

KDC-C510FM

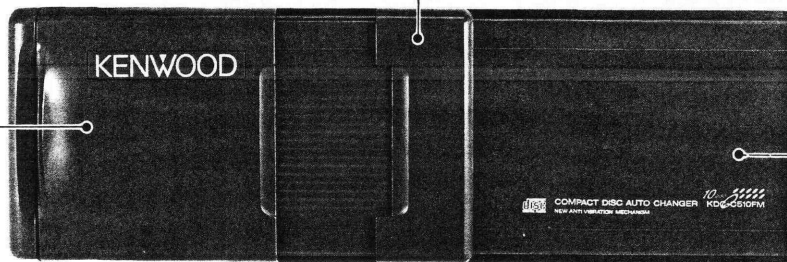
SERVICE MANUAL

©1998-2 PRINTED IN JAPAN
B51-7292-00(MC) 3296

**When transporting this model, always attach CAUTION CARD and STEPPED SCREW (for transportation).
CAUTION CARD : B58-1275-04
STEPPED SCREW: N09-4186-25**

Service jig	Parts No.
For initial position setting	W05-0635-00

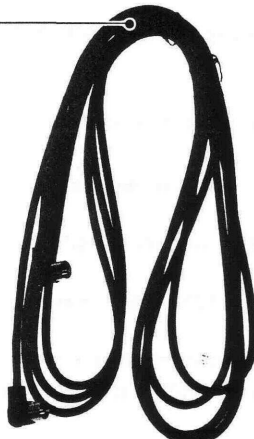
Dressing panel
(A21-2395-02):Gray
(A21-2390-02):Black



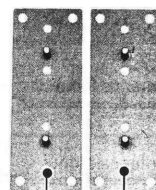
Dressing panel
(A21-2353-42):Gray
(A21-2392-02):Black

Panel
(A64-1266-01):Gray
(A64-1267-01):Black

Cord with plug
(E30-4138-05)



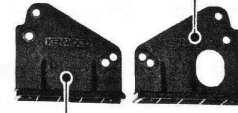
Holder assy (Magazine)
(J19-4676-42)



*M type only
Mounting hardware assy
(J21-7775-04)



*For M type
Screw set
(N99-1628-15)



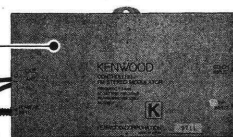
Bracket (R)
(J19-4711-13)

Bracket (L)
(J19-4710-13)

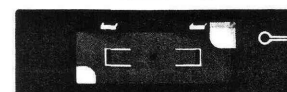
* E type only
Antenner adaptor
(T90-0512-08)

* E type only
Antenner adaptor
(T90-0521-08)

Case
(A01-2642-08)

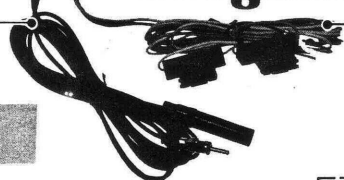


DC cord
(E30-4473-08)



Holder assy
(B07-2138-08)

Antenna cord assy
(E30-4310-08)

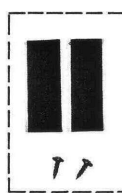
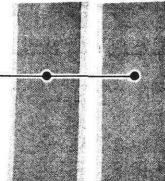


Blind plate
(F19-1303-04)

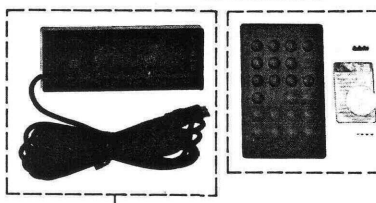


For K • E type
Screw set
(N99-1645-15)

*M type only
Adhesive tape
(J69-0506-04)



Magictape assy
(W01-0763-08)



Remote controller assy
(A70-0864-05)

Display unit assy
(T95-0241-08)

**The MECHANISM OPERATION DESCRIPTION is the same as model KDC-C710.
Please refer to the service manual of model KDC-C710 (B51-7104-00).**

MICROCOMPUTER'S DESCRIPTION

TEST Modes E-88 test mode

●How to enter

While holding the magazine eject SW, reset the unit and keep on holding the eject SW for more second to enter the E-88 mode.

(Note) In the E-88 mode, the initial position detection operation at the time of reset start is not performed.

●Manual operation functions

The E-88 display appears when the H/U is set to the changer mode.

In this condition, the changer mechanism can be operated manually using the track search up/down and disc search up/down keys.

Track search Up key:	Operates the spindle/loading motor in the direction for pulling the disc tray into the mechanism deck (disc loading direction).
Track search Down key:	Operates the spindle/loading motor in the direction for returning the disc tray into the magazine (disc ejection direction).
Disc search Up key:	Operates the ELV motor in the direction for moving the mechanism deck upward.
Disc search Down key:	Operates the ELV motor in the direction for moving the mechanism deck downward.

●Position adjustment function

This function writes the mechanism position adjustment values in the EEPROM in the E-88 mode.

Adjustment procedure

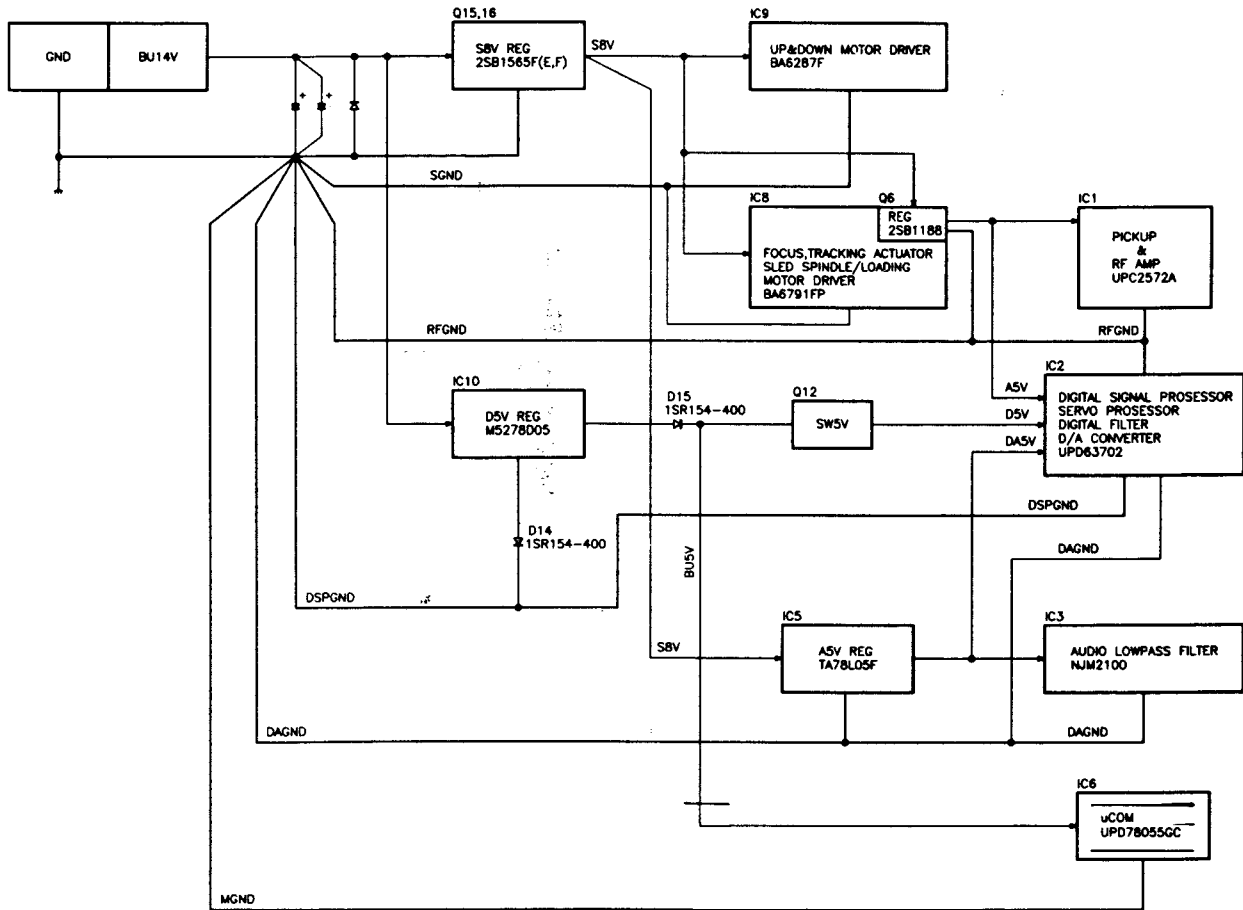
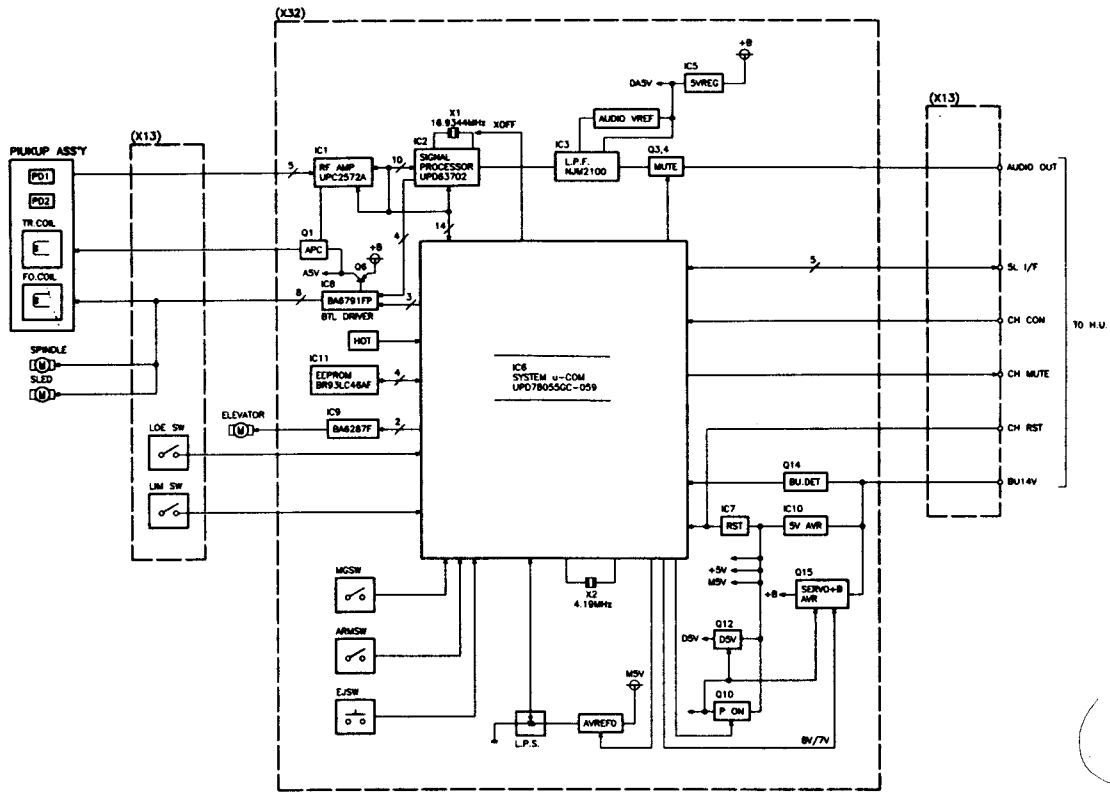
1. With the mechanism in the magazine ejection condition, move the mechanism manually up and down to set the mechanism to the reference position.
2. Pressing the REP key of the H/U starts the judgment of the mechanism position and the distinction whether the changer is a 6-disc or 10-disc changer.
If the mechanism position is extremely deviated from the reference position, the processing is aborted immediately.
3. The offset from the reference position is calculated and the 6/10 data and offset values are written in the EEPROM.
4. Data is read from the EEPROM to judge whether it has been written normally.
When it is judged that the write operation has completed normally, the mechanism deck moves to the magazine ejection standby position.
When it is judged that the write operation was abnormal, the mechanism performs no operation.

(Note) Mechanism reference position

6-disc mechanism: Position of the 3rd stage

10-disc mechanism: Position of the 6th stage

BLOCK DIAGRAM



COMPONENTS DESCRIPTION

CD PLAYER UNIT(X32-4260-01)

Ref.No.	Prts No.	Use and Function	Operation and condition
IC1	UPC2572A	RF amp & error amp	RF amplifier, focusing/tracking error amplifier, APC circuit, reference amplifier, mirror circuit, defect circuit, RF OK circuit, EFM comparator and vibration detector circuit.
IC2	UPD63702A	Digital servo data processor	Digital servo data processor, 8fs oversampling filter, D/A converter, digital loop filter.
IC3	NJM2100M	D/A converter output active filter	Differential amplifier.
IC5	TA78L05F	3-pin regulator	Supplies 5 V to the D/A converter and active filter.
IC6	UPD78055GCA25T	System u-COM	
IC7	PST9137NR	Reset IC	
IC8	BA6791FP	Motor drive	Drives the focusing/tracking actuators, sled motor and spindle motor.
IC9	BA6417F	Motor drive	Drives the mechanism deck up-down motor.
IC10	M5278D05	3-pin regulator	5 V power supply for the servo circuitry.
IC11	AK93C45AF	Memory IC	Storage of data on the initial position of the mechanism deck up-down operation and on the distinction between 10-disc and 6-disc changer.
Q1	2SA1362(Y)	Laser control	Controls the laser current according to the voltage output from the IC1 LD terminal.
Q2	DTC124EK	Clock ON/OFF	Clock is turned OFF when the IC6 XOFF terminal outputs "H".
Q3,Q4	2SD2114K	Audio muting	Muting is turned ON when IC6 A.MUTE outputs "L".
Q5	DTA124EK	Audio muting	Muting is turned ON when IC6 A.MUTE outputs "L".
Q6	2SB1188	5 V optics power	Supplies the power from AVR 8 V to the A.VDD of the P-U, IC1 and IC2.
Q7	DTC124EK	H/U communication control	Inverts the CH-CON logic.
Q8	DTC124EK	Reset SW	The microcomputer is reset when CH-RST goes "H".
Q9	DTA114EK	LPS power SW	Goes ON when LPSCO of IC6 goes "L" at P-ON or during up-down operation.
Q10	2SA1362(Y)	P-ON SW	
Q11	DTA143EK	H/U communication control	Inverts the CH-MUTE logic.
Q12	2SA1362(Y)	Servo 5 V drive	
Q13	DTC124EK	Servo 5 V SW	Goes ON/OFF at P-ON.
Q14	DTC124EK	B-U power detect SW	
Q15	2SB1655(E,F)	8 V AVR drive	
Q16	2SC2412K	8 V AVR drive	
Q17	DTA143EK	8 V AVR SW	Turned ON/OFF by P-ON.
Q18	DTC124EK	8 V AVR SW	Turned ON/OFF by P-ON.
Q19	DTC124EK	AVR 8 V/7 V SW	7 V when "H" (normal play mode).8 V when "L" (mechanism loading-ejection operation, ELV).
Q20,Q21	DTC114YK	Focusing/tracking hold upon scratch detection	When a scratch is detected, holds the focusing error and tracking error signals at the reference.
Q22	2SC2412K	Scratch detect SW	

MICROCOMPUTER'S DESCRIPTION

System μ -com:UPD7805GC (X32-4260-01:IC6)

Terminal description

Pin No.	Pin Name	I/O	Name	Pin Type	Function
1	P15	I	EDI	Push-pull	EEPROM data input.
2	P16	O	EDO	Buffer	EEPROM data output.
3	P17	O	ECLK	Buffer	EEPROM clock output.
4	AVss		AVss		
5	P130	O	ECS	Push-pull	EEPROM chip select output.
6	P131	O	REOC	Push-pull	Changer request output for 5-wire communication.
7	AVref1		AVref1		D/A converter reference voltage input
8	P70	I	SDI	Push-pull	Data input from servo IC.
9	P71	O	SDO	Buffer	Data output to servo IC.
10	P72	O	SCK	Push-pull	Clock output to servo IC.
11	P20	O		Push-pull	Not used (open).
12	P21	O		Push-pull	Not used (open).
13	P22	O		Push-pull	Not used (open).
14	P23	O	DGCON	Push-pull	Digital output control (not used)
15	P24	O	AMUTE	Push-pull	Audio muting output.
16	P25	I	DATAH	Schmitt trigger	H/U data input for 5-wire communication.
17	P26	O	DATA C	Push-pull	Changer data output for 5-wire communication.
18	P27	O	CHCLK	Push-pull	Changer clock output for 5-wire communication.
19	P40	O	CHSEL	Push-pull	Changer 1/2 switching.
20	P41	O	TSTB	Push-pull	Test mode strobe output.
21	P42	O	TCLK	Push-pull	Test mode clock output.
22	P43	O	TDATA	Push-pull	Test mode data output.
23	P44	O	8/7V	Push-pull	
24	P45	O		Push-pull	Not used.
25	P46	O		Push-pull	Not used.
26	P47	O		Push-pull	Not used.
27	P50	I	ARM_SW	Buffer	Arm SW input.
28	P51	O	TM4	Push-pull	4x-speed mode control output (not used).
29	P52	O	TM2	Push-pull	2x-speed mode control output (not used).
30	P53	O	XOFF	Push-pull	Servo IC oscillation OFF control output.
31	P54	O	CHCONO	Push-pull	CHCON output to stack changer.
32	P55	O	STB	Push-pull	Strobe output to servo IC.
33	Vss		Vss		Ground potential.
34	P56	O	A0	Push-pull	A0 output to servo IC.
35	P57	O	RST	Push-pull	Reset output to servo IC.
36	P60	I	ADJSEL	Buffer	Servo automatic adjustment invalidation selection terminal (for use in testing).
37	P61	I	LOCK	Buffer	Spindle servo lock detection.
38	P62	I	RFOK	Buffer	RF OK.
39	P63	I	TBCI	Buffer	Tracking filter bank switching input.
40	P64	O	TBCO	Push-pull	Tracking filter bank switching output.
41	P65	O	LAON	Push-pull	Laser ON.
42	P66	I	LIMSW	Push-pull	Limit switch input.
43	P67	I	8/12SW	Push-pull	8 cm/12 cm judgment switch (not used).

MICROCOMPUTER'S DESCRIPTION

Terminal description

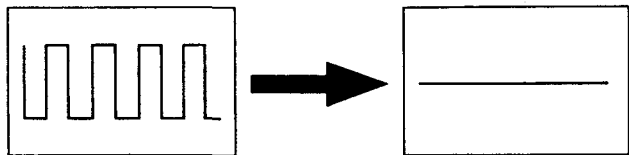
Pin No.	Pin Name	I/O	Name	Pin Type	Function
44	P30	I	LEDSW	Push-pull	Loading end switch input.
45	P31	O	SP/LO+	Push-pull	Spindle/loading motor output +.
46	P32	O	SP/LO-	Push-pull	Spindle/loading motor output -.
47	P33	O	DMUTE	Push-pull	Driver muting.
48	P34	O	ELV+	Push-pull	Up-down motor output +.
49	P35	O	ELV-	Push-pull	Up-down motor output -.
50	P36	O	CH_MUTE	Push-pull	Changer muting output.
51	P37	O	PON	Push-pull	P-ON output.
52	P120	I	TYPE0	Buffer	Test mode input 0.
53	P121	I	TYPE1	Buffer	Test mode input 1.
54	P122	I	TYPE2	Buffer	Test mode input 2.
55	P123	I	TYPE3	Buffer	Test mode input 3.
56	P124	O	SLNSA	Push-pull	Sled dead sector invalidation setting (for testing).
57	P125	I	COMSEL1	Buffer	u-COM destination type terminal 1.
58	P126	I	COMSEL2	Buffer	u-COM destination type terminal 2.
59	P127	I	ELVADJ	Buffer	Up-down position adjustment mode terminal.
60	RESET		RESET		
61	P00	I	SBSY	Schmitt trigger	Subcode Q input timing detection input.
62	P01	I	MGSW	Schmitt trigger	Magazine switch input.
63	P02	I	EJSW	Schmitt trigger	Eject switch input.
64	P03	I	REQH	Push-pull	REQH input.
65	P04	I	REOC2	Push-pull	CH2 REOC input.
66	P05	I	CH_CON1	Push-pull	CH1 control input from H/U.
67	P06	I	BU_DET	Push-pull	B-U detection.
68	Vdd		Vdd		Positive power supply.
69	X2		X2		Main clock (4.19 MHz) connection terminal 2.
70	X1		X1		Main clock (4.19 MHz) connection terminal 1.
71	IC		IC		Internally connected.
72	XT2		XT2		
73	XT1	I	CH_CON2		CH2 control input from H/U. (Stack changer)
74	AVdd		AVdd		Analog power supply of A/D converter.
75	AVref0		AVref0		Reference input voltage of A/D converter.
76	P10	I	KEY	A/D converter	Key input terminal (for test mode).
77	P11	I	HOT	A/D converter	High temperature detection terminal.
78	P12	I	LPS	A/D converter	Linear position sensor.
79	P13	O		A/D converter	
80	P14	O	LPSCO	A/D converterL	PS power control.

ADJUSTMENT

• RF MODULATOR UNIT

1. DC balance adjustment (VR301)

While observing the waveform with an oscilloscope at pin 13 of IC301, adjust VR301 to minimize the waveform level.



Make almost liner.

2. PLL control voltage adjustment (VR301)

First set the transmission frequency to *87.9 MHz with the commander, then adjust VC301 so that the DC Voltage at the + pole of C317, measured using a multimeter or digital tester, is + 3V (± 0.1 V).

*NOTE: E type is 87.7MHz

3. Modulation level adjustment (VR303)

The method using a standard receiver or tuner.

Adjust VR303 so that the output level from the standard receiver or tuner is as specified. The positions of the VRs and switches should be set prior to this adjustment.

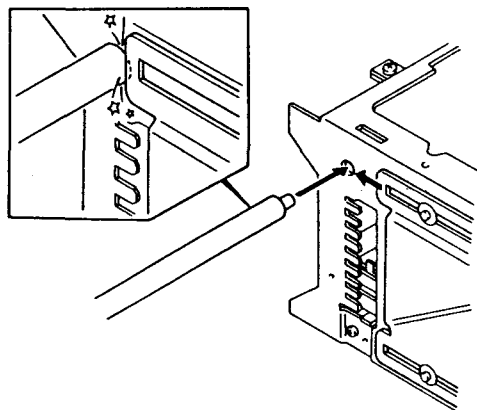
• POSITION ADJUSTMENT

1. LPS initial position adjustment procedure

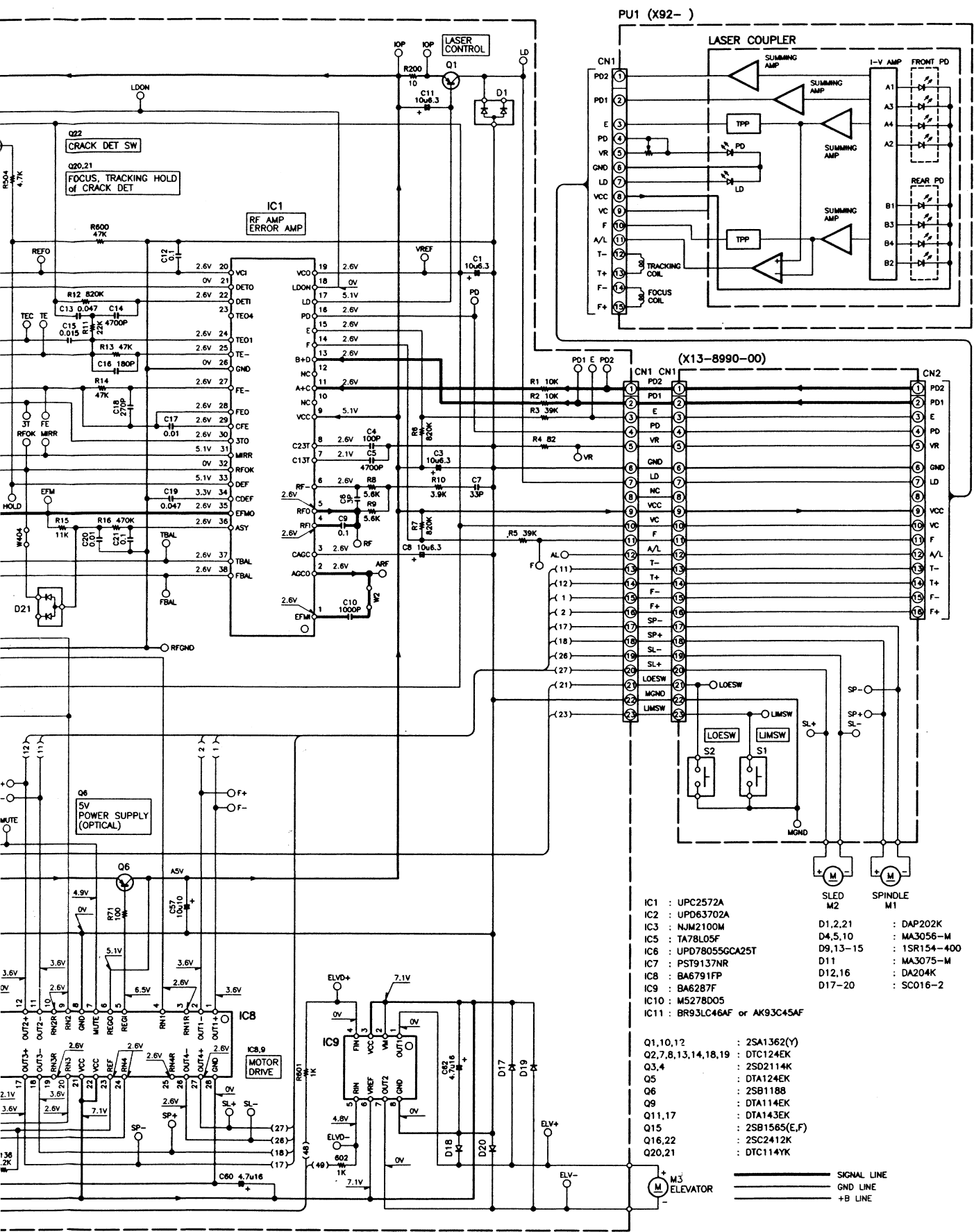
Connect the changer to the H/U. While holding the magazine **EJECT** key of the changer, press the **RESET** key of the H/U and, in about 1 second, release the magazine **EJECT** key. Press the **CD** key of the H/U to enter the E-88 mode. Move the mechanism deck to around the 1st stage by pressing the **DISC-** or **DISC+** key.

Insert the adjustment tool into the tool hole on the changer mechanism. Then press the **DISC+** key to move the mechanism deck until the mechanism's slider hits the adjustment tool. When the motor locks (stops) press the **REPEAT** key of the H/U.

When the **REPEAT** key is pressed, the mechanism moves automatically to the 1st stage and the initial position adjustment completes. (The data is written in the EEPROM at this time)



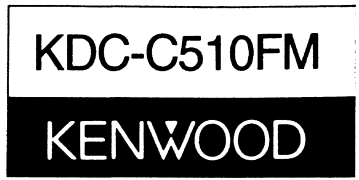
ADJUSTMENT TOOL : W05-0635-00

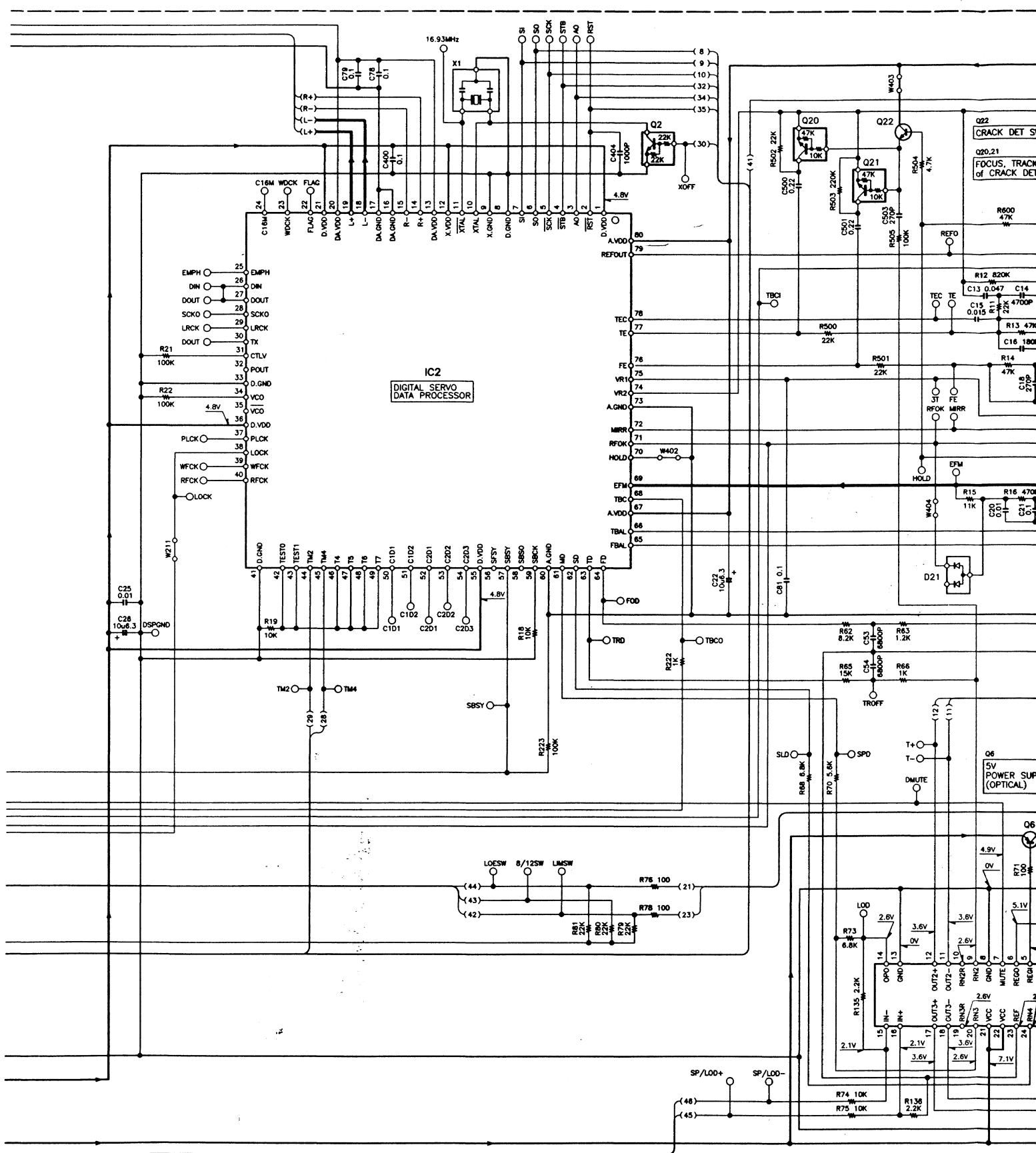


- IC1 : UPC2572A
- IC2 : UPD63702A
- IC3 : NJM2100M
- IC5 : TA78L05F
- IC6 : UPD78055GCA25T
- IC7 : PST9137NR
- IC8 : BA6791FP
- IC9 : BA6287F
- IC10 : M5278D05
- IC11 : BR93LC46AF or AK93C45AF
- Q1,10,12 : 2SA1362(Y)
- Q2,7,8,13,14,18,19 : DTC124EK
- Q3,4 : 2SD2114K
- Q5 : DTA124EK
- Q6 : 2SB1188
- Q9 : DTA114EK
- Q11,17 : DTA143EK
- Q15 : 2SB1565(E,F)
- Q16,22 : 2SC2412K
- Q20,21 : DTC114YK
- D1,2,21 : DAP202K
- D4,5,10 : MA3056-M
- D9,13-15 : 1SR154-400
- D11 : MA3075-M
- D12,16 : DA204K
- D17-20 : SC016-2
- S1, S2 : SP-0
- SLED M2
- SPINDLE M1
- M3 ELEVATOR

— SIGNAL LINE
 — GND LINE
 — +B LINE

al compo- and rating fuse(s). To reduce the risk of electric shock, leakage-
 (refer to current or resistance measurements shall be carried out (ex-
 or contin- posed parts are acceptably insulated from the supply circuit)
 ame type before the appliance is returned to the customer.

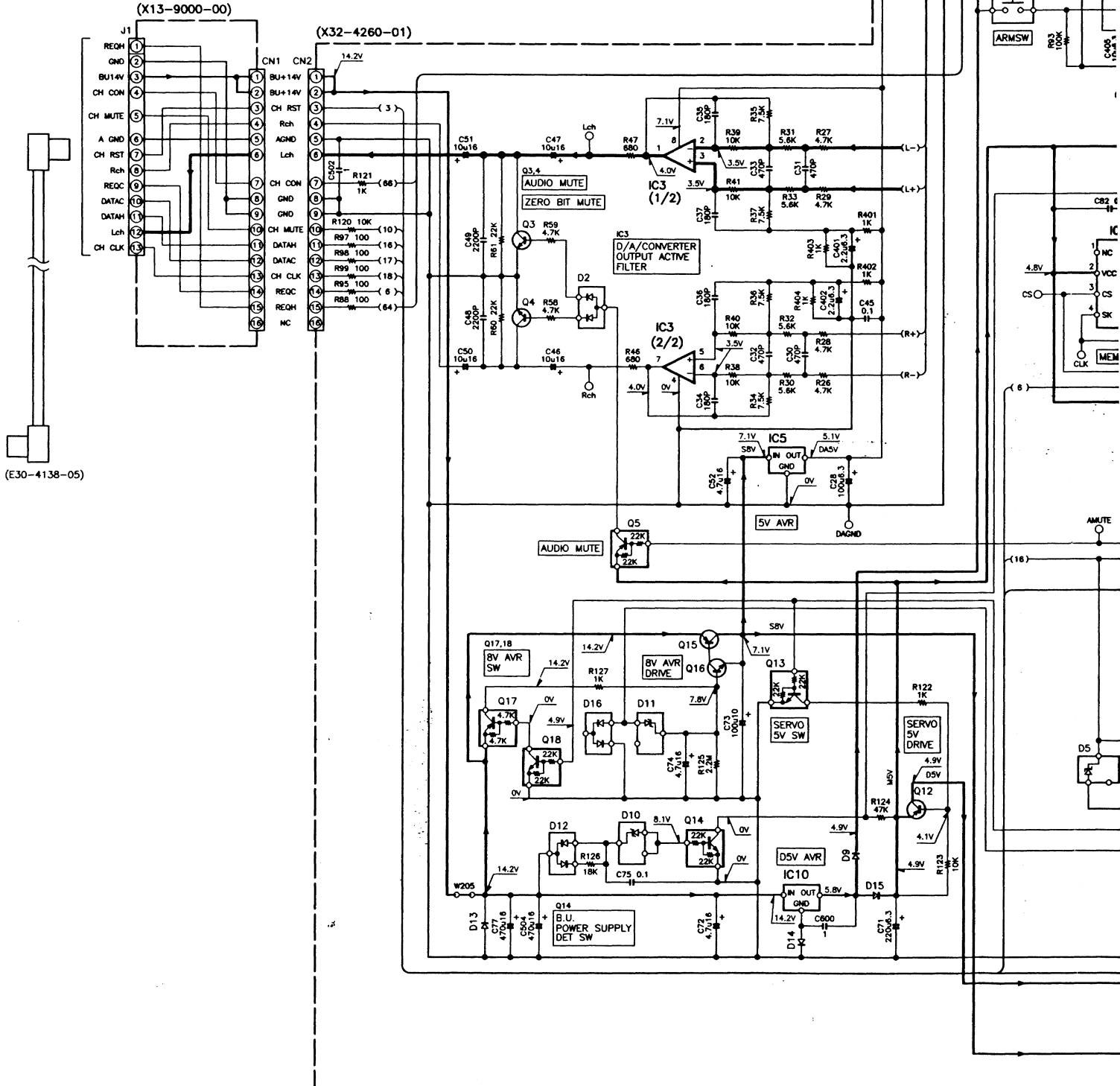
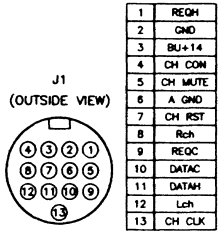




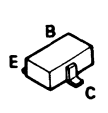
DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

CAUTION : For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). **⚠** indicates safety critical components. For continued protection against risk of fire, replace only with same type

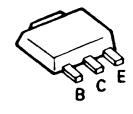
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DTA114EK
DTA124EK
DTA143EK
DTC124EK
2SA1362
2SC2412K
2SD2114K



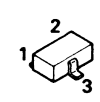
2SB1188



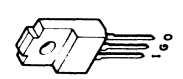
TA78L05F



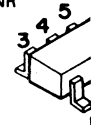
DA204K

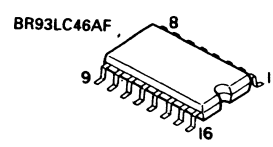
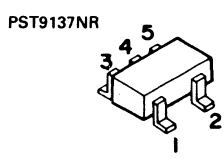
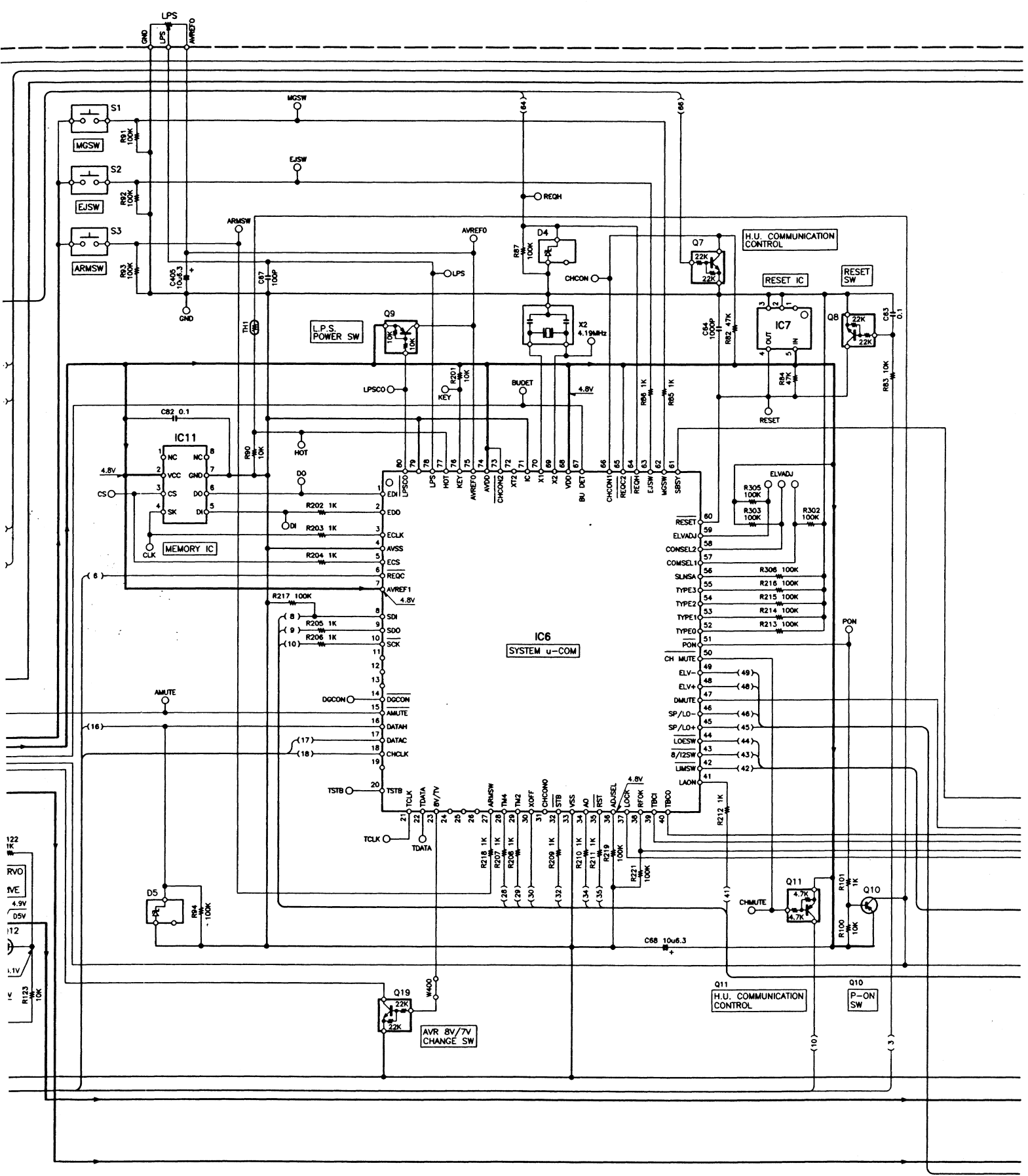


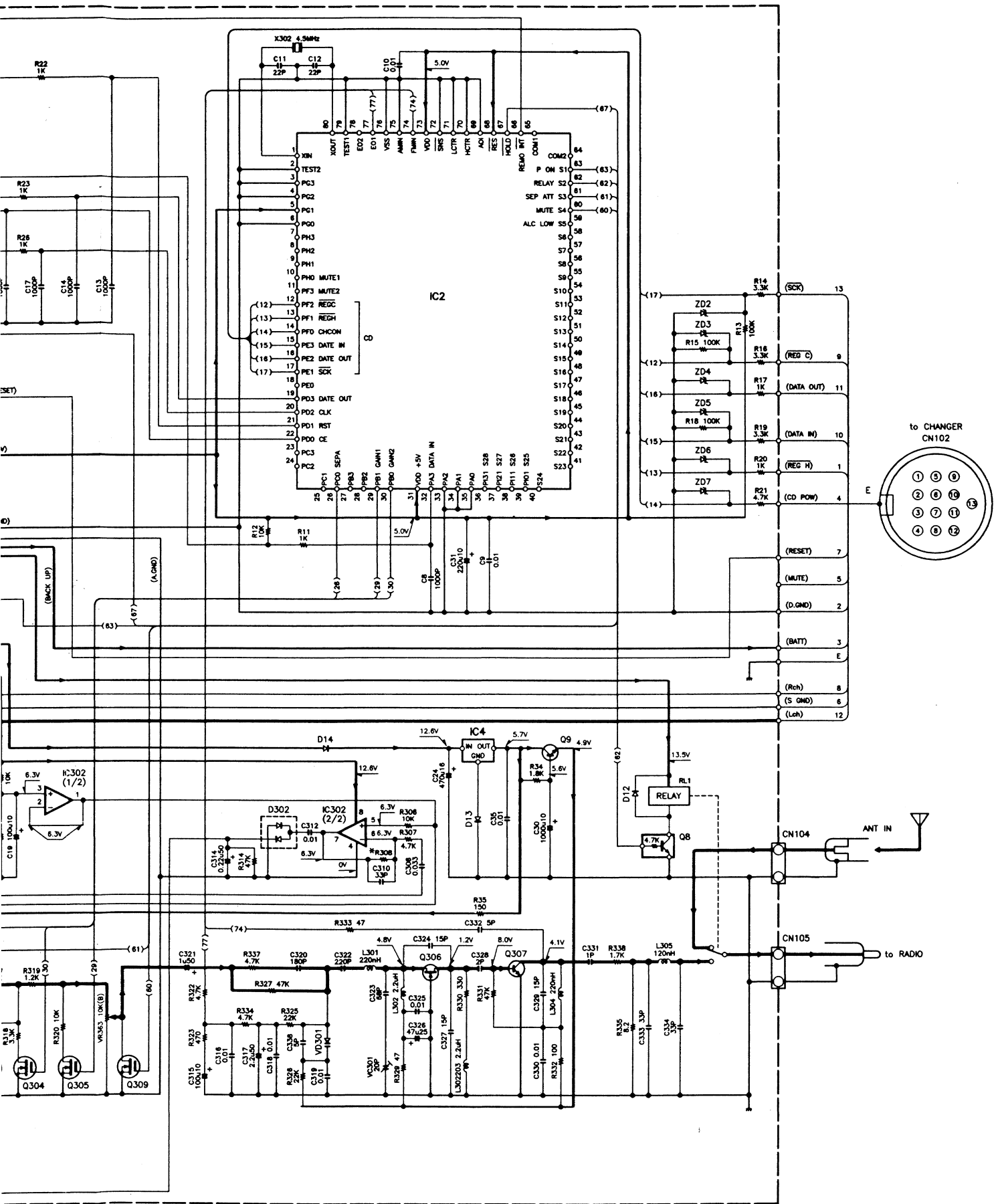
M5278D05



PST9137NR





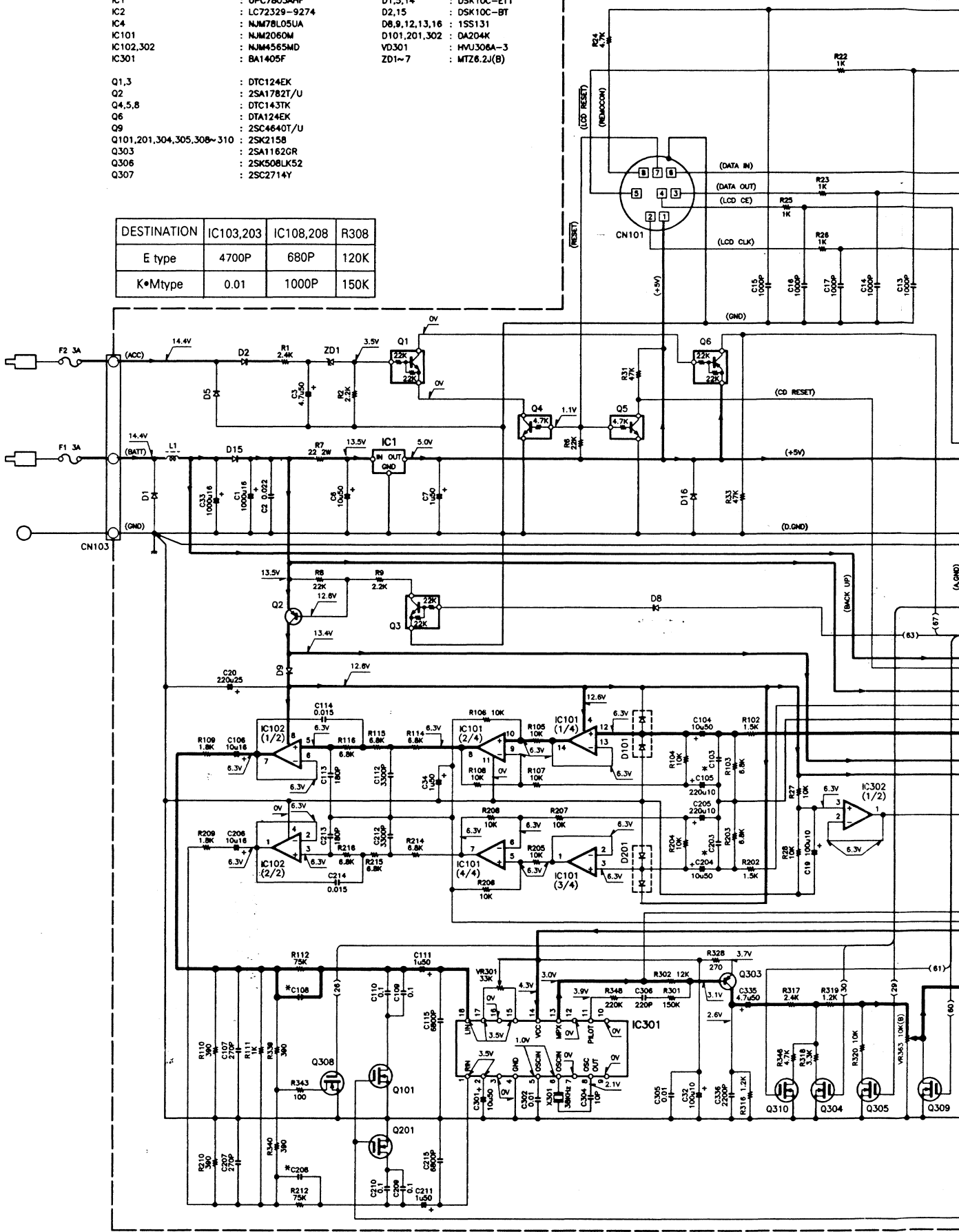


KDC-C510FM
KENWOOD

- IC1 : UPC7805AHF
- IC2 : LC72329-9274
- IC4 : NJM78L05UA
- IC101 : NJM2060M
- IC102,302 : NJM4565MD
- IC301 : BA1405F
- Q1,3 : DTC124EK
- Q2 : 2SA1782T/U
- Q4,5,8 : DTC143TK
- Q6 : DTA124EK
- Q9 : 2SC4640T/U
- Q101,201,304,305,308-310 : 2SK2158
- Q303 : 2SA1162GR
- Q306 : 2SK508LK52
- Q307 : 2SC2714Y
- D1,5,14 : DSK10C-ET1
- D2,15 : DSK10C-BT
- D8,9,12,13,16 : 1SS131
- D101,201,302 : DA204K
- VD301 : HMJ306A-3
- ZD1~7 : MTZ6.2J(B)

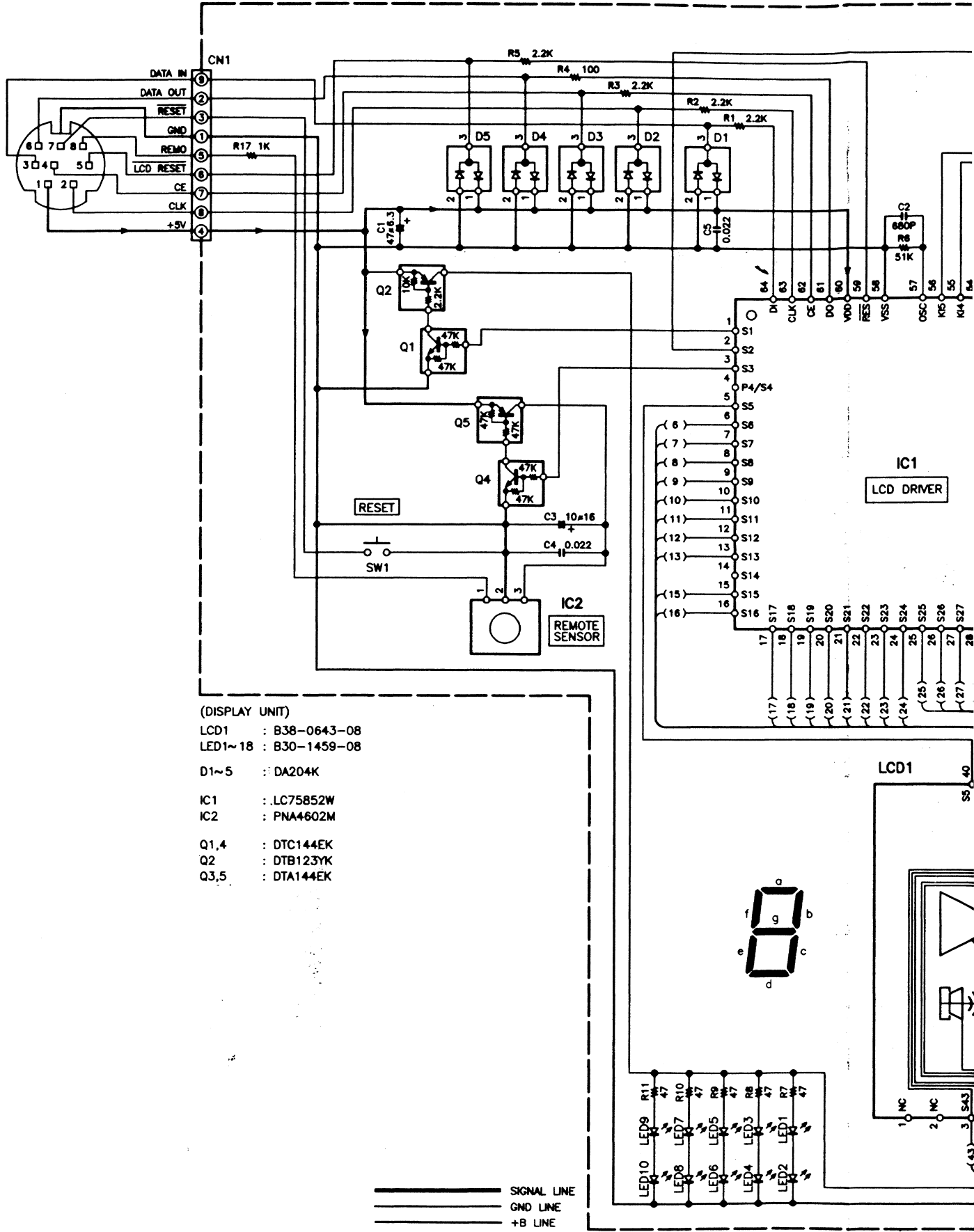
DESTINATION	IC103,203	IC108,208	R308
E type	4700P	680P	120K
K*Mtype	0.01	1000P	150K

RF MODULATOR UNIT

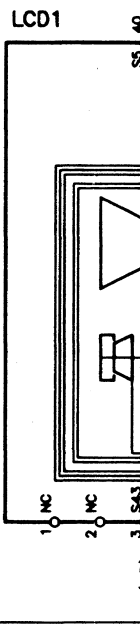
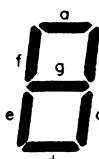
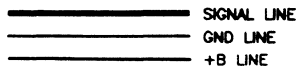


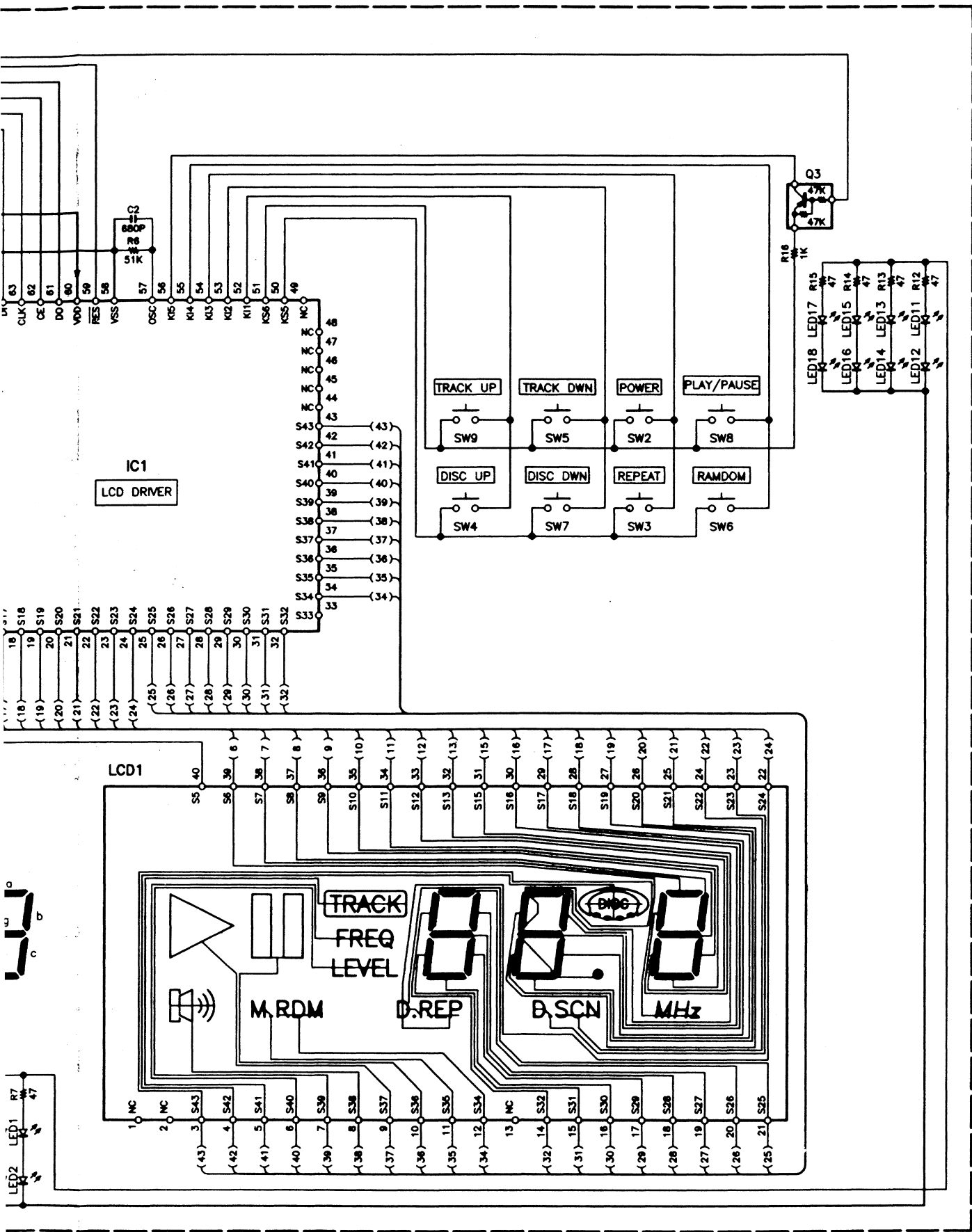
1
2
3
4
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6
7

DISPLAY UNIT



- (DISPLAY UNIT)
- LCD1 : B38-0643-08
 - LED1~18 : B30-1459-08
 - D1~5 : DA204K
 - IC1 : LC75852W
 - IC2 : PNA4602M
 - Q1,4 : DTC144EK
 - Q2 : DTB123YK
 - Q3,5 : DTA144EK





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