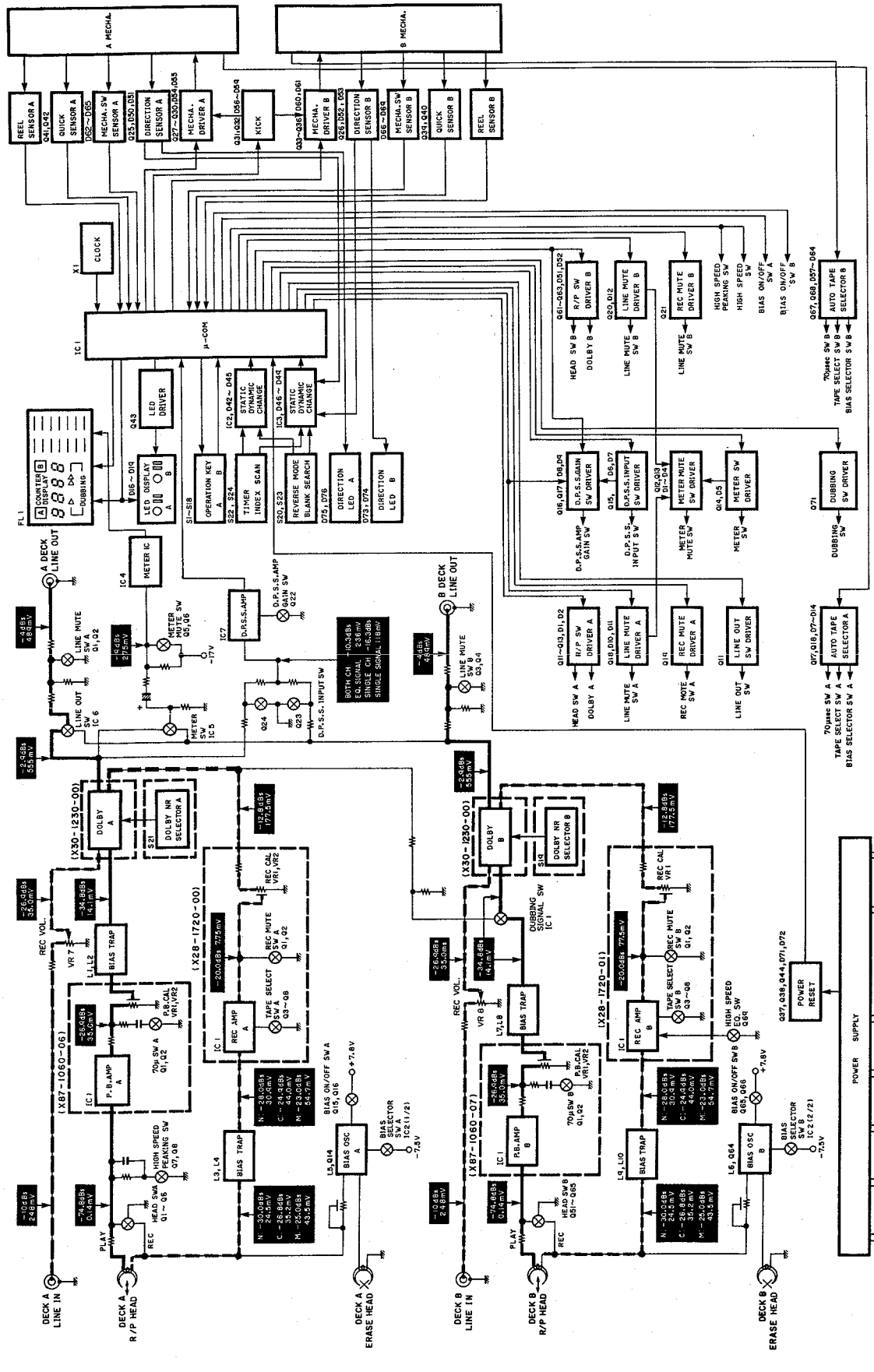
DISASSEMBLY FOR REPAIR

HOW TO REMOVE THE MECHANISM ASS'Y

1. Remove two screws (❶) on both sides of the front panel as well as four screws (❷) on upper and lower sides, and remove the front panel in the direction of the arrow (❸).
2. Remove three bush rivets (❹) and four screws (❺) of the mechanism fixture.
3. Remove eight screws on both sides and also on the lower side of the mechanism (❻).
4. Lift the mechanism assembly in the direction of the arrow (❼).



BLOCK LEVEL DIAGRAM



Note : Signal output at the time of relay play

At the time of relay play the output of A DECK, B DECK is output of A DECK LINE OUT by select operation of LINE OUT SW IC6. The output of B DECK only is directed to B DECK LINE OUT.

Therefore, when A DECK LINE OUT is connected to INPUT SELECTOR A of the amplifier, the signals of A DECK and B DECK are output at the time relay play, even if INPUT SELECTOR is not switched.

CIRCUIT DESCRIPTION

Description of components

CASSETTE (X26-1140-00)

Components	Application/function	Operation/condition/compatibility
Q1~Q4	PLAY SW (A DECK) for record/play head selection	OFF in REC mode; ON in other modes. (Unstable when OFF, 5.7V when ON)
Q5,Q6	REC SW for record/play head selection	ON in REC mode; OFF in other modes (–4.4V when OFF, –6.8V when ON)
Q7,Q8	Input impedance select switch for input impedance correction	OFF in triple speed dubbing mode; ON in other modes. (3.4V when OFF, –0.6V when ON)
Q11~Q13	Record/play select SW drive circuit for record/play selection of the circuit	High in REC mode; Low in other modes. (4.8V when High, 0V when Low)
Q14	BIAS OSC exciting Tr for primary excitation of BIAS OSC	
Q15,Q16	BIAS OSC SW for ON/OFF of BIAS OSC	ON in REC mode; OFF in other modes. (0V when OFF, 4.8V when ON)
Q17,Q18	Auto tape selector circuit	Nor / CrO_2 / Metal Q17: OFF / ON / OFF Q18: OFF / OFF / ON High impedance when OFF 6.4V when ON
Q19	EQ power supply circuit of A DECK for prevention of ripple component	
Q21~Q26	± power supply circuit for record/play systems	Auto balance type; ±7.8V output
Q27	– power supply for FL	Ripple filter type; –17V output
Q28	Power supply for μ-COM.	Ripple filter type; + 5.5V output
Q29,Q30	Power supply for mechanism	Ripple filter type, + 13.8V output
Q51~Q54	PLAY SW (B DECK) for record/play head selection	OFF in REC mode; OFF in other modes (Unstable when OFF, 5.7V when ON)
Q55,Q56	REC SW for record/play head selection	ON in REC mode; OFF in other modes. (–4.4V when OFF, 6.8V when ON)
Q61~Q63	Record/play select SW drive circuit for record/play selection of the circuit	High in REC mode; Low in other modes. (4.8V when High, 0V when ON)
Q64	BIAS OSC exciting Tr for primary excitation of BIAS OSC	
Q65,Q66	BIAS OSC SW for ON/OFF of BIAS OSC	ON in REC mode; OFF in other modes (0V when OFF, 4.8V when ON)
Q67,Q68	Auto tape selector circuit	Nor / CrO_2 / Metal Q67: OFF / ON / OFF Q68: OFF / OFF / ON High impedance when OFF 6.4V when ON
Q69	Record EQ select SW for selection between regular speed record EQ and triple speed record EQ	ON in triple speed dubbing mode, OFF in other modes. (0V when OFF, 4.6V when ON)
Q70	EQ power supply circuit of B DECK for prevention of ripple component	
Q71	Dubbing signal select circuit for driving IC1 (IC for signal selection)	High in dubbing mode; Low in other modes. (4.4V when High, –7.7V when Low)
IC1	Input signal select circuit for switching to REC OUT signal of A deck at the time of dubbing	Usual mode / Dubbing mode 5, 6 pin: 7.8V / –7.8V 12, 13 pin: –7.7V / 4.4V CMOS 4066
IC2	Bias currect select SW	Transistor array incorporating 4 circuit A deck with metal tape — 1 pin High — 9 pin ON A deck with chrome tape — 2 pin High — 8 pin ON B deck with metal tape — 4 pin High — 6 pin ON B deck with chrome tape — 3 pin High — 7 pin ON Note : High –7.0V ON – Tr array output ON

CIRCUIT DESCRIPTION

RECORD (X28-1720-00, -01)

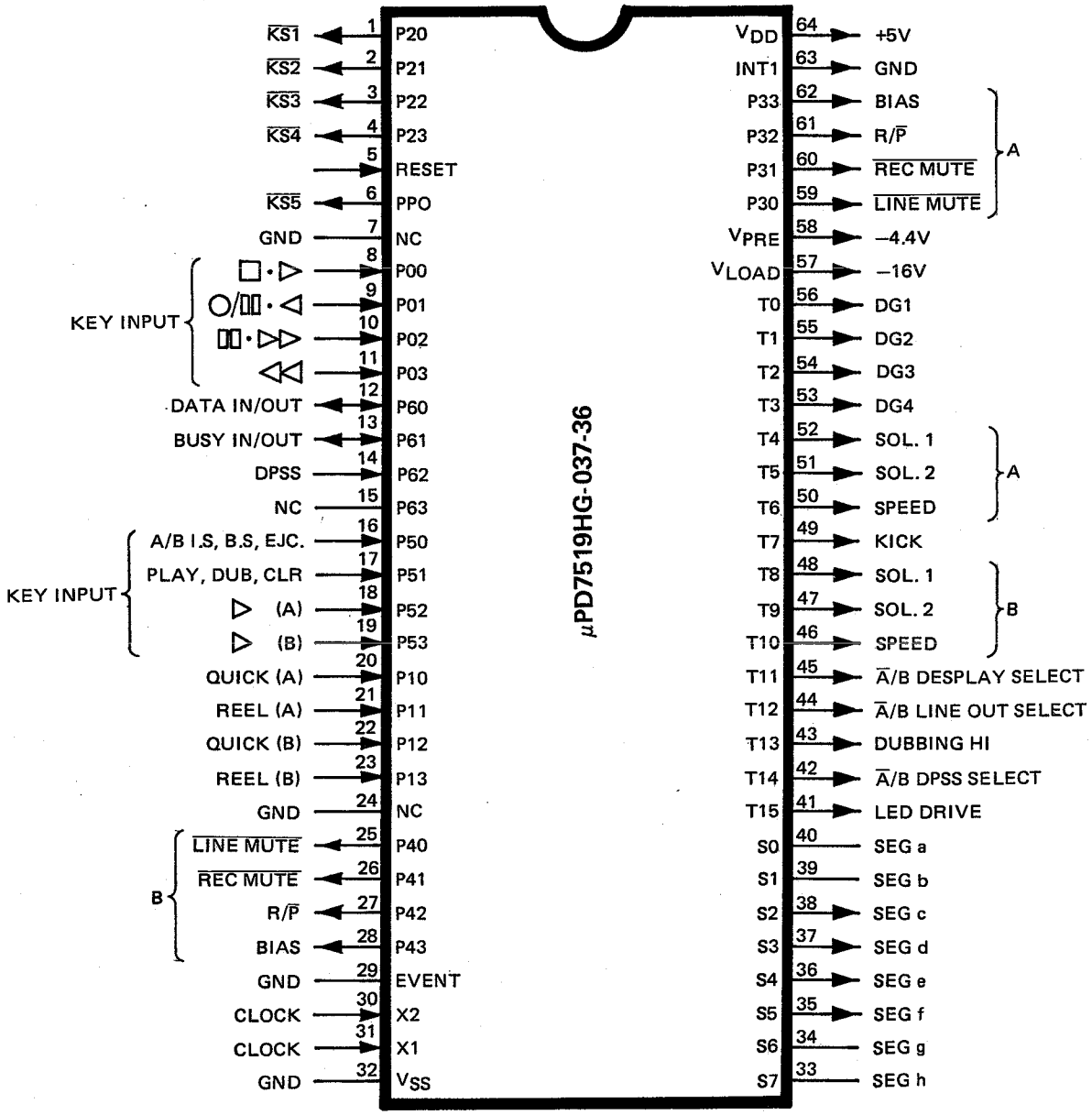
Components	Application/function	Operation/condition/compatibility
IC1	For driving record/play head	0–00 M5218P . . . Operational amplifier of 4558 type 0–01 M5201P . . . See description of general-purpose switch operational amplifier circuit operation.
Q1,Q2	For REC mute	OFF in recording mode; ON in other modes. –4.4V when OFF; 4.6V when ON.
Q3,Q4	For selecting recording peaking frequency	ON when normal or chrome tape is used; OFF when metal tape is used. –4.4V when OFF; 7.8V when ON.
Q5,Q6	Recording EQ switch for chrome	ON when chrome tape is used; OFF when normal or metal tape is used. –4.4V when OFF; 6.4V when ON.
Q7,Q8	Recording EQ switch for metal	ON when metal tape is used; OFF when normal or chrome tape is used. –4.4V when OFF; 6.4V when ON.

CONTROL (X29-1640-00)

Components	Application/function	Operation/condition/compatibility
IC1	Microprocessor mechanism, record/play system control	Details are described elsewhere.
IC2,IC3	Static/dynamic conversion	Details are described elsewhere. See page 9.
IC4	FL level meter drive	
IC5	Level meter input selection	
IC6	Line out A output selection	
IC7	DPSS amplifier	
Q1,Q2	Line mute (A)	OFF when A DECK is in PLAY, REC, REC PAUSE mode or when A deck is in STOP and B deck is in PLAY mode; ON in other modes.
Q3,Q4	Line mute (B)	OFF when B DECK is in PLAY, REC, REC PAUSE mode; ON in other modes.
Q5,Q6	Meter mute	OFF when selected meter side deck is in PLAY, REC, REC PAUSE mode; ON in other modes.
Q11	Line out A/B select drive	OFF when B deck is in PLAY mode; ON in other modes.
Q12,Q13,Q14	Meter mute selection	When A deck meter is selected; Q12 OFF, Q13 ON , Q14 ON. When B deck meter is selected; Q12 ON, Q13 OFF, Q14 OFF.
Q15,Q16,Q17	DPSS selection	When A deck is DPSS; Q15 ON , Q16 ON , Q17 OFF When B deck is DPSS; Q15 OFF, Q16 OFF, Q17 ON
Q18,Q19	Line mute	When A deck is in PLAY, REC, REC PAUSE or when A deck is in STOP mode.
Q20,Q21	REC mute drive	Q18 is OFF when B deck is in PLAY mode; ON in other modes. Q25 is OFF when B deck is in PLAY, REC, REC PAUSE mode; ON in other modes.
Q22	DPSS gain selection	OFF in FF, REW, STOP mode; ON in PLAY, REC modes.
Q23,Q24	DPSS input selection	Q24 is ON when B deck is in DPSS mode; OFF in other modes. Q23 is ON when A deck is in DPSS mode; OFF in other modes.
Q25,Q26	Direction LED drive	ON in FWD mode; OFF in REV mode. Q25 A deck, Q28 B deck.
Q27,Q28	Speed selection (A)	In high speed mode; Q27 ON , Q28 OFF In normal speed mode; Q27 OFF, Q28 ON.
Q29,Q30	Solenoid drive (A)	Q29 is ON and solenoid 1 is ON when IC1 52P HI; OFF in other cases. Q30 is ON and solenoid 2 is ON when IC1 52P HI; OFF in other cases.
Q31,Q32	Kick	Momentarily Q31 & Q32 are ON when PLAY, REC, FF, REW, STOP PAUSE, CUE & REV mode; OFF when in other modes.
Q33,Q34	Solenoid drive (B)	Q33 ON and solenoid 1 is ON when IC1 48P HI; OFF in other cases. Q34 ON and solenoid 2 is ON when IC1 48P HI; OFF in other cases.
Q35,Q36	Speed selection (B)	In high speed mode; Q35 ON, Q36 OFF In normal speed mode; Q35 OFF, Q36 ON.
Q37,Q38,Q44	Reset circuit	The microprocessor is reset at the time of power ON/OFF.
Q39,Q40	Quick sensor (B)	Momentarily ON from OFF at the boundary between the magnetic substance part, which is ON/OFF in accordance with a signal from the photocoupler for quick sensor, for quick sensor, and the leader tape part. (B deck side)
Q41,Q42	Quick sensor (A)	Same as above. (A deck side)
Q43	LED driver	When IC1 41P HI in REC PAUSE mode, Q43 is ON and LED (D38~D41) which correspond to terminals which are HI out of P53~P56 are lit. OFF in other cases.

CIRCUIT DESCRIPTION

Conection diagram of microprocessor IC1 (μPD7519HG-037-36)



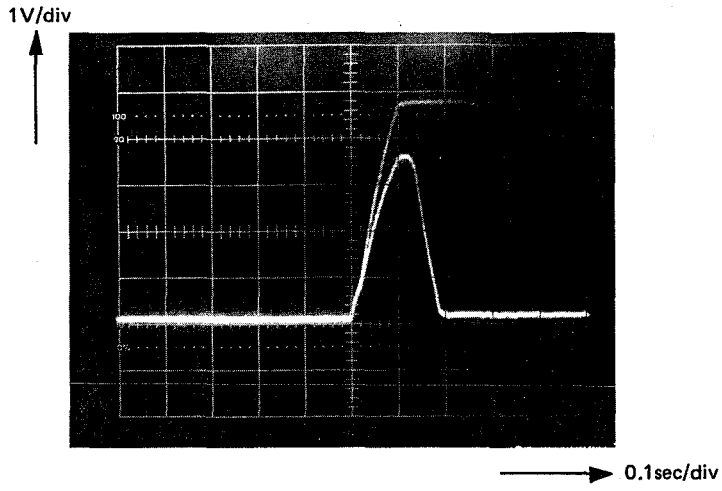
CIRCUIT DESCRIPTION

Description of functions of terminals of IC1 (μPD7519HG-037-36)

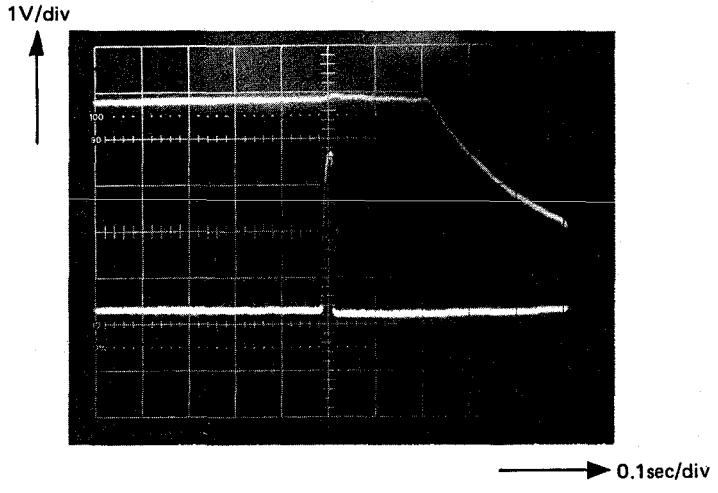
Terminal No.	Terminal name	I/O	Description of function
1~4	$\overline{KS1}$~$\overline{KS4}$	O	Key scan signal output for key matrix. Active"L" output, output pulse width around 4msec, duty ratio 1/5.
5	RESET	I	Reset input of high level active.
6	KS5	O	Same as No. 1~4 terminals.
8~11	P00~P03	I	Key return signal input, active "L" input.
12	DATA	I/O	Inter-system serial data input/output terminal.
13	BUSY	I/O	BUSY input/output terminal for inter-system serial data communication.
14	DPSS	I	Music signal input for DPSS; "H" in status with sound, "L" in status without sound.
16~19	P50~P53	I	Key return signal input, active "L" input.
20	QUICK REVERSE A	I	A deck quick reverse signal input, "H" when sensing.
21	PHOTO REFRECTOR A (REEL SENSOR)	I	Input for detection of rotation of A deck mechanism.
22	QUICK REVERSE B	I	B deck quick reverse signal input, "H" when sensing.
23	PHOTO REFRECTOR B (REEL SENSOR)	I	Input for detection of rotation of B deck mechanism.
25	$\overline{LINE\ MUTE}$	O	B deck line mute output, mute ON when "L".
26	$\overline{REC\ MUTE}$	O	B deck rec mute ouptut, mute ON when "L".
27	REC/$\overline{PLAY}$	O	B deck rec/play select output, rec when "H".
28	BIAS	O	B deck bias output, bias ON when "H".
30	CLOCK 2	I	Clock oscillation ceramic oscillator connecting terminal.
31	CLOCK 1	I	Oscillation frequency 4.19MHz.
33	S7 (h)	O	Segment output for A/B select indication and dubbing or high speed dubbing indication. Active "H" output, output pulse width 244μsec.
34~40	S6 (g)~S0 (a)	O	7 segment display output for digital tape counter. Active "H" output, output pulse width 244μsec.
41	LED DRIVE	O	Segment output for rec indication, pause indication. Active "H" output, output pulse width 244μsec.
42	$\overline{A}$/B DPSS Selection	O	Output for A/B DPSS selection, B deck is valid when "H".
43	DUBBING "H"	O	Dubbing signal output; "H" during dubbing, high speed dubbing.
44	$\overline{A}$/B LINE OUT Selection	O	Output for A/B line out selection; B deck is valid when "H".
45	$\overline{A}$/B indication selection	O	Output for A/B indication selection; B deck is valid when "H".
46	SPEED B	O	B deck motor speed select output; high speed when "H".
47	SOLENOID 2	O	B deck solenoid 2 drive output; solenoid ON when "H".
48	SOLENOID 1	O	B deck solenoid 1 drive output; solenoid ON when "H".
49	KICK	O	A, B deck solenoid kick output; kick when "H".
50	SPEED A	O	A deck motor speed select output; high speed when "H".
51	SOLENOID 2	O	A deck solenoid 2 drive output; solenoid ON when "H".
52	SOLENOID 1	O	A deck solenoid 1 drive output; solenoid ON when "H".
53~56	DG4~DG1	O	Digit output for dynamic display. Active "H" output, output pulse width 244μsec, blanking time 30.5μsec.
57	V_{LOAD}		FIP's power supply voltag eterminal.
58	V_{PRE}		Power supply terminal for FIP pre-driver.
59	$\overline{LINE\ MUTE}$	O	A deck line mute output; mute ON when "L".
60	$\overline{REC\ MUTE}$	O	A deck rec mute output; mute ON when "L".
61	REC/$\overline{PLAY}$	O	A deck rec/play mute output; rec when "H".
62	BIAS	O	A deck bias output; bias ON when "H".
64	5V (V_{DD})		Positive power supply voltage terminal (5V).

CIRCUIT DESCRIPTION

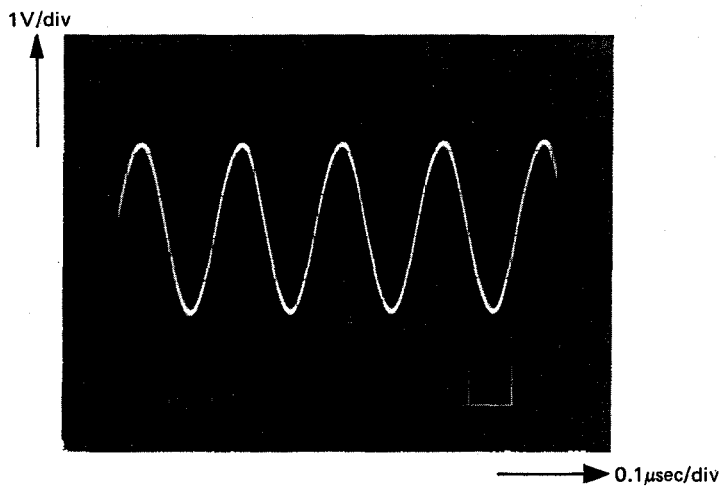
1. Microprocessor reset waveform at the time of power ON



2. Microprocessor reset waveform at the time of power OFF



3. Clock waveform by oscillator (X1) for microprocessor clocks



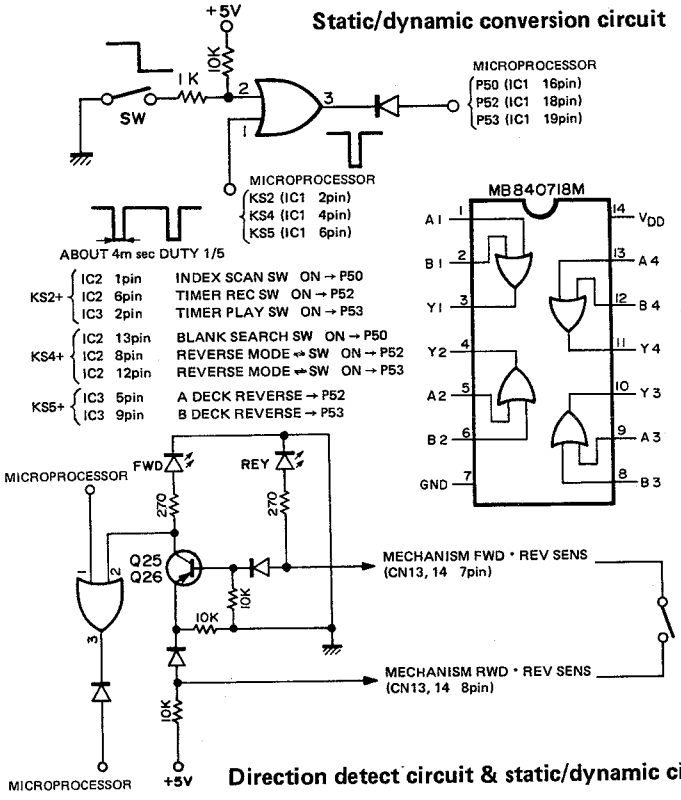
CIRCUIT DESCRIPTION

Static/dynamic conversion circuit (X29-1640-00)

At IC2 and IC3, static/dynamic conversion of ON/OFF signals of the switches located on board (X29-1640-00) D/7, E/7, and of the direction detect circuit. The figure on the right-hand side extracts a circuit out of them.

Key scan signal (active "L", pulse width about 4msec, duty 1/5) for key matrix from any one out of terminals 2, 4, 6 of microprocessor (IC1) is input to one side of the OR gate input in the IC. A constant voltage is always impressed to another OR gate input, but when each switch on board (X29-1460-00) D/7, E/7 is ON, the signal level input to the OR gate drops. Therefore, a pulse wave is output during switch ON to the OR gate output, enters a terminal out of 16, 18, 19 of the microprocessor and detects ON status of the switch.

With the DIRECTION detect circuit, at both A deck and B deck, a voltage of about 3.8V is impressed to one side of the OR gate input. In the reverse run, Tr Q25, Q26 are OFF and the signal level input to the OR gate drops. Therefore, a pulse wave is produced out of the OR gate output.



Static/dynamic conversion circuit

Direction detect circuit & static/dynamic circuit

Record unit (X28-1720-01)

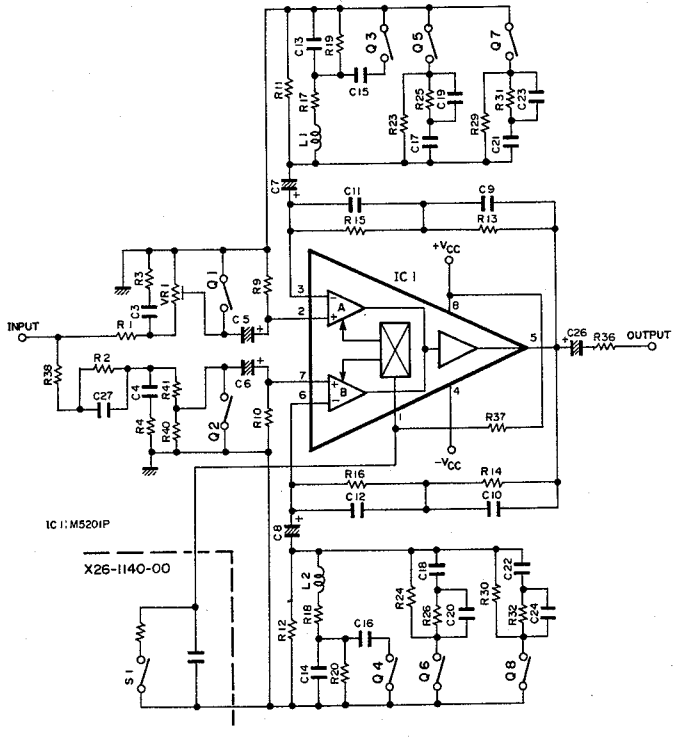
The operational amplifier used in this unit is an IC having mechanisms of two systems of A and B decks providing analog switch function and one output.

Input of A/B deck is selected by making H/L selection with the control terminal (pin 1), and operation that is equivalent to that of a conventional operational amplifier is permitted. The basic characteristics of the operational amplifier are of the performance equivalent to that of M5218P/L.

Input of A/B deck is selected in accordance with ON/OFF of external switch S1 (Q69 of X26-1140-00), and when input of A deck is selected, the amplifier works as an amplifier for recording at the normal speed, and when input of B deck is selected, it works as an amplifier for recording at the triple speed.

The functions of elements are as follows.

R1,R3,C3	Correction of medium range for normal speed
R2,R4,R38,C4,C27	Correction of medium/high range for triple speed
R11,R13,R15,C7,C9,C11 . .	Correction of low range for normal speed
R12,R14,R16,C8,C10,C12 .	Correction of low range for triple speed
L1,R17,R19,C13,C15,Q3 . .	Peaking for normal speed
L2,R18,R20,C14,C16,Q4 . .	Peaking for triple speed
R23,R25,C17,C19,Q5	Chrome EQ for normal speed
R24,R26,C18,C20,Q6	Chrome EQ for triple speed
R29,R31,C21,C23,Q7	Metal EQ for normal speed
R30,R32,C22,C24,Q8	Metal EQ for triple speed



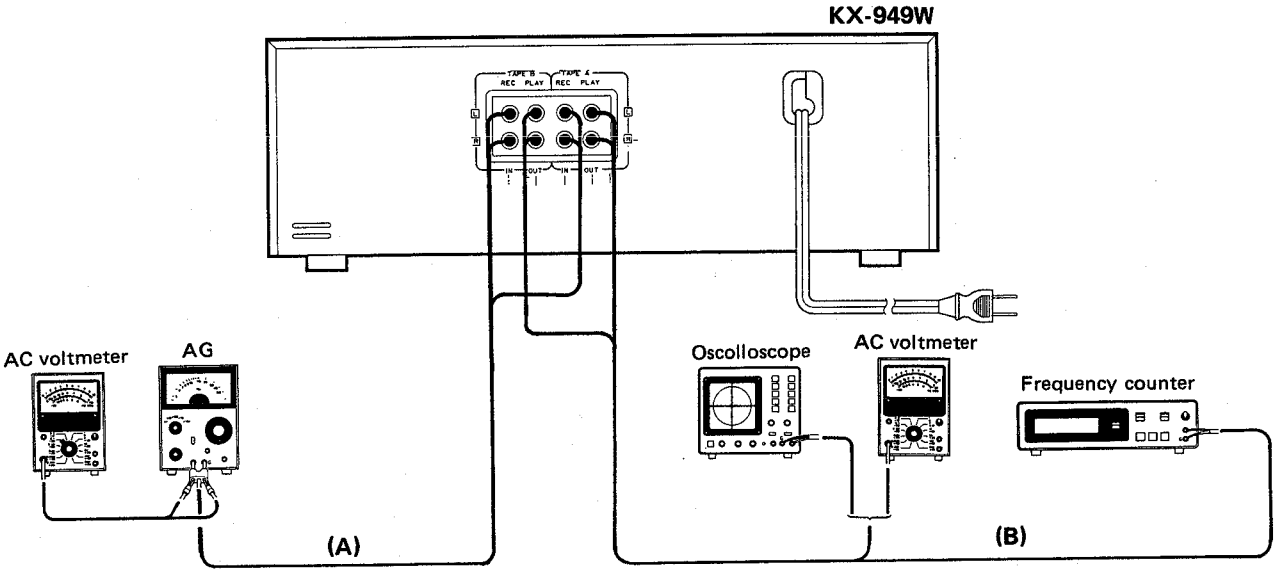
ADJUSTMENT

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-114 10kHz, -10dB	(B)	PLAY	Azimuth adjustment screw	Adjust the azimuth adjustment screw so that the output voltage is maximized in both forward and reverse direction.	
II PC BOARD							
(1)	REEL SENSOR	A DECK: B DECK: →Raw tape	–	PLAY	A DECK: VR9 B DECK: VR8	Maximum TP3(A), TP4(B)	(a)
(2)	TAPE SPEED (HI SPEED)	MTT-111 3kHz	(B)	Connect a jumper wire between GND and TP1,TP2 PLAY	A DECK: VR3 B DECK: VR5	Adjust the tape speed so that a 8100Hz signal is produced at the center of the tape.	
(3)	TAPE SPEED (NORMAL)	MTT-111 3kHz	(B)	PLAY	A DECK: VR2 B DECK: VR4	Adjust the tape speed so that a 3000Hz signal is produced at the center of the tape.	
III PC BOARD							
<1>	PLAYBACK LEVEL	MTT-111 400Hz	(B)	PLAY	A/B DECK: VR1(L),VR2(R)	Output level: −1.2dBs	
		MTT-256 315Hz				Output level: −4.0dBs	
		MTT-256U 315Hz				Output level: 0dBs	
IV PC BOARD							
[1]	BIAS OSC FREQUENCY	A DECK: B DECK: →Raw tape	(B)	REC	A DECK: L5 B DECK: L6	Adjust L5, L6 so that the Frequency Counter becomes 105kHz.	(b)
[2]	BIAS CURRENT	(A) 1kHz, -30dBs 10kHz, -30dBs	(B)	Adjust REC and BALANCE so that the REC monitor output becomes -24dBs at 1kHz, then record and reproduce signal of 1kHz and 10kHz in alternation.	A DECK: VR1 (L) VR2 (R)	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]	BIAS CURRENT	(A) 1kHz, -30dBs 10kHz, -30dBs	(B)	Adjust REC and BALANCE so that the REC monitor output becomes -24dBs at 1kHz, then record and reproduce signal of 1kHz and 10kHz in alternation.	B DECK: VR3 (L) VR4 (R)	Record 1kHz and 10kHz in alternation and adjust the variable resistors which control the bias current so that the same playback level is obtained.	

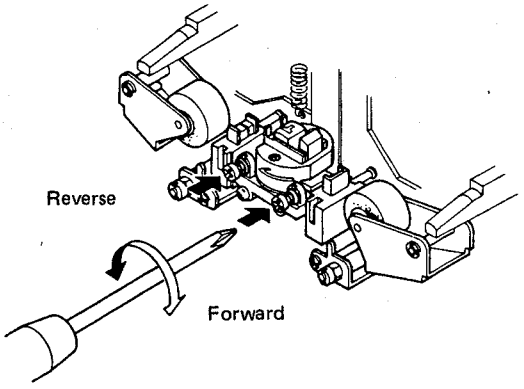
ADJUSTMENT

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	
V PC BOARD							
①	RECORD LEVEL	(A) 1kHz, −10dBs	(B)	Recrd and reproduce a 1kHz signal under the conditions set in ①	A DECK: VR1 (L) VR2 (R)	Adiust the variable resistors so that a playback level of −4dBs is obtained.	
VI PC BOARD							
①	RECORD LEVEL	(A) 1kHz, −10dBs	(B)	Recrd and reproduce a 1kHz signal under the conditions set in ①	B DECK: VR1 (L) VR1 (R)	Adiust the variable resistors so that a playback level of −4dBs is obtained.	
VII PC BOARD							
①	METER	(A) 1kHz, −10dBs	−	Adiust REC LEVEL so that the REC monitor output becomes −4dBs at 1kHz.	VR1 (R)	0dBs	

SYSTEM CONNECTIONS



AZINUTH ADJUSTMENT SCREW



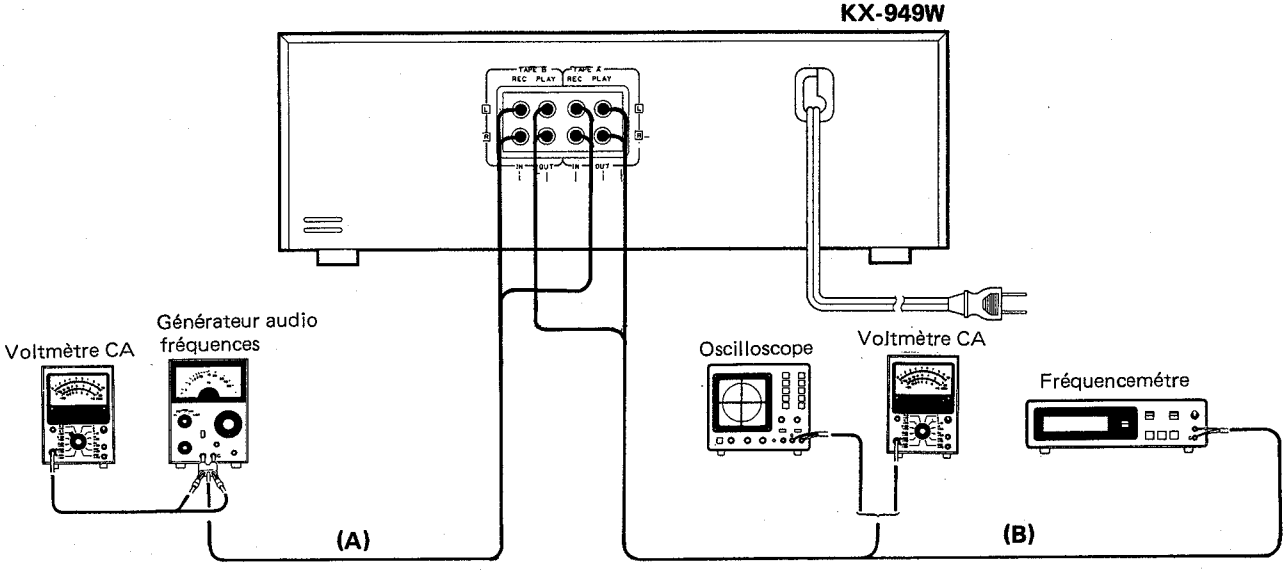
REGLAGE

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-114 10kHz. −10dB	(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.	
II PLAQUE IMPRIMEE							
(1)	DAPTEUR DE MOULINET	A DECK: B DECK: →Bande Brut	—	PLAY	A DECK: VR9 B DECK: VR8	Maximal TP3(A). TP4(B)	(a)
(2)	VITESSE DE DEFILEMENT (HI SPEED)	MTT-111 3kHz	(B)	Connecter un cablage enter les GND et TP1.TP2 PLAY	A DECK: VR3 B DECK: VR5	Régler la vitesse de bande de façon qu'un signal de 8100Hz soit produit au centre de la bande.	
(3)	VITESSE DE DEFILEMENT (HI SPEED)	MTT-111 3kHz	(B)	PLAY	A DECK: VR3 B DECK: VR5	Régler la vitesse de bande de façon qu'un signal de 3000Hz soit produit au centre de la bande.	
III PLAQUE IMPRIMEE							
<1>	NIVEAU DE LECTURE	MTT-111 400Hz	(B)	PLAY	A/B DECK: VR1(G).VR2(D)	Niveau de sortie: −1,2dBs	
		MTT-256 315Hz				Niveau de sortie: −4,0dBs	
		MTT-256U 315Hz				Niveau de sortie: 0dBs	
IV PLAQUE IMPRIMEE							
[1]	FREQUENCE DE OSC DE POLARISATION	A DECK: B DECK: →Bande Brut	(B)	REC	A DECK: L5 B DECK: L6	L5.L6→105kHz (Fréquencemeter)	(b)
[2]	COURANT DE POLARISATION	(A) 1kHz. -30dBs 10kHz. -30dBs	(B)	Régler REC et BALANCE de façon que la sortie de moniteur REC soit de -24dBs à 1kHz, puis enregistrer et reproduire des signaux de 1kHz et 10kHz en alternance.	A DECK: VR1 (G) VR2 (D)	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]	COURANT DE POLARISATION	(A) 1kHz. -30dBs 10kHz. -30dBs	(B)	Régler REC et BALANCE de façon que la sortie de moniteur REC soit de -24dBs à 1kHz, puis enregistrer et reproduire des signaux de 1kHz et 10kHz en alternance.	B DECK: VR3 (G) VR4 (D)	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.	

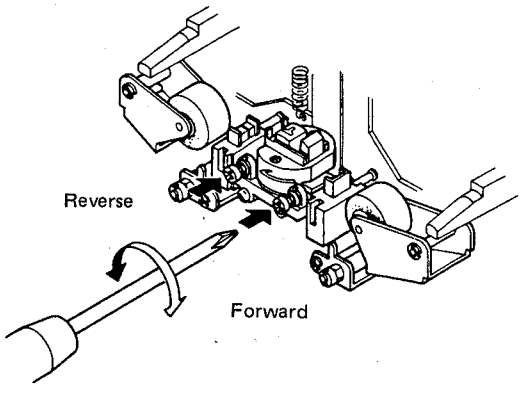
REGLAGE

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
V PLAQUE IMPRIMEE							
①	NIVEAU D'ENREGISTREMENT	(A) 1kHz.-10dBs	(B)	Enregistrer et reproduire un signal de 1kHz dans les conditions précisées en ①	A DECK: VR1 (G) VR2 (D)	Ajuster les résistances variables de façon à obtenir un niveau de lecture de −4dBs.	
VI PLAQUE IMPRIMEE							
①	NIVEAU D'ENREGISTREMENT	(A) 1kHz.-10dBs	(B)	Enregistrer et reproduire un signal de 1kHz dans les conditions précisées en ①	B DECK: VR1 (G) VR1 (D)	Ajuster les résistances variables de façon à obtenir un niveau de lecture de −4dBs.	
VII PLAQUE IMPRIMEE							
①	MESURE	(A) 1kHz.-10dBs	−	Régler REC LEVEL de façon que a sortie de moniteur REC soit de −4dBs à 1kHz.	VR1 (D)	0dBs	

RACCORDEMENTS DU SYSTEME



VIS D'AZIMUT



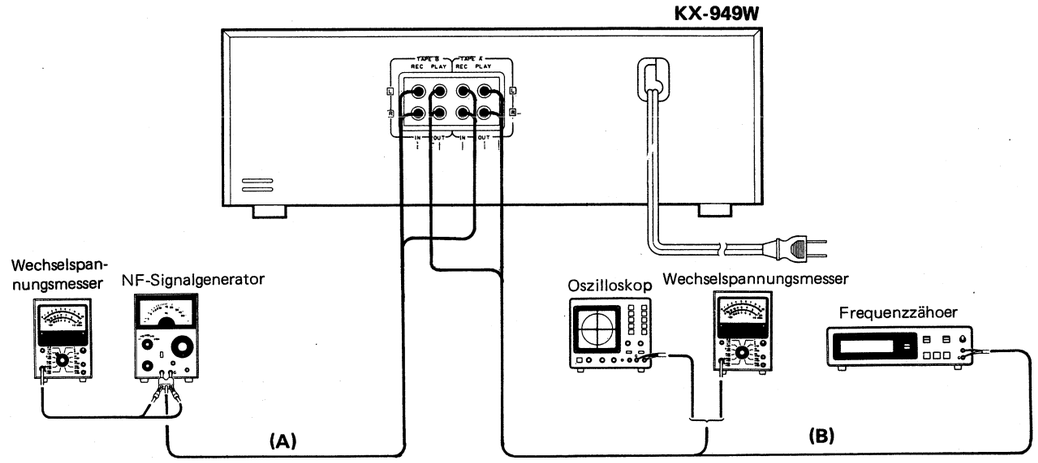
ABGLEICH

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	KASSETTENGERÄT-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 Kassettenfachdeckel 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 befeuchteten Wattebausch reinigen.	
3	AZIMUT-EINSTELLUNG	MTT-114 10kHz. −10dB	(B)	PLAY	Azimut-Einstellschraube	Die Azimut-Justierschraube so einstellen,daß die maximale Ausgangsspannung in Vorwärts-Reverserichtung und erzielt.	
II GEDRUCKTE SCHALTPLATTE							
(1)	HASPEL SENSOREN	A DECK: B DECK: →Roh Tonband	–	PLAY	A DECK: VR9 B DECK: VR8	Maximal TP3(A).TP4(B)	(a)
(2)	BANDGESCHWINDIGKEIT (HI SPEED)	MTT-111 3kHz	(B)	Einen Schaltdraht zwischen GND und TP1.TP2 anschließen. PLAY	A DECK: VR3 B DECK: VR5	Die Bandgeschwindigkeit so justieren, daß ein 8100Hz Signal auf der Mitte des Bands erzeugt wird.	
(3)	BANDGESCHWINDIGKEIT (NORMAL)	MTT-111 3kHz	(B)	PLAY	A DECK: VR2 B DECK: VR4	Die Bandgeschwindigkeit so justieren, daß ein 3000Hz Signal auf der Mitte des Bands erzeugt wird.	
III GEDRUCKTE SCHALTPLATTE							
<1>	WIEDERGABE-PEGEL	MTT-111 400Hz	(B)	PLAY	A/B DECK: VR1(L).VR2(R)	Ausgangspegel: −1.2dBs	
		MTT-256 315Hz				Ausgangspegel: −4.0dBs	
		MTT-256U 315Hz				Ausgangspegel: 0dBs	
IV GEDRUCKTE SCHALTPLATTE							
[1]	VORSPANNUNG OSZ FREQUENZ	A DECK: B DECK: →Roh Tonband	(B)	REC	A DECK: L5 B DECK: L6	L5.L6→105kHz (Frequenzzähler)	(b)
[2]	LEERLAUFSTROM	(A) 1kHz. -30dBs 10kHz. -30dBs	(B)	REC und BALANCE so justieren, daß der REC Monitorausgang -24dBs bei 1kHz wird, und danach abwechselnd Signale von 1kHz und 10kHz aufnehmen und wiedergeben.	A DECK: VR1 (L) VR2 (R)	Signale von 1kHz und 10kHz abwechselnd aufnehmen und die Regelwiderstände, die den Vormagnetisierugsstrom regeln, so justieren, daß der gleiche Wiedergabepegel erzielt wird.	
[3]	LEERLAUFSTROM	(A) 1kHz. -30dBs 10kHz. -30dBs	(B)	REC und BALANCE so justieren, daß der REC Monitorausgang -24dBs bei 1kHz wird, und danach abwechselnd Signale von 1kHz und 10kHz aufnehmen und wiedergeben.	B DECK: VR3 (L) VR4 (R)	Signale von 1kHz und 10kHz abwechselnd aufnehmen und die Regelwiderstände, die den Vormagnetisierugsstrom regeln, so justieren, daß der gleiche Wiedergabepegel erzielt wird.	

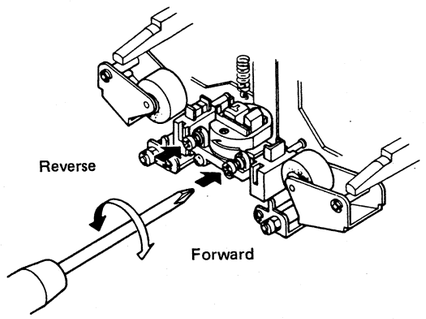
ABGLEICH

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	KASSETTENGERäT-EINSTELLUNG	ABGLEICH PUNKTE	ABGLEICHEN FüR	ABB.
CASSETTEN-DECK-ABTEILUNG	TAPE: NORMAL, DOLBY: OFF, EINGANG: LINE					0dBs=0,775V	
V GEDRUCKTE SCHALTPLATTE							
①	AUFNAHMEPEGEL	(A) 1kHz.-10dBs	(B)	Ein 1kHz Signal unter den in Punkt ① beschriebenen Bedingungen aufnehmen und reproduzieren.	A DECK: VR1 (L) VR2 (R)	Die Regelwiderstande so justieren, daß ein wiedergabepegel von -4dBs erzielt wird.	
VI GEDRUCKTE SCHALTPLATTE							
①	AUFNAHMEPEGEL	(A) 1kHz.-10dBs	(B)	Ein 1kHz Signal unter den in Punkt ① beschriebenen Bedingungen aufnehmen und reproduzieren.	B DECK: VR1 (L) VR1 (R)	Die Regelwiderstande so justieren, daß ein wiedergabepegel von -4dBs erzielt wird.	
VII GEDRUCKTE SCHALTPLATTE							
①	MESSER	(A) 1kHz.-10dBs	–	REC und BALANCE so justieren, daß der REC Monitorausgang -4dBs bei 1kHz.	VR1 (R)	0dBs	

SYSTEM-ANSCHLUSSE



AZINUT-EINSTELLSCHRAAUBE



SPECIFICATIONS

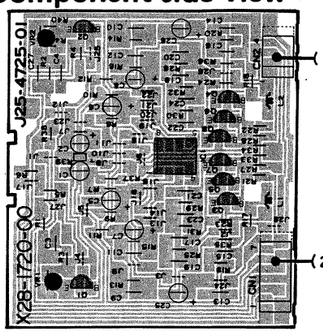
Type ..... Double Auto Reverse Stereo Cassette Deck with Dolby B·C NR System and Direct Program Search System
Track System ..... 4-Track, 2-Channel Stereo/Mono, Recording/Playback/Auto-Reverse in Record & Playback
Recording System ..... AC Bias System (Bias Frequency: 105 kHz)
Erasing System ..... AC System
Tape Speed ..... 4.76 cm/sec (1-7/8 ips)
Heads ..... Record and Playback Head × 2 (Hard Permalloy)
Erase Head (Double Gap Ferrite)
Motors ..... Electronically-Controlled DC Motor × 2
Fast Winding Time ..... Approx. 80 seconds with C-60 tape
Frequency Response:
Normal Tape ..... 20 Hz to 17,000 Hz (30 Hz to 16,000 Hz, ±3 dB)
CrO_2 Tape ..... 20 Hz to 18,000 Hz (30 Hz to 17,000 Hz, ±3 dB)
Metal Tape ..... 20 Hz to 19,000 Hz (30 Hz to 18,000 Hz, ±3 dB)
Signal to Noise Ratio:
Dolby C Type NR ON ..... 75 dB (Metal Tape)
Dolby B Type NR ON ..... 67 dB (Metal Tape)
Dolby NR OFF ..... 58 dB (Metal Tape)
Harmonic Distortion ..... Less than 1.0% (at 1 kHz, 0 VU with Metal Tape)
Wow and Flutter ..... 0.09% (W.R.M.S.)
0.18% (DIN)
Input Sensitivity/Impedance:
LINE × 2 ..... 77.5 mV/50 kohm
Output Level/Load Impedance:
LINE × 2 ..... 0.49 V (0 VU)/3.3 kohms
Power Consumption 28W
Dimensions ..... W: 340 mm (13-3/8")
H: 119 mm (4-11/16")
D: 353 mm (13-7/8")
Weight ..... 6.2 kg (13.6 lb)
Supplied Accessories ..... Audio Connection Cables
Reference Tapes ..... Normal: KENWOOD ND-60
CrO_2: KENWOOD CD-60
Metal: KENWOOD MD-60

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

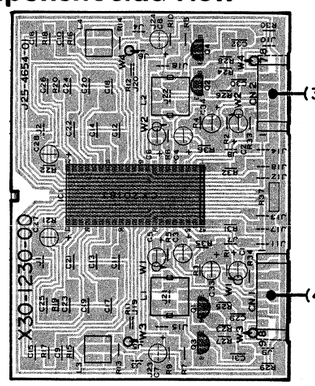
PC BOARD

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

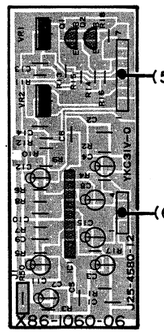
RECORD (X28-1720-00)
Component side view



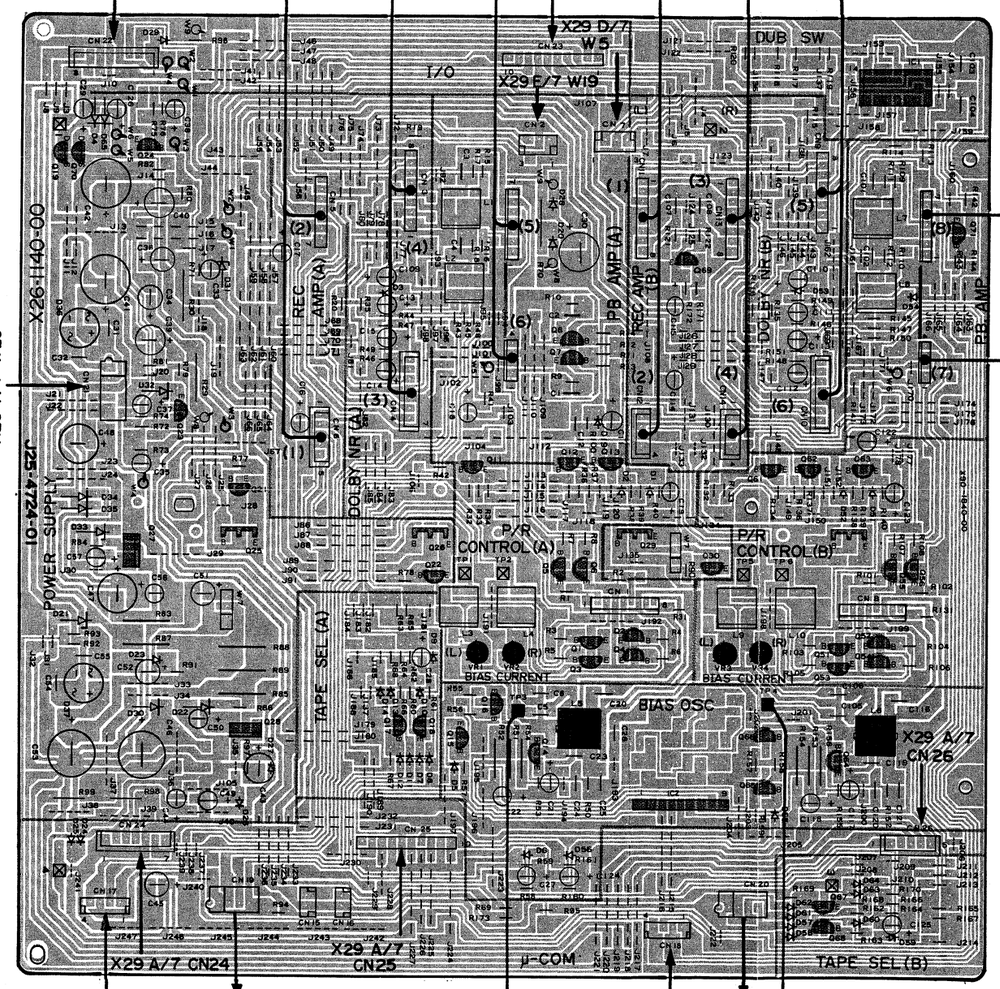
DOLBY NOISE REDUCTION (X30-1230-00)
Component side view



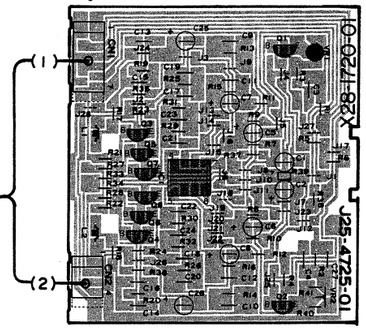
PLAYBACK AMPLIFIER (X87-1060-06)
Component side view



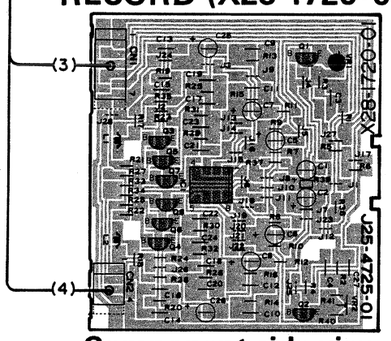
CASSETTE (X26-1140-00) Component side view



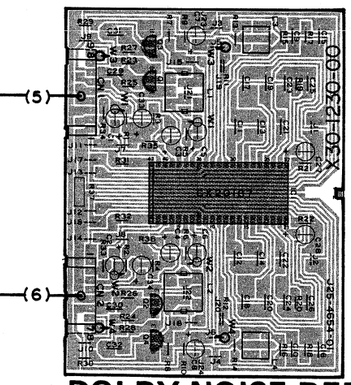
RECORD (X28-1720-01)
Component side view



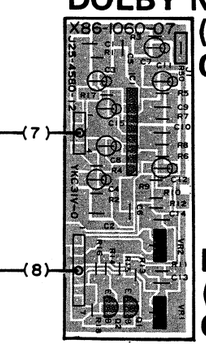
RECORD (X28-1720-01)



Component side view



DOLBY NOISE REDUCTION (X30-1230-00)
Component side view



PLAYBACK AMPLIFIER (X87-1060-07)
Component side view

X26-1140-00

	B	C	E
Q12	–	–	6.8V (REC) 4.4V (OTHERS)
Q21	–	15.8V	–
Q22	–	–	–15.6V
Q23	5.7V	–	5V
Q24	–0.6V	–	–9V
Q25	–	15.8V	7.8V
Q26	–	–7.9V	–15.6V
Q27	–17.5V	27.7V	–17V
Q28	6.1V	10.0V	5.5V
Q29	–	21V	13.7V
Q30	–14.9V	21V	–

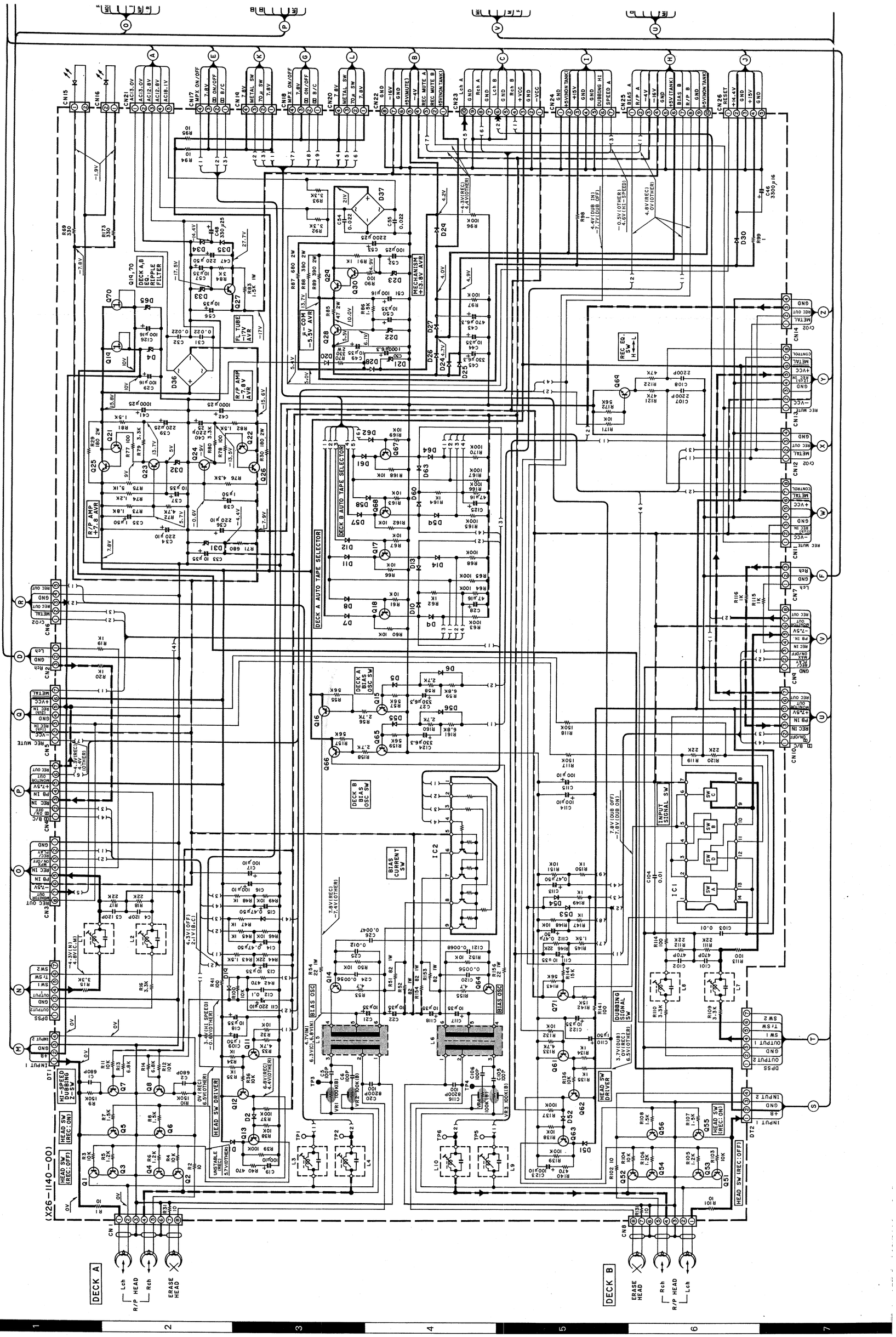
	D	G	S
Q19	–	10V	–
Q70	–	10V	–

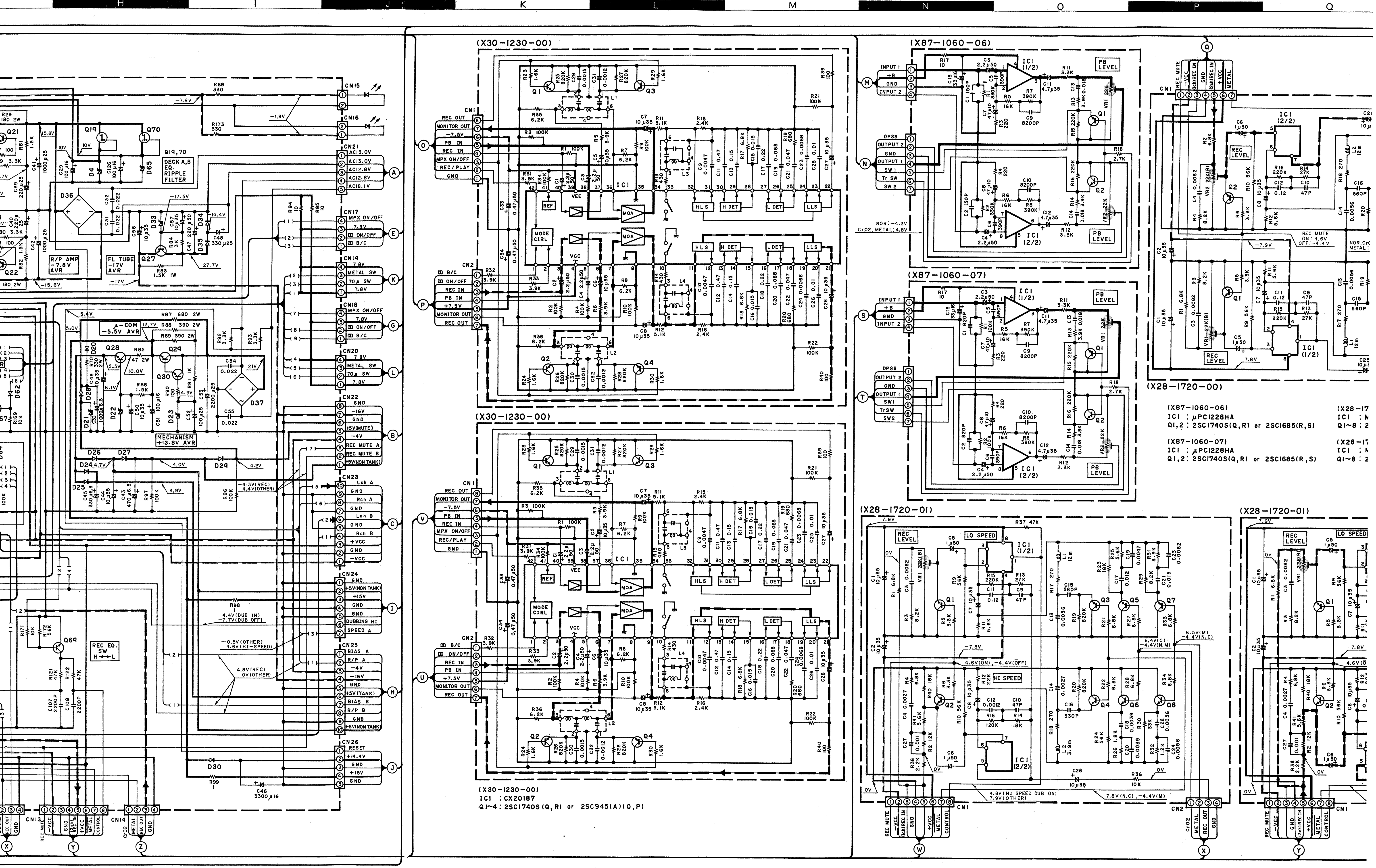
X28-1720-00
IC1

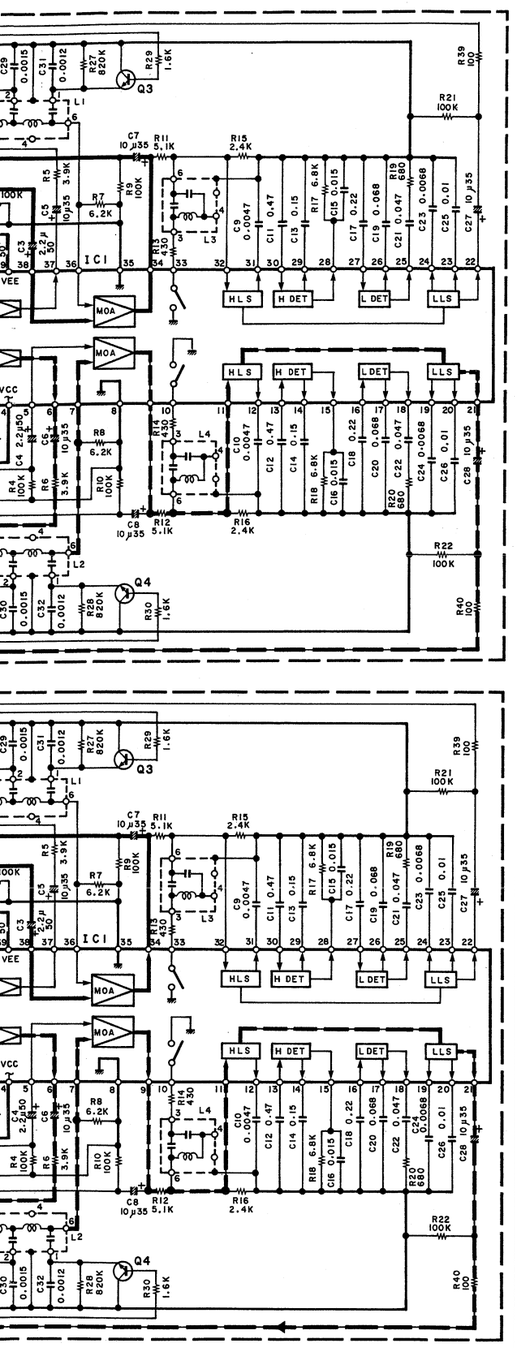
4	–7.9V
8	7.8V

X28-1720-01
IC1

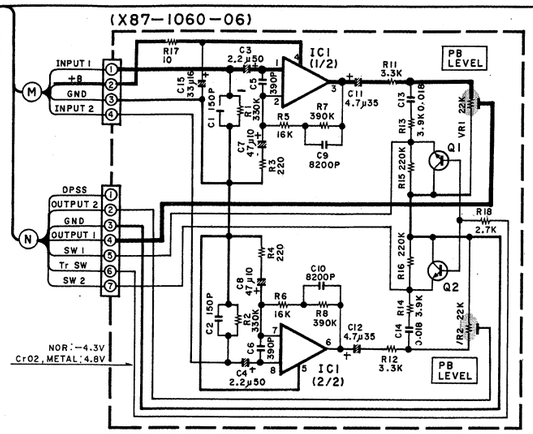
4	–7.8V
8	7.9V


(X26-1140-00)
DECK A
DECK B
DECK A AUTO TAPE SELECTOR
DECK B AUTO TAPE SELECTOR
DECK A BIAS OSC SW
DECK B BIAS OSC SW
BIAS CURRENT SW
BIAS OSC
HEAD SW DRIVER
DUBBING SIGNAL SW
INPUT SIGNAL SW
REC EQ.
DECK A,B EQ RIPPLE FILTER
MECHANISM +13.5V AVR
μ-COM -5.5V AVR
FL TUBE -17V AVR
R/P AMP +7.8V AVR
R/P AMP -7.8V AVR
HEAD SW (REC: ON)
HEAD SW (REC: OFF)
HI-SPEED DUBBING Z-SW
UNSTABLE INDICATOR
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN9
CN10
CN11
CN12
CN13
CN14
CN15
CN16
CN17
CN18
CN19
CN20
CN21
CN22
CN23
CN24
CN25
CN26
IC1
IC2
DT1
DT2
R/P HEAD
ERASE HEAD
Lch
Rch

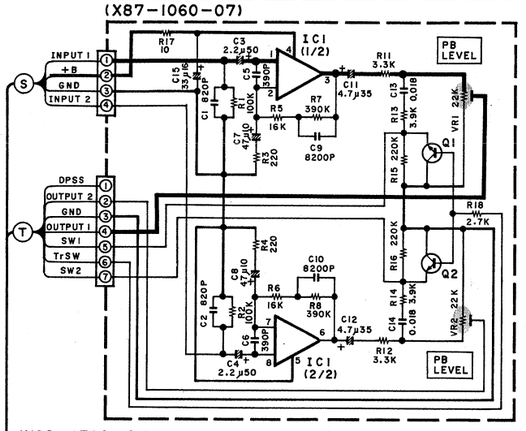

H
I
J
K
L
M
N
O
P
Q
CN15
CN16
CN21
CN17
CN19
CN18
CN20
CN22
CN23
CN24
CN25
CN26
CN13
CN14
Q19,70
DECK A,B
EQ.
RIPPLE
FILTER
R/P AMP
-7.8V
AVR
FL TUBE
-17V
AVR
µ-COM
-5.5V AVR
MECHANISM
+13.8V AVR
REC EQ.
SW
(X30-1230-00)
(X87-1060-06)
(X87-1060-07)
(X28-1720-00)
(X28-1720-01)
PB LEVEL
REC LEVEL
LO SPEED
HI SPEED
NOR: -4.3V
CrO2, METAL: 4.8V
(X87-1060-06)
IC1 : µPC1228HA
Q1,2 : 2SC1740S(Q,R) or 2SC1685(R,S)
(X87-1060-07)
IC1 : µPC1228HA
Q1,2 : 2SC1740S(Q,R) or 2SC1685(R,S)
(X30-1230-00)
IC1 : CX20187
Q1~4 : 2SC1740S(Q,R) or 2SC945(A)(Q,P)

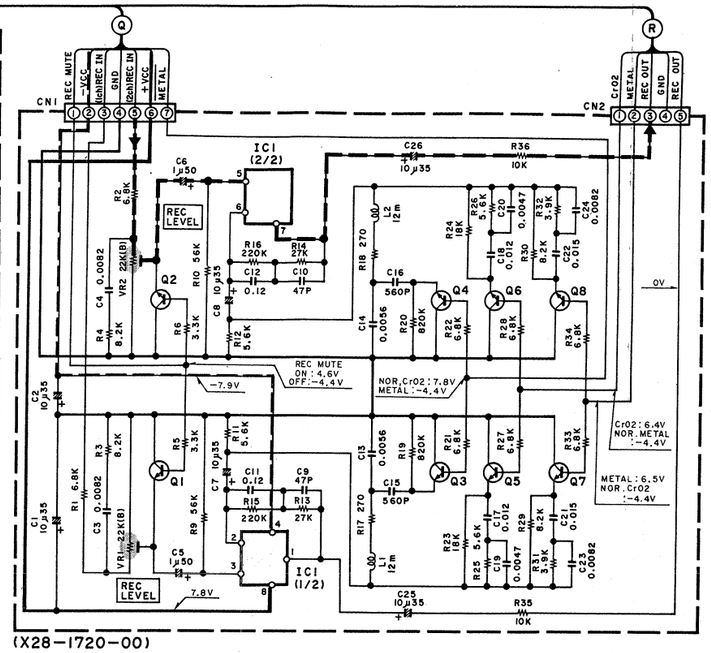


(X87-1060-06)



(X87-1060-07)





(X28-1720-00)

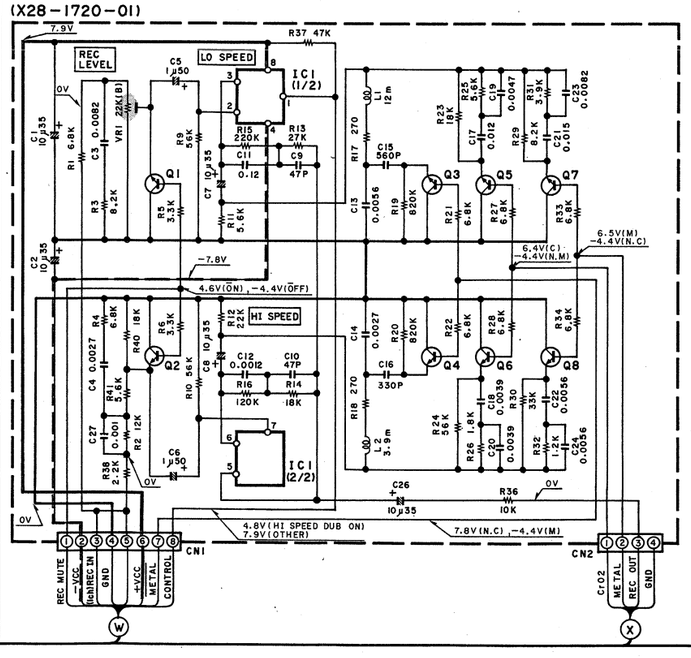
(X87-1060-06)
IC1 : μPC1228HA
Q1,2 : 2SC1740S(Q,R) or 2SC1685(R,S)

(X87-1060-07)
IC1 : μPC1228HA
Q1,2 : 2SC1740S(Q,R) or 2SC1685(R,S)

(X28-1720-00)
IC1 : M5218P
Q1~8 : 2SC1740S(Q,R) , 2SC945(A),(Q,P) or 2SC1685(R,S)

(X28-1720-01)
IC1 : M5201P
Q1~8 : 2SC1740S(Q,R) , 2SC945(A),(Q,P) or 2SC1685(R,S)

(X28-1720-01)



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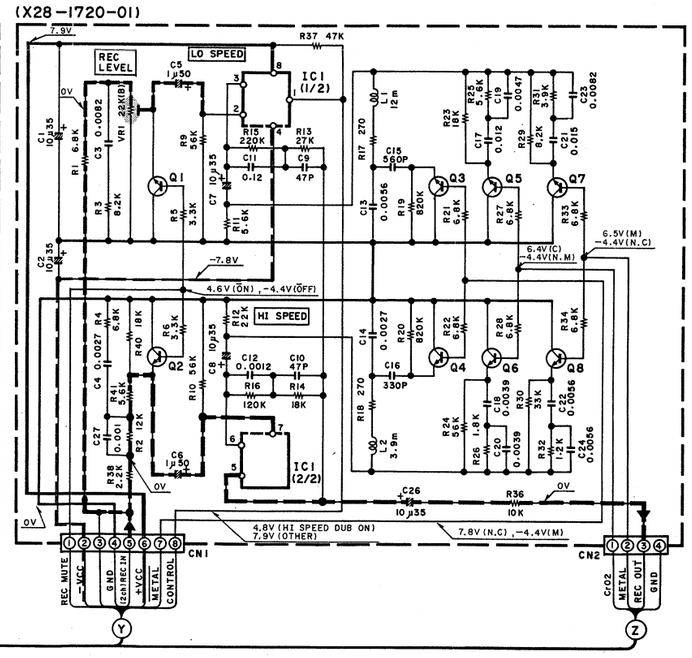
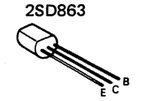


(X26-1140-00)
IC1 : μPD4066BC or MB84066BM
IC2 : TD62554S

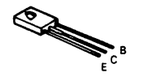
Q1 6,51 56 : 2SC1845(F,E)
Q7,8,12,17,18,22,24,62,67,68 : 2SA933S(Q,R), 2SA733(A)(Q,P) or 2SA999(E,F)
Q11,15,21,23,30,61,65,69,71 : 2SC1740S(Q,R), 2SC945(A)(Q,P) or 2SC2320(E,F)
Q13,63 : 2SA992(F,E)
Q14,64 : 2SD863(E,F) or 2SD1292(Q,R)
Q16,66 : 2SA954(L,K)
Q19,70 : 2SK364(BL)
Q25 : 2SD882 *1(Q,P)
Q26 : 2SB772 *1(Q,P)
Q27 : 2SB772(Q,P)
Q28 : 2SD882(Q,P)
Q29 : 2SD1266(Q,P)

D1~3,5~14,24~29,51~64 : 1SS133 or 1SS176
D4,65 : RD10JS(B)
D21,32 : RD5.1E(B2)
D22 : RD6.2E(B2)
D23 : RD15E(B3)
D30,34,35 : DSM1AJ
D31 : RD4.3E(B)
D33 : RD18E(B2)
D36,37 : W02-5008L

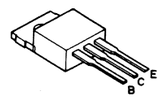
2SA733(A) 2SC1845
2SA954 2SC2320
2SA992 2SC945(A)
2SA999 2SD1292
2SC1685 2SD863



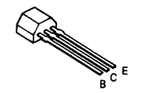
2SB772
2SB772*1
2SD882
2SD882*1



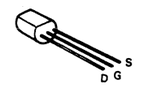
2SD1266



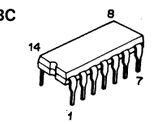
2SA933S
2SC1740S



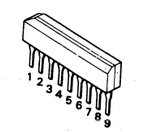
2SK364



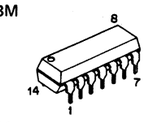
μPD4066BC



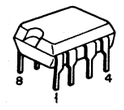
TD62554S



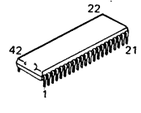
MB84066BM



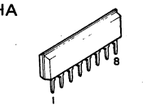
M5201P
M5218P



CX20187



μPC1228HA

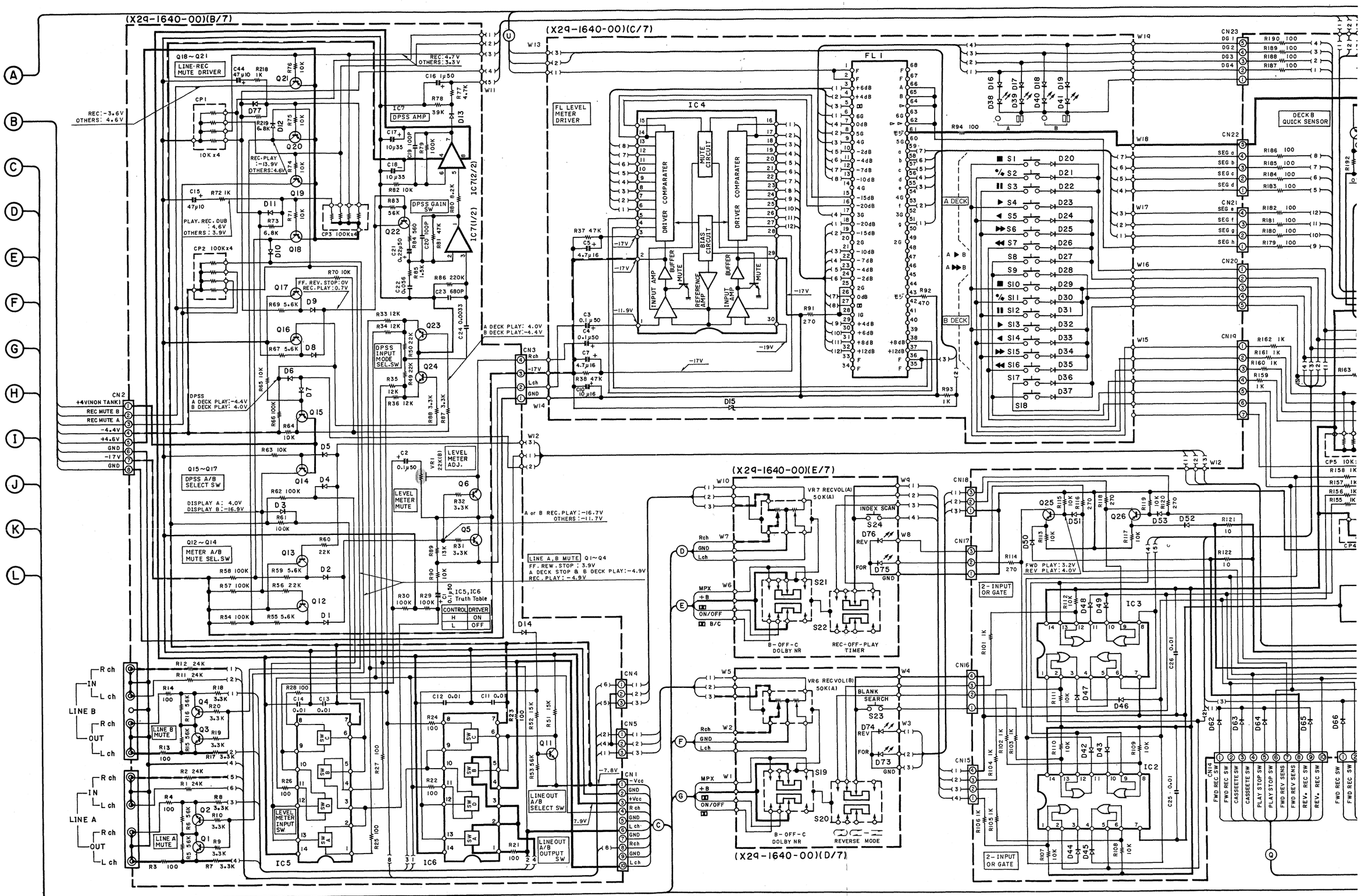


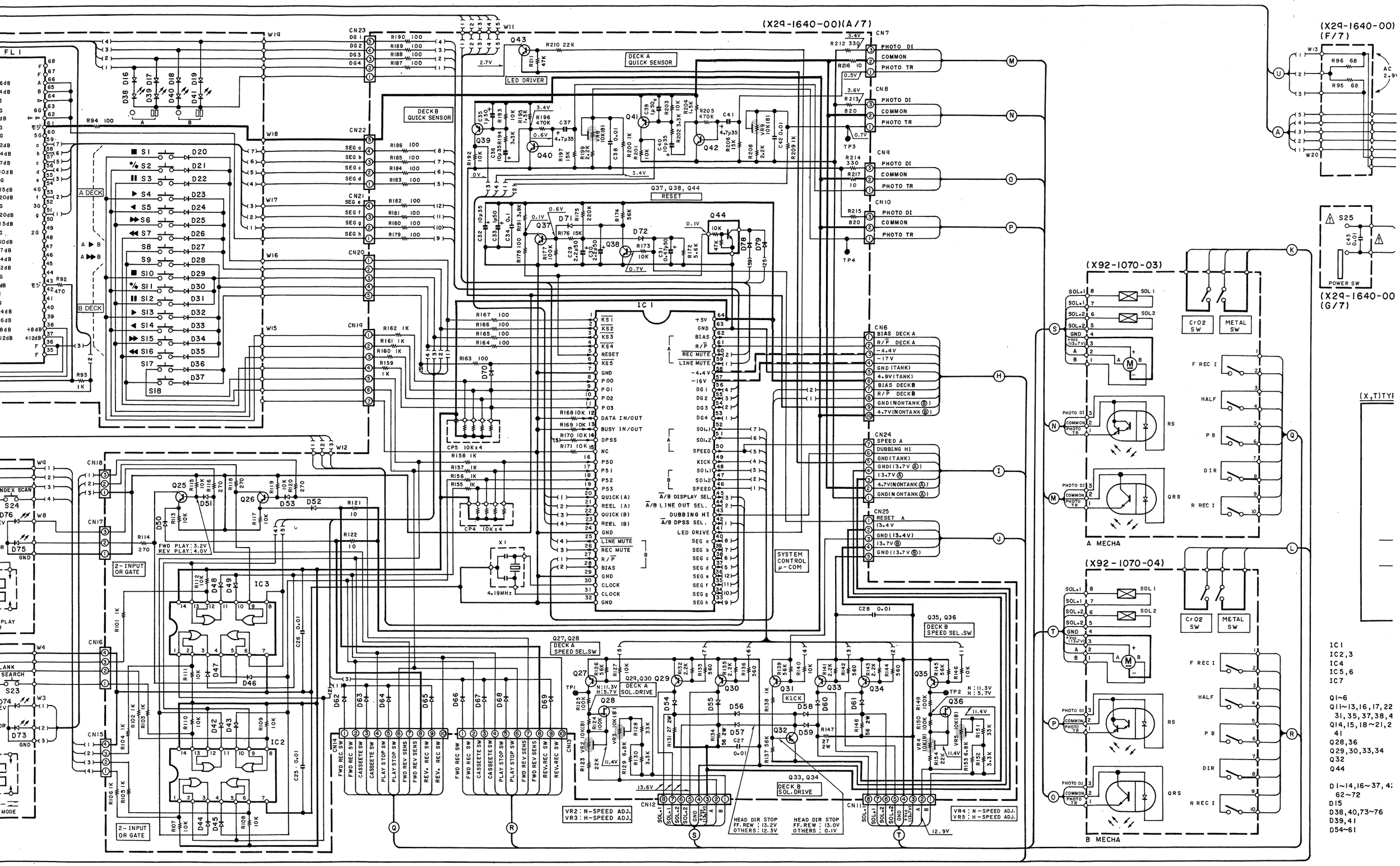
- DC voltages are as measured with a high impedance voltmeter with a cassette loaded at playback mode. Values may vary slightly due to variations between individual instruments or/and units. Bias circuit DC voltages are as measured while in the record mode.

KX-949W (K) (1/2)

KX-949W

KENWOOD

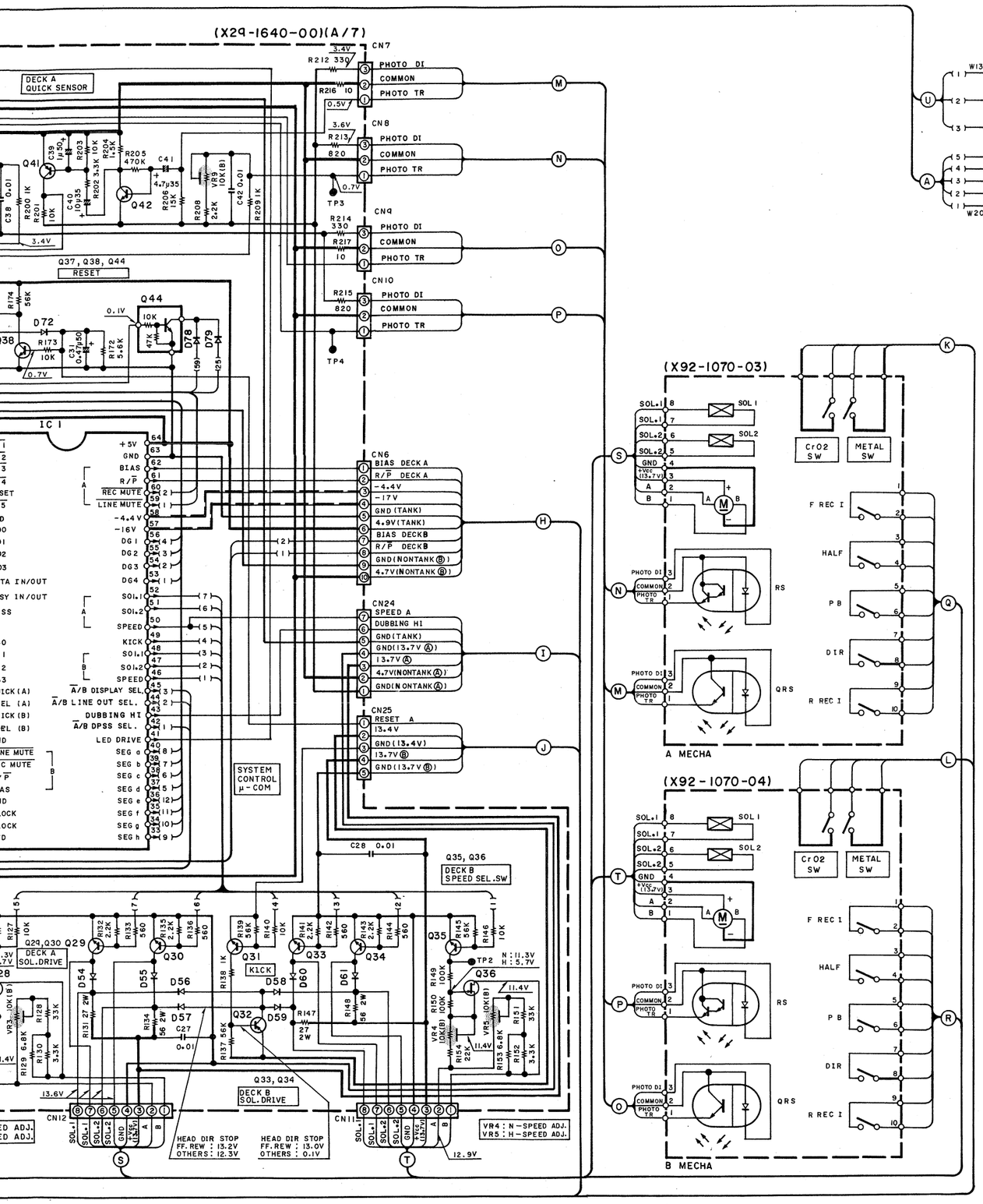

(X29-1640-00)(B/7)
(X29-1640-00)(C/7)
(X29-1640-00)(E/7)
(X29-1640-00)(D/7)
Q18~Q21
LINE-REC MUTE DRIVER
REC:-3.6V OTHERS: 4.6V
REC:4.7V OTHERS:3.3V
IC7 DPSS AMP
IC7(1/2)
IC7(2/2)
REC-PLAY :-13.9V OTHERS:4.6V
PLAY.REC.DUB :4.6V OTHERS : 3.9V
FF.REV.STOP:0V REC.PLAY:0.7V
DPSS A DECK PLAY:-4.4V B DECK PLAY: 4.0V
A DECK PLAY: 4.0V B DECK PLAY:-4.4V
Q15~Q17 DPSS A/B SELECT SW
DISPLAY A: 4.0V DISPLAY B:-16.9V
Q12~Q14 METER A/B MUTE SEL.SW
LEVEL METER ADJ.
LEVEL METER MUTE
DPSS INPUT MODE SEL.SW
A or B REC.PLAY:-16.7V OTHERS:-11.7V
LINE A,B MUTE Q1~Q4
FF.REW.STOP : 3.9V
A DECK STOP & B DECK PLAY:-4.9V
REC.PLAY: -4.9V
IC5,IC6 Truth Table
CONTROL H L
DRIVER ON OFF
FL LEVEL METER DRIVER
IC4
DRIVER COMPARATER
MUTE CIRCUIT
BIAS CIRCUIT
INPUT AMP
REFERENCE AMP
BUFFER
MUTE
FL1
A DECK
B DECK
DECK B QUICK SENSOR
CN2 +4V(NON TANK)
REC MUTE B
REC MUTE A
-4.4V
+4.6V
GND
-17V
GND
CN3 Rch -17V Lch GND
CN4
CN5
CN1 -Vcc GND +Vcc Rch GND Lch GND Rch GND Lch
LINE B
LINE A
IN
OUT
L ch
R ch
LINE B MUTE
LINE A MUTE
LEVEL METER INPUT SW
LINE OUT A/B SELECT SW
LINE OUT A/B OUTPUT SW
IC5
IC6
VR1 22K(B)
VR7 RECVOL(A) 50K(A)
VR6 RECVOL(B) 50K(A)
INDEX SCAN
BLANK SEARCH
S24
S23
S21
S22
S19
S20
B-OFF-C DOLBY NR
REC-OFF-PLAY TIMER
REVERSE MODE
FWD PLAY: 3.2V REV PLAY: 4.0V
2-INPUT OR GATE
IC3
IC2
CN23
CN22
CN21
CN20
CN19
CN18
CN17
CN16
CN15
CN14
FWD REC SW
CASSEETE SW
PLAY STOP SW
FWD REV SENS
REV. REC SW



IC1
IC2,3
IC4
IC5,6
IC7

Q1~6
Q11~13,16,17,22
31,35,37,38,4
Q14,15,18~21,2
41
Q28,36
Q29,30,33,34
Q32
Q44

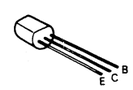
D1~14,16~37,4
62~72
D15
D38,40,73~76
D39,41
D54~61



IC1	: 7519HG-037-36
IC2,3	: MB84071BM or μPD4071BC
IC4	: HA12067NT
IC5,6	: MB84066BM or μPD4066BC
IC7	: M5218P or NJM4558D
Q1~6	: 2SD1302(S)
Q11~13,16,17,22~24,27, 31,35,37,38,40,42,43	: 2SC1740S(Q,R) or 2SC945(A),(Q,P)
Q14,15,18~21,25,26,39, 41	: 2SA933S(Q,R) or 2SA733A(Q,P)
Q28,36	: 2SK364(GR,BL)
Q29,30,33,34	: 2SC2060(Q,R) or 2SD863(E,F)
Q32	: 2SB772(Q,P)
Q44	: DTC114YFF
D1~14,16~37,42~53, 62~72	: 1SS133 or 1SS176
D15	: RD3.3E(B)
D38,40,73~76	: B30-1012-05
D39,41	: B30-1011-05
D54~61	: DSM1A1

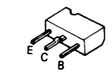
KX-949W(K)(2/2)

2SA733(A)
2SC2060
2SC945(A)
2SD1302
2SD863

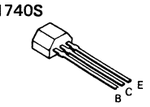


2SB772

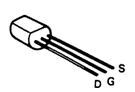
DTC114YFF



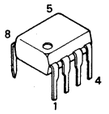
2SA933S
2SC1740S



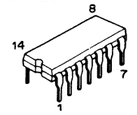
2SK364



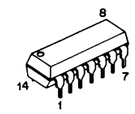
NJM4558D



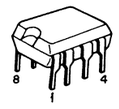
μPD4066BC
μPD4071BC



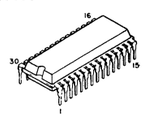
MB84066BM
MB84071BM



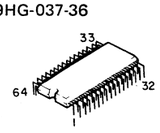
M5218P



HA12067NT



μPD7519HG-037-36



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

- DC voltages are as measured with a high impedance voltmeter with 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.
- Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Une cassette étant insérée en mode du lecture. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels. Les tensions c.c. du circuit de polarité doivent être mesurées. l'appareil étant en mode d'enregistrement.
- Die angegeben Gleichspannungswerte wurden bei eingesetzter Cassette in der Wiedergage mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig. Die angegeben Gleichspannungswerte der Vormagnetisierungsschaltung wurden in der Aufnahme-Betriebsart gemessen.

KX-949W

KENWOOD

PC BOARD

X29-1640-00

	B	C	E
Q14	–	–	4.0V(A) –16.9V(B)
Q20	–	–	–13.9V (REC, PLAY) 4.6V (OTHERS)
Q21	–	–	–3.6V (REC) 4.6V (OTHERS)
Q23	–	4.0V(A) –4.4V(B)	–
Q25	–	3.2V (FWD) 4.0V (REW)	–
Q29	–	13..6V	–
Q30	–	13.6V	–
Q32	13.0V (FF, REW) 0.1V (OTHERS)	–	13.2V (FF, REW) 12.3V (OTHERS)
Q37	0.6V	0.1V	–
Q38	0.7V	–	–
Q39	–	–	0V
Q40	0.6V	3.4V	–
Q43	–	2.7V	–
Q44	0.1V	–	–

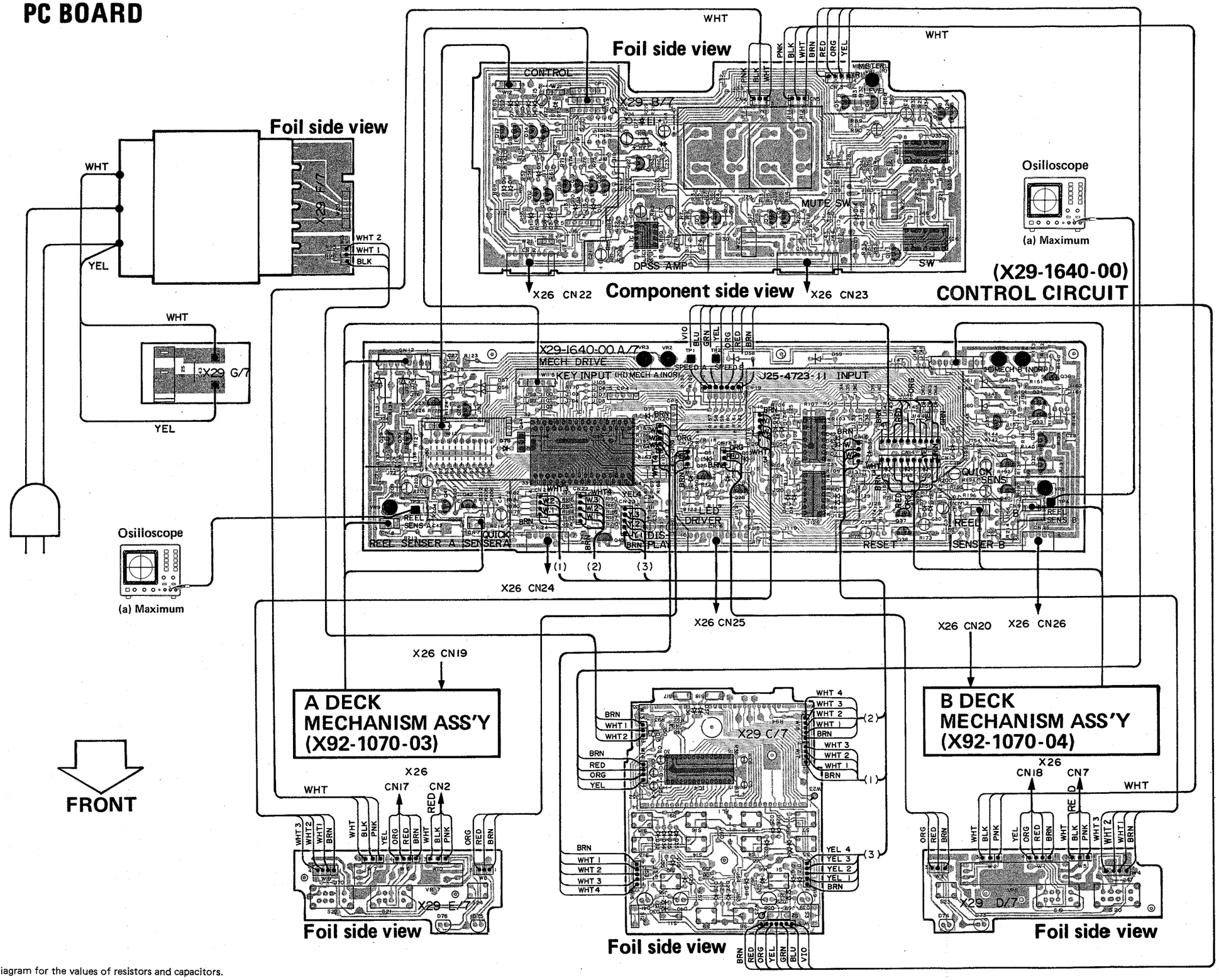
	D	G	S
Q28	11.4V	–	N 11.3V H 5.7V

IC4

1	–11.9V
2,3	–17V
28,29	–17V
30	–19V

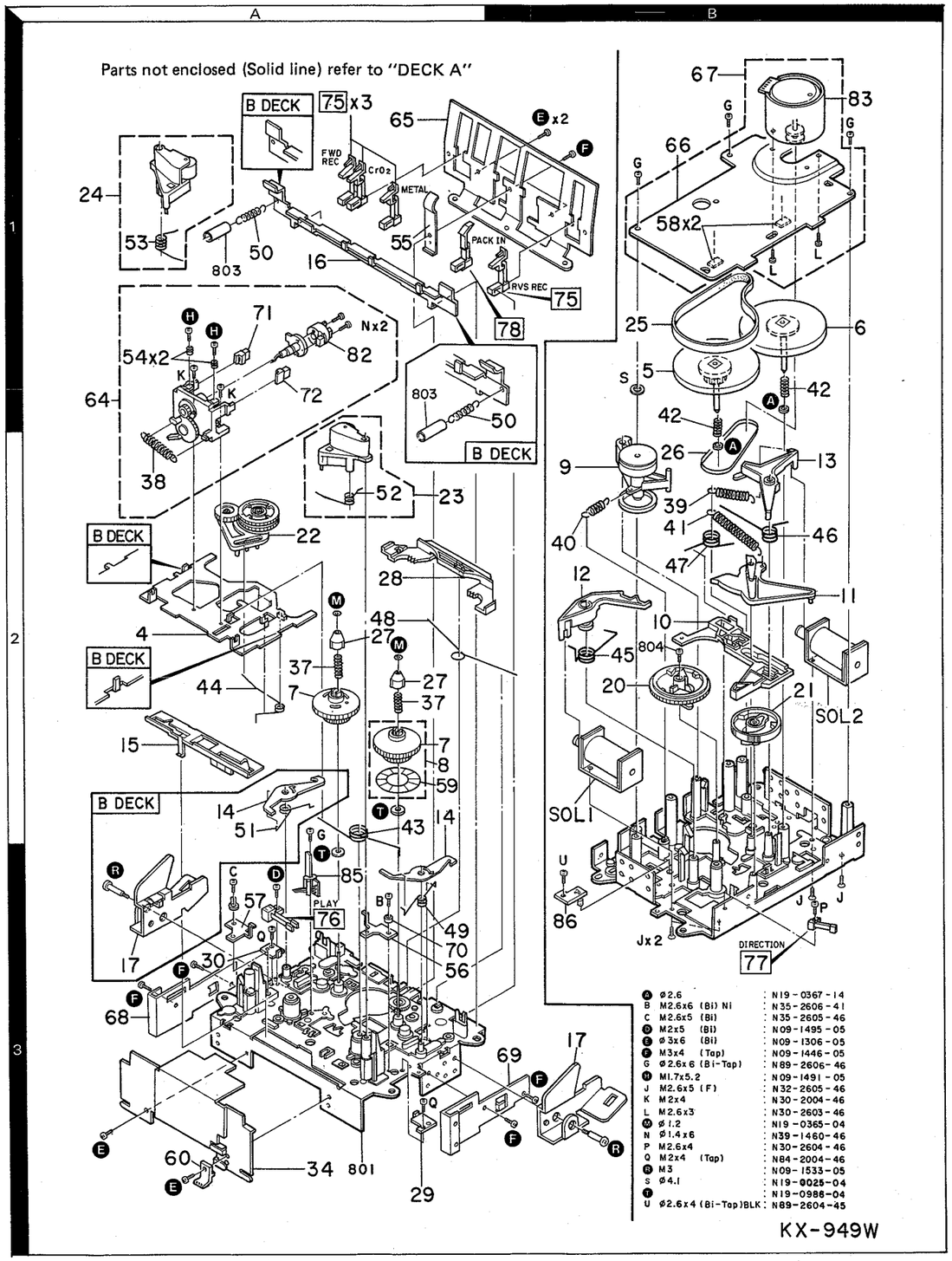
IC5, 6

7	–7.8V
14	7.9V



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

EXPLODED VIEW (MECHANISM)

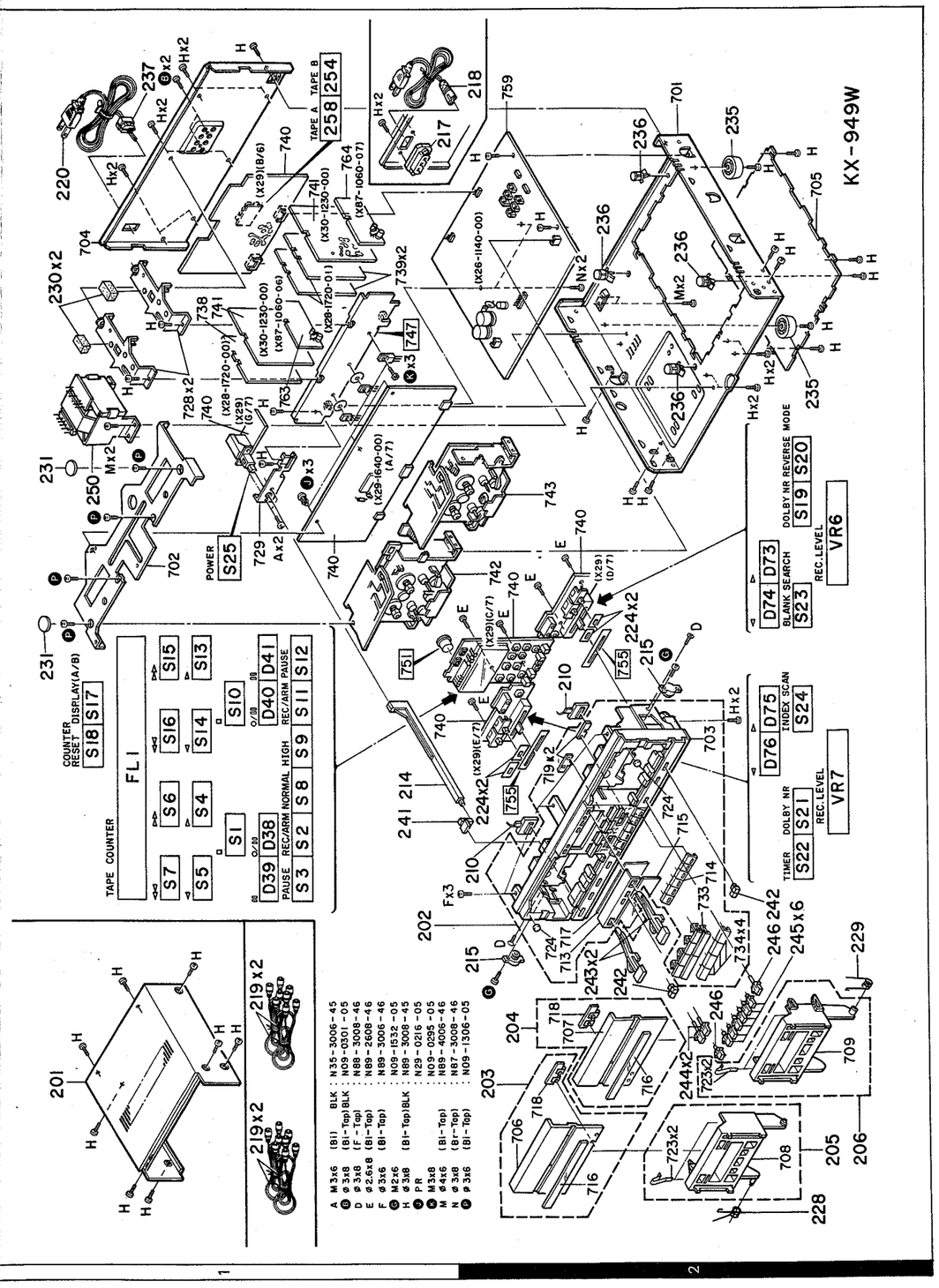


A	Ø2.6	: N19-0367-14
B	M2.6x6 (Bi) Ni	: N35-2606-41
C	M2.6x5 (Bi)	: N35-2605-46
D	M2x5 (Bi)	: N09-1495-05
E	Ø3x6 (Bi)	: N09-1306-05
F	M3x4 (Tap)	: N09-1446-05
G	Ø2.6x6 (Bi-Tap)	: N89-2606-46
H	MI.7x5.2	: N09-1491-05
J	M2.6x5 (F)	: N32-2605-46
K	M2x4	: N30-2004-46
L	M2.6x3	: N30-2603-46
M	Ø1.2	: N19-0365-04
N	Ø1.4x6	: N39-1460-46
P	M2.6x4	: N30-2604-46
Q	M2x4 (Tap)	: N84-2004-46
R	M3	: N09-1533-05
S	Ø4.1	: N19-0025-04
T		: N19-0988-04
U	Ø2.6x4 (Bi-Tap)BLK	: N89-2604-45

KX-949W

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

EXPLODED VIEW (UNIT)



A	M3x6 (Bi) BLK	: N35-3006-45
B	Ø3x8 (Bi-Tap)BLK	: N09-0501-05
D	Ø3x8 (F-Tap)	: N88-3008-46
E	Ø2.6x8 (Bi-Tap)	: N89-2608-46
F	Ø3x6 (Bi-Tap)	: N89-3006-46
G	M2x6	: N09-1532-05
H	Ø3x8 (Bi-Tap)BLK	: N89-3008-45
I	FR	: N29-0216-05
K	M3x8 (Bi-Tap)	: N09-0295-05
M	Ø4x6 (Bi-Tap)	: N89-4006-46
N	Ø3x8 (Bi-Tap)	: N89-3008-46
P	Ø3x6 (Bi-Tap)	: N09-1306-05

PARTS LIST

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes 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	Destination 仕向	Remarks 備考
			KX-949W			
201	1C	*	A01-1447-01	METALLIC CABINET		
202	1C	*	A20-4644-02	PANEL ASSY		
203	2C	*	A53-0767-03	CASSETTE LID ASSY (A)	UMUEE	
203	2C	*	A53-0769-03	CASSETTE LID ASSY (A)	T	
204	2C	*	A53-0768-03	CASSETTE LID ASSY (B)		
205	2C	*	A53-0773-03	CASSETTE HOLDER ASSY (A)		
206	2C	*	A53-0774-03	CASSETTE HOLDER ASSY (B)		
210	2C,2D		B30-1036-05	LED(SLF-601C)		
-			B46-0094-03	WARRANTY CARD	UUE	
-			B46-0095-03	WARRANTY CARD	UUE	
-			B46-0122-13	WARRANTY CARD	E	
-			B46-0123-03	WARRANTY CARD	T	
-		*	B50-6036-00	INSTRUCTION MANUAL (ENGLISH)	UMUEE	
-		*	B50-6037-00	INSTRUCTION MANUAL (FRENCH)	ME	
-		*	B50-6038-00	INSTRUCTION MANUAL (SPANISH)	M	
-		*	B50-6039-00	INSTRUCTION MANUAL (ENGLISH)	T	
-		*	B50-6040-00	INSTRUCTION MANUAL (G,D,I)	E	
-			B58-0223-04	CAUTION CARD (PRE-SET 120V)	U	
-			B58-0513-04	CAUTION CARD (PRESET220-240)	UE	
-			B59-0092-00	SERVICE DIRECTORY	UUE	
214	1D		D21-1104-03	EXTENSION SHAFT		
215	2C,2D		D39-0176-05	DAMPER		
217			E03-0102-25	AC INLET	UMUEE	
218			E30-1305-15	AC POWER CORD (INLET)	UMUE	
218			E30-1329-05	AC POWER CORD (INLET)	E	
219	1C		E30-0505-05	AUDIO CORD		
220	1E		E30-1416-05	AC POWER CORD	T	
224	2D		F19-0316-04	BLIND PLATE		
228	2C	*	G01-1745-04	TORSION COIL SPRING (A)		
229	2C	*	G01-1746-04	TORSION COIL SPRING (B)		
230	1E		G11-0180-04	SOFT TAPE (40X20X15)		
231	2D	*	G11-1160-04	CUSHION (Ø20X/10.5X4)		
-		*	H01-5688-04	ITEM CARTON CASE	UMUEE	
-		*	H01-5689-04	ITEM CARTON CASE	T	
-		*	H10-1831-02	POLYSTYRENE FOAMED FIXTURE		
-		*	H10-1832-02	POLYSTYRENE FOAMED FIXTURE		
-			H20-0417-04	PROTECTION COVER(460X370X360)	M	
-			H25-0223-04	PROTECTION BAG (750X350)	UUETE	
-			H25-0232-04	PROTECTION BAG (235X350)		
235	2E		J02-0129-05	FOOT		
236	2E	*	J19-2598-05	HOLDER		
237	1E		J42-0083-05	POWER CORD BUSHING	T	
-			J61-0307-05	WIRE BAND		
241	1D	*	K27-1552-04	KNOB (BUTTON) POWER		
242	2C	*	K27-1553-04	KNOB (LEVER) REC LEVEL		
243	2C	*	K29-2261-04	KNOB ASSY EJECT		
244	2C	*	K29-2270-04	KNOB (BUTTON) C.R,A/B		
245	2C	*	K29-2271-04	KNOB (BUTTON) REC,PAUSE		
246	2C	*	K29-2272-04	KNOB (BUTTON) INDEX SCAN		

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

⚠ indicates safety critical components.

X-949W

PARTS LIST

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

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格			Destination 仕向	Remarks 備考
250	1D	*	L01-6884-05	POWER TRANSFORMER				
B	1E		N09-0301-05	TAPTITE SCREW	(3X8)			
G	2C,2D	*	N09-1532-05	TAPTITE SCREW	(M2X6)			
J	1D		N29-0216-05	RIVET				
P	1D		N09-1306-05	TAPPING SCREW	(3X6)			
CASSETTE (X26-1140-00)								
C1 ,2			CQ09FS1H681JZS	POLYSTY	680PF	J		
C3 ,4			CQ09FS1H121JZS	POLYSTY	120PF	J		
C5 ,6			CC45FSL1H101J	CERAMIC	100PF	J		
C11			CE04KW1A221M	ELECTRO	220UF	10WV		
C12			C91-0700-05	CERAMIC	0.1UF	J		
C13			CE04KW1V100M	ELECTRO	10UF	35WV		
C14 ,15			CE04KW1HR47M	ELECTRO	0.47UF	50WV		
C16 ,17			CE04KW1A101M	ELECTRO	100UF	10WV		
C18			CE04KW1V100M	ELECTRO	10UF	35WV		
C19			CE04KW1A101M	ELECTRO	100UF	10WV		
C20			C91-0776-05	POLYPRO	1800PF	J		
C21 ,22			CE04KW1V100M	ELECTRO	10UF	35WV		
C24			CF92FV1H562J	MF	5600PF	J		
C25			CF92FV1H123J	MF	0.012UF	J		
C26			CF92FV1H472J	MF	4700PF	J		
C27		*	CE04KW0J331M	ELECTRO	330UF	6.3WV		
C28			CE04KW1C470M	ELECTRO	47UF	16WV		
C29			CE04KW1C101M	ELECTRO	100UF	16WV		
C30			CE04KW0J102M	ELECTRO	1000UF	6.3WV		
C31 ,32			CK45FF1H223Z	CERAMIC	0.022UF	Z		
C33			CE04KW1V100M	ELECTRO	10UF	35WV		
C34			CE04KW1A221M	ELECTRO	220UF	10WV		
C35			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C36			CE04KW1A221M	ELECTRO	220UF	10WV		
C37			CE04KW1V100M	ELECTRO	10UF	35WV		
C38			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C39 ,40			CE04KW1E221M	ELECTRO	220UF	25WV		
C41 ,42			CE04KW1E102M	ELECTRO	1000UF	25WV		
C43			CE04KW0J471M	ELECTRO	470UF	6.3WV		
C44			CE04KW1V100M	ELECTRO	10UF	35WV		
C45		*	CE04KW0J331M	ELECTRO	330UF	6.3WV		
C46		*	CE04KW1C332M	ELECTRO	3300UF	16WV		
C47			CE04KW1H221M	ELECTRO	220UF	50WV		
C48			CE04KW1E331M	ELECTRO	330UF	25WV		
C49 ,50			CE04KW1V100M	ELECTRO	10UF	35WV		
C51			CE04KW1C101M	ELECTRO	100UF	16WV		
C52			CE04KW1E101M	ELECTRO	100UF	25WV		
C53			CE04KW1E222M	ELECTRO	2200UF	25WV		
C54 ,55			CK45FF1H223Z	CERAMIC	0.022UF	Z		
C56 ,57			CE04KW1V100M	ELECTRO	10UF	35WV		
C101,102		*	CQ09FS1H471JZS	POLYSTY	470PF	J		
C103,104			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C105,106			CC45FSL1H101J	CERAMIC	100PF	J		
C107,108			CK45FB1H222K	CERAMIC	2200PF	K		
C109,110			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C111			CE04KW1V100M	ELECTRO	10UF	35WV		
C112,113			CE04KW1HR47M	ELECTRO	0.47UF	50WV		
C114,115			CE04KW1A101M	ELECTRO	100UF	10WV		

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C116			C91-0776-05	POLYPRO 1800PF J		
C117,118			CE04KW1V100M	ELECTRO 10UF 35WV		
C120			CF92FV1H562J	MF 5600PF J		
C121			CF92FV1H123J	MF 0.012UF J		
C122			CE04KW1V100M	ELECTRO 10UF 35WV		
C123			CE04KW1A101M	ELECTRO 100UF 10WV		
C124		*	CE04KW0J331M	ELECTRO 330UF 6.3WV		
C125			CE04KW1C470M	ELECTRO 47UF 16WV		
C126			CE04KW1C101M	ELECTRO 100UF 16WV		
L1 -4			L39-0107-05	TRAP COIL		
L5 ,6		*	L32-0329-15	BIAS OSCILATING COIL		
L7 -10			L39-0107-05	TRAP COIL		
K	1E		N09-0295-05	HEXAGON HEAD BOLT(M3X8,+)		
R29 ,30			RS14KB3D181J	FL-PROOF RS 180 J 2W		
R51 ,52			RS14KB3A820J	FL-PROOF RS 82 J 1W		
R54			RS14KB3A220J	FL-PROOF RS 22 J 1W		
R70			RS14KB3D331J	FL-PROOF RS 330 J 2W		
R83			RS14KB3A152J	FL-PROOF RS 1.5K J 1W		
R85			RS14KB3D470J	FL-PROOF RS 47 J 2W		
R87		*	RS14KB3D681J	FL-PROOF RS 680 J 2W		
R88 ,89			RS14KB3D391J	FL-PROOF RS 390 J 2W		
R98 ,99			RD14GB2E1R0J	FL-PROOF RD 1.0 J 1/4W		
R153,154			RS14KB3A820J	FL-PROOF RS 82 J 1W		
R156			RS14KB3A220J	FL-PROOF RS 22 J 1W		
VR1 -4			R12-5046-05	TRIMMING POT.(100K) BIAS OSC		
D1 -3			1SS133	DIODE		
D1 -3			1SS176	DIODE		
D4			RD10JS(B)	ZENER DIODE		
D5 -14			1SS133	DIODE		
D5 -14			1SS176	DIODE		
D19 ,20			1SS133	DIODE		
D19 ,20			1SS176	DIODE		
D21		*	RD4.3E(B)	ZENER DIODE		
D22			RD6.2E(B2)	ZENER DIODE		
D23			RD15E(B3)	ZENER DIODE		
D24 -29			1SS133	DIODE		
D24 -29			1SS176	DIODE		
D30			DSM1A1	DIODE		
D31		*	RD4.3E(B)	ZENER DIODE		
D32			RD5.1E(B2)	ZENER DIODE		
D33			RD18E(B2)	ZENER DIODE		
D34 ,35			DSM1A1	DIODE		
D36 ,37			W02-5008L	DIODE		
D51 -64			1SS133	DIODE		
D51 -64			1SS176	DIODE		
D65			RD10JS(B)	ZENER DIODE		
IC1			MB84066BM	IC(BILATERAL SWITCH X4)		
IC1			UPD4066BC	IC(BILATERAL SWITCH X4)		
IC2			TD62554S	IC(4CH TRANSISTOR ARRAY)		
Q1 -6			2SC1845(F,E)	TRANSISTOR		
Q7 ,8			2SA733(A)(Q,P)	TRANSISTOR		
Q7 ,8			2SA933S(Q,R)	TRANSISTOR		
Q7 ,8			2SA999(E,F)	TRANSISTOR		

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Q11			2SC1740S(Q,R)	TRANSISTOR		
Q11			2SC2320(E,F)	TRANSISTOR		
Q11			2SC945(A)(Q,P)	TRANSISTOR		
Q12			2SA733(A)(Q,P)	TRANSISTOR		
Q12			2SA933S(Q,R)	TRANSISTOR		
Q12			2SA999(E,F)	TRANSISTOR		
Q13			2SA992(F,E)	TRANSISTOR		
Q14			2SD1292(Q,R)	TRANSISTOR		
Q14			2SD863(E,F)	TRANSISTOR		
Q15			2SC1740S(Q,R)	TRANSISTOR		
Q15			2SC2320(E,F)	TRANSISTOR		
Q15			2SC945(A)(Q,P)	TRANSISTOR		
Q16			2SA954(L,K)	TRANSISTOR		
Q17 ,18			2SA733(A)(Q,P)	TRANSISTOR		
Q17 ,18			2SA933S(Q,R)	TRANSISTOR		
Q17 ,18			2SA999(E,F)	TRANSISTOR		
Q19		*	2SK364(BL)	FET		
Q21			2SC1740S(Q,R)	TRANSISTOR		
Q21			2SC2320(E,F)	TRANSISTOR		
Q21			2SC945(A)(Q,P)	TRANSISTOR		
Q22			2SA733(A)(Q,P)	TRANSISTOR		
Q22			2SA933S(Q,R)	TRANSISTOR		
Q22			2SA999(E,F)	TRANSISTOR		
Q23			2SC1740S(Q,R)	TRANSISTOR		
Q23			2SC2320(E,F)	TRANSISTOR		
Q23			2SC945(A)(Q,P)	TRANSISTOR		
Q24			2SA733(A)(Q,P)	TRANSISTOR		
Q24			2SA933S(Q,R)	TRANSISTOR		
Q24			2SA999(E,F)	TRANSISTOR		
Q25			2SD882*1(Q,P)	TRANSISTOR		
Q26 ,27			2SB772*1(Q,P)	TRANSISTOR		
Q28			2SD882(Q,P)	TRANSISTOR		
Q29			2SD1266(Q,P)	TRANSISTOR		
Q30			2SC1740S(Q,R)	TRANSISTOR		
Q30			2SC2320(E,F)	TRANSISTOR		
Q30			2SC945(A)(Q,P)	TRANSISTOR		
Q51 -56			2SC1845(F,E)	TRANSISTOR		
Q61			2SC1740S(Q,R)	TRANSISTOR		
Q61			2SC2320(E,F)	TRANSISTOR		
Q61			2SC945(A)(Q,P)	TRANSISTOR		
Q62			2SA733(A)(Q,P)	TRANSISTOR		
Q62			2SA933S(Q,R)	TRANSISTOR		
Q62			2SA999(E,F)	TRANSISTOR		
Q63			2SA992(F,E)	TRANSISTOR		
Q64			2SD1292(Q,R)	TRANSISTOR		
Q64			2SD863(E,F)	TRANSISTOR		
Q65			2SC1740S(Q,R)	TRANSISTOR		
Q65			2SC2320(E,F)	TRANSISTOR		
Q65			2SC945(A)(Q,P)	TRANSISTOR		
Q66			2SA954(L,K)	TRANSISTOR		
Q67 ,68			2SA733(A)(Q,P)	TRANSISTOR		
Q67 ,68			2SA933S(Q,R)	TRANSISTOR		
Q67 ,68			2SA999(E,F)	TRANSISTOR		
Q69			2SC1740S(Q,R)	TRANSISTOR		
Q69			2SC2320(E,F)	TRANSISTOR		

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Q69			2SC945(A)(Q,P)	TRANSISTOR		
Q70		*	2SK364(BL)	FET		
Q71			2SC1740S(Q,R)	TRANSISTOR		
Q71			2SC2320(E,F)	TRANSISTOR		
Q71			2SC945(A)(Q,P)	TRANSISTOR		
RECORD (X28-1720-00)						
C1 ,2			CE04KW1V100M	ELECTRO 10UF 35WV		
C3 ,4			CF92FV1H822J	MF 8200PF J		
C5 ,6			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C7 ,8			CE04KW1V100M	ELECTRO 10UF 35WV		
C9 ,10			CC45FSL1H470J	CERAMIC 47PF J		
C11 ,12			CF92FV1H124J	MF 0.12UF J		
C13 ,14			CF92FV1H562J	MF 5600PF J		
C15 ,16			CQ09FS1H561J	POLYSTY 560PF J		
C17 ,18			CF92FV1H123J	MF 0.012UF J		
C19 ,20			CF92FV1H472J	MF 4700PF J		
C21 ,22			CF92FV1H153J	MF 0.015UF J		
C23 ,24			CF92FV1H822J	MF 8200PF J		
C25 ,26			CE04KW1V100M	ELECTRO 10UF 35WV		
L1 ,2			L40-1238-29	SMALL FIXED INDUCTOR(12MH,G)		
VR1 ,2			R12-3101-05	TRIMMING POT.(22K) REC LEVEL		
IC1			M5218P	IC(OP AMP X2)		
Q1 -8			2SC1685(R,S)	TRANSISTOR		
Q1 -8			2SC1740S(Q,R)	TRANSISTOR		
Q1 -8			2SC945(A)(Q,P)	TRANSISTOR		
RECORD (X28-1720-01)						
C1 ,2			CE04KW1V100M	ELECTRO 10UF 35WV		
C3			CF92FV1H822J	MF 8200PF J		
C4			CF92FV1H272J	MF 2700PF J		
C5 ,6			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C7 ,8			CE04KW1V100M	ELECTRO 10UF 35WV		
C9 ,10			CC45FSL1H470J	CERAMIC 47PF J		
C11			CF92FV1H124J	MF 0.12UF J		
C12			CF92FV1H122J	MF 1200PF J		
C13			CF92FV1H562J	MF 5600PF J		
C14			CF92FV1H272J	MF 2700PF J		
C15			CQ09FS1H561J	POLYSTY 560PF J		
C16			CQ09FS1H331J	POLYSTY 330PF J		
C17			CF92FV1H123J	MF 0.012UF J		
C18			CF92FV1H392J	MF 3900PF J		
C19			CF92FV1H472J	MF 4700PF J		
C20			CF92FV1H392J	MF 3900PF J		
C21			CF92FV1H153J	MF 0.015UF J		
C22			CF92FV1H562J	MF 5600PF J		
C23			CF92FV1H822J	MF 8200PF J		
C24			CF92FV1H562J	MF 5600PF J		
C26			CE04KW1V100M	ELECTRO 10UF 35WV		
C27			CF92FV1H102J	MF 1000PF J		
L1			L40-1238-29	SMALL FIXED INDUCTOR(12MH,G)		
L2		*	L40-3928-29	SMALL FIXED INDUCTOR(3.9MH,G)		
VR1			R12-3101-05	TRIMMING POT.(22K) REC LEVEL		

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IC1		*	M5201P	IC(OP AMP X2)		
Q1 -8			2SC1685(R,S)	TRANSISTOR		
Q1 -8			2SC1740S(Q,R)	TRANSISTOR		
Q1 -8			2SC945(A)(Q,P)	TRANSISTOR		
CONTROL CIRCUIT (X29-1640-00)						
D38	1D		B30-1012-05	LED(SLP-981C-50) REC ARM,A		
D39	1D		B30-1011-05	LED(SLP-481C-50) PAUSE,A		
D40	1D		B30-1012-05	LED(SLP-981C-50) REC ARM,B		
D41	1D		B30-1011-05	LED(SLP-481C-50) PAUSE,B		
D73 -76	1D		B30-1012-05	LED(SLP-981C-50) FF,REW		
C1 ,2			CE04KW1H0R1M	ELECTRO 0.1UF 50WV		
C3 ,4		*	CE04JW1H0R1M	ELECTRO 0.1UF 50WV		
C5 ,6			CE04JW1C4R7M	ELECTRO 4.7UF 16WV		
C10			CE04JW1C100M	ELECTRO 10UF 16WV		
C11 -14			CK45FF1H103Z	CERAMIC 0.010UF Z		
C15			CE04KW1A470M	ELECTRO 47UF 10WV		
C16			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C17 ,18			CE04KW1V100M	ELECTRO 10UF 35WV		
C19 ,20			CC45FSL1H101J	CERAMIC 100PF J		
C21			CE04KW1HR22M	ELECTRO 0.22UF 50WV		
C22			CF92FV1H563J	MF 0.056UF J		
C23			CK45FB1H681K	CERAMIC 680PF K		
C24			CF92FV1H332J	MF 3300PF J		
C25 -28			CK45FF1H103Z	CERAMIC 0.010UF Z		
C29 ,30			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C31			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C32			CE04KW1V100M	ELECTRO 10UF 35WV		
C33			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C34			C91-0700-05	CERAMIC 0.1UF J		
C35			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C36			CE04KW1V100M	ELECTRO 10UF 35WV		
C37			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C38			CK45FF1H103Z	CERAMIC 0.010UF Z		
C39			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C40			CE04KW1V100M	ELECTRO 10UF 35WV		
C41			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C42			CK45FF1H103Z	CERAMIC 0.010UF Z		
⚠ C43			C91-0023-05	CERAMIC 0.01UF AC250V	UMUE	
⚠ C43			C91-0647-05	CERAMIC 0.01UF P	TE	
C44			CE04KW1A470M	ELECTRO 47UF 10WV		
254	1E	*	E13-0450-05	PHONO JACK (4P)TAPE B		
258	1E		E13-0496-05	PHONO JACK (4P)TAPE A		
			F29-0072-05	INSULATING COVER	TE	
X1			L78-0209-05	RESONATOR (4.194000MHZ)		
CP1			R90-0233-05	MULTI-COMP 10KX4 J 1/6W		
CP2 ,3			R90-0291-05	MULTI-COMP 100KX4 J 1/6W		
CP4 ,5			R90-0233-05	MULTI-COMP 10KX4 J 1/6W		
R131			RS14KB3D270J	FL-PROOF RS 27 J 2W		
R134			RS14KB3D560J	FL-PROOF RS 56 J 2W		
R147			RS14KB3D270J	FL-PROOF RS 27 J 2W		
R148			RS14KB3D560J	FL-PROOF RS 56 J 2W		
VR1			R12-3101-05	TRIMMING POT. (22K) METER LEVEL		
VR2 -5			R12-3100-05	TRIMMING POT. (10K) MECHA		

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VR6 ,7	2D	*	R13-4034-05	POTENTIOMETER(50K) REC LEVEL		
VR8 ,9			R12-3100-05	TRIMMING POT.(10K) REEL SENSOR		
S1	1D		S40-1064-05	PUSH SWITCH (STOP) A		
S2 ,3	1C,1D		S40-1086-05	PUSH SWITCH (PAUSE,REC/ARM) A		
S4 -10	1C,1D		S40-1064-05	PUSH SWITCH (TAPE SPEED) A		
S11 ,12	1D		S40-1086-05	PUSH SWITCH (PAUSE,REC/ARM) B		
S13 -16	1D		S40-1064-05	PUSH SWITCH (TAPE SPEED) B		
S17 ,18	1D		S40-1086-05	PUSH SWITCH (COUNT RESET,DISP		
S19 -22	2C,2D		S31-2062-15	SLIDE SWITCH (TIMER,DOL)		
S23 ,24	2D		S40-1064-05	PUSH SWITCH (IND SCAN)		
⚠ S25	1D		S40-1066-05	PUSH SWITCH (POWER TYPE)		
D1 -14			1SS133	DIODE		
D1 -14			1SS176	DIODE		
D15		*	RD3.3E(B)	ZENER DIODE		
D16 -37			1SS133	DIODE		
D16 -37			1SS176	DIODE		
D42 -45			1SS176	DIODE		
D42 -53			1SS133	DIODE		
D54 -61			DSM1A1	DIODE		
D62 -72			1SS133	DIODE		
D77 ,78			1SS133	DIODE		
D79			1SS133	DIODE		
D79			1SS176	DIODE		
FL1		*	FIP6AM21	FLUORESCENT INDICATOR TUBE		
IC1			7519HG-037-36	IC(MICROPROCESSOR)		
IC2 ,3			MB84071BM	IC(OR X4)		
IC2 ,3			UPD4071BC	IC(OR X4)		
IC4		*	HA12067NT	IC(FL DRIVER)		
IC5 ,6			MB84066BM	IC(BILATERAL SWITCH X4)		
IC5 ,6			UPD4066BC	IC(BILATERAL SWITCH X4)		
IC7			M5218P	IC(OP AMP X2)		
IC7			NJM4558D	IC(OP AMP X2)		
Q1 -6			2SD1302(S)	TRANSISTOR		
Q11 -13			2SC1740S(Q,R)	TRANSISTOR		
Q11 -13			2SC945(A)(Q,P)	TRANSISTOR		
Q14 ,15			2SA733(A)(Q,P)	TRANSISTOR		
Q14 ,15			2SA933S(Q,R)	TRANSISTOR		
Q16 ,17			2SC1740S(Q,R)	TRANSISTOR		
Q16 ,17			2SC945(A)(Q,P)	TRANSISTOR		
Q18 -21			2SA733(A)(Q,P)	TRANSISTOR		
Q18 -21			2SA933S(Q,R)	TRANSISTOR		
Q22 -24			2SC1740S(Q,R)	TRANSISTOR		
Q22 -24			2SC945(A)(Q,P)	TRANSISTOR		
Q25 ,26			2SA733(A)(Q,P)	TRANSISTOR		
Q25 ,26			2SA933S(Q,R)	TRANSISTOR		
Q27			2SC1740S(Q,R)	TRANSISTOR		
Q27			2SC945(A)(Q,P)	TRANSISTOR		
Q28			2SK364(GR,BL)	FET		
Q29 ,30			2SC2060(Q,R)	TRANSISTOR		
Q29 ,30			2SD863(E,F)	TRANSISTOR		
Q31			2SC1740S(Q,R)	TRANSISTOR		
Q31			2SC945(A)(Q,P)	TRANSISTOR		
Q32			2SB772(Q,P)	TRANSISTOR		
Q33 ,34			2SC2060(Q,R)	TRANSISTOR		

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Q33 ,34			2SD863(E,F)	TRANSISTOR				
Q35			2SC1740S(Q,R)	TRANSISTOR				
Q35			2SC945(A)(Q,P)	TRANSISTOR				
Q36			2SK364(GR,BL)	FET				
Q37 ,38			2SC1740S(Q,R)	TRANSISTOR				
Q37 ,38			2SC945(A)(Q,P)	TRANSISTOR				
Q39			2SA733(A)(Q,P)	TRANSISTOR				
Q39			2SA933S(Q,R)	TRANSISTOR				
Q40			2SC1740S(Q,R)	TRANSISTOR				
Q40			2SC945(A)(Q,P)	TRANSISTOR				
Q41			2SA733(A)(Q,P)	TRANSISTOR				
Q41			2SA933S(Q,R)	TRANSISTOR				
Q42 ,43			2SC1740S(Q,R)	TRANSISTOR				
Q44			DTC114YFF	DIGITAL TRANSISTOR				
DOLBY NOISE REDUCTION (X30-1230-00)								
C1 -4		*	CE04KW1H2R2MEL	ELECTRO	2.2UF	50WV		
C5 -8			CE04KW1V100MEL	ELECTRO	10UF	35WV		
C9 ,10			CF92FV1H472J	MF	4700PF	J		
C11 ,12			CF92FV1H474J	MF	0.47UF	J		
C13 ,14			CF92FV1H154J	MF	0.15UF	J		
C15 ,16			CF92FV1H153J	MF	0.015UF	J		
C17 ,18			CF92FV1H224J	MF	0.22UF	J		
C19 ,20			CF92FV1H683J	MF	0.068UF	J		
C21 ,22			CF92FV1H473J	MF	0.047UF	J		
C23 ,24			CF92FV1H682J	MF	6800PF	J		
C25 ,26			CF92FV1H103J	MF	0.010UF	J		
C27 ,28			CE04KW1V100MEL	ELECTRO	10UF	35WV		
C29 ,30			CF92FV1H152J	MF	1500PF	J		
C31 ,32			CF92FV1H122J	MF	1200PF	J		
C33 ,34		*	CE04KW1A470MEL	ELECTRO	47UF	10WV		
L1 ,2			L79-0189-05	LC FILTER				
L3 ,4			L39-0108-05	TRAP COIL				
IC1		*	CX20187	IC(DOLBY B/C NOISE REDUCT X2)				
Q1 -4			2SC1740S(Q,R)	TRANSISTOR				
Q1 -4			2SC945(A)(Q,P)	TRANSISTOR				
PLAYBACK AMPLIFIER (X87-1060-06, -07)								
C1 ,2		*	CQ09FS1H151JZS	POLYSTY	150PF	J		
C1 ,2		*	CQ09FS1H821JZS	POLYSTY	820PF	J		
C3 ,4			CE04KW1H2R2M	ELECTRO	2.2UF	50WV		
C5 ,6			CK45FB1H391K	CERAMIC	390PF	K		
C7 ,8			CE04KW1A470M	ELECTRO	47UF	10WV		
C9 ,10			CF92FV1H822J	MF	8200PF	J		
C11 ,12			CE04KW1V4R7M	ELECTRO	4.7UF	35WV		
C13 ,14			CF92FV1H183J	MF	0.018UF	J		
C15			CE04KW1C330M	ELECTRO	33UF	16WV		
VR1 ,2			R12-3101-05	TRIMMING POT.(22K) PB LEVEL				
IC1			UPC1228HA	IC(PREAMP FOR TAPE EQ X2)				
Q1 ,2			2SC1685(R,S)	TRANSISTOR				
Q1 ,2			2SC1740S(Q,R)	TRANSISTOR				
MECHANISM ASS'Y (X92-1070-03) : A (X92-1070-04) : B								
4	2A	*	A11-0152-03	SUB CHASSIS (R EL)				
4	2A	*	A11-0159-03	SUB CHASSIS (R ER)				

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5	1B	*	D01-0066-05	FLYWHEEL ASSY		
6	1B	*	D01-0067-05	FLYWHEEL ASSY		
7	2A	*	D03-0236-04	REEL DISK		
8	2A	*	D03-0244-05	REEL DISK ASSY		
9	2B	*	D10-1404-05	ARM ASSY (F ARM)		
10	2B	*	D10-1405-03	SLIDER (FUNCTION)		
11	2B	*	D10-1406-03	ARM (DIRECTION)		
12	2B	*	D10-1407-03	ARM (FD TRIGGER)		
13	2B	*	D10-1408-03	ARM (FR TRIGGER)		
14	2A	*	D10-1409-04	ARM (LOCK)		
15	2A	*	D10-1410-03	SLIDER (DIRECTION)		
16	1A	*	D10-1540-03	LEVER (A)		
16	1A	*	D10-1557-03	LEVER (B)		
17	3B	*	D10-1541-04	LEVER (HD) A		
17	3A	*	D10-1542-04	LEVER (HD) B		
20	2B	*	D13-0266-12	GEAR (FD TRIGGER)		
21	2B	*	D13-0267-02	GEAR (FR TRIGGER)		
22	2A	*	D14-0121-05	IDLER ASSY		
23	2A	*	D14-0122-03	PINCH ROLLER ASSY (R)		
24	1A	*	D14-0123-03	PINCH ROLLER ASSY (L)		
25	1B	*	D16-0115-04	BELT (REVERSE)		
26	2B	*	D16-0116-04	BELT		
27	2A	*	D19-0073-04			
28	2A		D30-0013-03	BRAKE		
29	3A	*	D32-0137-04	STOPPER		
30	3A	*	D32-0138-04	STOPPER		
34	3A	*	F10-0569-04	SHIELDING PLATE		
37	2A	*	G01-1672-04	COMPRESSION SPRING(HEAD RETURN		
38	2A	*	G01-1666-08	EXTENSION SPRING (DIRECTION)		
39	2B	*	G01-1667-04	EXTENSION SPRING (FR TRIGGER		
40	2B	*	G01-1668-04	EXTENSION SPRING (F ARM)		
41	2B	*	G01-1669-04	EXTENSION SPRING (DIRECTION SP		
42	1B	*	G01-1671-04	COMPRESSION SPRING		
43	2A	*	G01-1676-04	TORSION COIL SPRING		
44	2A	*	G01-1677-04	TORSION COIL SPRING(FD TRIGGER		
45	2B	*	G01-1678-04	TORSION COIL SPRING(FRSP)		
46	2B	*	G01-1679-04	TORSION COIL SPRING		
47	2B	*	G01-1680-04	TORSION COIL SPRING		
48	2A	*	G01-1681-14	TORSION COIL SPRING(BRAKE)		
49	3A	*	G01-1682-04	TORSION COIL SPRING(ARM LOCK,R		
50	1A	*	G01-1744-04	EXTENSION SPRING (LOCK LVR HD		
51	2A	*	G01-1743-04	TORSION COIL SPRING(ARM LOCK,L		
52	2A	*	G01-1752-04	TORSION COIL SPRING(R)		
53	1A	*	G01-1753-04	TORSION COIL SPRING(L)		
54	1A		G01-1758-08	COMPRESSION SPRING		
55	1A		G02-0108-04	FLAT SPRING		
56	3A	*	G02-0361-14	FLAT SPRING (PANEL,R)		
57	3A	*	G02-0362-04	FLAT SPRING (PANEL,L)		
58	1B		G16-0108-04	SHEET		
59	2A	*	G16-0109-08	SHEET		
60	3A	*	J19-2644-04	HOLDER		
64	1A	*	J19-2528-05	HOLDER ASSY		
65	1A	*	J21-3624-04	SWITCH MOUNTING HARDWARE		

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66	1B		J21-3625-04	FLYWHEEL MOUNTING HARDWARE		
67	1B	*	J21-3701-03	MOUNTING HARDWARE ASSY		
68	3A	*	J21-3706-04	MOUNTING HARDWARE (HD,L)		
69	3B	*	J21-3707-04	MOUNTING HARDWARE (HD,R)		
70	3A	*	J31-0259-05	COLLAR		
71	1A	*	J90-0159-08	GUIDE (HOLDER ASSY)		
72	1A	*	J90-0158-08	GUIDE (HOLDER ASSY)		
-			J61-0054-05	WIRE BAND		
-			J61-0307-05	WIRE BAND		
A	1B,2B		N19-0367-14	FLAT WASHER (Ø2.6)		
D	3A	*	N09-1495-05	MACHINE SCREW (M2X5)		
E	3A,1B		N09-1306-05	TAPPING SCREW (3X6)		
F	1B		N09-1446-05	SEMS (TAPTITE SCREW) M3X4)		
H	1A	*	N09-1491-05	MACHINE SCREW (M1.7X5.2)		
M	2A		N19-0365-04	FLAT WASHER (Ø1.2)		
R	3A,3B	*	N09-1533-05	STEPPED SCREW (M3)		
T	2A,3A	*	N19-0986-04	FLAT WASHER (Ø1.7)		
75	1A	*	S46-1029-25	LEAF SWITCH (TAPE SEL)		
76	3A		S46-1046-05	LEAF SWITCH (PLAY)		
77	3B	*	S46-1068-05	LEAF SWITCH (DIRECTION)		
78	1B	*	S46-1075-05	LEAF SWITCH		
82	1A	*	T39-0002-05	RECORD/PLAYBACK ERASE HEAD		
83	1B		T42-0084-04	MOTOR ASSY		
85	3A	*	T95-0027-05	OPTO ISOLATOR (SENSOR POST)		
86	3B	*	T95-0028-05	OPTO ISOLATOR		
SOL1	2B	*	T94-0084-05	SOLENOID COIL		
SOL2	2B	*	T94-0086-05	SOLENOID COIL		

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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 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.

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