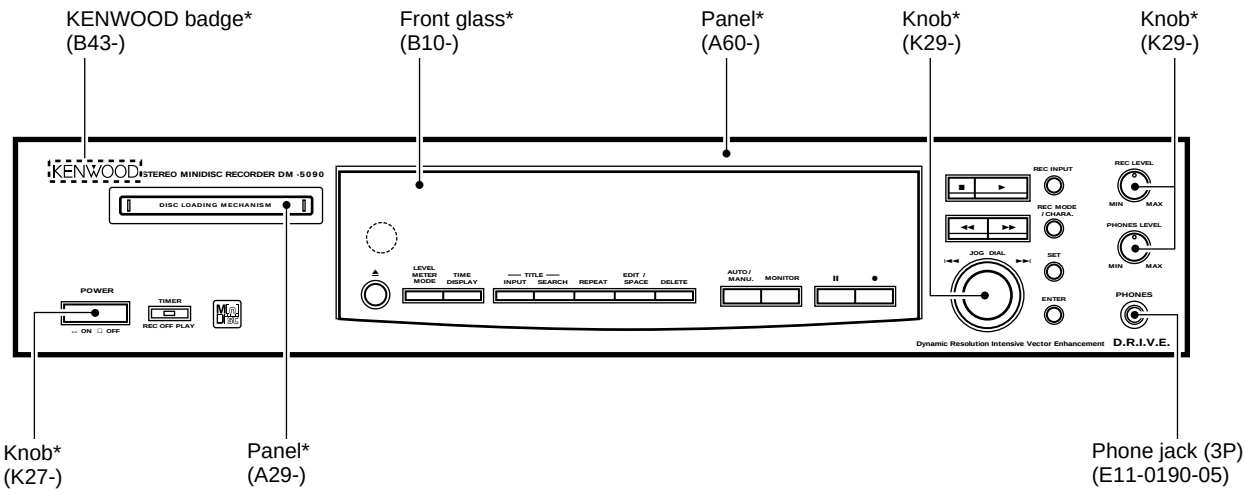
STEREO MINIDISC RECORDER

1050MD/DM-5090
DM-9090
SERVICE MANUAL

KENWOOD



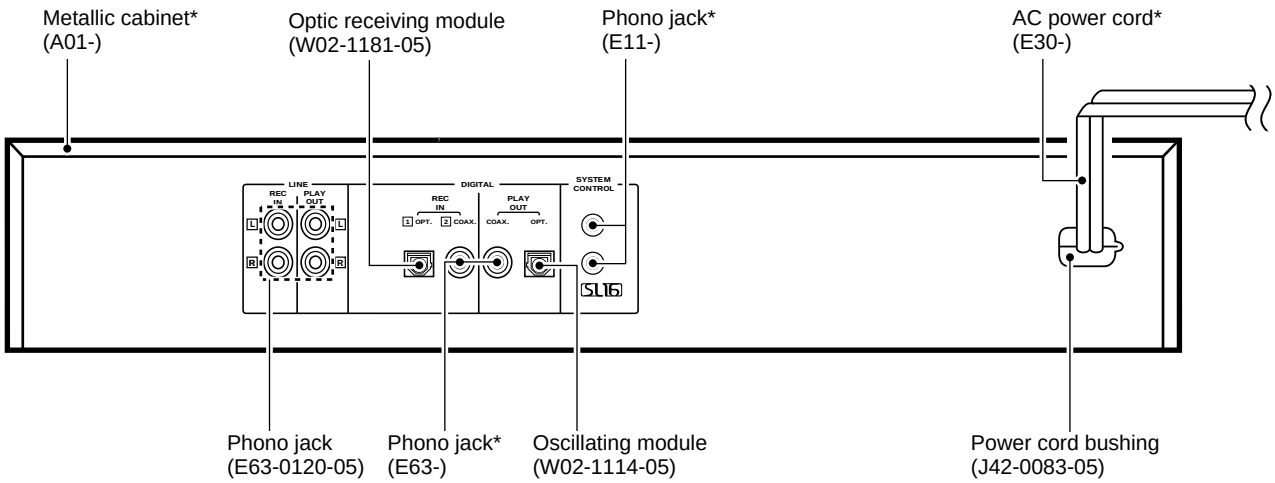


Illustration is DM-5090.
***Refer to parts list on page 40.**

In compliance with Federal Regulations, following are reproductions of labels on, or inside the product relating to laser product safety,

KENWOOD-Corp. certifies this equipment conforms to DHHS Regulation No.21 CFR 1040.10, Chapter 1, Subchapter J.

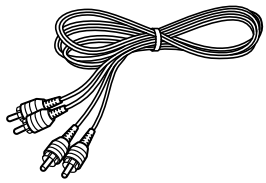
DANGER : Laser radiation when open and interlock defeated.
AVOID DIRECT EXPOSURE TO BEAM.

CONTENTS/ACCESSORIES/CAUTIONS

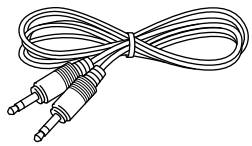
CONTENTS

Accessories

Audio cord (2)
(E30-0505-05)

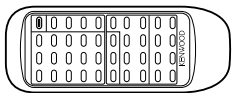


System control cord (1)
(E30-2733-05)



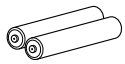
Optical fiber cable(1)
(B19-1529-05)

Remote control unit (1)
(A70-1141-05: RC-M0702)



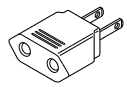
Battery cover: (A09-0362-08)

Batteries (R6/AA) (2)



AC adaptor (1)
(E03-0115-05)

M type only

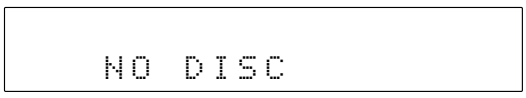


Cautions

Note related to transportation and movement

Before transporting or moving this unit, carry out the following operation.

1. Set the POWER key to ON without loading a Mini Disc.
● Check that no disc is present in the unit.
2. Wait a few seconds and verify that the display shown appear.
3. Set the POWER key to OFF.



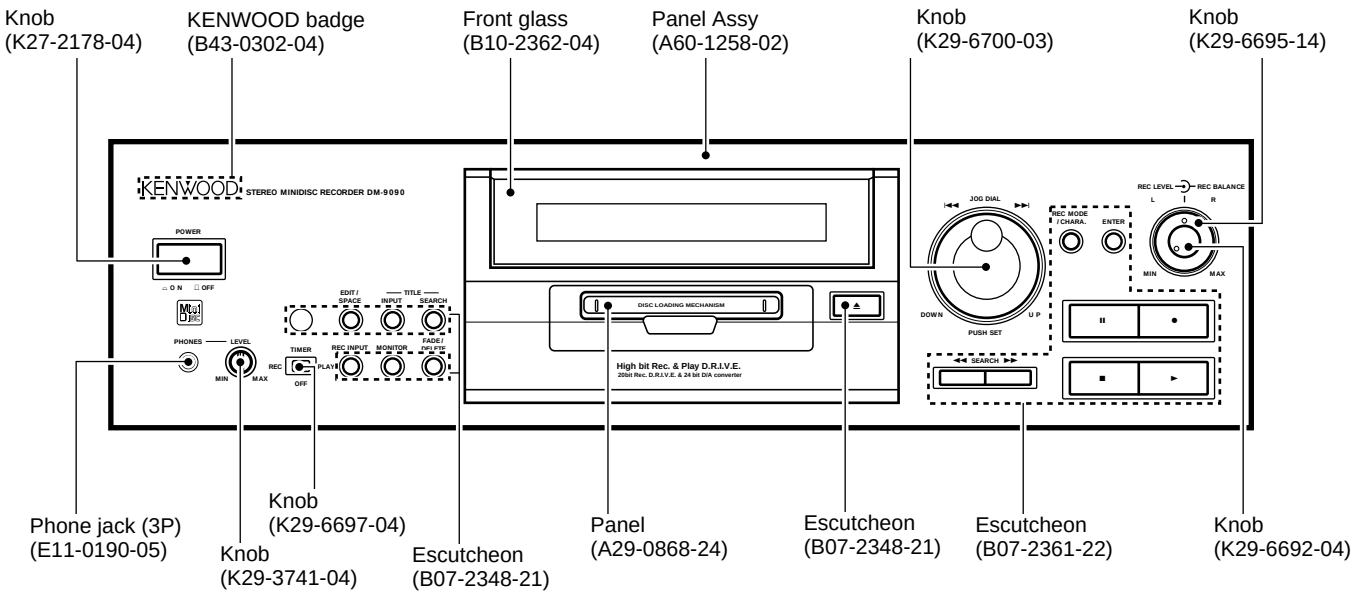
Beware of condensation

When water vapor comes into contact with the surface of cold material, water drops are produced.
If condensation occurs, correct operation may not be possible, or the unit may not function correctly.
This is not a malfunction, however, the unit should be dried. (To do this, turn the POWER switch ON and leave the unit as it is for several hours.)

Be especially careful in the following conditions :

When the unit is brought from a cold place to a warm place, and there is a large temperature difference.
When a heater starts operating.
When the unit is brought from an air-conditioned place to a place of high temperature with high humidity.
When there is a large difference between the internal temperature of the unit and the ambient temperature, or in conditions where condensation occurs easily.

EXTERNAL VIEW



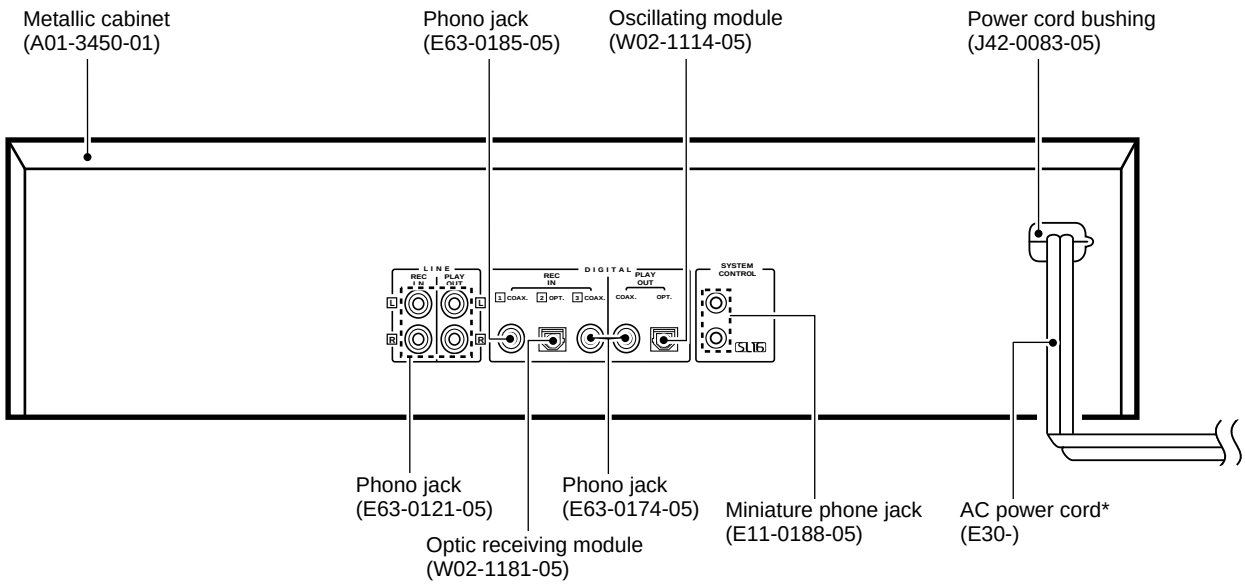
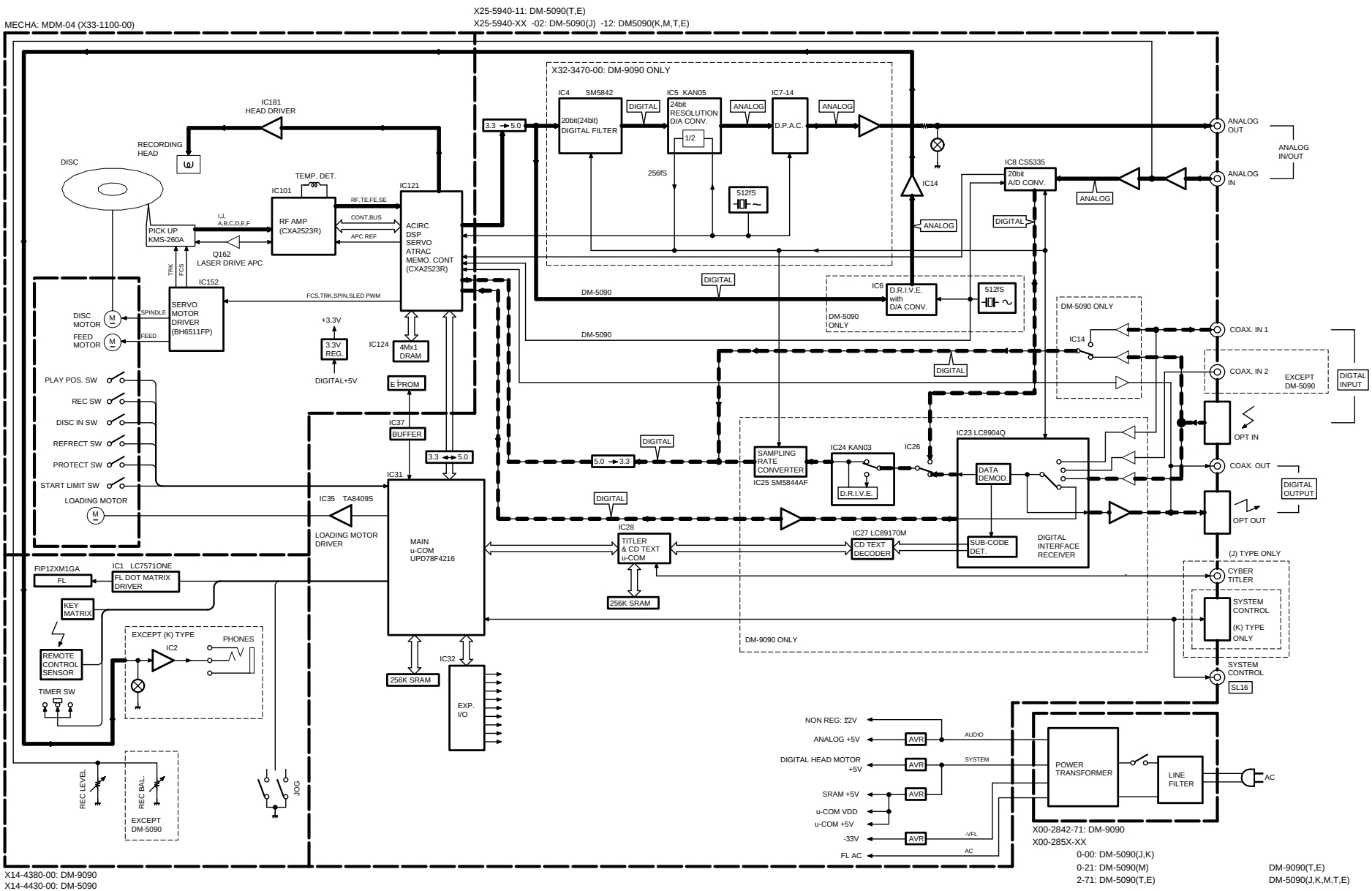


Illustration is DM-9090.
***Refer to parts list on page 40.**

1050MD/DM-5090/DM-9090

BLOCK DIAGRAM



CIRCUIT DESCRIPTION

1. Mechanism microprocessor : uPD784215GF508 (X25- , IC31)

1-1 Pin description

No.	Name	I/O	Description	
1,2	-	O	N.C.	
3	EXLAT	O	Output port of latch signal to IC32 (TC74HC4094)	
4	EXCK	O	Clock output port to IC32 (TC74HC4094)	
5	RD	O	SRAM WR	
6	WR	O	SRAM WR	
7	CS	O	SRAM CS	L; SRAM enable
8	STB	O	Output port of strobe signal to IC33	
9	Vdd	-	Power supply (Microprocessor)	
10	POWER	O	Power terminal	H; Power ON
11	MUTE	O	Mute control output	L; Mute ON
12	INISW2	I	Destination selector	
13	SCHNG	O	E2PROM data IN/OUT change-over	H; SDA output
14	SBUSY	I/O	16 serial busy	
15	SDATA	I/O	16 serial data	
16	SCL	O	Output port of clock signal to IC6 (X33)	
17	SDA	I/O	Interface port of data signal from / to IC6 (X33)	
18	LDON	O	Laser ON / OFF control port	H; LD ON
19	RMS	O	Pick RMS	H; ON
20	XLAT	O	System IC latch	
21	SENS	I	System IC sens	
22	GND	-	GND	
23	PROTECT	I	Detection port of protect switch	L; Protect ON
24	REFLECT	I	Detection port of reflect switch	H; Low reflect
25	DISCIN	I	Detection of disc input switch	L; Disc out SW ON
26	STTLMT	I	Detection port of limit switch	L; Start limit SW ON
27	PHOTSW	I	Detection of mechanism play position	L; Photo sensor ON
28	REC SW	I	Input port of detection from REC position switch	L; REC SW ON
29	LOADIN	O	Output port of loading motor control signal	L; Loading OUT
30	LOADOUT	O	Output port of loading motor control signal	L; Loading IN
31	MNT0	I	FOK signal from CXD2652AR (IC2)	L; Focus ON
32	MNT2	I	Input port of monitor 2 from CXD2652AR (IC2)	
33	XRST	O	Output port of reset signal to CXD2652AR (IC2)	
34	TX	O	Output port of recording permitted signal	
35	RECP	O	Laser power control to CXD2652AR (IC2)	
36	MNT3	I	Input port of monitor 3 from CXD2652AR (IC2)	
37	Vdd	-	Power supply (Microprocessor)	
38,39		-	Clock IN / OUT (12.5MHz)	
40	GND	-	GND	
41	OPEN	O	No used	
42	GND	I	No used	

CIRCUIT DESCRIPTION

No.	Name	I/O	Description
43	RESET	I	Microprocessor hard reset
44	REM	I	Remocon signal input terminal
45	XINT	I	Input port of interrupted status from CXD2652AR (IC2)
46	CE	I	Microprocessor chip enable H; Enable / L; disable
47	SQSY	I	Input port of sub code Q from CXD2652AR (IC2)
48	DQSY	I	U-bit of digital IN / SUB Q sync input of CD format from CXD2652AR (IC2)
49	DDQSY	I	U-bit of digital IN / SUB Q sync input from LC8904Q (IC23)
50	MNT1	I	Input port of track jump detection from CXD2652AR (IC2)
51	Vdd	-	Microprocessor power supply
52	+5V	-	A/D reference voltage (+5)
53~56	KR0~KR3	I	Key return (KR0~KR3)
57	TMSW	I	Timer switch input
58	INISW1	I	Detection selector
59	BACK	I	Back up voltage detection
60	ENCB	I	Rotary encoder B
61	GND	-	GND
62	BACK ON	O	Back up change control
63	ENCA	I	Rotary encoder A
64	+5V	-	D/A reference voltage (+5V)
65	SRDT	I	Data for reading input from CXD2652AR (IC2)
66	SWDT	O	Data for writing to CXD2652AR (IC2)
67	SCLK	O	Serial clock to CXD2652AR (IC2)
68	CRXD	I	Communication to sub u-COM (IC28)
69	CTXD	O	Communication to sub u-COM (IC28)
70	CENA	I	Communication to sub u-COM (IC28) H; Comm enable
71	EXDT	O	Data output to TC74HC4094 (IC32)
72	FLDCE	O	Chip enable to FL driver
73	DRDT	I	Read data from LC8904Q (IC23)
74	DWDT	O	Data to LC8904Q (IC23) and LC75710NE (IC1)
75	DCLK	O	Clock to LC8904Q (IC23) and LC75710NE (IC1)
76	DLAT	O	Latch to LC8904q (IC23)
77	DEMPH	I	Emphasis from LC8904Q (IC23)
78	DSUB1	I	Sub 1 from LC8904Q (IC23)
79	DSUB2	I	Sub 2 from LC8904Q (IC23)
80	SRCLAT	O	Latch to SM5844AF (IC25)
81	BACKCHK	O	Back up voltage check
82	VCLK	O	Clock to SM5844AF (IC25)
83	VLDT	O	Data to SM5844AF (IC25)
84~91	AD0~AD7	O	SRAM address / data (AD0~AD7)
92~99	A8~A15	O	SRAM address (A8~A15)
100	Vss	-	GND

CIRCUIT DESCRIPTION

1-2. Initialization

POWER	= ON (DM-9090,DM-5090)
REC INPUT	= ANALOG
AUTO/MANUAL	= AUTO
FADE	= OFF
PLAY MODE	= TRACK
REPEAT	= OFF
TIME DISPLAY	= SINGLE(+)
LEVEL METER MODE	= NORMAL MODE
DIGITAL REC LEVEL	= 0dB
AUTO TNO TIME	= 2 sec
AUTO TNO LEVEL	= 3 (-50dB)
FADE TIME	= 3 sec
REC END WRITE	= ON
DRIVE	= ON
PRESET TITLE	= PRE1 : Pops
	PRE2 : Rock
	PRE3 : Classic
	PRE4 : Jazz
	PRE5 : Disco
	PRE6 : Best Hits
	PRE7 : Air Check
	PRE8 : No.
	PRE9 : Vol.

1-3. Switch control table

INI SW1	
AVref(0.8~1.0AVref)	Mecha. u-COM MODE
0.7AVref(0.6~0.8AVref)	-
0.5AVref(0.4~0.8AVref)	DMF-7002S (J type)
0.3AVref(0.2~0.4AVref)	DM-9090
0.0AVref(0.0~0.2AVref)	DM-5090

(AVref=Vdd)

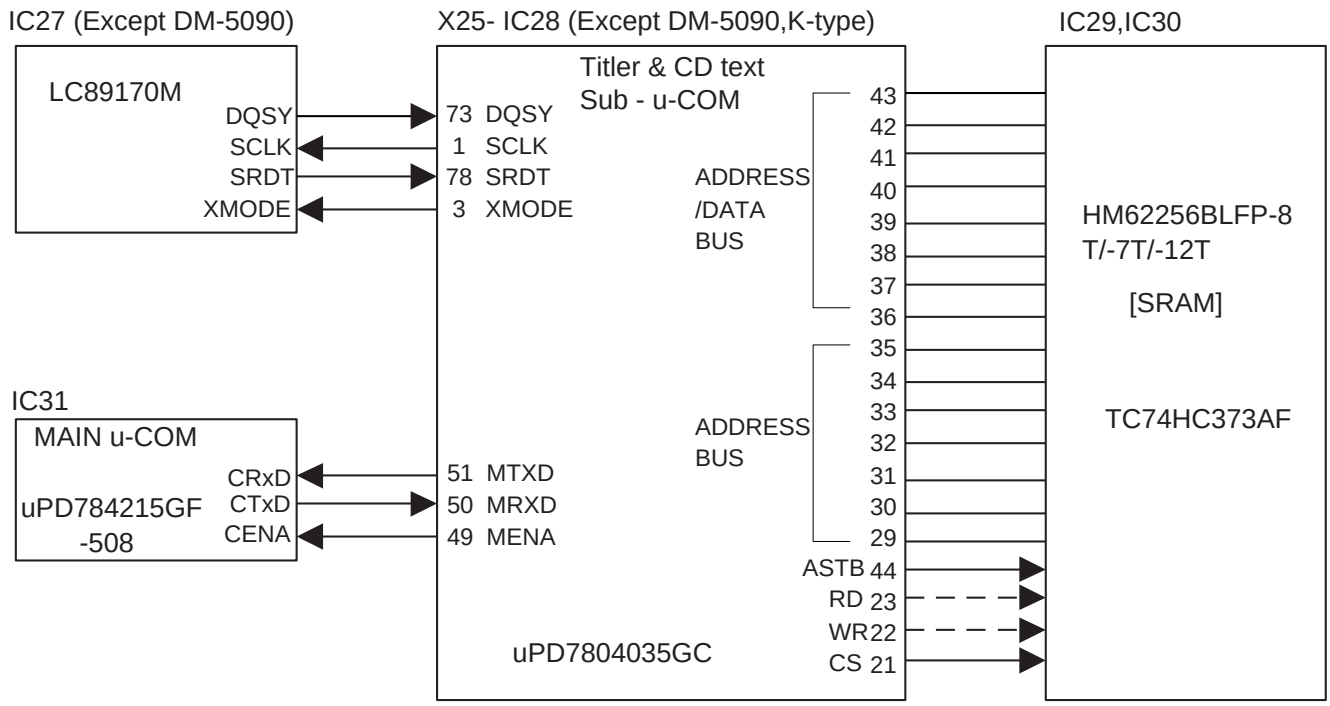
INI SW2	
High	Overseas : No katakana character : No cyber titler
Low	Japan : Katakana character : Cyber titler

1-4. Key voltage matrix

	0.00V ~0.78V	0.80V ~1.59V	1.61V ~2.39V	2.41V ~3.20V	3.22V ~3.98V	4.00V ~4.98V
KR0	POWER	EJECT	PAUSE	-	FF	-
KR1	STOP	REC	PLAY	-	FB	TT SEARCH
KR2	DEL	SPACE /EDIT	TT. INPUT	REC. INPUT	MONI -TOR	TIME DISP
KR3	SET	ENTER	CHR / REC	AUTO / MANUAL	LEVEL METER MODE	REPEAT

2. Sub microprocessor : uPD784035GC (X25- ,IC28)

2-1. Sub microprocessor periphery block diagram



CIRCUIT DESCRIPTION

2-2 Pin description (uPD784035GC)

No.	Name	I/O	Description	
1	SCLK	O	Text data read clock	
2	N.C.	O	No used	
3	XMODE	O	Text data decoder reset	L: Power Down
4~6	N.C.	O	No used	
7	RESET	I	Reset signal input	
8	Vdd	-	Microprocessor power supply	
9,10	X2,1	-	12.5MHz oscillator	
11	Vss	-	GND	
12~20	N.C.	O	No used	
21	CS	O	Chip select for SRAM control	H: Power Down
22	WR	O	Write strobe for SRAM control	
23	RD	O	Read strobe for SRAM control	
24~27	N.C.	O	No used	
28	A15	O	No used	
29~35	A14~A8	-	SRAM control terminal (address BUS), A14~A8	
36~43	D7~D0	-	SRAM control terminal (address / data BUS) , D7~D0	
44	STB	O	Address strobe signal output	
45,46	GND	-	GND	
47,48	N.C.	O	No used	
49	CENA	O	Communication to main u-COM (enable)	
50	CTXD	I	Communication to main u-COM (uart TXD)	
51	CRXD	O	Communication to main u-COM (uart RXD)	
52~55	N.C.	O	No used	
56	Vdd	-	Microprocessor power supply	
57~61	N.C.	I	GND	
62	CTR	I	Cyber titler	(J type only)
63	TXT	I	CD text	(J type only)
64	Avdd	-	A/D power supply terminal (+5V)	
65	AVref1	-	A/D reference voltage	
66	AVss	-	A/D GND	
67,68	N.C.	O	No used	
69	AVref2	-	D/A reference voltage	
70	AVref3	-	D/A GND	
71,72	N.C.	I	Noused	
73	DQSY	I	Text data reading permitted terminal	L: Interrupt
74~77	N.C.	I	No used	
78	SRDT	I	Text data reading line	
79	RXD	I	Communication to cyber titler (UART)	(J type only)
80	TXD	O	Communication to cyber titler (UART)	(J type only)

CIRCUIT DESCRIPTION

3. Test mode of the unit

3-1 Setting of the test mode

While pressing the [STOP] key, plug the AC power cord into the AC wall outlet.

3-2 Contents of the test mode

① [DOT TEST]

② [SEG TEST]

✜③ [KEY TEST]

✜④ [CYBER TEST] J type only

✜Used for production line only

3-3 Function of the test mode

① [DOT TEST]

The FL display starts the "NIAGARA MODE" by pressing the [SET] key in the [DOT TEST] mode.

② [SEG TEST]

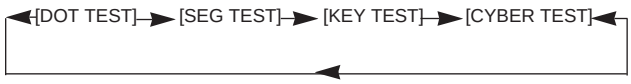
Turn the FL indication ON by pressing the [SET] key in the [SEG TEST] mode.

The FL indication changes cyclically as shown in the below by turning the JOG DIAL (I◄◄►►I).

3-4 Function of the key

① JOG UP (►►I) and JOG DOWN (I◄◄)keys

: Selects the test mode.



: Selects the FL indication

② Set key

: Proceeds the test mode or return to test mode.

③ Stop key

: Cancel the test mode.

3-5 Microprocessor reset

The microprocessor can be initialized while pressing the [EJECT] key, plug the AC power cord into the AC wall outlet.

4. Mechanism test mode

4-1 Setting the test mode

Connect a plug of AC power cord to an outlet of AC, while pressing PLAY key.

4-2 Canceling the test mode

Unplug the AC power cord.

4-3 Basic operation in test mode

All operations are performed using the JOG DIAL (up/down), ENTER key, DELETE key, and SET key. The functions of each key are shown in the table below.

Function	Description
JOG DIAL(up/down)	Changes the parameter and mode.
ENTER key	Proceeds for definition.
DELETE key	Returns for interrupt.
SET key	Skip the mode and go to next step.

4-4 Selection of test mode

12 test modes are selected by turning the JOG DIAL.

No.	Display	Description	Section
1	TEMP ADJUST	The work of adjustment is unnecessary in this mode	-
2	LDPWR ADJUST	Laser power adjustment	5-5
3	LDPWR CHECK	Laser power check	5-5
4	EFBAL ADJUST	Traverse adjustment	5-6
5	FBIAS ADJUST	Focus bias adjustment	5-7
6	CPLAY MODE	Continuous playback mode	4-4-1
7	CREC MODE	Continuous recording mode	4-4-2
8	STT-LIMIT SW	Check the mechanism start limit SW position	-
9	JUMP MODE	Track jump checking mode	-
10	SRV DAT READ	Servo data reading	-
11	EEP MODE	E2PPROM data reading or rewrite	-
12	EEP INITIAL	E2PROM data initializing	-

For more information on each adjustment mode, refer to each section of 5, “Electrical adjustment”.

If other adjustment mode has been entered incorrectly, press the DELETE key to exit the mode.

* The number 8 - 12 are not used for service. If these mode have been entered incorrectly, press the DELETE key immediately to exit the mode. Specially, do not use EEP INITIAL. (E2PROM data has initialized if used it.)

4-4-1 Operation in continuous playback mode

1. Entering the continuous playback mode

(1) Insert a recordable disc or pre-mastered disc into the unit.

(2) Turn the JOG DIAL to display “CPLAY MODE”.

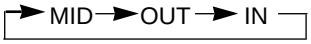
(3) Press the ENTER key. The display then changes from “CPLAY MODE” to “CPLAY MID”.

(4) After the access operation is completed, the display changes from “CPLAY MID” to “C=#### a=##”.

Note: Numerals on the display appear the error rate and ADIP error.

CIRCUIT DESCRIPTION

2. Change the playback point.
(1) Press the ENTER key during continuous playback. The display then changes as follows.



(2) After the access operation is completed, the display changes “C=####” a=##”.

Note: Numerals on the display appear the error rate and ADIP error.

3. Terminating the continuous playback mode
(1) Press the DELETE key. The display then changes to “CPLAY MODE”.
(2) Press the EJECT key to take out the disc.

Note : The playback start addresses of IN, MID, and OUT are described below.

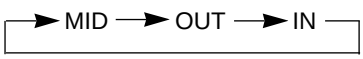
IN	30H cluster
MID	300H cluster
OUT	700H cluster

4-4-2 Operation in continuous recording mode

1. Entering the continuous recording mode
(1) Insert a recordable disc into the unit.
(2) Turn the JOG DIAL to display “CREC MODE”.
(3) Press the ENTER key. The display then changes from “CREC MODE” to “CREC IN”.
(4) Press the ENTER key again. The display changes from “CREC IN” to “CREC (####)”, and the continuous recording is started.

Note: Numerals on the display (####) appear the address of recording point.

2. Change the recording point.
(1) Turn the JOG DIAL to clockwise while “CREC IN” is displayed. The display changes as follows. (The recording point can be shifted.)



(2) Press the ENTER key. The display then changes to “CREC(####)”, and the continuous recording is started.

Note : Numerals on the display (####) appear the address of recording point.

3. Terminating the continuous recording mode
(1) Press the DELETE key. The display then changes to “CREC MODE” and the REC display goes off.
(2) Press the EJECT key to take out the disc.

Notes :

1. The recording start addresses of IN, MID, and OUT are described below.

IN	30H cluster
MID	300H cluster
OUT	700H cluster

2. The DELETE key can be pressed at any time to stop the recording.
3. An erasure prevention control is not detected in the test mode. Be careful not to enter the continuous recording mode using a disc containing the data that should not be erased.
4. Do not record continuously for more than five minutes.
5. Take care that no vibration is applied during continuous recording.

4-5 Other key functions

Function	Description
►	Plays back continuously when this key is pressed during stop. Turn on and off the tracking servo when it is pressed during continuous playback.
■	Stops the continuous playback and recording.
◄◄	The thread moves to the inner circumference while this key is pressed.
REC INPUT	Selects the mode for the pit and groove every time this key is pressed.
REC MODE	Selects the spindle servo mode. (CLV-S and CLV-A)
TITLE INPUT	Selects the contents of the display every time this key is pressed.

Note : An erasure prevention control is not detected in the test mode. Notice that recording is performed irrespective of the erasure prevention control position when the REC key is pressed.

4-6 Display in test mode

The display is selected in the order of MODE display, address display and error rate display every time the TITLE INPUT key is pressed.

1. MODE display

“TEMP ADJUST” and “CPLAY MODE” are displayed as the MODE display.

2. Error rate display

The error rare display appears as described below.

C1 = #### AD = ##

C1 = C1 error,AD = ADIP error

3. Address display

The address display appears as described below.

h = ####, d = ####(Recordable groove and pre-mastered disc.)

h=Header address, d=ADIP address

* When no address can be read," - " display appears.

4. Segment indication

[play] mark : servo on
[pause] mark : tracking servo on
[rec] mark : servo on (laser light power)
[SINGLE] : servo groove mode
[TOTAL] : servo mode (CLV-A)
[PGM] : spindle lock
[COPY] : recordable disc

CIRCUIT DESCRIPTION

4-7 Precaution on use of test mode

✜ An erasure prevention control is not detected in the test mode. Therefore, when the recording laser power mode such as continuous recording mode and traverse adjustment mode is entered, the contents of the existing recording are erased irrespective of the control position. Be careful not to enter the continuous recording mode and traverse adjustment mode when using a disc, containing the data that should not be erased, in the test mode.

5. Electrical adjustment

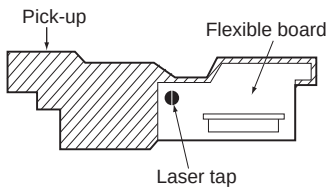
5-1 Precaution during confirmation of Laser Diode emission

During adjustment, do not view the emission of a laser diode from just above for confirmation. This may damage your eyes.

5-2 Precaution on handling of Optical pick-up (KMS-260A)

The laser diode in an optical pick-up is easy to be subject to electrostatic destruction. Therefore, solder-bridge the laser tap on the flexible board when handling the optical pick-up.

When removing the flexible board from the connector, make a solder bridge in advance, then remove the board. Be careful not to remove the solder bridge before inserting the connector. Moreover, take careful measures against electrostatic destruction. The flexible board is cut easily. Handle the flexible board with care.



5-3 Precaution during adjustment

1) Perform the adjustment and confirmation marked with “O” in the order shown in the table when the parts below are replaced.

2) In the test mode, perform the adjustment. After adjustment is completed, cancel the test mode.

	Optical pick-up	BD board		
		IC6	D101	IC1,IC2,IC10
1. Temperature compensation offset adjustment	X	O	O	O
2. Laser power adjustment	O	O	X	O
3. Traverse adjustment	O	O	X	O
4. Focus bias adjustment	O	O	X	O
5. Error rate confirmation	O	O	X	O

3) Perform the adjustment in the order described.

4) Use the following tools and measurement equipment.
- CD test disc TGYS-1
- Laser power meter
- Oscilloscope (with bandwidth of more than 40 MΩ) (Calibrate the probe before measurement.)
- Digital voltmeter
- Thermometer

5) Take care that VC and GND (ground) are not connected on the oscilloscope when two or more signals are monitored on the oscilloscope. (VC and GND are short-circuited in this case.)

Note : The "#" display on the screen indicates an arbitrary figure.

5-4 Creating the recordable continuous recording disc

This disc is used for focus bias adjustment and error rate confirmation. How to create the recordable continuous recording disc is described below.

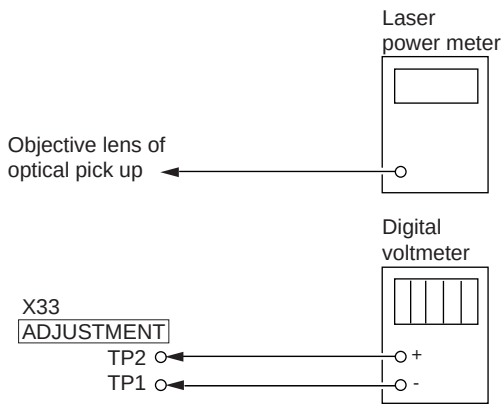
1. Insert a commercial recordable disc (blank disc).
2. Turn the JOG DIAL to display “CREC MODE.”
3. Press the ENTER key to display “CREC IN”.
4. Turn the JOG DIAL (CW) to display “CREC-MID”.
5. After pressed the ENTER key, a display indicates “CREC(0300)” and the recording begins.
6. Terminate the recording within five minutes.
7. Press the DELETE key to stop the recording.
8. Press the EJECT key to take out the recordable disc.

As a result, a continuously recorded disc can be created for focus bias adjustment and error rate confirmation.

Note : Take care that no vibration is applied during continuous recording.

5-5 Laser power adjustment

Connection :



Adjustment :

1. Put the laser power meter on the objective lens of the optical pick-up. Connect the digital voltmeter to TP1 and TP2.
2. Turn the JOG DIAL to display “LDPWR ADJUST”. (Laser power : For adjustment use)
3. Press the ENTER key to display “(0.9mW)$##”.
4. Adjust to turn JOG DIAL so that the laser power meter reads 0.86 - 0.94mW. Set range 10mW of the laser power meter,then save to press ENTER key.
5. “(7.0mW)$##” is displayed.
6. Adjust to turn the JOG DIAL so that laser power meter reads 6.9-7.1mW, then save to press ENTER key. ("LDPWR<$##" is displayed monentarily.)

CIRCUIT DESCRIPTION

✜ Don't output the laser power of 7.0mW more than 15sec.

7. Next turn the JOG DIAL to display "LDPWR CHECK".
8. Press ENTER key to display "(0.9mW)$##". Check the laser power meter reads 0.85-0.95mW.
9. Next set range 10mW of the laser power meter, then press ENTER key to display "(7.0mW)$##". Confirm that the laser power meter and digital voltmeterat that time read the specified value.

Specification :

Reading of laser power meter : 7.0 ±0.1 mW

Reading of digital voltmeter : Optical pick-up indication value ±10%

(optical pick-up label)

In this case, Iop = 82.5 mA

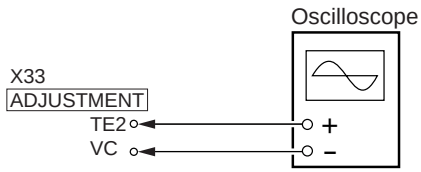
Iop(mA) = Reading of digital voltmeter(mV)/1(Ω)

10. Press the ENTER key to display “LDPWR CHECK” and stop the laser emission. (The DELETE key can be pressed at any time to stop the laser emission.)

Note : The "#" display on the screen indicates an arbitrary figure.

5-6. Traverse Adjustment

Connection :



V: 0.5V/div H: 10ms/div

INPUT: DC mode

Adjustment :

1. Connect the oscilloscope to (TE2) and (VC) on the X33 board.
2. Insert a commercial recordable disc.
3. Turn the JOG DIAL to display “EFBAL ADJUST”.
4. Press the ENTER key to display “EFBAL MO-W” and after that press the ENTER key again to display "EF=$##MOW".
5. Turn the JOG DIAL so that the waveform on the oscilloscope satisfies the specified value. (When the JOG DIAL is turned, the #-marked figure in "EF=$##" changes and the waveform also changes.)During this adjustment, the oscilloscope changes in units of about 3%. Adjust so that the waveform comes nearest to the specified value. (MO groove read power traverse adjustment)

(Traverse waveform)

Specification : A = B

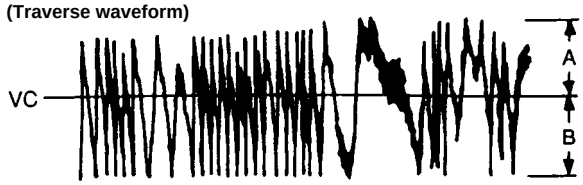
6. Press the ENTER key to display "EFB=##XSAVE" momentarily. After that, "EF=$##MOR" is displayed. (Laser power READ power, focus servo ON, tracking servo OFF, and spindle(S) servo ON.)
7. Turn the JOG DIAL so that the waveform on the oscilloscope satisfies the specified value. (When the JOG DIAL is turned, the #-marked figure in "EF-##" changes and the waveform also changes.) During this adjustment, the oscilloscope changes in units of about 2%. Adjust so that the waveform comes nearest to the specified value. (MO groove read power traverse adjustment)

(Traverse waveform)

Specification : A = B

8. Press the ENTER key to display “EFB=##XSAVE” momentarily and save the adjustment result in non-volatile memory After that, "EFBAL MO-P" is displayed.
9. Press ENTER key to display "EF=$##MOP".(A pick-up moves automatically to pit block area.)
10. Turn the JOG DIAL so that the waveform on the oscilloscope comes near to the specified value. During this adjustment, the waveform changes in units of about 2%. Adjust so that the waveform comes nearest to the specified value.

(Traverse waveform)



Specification : A = B

11. Press the ENTER key to display “EFB=##XSAVE” momentarily and save the adjustment result in non-volatile memory. After that, “EFBAL CHANGE” is displayed. The disc rotation stops automatically.

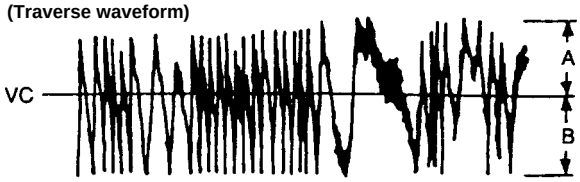
Note : The "#" display on the screen indicates an arbitrary figure.

12. Press the EJECT key to take out a recordable disc.
13. Insert test disc TGYS-1.
14. Press the ENTER key to display “EF=$##CD”. A servo is established automatically.
15. Turn the JOG DIAL so that the waveform on the oscilloscope comes near to the specified value. During this adjustment, the waveform changes in units of about 2%. Adjust so that the waveform comes nearest to the specified value.

(Traverse waveform)

CIRCUIT DESCRIPTION

(Traverse waveform)

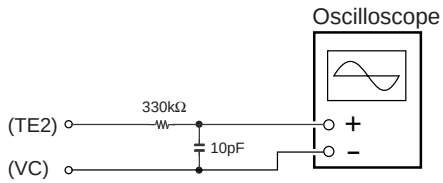


Specification : A = B

16. Press the ENTER key to display “EFB=##XSAVE” momentarily and save the adjustment result in non-volatile memory. After that, “EFBAL ADJUST” is displayed.
17. Press the EJECT key to take out test disc TGYS-1.

Notes :

1. Data is erased during MO write when a recorded disc is used for this adjustment.
2. If the traverse waveform is difficult to be monitored, connect an oscilloscope as shown in the figure below.



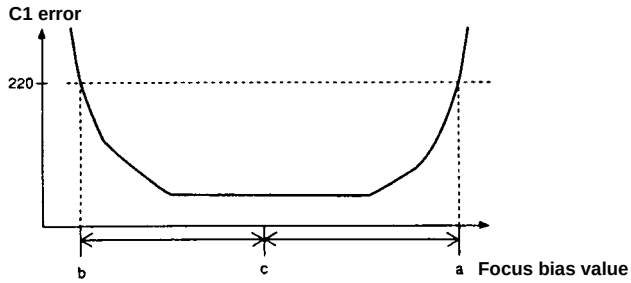
5-7 Focus bias adjustment

Connection :

1. Insert a continuously recorded disc (refer to 5-4, “Creating the recordable continuous recording disc”).
2. Turn the JOG DIAL to display “CPLAY MODE”.
3. Press the ENTER key to display “CPLAY MID”.
4. Press the DELETE key when "C=#### a=##" is displayed.
5. Turn the JOG DIAL to display “FBIAS ADJUST”.
6. Press the ENTER key to display “a=## ####/##”. The middle four-digit figure indicates the C1 error rate, the two-digit figure after “/##indicates ADIP error” , and the two-digit figure after “a=” indicates the focus bias value.
7. Turn the JOG DIAL clockwise and detect the focus bias value in which the C1 error rate becomes 220.
8. Press the ENTER key to display “b=## ####/##”.
9. Turn the JOG DIAL counterclockwise and detect the focus bias value in which the C1 error rate becomes 220.
10. Press the ENTER key to display “C=## ####/##”.
11. Confirm that the C1 error rate at that time is less than 50, then press the ENTER key.
12. The display appears "##-##-##(##)" momentarily and save the adjustment result in nonvolatile memory. After that "FBIAS ADJUST" is displayed.
13. Press the EJECT key to take out a continuous recording disc.

Notes :

1. The relation between the C1 error and focus bias value is shown in the figure below. Points “a” and “b” in the figure are detected by the above adjustment. Focal position “C” is automatically obtained from points “a” and “b” by calculation.
2. The C1 error rate fluctuates. Therefore, perform the adjustment according to the observed mean value.



5-8 Error rate confirmation

5-8-1 CD error rate confirmation

Confirmation :

1. Insert test disc TGYS-1.
2. Turn the JOG DIAL to display “CPLAY MODE”.
3. Press the ENTER key to display “CPLAY MID”.
4. “C=#### a=##” is displayed.
5. Confirm that the C1 error rate is less than 20.
6. Press the DELETE key to stop the playback, than press the EJECT key to take out a test disc.

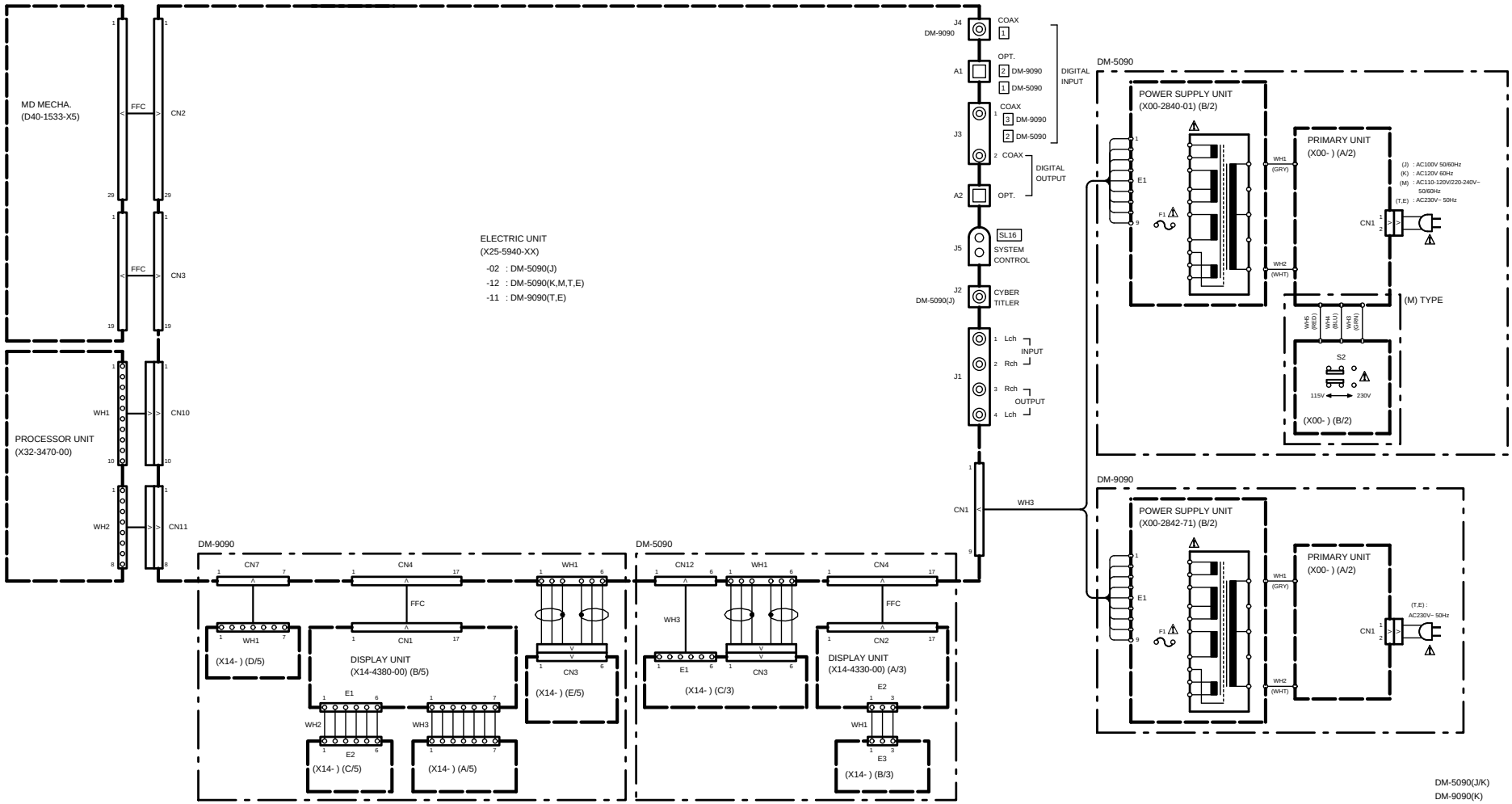
5-8-2 MO error rate confirmation

1. Insert a continuously recorded disc (refer to 5-4, "Creating the recordable continuous recording disc")
2. Turn the JOG DIAL to display “CPLAY MODE”.
3. Press the ENTER key to display “CPLAY MID”.
4. “C=#### a=##” is displayed.
5. Confirm that the C1 error rate is less than 50 and that ADIP error rate is 00.
6. Press the DELETE key to stop the playback, then press the EJECT key to take out a test disc.

Note : The "#" display on the screen indicates an arbitrary figure.

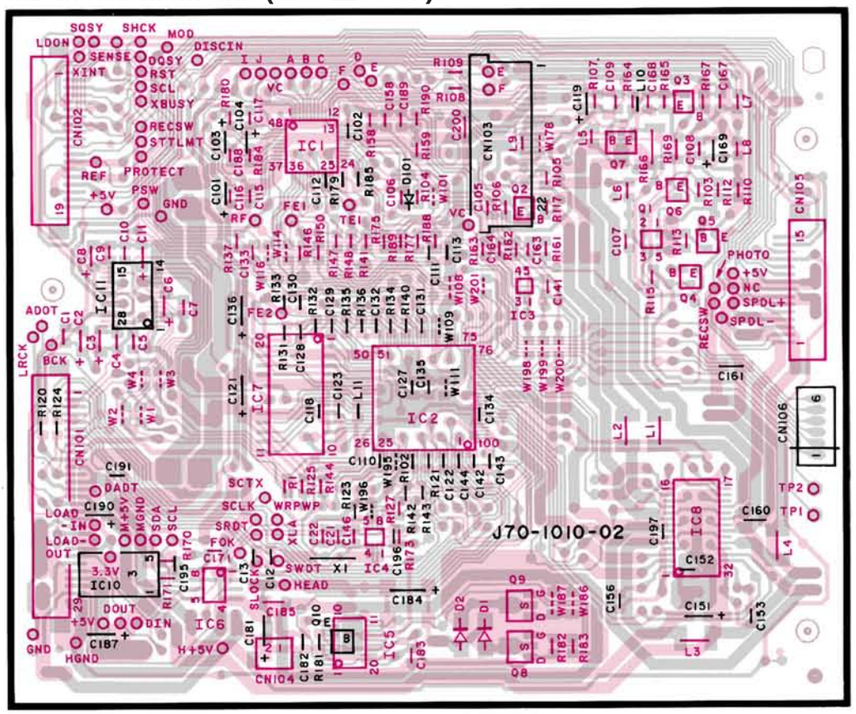
1050MD/DM-5090/DM-9090

WIRING DIAGRAM

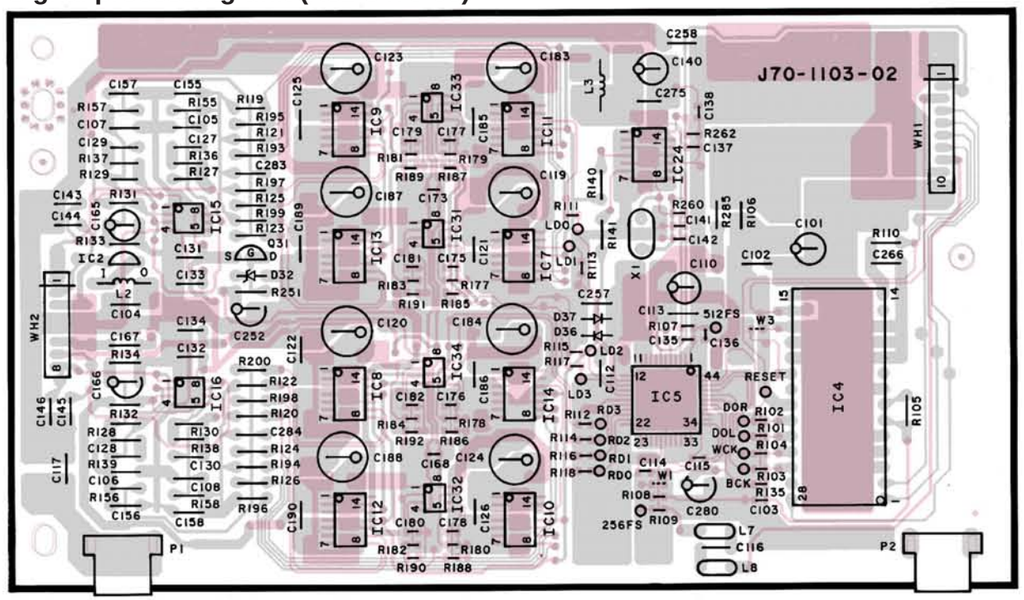


PC BOARD(Component side view)

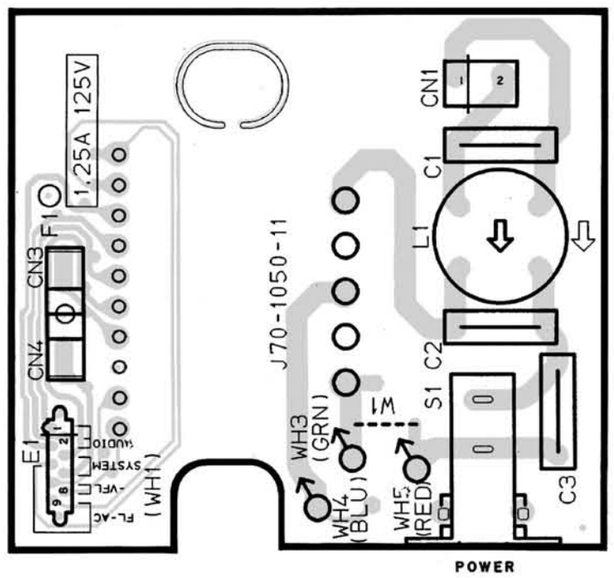
MD mechanism unit (X33-1100-00)



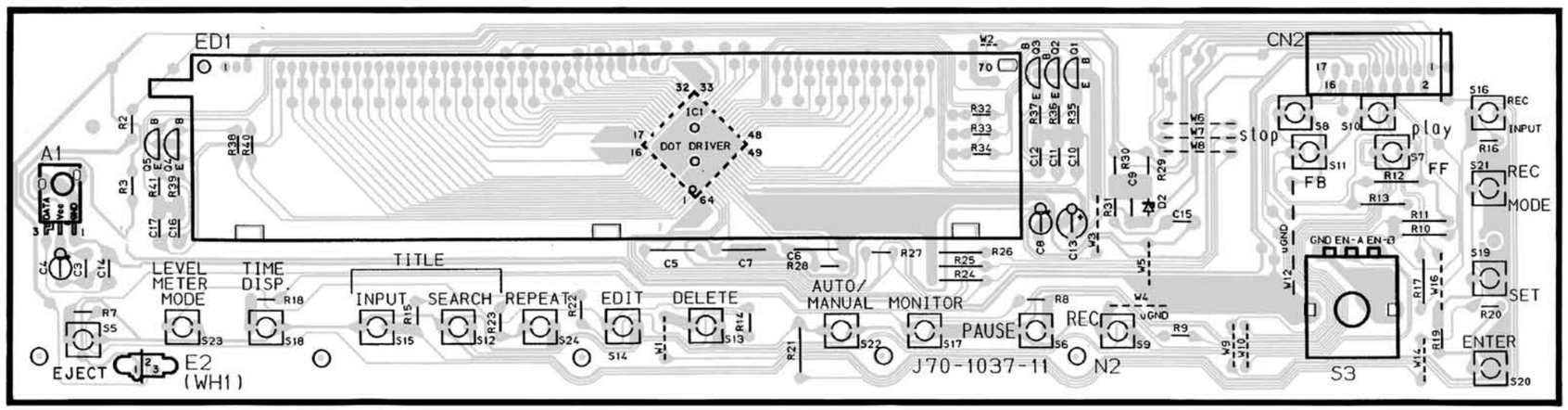
Signal processing unit (X32-3470-00)



(X00-2850-21) (A/2)



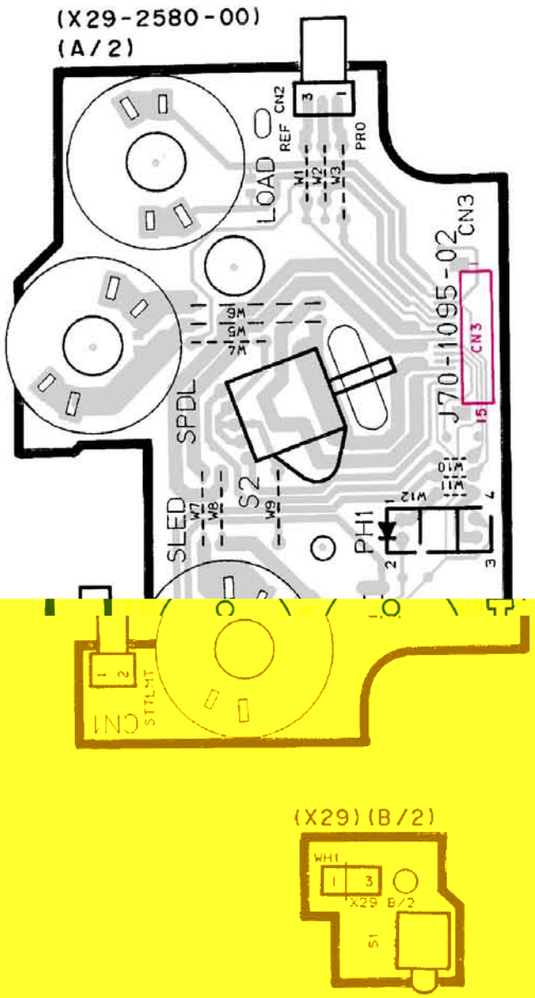
(X14-4430-00) (A/3)



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

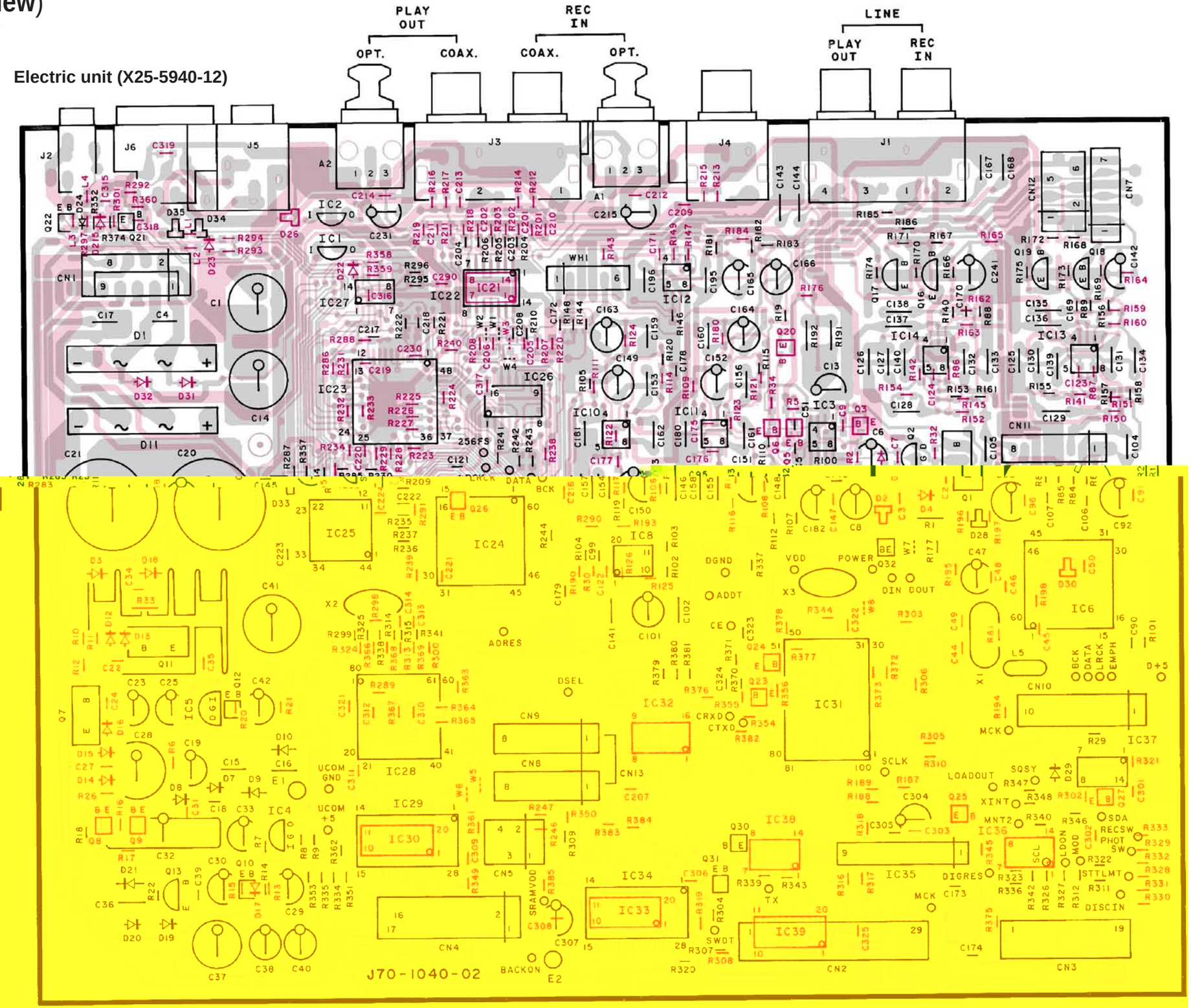
PC BOARD(Component side view)

MD control circuit unit (X29-2580-00)



(X29)(B/2)

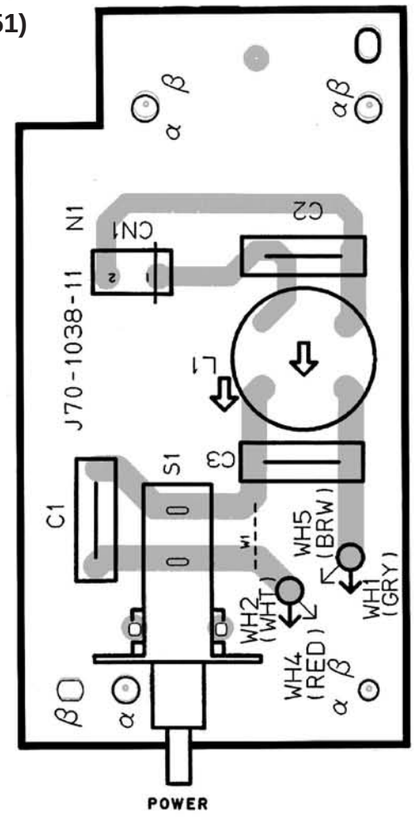
Electric unit (X25-5940-12)



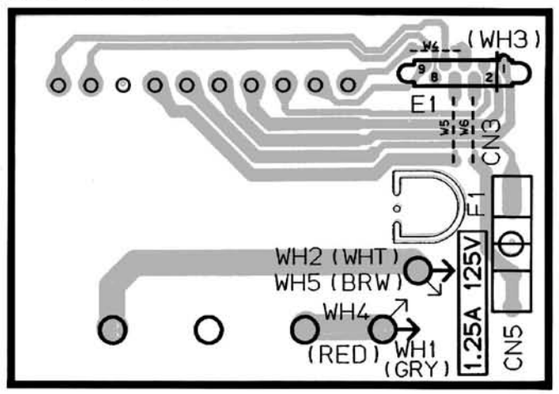
Refer to the schematic diagram for the value of resistors and capacitors.

PC BOARD(Component side view)

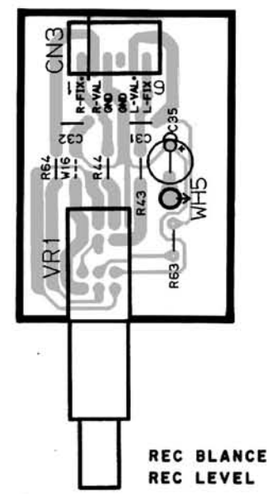
Power supply unit (X00-2840-00) (A/2)
(X00-2840-51)



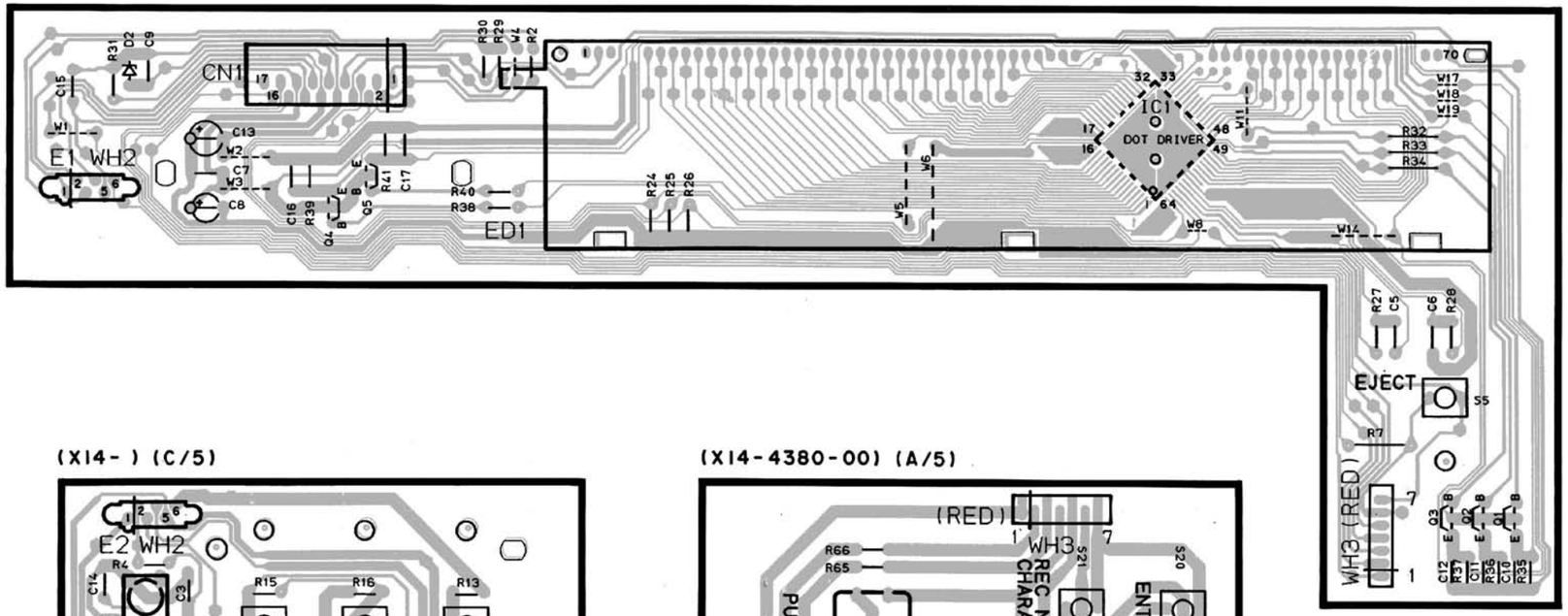
(X00-) (B/2)



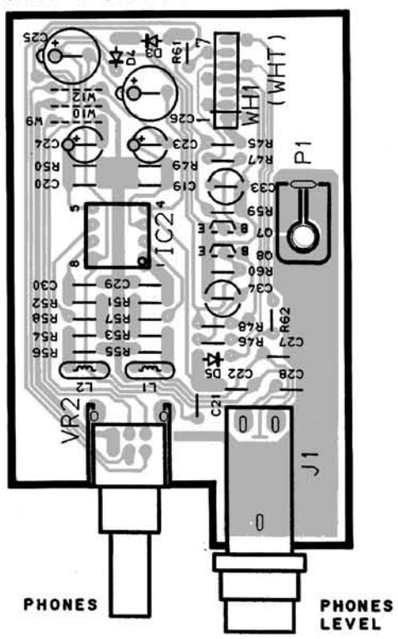
(X14-) (E/5)



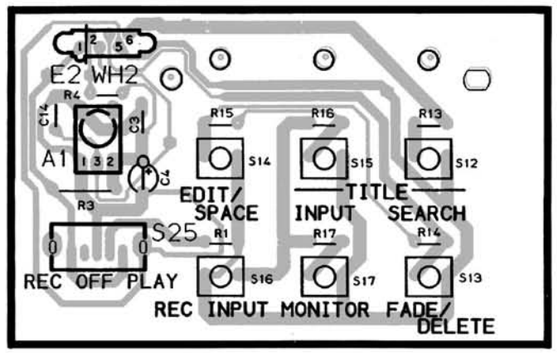
Display unit (X14-4380-00)
(X14-) (B/5)



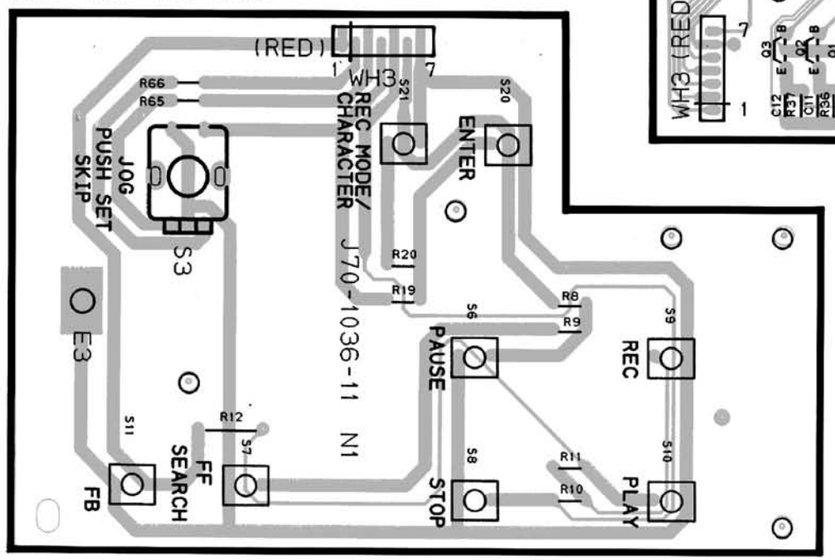
(X14-) (D/5)



(X14-) (C/5)



(X14-4380-00) (A/5)



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

A MECHA. (D40-1533-*5)

(X33-1100-00)

OVER WRITE HEAD HR901

CN104

CN103

OPTICAL PICK-UP BLOCK (KMS-260A/JIN)

HEAD DRIVER

IC5

IC1 RF AMP

IC2 ACIRC ATRAC EN/DECODE

IC7 DRAM

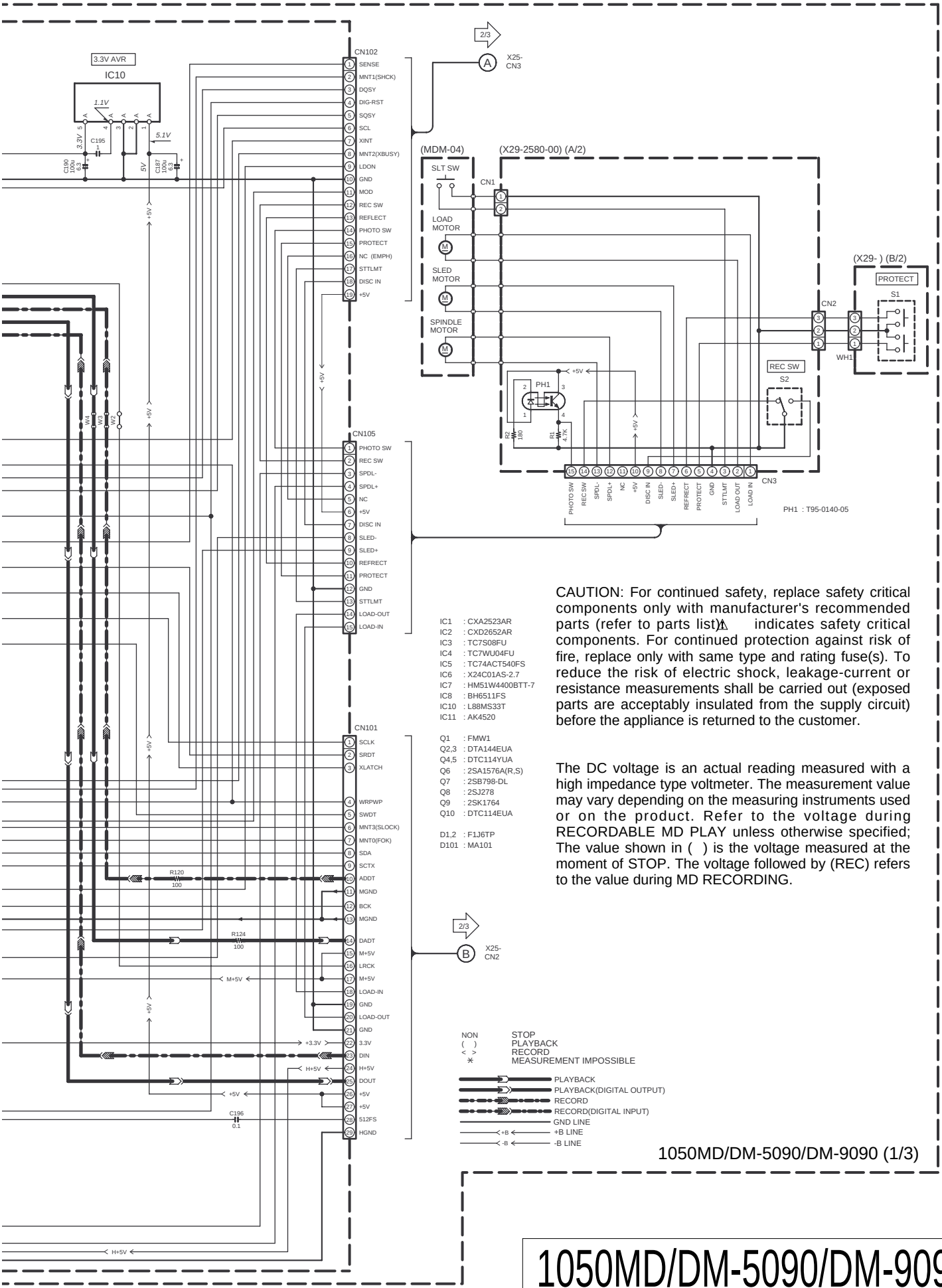
IC6 E2PROM.

IC4 S12fs

IC8 BTL

BUFFER IC3

CN106 ADJUSTMENT



IC1 : CXA2523AR
IC2 : CXD2652AR
IC3 : TC7S08FU
IC4 : TC7WU04FU
IC5 : TC74ACT540FS
IC6 : X24C01AS-2.7
IC7 : HM51W4400BTT-7
IC8 : BH6511FS
IC10 : L88MS33T
IC11 : AK4520

Q1 : FMW1
Q2,3 : DTA144EUA
Q4,5 : DTC114YUA
Q6 : 2SA1576A(R,S)
Q7 : 2SB798-DL
Q8 : 2SJ278
Q9 : 2SK1764
Q10 : DTC114EUA

D1,2 : F1J6TP
D101 : MA101

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 and rating fuse(s). 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.

The DC voltage is an actual reading measured with a high impedance type voltmeter. The measurement value may vary depending on the measuring instruments used or on the product. Refer to the voltage during RECORDABLE MD PLAY unless otherwise specified; The value shown in ( ) is the voltage measured at the moment of STOP. The voltage followed by (REC) refers to the value during MD RECORDING.

NON STOP
( ) PLAYBACK
< > RECORD
✳ MEASUREMENT IMPOSSIBLE

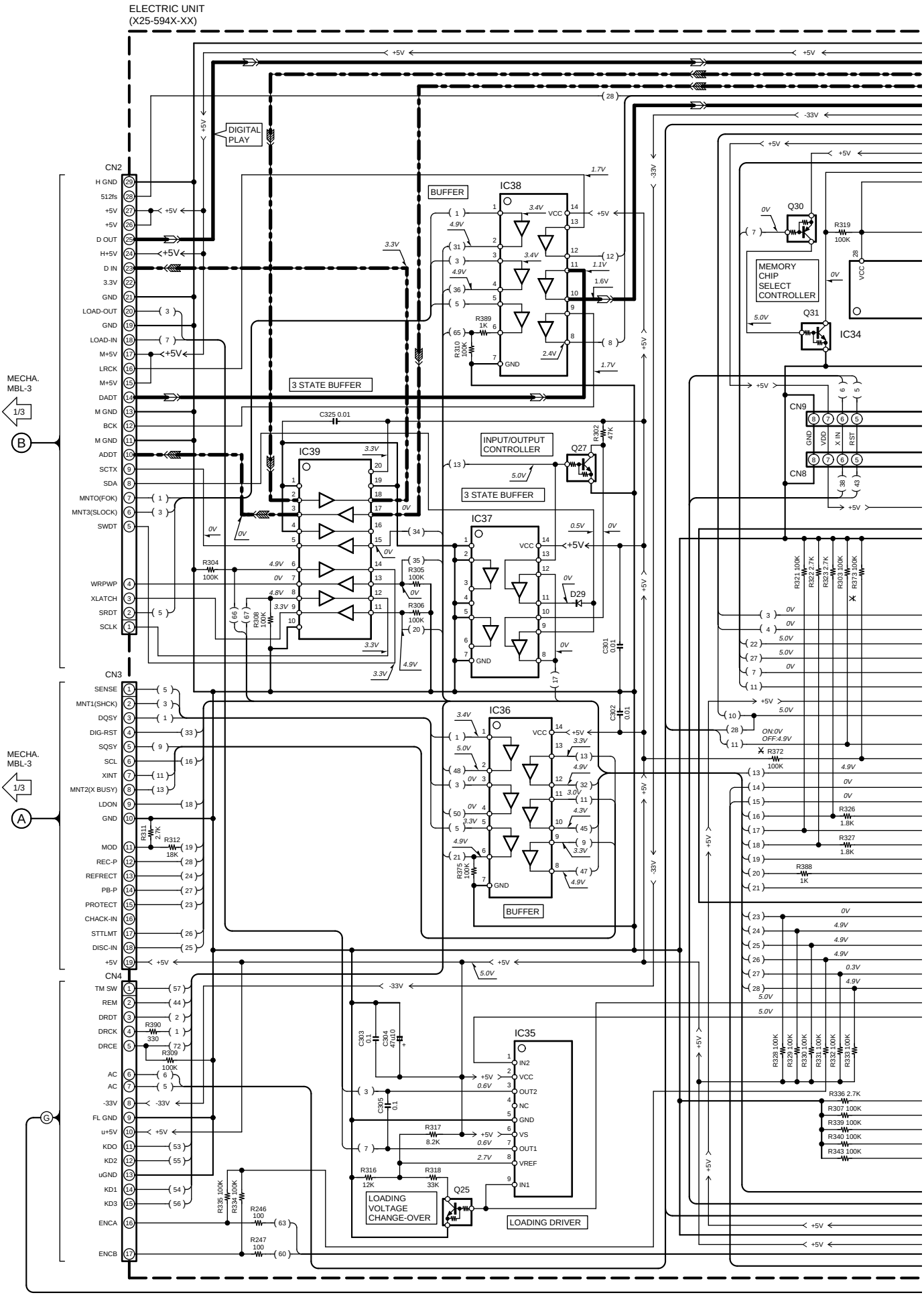
PLAYBACK
PLAYBACK(DIGITAL OUTPUT)
RECORD
RECORD(DIGITAL INPUT)
GND LINE
+B LINE
-B LINE

1050MD/DM-5090/DM-9090 (1/3)

Y22-7000-00

1050MD/DM-5090/DM-9090

KENWOOD


ELECTRIC UNIT
(X25-594X-XX)
DIGITAL PLAY
CN2
H GND
512fs
+5V
D OUT
H+5V
D IN
3.3V
GND
LOAD-OUT
LOAD-IN
M+5V
LRCK
DADT
M GND
BCK
ADDT
SCTX
SDA
MNTO(FOK)
MNT3(SLOCK)
SWDT
WRPWP
XLATCH
SRDT
SCLK
MECHA. MBL-3
1/3
CN3
SENSE
MNT1(SHCK)
DQSY
DIG-RST
SQSY
SCL
XINT
MNT2(X BUSY)
LDON
MOD
REC-P
REFRECT
PB-P
PROTECT
CHACK-IN
STTLMT
DISC-IN
CN4
TM SW
REM
DRDT
DRCK
DRCE
AC
-33V
FL GND
u+5V
KDO
KD2
uGND
KD1
KD3
ENCA
ENCB
BUFFER
IC38
3 STATE BUFFER
IC39
INPUT/OUTPUT CONTROLLER
Q27
IC37
D29
IC36
IC35
LOADING VOLTAGE CHANGE-OVER
Q25
LOADING DRIVER
MEMORY CHIP SELECT CONTROLLER
Q30
Q31
IC34
CN9
CN8
GND
VDD
X IN
RST

IC31
MAIN
u-COM

IC28
TEXT INPUT
u-COM

IC29
8BIT MEMORY LATCH

IC30
8BIT MEMORY LATCH

IC32
SERI → PARA CONVERTER

IC33
8BIT MEMORY LATCH

MEMORY IC

MEMORY IC

IC25
SAMPLING RATE CON

IC27
CD TEXT DECODER

IC26
DIGITAL REC SEL (LINE/OPT/COAX)

IC24
D.R.I.V.E. (REC)

Q26 D.R.I.V.E ON/OFF CONTROLLER

DIGITAL REC

DIGITAL REC

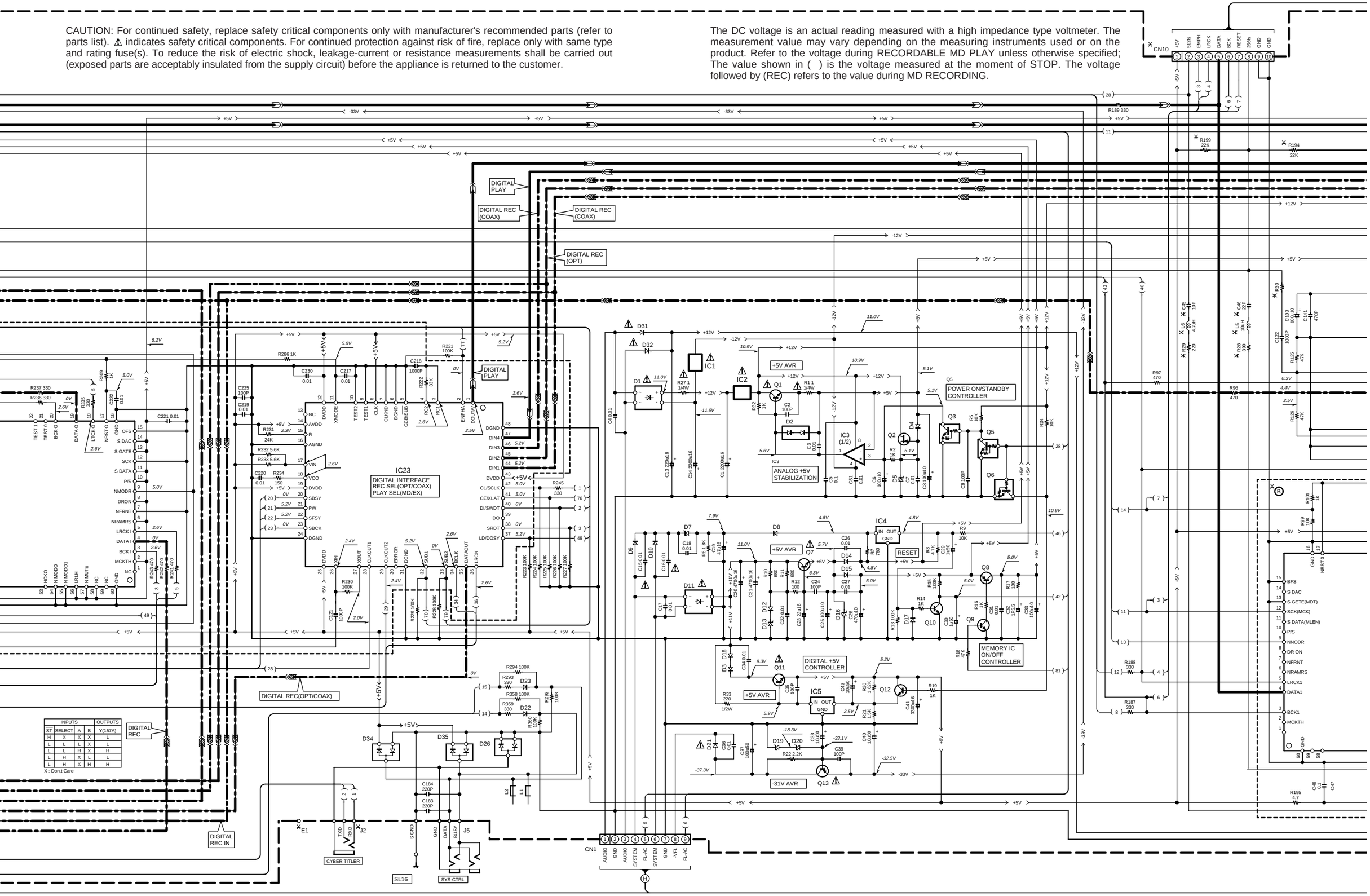
BACK UP VOLTAGE DETECTOR

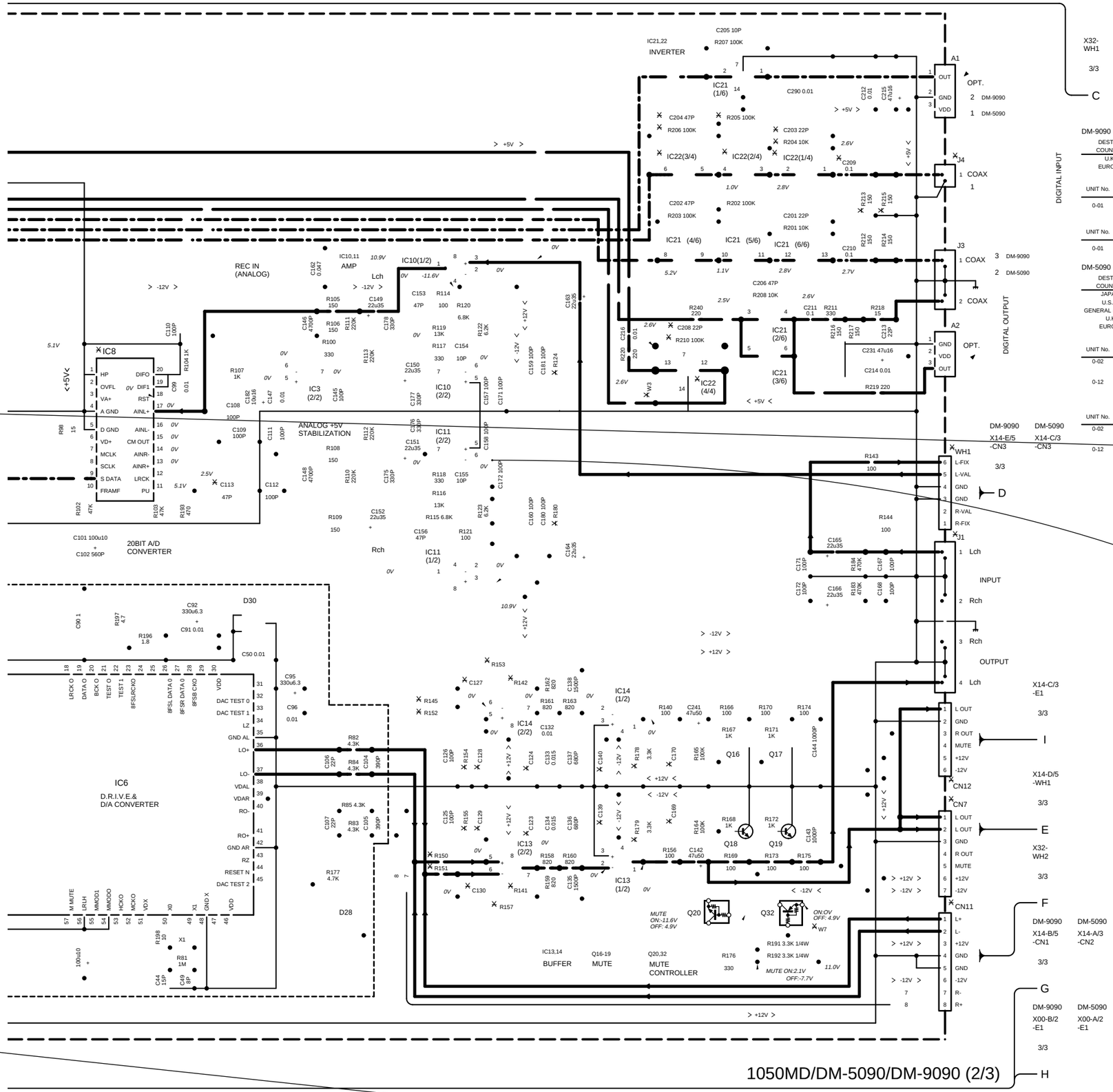
SRAM

SRAM

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 and rating fuse(s). 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.

The DC voltage is an actual reading measured with a high impedance type voltmeter. The measurement value may vary depending on the measuring instruments used or on the product. Refer to the voltage during RECORDABLE MD PLAY unless otherwise specified; The value shown in ( ) is the voltage measured at the moment of STOP. The voltage followed by (REC) refers to the value during MD RECORDING.





DM-9090 (X25-5940-11)

DESTINATION COUNTRY	ABB.	UNIT No.	A	C	B	C45,46, 113,315,	C123,124, 169,170	C127-130	C139, 140	C203,204,208, 209,316	CN7, 10,11	CN12	D24, 215
U.K. EUROPE	T E	0-01	YES	NO	NO	330P	1500P	120P	YES	YES	NO	NO	

UNIT No.	E1	IC8	IC22, 27	J1	J2	J3	J4	L3 ~6	Q21, 22	R28,29,190,238, 297,352,373,374	R30	R124, 180
0-01	YES	CS5335	YES	E63-0121-05	NO	E63-0174-05	YES	NO	NO	NO	330	330K

UNIT No.	R141, 142	R145, 150-152	R153- R155,157	R178,179,194,199,204-206,210, 213,215,288,289,295,296,372	R371	W1-3,5	W4, 6,7	WH1
0-01	100	4.7K	1.5K	YES	110K	NO	YES	E35-1974-05

DM-5090 (X25-594X-XX)

DESTINATION COUNTRY	ABB.	UNIT No.	A	B	C	C45,46, 113	C123,124,139, 140,169,170,	C127-130	C203,204,208, 209,316	C315	CN7, 10,11	CN12	D24, 215
JAPAN	J	0-02		YES						YES			YES
U.S.A. GENERAL MARKET	K M	0-12	NO	YES	NO	YES	100P	180P	NO		NO	NO	YES
U.K. EUROPE	T E												NO

UNIT No.	E1	IC8	IC22, 27	J1	J2	J3	J4	L3,4	L5,6	Q21, 22	R28,29, 190,238	R30	R124, 180	R141, 142
0-02					YES		YES			YES				
0-12	NO	CS5334	NO	E63-0120-05	NO	E63-0160-05	NO	NO	YES	NO	YES	10	56K	330

UNIT No.	R145, 150-152	R153- R155,157	R178,179,194,199,204- 206,210,213,215,371	R288,289,295- 297,352,373,374	R372	W1-3,5	W4, 6,7	WH1
0-02				YES		NO		
0-12	3.9K	18K	NO	NO	YES	NO	YES	E35-2021-05

	DM-9090	DM-5090
	X14-E/5 -CN3	X14-C/3 -CN3

IC1,2	: ICP-N10
IC3	: NJM4558M
IC4	: PST993D-T
IC5	: TL431CLP
IC6,24	: KAN03
IC8	: CS5334
IC10,11,13,14	: NJM4580ED
IC21,22	: TC74HCU04AF
IC23	: LC8904Q
IC25	: SM5844AF
IC26	: TC74HC157AF
IC27	: LC89170M
IC28	: uPD784035GC801
IC29,34	: HM62256BLFP-8T or HM62256BLFP-7T or HM62256BLFP12T
IC30,33	: TC74HC373AF
IC31	: UPD784215GF508 or UPD78F4216GF
IC32	: TC74HC4094AF
IC35	: TA8409S
IC36,38	: TC74HCT7007AF
IC37	: HD74HCT126FPEL
IC39	: TC74VHC244F
Q1,7,11	: 2SD2061 or 2SD2012
Q2	: 2SK246(Y,GR)
Q3	: UN5219
Q5,6,20-22,25-27	: UN5212
Q8,24	: 2SA1576A(R,S)
Q9,10,12,23	: 2SC4081(R,S)
Q13	: 2SC954(L,K)
Q16-19	: 2SD1450(S,T)
Q30,32	: UN5112
Q31	: UN5216 or DTC143TUA
D1,11	: D3SBA20F03
D2,26,30,33-35	: DA204U
D3,18	: U1BC44
D4,8,12,17,22-24,29,31,32,215	: MA111
D5	: UDZ5.1B
D7	: UDZ2.7B
D9,10,21	: S5688B(TPB5)
D13	: UDZ5.6B
D14,15	: MA113
D16	: UDZ6.2B
D19	: UDZ18B
D20	: UDZ15B
D28	: DAP202U

DIGITAL RECORD LINE (DIGITAL INPUT)
DIGITAL PLAYBACK LINE (DIGITAL OUTPUT)
DIGITAL LINE
GND LINE
+B LINE
-B LINE

1050MD/DM-5090/DM-9090 (2/3)

Y22-7000-00

1050MD/DM-5090/DM-9090

KENWOOD

AY AZ BA BB BC BD BE BF BG BH

1 2 3 4 5 6 7

PROCESSOR UNIT
(X32-3470-00): DM-9090 ONLY

IC2	: ICP-N10
IC4	: SM5843AP
IC5	: KAN05
IC7-14	: TC74AC74F
IC15,16,31-34	: NJM4580E
IC24	: TC74VHCU04F
Q31	: 2SK246(Y,GR)
D32	: UDZ5.1B
D36,37	: 1SS133 or HSS104

D-LATCH IC
IC7
IC11
IC9
IC13
BUFFER
IC24 (3/6)
AMP
+5V POWER STABILIZATION
D32
D36
WH1
IC4
DIGITAL
IC5
24BIT D/A CONVERTER IC
(BOTTOM VIEW)
P1
P2
C
P
E

2.5V 2.2V 2.2V 2.2V 2.2V 2.2V 2.2V 10.9V 4.9V 5.2V 5.0V 0.4V 2.0V 0.4V 10.9V 1.5V 2.5V 1.5V 2.4V 5.0V 0V 0V 4.9V

DISPLAY UNIT
(X14-4380-00) (B/5): DM-9090 ONLY

ED1

14G

P13 REPEAT
P14 FADE
P15 TITLE
P16 IN
P17 PGM
P18 SEARCH
P19 P20 COPY
P21 SINGLE
P22 TOTAL
P23 P24 P25 REMAIN

P17 L ∞ ∘ 40 ∘ 30 ∘ 21 ∘ 18 ∘ 15 ∘ 12 ∘ 9 ∘ 7 ∘ 5 ∘ 3 ∘ 1 ∘ 0 OVER (-dB) P33 L15
L1 P18 L2 P19 L3 P20 L4 P21 L5 P22 L6 P23 L7 P24 L8 P25 L9 P26 L10 P27 L11 P28 L12 P29 L13 P30 L14 P31
P3 R1 P4 R2 P5 R3 P6 R4 P7 R5 P8 R6 P9 R7 P10 R8 P11 R9 P12 R10 P13 R11 P14 R12 P15 R13 P16 R14
P32 OUT
P2 R ∞ ∘ 40 ∘ 30 ∘ 27 ∘ 24 ∘ 21 ∘ 18 ∘ 15 ∘ 12 ∘ 9 ∘ 6 ∘ 3 ∘ 0 OVER (-dB) P1 R15

P1 ANALOG
P2 DIGITAL
P3 1
P4 2
P5 3
P6 MONO
P7 32kHz
P8 MONITOR
P9 44.1kHz
P10 MANUAL
P12 48kHz
P11 A.PAUSE

15G 10G 9G 8G 7G 6G 5G 4G 3G 2G 1G 11G 12G 13G

P1 AM1 P2 AM2 P3 AM3 P4 AM4 P5 AM5
P6 AM6 P7 AM7 P8 AM8 P9 AM9 P10 AM10
P11 AM11 P12 AM12 P13 AM13 P14 AM14 P15 AM15
P16 AM16 P17 AM17 P18 AM18 P19 AM19 P20 AM20
P21 AM21 P22 AM22 P23 AM23 P24 AM24 P25 AM25
P26 AM26 P27 AM27 P28 AM28 P29 AM29 P30 AM30
P31 AM31 P32 AM32 P33 AM33 P34 AM34 P35 AM35
(1G-12G)

CN1 (F)
ENCB 17, ENCA 16, KD3 15, KD1 14, UGND 13, KD2 12, KD0 11, U+5V 10, FL GND 9, -33V 8, AC5.9V 7, AC5.9V 6, DRCE 5, DRCK 4, DRDT 3, REM 2, TMSW 1
R30 100, R29 100, R31 10K, D2, C9 0.01, C15 0.01, R2 470

IC1
FL DRIVER
(BOTTOM VIEW)
DI 64, CL 63, CE 62, RST 61, VDD 60, OSC1 59, OSC0 58, VSS 57, TEST 56, VFL 55, G1 54, G2 53, G3 52, G4 51, G5 50, G6 49

Q1-5
BUFFER

Q5 R41 47K, C17 220P, 1R 40K
Q4 R38 1K, C16 220P, R39 100K
Q3 R34 1K, C12 1000P, R37 22K
Q2 R33 1K, C11 1000P, R36 100K
Q1 R32 1K, C10 1000P, R35 22K
R27 10K, R28 10K, R24 10K, R25 10K, R26 10K, C5 0.01, C6 100P, C13 100u25, C8 100u6.3, C7 0.01
-15.7V, -15.3V, -29.8V, -30.2V, -32.5V, 4.8V, -33V, U+5V

R7 1.8K, S5, EJECT

(X14-) (C/5)
E1, E2, WH2
S25, R1 10K, TIMER SW (Hi : REC, Md : PLAY, Lo : OFF)
R3 10K, R4
S13 FADE, S14 EDIT, S15 TITLE INPUT, S16 REC INPUT, S17 MONITOR, S12 TT SEARCH
R14 1.8K, R15 2.7K, R16 4.7K, R17 8.2K, R13 22K
A1 GND, VCC, DATA, C4 470u6.3, C3 0.01, C14 100P, R4 100

(X14-) (A/5)
WH3
R20 2.7K, R19 1.8K, R66 100, R65 100
S21 REC MODE, S20 ENTER, S3, JOG DIAL SET
R12 12K, R11 2.7K, R10 1.8K
S11 FB, S10 PLAY, S9 REC, S8 STOP
R9 12K, R8 2.7K
S7 FF, S6 PAUSE
E3

IC1 : LC75710NE
IC2 : NJM4580D
Q1-5 : 2SC3311A(Q,R) or 2SC2458(Y,GR)
Q7,8 : 2SD1450(S,T)
D2 : RD7.5JS(B) or HZS7.5S(B)
D3-5 : 1SS133 or HSS104
ED1 : FIP12XM1GA
A1 : W02-2571-05

(X14-) (E/5)
CN3 (E)
L-FIX 6, L-VAL 5, GND 4, GND 3, R-VAL 2, R-FIX 1
WH1 (D)
R43 1K, R63 1K, C31 220P, C32 220P, VR1 50K, R64 1K, R44 1K
REC LEVEL, BALANCE

(X14-) (D/5)
WH1 (E)
LOUT 1, LOUT 2, GND 3, ROUT 4, MUTE 5, +12V 6, -12V 7
R45 2.7K, R47 1K, Q7, Q8, MUTE, R59 5.6K, R60 5.6K, R46 1K, R48 2.7K, C33 220u50, C34 220u50, C22 100P, C21 0.01, R61 100, R62 100, D3, D4, D5
ON:2.1V OFF:-7.7V, 10.9V, -11.6V
C23 22u16, C24 22u16, VR2 50K, R49 10K, R50 10K, C19 100P, C20 100P, C25 220u16, C26 220u16
IC2 (1/2), IC2 (2/2), BUFFER AMP
R51 22, R53 22, R57 330, R55 100K, R58 330, R56 100K, R52 22, R54 22, L1, L2, C27 470P, C28 470P
J1, P1, HEADPHONE

(X00-2840-01) (B/2)
WH3 (H)
AC18.5V 1, GND 2, AC18.5V 3, AC10V 4, AC5.9V 5, AC10V 6, AC29V 7, AC29V 8, AC5.9V 9
E1
CN5, CN3, F1 1.25A 125V
AC, AC, AUDIO, AUDIO, AUDIO, SYSTEM, SYSTEM, -VFL, -VFL

(X00-) (A/2)
WH1 (GRY), WH2 (WHT)
C3 6800P, C2 6800P, C1 6800P, L1, S1
MAIN POWER
CN1 AC100V 50/60Hz

DISPLAY UNIT (X14-4430-00) (A/3) : DM-5090 ONLY

ED1

14G

REPEAT (P13) FADE (P14)
TITLE (P15) IN (P16)
PGM (P17) SEARCH (P18)
COPY (P19 P20) SINGLE (P21)
TOTAL (P22)
REMAIN (P25)
(P23 P24)

L (P17): ∞ ∘ 40 ∘ 30 ∘ 21 ∘ 18 ∘ 15 ∘ 12 ∘ 9 ∘ 7 ∘ 5 ∘ 3 ∘ 1 ∘ 0 OVER (-dB) (P33 L15)
L1 (P18) L2 (P19) L3 (P20) L4 (P21) L5 (P22) L6 (P23) L7 (P24) L8 (P25) L9 (P26) L10 (P27) L11 (P28) L12 (P29) L13 (P30) L14 (P31)
P3 R1 P4 R2 P5 R3 P6 R4 P7 R5 P8 R6 P9 R7 P10 R8 P11 R9 P12 R10 P13 R11 P14 R12 P15 R13 P16 R14
OUT (P32)
R (P2): ∞ ∘ 40 ∘ 30 ∘ 27 ∘ 24 ∘ 21 ∘ 18 ∘ 15 ∘ 12 ∘ 9 ∘ 6 ∘ 3 ∘ 0 OVER (-dB) (P1 R15)

ANALOG (P1) DIGITAL (P2)
P3 1 P4 2 P5 3
MONO (P6) 32kHz (P7)
MONITOR (P8) 44.1kHz (P9)
MANUAL (P10) 48kHz (P12)
A.PAUSE (P11)

15G 10G 9G 8G 7G 6G 5G 4G 3G 2G 1G 11G 12G 13G

P1 AM1 P2 AM2 P3 AM3 P4 AM4 P5 AM5
P6 AM6 P7 AM7 P8 AM8 P9 AM9 P10 AM10
P11 AM11 P12 AM12 P13 AM13 P14 AM14 P15 AM15
P16 AM16 P17 AM17 P18 AM18 P19 AM19 P20 AM20
P21 AM21 P22 AM22 P23 AM23 P24 AM24 P25 AM25
P26 AM26 P27 AM27 P28 AM28 P29 AM29 P30 AM30
P31 AM31 P32 AM32 P33 AM33 P34 AM34 P35 AM35
(1G-12G)

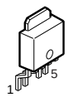
IC1 : LC75710NE
IC2 : NJM4580D

Q1-5 : 2SC3311A(Q,R) or 2SC2458(Y,GR)
Q7,8 : 2SD1450(S,T)

D2 : RD7.5JS(B) or HZS7.5S(B)
D1,3,4 : 1SS133 or HSS104

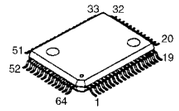
ED1 : FIP12XM1GA
A1 : W02-2551-05

L88MS33T

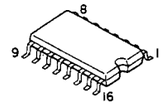


TL431CLP

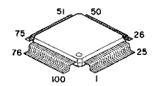
LC75710NE



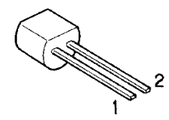
TC74HC157AF



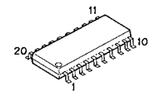
CXD2652AR



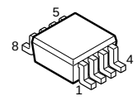
ICP-N10



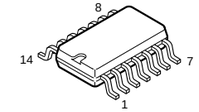
CS5334
CS5335
TC74ACT540FS



TC7WU04FU



HD74HCT126FPEL



IC1 FL DRIVER (BOTTOM VIEW)

CN2: ENCB ENCA KD3 KD1 UGND KD2 KD0 U+5V FL GND -33V AC5.9V AC5.9V DRCE DRCK DRDT REM TMSW

X25-CN4 2/3 G

U+5V R41 47K Q5 C17 220P -29.8V -29.3V R40 1K
C15 0.01 R30 100 R29 100 D1 1SS133 D2 C9 0.01 R2 470
R27 10K R28 10K C6 100P R24 10K R25 10K R26 10K C5 0.02 C8 10u6.3 C7 0.02 C13 0.02
-33V -32.5V 4.8V

AM1 AM2 AM3 AM4 AM5 AM6 AM7 AM8 AM9 AM10 AM11 AM12 AM13 AM14 AM15 AM16 AM17 AM18 AM19 AM20 AM21 AM22 AM23 AM24 AM25 AM26 AM27 AM28 AM29 AM30 AM31 AM32 AM33 AM34 AM35 AA1 AA2 AA3 AA4/G16 AA5/G15 AA6/G14 AA7/G13 AA8/G12 G11 G10 G9 G8 G7

DI CL CE RST VDD OSC1 OSC0 VSS TEST VFL G1 G2 G3 G4 G5 G6

-15.7V R38 1K Q4 C16 220P R39 100K -15.3V
R34 1K Q3 C12 1000P R35 22K -29.8V
R33 1K Q2 C11 1000P R36 100K -29.8V
R32 1K Q1 C10 1000P R37 22K -30.2V
Q1-5 BUFFER

R9 12K R8 2.7K R7 1.8K
FF S7 PAUSE S6 EJECT S5
TT SEARCH S12 FB S11 PLAY S10 REC S9 STOP S8
TIME DISPLAY S18 MONI -TOR S17 REC INPUT S16 TITLE INPUT S15 EDIT S14 FADE S13
PRESET TITLE S24 LEVEL METER MODE S23 AUTO/ MANUAL S22 REC MODE S21 ENTER S20 JOG DIAL SET S19
R13 12K R12 12K R11 2.7K R10 1.8K
R18 22K R17 8.2K R16 4.7K R15 2.7K R14 1.8K
R23 22K R22 8.2K R21 4.7K R20 2.7K R19 1.8K

REMOTE SENSOR A1 GND VCC DATA C3 0.01 C4 10u6.3 C14 1000P R3 10K

S3 (X14-) (B/3) S25 TIMER SW HI: REC MD: PLAY LO: OFF R1 10K E2 WH1 E3

X25-WH1 2/3 D
X25-CN12 2/3 I
X25-CN1 2/3 H

(X14-) (C/3)

CN3: R-FIX R-VAL GND GND L-VAL L-FIX
REC LEVEL R44 1K VR1 50K R43 1K
MUTE Q7.8 Q7 Q8 R45 2.7K R47 1K R48 1K R46 2.7K R49 5.6K R50 5.6K C21 2.2u C20 2.2u C22 2.2u C23 22u16 C24 22u16
R61 100 D3 D1 D4 R62 100 10.9V -11.6V
+12V -12V
VR2 50K R59 100K R60 100K C19 100P C25 220u16 C26 220u16 C27 470P C28 470P
IC2 (1/2) IC2 (2/2) BUFFER AMP
R51 22 R53 22 R57 330 R55 100K R58 330 R56 100K R52 22 R54 22 L1 L2
HEADPHONES J1 P1
PHONES LEVEL C21 0.01 C22 100P
E1 LOUT GND ROUT MUTE +12V -12V WH3

(X00-285X-XX) (A/2)

WH1 E1: AC19V GND AC19V AC10V AC5.9V AC10V AC30V AC30V AC5.9V
AC AC AUDIO AUDIO AUDIO SYSTEM SYSTEM SHIELD -VFL -VFL
TRANSFORMER MAIN POWER F1 CN4 CN3 S1 W1 C2 6800P C1 6800P L1
CN1 (J) : AC100V 50/60Hz (K) : AC120V 60Hz (M) : AC110-120V/220-240V~ 50/60Hz (X) : AC240V~ 50Hz (T,E) : AC230V~ 50Hz
(X00-285X-XX) (B/2) WH5 (RED) WH4 (BLU) WH3 (GRN) S2 115V 230V

(X00-285X-XX) (A/2) (B/2)

DESTINATION		UNIT No.	W1	WH3-5	S2	F1	TRANSFORMER
COUNTRY	ABB.						
JAPAN	J	0-00	YES	NO	NO	1.25A 125V	L07-2412-05
U.S.A.	K						
GENERAL MARKET	M	0-21	NO	YES	YES	T800mA L250V	L07-2271-05
EUROPE	E	2-71	YES	NO	NO		L07-2270-05
U.K.	T						

1050MD/DM-5090/DM-9090 (3/3)

Y22-7000-00

1050MD/DM-5090/DM-9090

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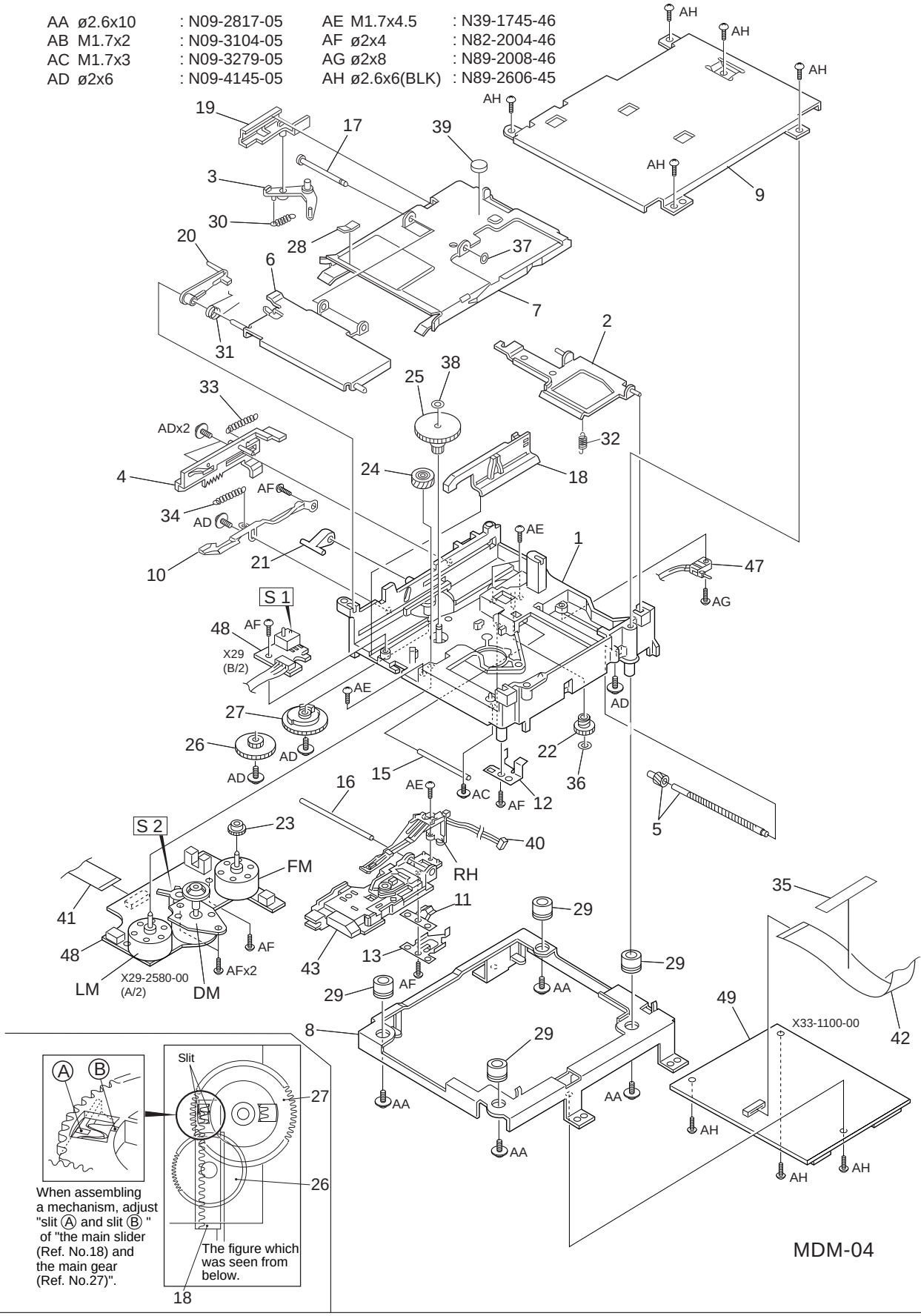
EXPLODED VIEW (MECHANISM)

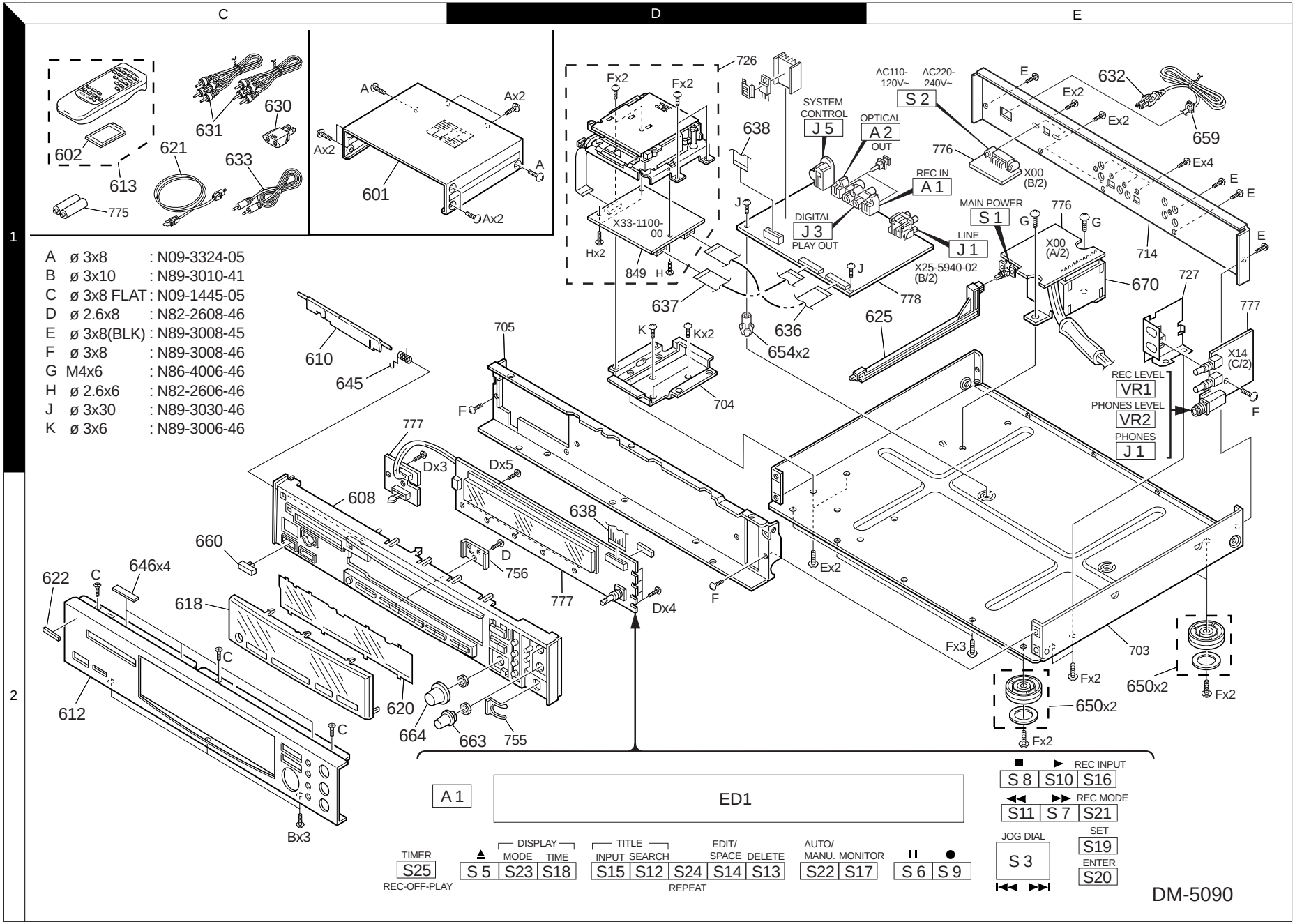
AA ø2.6x10	: N09-2817-05	AE M1.7x4.5	: N39-1745-46
AB M1.7x2	: N09-3104-05	AF ø2x4	: N82-2004-46
AC M1.7x3	: N09-3279-05	AG ø2x8	: N89-2008-46
AD ø2x6	: N09-4145-05	AH ø2.6x6(BLK)	: N89-2606-45



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

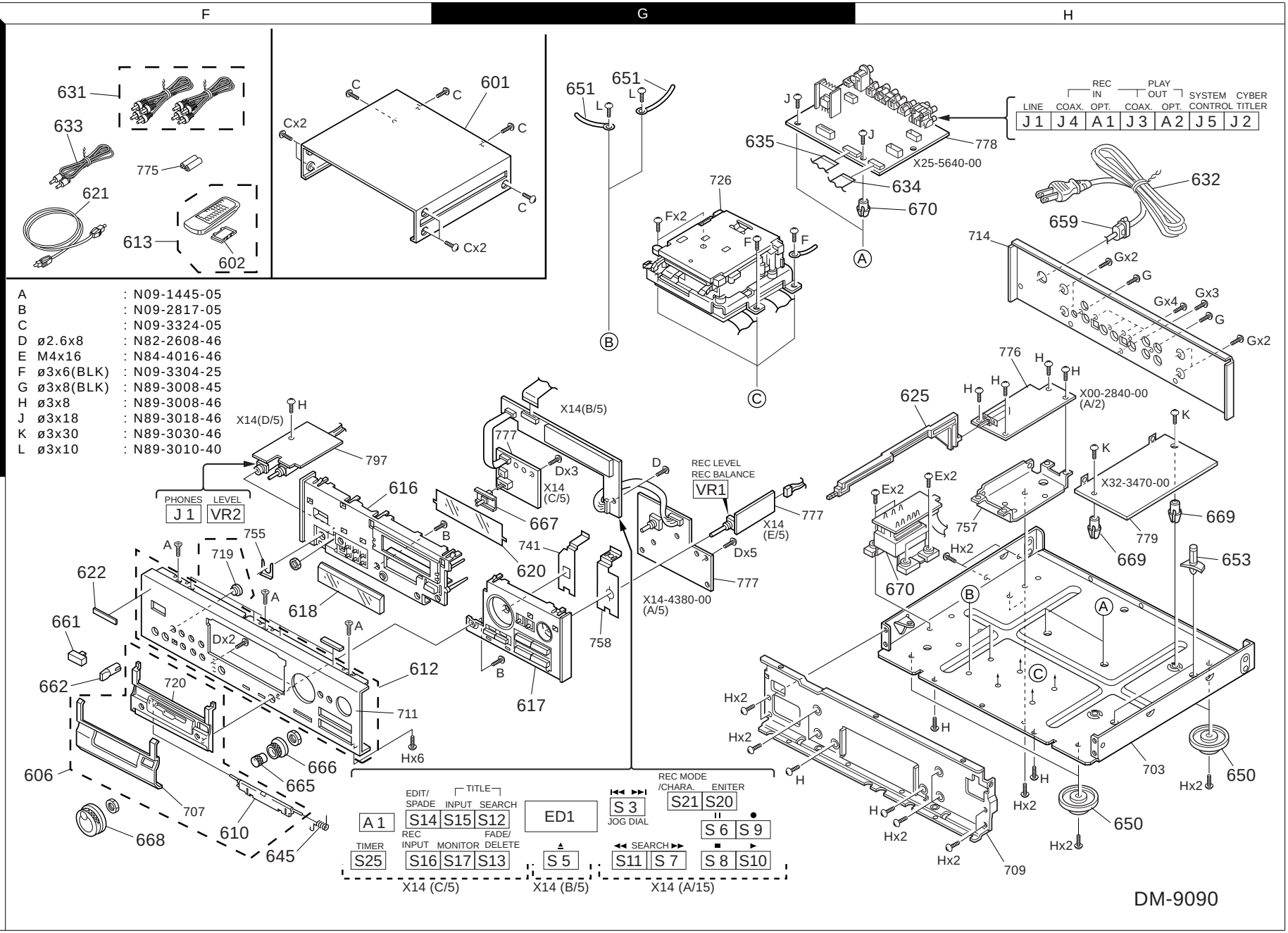
1050MD/DM-5090/DM-9090

EXPLODED VIEW (UNIT)



Parts with exploded numbers larger than 700 are not supplied.

EXPLODED VIEW (UNIT)



A		: N09-1445-05
B		: N09-2817-05
C		: N09-3324-05
D	ø2.6x8	: N82-2608-46
E	M4x16	: N84-4016-46
F	ø3x6(BLK)	: N09-3304-25
G	ø3x8(BLK)	: N89-3008-45
H	ø3x8	: N89-3008-46
J	ø3x18	: N89-3018-46
K	ø3x30	: N89-3030-46
L	ø3x10	: N89-3010-40

Parts with exploded numbers larger than 700 are not supplied.

✻ 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.

❶

Ref. No	Address	New Parts	Parts No.	Description	Destination	Remarks
			1050MD/DM-5090 T2: GOLD			
601	1C	✻	A01-3342-11	METALLIC CABINET	T2	
601	1C		A01-3369-01	METALLIC CABINET	KMTE	
602	1C		A09-0362-08	BATTERY COVER		
608	2C	✻	A22-1743-31	SUB PANEL	T2	
608	2C	✻	A22-1747-31	SUB PANEL	KMTE	
610	1C	✻	A29-0866-24	PANEL	T2	
610	1C	✻	A29-0868-24	PANEL	KMTE	
612	2C	✻	A60-1180-02	PANEL	T2	
612	2C	✻	A60-1181-02	PANEL	K	
612	2C	✻	A60-1182-02	PANEL	MTE	
613	1C		A70-1141-05	REMOTE CONTROLLER ASSY		
618	2C	✻	B10-2376-03	FRONT GLASS	T2	
618	2C	✻	B10-2377-03	FRONT GLASS	KMTE	
620	2C		B11-0336-13	COLOR FILTER	KMTE	
621			B11-0337-13	COLOR FILTER	T2	
621	1C		B19-1529-05	OPTICAL FIBER		
622	1C		B43-0302-04	KENWOOD BADGE	KMTE	
622	1C		B43-0305-04	KENWOOD BADGE	T2	
-			B46-0310-03	WARRANTY CARD	TE	
-			B46-0328-03	WARRANTY CARD	K	
-			B46-0336-03	WARRANTY CARD	K	
-			B58-0945-03	CAUTION CARD	TT2	
-		✻	B60-3497-00	INSTRUCTION MANUAL(ENGLISH)	MTT2	
-		✻	B60-3498-00	INSTRUCTION MANUAL(FRN/ITALY)	E	
-		✻	B60-3499-00	INSTRUCTION MANUAL(GER/DUTCH)	E	
-		✻	B60-3500-00	INSTRUCTION MANUAL(SPANISH)	ME	
-		✻	B60-3501-00	INSTRUCTION MANUAL(TIWANESE)	M	
-		✻	B60-3502-00	INSTRUCTION MANUAL(ENG/FRN)	K	
625	1E	✻	D21-1877-03	EXTENSION SHAFT		
⚠ 630	1C		E03-0115-05	AC PLUG ADAPTER	M	
631	1C		E30-0505-05	AUDIO CORD		
⚠ 632	1E		E30-2592-15	AC POWER CORD	ME	
⚠ 632	1E		E30-2650-05	AC POWER CORD	K	
⚠ 632	1E		E30-2829-05	AC POWER CORD	TT2	
633	1C		E30-2733-05	CORD WITH PLUG		
636	1D	✻	E35-1962-05	FLAT CABLE		
637	1D	✻	E35-1963-05	FLAT CABLE		
638	1D,2D	✻	E35-1964-05	FLAT CABLE		
645	1C	✻	G01-4045-04	TORSION COIL SPRING		
646	2C		G11-0155-14	SOFT TAPE (40X9X2)		
-		✻	G11-1389-04	CUSHION		
-			G11-2247-04	CUSHION		
-		✻	G11-2361-04	SOFT TAPE		
-		✻	H10-7365-12	POLYSTYRENE FOAMED FIXTURE		
-		✻	H10-7366-12	POLYSTYRENE FOAMED FIXTURE		
-			H12-2355-04	PACKING FIXTURE	TT2	
-			H20-0568-04	PROTECTION COVER	M	
-			H25-0232-04	PROTECTION BAG (235X350X0.03)	KME	
-			H25-0319-04	PROTECTION BAG	KTET2	
-			H25-0651-04	PROTECTION BAG	TT2	
-			H50-2428-04	ITEM CARTON CASE	E	

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-			H50-2429-04	ITEM CARTON CASE	TT2	
-		✻	H50-2556-04	ITEM CARTON CASE	K	
-		✻	H50-2557-04	ITEM CARTON CASE	M	
650	2E		J02-1151-03	FOOT	KMTE	
650	2E		J02-1168-03	FOOT	T2	
654	1D		J19-3753-04	UNIT HOLDER		
⚠ 659	1E		J42-0083-05	POWER CORD BUSHING		
-			J19-2808-05	HOLDER		
-			J61-0307-05	WIRE BAND		
660	2C		K27-2005-04	KNOB (BUTTON)	KMTE	
660	2C		K27-2199-04	KNOB (BUTTON)	T2	
663	2D		K29-4332-04	KNOB	KMTE	
663	2D	✻	K29-6425-04	KNOB	T2	
664	2C		K29-6264-14	KNOB	KMTE	
664	2C	✻	K29-6426-14	KNOB	T2	
⚠ 670	1E		L07-2270-05	POWER TRANSFORMER	TET2	
⚠ 670	1E		L07-2271-05	POWER TRANSFORMER	M	
⚠ 670	1E	✻	L07-2412-05	POWER TRANSFORMER	K	
			DM-9090			
601	1G	✻	A01-3450-01	METALLIC CABINET		
602	1F		A09-0362-08	BATTERY COVER		
606	2F	✻	A21-1969-23	DRESSING PANEL ASSY		
610	2F		A29-0868-24	PANEL		
612	2F	✻	A60-1258-02	PANEL ASSY		
613	1F	✻	A70-1141-05	REMOTE CONTROLLER ASSY		
616	2E	✻	B07-2348-21	ESCUTCHEON		
617	2G	✻	B07-2361-22	ESCUTCHEON ASSY		
618	2F	✻	B10-2362-04	FRONT GLASS		
620	2G	✻	B11-0356-04	COLOR FILTER		
621	1F		B19-1529-05	OPTICAL FIBER		
622	1F		B43-0302-04	KENWOOD BADGE		
-			B46-0310-03	WARRANTY CARD		
-			B58-0945-03	CAUTION CARD	T	
-		✻	B60-3491-00	INSTRUCTION MANUAL(ENGLISH)	T	
-		✻	B60-3492-00	INSTRUCTION MANUAL(FRANCH)	E	
-		✻	B60-3493-00	INSTRUCTION MANUAL(GER/DUTCH)	E	
-		✻	B60-3494-00	INSTRUCTION MANUAL(ITALY/SPAN)	E	
625	1H	✻	D21-1891-03	EXTENSION SHAFT		
631	1F		E30-0505-05	AUDIO CORD		
⚠ 632	1H		E30-2592-15	AC POWER CORD	E	
⚠ 632	1H		E30-2721-05	AC POWER CORD	T	
633	1F		E30-2733-05	CORD WITH PLUG		
634	1H		E35-1890-05	FLAT CABLE		
635	1G		E35-1960-05	FLAT CABLE		
645	2F		G01-4044-04	TORSION COIL SPRING		
-		✻	G01-4020-14	TORSION COIL SPRING		
-			G10-0458-04	NON-WOVEN FABRIC		
-			G10-0464-04	NON-WOVEN FABRIC		
-			G11-0155-14	SOFT TAPE (40X9X2)		
-			G11-2341-04	CUSHION		

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	-		✻	H10-7318-12	POLYSTYRENE FOAMED FIXTURE				
	-		✻	H10-7319-12	POLYSTYRENE FOAMED FIXTURE				
	-			H11-0088-04	POLYSTYRENE FOAMED BOARD				
	-			H12-2301-04	PACKING FIXTURE			T	
	-			H12-2382-04	PACKING FIXTURE			E	
	-			H12-2383-04	PACKING FIXTURE			T	
	-			H25-0232-04	PROTECTION BAG (235X350X0.03)			E	
	-			H25-0368-04	PROTECTION BAG				
	-			H25-0651-04	PROTECTION BAG			T	
	-		✻	H50-2426-14	ITEM CARTON CASE			E	
	-		✻	H50-2427-14	ITEM CARTON CASE			T	
	650	1H		J02-1149-05	FOOT				
	651	1G,1H		J19-0306-05	LEAD HOLDER				
	653	2H		J19-3056-05	UNIT HOLDER				
⚠	659	1H		J42-0083-05	POWER CORD BUSHING				
	-			J19-2808-05	HOLDER				
	-			J19-3703-14	UNIT HOLDER				
	-			J61-0307-05	WIRE BAND				
	661	2F		K27-2178-04	KNOB (BUTTON)				
	662	2F		K29-3741-04	KNOB				
	665	2F	✻	K29-6692-04	KNOB				
	666	2F	✻	K29-6695-14	KNOB				
	667	2G		K29-6697-04	KNOB				
	668	2F	✻	K29-6700-03	KNOB				
⚠	670	1H		L07-2270-05	POWER TRANSFORMER				
	Power supply unit (X00-2840-51: DM-9090 only)								
⚠	C1 -3			C91-1488-05	MF	6800PF	250VAC		
	CN1			E40-4245-05	PIN ASSY				
⚠	F1			F05-8013-05	FUSE (SEMKO)	(250V T800MAL)			
	CN3			J13-0075-05	FUSE CLIP				
	CN5			J13-0075-05	FUSE CLIP				
⚠	L1			L79-0733-05	LINE FILTER				
⚠	S1			S40-1153-05	PUSH SWITCH				
	Power supply unit (X00-2850-21: 1050MD/DM-5090)								
⚠	C1 -3			C91-1488-05	MF	6800PF	250VAC		
	CN1			E40-4245-05	PIN ASSY				
⚠	F1			F05-8013-05	FUSE (SEMKO)	(250V T800MAL)		5	
⚠	F1			F50-0067-05	FUSE(5X20)			1	
	CN3 ,4			J13-0075-05	FUSE CLIP				
⚠	L1			L79-0733-05	LINE FILTER				
⚠	S1			S40-1153-05	PUSH SWITCH				
⚠	S2			S62-0001-05	SLIDE SWITCH			M	
	Display unit (X14-4380-00: DM-9090 only)								
	C3			CK45FF1H103Z	CERAMIC	0.010UF	Z		

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C4			C90-3212-05	ELECTRO	47UF	6.3WV		
C5			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C6			CC45FSL1H101J	CERAMIC	100PF	J		
C7			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C8			C90-3209-05	ELECTRO	10UF	6.3WV		
C9			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C10 -12			CK45FB1H102K	CERAMIC	1000PF	K		
C13			C90-3244-05	ELECTRO	10UF	35WV		
C14			CK45FB1H102K	CERAMIC	1000PF	K		
C15			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C16 ,17			CC45FSL1H221J	CERAMIC	220PF	J		
C19 ,20			CC45FSL1H101J	CERAMIC	100PF	J		
C21			CQ93FMG1H103J	MYLAR	0.010UF	J		
C22			CC45FSL1H101J	CERAMIC	100PF	J		
C23 ,24			CE04KW1C220M	ELECTRO	22UF	16WV		
C25 ,26			CE04KW1C221M	ELECTRO	220UF	16WV		
C27 ,28			CK45FB1H471K	CERAMIC	470PF	K		
C29 ,30			CC45FSL1H101J	CERAMIC	100PF	J		
C31 ,32			CC45FSL1H270J	CERAMIC	27PF	J		
C33 ,34			CE04HW1HR22M	NP-ELEC	0.22UF	50WV		
C35			CF92FV1H104J	MF-C	0.10UF	J		
CN1			E40-4942-05	FLAT CABLE CONNECTOR				
CN3			E40-3264-05	PIN ASSY				
J1			E11-0190-05	PHONE JACK	(3P)			
-			J19-5690-03	HOLDER				
E3			J11-0809-05	WIRE CLAMPER				
L1 ,2			L92-0044-05	FERRITE CORE				
VR1			R31-0089-05	VARIABLE RESISTOR				
VR2			R10-4043-05	POTENTIOMETER(50K)				
S5 -17			S70-0031-05	TACT SWITCH				
S20 ,21			S70-0031-05	TACT SWITCH				
S25			S62-0060-05	SLIDE SWITCH				
S3			T99-0593-05	ROTARY ENCODER				
D2			HZS7.5S(B)	ZENER DIODE				
D2			RD7.5JS(B)	ZENER DIODE				
D3 -5			HSS104	DIODE				
D3 -5			1SS133	DIODE				
ED1			FIP12XM1GA	INDICATOR TUBE				
IC1			LC75710NE	MOS-IC				
IC2			NJM4580D	IC(OP AMP X2)				
Q1 -5			2SC2458(Y,GR)	TRANSISTOR				
Q1 -5			2SC3311A(Q,R)	TRANSISTOR				
Q7 ,8			2SD1450(S,T)	TRANSISTOR				
A1			W02-2571-05	OPTIC RECEIVING MODULE				
Display unit (X14-4430-00: 1050MD/DM-5090)								
C3			CK45FF1H103ZMU	CERAMIC	0.010UF	Z		
C4			C90-3209-05	ELECTRO	10UF	6.3WV		
C5			C91-0085-05	CERAMIC	0.022UF	N		
C6			C91-0745-05	CERAMIC	100PF	K		
C7			C91-0085-05	CERAMIC	0.022UF	N		
C8			C90-3209-05	ELECTRO	10UF	6.3WV		
C9			CK45FF1H103ZMU	CERAMIC	0.010UF	Z		

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C10 -12			CK45FB1H102KMU	CERAMIC	1000PF	K		
C13			C90-3244-05	ELECTRO	10UF	35WV		
C14			CK45FB1H102KMU	CERAMIC	1000PF	K		
C15			CK45FF1H103ZMU	CERAMIC	0.010UF	Z		
C16 ,17			CC45FSL1H221JM	CERAMIC	220PF	J		
C19 ,20			CC45FSL1H101JM	CERAMIC	100PF	J		
C21			CQ93FMG1H103J	MYLAR	0.010UF	J		
C22			CC45FSL1H101JM	CERAMIC	100PF	J		
C23 ,24			CE04KW1C220M	ELECTRO	22UF	16WV		
C25 ,26			CE04KW1C221M	ELECTRO	220UF	16WV		
C27 ,28			CK45FB1H471KMU	CERAMIC	470PF	K		
C29 ,30			CC45FSL1H101JM	CERAMIC	100PF	J		
C31 ,32			CE04HW1H2R2M	NP-ELEC	2.2UF	50WV		
CN2			E40-4942-05	FLAT CABLE CONNECTOR				
CN3			E40-3264-05	PIN ASSY				
J1			E11-0190-05	PHONE JACK	(3P)			
-			J19-5690-03	HOLDER				
L1 ,2			L92-0044-05	FERRITE CORE				
VR1 ,2			R10-4049-05	POTENTIOMETER				
S5 -24			S70-0031-05	TACT SWITCH				
S25			S31-1036-05	SLIDE SWITCH				
S3			T99-0537-05	ROTARY ENCODER				
D1			HSS104	DIODE				
D1			1SS133	DIODE				
D2			HZS7.5S(B)	ZENER DIODE				
D2			RD7.5JS(B)	ZENER DIODE				
D3 ,4			HSS104	DIODE				
D3 ,4			1SS133	DIODE				
ED1			FIP12XM1GA	INDICATOR TUBE				
IC1			LC75710NE	MOS-IC				
IC2			NJM4580D	IC(OP AMP X2)				
Q1 -5			2SC2458(Y,GR)	TRANSISTOR				
Q1 -5			2SC3311A(Q,R)	TRANSISTOR				
Q7 ,8			2SD1450(S,T)	TRANSISTOR				
A1			W02-2551-05	ELECTRIC CIRCUIT MODULE				
Electric unit (X25-5940-12)								
C1			CE04KW1C222M	ELECTRO	2200UF	16WV		
C2			CC73FSL1H101J	CHIP C	100PF	J		
C3			CK73FB1H103K	CHIP C	0.010UF	K		
C4			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C5			CK73FF1E104Z	CHIP C	0.10UF	Z		
C6			CE04KW1A101M	ELECTRO	100UF	10WV		
C7			CK73FB1H103K	CHIP C	0.010UF	K		
C8			CE04KW1A101M	ELECTRO	100UF	10WV		
C9			CC73FSL1H101J	CHIP C	100PF	J		
C13			CE04KW1C221M	ELECTRO	220UF	16WV		
C14			CE04KW1C222M	ELECTRO	2200UF	16WV		
C15 -17			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C18			CK73FB1H103K	CHIP C	0.010UF	K		
C19			CE04KW1C470M	ELECTRO	47UF	16WV		

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C20 ,21			CE04KW1C472M	ELECTRO	4700UF	16WV		
C22			CK73FB1H103K	CHIP C	0.010UF	K		
C23			CE04KW1C220M	ELECTRO	22UF	16WV		
C24			CC73FSL1H101J	CHIP C	100PF	J		
C25			CE04KW1A101M	ELECTRO	100UF	10WV		
C26 ,27			CK73FB1H103K	CHIP C	0.010UF	K		
C28			CE04KW1A471M	ELECTRO	470UF	10WV		
C29 ,30			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C31			CK73FB1H103K	CHIP C	0.010UF	K		
C32			C90-3542-05	SUPER-C	1.0F	5.5WV		
C33			CE04KW1A101M	ELECTRO	100UF	10WV		
C34			CK73FB1H103K	CHIP C	0.010UF	K		
C35			CC73FSL1H101J	CHIP C	100PF	J		
C36			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C37			CE04KW1H101M	ELECTRO	100UF	50WV		
C38			CE04KW1H100M	ELECTRO	10UF	50WV		
C39			CC73FSL1H101J	CHIP C	100PF	J		
C40			CE04KW1H100M	ELECTRO	10UF	50WV		
C41			CE04KW1C332M	ELECTRO	3300UF	16WV		
C42			CE04KW1H100M	ELECTRO	10UF	50WV		
C44			CC73FSL1H150J	CHIP C	15PF	J	1/5	
C45			CC73FSL1H100J	CHIP C	10PF	J	1/5	
C46			CC73FSL1H220J	CHIP C	22PF	J	1/5	
C47			CE04KW1A101M	ELECTRO	100UF	10WV	1/5	
C48			CK73FF1E104Z	CHIP C	0.10UF	Z	1/5	
C49			CC73FCH1H080D	CHIP C	8.0PF	D	1/5	
C50			CK73FB1H103K	CHIP C	0.010UF	K	1/5	
C51			CK73FB1H103K	CHIP C	0.010UF	K		
C90			CK73FF1C105Z	CHIP C	1.0UF	Z	1/5	
C91			CK73FB1H103K	CHIP C	0.010UF	K	1/5	
C92			CE04KW0J331M	ELECTRO	330UF	6.3WV	1/5	
C95			CE04KW0J331M	ELECTRO	330UF	6.3WV	1/5	
C96			CK73FB1H103K	CHIP C	0.010UF	K	1/5	
C99			CK73FB1H103K	CHIP C	0.010UF	K		
C101			CE04KW1A101M	ELECTRO	100UF	10WV		
C102			CK45FB1H561K	CERAMIC	560PF	K		
C103			CE04KW1A101M	ELECTRO	100UF	10WV		
C104,105			CK45FB1H391KMU	CERAMIC	390PF	K	1/5	
C106,107			CC73FSL1H220J	CHIP C	22PF	J	1/5	
C108-112			CC73FSL1H101J	CHIP C	100PF	J		
C113			CC73FSL1H470J	CHIP C	47PF	J	1/5	
C121,122			CC73FSL1H102J	CHIP C	1000PF	J	9	
C122			CC73FSL1H102J	CHIP C	1000PF	J	1/5	
C123,124			CC73FSL1H101J	CHIP C	100PF	J	1/5	
C123,124			CC73FSL1H331J	CHIP C	330PF	J	9	
C125,126			CC45FSL1H101J	CERAMIC	100PF	J		
C127-130			CC45FSL1H181JM	CERAMIC	180PF	J	1/5	
C127-130			CQ93FMG1H152J	MYLAR	1500PF	J	9	
C132			CQ93FMG1H103J	MYLAR	0.010UF	J		
C133,134			CQ93FMG1H153J	MYLAR	0.015UF	J		
C135			CQ93FMG1H152J	MYLAR	1500PF	J		
C136,137			CQ93FMG1H681J	MYLAR	680PF	J		
C138			CQ93FMG1H152J	MYLAR	1500PF	J		
C139,140			CC45FSL1H101J	CERAMIC	100PF	J	1/5	
C139,140			CC45FSL1H121J	CERAMIC	120PF	J	9	

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C141			CK45FB1H471K	CERAMIC	470PF	K		
C142			CE04KW1H470M	ELECTRO	47UF	50WV		
C143,144			CQ93FMG1H102J	MYLAR	1000PF	J		
C145			CC73FSL1H101J	CHIP C	100PF	J		
C146			CQ93FMG1H472J	MYLAR	4700PF	J		
C147			CK73FB1H103K	CHIP C	0.010UF	K		
C148			CQ93FMG1H472J	MYLAR	4700PF	J		
C149-152			CE04KW1V220M	ELECTRO	22UF	35WV		
C153			CC45FSL1H470J	CERAMIC	47PF	J		
C154,155			CC45FSL1H100D	CERAMIC	10PF	D		
C156			CC45FSL1H470J	CERAMIC	47PF	J		
C157-160			CC45FSL1H101J	CERAMIC	100PF	J		
C162			CQ93FMG1H473J	MYLAR	0.047UF	J		
C163-166			CE04KW1V220M	ELECTRO	22UF	35WV		
C167,168			CC45FSL1H101J	CERAMIC	100PF	J		
C169-170			CC73FSL1H101J	CHIP C	100PF	J	1/5	
C169,170			CC73FSL1H331J	CHIP C	330PF	J	9	
C171,172			CC73FSL1H101J	CHIP C	100PF	J		
C175-178			CC73FSL1H331J	CHIP C	330PF	J		
C179			CC73FSL1H102J	CHIP C	1000PF	J	9	
C180,181			CC45FSL1H101J	CERAMIC	100PF	J		
C182			CE04KW1C100M	ELECTRO	10UF	16WV		
C183,184			CC73FSL1H221J	CHIP C	220PF	J		
C201			CC73FSL1H220J	CHIP C	22PF	J		
C202			CC73FSL1H470J	CHIP C	47PF	J		
C203			CC73FSL1H220J	CHIP C	22PF	J	9	
C204			CC73FSL1H470J	CHIP C	47PF	J	9	
C205			CC73FSL1H100D	CHIP C	10PF	D		
C206			CC73FSL1H470J	CHIP C	47PF	J		
C207			CK73FB1H103K	CHIP C	0.010UF	K		
C208			CC73FSL1H220J	CHIP C	22PF	J	9	
C209			CK73FF1E104Z	CHIP C	0.10UF	Z	9	
C210,211			CK73FF1E104Z	CHIP C	0.10UF	Z		
C212			CK73FB1H103K	CHIP C	0.010UF	K		
C213			CC73FSL1H220J	CHIP C	22PF	J		
C214			CK73FB1H103K	CHIP C	0.010UF	K		
C215			CE04KW1C470M	ELECTRO	47UF	16WV		
C216			CK73FB1H103K	CHIP C	0.010UF	K		
C217			CK73FB1H103K	CHIP C	0.010UF	K	9	
C218			CK73FB1H102K	CHIP C	1000PF	K	9	
C219-222			CK73FB1H103K	CHIP C	0.010UF	K	9	
C223,224			CK73FF1E104Z	CHIP C	0.10UF	Z	9	
C225			CC73FSL1H101J	CHIP C	100PF	J	9	
C230			CK73FB1H103K	CHIP C	0.010UF	K	9	
C231			CE04KW1C470M	ELECTRO	47UF	16WV		
C241			CE04KW1H470M	ELECTRO	47UF	50WV		
C290			CK73FB1H103K	CHIP C	0.010UF	K		
C301,302			CK73FB1H103K	CHIP C	0.010UF	K		
C303			CK73FF1E104Z	CHIP C	0.10UF	Z		
C304			CE04KW1A470M	ELECTRO	47UF	10WV		
C305			CK73FF1E104Z	CHIP C	0.10UF	Z		
C306			CK73FB1H103K	CHIP C	0.010UF	K		
C307			CE04KW1A470M	ELECTRO	47UF	10WV		
C308			CK73FB1H103K	CHIP C	0.010UF	K		
C309-312			CK73FB1H103K	CHIP C	0.010UF	K	9	

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Ref. No	Address	New Parts	Parts No.	Description			Destination	Remarks
C316			CK73FB1H103K	CHIP C	0.010UF	K	9	
C317			CK73FB1H103K	CHIP C	0.010UF	K		
C321			CK73FF1E104Z	CHIP C	0.10UF	Z	9	
C322			CK73FB1H103K	CHIP C	0.010UF	K		
C323,324			CK73FF1E104Z	CHIP C	0.10UF	Z		
C325			CK73FB1H103K	CHIP C	0.010UF	K		
CN1			E40-4807-05	PIN ASSY				
CN2			E40-8074-05	FLAT CABLE CONNECTOR				
CN3			E40-8075-05	FLAT CABLE CONNECTOR				
CN4			E40-4904-05	FLAT CABLE CONNECTOR				
CN7			E40-3251-05	PIN ASSY			9	
CN8 ,9			E40-8144-05	PIN ASSY				
CN10			E40-3254-05	PIN ASSY			9	
CN11			E40-3252-05	PIN ASSY			9	
CN12			E40-4296-05	FLAT CABLE CONNECTOR			1/5	
CN13			E40-8145-05	SOCKET FOR PIN ASSY				
J1			E63-0120-05	PHONO JACK			1/5	
J1			E63-0121-05	PHONO JACK			9	
J3			E63-0160-05	PHONO JACK			1/5	
J3			E63-0174-05	PHONO JACK			9	
J4			E63-0185-05	PHONO JACK			9	
J5			E11-0188-05	MINIATURE PHONE JACK(2P)			9	
J5			E11-0293-05	MINIATURE PHONE JACK(2P)			1/5	
E1			J11-0809-05	WIRE CLAMPER			9	
L1 ,2			L92-0131-05	FERRITE CORE				
L5			L40-1001-58	SMALL FIXED INDUCTOR(10UH,K)			1/5	
L6			L40-4791-58	SMALL FIXED INDUCTOR(4.7UH,K)			1/5	
X1			L77-1124-05	CRYSTAL RESONATOR			1/5	
X2			L78-0277-05	RESONATOR	(12.000M)		9	
X3			L78-0615-05	RESONATOR	(12.5MHZ)			
R1			RD14NB2E1R0J	RD	1	J 1/4W		
R2			RK73FB2A102J	CHIP R	1.0K	J 1/10W		
R5			RK73FB2A103J	CHIP R	10K	J 1/10W		
R6			RK73FB2A182J	CHIP R	1.8K	J 1/10W		
R7			RK73FB2A751J	CHIP R	750	J 1/10W		
R8			RK73FB2A472J	CHIP R	4.7K	J 1/10W		
R9			RK73FB2A103J	CHIP R	10K	J 1/10W		
⚠ R10 ,11			RK73FB2A681J	CHIP R	680	J 1/10W		
R12			RK73FB2A101J	CHIP R	100	J 1/10W		
R13			RK73FB2A104J	CHIP R	100K	J 1/10W		
R14			RK73FB2A102J	CHIP R	1.0K	J 1/10W		
R15			RK73FB2A104J	CHIP R	100K	J 1/10W		
R16			RK73FB2A102J	CHIP R	1.0K	J 1/10W		
R17			RK73FB2A101J	CHIP R	100	J 1/10W		
R18			RK73FB2A473J	CHIP R	47K	J 1/10W		
R19			RK73FB2A102J	CHIP R	1.0K	J 1/10W		
R20			R92-1861-05	METAL GLAZE RESISTOR				
R21			R92-1860-05	METAL GLAZE RESISTOR				
R22			RK73FB2A222J	CHIP R	2.2K	J 1/10W		
R27			RD14NB2E1R0J	RD	1	J 1/4W		
R28			RK73FB2A391J	CHIP R	390	J 1/10W	1/5	
R29			RK73FB2A221J	CHIP R	220	J 1/10W	1/5	

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R30			RK73FB2A100J	CHIP R	10	J	1/10W	1/5	
R30			RK73FB2A331J	CHIP R	330	J	1/10W	9	
R32			RK73FB2A102J	CHIP R	1.0K	J	1/10W		
R33			R92-1201-05	CHIP R	220		1/2W		
R34			RK73FB2A103J	CHIP R	10K	J	1/10W		
R81			RK73FB2A105J	CHIP R	1.0M	J	1/10W	1/5	
R82 -85			RK73FB2A432J	CHIP R	4.3K	J	1/10W	1/5	
R96			RK73FB2A471J	CHIP R	470	J	1/10W	9	
R97			RK73FB2A471J	CHIP R	470	J	1/10W		
R98			RK73FB2A150J	CHIP R	15	J	1/10W		
R99			RK73FB2A103J	CHIP R	10K	J	1/10W	1/5	
R100			RK73FB2A331J	CHIP R	330	J	1/10W		
R101			RK73FB2A102J	CHIP R	1.0K	J	1/10W	1/5	
R102,103			RK73FB2A473J	CHIP R	47K	J	1/10W		
R104			RK73FB2A102J	CHIP R	1.0K	J	1/10W		
R105,106			RK73FB2A151J	CHIP R	150	J	1/10W		
R107			RK73FB2A102J	CHIP R	1.0K	J	1/10W		
R108,109			RK73FB2A151J	CHIP R	150	J	1/10W		
R110-113			RK73FB2A224J	CHIP R	220K	J	1/10W		
R114			RK73FB2A101J	CHIP R	100	J	1/10W		
R115			RK73FB2A682J	CHIP R	6.8K	J	1/10W		
R116			RK73FB2A133J	CHIP R	13K	J	1/10W		
R117,118			RK73FB2A331J	CHIP R	330	J	1/10W		
R119			RK73FB2A133J	CHIP R	13K	J	1/10W		
R120			RK73FB2A682J	CHIP R	6.8K	J	1/10W		
R121			RK73FB2A101J	CHIP R	100	J	1/10W		
R122,123			RK73FB2A622J	CHIP R	6.2K	J	1/10W		
R124			RK73FB2A334J	CHIP R	330K	J	1/10W	9	
R124			RK73FB2A563J	CHIP R	56K	J	1/10W	1/5	
R125,126			RK73FB2A473J	CHIP R	47K	J	1/10W		
R140			RK73FB2A101J	CHIP R	100	J	1/10W	1/5	
R140-144			RK73FB2A101J	CHIP R	100	J	1/10W	9	
R141,142			RK73FB2A331J	CHIP R	330	J	1/10W	1/5	
R143,144			RK73FB2A101J	CHIP R	100	J	1/10W	1/5	
R145			RK73FB2A392J	CHIP R	3.9K	J	1/10W	1/5	
R145			RK73FB2A472J	CHIP R	4.7K	J	1/10W	9	
R150-152			RK73FB2A392J	CHIP R	3.9K	J	1/10W	1/5	
R150-152			RK73FB2A472J	CHIP R	4.7K	J	1/10W	9	
R153-155			RK73FB2A152J	CHIP R	1.5K	J	1/10W	9	
R153-155			RK73FB2A183J	CHIP R	18K	J	1/10W	1/5	
R156			RK73FB2A101J	CHIP R	100	J	1/10W		
R157			RK73FB2A152J	CHIP R	1.5K	J	1/10W	9	
R157			RK73FB2A183J	CHIP R	18K	J	1/10W	1/5	
R158-163			RK73FB2A821J	CHIP R	820	J	1/10W		
R164,165			RK73FB2A104J	CHIP R	100K	J	1/10W		
R166			RK73FB2A101J	CHIP R	100	J	1/10W		
R167,168			RK73FB2A102J	CHIP R	1.0K	J	1/10W		
R169,170			RK73FB2A101J	CHIP R	100	J	1/10W		
R171,172			RK73FB2A102J	CHIP R	1.0K	J	1/10W		
R173-175			RK73FB2A101J	CHIP R	100	J	1/10W		
R176			RK73FB2A331J	CHIP R	330	J	1/10W		
R177			RK73FB2A472J	CHIP R	4.7K	J	1/10W	1/5	
R178,179			RK73FB2A332J	CHIP R	3.3K	J	1/10W	9	
R180			RK73FB2A334J	CHIP R	330K	J	1/10W	9	
R180			RK73FB2A563J	CHIP R	56K	J	1/10W	1/5	

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R183,184			RK73FB2A474J	CHIP R	470K	J	1/10W		
R187-189			RK73FB2A331J	CHIP R	330	J	1/10W		
R190			RK73FB2A471J	CHIP R	470	J	1/10W	1/5	
R191,192			RD14NB2E332J	RD	3.3K	J	1/4W		
R193			RK73FB2A471J	CHIP R	470	J	1/10W		
R194			RK73FB2A223J	CHIP R	22K	J	1/10W	9	
R195			RK73FB2A4R7J	CHIP R	4.7	J	1/10W	1/5	
R196			RK73FB2A1R8J	CHIP R	1.8	J	1/10W	1/5	
R197			RK73FB2A4R7J	CHIP R	4.7	J	1/10W	1/5	
R198			RK73FB2A100J	CHIP R	10	J	1/10W	T1	
R198			RK73FB2A100J	CHIP R	10	J	1/10W	1/5	
R199			RK73FB2A223J	CHIP R	22K	J	1/10W	9	
R201			RK73FB2A103J	CHIP R	10K	J	1/10W		
R202,203			RK73FB2A104J	CHIP R	100K	J	1/10W		
R204			RK73FB2A103J	CHIP R	10K	J	1/10W	9	
R205-206			RK73FB2A104J	CHIP R	100K	J	1/10W	9	
R207			RK73FB2A104J	CHIP R	100K	J	1/10W		
R208			RK73FB2A103J	CHIP R	10K	J	1/10W		
R209			RK73FB2A102J	CHIP R	1.0K	J	1/10W	9	
R210			RK73FB2A104J	CHIP R	100K	J	1/10W	9	
R211			RK73FB2A331J	CHIP R	330	J	1/10W		
R212			RK73FB2A151J	CHIP R	150	J	1/10W		
R213			RK73FB2A151J	CHIP R	150	J	1/10W	9	
R214			RK73FB2A151J	CHIP R	150	J	1/10W		
R215			RK73FB2A151J	CHIP R	150	J	1/10W	9	
R216,217			RK73FB2A151J	CHIP R	150	J	1/10W		
R218			RK73FB2A150J	CHIP R	15	J	1/10W		
R219,220			RK73FB2A221J	CHIP R	220	J	1/10W		
R221			RK73FB2A104J	CHIP R	100K	J	1/10W		
R222			RK73FB2A333J	CHIP R	33K	J	1/10W	9	
R223-229			RK73FB2A104J	CHIP R	100K	J	1/10W		
R230			RK73FB2A104J	CHIP R	100K	J	1/10W	9	
R231			RK73FB2A243J	CHIP R	24K	J	1/10W	9	
R232,233			RK73FB2A562J	CHIP R	5.6K	J	1/10W	9	
R234			RK73FB2A151J	CHIP R	150	J	1/10W	9	
R235-237			RK73FB2A331J	CHIP R	330	J	1/10W	9	
R238			RK73FB2A471J	CHIP R	470	J	1/10W	1/5	
R239			RK73FB2A471J	CHIP R	470	J	1/10W	9	
R240			RK73FB2A221J	CHIP R	220	J	1/10W	9	
R241-243			RK73FB2A471J	CHIP R	470	J	1/10W	9	
R244			RK73FB2A221J	CHIP R	220	J	1/10W	9	
R245			RK73FB2A331J	CHIP R	330	J	1/10W	9	
R246,247			RK73FB2A101J	CHIP R	100	J	1/10W		
R283-285			RK73FB2A101J	CHIP R	100	J	1/10W	9	
R286,287			RK73FB2A102J	CHIP R	1.0K	J	1/10W	9	
R288,289			RK73FB2A104J	CHIP R	100K	J	1/10W	9	
R290			RK73FB2A100J	CHIP R	10	J	1/10W	9	
R291			RK73FB2A473J	CHIP R	47K	J	1/10W	9	
R292			RK73FB2A104J	CHIP R	100K	J	1/10W		
R293			RK73FB2A331J	CHIP R	330	J	1/10W		
R294			RK73FB2A104J	CHIP R	100K	J	1/10W		
R295,296			RK73FB2A104J	CHIP R	100K	J	1/10W	9	
R298			RK73FB2A105J	CHIP R	1.0M	J	1/10W	9	
R299,300			RK73FB2A104J	CHIP R	100K	J	1/10W	9	
R301			RK73FB2A473J	CHIP R	47K	J	1/10W	9	

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R302			RK73FB2A473J	CHIP R	47K	J	1/10W		
R303-310			RK73FB2A104J	CHIP R	100K	J	1/10W		
R311			RK73FB2A272J	CHIP R	2.7K	J	1/10W		
R312			RK73FB2A182J	CHIP R	1.8K	J	1/10W		
R313-315			RK73FB2A104J	CHIP R	100K	J	1/10W	9	
R316			RK73FB2A123J	CHIP R	12K	J	1/10W		
R317			RK73FB2A822J	CHIP R	8.2K	J	1/10W		
R318			RK73FB2A333J	CHIP R	33K	J	1/10W		
R319-321			RK73FB2A104J	CHIP R	100K	J	1/10W		
R322,323			RK73FB2A272J	CHIP R	2.7K	J	1/10W		
R324,325			RK73FB2A104J	CHIP R	100K	J	1/10W	9	
R326,327			RK73FB2A182J	CHIP R	1.8K	J	1/10W		
R328-335			RK73FB2A104J	CHIP R	100K	J	1/10W		
R336			RK73FB2A272J	CHIP R	2.7K	J	1/10W		
R337			RK73FB2A102J	CHIP R	1.0K	J	1/10W		
R338			RK73FB2A104J	CHIP R	100K	J	1/10W	9	
R339,340			RK73FB2A104J	CHIP R	100K	J	1/10W		
R341			RK73FB2A104J	CHIP R	100K	J	1/10W	9	
R342			RK73FB2A182J	CHIP R	1.8K	J	1/10W		
R343			RK73FB2A104J	CHIP R	100K	J	1/10W		
R344			RK73FB2A102J	CHIP R	1.0K	J	1/10W		
R345-348			RK73FB2A104J	CHIP R	100K	J	1/10W		
R349-351			RK73FB2A103J	CHIP R	10K	J	1/10W		
R353			RK73FB2A103J	CHIP R	10K	J	1/10W		
R354			RK73FB2A104J	CHIP R	100K	J	1/10W		
R355,356			RK73FB2A102J	CHIP R	1.0K	J	1/10W		
R357,358			RK73FB2A104J	CHIP R	100K	J	1/10W		
R359			RK73FB2A331J	CHIP R	330	J	1/10W		
R360			RK73FB2A104J	CHIP R	100K	J	1/10W		
R361,362			RK73FB2A104J	CHIP R	100K	J	1/10W	9	
R363-365			RK73FB2A104J	CHIP R	100K	J	1/10W		
R366			RK73FB2A104J	CHIP R	100K	J	1/10W	9	
R368,369			RK73FB2A104J	CHIP R	100K	J	1/10W	9	
R370			RK73FB2A473J	CHIP R	47K	J	1/10W		
R371			RK73FB2A114J	CHIP R	110K	J	1/10W	9	
R372			RK73FB2A104J	CHIP R	100K	J	1/10W		
R375-378			RK73FB2A104J	CHIP R	100K	J	1/10W		
R379-385			RK73FB2A101J	CHIP R	100	J	1/10W		
R386-389			RK73FB2A102J	CHIP R	1.0K	J	1/10W		
R390			RK73FB2A331J	CHIP R	330	J	1/10W		
R391			RK73FB2A104J	CHIP R	100K	J	1/10W	9	
R393			RK73FB2A104J	CHIP R	100K	J	1/10W	9	
R394			RK73FB2A101J	CHIP R	100	J	1/10W		
W1 -3			R92-0670-05	CHIP R	0 OHM			1/5	
W4			R92-0670-05	CHIP R	0 OHM			9	
W5			R92-0670-05	CHIP R	0 OHM			1/5	
W6 -7			R92-0670-05	CHIP R	0 OHM			9	
W8			R92-0670-05	CHIP R	0 OHM				
⚠ D1			D3SBA20F03	DIODE					
D2			DA204U	DIODE					
D3			U1BC44	DIODE					
D4			MA111	DIODE					
D5			UDZ5.1B	ZENER DIODE					
D7			UDZ2.7B	ZENER DIODE					

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D8			MA111	DIODE		
D9 ,10			S5688B(TPB5)	DIODE		
⚠ D11			D3SBA20F03	DIODE		
D12			MA111	DIODE		
D13			UDZ5.6B	ZENER DIODE		
D14 ,15			MA113	DIODE		
D16			UDZ6.2B	ZENER DIODE		
D17			MA111	DIODE		
D18			U1BC44	DIODE		
D19			UDZ18B	ZENER DIODE		
D20			UDZ15B	ZENER DIODE		
⚠ D21			S5688B(TPB5)	DIODE		
D22 ,23			MA111	DIODE		
D26			DA204U	DIODE		
D28			DAP202U	DIODE	1/5	
D29			MA111	DIODE		
D30			DA204U	DIODE	1/5	
⚠ D31 ,32			MA111	DIODE		
D33			DA204U	DIODE	9	
⚠ IC1 ,2			ICP-N10	ANALOGUE IC		
IC3			NJM4558M	IC(OP AMP X2)		
IC4			PST993D-T	ANALOGUE IC		
IC5			TL431CLP	MOS-IC		
IC6			KAN03	CUSTOM IC	1/5	
IC8			CS5334	MOS-IC	1/5	
IC8		✻	CS5335	MOS-IC	9	
IC10,11			NJM4580ED	ANALOGUE IC		
IC13,14			NJM4580ED	ANALOGUE IC		
IC21			TC74HCU04AF	IC(HEX INVERTER SMD)		
IC22			TC74HCU04AF	IC(HEX INVERTER SMD)	9	
IC23			LC8904Q	MOS-IC	9	
IC24			KAN03	CUSTOM IC	9	
IC25			SM5844AF	MOS-IC	9	
IC26			TC74HC157AF	MOS-IC		
IC27		✻	LC89170M	MOS-IC	9	
IC28		✻	UPD784035GC801	MI-COM IC	9	
IC29			HM62256BLFP-7T	MEMORY IC	9	
IC29			HM62256BLFP-8T	MEMORY IC	9	
IC29			HM62256BLFP12T	MEMORY IC	9	
IC30			TC74HC373AF	IC(8 bit LATCH)	9	
IC31		✻	UPD784215GF508	MI-COM IC		
IC32			TC74HC4094AF	MOS-IC		
IC33			TC74HC373AF	IC(8 bit LATCH)		
IC34			HM62256BLFP-7T	MEMORY IC		
IC34			HM62256BLFP-8T	MEMORY IC		
IC34			HM62256BLFP12T	MEMORY IC		
IC35			TA8409S	MOS-IC		
IC36			TC74HCT7007AF	IC(HEX BUFFER)		
IC37			HD74HCT126FPEL	MOS-IC		
IC38			TC74HCT7007AF	IC(HEX BUFFER)		
IC39			TC74VHC244F	MOS-IC		
⚠ Q1			2SD2012	TRANSISTOR		
Q1			2SD2061	TRANSISTOR		
Q2			2SK246(Y,GR)	FET		
Q3			UN5219	DIGITAL TRANSISTOR		

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⑬

Ref. No	Address	New Parts	Parts No.	Description			Destination	Remarks
Q5 ,6			UN5212	DIGITAL TRANSISTOR				
⚠ Q7			2SD2012	TRANSISTOR				
⚠ Q7			2SD2061	TRANSISTOR				
Q8			2SA1576A(R,S)	TRANSISTOR				
Q9 ,10			2SC4081(R,S)	TRANSISTOR				
⚠ Q11			2SD2012	TRANSISTOR				
⚠ Q11			2SD2061	TRANSISTOR				
Q12			2SC4081(R,S)	TRANSISTOR				
⚠ Q13			2SA954(L,K)	TRANSISTOR				
Q16 -19			2SD1450(S,T)	TRANSISTOR				
Q20			UN5212	DIGITAL TRANSISTOR				
Q23			2SC4081(R,S)	TRANSISTOR				
Q24			2SA1576A(R,S)	TRANSISTOR				
Q25			UN5212	DIGITAL TRANSISTOR				
Q26			UN5212	DIGITAL TRANSISTOR			9	
Q27			UN5212	DIGITAL TRANSISTOR				
Q30			UN5112	DIGITAL TRANSISTOR				
Q31			DTC143TUA	DIGITAL TRANSISTOR				
Q31			UN5216	DIGITAL TRANSISTOR				
Q32			UN5112	DIGITAL TRANSISTOR				
A1			W02-1181-05	OPTIC RECEIVING MODULE				
A2			W02-1114-05	OSCILLATING MODULE				
MD control unit (X29-2580-00)								
CN1			E40-3260-05	PIN ASSY				
CN2			E40-3261-05	PIN ASSY				
CN3			E40-8076-05	FLAT CABLE CONNECTOR				
S1			S64-0028-05	LEVER SWITCH				
S2			S68-0074-05	PUSH SWITCH				
PH1			T95-0140-05	OPTO ISOLATOR (RPI-574)				
Processor unit (X32-3470-00: DM-9090 only)								
C101			CE04KW1A101M	ELECTRO	100UF	10WV		
C103			CK73FB1H102K	CHIP C	1000PF	K		
C104			CQ93FMG1H103J	MYLAR	0.010UF	J		
C105-108			CK45FB1H471K	CERAMIC	470PF	K		
C109			CC73FCH1H050C	CHIP C	5.0PF	C		
C110			CE04KW1A101M	ELECTRO	100UF	10WV		
C112			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C113			CK45FB1H102K	CERAMIC	1000PF	K		
C114,115			CC73FSL1H100D	CHIP C	10PF	D		
C116			CC45FSL1H220J	CERAMIC	22PF	J		
C117			CC73FSL1H100D	CHIP C	10PF	D		
C119,120			CE04KW0J331M	ELECTRO	330UF	6.3WV		
C121,122			CF92FV1H474J	MF-C	0.47UF	J		
C123,124			CE04KW0J331M	ELECTRO	330UF	6.3WV		
C125,126			CF92FV1H474J	MF-C	0.47UF	J		
C127-130			CC45FSL1H121J	CERAMIC	120PF	J		
C131			CQ93FMG1H391K	MYLAR	390PF	K		
C133,134			CQ93FMG1H103J	MYLAR	0.010UF	J		
C135,136			CC73FSL1H100D	CHIP C	10PF	D		
C139			CQ93FMG1H121K	MYLAR	120PF	K		
C140			CE04KW1A101M	ELECTRO	100UF	10WV		
C141,142			CC73FCH1H080D	CHIP C	8.0PF	D		
C143-146			CQ93FMG1H391K	MYLAR	390PF	K		

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C147			CC45FSL1H101J	CERAMIC	100PF	J		
C155-158			CC45FSL1H331J	CERAMIC	330PF	J		
C165,166			CE04KW1A101M	ELECTRO	100UF	10WV		
C168			CK73FB1H103K	CHIP C	0.010UF	K		
C173			CK73FB1H103K	CHIP C	0.010UF	K		
C174			CQ93FMG1H121K	MYLAR	120PF	K		
C175-182			CK73FB1H471K	CHIP C	470PF	K		
C183,184			CE04KW0J331M	ELECTRO	330UF	6.3WV		
C185,186			CF92FV1H474J	MF-C	0.47UF	J		
C187,188			CE04KW0J331M	ELECTRO	330UF	6.3WV		
C189,190			CF92FV1H474J	MF-C	0.47UF	J		
C252			CE04KW1A101M	ELECTRO	100UF	10WV		
C257			CK45FB1H222K	CERAMIC	2200PF	K		
C258			CK45FB1H471K	CERAMIC	470PF	K		
C266			CE04KW1H2R2M	ELECTRO	2.2UF	50WV		
C275			CC45FSL1H151J	CERAMIC	150PF	J		
C280			CE04HW1H3R3M	NP-ELEC	3.3UF	50WV		
C283,284			CK45FB1H471K	CERAMIC	470PF	K		
L2			L40-2291-17	SMALL FIXED INDUCTOR				
L3			L40-4781-17	SMALL FIXED INDUCTOR				
L7			L40-1001-58	SMALL FIXED INDUCTOR(10UH,K)				
L8			L92-0044-05	FERRITE CORE				
L9			L40-4791-58	SMALL FIXED INDUCTOR(4.7UH,K)				
X1			L77-1124-05	CRYSTAL RESONATOR				
R101-104			RK73FB2A471J	CHIP R	470	J 1/10W		
⚠ R106			RD14NB2E3R9J	RD	3.9	J 1/4W		
R107			RK73FB2A221J	CHIP R	220	J 1/10W		
R108			RK73FB2A102J	CHIP R	1.0K	J 1/10W		
R109			RK73FB2A101J	CHIP R	100	J 1/10W		
R111-118			RK73FB2A471J	CHIP R	470	J 1/10W		
R119-126			RN14BK2C3901F	RN	3.90K	F 1/6W		
R135			RK73FB2A471J	CHIP R	470	J 1/10W		
R177-184			RK73FB2A332J	CHIP R	3.3K	J 1/10W		
R185-192			RK73FB2A511J	CHIP R	510	J 1/10W		
R193-200			RN14BK2C3901F	RN	3.90K	F 1/6W		
R260			RK73FB2A105J	CHIP R	1.0M	J 1/10W		
R262			RK73FB2A151J	CHIP R	150	J 1/10W		
⚠ R285			RD14NB2E3R9J	RD	3.9	J 1/4W		
W1 -3			R92-0670-05	CHIP R	0 OHM			
D32			UDZ5.1B	ZENER DIODE				
D36 ,37			HSS104	DIODE				
D36 ,37			1SS133	DIODE				
⚠ IC2			ICP-N10	ANALOGUE IC				
IC4			SM5842AP	MOS-IC				
IC5			KAN05	CUSTOM IC				
IC7 -14			TC74AC74F	MOS-IC				
IC15,16			NJM4580E	ANALOGUE IC				
IC24			TC74VHCU04F	MOS-IC				
IC31-34			NJM4580E	ANALOGUE IC				
Q31			2SK246(Y,GR)	FET				
MD mechanism unit (X33-1100-00)								
C21 ,22			CC73FCH1H020C	CHIP C	2.0PF	C		
C101			C92-0628-05	CHIP-TAN	10UF	10WV		

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C102			CK73FB1E104K	CHIP C	0.10UF	K		
C103,104			C92-0628-05	CHIP-TAN	10UF	10WV		
C105			CK73FB1H103K	CHIP C	0.010UF	K		
C106			CC73FCH1H102J	CHIP C	1000PF	J		
C107,108			CK73FF1E104Z	CHIP C	0.10UF	Z		
C109			CK73FB1H223K	CHIP C	0.022UF	K		
C110			CK73FB1E104K	CHIP C	0.10UF	K		
C111			CK73FB1H683K	CHIP C	0.068UF	K		
C112			CK73FB1H472K	CHIP C	4700PF	K		
C113			CK73FF1C105Z	CHIP C	1.0UF	Z		
C115			CK73FB1C224K	CHIP C	0.22UF	K		
C116			CK73FB1H223K	CHIP C	0.022UF	K		
C117,118			CK73FB1E104K	CHIP C	0.10UF	K		
C119			C92-0628-05	CHIP-TAN	10UF	10WV		
C121			C92-0048-05	ELECTRO	100UF	6.3WV		
C122			CK73FB1H103K	CHIP C	0.010UF	K		
C123			CK73FF1E104Z	CHIP C	0.10UF	Z		
C127			CK73FF1E104Z	CHIP C	0.10UF	Z		
C128			CK73FB1H103K	CHIP C	0.010UF	K		
C129			CK73FB1C474K	CHIP C	0.47UF	K		
C130			CC73FSL1H101J	CHIP C	100PF	J		
C131			CK73FB1H153K	CHIP C	0.015UF	K		
C132			CK73FB1C474K	CHIP C	0.47UF	K		
C133			CK73FB1H472K	CHIP C	4700PF	K		
C134,135			CK73FF1E104Z	CHIP C	0.10UF	Z		
C136			C92-0048-05	ELECTRO	100UF	6.3WV		
C141			CK73FF1E104Z	CHIP C	0.10UF	Z		
C142-144			CC73FSL1H101J	CHIP C	100PF	J		
C146			CK73FF1E104Z	CHIP C	0.10UF	Z		
C151			C92-0048-05	ELECTRO	100UF	6.3WV		
C152			CK73FF1E104Z	CHIP C	0.10UF	Z		
C153			CK73FB1H103K	CHIP C	0.010UF	K		
C156			CK73FF1E104Z	CHIP C	0.10UF	Z		
C158			CK73FB1H682K	CHIP C	6800PF	K		
C160,161			C92-0167-05	CHIP-ELE	10UF	10WV		
C163,164			CK73FB1H103K	CHIP C	0.010UF	K		
C167,168			CK73FF1E104Z	CHIP C	0.10UF	Z		
C169			C92-0628-05	CHIP-TAN	10UF	10WV		
C171			CK73FF1E104Z	CHIP C	0.10UF	Z		
C181			C92-0048-05	ELECTRO	100UF	6.3WV		
C182,183			CK73FF1E104Z	CHIP C	0.10UF	Z		
C184			C92-0149-05	CHIP-ELE	22UF	8WV		
C185			C93-0031-05	CHIP-C	1000P	500V		
C187			C92-0048-05	ELECTRO	100UF	6.3WV		
C188			CK73FB1H103K	CHIP C	0.010UF	K		
C189			CK73FB1H333K	CHIP C	0.033UF	K		
C190			C92-0048-05	ELECTRO	100UF	6.3WV		
C191			CK73FF1E104Z	CHIP C	0.10UF	Z		
C195			CK73FF1C105Z	CHIP C	1.0UF	Z		
C196,197			CK73FF1E104Z	CHIP C	0.10UF	Z		
C200			C93-0032-05	CHIP C	10UF	10WV		
CN101			E40-8074-05	FLAT CABLE CONNECTOR (29P)				
CN102			E40-8075-05	FLAT CABLE CONNECTOR (19P)				
CN103			E40-8077-05	FLAT CABLE CONNECTOR (22P)				

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CN104			E40-8078-05	PIN ASSY	(2P)				
CN105			E40-8076-05	FLAT CABLE CONNECTOR (15P)					
L1 ,2			L33-0545-05	CHOKE COIL	(10UH)				
L3 ,4			L33-0369-05	CHOKE COIL	(100UH)				
L5 -11			L79-1216-05	LINE FILTER					
R103			RK73FB2A102J	CHIP R	1.0K	J	1/10W		
R104			RK73FB2A103J	CHIP R	10K	J	1/10W		
R105			RK73FB2A472J	CHIP R	4.7K	J	1/10W		
R106			RK73FB2A335J	CHIP R	3.3M	J	1/10W		
R107			RK73FB2A474J	CHIP R	470K	J	1/10W		
R108,109			RK73FB2A102J	CHIP R	1.0K	J	1/10W		
R110			RK73FB2A103J	CHIP R	10K	J	1/10W		
R112			RK73FB2A473J	CHIP R	47K	J	1/10W		
R113			RK73FB2A102J	CHIP R	1.0K	J	1/10W		
R115			RK73FB2A102J	CHIP R	1.0K	J	1/10W		
R117			RK73FB2A474J	CHIP R	470K	J	1/10W		
R120			RK73FB2A101J	CHIP R	100	J	1/10W		
R121			RK73FB2A104J	CHIP R	100K	J	1/10W		
R123			RK73FB2A221J	CHIP R	220	J	1/10W		
R124,125			RK73FB2A101J	CHIP R	100	J	1/10W		
R127			RK73FB2A101J	CHIP R	100	J	1/10W		
R131			RK73FB2A103J	CHIP R	10K	J	1/10W		
R132			RK73FB2A104J	CHIP R	100K	J	1/10W		
R133			RK73FB2A684J	CHIP R	680K	J	1/10W		
R134			RK73FB2A102J	CHIP R	1.0K	J	1/10W		
R135			RK73FB2A332J	CHIP R	3.3K	J	1/10W		
R136			RK73FB2A102J	CHIP R	1.0K	J	1/10W		
R137			RK73FB2A101J	CHIP R	100	J	1/10W		
R140			RK73FB2A151J	CHIP R	150	J	1/10W		
R141			RK73FB2A561J	CHIP R	560	J	1/10W		
R142,143			RK73FB2A103J	CHIP R	10K	J	1/10W		
R144			RK73FB2A101J	CHIP R	100	J	1/10W		
R146-148			RK73FB2A101J	CHIP R	100	J	1/10W		
R150			RK73FB2A221J	CHIP R	220	J	1/10W		
R158,159			RK73FB2A104J	CHIP R	100K	J	1/10W		
R161-163			RK73FB2A222J	CHIP R	2.2K	J	1/10W		
R164			RK73FB2A681J	CHIP R	680	J	1/10W		
R165			RK73FB2A104J	CHIP R	100K	J	1/10W		
R166			R92-1854-05	RN	2.2	K	1/2W		
R167			RK73FB2A472J	CHIP R	4.7K	J	1/10W		
R169			R92-1853-05	CHIP-RN	1		1/4W		
R170,171			RK73FB2A103J	CHIP R	10K	J	1/10W		
R173			RK73FB2A105J	CHIP R	1.0M	J	1/10W		
R175			RK73FB2A332J	CHIP R	3.3K	J	1/10W		
R177			RK73FB2A332J	CHIP R	3.3K	J	1/10W		
R179			RK73FB2A473J	CHIP R	47K	J	1/10W		
R180,181			RK73FB2A103J	CHIP R	10K	J	1/10W		
R182,183			RK73FB2A473J	CHIP R	47K	J	1/10W		
R184,185			RK73FB2A103J	CHIP R	10K	J	1/10W		
R188-190			RK73FB2A103J	CHIP R	10K	J	1/10W		
W1 -4			R92-0670-05	CHIP R	0 OHM				
W101			R92-0670-05	CHIP R	0 OHM				
W108			R92-0679-05	CHIP R	0 OHM				
W109			R92-0670-05	CHIP R	0 OHM				

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W111			R92-0670-05	CHIP R 0 OHM		
W114			R92-0670-05	CHIP R 0 OHM		
W116			R92-0670-05	CHIP R 0 OHM		
W178			R92-0670-05	CHIP R 0 OHM		
W186,187			R92-0679-05	CHIP R 0 OHM		
W195,196			R92-0670-05	CHIP R 0 OHM		
W198-201			R92-0670-05	CHIP R 0 OHM		
D1 ,2			F1J6TP	DIODE		
D101			MA111	DIODE		
IC1			CXA2523AR	ANALOGUE IC		
IC2			CXD2652AR	MOS-IC		
IC3			TC7S08FU	MOS-IC		
IC4			TC7WU04FU	MOS-IC		
IC5			TC74ACT540FS	MOS-IC		
IC6			X24C01AS-2.7	MEMORY IC		
IC7			HM51W4400BTT-7	MEMORY IC		
IC8			BH6511FS	ANALOGUE IC		
IC10			L88MS33T	ANALOGUE IC		
Q1			FMW1	TRANSISTOR		
Q2 ,3			DTA144EUA	DIGITAL TRANSISTOR		
Q4 ,5			DTC114YUA	DIGITAL TRANSISTOR		
Q6			2SA1576A(R,S)	TRANSISTOR		
Q7			2SB798-DL	TRANSISTOR		
Q8			2SJ278	FET		
Q9			2SK1764	FET		
Q10			DTC114EUA	DIGITAL TRANSISTOR		
MD mechanism Assy (D40-1533-05: MDM-04)						
1	2B		A10-3329-08	CHASSIS ASSY		
2	1B		D10-3690-08	LEVER ASSY		
3	1A		D10-3698-08	ARM ASSY		
4	2A		D10-3759-08	SLIDER ASSY (HD)		
5	2B		D13-1784-08	GEAR ASSY (T)		
6	1A		J11-0824-08	CLAMPER ASSY		
7	1B		J19-5766-08	HOLDER ASSY		
8	3A		A11-1113-08	SUB SHASSIS (FRAME)		
9	1B		A11-1116-08	SUB SHASSIS (TOP)		
10	2A		D10-3742-08	LEVER (DOOR)		
11	3A		D13-1792-08	RACK (GEAR)		
12	2B		G02-1616-08	FLAT SPRING (THRUST)		
13	3A		G02-1618-08	FLAT SPRING (SUB)		
15	2A		D10-3685-08	SHAFT (SUB)		
16	2A		D10-3694-08	SHAFT (MAIN)		
17	1A		D21-1859-08	SHAFT (JOINT)		
18	2B		D10-3686-08	SLIDER (MAIN)		
19	1A		D10-3687-08	SLIDER (LD)		
20	1A		D10-3689-08	ARM (CLAMP)		
21	2A		D10-3692-08	ARM (CHANGE)		
22	2B		D13-1786-08	GEAR (WORM)		
23	2A		D13-1787-08	GEAR (MOTOR-T)		
24	2A		D13-1788-08	GEAR (MOTOR-L)		
25	1A		D13-1789-08	GEAR (INTERMEDIATE LA)		
26	2A		D13-1790-08	GEAR (INTERMEDIATE LB)		
27	2A		D13-1791-08	GEAR (MAIN)		
28	1A		G13-0560-08	CUSHION		

L : Scandinavia
Y : PX(Far East, Hawaii)
Y : AAFES(Europe)
K : USA **T :** Europe **X :** Australia
P : Canada **E :** Europe **M :** Other Areas
R : Mexico **G :** Germany
1 : 1050MD **5 :** DM-5090 **9 :** DM-9090

⚠ indicates safety critical components.

✻ 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.

⑱

Ref. No	Address	New Parts	Parts No.	Description	Destination	Remarks
29	3A,3B		J02-1178-08	INSULATOR		
30	1A		G01-3964-08	EXTENSION SP		
31	1A		G01-3965-08	TORSION SP		
32	2B		G01-3966-08	EXTENSION SP		
33	1A		G01-3967-08	EXTENSION SP (S/HD)		
34	2A		G01-4014-08	EXTENSION SP (DOOR)		
35	3B		G10-0146-04	NON-WOVEN-FABRIC		
36	2B		N19-1101-04	POLY WS 1.2*3.0*0.5CUT		
37	1B		N19-1105-04	POLY WS 1.6*3.5*0.5CUT		
38	1A		N19-0366-04	POLY WS 2.1*4.0*0.5CUT		
39	1A		G16-0877-04	SHEET (TRAY)		
40	2B		E35-1715-08	WIRING HARNESS		
41	3A		E35-1780-08	FLAT CABLE		
42	3B		J80-0012-08	FPC		
47	2B		S33-1022-05	PUSH SWITCH SPPB12		
48	2A,3A		J26-0052-08	PCB ASSY (X29-2580-00)		
DM	3A		T42-0871-08	MOTOR ASSY		
FM	3A		T42-0880-05	DC MOTOR		
LM	3A		T42-0881-05	DC MOTOR		
PU	3A		T25-0060-05	OPTICAL PICKUP HEAD		
RH	3A		T30-0013-05	RECORD HEAD		

L : Scandinavia
Y : PX(Far East, Hawaii)
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1 : 1050MD **5 :** DM-5090 **9 :** DM-9090

⚠ indicates safety critical components.

SPECIFICATIONS

1050MD / DM-5090

[Format]

System ..... Minidisc digital audio system
Laser ..... Semiconductor laser
Recording method ..... Field modulation overwrite method
Audio compression ..... ATRAC (Adaptive TRansform Acoustic Coding)
Playing rotation ..... Approx. 400 rpm ~ 900 rpm (CLV)

[D/A conversion]

D/A conversion ..... 1 Bit+ D.R.I.V.E. conversion
Oversampling ..... 8 fs (352.8 kHz)

[A/D converter]

A/D converter ..... 4 th order sigma-delta conversion
Sampling frequency ..... 44.1 kHz

[Digital audio performance]

Frequency response (playback mode) ..... 8 Hz ~ 20 kHz, ±1 dB
Signal to noise ratio (playback mode) ..... More than 100 dB
Dynamic range (playback mode) ..... More than 94 dB
Wow & flutter ..... Less than unmeasurable limit
Analog input sensitivity / input impedance ..... 500 mV / 22 kΩ or more
Analog output level / output impedance ..... 2.0 V / Less than 300 Ω
Headphone output ..... 20 mW/32 Ω load
Digital input
  Coaxial ..... 0.5 Vp-p / 75 Ω
  Optical(Wave length 660 nm) ..... - 15 dBm ~ - 21 dBm
Digital output
  Coaxial ..... 0.5 Vp-p / 75 Ω
  Optical(Wave length 660 nm) ..... - 15 dBm ~ - 21 dBm

[General]

Power consumption ..... 18 W
Dimensions ..... W : 440 mm (17 - 5 / 16 ")
..... H : 94 mm (3 - 11 / 16 ")
..... D : 373 mm (14 - 11 / 16 ")
Weight (Net) ..... 4.9 kg (10.8 lb)

1050MD/DM-5090/DM-9090

SPECIFICATIONS

DM-9090

[Format]

System.....Minidisc digital audio system
Laser .....Semiconductor laser
Recording method .....Field modulation overwrite method
Audio compression .....ATRAC (Adaptive TRansform Acoustic Coding)
Playing rotation .....Approx. 400 rpm ~ 900 rpm (CLV)

[D/A conversion]

D/A conversion .....1 Bit (24 bit Fine D.R.I.V.E.)
Oversampling .....8 fs (352.8 kHz)

[A/D converter]

A/D converter.....4 th order sigma-delta conversion+ D.R.I.V.E. conversion
Sampling frequency.....44.1 kHz

[Digital audio performance]

Frequency response (playback mode) .....8 Hz ~ 20 kHz, ±1 dB
Signal to noise ratio (playback mode) .....More than 110 dB
Dynamic range (playback mode).....More than 98 dB
Total harmonic distortion (1 kHz, playback mode) .....Less than 0.004 %
Wow & flutter .....Less than unmeasurable limit
Analog input sensitivity / input impedance.....500 mV / 22 kΩ
Analog output level / output impedance .....2.0 V / Less than 300 Ω
Headphone output.....20 mW/32 Ω load
Digital input
  Coaxial.....0.5 Vp-p / 75 Ω
  Optical(Wave length 660 nm) .....- 15 dBm ~ - 21 dBm
Digital output
  Coaxial.....0.5 Vp-p / 75 Ω
  Optical(Wave length 660 nm) .....- 15 dBm ~ - 21 dBm

[General]

Power consumption.....20 W
Dimensions .....W : 440 mm (17 - 5 / 16 ")
H : 125 mm (4 - 15 / 16 ")
D : 373 mm (14 - 11 / 16 ")
Weight (Net) .....5.4 kg (11.9 lb)

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

KENWOOD CORPORATION
14-6,Dogenzaka 1-chome, Shibuya-ku, Tokyo, 150 Japan
KENWOOD SERVICE CORPORATION
P.O BOX 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745, U.S.A.

KENWOOD

MINIDISC RECORDER

DM-9090

INSTRUCTION MANUAL

KENWOOD CORPORATION

B60-3491-00 (JA) (T) [MC]
98/12 11 10 9 8 7 6 5 4 3 2 1 97/12 11 10 9 8 7

Before applying power

⚠ ***Caution : Read this section carefully to ensure safe operation.***

Units are designed for operation as follows.

U.K. and Europe ..... AC 230 V only

For the United Kingdom

Factory fitted moulded mains plug

1. The mains plug contains a fuse. For replacement, use only a 13- Amp ASTA-approved (BS1362) fuse.
2. The fuse cover must be refitted when replacing the fuse in the moulded plug.
3. Do not cut off the mains plug from this equipment. If the plug fitted is not suitable for the power points in your home or the cable is too short to reach a power point, then obtain an appro priate safety approved extension lead or adapter, or consult your dealer.If nonetheless the mains plug is cut off, remove the fuse and dispose of the plug immediately, to avoid a possible shock hazard by inadvertent connection to the mains supply.

IMPORTANT :

The wires in the mains lead are coloured in accordance with the following code :

Blue: Neutral

Brown : Live

Do not connect those leads to the earth terminal of a three - pin plug.

Safety precautions

⚠ ***Caution : Read this section carefully to ensure safe operation.***

WARNING : TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE, REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
	THE LIGHTNING FLASH WITH ARROWHEAD SYMBOL, WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE USER TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" WITHIN THE PRODUCT'S ENCLOSURE THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK TO PERSONS.
	THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE USER TO THE PRESENCE OF IMPORTANT OPERATING AND MAINTENANCE (SERVICING) INSTRUCTIONS IN THE LITERATURE ACCOMPANYING THE APPLIANCE.

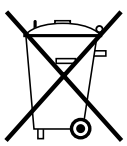
The marking of products using lasers (Except for some areas)

CLASS 1 LASER PRODUCT

The marking is located on the rear panel and says that the component uses laser beams that have been classified as Class 1. It means that the unit is utilizing laser beams that are of a weaker class. There is no danger of hazardous radiation outside the unit.

REQUIREMENT BY NEDERLAND GAZETTE

Batteries are supplied with this product. When they empty, you should not throw away. Instead, hand them in as small chemical waste.



Contents

Caution : Read the pages marked ⚠ carefully to ensure safe operation.

Unpacking

Unpack the unit carefully and make sure that all accessories are put aside so they will not be lost.
Examine the unit for any possibility of shipping damage. If your unit is damaged or fails to operate, notify your dealer immediately. If your unit was shipped to you directly, notify the shipping company without delay. Only the consignee (the person or company receiving the unit) can file a claim against the carrier for shipping damage.
We recommend that you retain the original carton and packing materials for use should you transport or ship the unit in the future.

Keep this manual handy for future reference.

Special feature

This unit is audio equipment based on the Mini Disc format. The Mini Disc (MD) is an application of the optical and magneto-optical technology and has the capability to record signals on discs.The operability of the MD is equivalent to the Compact Disc (CD). The MD uses optional non-contact system so the recordings are not degraded by eternal factors and the discs are never scratched or damaged in playback.

"High bit Rec & Play D.R.I.V.E." for high-quality recording and playback

This unit incorporates the KENWOOD-original "20-bit REC D.R.I.V.E." system to allow high-quality 20-bit recording of CD as well as analog sources such as a tuner and analog disk turntable.
The playback circuitry incorporate the KENWOOD-original "24-bit D/A converter" for high-quality playback.
(D.R.I.V.E.:Dynamic Resolution Intensive Vector Enhancement)

Sampling rate converter

The sampling rate converter incorporated in this unit is compatible with all digital sources (32 kHz, 44.1 kHz, 48 kHz).

- 48 kHz : Standard mode of DAT. For recording of B mode broadcasting of BS tuner, etc.
- 44.1 kHz : Standard mode of DAT. For recording of CD, MD, etc.
- 32 kHz : Standard mode and long-hour mode of DAT. For recording of A mode broadcasting of BS tuner.

Versatile editing functions

In addition to the conventional editing functions (MOVE, DIVIDE, COMBINE and ERASE), this unit provides more versatile editing functions such as the QUICK MOVE function for moving desired tracks at once or the QUICK ERASE function for erasing desired tracks at once.

DIGITAL REC control

This unit is capable of adjusting the recording level during recording from a digital source as well as from an analog source. The fade-in/out functions can also be used.

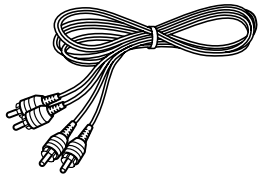
Title input, title search

In addition to the "Title input function" which allows to assign disc and track titles simply using the multi-jog dial and the "Title search function" which allows to find the desired track title, the "Preset title function" provides a selection of frequently used titles.

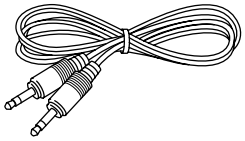
Accessories

Check that the following accessories are present.

Audio cord (2)

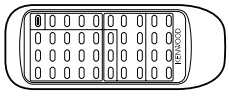


System control cord (1)

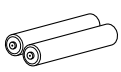


Optical fiber cable (1)

Remote control unit (1)



Batteries (2)



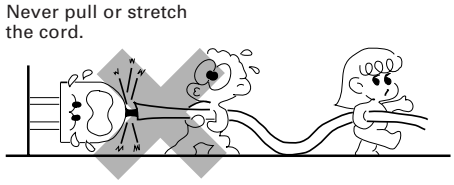
IMPORTANT SAFEGUARDS

⚠ Caution :Read this page carefully to ensure safe operation.

Please read all of the safety and operating instructions before operating this appliance. Adhere to all warnings on the appliance and in the instruction manual. Follow all the safety and operating instructions. These safety and operating instructions should be retained for future reference.

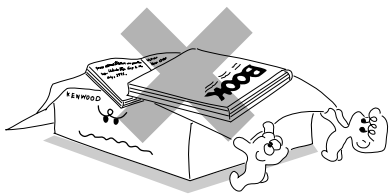
1. **Power sources** – The appliance should be connected to a power supply only of the type described in the instruction manual or as marked on the appliance. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For appliances intended to operate from battery power, or other sources, refer to the instruction manual.

2. **Power-cord protection** – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, pay particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.



3. **CAUTION – Polarization** – This appliance may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

4. **Ventilation** – Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the appliance and to protect it from overheating, and these openings must not be blocked or covered. The appliance should be situated so that its location or position does not interfere with its proper ventilation.
   To maintain good ventilation, do not put records or a table-cloth on the appliance. Place the appliance at least 10 cm away from the walls.
   Do not use the appliance on a bed, sofa, rug or similar surface that may block the ventilation openings. This appliance should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

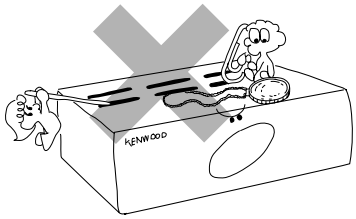


5. **Water and moisture** – The appliance should not be used near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.

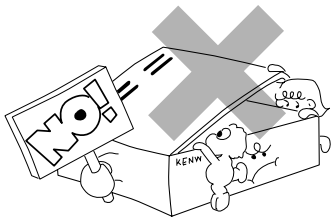
6. **Temperature** – The appliance may not function properly if used at extremely low, or freezing temperatures. The ideal ambient temperature is above +5°C (41°F).

7. **Heat** – The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.

8. **Electric shock** – Care should be taken so that objects do not fall and liquid is not spilled into the enclosure through openings. If a metal objects, such as a hair pin or a needle, comes into contact with the inside of this appliance, a dangerous electric shock may result. For families with children, never permit children to put anything, especially metal, inside this appliance.



9. **Enclosure removal** – Never remove the enclosure. If the internal parts are touched accidentally, a serious electric shock might occur.



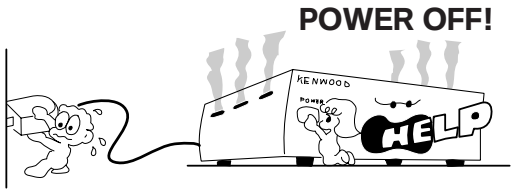
10. **Magnetic fields** – Keep the appliance away from sources of magnetic fields such as TV sets, speaker systems, radios, motorized toys or magnetized objects.

11. **Cleaning** – Unplug this appliance from the wall outlet before cleaning. Do not use volatile solvents such as alcohol, paint thinner, gasoline, or benzine, etc. to clean the cabinet. Use a clean dry cloth.

12. **Accessories** – Do not place this appliance on an unstable cart, stand, tripod, bracket, or table. The appliance may fall, causing serious injury to a child or adult, and serious damage to the appliance. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the appliance. Any mounting of the appliance should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

13. Lightning – For added protection for this appliance during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the appliance due to lightning and power-line surges.

14. Abnormal smell – If an abnormal smell or smoke is detected, immediately turn the power OFF and unplug the appliance from the wall outlet. Contact your dealer or nearest service center.



15. Damage requiring service – The appliance should be serviced by qualified service personnel when:

A. The power-supply cord or the plug has been damaged.

B. Objects have fallen, or liquid has been spilled into the appliance.

C. The appliance has been exposed to rain or water.

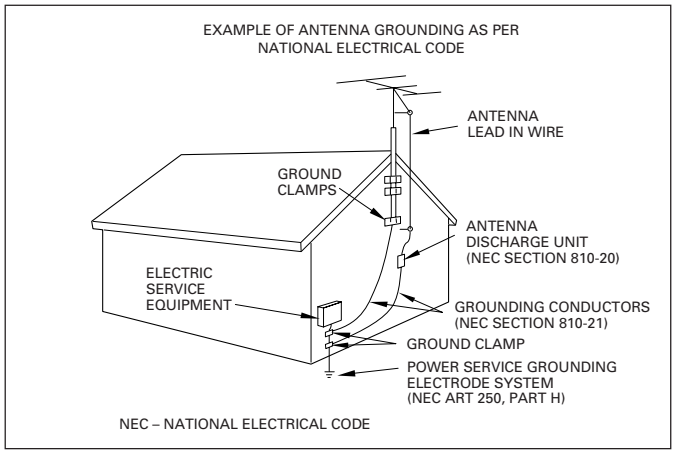
D. The appliance does not appear to operate normally by following the instruction manual. Adjust only those controls that are covered by the instruction manual as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the appliance to its normal operation.

E. The appliance has been dropped, or the enclosure damaged.

F. The appliance exhibits a marked change in performance.

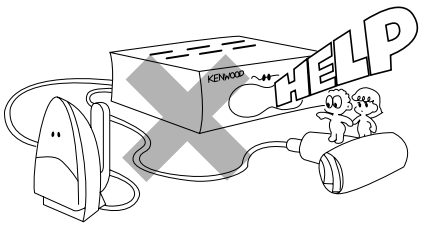
16. Servicing – The user should not attempt to service the appliance beyond that described in the instruction manual. All other servicing should be referred to qualified service personnel.

17. Outdoor antenna grounding – If an outside antenna is connected to the appliance, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges. Article 810 of the National Electrical Code ANSI/NFPA 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure.



18. Power lines – An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.

19. AC outlets – Do not connect other audio equipment with a power consumption larger than that specified to the AC outlet on the rear panel. Never connect other electrical appliances, such as an iron or toaster, to it to prevent fire or electric shock.



20. Overloading – Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.

21. Attachment – Do not use attachments not recommended by the appliance manufacturer as they may cause hazards.

22. Replacement parts – When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original parts. Unauthorized substitutions may result in fire, electric shock, or other hazards.

23. Safety check – Upon completion of any service or repairs to this appliance, ask the service technician to perform safety checks to determine that the appliance is in proper operating condition.

Notes

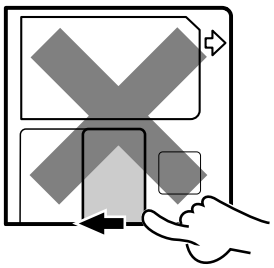
1. Item 3 is not required except for grounded or polarized equipment.
2. Item 17 and 18 are not required except for units provided with antenna terminals.
3. Item 17 complies with UL in the U.S.A.

Safety Precautions

Handling of Mini Disc

As the Mini Disc is accommodated inside a cartridge, it can be handled without caring about dust or fingerprint. However, stained or soiled cartridge may cause malfunction. To enjoy beautiful sound for extended period of time, take care on the following points.

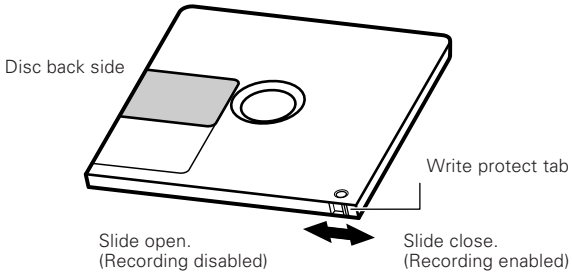
Do not touch the disc directly.
Do not touch the disc by opening the shutter with your hand. The cartridge will be damaged if it is forced open.



Storage position
Do not leave Mini Discs in place where the temperature and/or humidity are extremely high (for example, in a place subject to direct sunlight).

Care
Wipe periodically dust and dirt attached on the cartridge with a dry cloth.

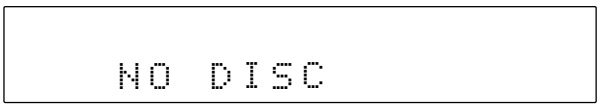
Write protect tab
To protect recorded contents against accidental erasure, set the write protect tab of the disc open. Return the tab to the original position when you want to record signals on the disc.



Note related to transportation and movement

Before transporting or moving this unit, carry out the following operations.

1. **Set the POWER key to ON without loading a Mini Disc.**
   - Check that no disc is present in the unit.
2. **Wait a few seconds and verify that the display shown appears.**
3. **Set the POWER key to OFF.**



Installation position

The MD recorder is very sensitive to vibrations. It should be installed in a position subject to as small vibration as possible.

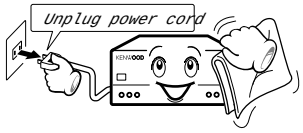
Dust countermeasure

The shutter of the disc cartridge is permanently open while the disc is loaded in the set. Therefore, to prevent dust from penetrating inside the disc, take the disc out of the unit immediately after completion of recording or playback.

Maintenance

Cleaning

Unplug this appliance from the wall outlet before cleaning. Do not use volatile solvents such as alcohol, paint thinner, gasoline, or benzine, etc. to clean the cabinet. Use a clean dry cloth.



Caution against contact revitalizer

Do not use contact cleaners because it could cause a malfunction. Be specially careful against contact cleaners containing oil, for they may deform the plastic componente.

Reference notes

Beware of condensation

When water vapor comes into contact with the surface of cold material, water drops are produced.
If condensation occurs, correct operation may not be possible, or the unit may not function correctly.
This is not a malfunction, however, the unit should be dried.
(To do this, turn the POWER switch ON and leave the unit as it is for several hours.)

Be especially careful in the following conditions:

- When the unit is brought from a cold place to a warm place, and there is a large temperature difference.
- When a heater starts operating.
- When the unit is brought from an air-conditioned place to a place of high temperature with high humidity.
- When there is a large difference between the internal temperature of the unit and the ambient temperature, or in conditions where condensation occurs easily.

Memory backup

The typical period for which the memory can be backed up while the power cord is unplugged or the **POWER** key is set to the **OFF** position is about 3 weeks, though this may be variable depending on the surrounding environment.
In case of long hours of power failure or slipping out of the power cord, the data related to recording and editing (that is usually recorded at the moment the Mini Disc is ejected) may be cleared or destroyed before it is written in the Mini Disc. Remember that the data lost cannot be recovered.
After recording or editing, be sure to eject the Mini Disc so that the recording or editing data can be written in the disc.

WARNING NOTICE:

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CD TEXT

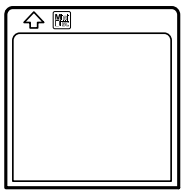
CD TEXT is a system that is standardized to allow the display of text data (disc name or song title, artist name etc.) that is recorded on CDs in addition to music.
By digitally connecting this unit with a CD player (CD TEXT compatible), the text data of a CD can be copied to an MD.
Presently (1997), however, some CDs are equipped with a copy prevention code that prohibits the copying of this data. In the case of such CDs, copying of text data is not possible.
On CDs that do not include the text data copy prevention code, the operation of **"CD text editing"** is possible. →48

MD system

The Mini Disc system has the features as summarized in the following.

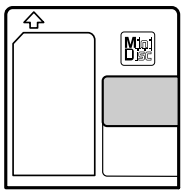
① Like CD (Compact Disc), playback can be started from any position. (Random access)
② It uses a disc with a diameter of 64 mm that is accommodated in a cartridge.
③ Two types of discs can be used. (playback only discs, recordable / playable discs).
④ Up to 74 minutes of recording or playback is possible using high-efficiency coding technology.
⑤ Countermeasure against vibration is taken using semiconductor memory chip.

Playback-only Mini Disc



This type of MD can be used only for playback, and is used by the commercially-available music MD software packages. The playback-only MD is an optical disc like the Compact Disc (CD). The signals are recorded as the presence or absence of small pits and read out by an optical, non-contact pickup.

Recordable Mini Disc

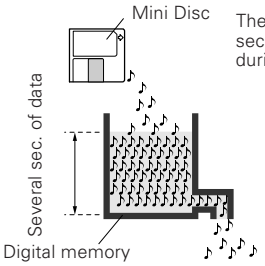


This MD is a magneto-optical disc which can be recorded by magnetic field modulation. To record signals, laser light is irradiated from the bottom side of the magneto-optical disc and magnetic field is applied from the upper side of it.

Sound-skip prevention memory

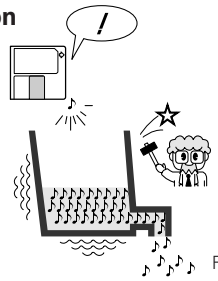
During playback, this unit always stores signals in memory temporarily to prevent sound from being skipped in case of vibration. As a result, even when the data from the optical pickup is interrupted due to vibration, etc., the music will not be interrupted because the memory holds the data for several seconds.

During normal playback



The sound data for several seconds is always stored during playback.

In case of vibration

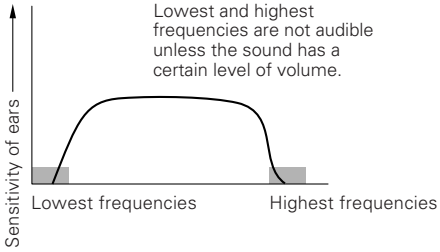


When the readout from disc is interrupted momentarily due to vibration or shock, the reproduced sound from the memory will not be interrupted.

High-efficiency coding technology "ATRAC" (Adaptive TRansform Acoustic Coding)

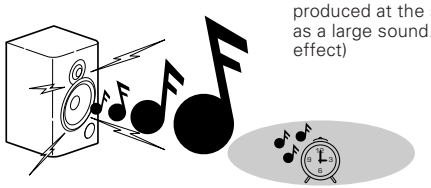
The Mini Disc has only a half the size of the Compact Disc but provides the same recording time. This is made possible by ATRAC*, a newly developed high-efficiency coding technology.
The ATRAC compresses the music data to about 1/5 the amount of data which would be obtained with conventional technology, by cutting off the sound components which do not pose problem in audition even when they are not present. This has made it possible to record or play up to 74 minutes.

Sound does not affect the sensitivity of ears



Lowest and highest frequencies are not audible unless the sound has a certain level of volume.

Small sound near large sound



A small sound is not audible to human ears if it is produced at the same time as a large sound. (Masking effect)

Monaural recording

This unit can record a longer period of sound in monaural (monaural long-play mode). In this mode, the recording time of the disc is about double that in the stereo mode.
The Mini Disc recorded in the monaural mode cannot be played with equipment which is not compatible with monaural playback. →16

D.R.I.V.E. (Dynamic Resolution Intensive Vector Enhancement) system

This unit incorporates the KENWOOD-original "20-bit REC D.R.I.V.E." system so that, not to mention the CD, analog sources such as the tuner and analog disk turntable can also be recorded with high-quality 20-bit recording.
The digital inputs include both optical and coaxial input jacks so that high-quality recording is possible from any digital equipment.
① The reproducibility of small signals is improved drastically for an excellent reproduction of fine reverberations of music. The excellence is also remarkable in the feeling of stability, presence, attack sound and bass reproduction.
② The D.R.I.V.E. system maintains the correlation between the musical components of the input and output signals and does not cause any sound degradation from the principle.

MONITOR function

This unit can be used as a 24-bit D/A converter by setting the **MONITOR** key. Refer to **"MONITOR key"**. →23

System connections

Make connection as shown below. When connecting the related system components, refer also to the instruction manuals of the related components.
Caution: Do not plug in the power lead until all connections are completed.

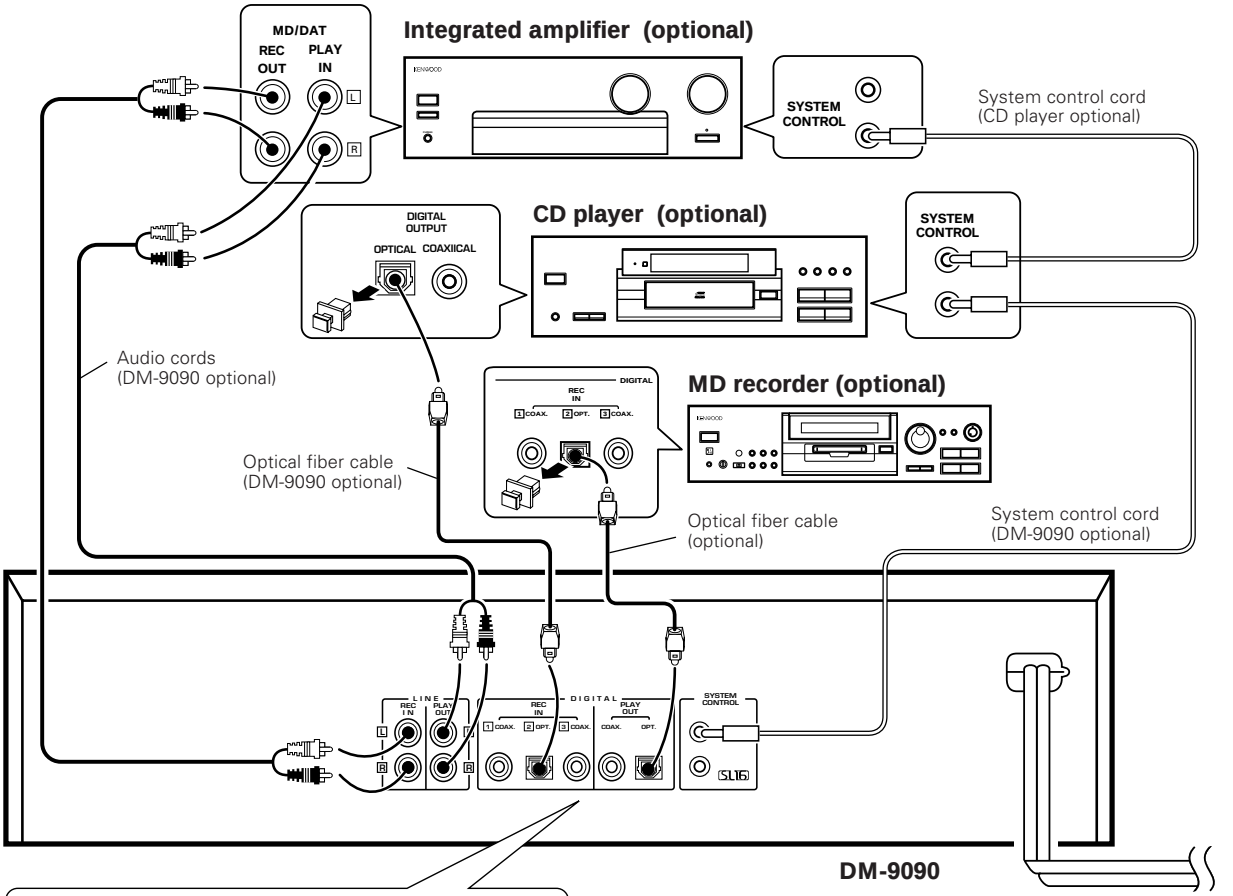
Malfunction of microprocessor

If operation is not possible or erroneous display appears even though all connections have been made properly, reset the microprocessor referring to "In case of difficulty". →51

Except for U.S.A., Canada

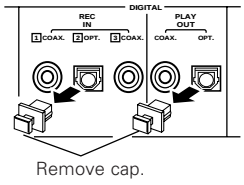
Caution regarding placement

To maintain proper ventilation, be sure to leave a space around the unit (from the largest outer dimensions including projections) equal to, or greater than, shown below.
Left and right panels: 10 cm, rear panel: 10 cm



DIGITAL input / output jacks (OPTICAL)

Remove protective caps from digital input/output jacks before use.



Remove cap.

- When connecting the audio cords (cords with pin plugs on each end), insert the white plugs into the **L** (Left) jacks and red plugs into the **R** (Right) jacks.

Notes

1. Connect all cords firmly. If connections are loose, there could be loss of sound or noise produced.
2. When plugging and unplugging connection cords, be sure to first remove the power cord from the AC outlet. Plugging/unplugging connection cords without removal of the power cord can cause malfunctions or damage to the unit.

About the system control connections

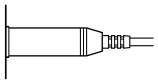
About the system control connections

Connecting system control cords after connecting a Kenwood audio component system lets you take advantage of convenient system control operations.
There are two Kenwoood system control modes. Make connections according to the groups of terminal symbols shown below.
[XS8] Mode : lets you combine [XR], [XS], and [XS8] terminals
[SL16] Mode : for [SL16] terminals only

This unit is [SL16] compatible.
You can connect this unit via system control if all other equipment using system control connections are set to the [SL16] mode.

Notes

1. [SL16] equipment cannot be combined with [XR], [XS], and [XS8] equipment for system operations. If your equipment consists of this kind of combination, please do not connect any system control cords. Even without system control cords, normal operations can be carried out without affecting performance.
2. If your amp or receiver does not have a system control terminal, do not connect any system control cords to the system control terminals on the other components.
3. Do not connect system control cords to any components other than those specified by Kenwood. It may cause a malfunction and damage your equipment.
4. Be sure the system control plugs are inserted all the way in to the system control terminals.



About the system control operations

Remote Control
Lets you operate this unit with the system remote supplied with the amp or receiver.
Automatic Operation
Automatically switches the input selector on the amp or receiver when you start playback from this unit.
Synchronized Recording
When recording a CD after setting the amplifier's input selector to CD, starting playback on the CD player allows to start recording automatically in an interlocked operation.

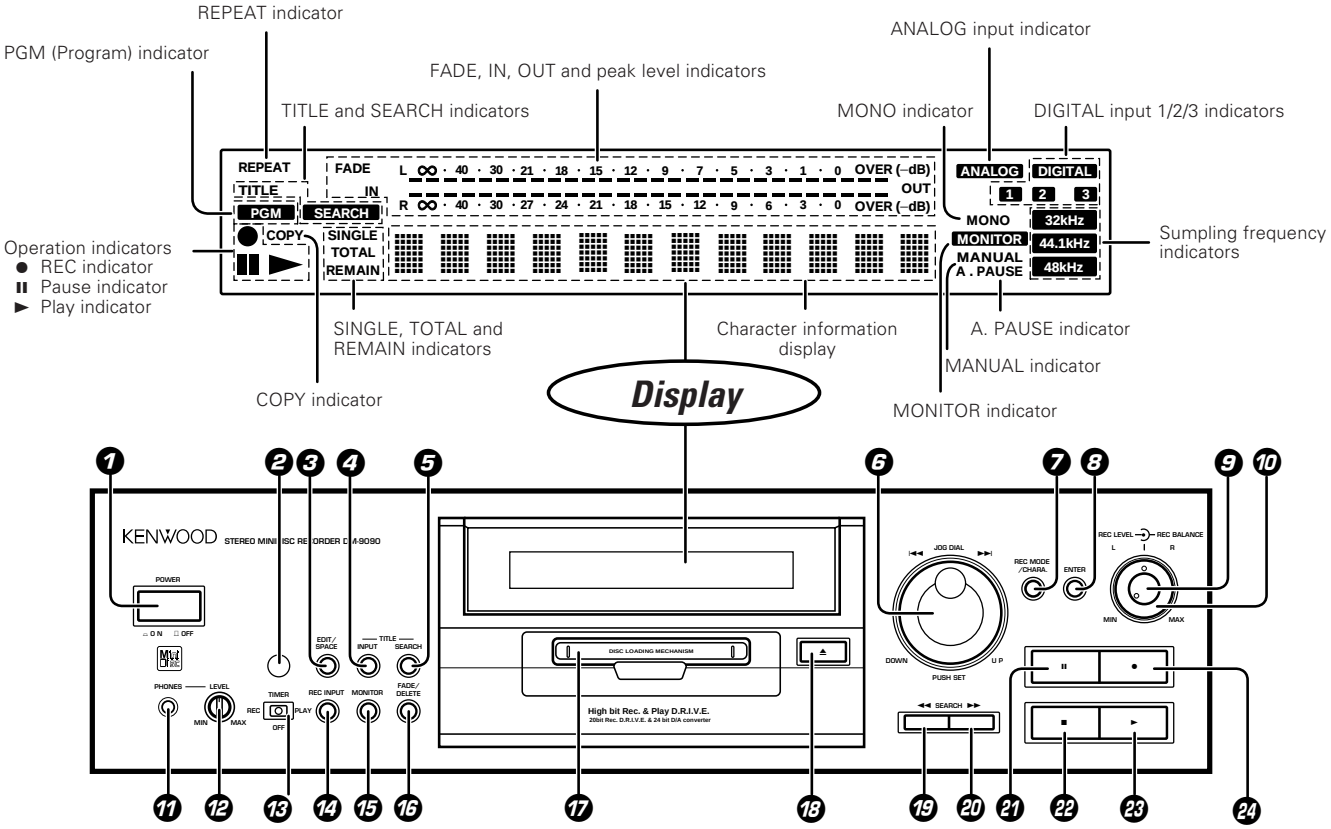
- Do not operate the CD player during recording of a digital source other than CD; otherwise malfunction may occur. →30

Note on connection of optical-fiber cable

The optical-fiber cable is designed for use in the connection of the CD player (optional). The digital signal transmission makes it possible to record the high-quality sound of CDs without degradation.

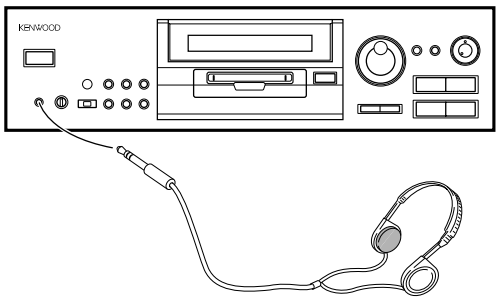
- Insert the optical-fiber cable straight into the connector until it clicks.
- Be sure to attach the protection cap when the connector is not used.
- Never bend or bundle the optical-fiber cable.
- All of the commercially-available optical fiber cables cannot be used with these units. If there is an optical fiber cable which cannot be connected to your component, please consult your dealer or nearest KENWOOD agent.

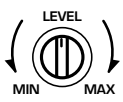
Display / Main unit



Listening through headphones

Plug the stereo headphones (with standard-plug) available in audio stores into the **PHONES** jack and adjust the listening volume with the **PHONES LEVEL** control on the front panel.





Standby mode

While the standby indicator of the unit is lit, a small amount of current is flowing into the unit's internal circuitry to back up the memory. This condition is referred to as the standby mode of the unit. While the unit is in the standby mode, it can be turned ON from the remote control unit.

Description of main unit keys

❶ POWER key
: Press to turn the unit ON and OFF.
: The unit may enter the standby mode when the **POWER** key is pressed to turn it ON. This is because the unit holds the memory that it has been put to the standby mode by the remote control unit in the last operation.

❷ Remote control sensor

❸ EDIT/SPACE keys →32
EDIT:
: Press to switch the editing mode ON/OFF.
SPACE:
: Press to insert a blank space character during the title input operation.

❹ TITLE INPUT key →44
: Press to switch the title input mode ON/OFF.

❺ TITLE SEARCH key →17 →45 →46
: Press to switch the title search mode ON/OFF.
: During title editing, press to switch the title change input mode between the "overwrite mode" and "insert mode".

❻ JOG DIAL (Jog dial) →17 →19 →32
Skip down (I◄◄)/ Skip up(►►I) knob
: During playback, press to skip tracks.
: Before starting recording in record mode, rotate to select the recording setting adjustment mode.
: During title search, rotate to select a track number.
: During title input, rotate to select a track number or a character.
: During editing, rotate to select the editing mode or a track number.
PUSH SET knob: →32
: For use in setting the editing result and input title in memory.

❼ REC MODE/CHARA. (Character) keys →24 →45
REC MODE:
: Press to switch the recording setting adjustment modes (record modes) ON/OFF.
CHARA. :
: Press to select a character group during the title input operation.

❽ ENTER key →33
: For use in executing the editing and title input operations.

❾ REC LEVEL knob →27
: Rotate to adjust the analog recording level.

❿ REC BALANCE knob →27
: Rotate to adjust the analog recording balance.

⓫ PHONES jack
: Connect stereo headphones (optional) here.

⓬ PHONES LEVEL knob
: Rotate to adjust the volume of the headphones.

⓭ TIMER switch
: This switch is used in timer playback and timer recording.

⓮ REC INPUT key →26
: Press to switch the recording input line between digital (optical/coaxial), analog and monaural.

⓯ MONITOR key →23
: Press to monitor the sound being input from the source while the unit is in stop mode.

⓰ FADE/DELETE keys →28 →46
FADE:
: Press to switch the fade mode ON/OFF.
DELETE:
: During title editing, press to delete a character. During track editing, press to delete a track.

⓱ Mini Disc insertion slot
: When a Mini Disc is inserted while the unit is in the standby mode, it is turned ON automatically.

⓲ Eject (▲) key
: Press to eject the Mini Disc.

⓳ Manual search down (◄◄) key →19 →46
: This key also functions as the fast reverse key during playback.
: During an editing mode, press to move the title input cursor or to scroll the track title display to the left.

⓴ Manual search up (►►) key →19 →46
: This key also functions as the fast forward key during playback.
: During an editing mode, press to move the title input cursor or to scroll the track title display to the right.

㉑ Pause (II) key
: Press to let playback or recording pause temporarily.

㉒ Stop (■) key
: Press to stop playback or recording.

㉓ Play (►) key
: Press to start playback.

㉔ Record (●) key
: Press to start recording.
In stop mode :
: When the ● key is pressed while a recordable disc is present in the unit, it enters record-pause mode.
(It enters record-pause mode at the position immediately after the last existing track.)
In record-pause mode :
: When the ● key is pressed, recording starts by creating a new track from the current position. The track number is incremented by "1".

Remote control unit

The remote control unit incorporates the basic operation keys as well as a variety of applied operation keys so that it can be used in a wide range of purposes.
Use care to store the remote control unit in a safe place so as not to lose it.

❶ Numeric keys / Character editing keys

Numeric keys

0-9 :

: Press when selecting a track number directly.

+10 :

: Press when selecting a track number 10 or more.

+100 :

: Press when selecting a track number 100 or more.

: These keys are also used to select a character or symbol during title editing.

CHARACTER DELETE / CLEAR keys

CHARACTER DELETE :

: During title input, press to delete a character.

CLEAR :

: During editing, press to clear a selected track number.

: In program mode, press to clear the program.

CHARACTER SPACE / CHECK keys

CHARACTER SPACE :

: During title input, press to insert a blank space character.

CHECK :

: In program mode, press to check the program contents.

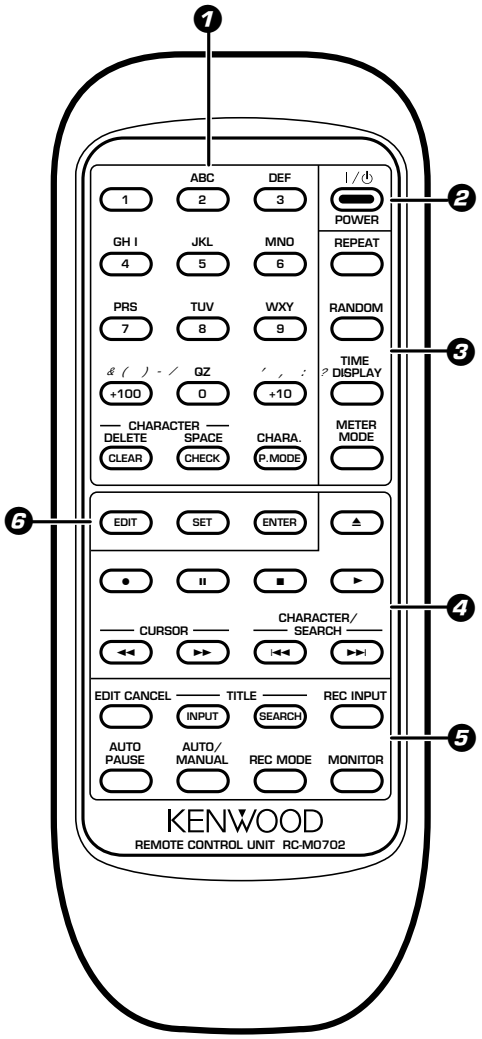
CHARA. (Character)/ P.MODE (Play Mode) keys

CHARA. :

: Press to select a character group during the title input operation.

P.MODE :

: Press to initiate the program mode.



Model: RC-M0702
Infrared ray system

❷ ON/STANDBY key

: Press to turn the unit between ON (I) and STANDBY (⏻) modes.

❸ Display-related/REPEAT keys

REPEAT key

: Press to switch the repeat modes for repeat playback.

RANDOM key

: Press to initiate the random play mode.

TIME DISPLAY key

: Press to switch the time and title display modes.

METER MODE key

: Press to switch the level meter display contents.

❹ Basic operation keys

⏏ : Eject key
● : Record key
⏸ : Pause key
■ : Stop key
► : Play key
⏮ , ⏭ : Skip down/up keys

CURSOR / ◄◄ , ►► keys

◄◄ , ►► :

: During playback, press to fast forward or fast reverse the play.

CURSOR :

: During title input, press to move the cursor.

CHARACTER/SEARCH keys

CHARACTER :

: Press to select a character group during the title input operation.

SEARCH :

: During playback, press to skip tracks in the forward or reverse direction.

❺ Applied operation keys

EDIT CANCEL key

: Press to cancel the editing operation.

TITLE INPUT key

: Press to switch the title input mode ON/OFF.

TITLE SEARCH key

: Press to switch the title search mode ON/OFF.

: During title editing, press to switch the title change input mode between the "overwrite mode" and "insert mode".

REC INPUT Key

: Press to switch the recording input line between digital (optical/coaxial), analog and monaural.

AUTO PAUSE key

: When this key is pressed, the pause mode is initiated automatically at the point where the track number changes during playback.

AUTO/MANUAL key

: Selects whether the track numbers are to be marked automatically during recording (AUTO) or to be marked manually after it (MANUAL).

REC MODE key

: Press to switch the recording setting adjustment modes (REC MODE) ON/OFF.

MONITOR key

: Press to monitor the sound being input from the source while the unit is in stop mode.

❻ Editing mode keys

EDIT key

: Press to switch the editing mode ON/OFF.

SET key

: This key is used in the title assignment or editing operations.

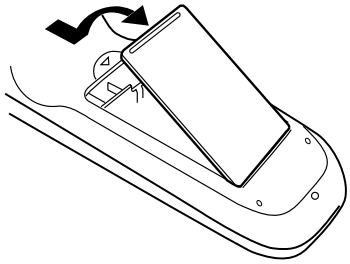
ENTER key

: Press to execute editing or enter the input title in memory.

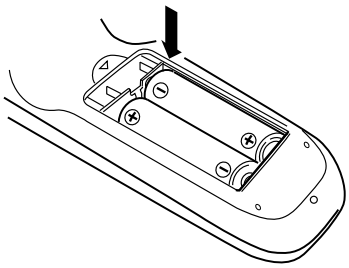
Operation of remote control unit

Loading batteries

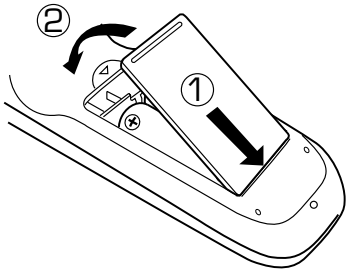
1 ***Remove the cover.***



2 ***Insert batteries.***



3 ***Close the cover.***

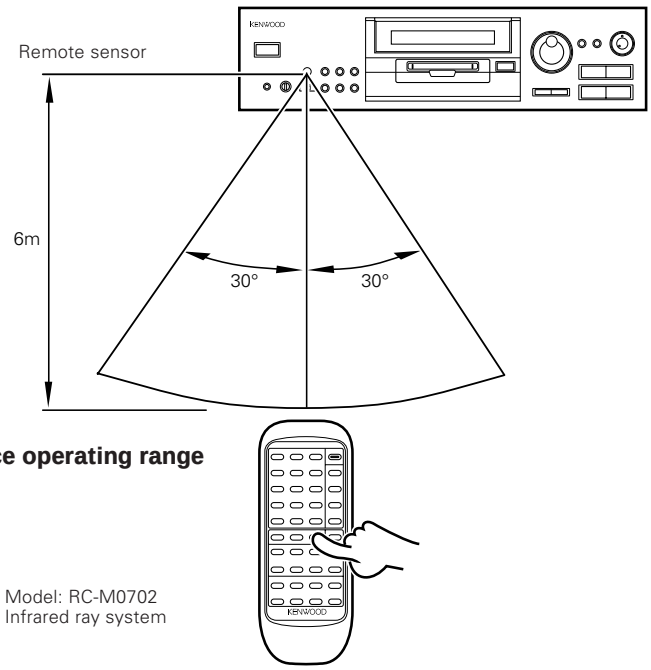


- Insert two R6 ("AA"-size) batteries following the polarity indications.

Operation

To switch the power of the unit ON, plug the power cord into a wall outlet, press the POWER key of the main unit to ON and press the ON/STANDBY key of the remote control unit. Once the power has been switched ON, press the desired operation key.

- When pressing more than one remote control keys successively, press the keys securely by leaving an interval of 1 second or more between pressing of keys.



Reference operating range

Model: RC-M0702
Infrared ray system

Notes

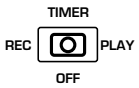
1. The provided batteries are intended for use in operation checking, and their service life may be short.
2. When the remote controllable distance becomes short, replace both of the batteries with new ones.
3. If direct sunlight or the light of a high- frequency fluorescent lamp (inverter type, etc.) is incident to the remote sensor, malfunction may occur. In such a case, change the installation position to avoid malfunction.

Playback of Mini Disc

Use the following procedure to play a MD in the original order of tracks from track No. 1.

Before playing a MD

Set the TIMER switch to OFF.



Disc recorded in monaural mode

This unit is capable of playing a Mini Disc recorded in the "monaural long-play mode." As the "monaural long-play mode" requires half the amount of data required for stereo mode recording, the playing time (recording time) of the disc is doubled (to max. 148 minutes) from that in the stereo mode.

- A Mini Disc recorded in the "monaural long-play mode" cannot be played normally with equipment which is not compatible with monaural playback.

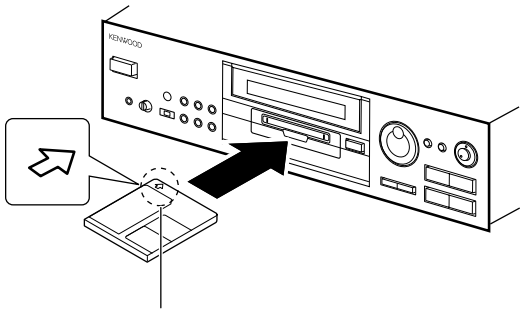
Playing tracks in order from track No. 1

1 Turn the power ON.

In case no disc is loaded:

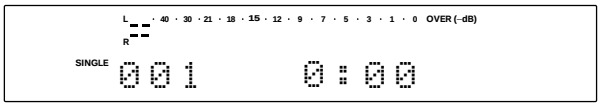
- When **"-STANDBY-"** is displayed, turn the unit ON by pressing the **ON (I) / STANDBY (⏻)** key of the remote control unit.

2 Load a Mini Disc.



In the direction of the arrow.

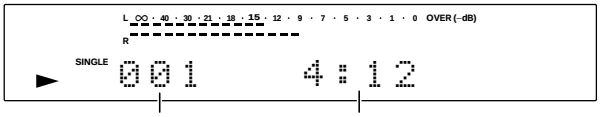
- Insert a Mini Disc into the slot securely.
- **"READING"** blinks while the unit checks the contents of the disc.
- If a title has been assigned to the disc, that title will be displayed.



- If the **"PGM"** indicator is lit, press the **CHARA. / P.MODE** key of the remote control unit to turn it off.

3 Start playback.

- In a few seconds, playback starts from track No, 1.

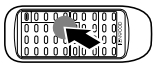


Track No. being played

Elapsed time of track being played

Preparation

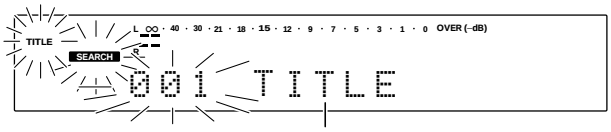
❶ **Put the MD recorder in stop mode.**
❷ **Enter the track mode. (“PGM” goes off)**



Searching a desired track by its title (TITLE SEARCH)

1 Press the TITLE SEARCH key.

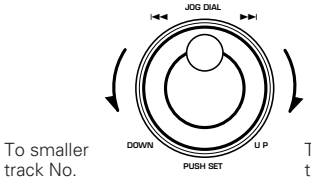
Pressing the **TITLE SEARCH** key again cancels the track number selection mode.



Title

- With a track to which no title has been assigned, the track number and **“. . . . . .”** are displayed.
- Title search is possible in either stop or play mode.

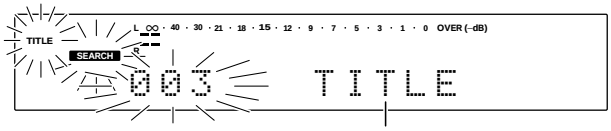
2 Select the desired title.



To smaller track No.

To larger track No.

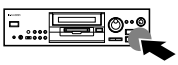
Pressing the **TITLE SEARCH** key again cancels the current track number.

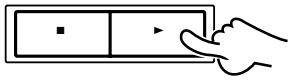


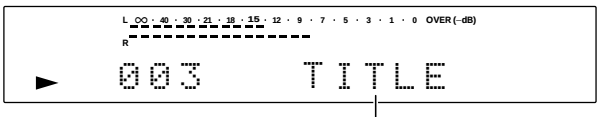
Selected track

Characters flow toward the left.

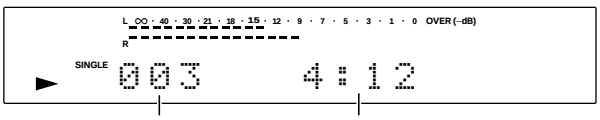
3 Start playback.







Characters flow toward the left.



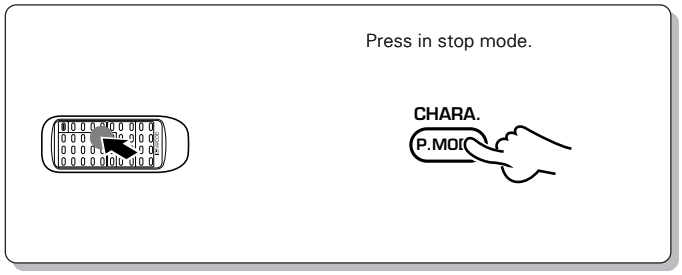
Track No. being played

Elapsed time of track being played

- Playback starts in a few seconds.

Playback from desired track

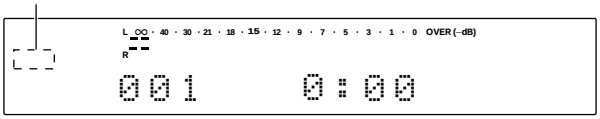
1 Enter the track mode.



Each press switches the mode.

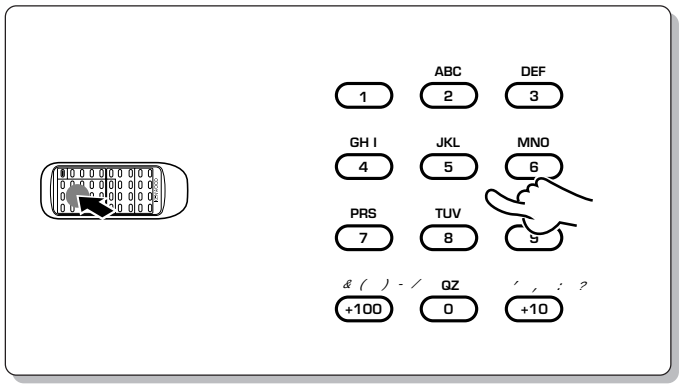
① **Track mode** : PGM goes off
② **Program mode** : PGM lights up

"PGM" goes off



- If the **"PGM"** indicator is lit, press the **CHARA. / P.MODE** key of the remote control unit to turn it off.

2 Select the desired track number.



Press the numeric keys as shown below....

To enter track No. 23 : [+10], [+10], [3]
To enter track No. 40 : [+10], [+10], [+10], [+10], [0]
Track No. 212: : [+100], [+100], [+10], [2]

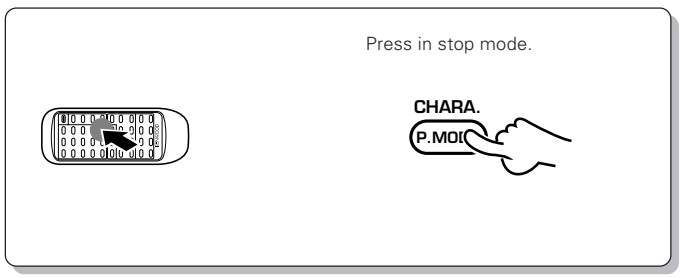
To start playback directly from a part of a track....

Early part of track No. 7 (7.2) : [7] [0] [2]
Middle part of track No. 7 (7.5) : [7] [0] [5]
Latter part of track No. 7 (7.8) : [7] [0] [8]
Middle part of current track (.5) : [0] [5]

- If a track NO. which does not exist on the disc is selected while **"READING"** is blinking, the last track on the disc will be played.

Random playback

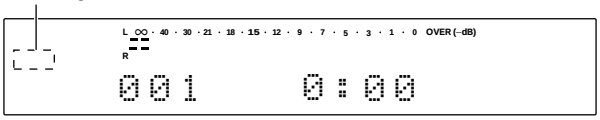
1 Enter the track mode.



Each press switches the mode.

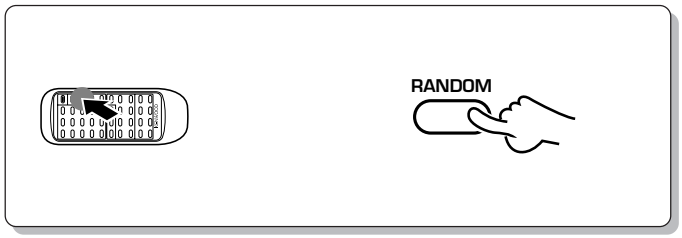
① **Track mode** : PGM goes off
② **Program mode** : PGM lights up

"PGM" goes off



- If the **"PGM"** indicator is lit, press the **CHARA. / P.MODE** key of the remote control unit to turn it off.

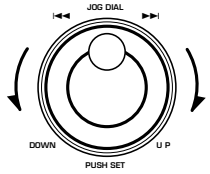
2 Press the RANDOM key.



- Random playback is not possible in the program mode.

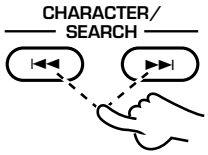
Skipping tracks

Main unit



To skip forward — To skip backward

Remote control unit

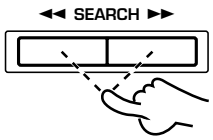


To skip forward — To skip backward

- The track in the direction of the pressed button is skipped, and the selected track will be played from the beginning.
- When the I◄◄ key is pressed once during playback, the track being played will be played from the beginning.
- To return to the beginning of the previous track to the current track, press the I◄◄ key in less than about 2 seconds after the restart of the current track.

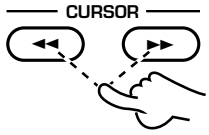
Searching in a track

Main unit



Reverse search — Forward search

Remote control unit



Reverse search — Forward search

- Playback restarts from the position with which the key is released or the jog dial operation is terminated. (If the key was pressed in the pause mode, the unit returns to the pause mode at that position.)
- Sound is output when using forward or reverse search during playback.
- If forward or reverse search is started during play-pause, the disc can be searched at a high speed but sound is not output.
- When the reverse search is started during the program mode and the beginning of the current track is attained, it will be played from the beginning. →20

To pause playback

Main unit

Remote control unit

- Each press pauses and plays the MD alternately.

To stop playback

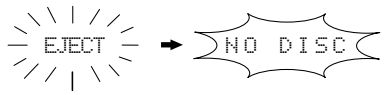
Main unit

Remote control unit

Ejecting the disc

Main unit

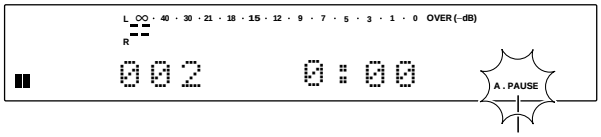
Remote control unit



Mini Disc has been ejected.

AUTO PAUSE key

When the AUTO PAUSE key is pressed, playback pauses after every track. This function is convenient for learning a foreign language or when time is required after each track.



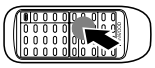
"A. PAUSE" lights up

- Press the ► key to resume playback.
- When this function is not required, be sure to press the **AUTO PAUSE** key so that the **"A. PAUSE"** indicator is extinguished.

Use the following procedure to program desired tracks in a desired order. (up to 32 tracks)

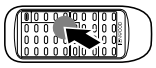
Preparation

❶ **Load a disc.**
❷ **Put the MD recorder in stop mode.**



Programming tracks in a desired order

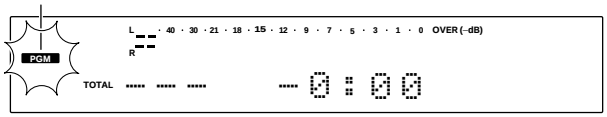
1 Initiate the program mode.



Each press switches the mode.

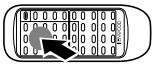
① **Track mode** : PGM goes off
② **Program mode** : PGM lights up

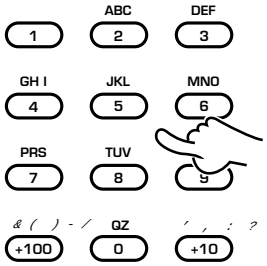
"PGM" lights up



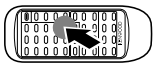
2 Select track numbers in the order you want to play them.

❶ **Select the track number to be played.**



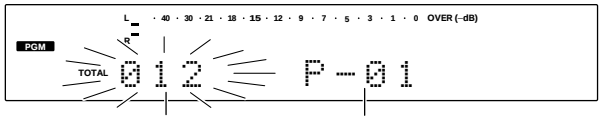


❷ **Set the input track number.**



Repeat steps ❶ and ❷ till the desired tracks have been programmed, in the desired order.

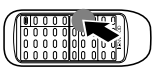
Press numeric keys in the following order.
To select track No. 12:
Press in order of [+10], [2] then the **CHARA. / P.MODE** key.

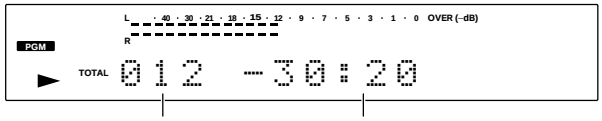


Selected track — Programmed order

- Up to 32 tracks can be selected. **"FULL"** is displayed when no more track can be programmed.
- If you made a mistake, press the **CHARACTER DELETE / CLEAR** key and enter the track No. again.
- An extremely shot track cannot be programmed.
- **"– ✶✶ : ✶✶"** is displayed when the total programmed period has attained 256 minutes or more.
- The input operation is aborted if the **CHARA. / P.MODE** key is not pressed while the indicator is blinking.

3 Start playback.

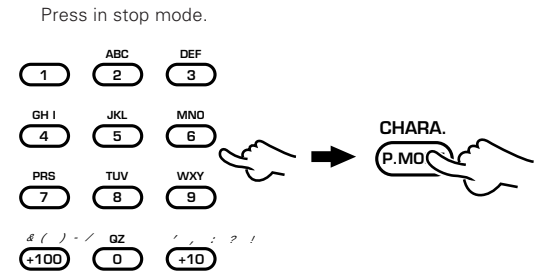




Track No. being played — Total remaining time of the programmed tracks

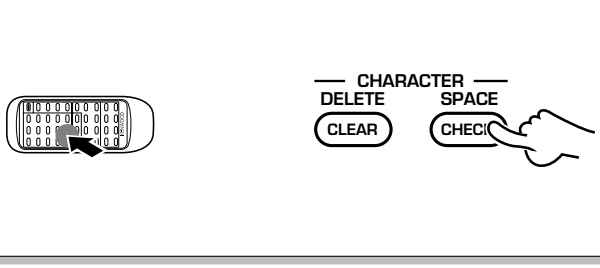
- Tracks will be played in the order they are programmed.
- When the ⏮ or ⏭ key is pressed during playback, tracks will be skipped in the direction of the pressed key.

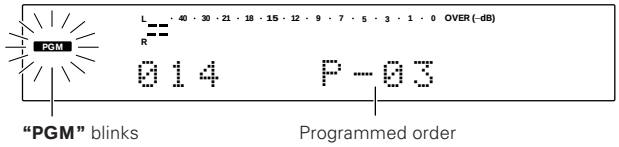
To add a track to the program



- When a track No. is entered, the track will be added to the end of the existing program.
- The input operation is aborted if the **CHARA. / P.MODE** key is not pressed while the indicator is blinking.

Checking the order of tracks





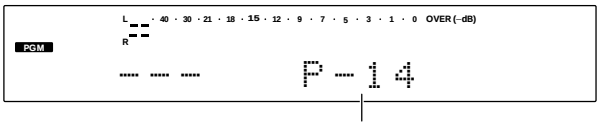
- Each press displays the next track in the program.

To clear tracks from the program

Clearing tracks from the end

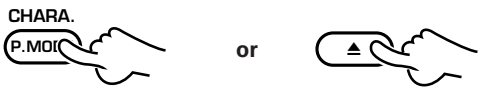
Press in stop mode.

The last track in the program after clear is displayed.



Clearing all tracks

Press in stop mode.



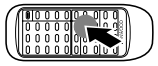
Remote control unit

- The entire program is cleared.

The programmed tracks can be played repeatedly.

Preparation

Put the MD recorder in stop mode.

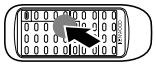


Repeated playback

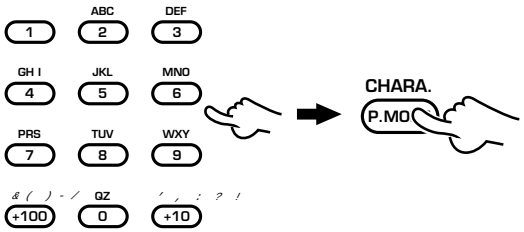
To repeat only the programmed tracks

❶ Program the tracks to be repeated.

① Initiate the program mode.

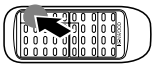


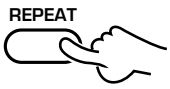
② Select the desired tracks in the desired order.



❷ Repeat the procedure ②.

❸ Enter the repeat mode.



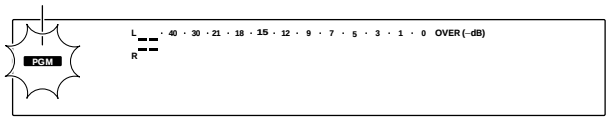


❹ Start playback.

Each press switches the mode.

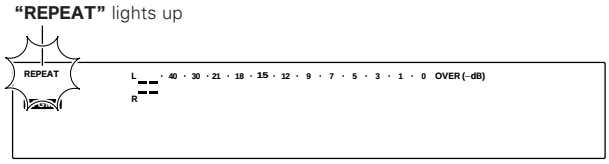
① **Track mode** : PGM goes off
② **Program mode** : PGM lights up

"PGM" lights up



- All of the programmed tracks will be repeated.
- In case only one track is programmed, only that track will be repeated.

"REPEAT" lights up



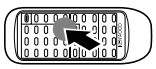
To stop repeated playback

Press the REPEAT key again.

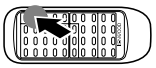
- The **"REPEAT"** indicator goes off and the playback following the current mode (PROGRAM) of the MD player starts.

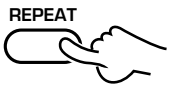
To repeat the entire disc

❶ Enter the track mode.

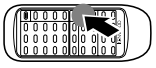


❷ Enter the repeat mode.





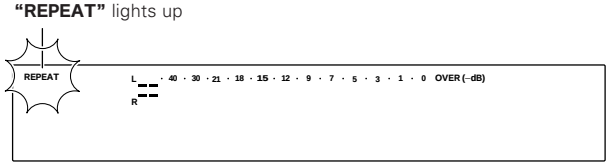
❸ Start playback.



Each press switches the mode.

① **Track mode** : PGM goes off
② **Program mode** : PGM lights up

"REPEAT" lights up



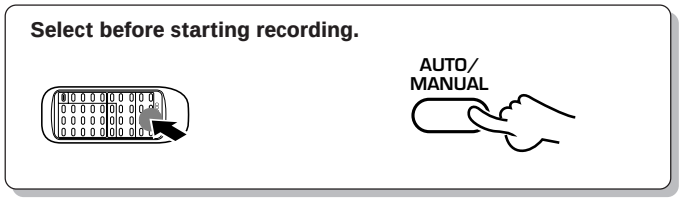
To stop repeated playback

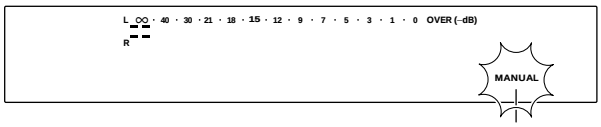
Press the REPEAT key again.

- The **"REPEAT"** indicator goes off and the playback following the current mode (TRACK) of the MD player starts.

AUTO/MANUAL key

This key is used to select whether track numbers are to be marked automatically during recording or they are to be marked manually during or after recording. The track numbers can be used to locate the beginning of a track during playback or programming tracks.





Extinguished in **"AUTO"** mode, lit in **"MANUAL"** mode.

AUTO

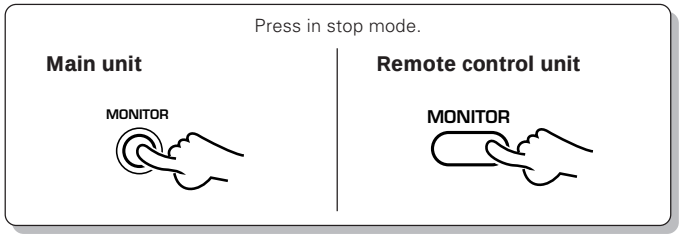
If a no-sound input has lasted for 2 seconds during recording, the track number will be incremented automatically by "1". Usually, use this position for recording. Use this mode when recording all of the tracks in a CD. When recording music containing a continuous section with a very low level, for example when recording classic music, the track number may be incremented by "1" after such a section. In this case, cancel the track number later. It is recommended to use the MANUAL mode when recording such a kind of music.
During digital recording of CD, the track number is incremented automatically by "1" according to the data contained in the digital information. But the no-sound blank is not detected.
When the CD track number is increased during manual search of a CD, the track number recorded on the MD may sometimes fail to be incremented.
A nosound track may sometimes created at the moment the played CD stops.

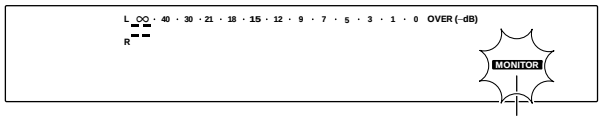
MANUAL

With this setting, the MD track number is not incremented automatically during recording. Track numbers can be marked either during editing (by pressing the **EDIT** key) or after recording (by executing the **TRACK DIVIDE** operation → 36).
This setting is convenient when recording a CD which has been recorded in live or which contains very low-level sound such as a classical music CD.

MONITOR key

Press to monitor the sound being input from the source while the unit is in stop mode.
When the REC INPUT is DIGITAL, the sampling rate (48 kHz, 44.1 kHz, 32 kHz) of the input digital signal can be displayed by pressing this key.





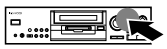
"MONITOR" litghts up

The recording-related settings can be adjusted precisely by selecting the proper display modes.

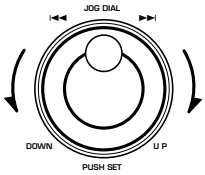
REC MODE key

Selecting the setting adjustment mode

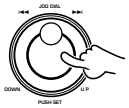
❶ Switch the REC MODE on.



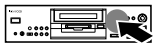
❷ Select the setting adjustment mode.

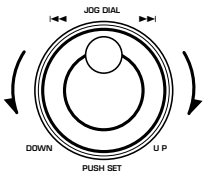


❸ Set the selection (by pressing the JOG DIAL).



❹ Adjust the setting value.





To change another setting, press the **JOG DIAL (PUSH SET knob)**.
(This returns to step ❷ above.)
To end the setting adjustment, press the **REC MODE/CHARA.** key again.

Each press switches the mode.

- ① **REC MODE :** off
- ② **REC MODE :** on (**"D.REC LEVEL?"** displayed.)

The modes are switched by rotating the JOG DIAL.

- ① **D. REC LEVEL?** : Digital recording level setting.
- ② **AUTO TIME?** : Setting of the time for detecting a no-sound blank section during automatic track number marking.
- ③ **AUTO LEVEL?** : Setting of the level for detecting a non-sound blank section during automatic track number marking.
- ④ **FADE TIME?** : Setting of the fading time in fade-in and fade-out.
- ⑤ **REC→ WRITING?** : Setting of the UTOC writing after recording.

- The **"D.REC LEVEL"** and **"FADE TIME"** settings are not used during analog source recording.

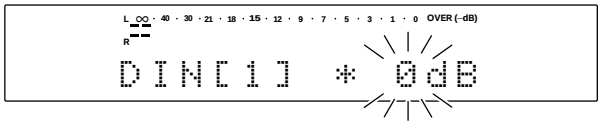
- Step ❹ consists of adjusting the setting of the **"Setting adjustment mode"** selected in step ❷.

When "D.REC LEVEL?" is selected

(Valid during digital recording)

Pressing the SET key while "D.REC LEVEL?" is displayed initiates the initial display for the digital recording level adjustment.
The recording level of the currently selected digital input can be varied by operating the skip up/down keys.
The initial setting is "DIN[1] ✶ 0 dB", which can be set in the level range between -∞ and +12 dB.

Initial display



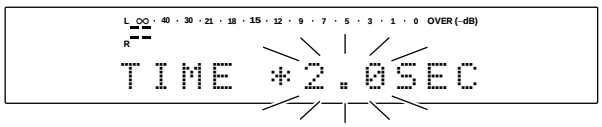
Adjusted value display

When "AUTO TIME?" is displayed

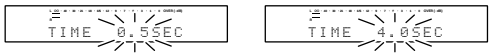
(Valid during analog recording)

Pressing the SET key while "AUTO TIME?" is displayed initiates the initial display for the no-sound blank detection time adjustment for automatic track number marking.
The time after which a no-sound blank is detected can be varied by operating the skip up/down keys.
The initial setting is "TIME ✶ 2.0 SEC", which can be set in the time range between 0.5 and 4.0 seconds set in 0.5-second steps.

Initial display



Adjusted value display

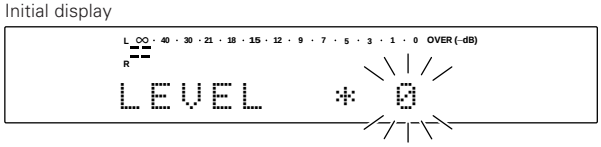


When "AUTO LEVEL?" is displayed

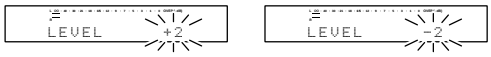
(Valid during analog recording)

Pressing the SET key while "AUTO LEVEL?" is displayed initiates the initial display for the no-sound blank detection level adjustment for automatic track number marking.
The level at which no sound blank is detected can be varied by operating the skip up/down keys.
The initial setting is "LEVEL ✶ 0", which can be set in the level range between +2 and -2.

Initial display



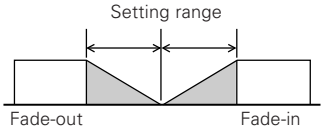
Adjusted value display



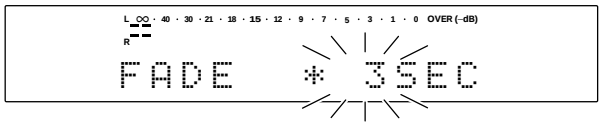
When "FADE TIME?" is displayed

(Valid during digital recording)

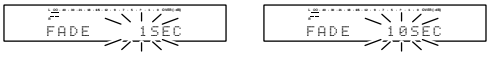
Pressing the SET key while "FADE TIME?" is displayed initiates the initial display for the fade time adjustment.
The time period of fade-in and fade-out operations can be varied by operating the skip up/down keys.
The initial setting is "FADE ✶ 3SEC", which can be set in the time range between 1 and 10 seconds in 1-second steps.



Initial display



Adjusted value display

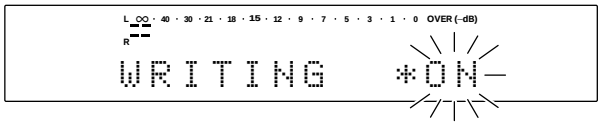


When "REC → WRITING?" is displayed

"WRITING" refers to the writing of recording-related data in the Mini Disc.
Pressing the SET key while "REC → WRITING?" is displayed initiates the initial display for the writing mode setting.
The UTOC writing after recording can be switched on/off by operating the skip up/down keys.
The initial setting is "WRITING ✶ ON".

Setting examples
WRITING ON : Use this setting in normal recording (from a CD, etc.).
WRITING OFF : At this setting, recording can be started immediately as the WRITING mode will not be entered. Use when recording a short track or a broadcast from the tuner.

Initial display



Adjusted value display

Recording (ANALOG input)

The input jacks connected with audio cords accept analog signals. This unit records the analog signal from the REC IN jacks by converting it into digital signal. (This recording is simply referred to as analog recording.)

Preparation

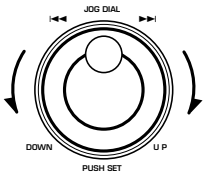
❶ Open the write protect tab of the Mini Disc to make it recordable. →7
❷ Load the Mini Disc.
❸ Check the remaining recording time. →49
❹ Set the amplifier's input selector to the source to be recorded.

ANALOG recording

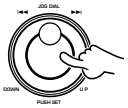
1 Adjust the settings if required.

❶ Switch the REC MODE on.

❷ Select the setting adjustment mode.



❸ Set the selection (by pressing the JOG DIAL).



Go to step ❷ if setting adjustments are not required.

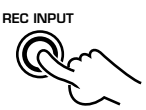
Each press switches the mode.
- ① **REC MODE :** off
- ② **REC MODE :** on (**"D.REC LEVEL?"** displayed.)

The modes are switched by rotating the JOG DIAL.
- ① **D. REC LEVEL?** : Digital recording level setting.
- ② **AUTO TIME?** : Setting of the time for detecting a no-sound blank section during automatic track number marking.
- ③ **AUTO LEVEL?** : Setting of the level for detecting a non-sound blank section during automatic track number marking.
- ④ **FADE TIME?** : Setting of the fading time in fade-in and fade-out.
- ⑤ **REC→ WRITING?** : Setting of the UTOC writing after recording.

● For details on the setting adjustment modes, see **"REC MODE key"**. →24

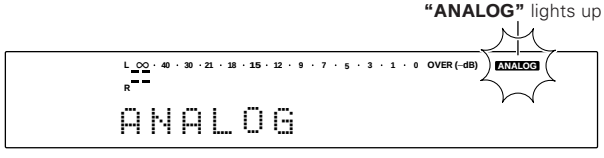
● The **"D.REC LEVEL"** and **"FADE TIME"** settings are not used during analog source recording.

2 Select ANALOG or MONO.



Each press switches the mode.
- ① **ANALOG** : Analog "stereo mode"
- ② **DIGITAL 1** : Coaxial input mode
- ③ **DIGITAL 2** : Optical input mode
- ④ **DIGITAL 3** : Coaxial input mode
- ⑤ **MONO** : Analog "monaural long-play mode"

"ANALOG" lights up



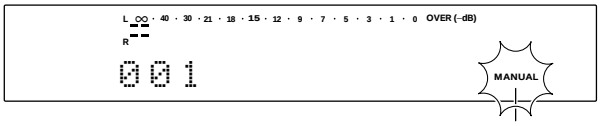
● MONO cannot be selected during recording pause.
● The REC INPUT cannot be changed during pause in the MONO mode.
● The analog "monaural long-play mode" allows to double the recording time compared to recording in the stereo mode.

3 *Select "AUTO" or "MANUAL".*

Each press switches the mode.

① goes off **(AUTO)** : Track numbers are marked automatically. →23

② **MANUAL** : Track numbers can be marked as desired. →23



Extinguished in **"AUTO"** mode, lit in **"MANUAL"** mode.

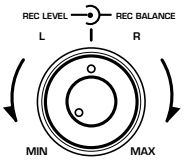
4 *Adjust the recording level. (Main unit only)*

❶ Play the source to be recorded.

❷ Press the ● key.

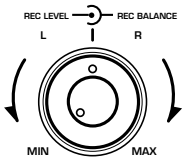
❸ Adjust the recording level and balance.

Recording level
(inner knob)



To decrease level — To increase level

Recording balance
(outer knob)



To attenuate the R CH — To attenuate the L CH

●The unit enters record-pause mode automatically when the ● key is pressed.

●Decrease the level if the red segments of the peak level meter light.

5 *Start recording.*

❶ Press the ● key.

Pressing the pause (❚❚) key also allows to cancel record-pause mode and start recording.

❷ Play the source to be recorded from the beginning.

Recording is not possible if the following characters are displayed.

"DISC FULL" : Disc is full
➡Erase undesired tracks. →40 →42

"PROTECTED" : The accidental erasure protect tab is open.
➡Close it. →7

"PLAY ONLY" : A playback-only Mini Disc is loaded.
➡Load a recordable Mini Disc. →9

●When the **EDIT / SPACE** key is pressed during recording, a track number is inserted in that position.

6 *After recording, eject the Mini Disc.*

Information is being written. — Mini Disc has been ejected.

●The eject (⏏)key is not accepted during recording.

Note **While "WRITING" is displayed, do not apply shock or vibration to the unit because information is being written on the Mini Disc.**

Recording (DIGITAL input)

Recording is possible using recordable Mini Discs. When this unit is connected with a component equipped with digital output, such as a CD player, through a digital cord or optical fiber cable, the signal input through the DIGITAL input jack can be recorded in the digital format (this recording is referred to as digital recording). Enjoy high-quality sound of digital recording!

Preparation

❶ **Open the write protect tab of the Mini Disc to make it recordable.** →7
❷ **Load the Mini Disc.**
❸ **Check the remaining recording time.** →49
❹ **Set the amplifier's input selector to the source to be recorded.**

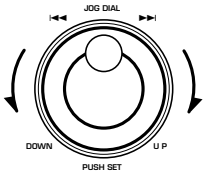
DIGITAL recording

1 Adjust the settings if required.

❶ **Switch the REC MODE on.**

Each press switches the mode.
① **REC MODE :** off
② **REC MODE :** on (**"D.REC LEVEL?"** displayed.)

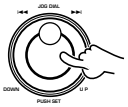
❷ **Select the setting adjustment mode.**



The modes are switched by rotating the JOG DIAL.
① **D. REC LEVEL?** : Digital recording level setting.
② **AUTO TIME?** : Setting of the time for detecting a no-sound blank section during automatic track number marking.
③ **AUTO LEVEL?** : Setting of the level for detecting a non-sound blank section during automatic track number marking.
④ **FADE TIME?** : Setting of the fading time in fade-in and fade-out.
⑤ **REC→ WRITING?** : Setting of the UTOC writing after recording.

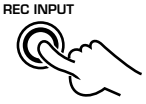
● For details on the setting adjustment modes, see **"REC MODE key"**. →24

❸ **Set the selection (by pressing the JOG DIAL).**



Go to step ❷ if setting adjustments are not required.

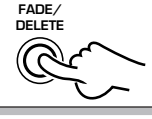
2 Select one of "DIGITAL 1, 2 and 3".



Each press switches the mode.
① **ANALOG** : Analog "stereo mode"
② **DIGITAL 1** : Coaxial input mode
③ **DIGITAL 2** : Optical input mode
④ **DIGITAL 3** : Coaxial input mode
⑤ **MONO** : Analog "monaural long-play mode"

3 To fade in and fade out the music.

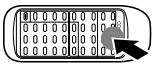
Press in stop mode.



Each press switches the mode.
① **FADE not lit** : Fade mode is off
② **FADE lit** : Fade mode is on

● For details on fade-in and fade-out, see **"When FADE TIME? is displayed"** (→25) and **"Faded recording of MD"** (→30).

4 Select AUTO or MANUAL.



Each press switches the mode.
① goes off **(AUTO)** : Track numbers are marked automatically. →23
② **MANUAL** : Track numbers can be marked as desired. →23

5 Adjust the digital source recording level.

❶ **Play the source to be recorded.**

❷ **Press the ● key.**

❸ **Adjust the recording level.**

Set the **REC MODE** key to **ON**, select the **"D.REC LEVEL?"** setting adjustment display and vary the setting using the **JOG DIAL**.

- The unit enters record-pause mode automatically when the ● key is pressed.
- Decrease the level if the red segments of the peak level meter light.

6 Start recording.

Pressing the pause (**II**) key also allows to cancel record-pause mode and start recording.

Recording is not possible if the following characters are displayed.

"DISC FULL" : Disc is full
➡ Erase undesired tracks. →40 →42

"001 UNLOCK" : The digital cord or optical fiber cable is not locked in position or connected incompletely (or not connected).
➡ Connect the digital cord or optical fiber cable properly. →10

"001 SCMS ON" : Digital recording is inhibited by SCMS.
➡ Use analog recording. →26

"001 notAudio" : The digital signal being input is not an audio signal.
➡ Use analog recording. →26

"PROTECTED" : The accidental erasure protect tab is open.
➡ Close it. →7

"PLAY ONLY" : The disc in use is a playback-only Mini Disc.
➡ Use a recordable Mini Disc. →9

- When the **EDIT / SPACE** key is pressed during recording, a track number is inserted in that position.
- The track number display (001 in the above) indicates the track where the unit is put to record-pause mode.
- When recording is restarted after record-pause, the track number is incremented automatically by "1".

7 Play the source to be recorded.

- To play a track with a margin from the beginning, it is recommended to start playing the source after the time display of the MD recorder has started the count.

8 After recording, eject the Mini Disc.

Information is being written.

Mini Disc has been ejected.

- The eject (⏏) key is not accepted during recording.

While "WRITING" is displayed, do not apply shock or vibration to the unit because information is being written on the Mini Disc.

During recording of a CD, the track number may be incremented by "1" at the moment the CD starts to play. This is caused by a signal contained in the digital signal component of the CD. Unnecessary track numbers can be erased by following the procedure for **"Erasing the track being played (TRACK ERASE)."** →40

Synchro recording with CD playback

By connecting this unit with a KENWOOD " SYNCHRO " type amplifier and CD player, which are equipped with system control jacks, using system control cords, the recording of MD can be started in synchronism with the playback of the CD player.

❶ Set the amplifier's input selector to CD.
❷ Put the CD player in pause mode.
❸ Select the CD track to be recorded using the ⏮ or ⏭ key.
❹ Put the MD recorder in record-pause mode.
❺ Start playback of the CD player.

To stop recording

Press the ■ key, then press the ⏏ key.

DIGITAL recording and SCMS

Note that the digital recording of Mini Discs is not possible in the following cases.
If the digital source has a copy prohibition code, "001 SCMS ON" is displayed and the unit enters record-pause mode. (This message is displayed when copy prohibition is encountered during recording of track number "001".)

Note on the sampling rate converter

Three types of digital signals are usually used according to the sampling frequencies. The sampling frequencies vary depending on the types of digital equipment as shown below.

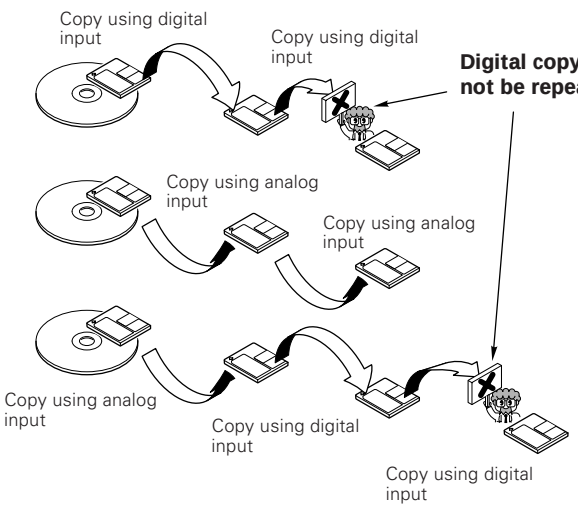
48 kHz : Standard mode of DAT, B mode broadcasting of BS tuner, etc.
44.1 kHz : Standard mode of DAT, CD, MD, etc.
32 kHz : Standard and long-hour modes of DAT, A mode broadcasting of BS tuner, etc.

In general, high-quality recording based on digital signal transmission is available only when the sampling frequency of the source equipment matches that of the recorder equipment. However, this unit incorporates a sampling rate converter so that it can also record digital signals sampled at 48 kHz and 32 kHz by converting their sampling frequency into the sampling frequency of MD (44.1 kHz).
The SCMS may be activated with certain type of satellite broadcasting.

(DAT: Digital Audio Tape deck)

SCMS (Serial Copy Management System)

Designed for copyright protection, the SCMS is a prescription that copying of digital signals as they are in the digital form between digital audio equipment is allowable only for one generation.



Faded recording of MD

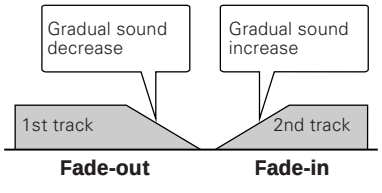
The fade mode of the unit is switched on/off every time the FADE key is pressed.

Recording with fade-in:
When recording is initiated during stop (or pause) in the fade mode, recording starts from ATT = - `, increases to the previously set recording level and continues at this level.

Recording with fade-out:
When recording is stopped during recording in the fade mode, the current recording level decreases to ATT = - ` then recording stops.
If recording is continued until the end of disc, fade-out occurs automatically before the unit stops recording.

Fade-in and fade-out

Fade-out : Ending of music after gradual decrease in volume.
Fade-in : Beginning of music after gradual increase in volume.



After recording of a commercially-available recordable Mini Disc, the recording can be edited in various ways. Note that it is impossible to edit a playback-only Mini Disc.
(Editing is not possible while the "PGM" indicator is lit.)

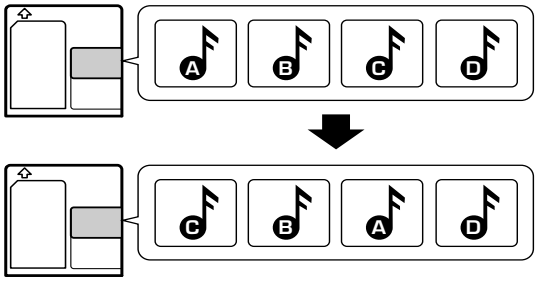
Limitation of functionality due to MD standard

Some functions are limited due to the restrictions imposed by the MD standard. Before considering the symptoms as a sign of trouble with the unit, please read "Symptoms related to MD standard". →51

Selecting the editing function type

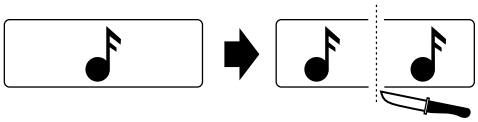
Reordering tracks by moving them

Moving the track being played (TRACK MOVE) →32
Moving several tracks at a time (QUICK MOVE) →34



Dividing a track, combining two tracks

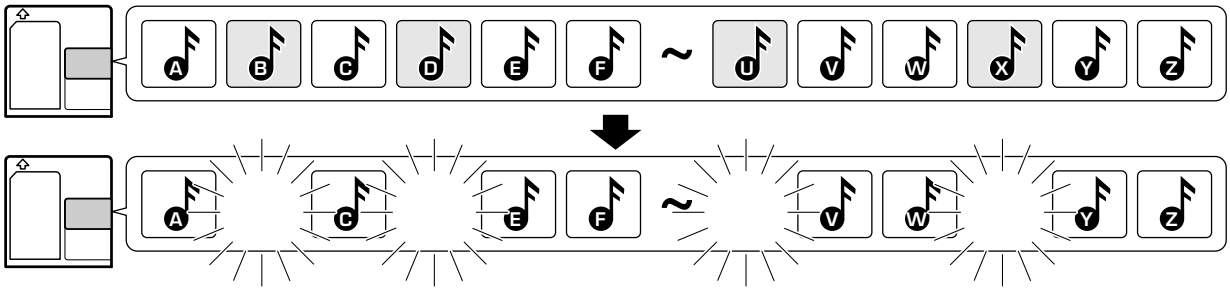
Dividing the track being played (TRACK DIVIDE) →36



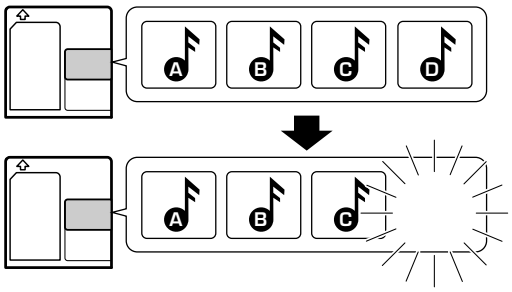
Combining the track being played (TRACK COMBINE) →38

Erasing desired tracks (QUICK ERASE)

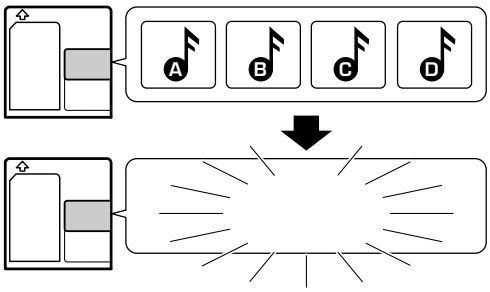
Erasing one or more track at a time (QUICK ERASE) →42



Erasing the track being played (TRACK ERASE) →40



ALL ERASE →42



Editing titles →44

Titles can be assigned to Mini Discs and tracks can have titles, and these titles can be changed or cleared later.

This procedure shows you how to select and move (insert) a track to the track number you desire. The surrounding tracks are renumbered automatically.
Repeating this procedure lets you arrange the tracks in the order you desire.

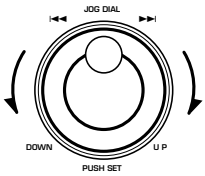
Preparation

❶ **Play a MD.**
❷ **Press the EDIT/SPACE key to switch the editing mode on.**

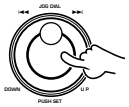
Moving the track being played (TRACK MOVE)

1 Select "MOVE".

❶ **Select "MOVE".**



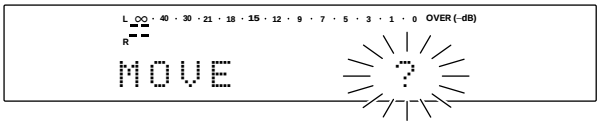
❷ **Set the selection (by pressing the JOG DIAL).**

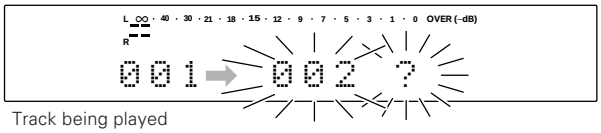


The modes are switched by rotating the JOG DIAL.

① **DIVIDE?** : Dividing a track
② **COMBINE?** : Combining tracks
③ **ERASE?** : Erasing track(s)
④ **MOVE?** : Moving (reordering) tracks

● Editing is aborted if no operation has been performed for 8 seconds.

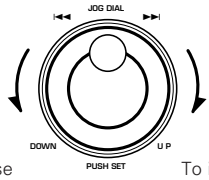




Track being played

2 Select the move destination.

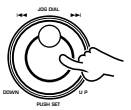
❶ **Select the move destination (the new track number to be assigned to the track being played).**



To decrease track No.

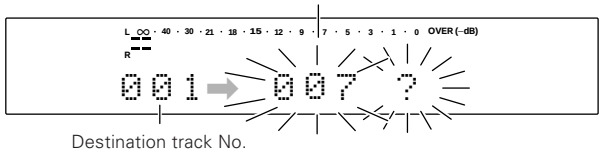
To increase track No.

❷ **Set the selection (by pressing the JOG DIAL).**

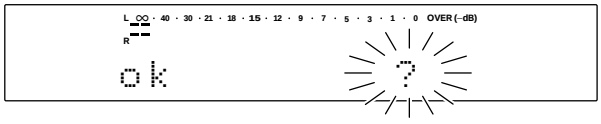


Example of MOVE: To move track No. 1 to track No. 7

Track to be moved



Destination track No.



3 Execute the track reordering operation.

Display after execution

"EDIT NOW!" : When editing is in progress
"COMPLETE!" : When editing is completed successfully
"CAN'T EDIT" : When editing is incomplete

- It takes a while until the execution completes.
- If you execute an editing operation by mistake, the condition before editing can be recovered by performing the **"EDIT CANCEL"** operation. →33

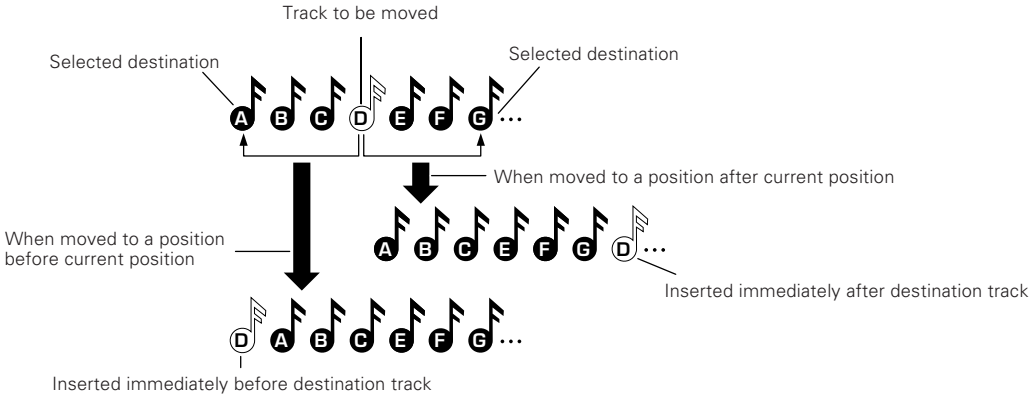
4 Eject the Mini Disc.

Information is being written.

Mini Disc has been ejected.

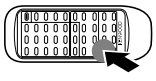
Note **While "WRITING" is displayed, do not apply shock or vibration to the unit because information is being written on the Mini Disc.**

Image of track moving



To cancel the editing results (EDIT CANCEL)

To return the Mini Disc to the condition before it was loaded in the unit, perform the following key operations before ejecting the disc.
After canceling, the editing operation can be restarted from the beginning.



- Be careful for the editing results cannot be canceled after recording operation has been performed or the **"DISC ERROR"** message has been displayed.

Use the following procedure to change the current order of tracks by selecting a desired order and moving the tracks together.

Preparation

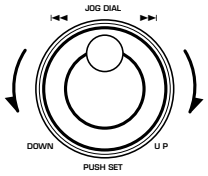
❶ **Put the MD recorder in stop mode.**
❷ **Press the EDIT/SPACE key to switch the editing mode on.**

20 continuous tracks within the specified range can be reordered at a time.

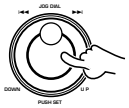
Moving several tracks at a time (QUICK MOVE)

1 Select "Q.MOVE".

❶ **Select "Q.MOVE".**



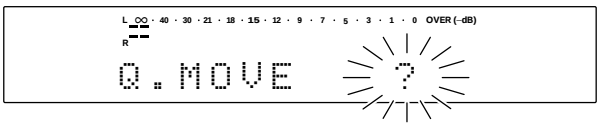
❷ **Set the selection (by pressing the JOG DIAL).**



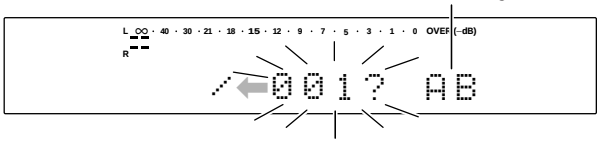
The modes are switched by rotating the JOG DIAL.

① **Q. MOVE?** : Moving (reordering) tracks
② **Q.ERASE?** : Erasing track(s)

- Editing is aborted if no operation has been performed for 8 seconds.



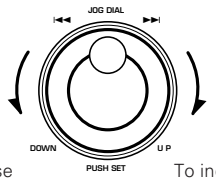
Title scrolling



- Press the **EDIT/SPACE** key again to abort the editing operation.

2 Select the track numbers to be moved.

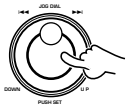
❶ **Select a track number.**



To decrease track No.

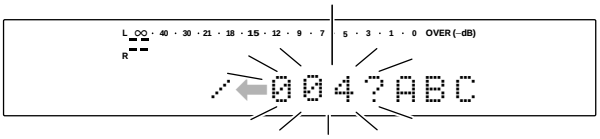
To increase track No.

❷ **Set the selection (by pressing the JOG DIAL).**



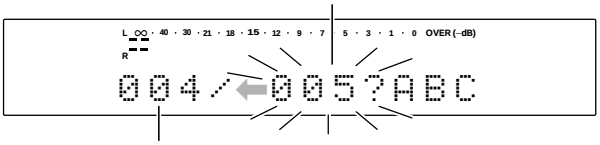
Repeat steps ❶ and ❷ until all tracks have been arranged in the desired order.

Selected track No.



- Only the last selected track can be cleared by pressing the **FADE/DELETE** key of the remote control unit. (To clear all of the selected tracks, cancel editing and restart the operation from the beginning.)
- The orders of tracks can be confirmed by pressing the ◄◄ key (or ►► key) of the remote control unit.

Next track No.

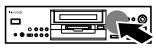


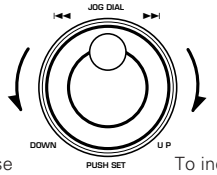
Selected track No.

3 End the selection of the track numbers to be moved.

4 Select the move destination.

❶ **Select the move destination track number.**

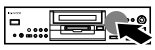


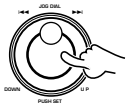


To decrease track No.

To increase track No.

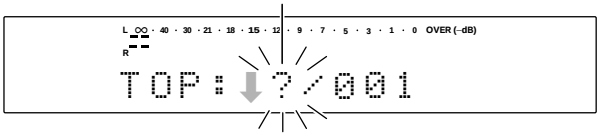
❷ **Set the movement destination (by pressing the JOG DIAL).**





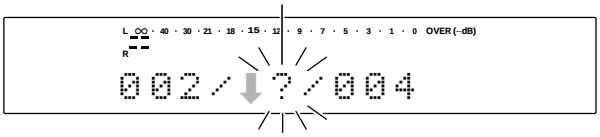
Display when tracks are moved at the top of all tracks

Moved Track Nos.



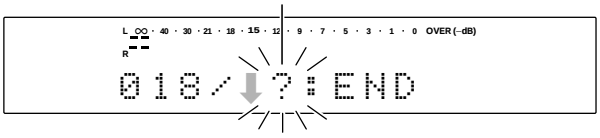
Display when tracks are moved between two track Nos.

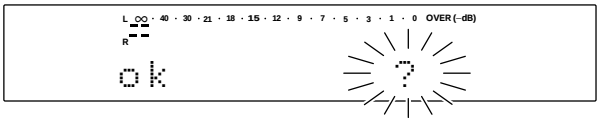
Moved Track Nos.



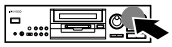
Display when tracks are moved at the end of all tracks

Moved Track Nos.





5 Execute the track reordering operation.



Display after execution

"EDIT NOW!" : When editing is in progress

"COMPLETE!": When editing is completed successfully

"CAN'T EDIT" : When editing is incomplete

- It takes a while until the execution completes.
- If the **ENTER** key is pressed before reordering all tracks, the tracks which have not been selected are added to the end of the reordered range in the same order as before.
- Do not press the ⏏ or **"POWER"** key while **"COMPLETE!"** is blinking, otherwise the track reordering may be interrupted in the middle.
- If you execute an editing operation by mistake, the condition before editing can be recovered by performing the **"EDIT CANCEL"** operation. →33

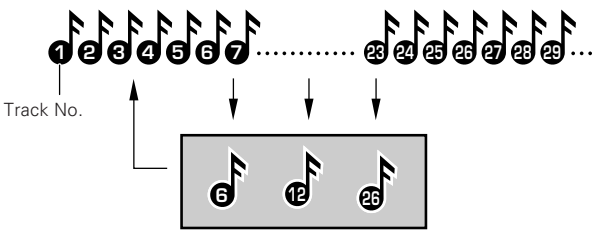
6 Eject the Mini Disc .

Information is being written.

Mini Disc has been ejected.

Note **While "WRITING" is displayed, do not apply shock or vibration to the unit because information is being written on the Mini Disc.**

Image of track insertion



Use the following procedure to divide a track into two by inserting a track number in its middle. For example, by inserting an additional track number before the passage you are specially fond of, it is easy to skip to there when you play the disc later. Note that the track numbers of the tracks located after the divided track are automatically incremented.
The preview function allows to fine-adjust the track division point by playing the divided part repeatedly.

Preparation

❶ **Play the MD track to be divided.**
❷ **Press the EDIT/SPACE key to switch the editing mode on.**

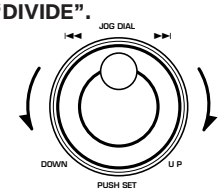
Limitation of functionality due to MD standard

Some functions are limited due to the restrictions imposed by the MD standard. Before considering the symptoms as a sign of trouble with the unit, please read "Symptoms related to MD standard". → 51

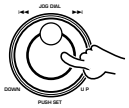
Dividing the track being played (TRACK DIVIDE)

1 *Select "DIVIDE".*

❶ **Select "DIVIDE".**



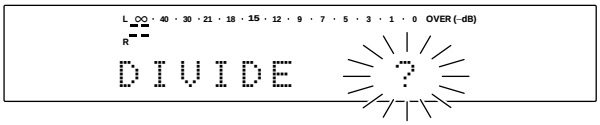
❷ **Set the selection (by pressing the JOG DIAL).**

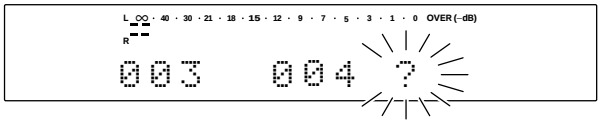


The modes are switched by rotating the JOG DIAL.

① **DIVIDE?** : Dividing a track
② **COMBINE?** : Combining tracks
③ **ERASE?** : Erasing track(s)
④ **MOVE?** : Moving (reordering) tracks

- Editing is aborted if no operation has been performed for 8 seconds.

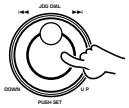


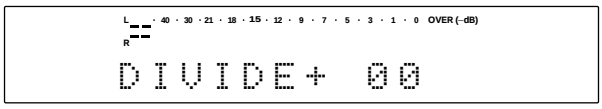


When preview is not required, press the ENTER key once (so that "ok?" is displayed), then go to step ❸.

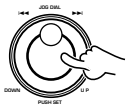
2 *Preview the result.*

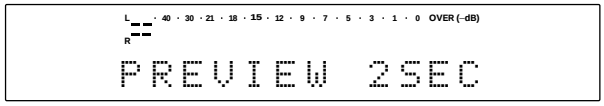
❶ **Enter the DIVIDE mode.**





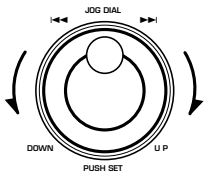
❷ **Execute preview.**

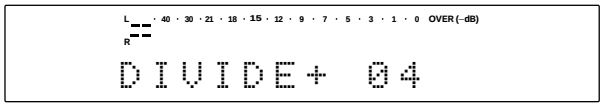




- The first 3 seconds after the division point is repeated.
- If preview is started at the end of a track, the preview continues till the next track (the first track if it is started in the last track), but the part in the next track cannot be divided by TRACK DIVIDE.

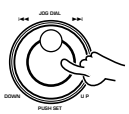
❸ **Fine-adjust the division point.**

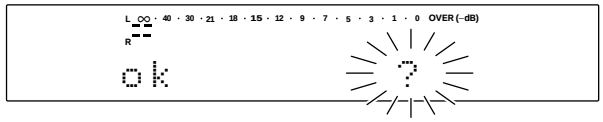




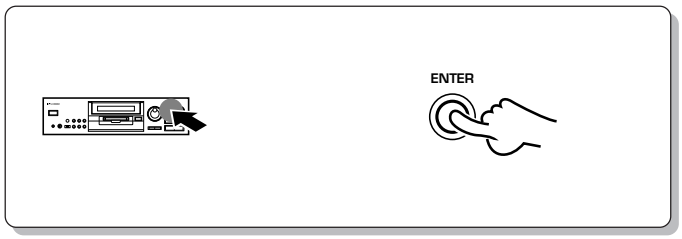
- Fine adjustment is possible while monitoring the sound.
- A The dividing point can be fine-adjusted only in the forward direction from the point where the **EDIT / SPACE** key was pressed initially, in 32 steps and for about 60 ms (6/100 sec.) per step.
  It is recommended to start fine adjustment from slightly before the initial division point.

❹ **Establish the division point.**





3 Execute the track divide operation.



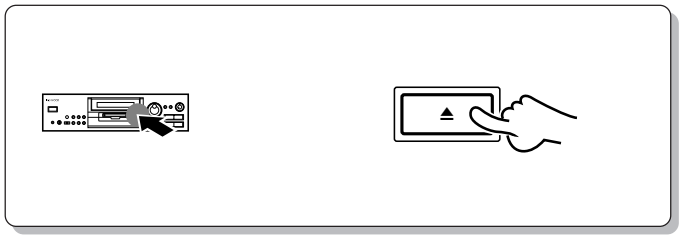
Up to 255 track numbers can be inserted additionally by repeating 1 to 3 for each of them.

Display after execution.

"EDIT NOW!" : When editing is in progress
"COMPLETE!" : When editing is completed successfully
"CAN'T EDIT" : When editing is incomplete

- It takes a while until the execution completes.
- The track is divided into two tracks.
- The unit enters pause mode at the second track.
- There is no blank space left between the two tracks.
- Track division may sometimes be impossible due to the limitations of the MD standard.
- If you execute an editing operation by mistake, the condition before editing can be recovered by performing the **"EDIT CANCEL"** operation. →33

4 Eject the Mini Disc.



Information is being written.

Mini Disc has been ejected.

Note **While "WRITING" is displayed, do not apply shock or vibration to the unit because information is being written on the Mini Disc.**

Image of track division

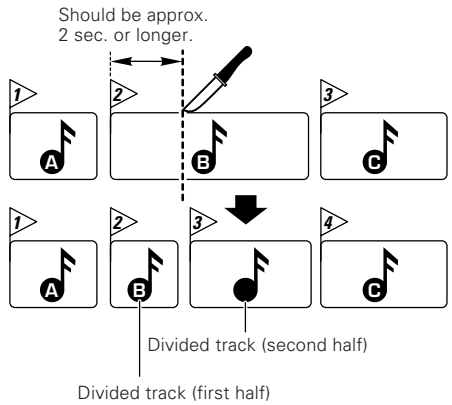
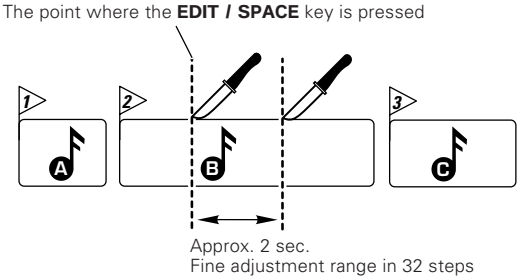


Image of preview



Use the following procedure to combine two tracks into one by deleting a track number. This operation allows to connect several tracks or a piece of music divided into several parts. After this operation, the track numbers of tracks located after the combined tracks are decreased automatically.

Preparation

❶ **Play one of the MD tracks to be combined.**
❷ **Press the EDIT/SPACE key to switch the editing mode on.**

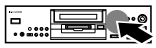
Limitation of functionality due to MD standard

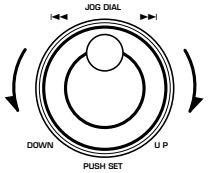
Some functions are limited due to the restrictions imposed by the MD standard. Before considering the symptoms as a sign of trouble with the unit, please read "Symptoms related to MD standard". →51

Combining the track being played (TRACK COMBINE)

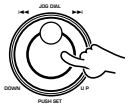
1 To combine the current track with the next track.

❶ **Select "COMBINE".**





❷ **Set the selection (by pressing the JOG DIAL).**

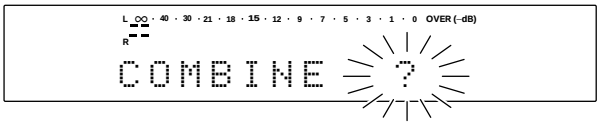


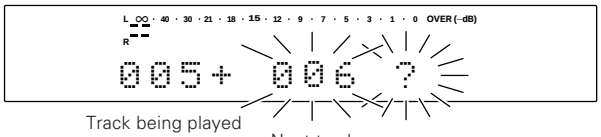
To combine the track with the next track to it, go to step 2.

The modes are switched by rotating the JOG DIAL.
When pressed in play mode:

① **DIVIDE?** : Dividing a track
② **COMBINE?** : Combining tracks
③ **ERASE?** : Erasing track(s)
④ **MOVE?** : Moving (reordering) tracks

- Editing is aborted if no operation has been performed for 8 seconds.



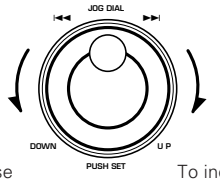


Track being played
Next track

- To combine two tracks during playback, press the **EDIT/SPACE** key while the first track is being played. (The track being played and the track immediately after it will be combined.)
- If the operation is started during playback, it pauses automatically.

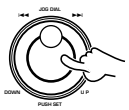
2 Select the track to be combined.

❶ **Select the track number.**

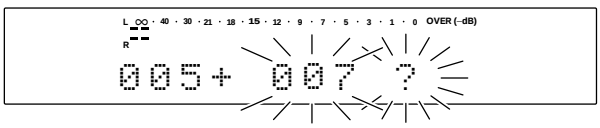


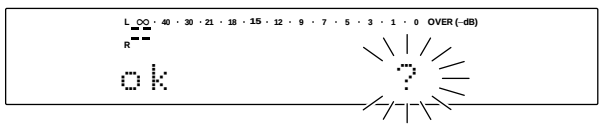
To decrease track No.
To increase track No.

❷ **Set the selection (by pressing the JOG DIAL).**

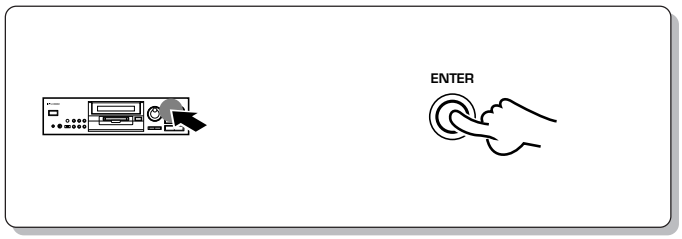


To combine track Nos. 5 and 7 :





3 Execute the track combine operation.

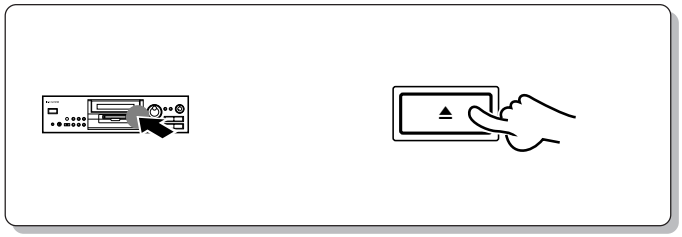


Display after execution

"EDIT NOW!" : When editing is in progress
"COMPLETE!" : When editing is completed successfully
"CAN'T EDIT" : When editing is incomplete

- It takes a while until the execution completes.
- If editing has been started during playback, playback restarts automatically from the current track.
- Track combining may sometimes be impossible due to the limitations of the MD standard.
- If you execute an editing operation by mistake, the condition before editing can be recovered by performing the **"EDIT CANCEL"** operation. →33

4 Eject the Mini Disc.

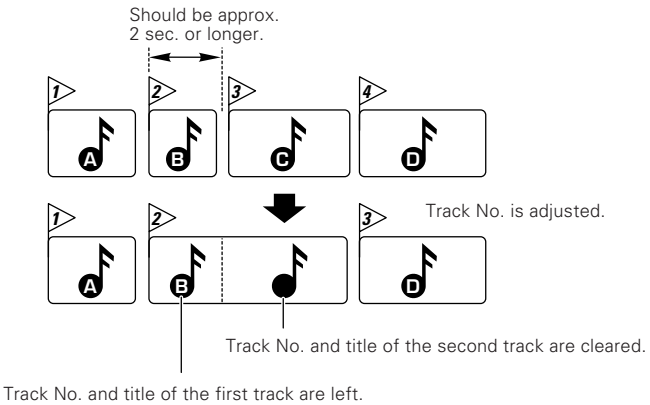


Information is being written.

Mini Disc has been ejected.

While "WRITING" is displayed, do not apply shock or vibration to the unit because information is being written on the Mini Disc.

Image of track combination



Use the following procedure to erase a single track being played.
Be careful in using this operation because a track cannot be recovered once it has been erased.

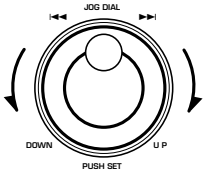
Preparation

❶ **Play a MD.**
❷ **Press the EDIT/SPACE key to switch the editing mode on.**

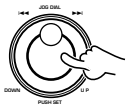
Erasing the track being played (TRACK ERASE)

1 Select "ERASE".

❶ **Select "ERASE".**



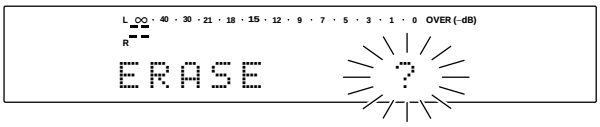
❷ **Set the selection (by pressing the JOG DIAL).**



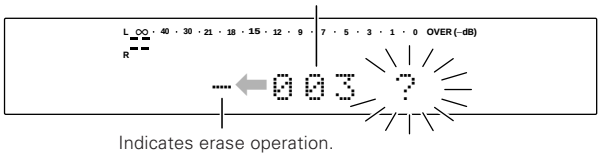
The modes are switched by rotating the JOG DIAL.

① **DIVIDE?** : Dividing a track
② **COMBINE?** : Combining tracks
③ **ERASE?** : Erasing track(s)
④ **MOVE?** : Moving (reordering) tracks

● Editing is aborted if no operation has been performed for 8 seconds.

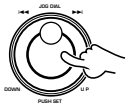


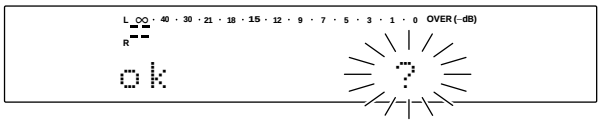
Track No. to be erased



Indicates erase operation.

2 Confirm that the track has been erased.





Confirm that the track has been erased.

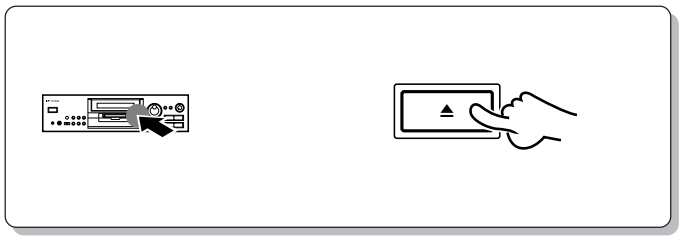
3 Execute the track erasure operation.

Display after execution

"EDIT NOW!" : When editing is in progress
"COMPLETE!" : When editing is completed successfully
"CAN'T EDIT" : When editing is incomplete

● It takes a while until the execution completes.
● The track being played is erased (together with its track title).
● If you execute an editing operation by mistake, the condition before editing can be recovered by performing the **"EDIT CANCEL"** operation. →33

4 Eject the Mini Disc.



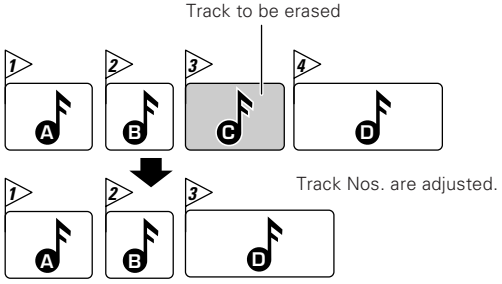
Information is being written.

Mini Disc has been ejected.

Note

While "WRITING" is displayed, do not apply shock or vibration to the unit because information is being written on the Mini Disc.

Image of track erasure



Use the following procedure to erase desired tracks in stop mode.
Be careful in using this operation because tracks cannot be recovered once they have been erased.

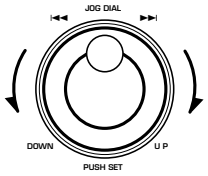
Preparation

❶ Put the MD recorder in stop mode.
❷ Press the EDIT/ SPACE key to switch the editing mode on.

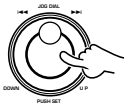
Erasing one or more track at a time (QUICK ERASE)

1 To erase all MD tracks.

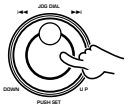
❶ Select "Q.ERASE".



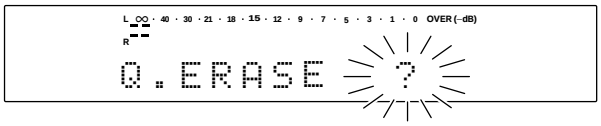
❷ Set the selection (by pressing the JOG DIAL).



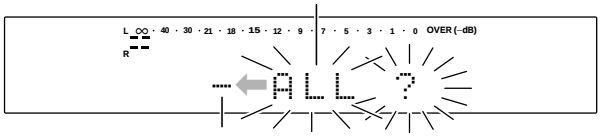
❸ Set the selection (by pressing the JOG DIAL).



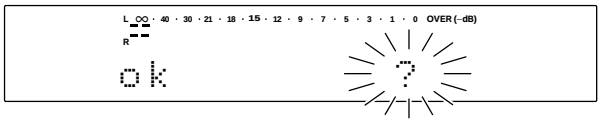
The modes are switched by rotating the JOG DIAL.
① **Q. MOVE?** : Moving (reordering) tracks
② **Q.ERASE?** : Erasing track(s)



Confirmation of all track erasure



Indicates erase operation.

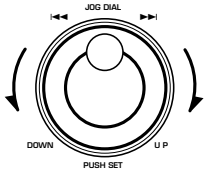


Reconfirmation of erasure

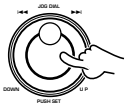
If you want to clear all tracks in a MD, go to step ❹.

2 To erase desired tracks.

❶ Select a track number to be erased.

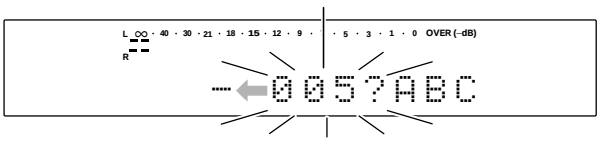


❷ Set the selection (by pressing the JOG DIAL).



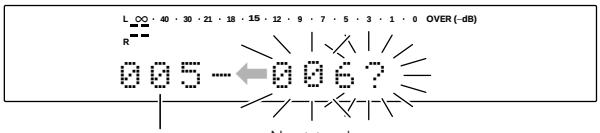
Erase desired tracks by repeating steps ❶ and ❷.

Selected track



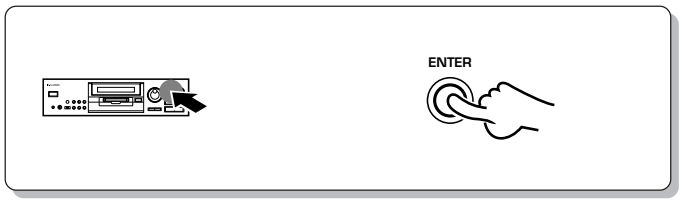
Title scrolling

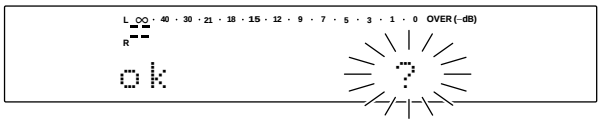
- Only the last selected track can be cleared by pressing the **FADE/ DELETE** key of the remote control unit. (To clear all of the selected tracks, cancel editing and restart the operation from the beginning.)
- The orders of tracks can be confirmed by pressing the ◄◄ key (or ►► key) of the remote control unit.



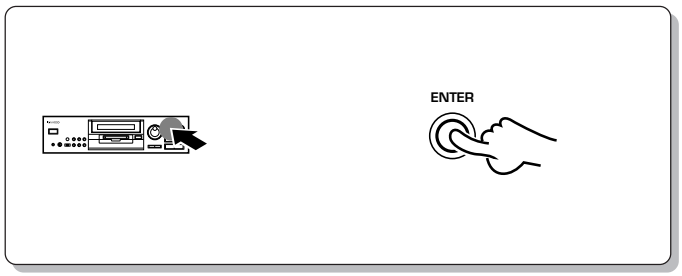
Selected track Next track

3 End the selection of the tracks to be erased.





4 Execute the track erasure operation.

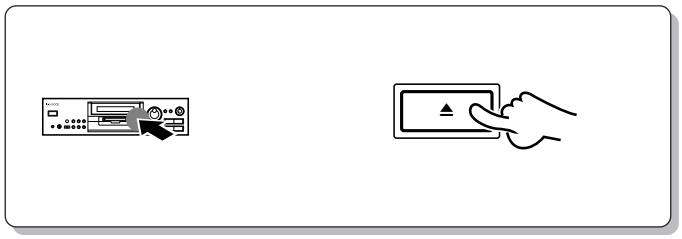


Display after execution

"EDIT NOW!" : When editing is in progress
"COMPLETE!" : When editing is completed successfully
"CAN'T EDIT" : When editing is incomplete

- It takes a while until the execution completes.
- If you execute an editing operation by mistake, the condition before editing can be recovered by performing the **"EDIT CANCEL"** operation. →33

5 Eject the Mini Disc.



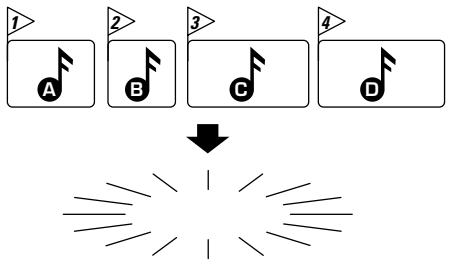
Information is being written.

Mini Disc has been ejected.

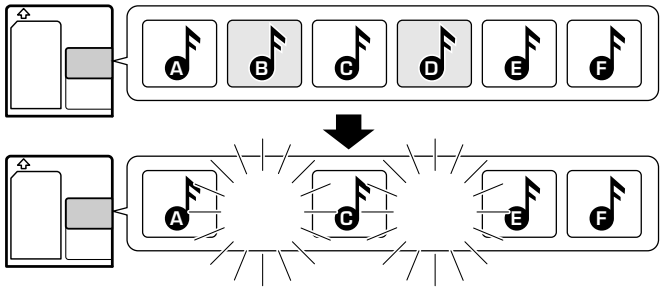
Note **While "WRITING" is displayed, do not apply shock or vibration to the unit because information is being written on the Mini Disc.**

Image of track deleting (QUICK ERASE)

Erasing all tracks:

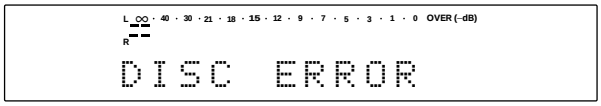


Erasing desired tracks:



When "DISC ERROR" is displayed

If "DISC ERROR" is displayed with a Mini Disc which has been know to be normal, re-load the Mini Disc before proceeding to the ALL ERASE operation. This may makes it possible to read the Mini Disc contents.



- Once the **"DISC ERROR"** message has been displayed, the **"ALL ERASE"** operation is possible but **"EDIT CANCEL"** operation is not possible.

When titles are assigned to a disc and its tracks, the titles cannot only be displayed during playback but title search (searching a track by the title) is also made possible. The assigned titles can be changed or deleted with the same procedure.

Preparation

❶ **Put the MD recorder to stop or play mode.**
❷ **Press the TITLE INPUT key to switch the title input mode on.**

About preset titles

Easy title editing is possible by memorizing titles that you often use or titles that you like at the optional preset titles. Changing preset title names to new ones and imputing those titles to the mini disc is carried out with the "Editing titles" operation.
Initial settings are as follows.
PRE1: Pops, PRE2:Rock, PRE3:Classic, PRE4:Jazz, PRE5:Disco, PRE6:Best Hits, PRE7:Air Check, PRE8:No., PRE9:Vol.

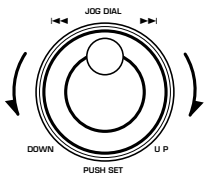
● To return a changed preset title to the initial setting, please refer to "Operation to reset". →51

Editing titles

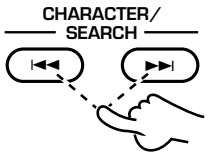
1 Select the item to be edited.

Main unit **Remote control unit**

❶ **Select whether the disc title or track title is input.**



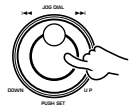
To return To advance



To return To advance

❷ **Set the selection.**

Press the JOG DIAL.



To abort operation, press the **TITLE INPUT** key again.

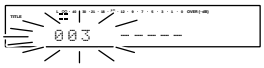
The modes are switched by rotating the JOG DIAL.

① **DISC** : Disc title
② **001** : Track title
③ **PRE 1-PRE 9** : Preset title
④ **ALL ERASE?** : Erasing both disc and track titles
⑤ **CDtext LOAD?** : Preparing for CD text copy

● **"CDtext LOAD?"** is displayed only when a KENWOOD CD player with the CD text compatibility is connected to this unit.
● Editing is aborted if no operation has been performed for 8 seconds.

To edit a disc title: Select "DISC".

To edit a track title: Select the desired track number.



To edit the preset titles: Select the desired preset number.

To erase both disc and track titles.

To input a title, go to step ❷.
To change or delete a title, go to step ❺.

Total number of title characters

Up to 1792 characters can be input per disc and up to 80 characters can be input per track. (In case of alphanumeric and symbol characters)
A space (blank character) also required the same amount of data as alphanumeric characters. When deleting a title, it is not recommended to overwrite spaces on previous characters but use the DELETE function.

Characters usable in title editing

The following alphabets and symbols (ASCII codes) can be selected for use in title editing.

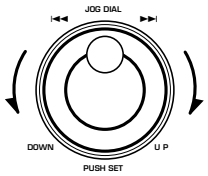
Uppercase alphabets x 26 : ABCD...WXYZ
Lowercase alphabets x 26 : abcd...wxyz
Numerals x 10 : 0123456789
Space & symbols x 26 : !"#$%&'()*+,-./:;<=>?@_`^

2 Input the title.

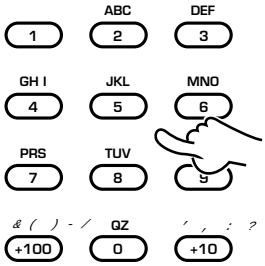
Main unit **Remote control unit**

❶ Select a character group.

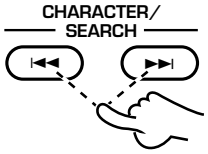
❷ Select a character.



To return To advance

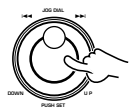


and also



❸ Set the selected character.

Press the JOG DIAL.



Repeat steps ❶ to ❸ till all of the title characters have been input.

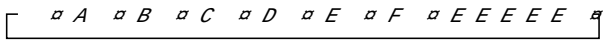
This procedure is continued on next page.

One of the following character groups can be selected.

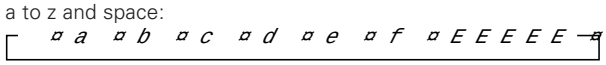
① A to Z and space (a blank character):
② a to z and space:
③ 0 to 9, symbols, preset titles (x 9):

The characters can be switched by rotating the JOG knob.

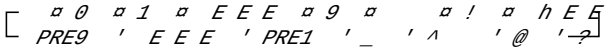
① A to Z and space (a blank character):



② a to z and space:

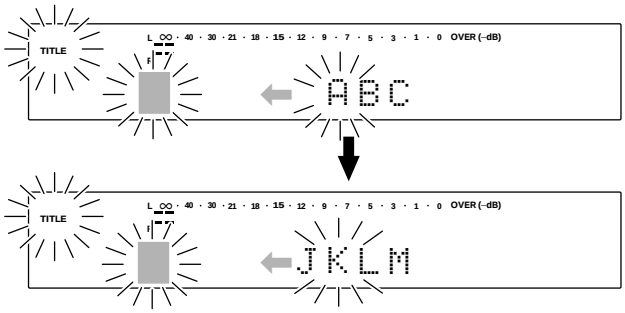


③ 0 to 9, symbols, preset titles (x 9):



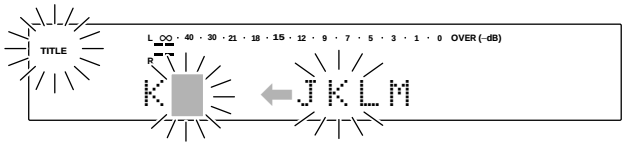
Example of new title input:

Initial display



Selected character

- The display can be scrolled so that any character (in a single group) can be selected.
- Characters can also be selected directly from the remote control unit by using the numeric keys.
  (Example: Each press of the [2] key switches characters in order of **A → B → C**.)
- The cursor can be moved to the left and right with the ◄◄ and ►► keys.
- Pressing the **TITLE SEARCH** key during title input switches the input mode between the "overwrite mode" and "insert mode".

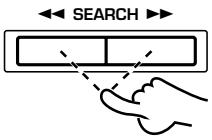


- Pressing the **EDIT/SPACE** key inserts a blank space character.

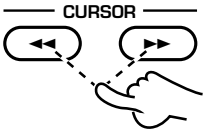
3 To change or erase a title.

Main unit **Remote control unit**

❶ Move the character to the desired character (to be changed).



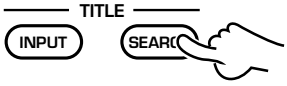
To return To advance



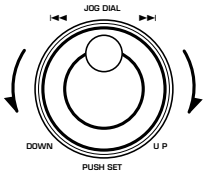
To return To advance

❷ Select a character group.

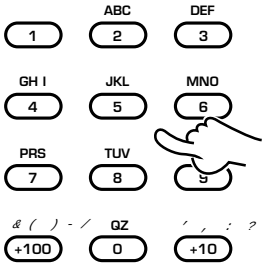
❸ Select the "overwrite mode" or "insert mode".



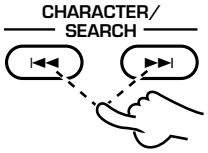
❹ Select a character.



To return To advance

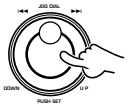


and also

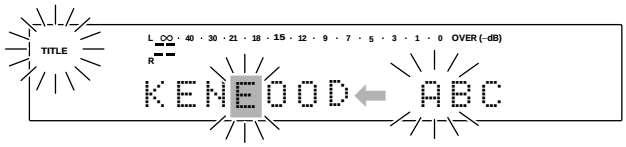


❺ Set the selected character.

Press the JOG DIAL.



All characters of a title can be changed or erased by repeating steps ❶ to ❺.



Selected character blinks.

- If the title to be changed is too long to be displayed on the display section, press the ◄◄ or ►► key to scroll the display so that the characters hidden until then appear.
- Press the **FADE/DELETE** key to erase the selected character.

One of the following character groups can be selected.

① A to Z and space (a blank character):
② a to z and space:
③ 0 to 9, symbols, preset titles (x 9):

- The display can be scrolled so that any character (in a single group) can be selected.

Each press switches the mode.

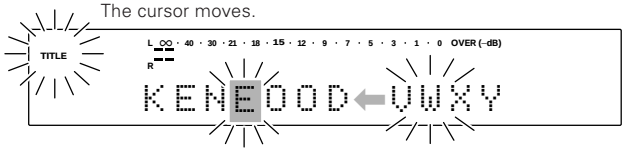
① **Overwrite mode** : Inputs a character by replacing the existing character.
② **Insert mode** : Inputs a character before or after an existing character.

Cursor types

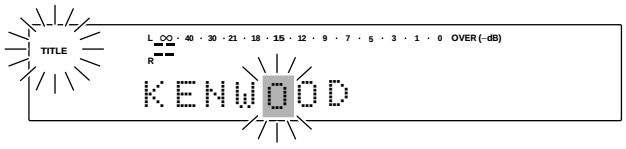
Overwrite mode : Larger cursor " ▮ "
Insert mode : Smaller cursor " ▬ "

Selecting the correct character (in overwrite mode):

The cursor moves.



- The display can be scrolled so that any character (in a single group) can be selected.
- Characters can also be selected directly from the remote control unit by using the numeric keys.
  (Example: Each press of the [2] key switches characters in order of **A → B → C**.)
- The cursor can be moved to the left and right with the ◄◄ and ►► keys.

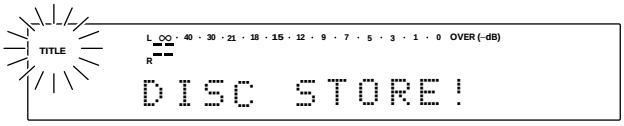


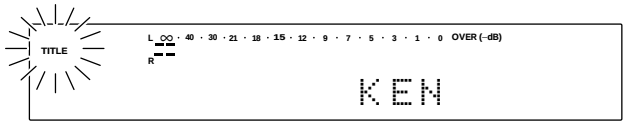
4 Execute title change or deletion.

Main unit **Remote control unit**

❶ Enter the title in memory.

❷ Complete the operation.





The title is scrolled automatically.

5 Eject the Mini Disc.

Main unit **Remote control unit**

Information is being written.

Mini Disc has been ejected.

Note

While "WRITING" is displayed, do not apply shock or vibration to the unit because information is being written on the Mini Disc.

Title editing function keys

CHARA. key:

Press to switch the character groups on the character display.

Manual search (◄◄, ►►) keys:

Press to move the cursor during title input operation.

When the cursor is ▬ (lower half only) : The input character is inserted before the character in the cursor position.

When the cursor is ▮ : The input character replaces the character in the cursor position.

FADE / DELETE key:

Press to clear (delete) the character on the cursor position and move the characters after it by one character backward. Pressing the key successively (or holding it depressed) allows to clear a title easily.

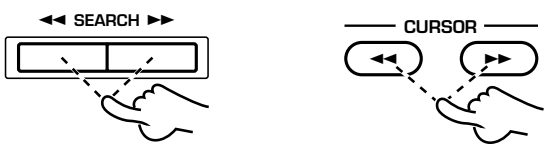
EDIT / SPACE key:

Press to enter (insert) a space (one blank character) immediately before the character in the cursor position and move the characters after it by one character forward. Multiple spaces can also be entered by pressing the key successively (or holding it depressed). The spaces are mainly used to leave spaces for later addition of characters before adding characters to a title.

Scrolling the display

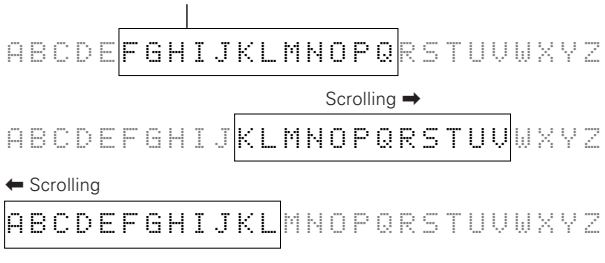
There may be cases in which the amount of information is too large to be displayed at a time during the title input operation, etc. In such a case, pressing and holding the ◄◄ or ►► key allows to move the displayed characters to the left (or right) so that other information which has been hidden can be displayed. This leftward or rightward movement of the display characters is referred to as "scrolling."

Main unit **Remote control unit**



Example of scrolling

Displayed area (All cannot be displayed.)



CD text editing

By connecting this unit with a KENWOOD CD Text-compatible CD player (which carries "CD TEXT" marking on the rear panel) through a synchro cord and a digital cord or optical fiber cable, the text (track titles) and music of CD tracks can be copied onto a MD disc. It is not possible to copy the text alone. However, note that the copying of CD text may not be possible with certain discs.

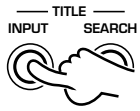
Preparation

❶ **Set the amplifier's input selector to CD.**
❷ **Switch off the program mode of the CD player.**
❸ **Put the CD player and MD recorder to stop mode.**
❹ **Set the MD recorder to the DIGITAL mode for accepting the input signal from the CD player.**

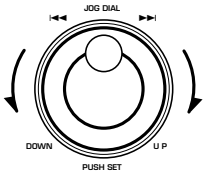
Copying the CD text

1 Transmit the CD text into the MD recorder.

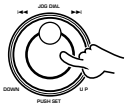
❶ **Switch the TITLE INPUT mode on.**



❷ **Select "CDtext LOAD".**



❸ **Set the selection (by pressing the JOG DIAL).**

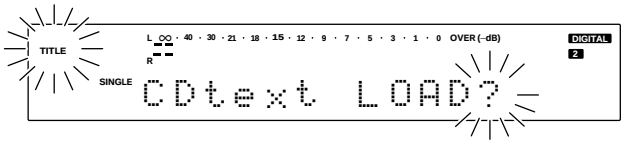


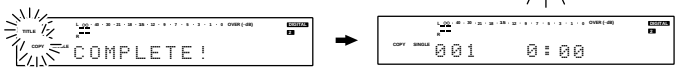
Each press switches the mode.

- ① **TITLE not lit** : **TITLE INPUT** mode is off
- ② **TITLE blinking** : **TITLE INPUT** mode is on

The modes are switched by rotating the JOG DIAL.

- ① **DISC** : Disc title
- ② **001** : Track title
- ③ **PRE 1-PRE 9** : Preset title
- ④ **ALL ERASE?** : Erasing both disc and track titles
- ⑤ **CDtext LOAD?** : Preparing for CD text copy





"COPY" blinks　　**"COPY"** lights up

- When the text copy function has been set, the text (track titles) is transmitted from the CD to the MD.
- To abort the CD text copy in the middle, eject the copy source CD.

Display after execution

"COMPLETE!" : Copy is completed.
"CAN'T LOAD" : Copy is incomplete.
"CAN'T ACCESS" : A CD text-compatible CD player is not connected to this unit.

To delete the CD text data copied on MD:
While "COPY" is lit, press the REC INPUT key to switch the mode.

2 Record tracks while copying the CD text.

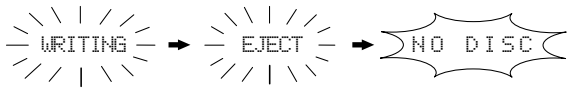
❶ **Put the CD player in pause mode.**
❷ **Select the CD track to be recorded using the ⏮ or ⏭ key.**
❸ **Put the MD recorder in record-pause mode.**
❹ **Start playback of the CD player.**

- To abort recording in the middle, press the ■ key of the CD player.

Display after execution

"CAN'T COPY" : Copy failed.

3 Eject the Mini Disc.



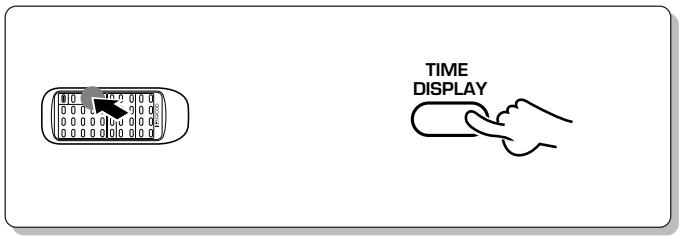
Information is being written.　　Mini Disc has been ejected.

While "WRITING" is displayed, do not apply shock or vibration to the unit because information is being written on the Mini Disc.

- The copied CD text data is deleted automatically.

TIME DISPLAY key

This key allows to switch the mode of time display.



Each press switches the time display modes.

In play/pause mode

- ① **SINGLE(+)** : Elapsed time of the track being played
- ② **SINGLE(–)** : Remaining time on the track being played
- ③ **TOTAL(+)** : Total elapsed play time of tracks
- ④ **TOTAL(–)** : Total remaining play time of tracks (The total number of tracks is also displayed during stop mode.)
- ⑤ **REMAIN** : Remaining recording time of disc
- ⑥ **TITLE** : Track title display (during playback) or Mini Disc title display (during pause)

In play mode

- ① **SINGLE(+)** : Elapsed play time of track being played
- ② **TOTAL(+)** : Total elapsed play time of tracks
- ③ **REMAIN** : Remaining recording time of disc

When no track has been recorded

- ① **SINGLE(+)** : "BLANK DISC" is displayed. ("NO TRACKS" is displayed if the disc has a title.)
- ② **REMAIN** : Remaining recording time of disc
- ③ **REMAIN** : The Mini Disc title is displayed

LEVEL METER MODE key

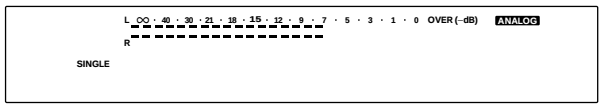
The level meter display contents can be switched over in cycle.

1. Normal display : The scale around 0 dB is set finely in this mode, which is suitable for normal recording (rock) or playback (pop music).

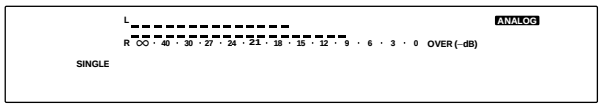
2. Wide display : The scale is set almost evenly from 0 dB to 30 dB in this mode, which is suitable for playing music with wide level variation from pianissimo to fortissimo, such as classical music.

Each press switches the title display modes.

① Example of normal display:



② Example of wide display:

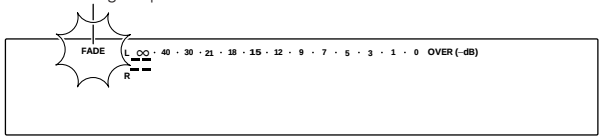


FADE key

By switching the fade mode on, each track can be recorded with gradual sound increase at the beginning and gradual sound decrease at the ending.

The fade mode can be switched on when the unit is ON, the REC INPUT is DIGITAL, in stop mode or in record mode. Press the FADE/DELETE key again to switch the fade mode off.

"FADE" light up



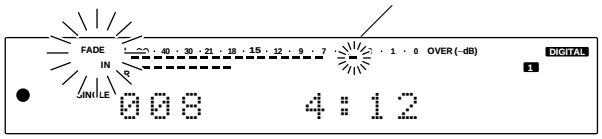
Level meter display during fade-in/fade-out

Upper row of level meter : The level information during fade-in and fade-out is displayed graphically.

Lower row of level meter : The meter segments light according to the current R + L CH level.

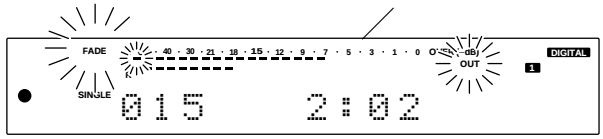
Example (During FADE IN):

The indicated level increases (toward the right) as fade-in advances.



Example (During FADE OUT):

The indicated level decreases (toward the left) as fade-out advances.

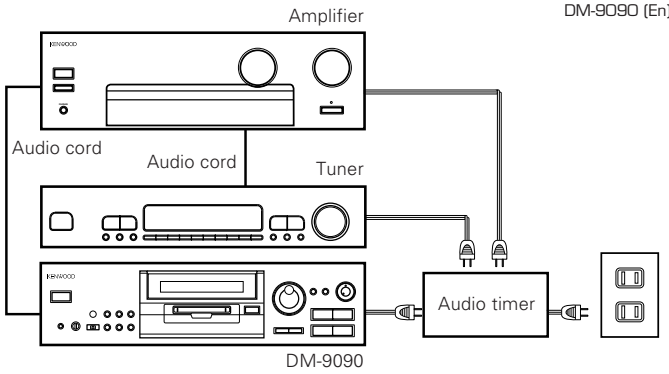


Timer operations

Playback or recording can also be activated at the desired time by using a commercially available timer.

Connect the power cords of the associated components so that their power can be turned ON through the audio timer.
Also, be sure to read carefully the instruction manual of the timer.
Do not set timer recording in a way that the power is not turned ON for more than 3 days; otherwise, the last recorded data may be cleared.

Refer to "Memory backup". →8



Timer playback, timer recording

1 Turn the powers of the associated components ON.

- Set the **POWER** key of the unit to ON.

2 Make preparations.

For timer playback

Load a prerecorded Mini Disc.

For timer recording

❶ Load a recordable Mini Disc.
❷ Receive the desired radio station.
❸ Select the desired source with the REC INPUT key. →26
❹ Adjust the recording level.

- For timer recording, be sure to set the write protect tab to enable recording. →7
- For timer recording, be sure to check the remaining recording time. →49

3 Set the amplifier volume.

For timer playback

❶ Play the Mini Disc.
❷ Adjust the amplifier volume.
❸ Stop the disc.

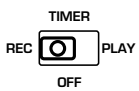
For timer recording

Minimize the amplifier volume.

4 Set the TIMER.

For timer playback

For timer recording



- When the set time comes, the disc playback or recording starts automatically. (Also be sure to read the instruction manual of the connected component carefully.)

5 Set the timer ON time.

For timer playback

Set the timer so that it supplies power at the specified time.

For timer recording

Set the timer so that the tuner reception can be started at the desired time of the day.

- After having set the timer, be careful not to press the **ON/STANDBY** key of the remote control unit to ON; otherwise the timer operation would be activated.

In case of difficulty

What appears to be a malfunction may not always be serious. If your unit should not perform as expected, consult the table below to see if the problem can be corrected before seeking help from your dealer or service representative.

Operation to reset

The microprocessor may fall into malfunction (impossibility to operate erroneous display, etc.) when the power cord is unplugged while power is ON or due to an external factor. In this case, execute the following procedure to reset the microprocessor and return it to normal condition.

With the POWER key left to ON, unplug the power cord from the power outlet then, while holding the eject (⏏) key depressed, plug the power cord again.

- Please note that resetting the microprocessor clears the contents stored in, it returns the microprocessor to the condition when it left the factory.

Symptoms related to MD standard

Symptom	Cause
"DISC FULL" is displayed while the disc still has a remaining recordable time.	● More than 255 tracks (track No. 256 or more) cannot be recorded. (There may be also cases in which recording is impossible while the track number is less than 256.) In such a case, the REMAIN time display shows **"0:00"**.
The recordable time does not increase after a short track has been erased.	● The remaining time display becomes **"0:00"** when the actual total remaining time of the Mini Disc is less than 12 seconds. The recordable time display changes when the total time of the erased track exceeds 12 seconds. ● When a Mini Disc has been subjected to repeated editing, the remaining time may not increase even after a short track has been erased.
Tracks cannot be combined.	● A track created as a result of an editing operation may sometimes be impossible to be combined with another track.
The total of the recorded time and recordable time does not coincide with the total recording time of the MD (60 or 74 min.).	● As recording is performed on a minimum recording basis of 2 seconds, the displayed time may not coincide with the consumed disc capacity.
Sound is interrupted when a track created by editing is subjected to fast forward or fast backward operation.	● Sound interruption may occur due to a combination of various factors, and it is not a malfunction.
Tracks are not numbered correctly.	● A short track may be created depending on the contents of the recorded source (CD, for example).
The period in which "READING" is displayed is abnormally long.	● **"READING"** is displayed for a longer period than usual when a brand-new recordable Mini Disc (a virgin disc) is loaded. ● The Mini Disc in use has been processed with repeated editing or contains a large number of tracks.
The total number of characters used in the titles is less than 1792 characters.	● As the title recording areas are used on a per-7-character basis, the total number of input characters may be less than 1792.

Displayed messages and actions to be taken against them

Displayed Message	Meaning	Action
NO DISC	● This unit is not loaded with disc.	● Load a disc.
001 UNLOCK	● The digital cord or optical fiber cable is not locked in position or connected incompletely (or not connected).	● The digital cord or optical fiber cable is not locked in position or connected incompletely (or not connected). → 10
001 SCMS ON	● An attempt is made to record digital signal from a source while its digital copy has been prohibited by SCMS.	● Use analog recording. → 26
001 NotAudio	● The digital signal being input is not an audio signal.	● Use analog recording. → 26
DISC FULL	● There is no recordable area on the disc. ● An attempt is made to record a 256th track.	● Use another recordable disc. ● More than 255 tracks cannot be recorded per disc.
TITLE FULL	● An attempt is made to assign a title with more characters than usable.	● Refer to **"Total number of title characters"**. → 44
BLANK DISC	● The disc does not contain any recordings.	● When playback is required, use a recorded disc.
NO TRACKS	● The disc does not contain any tracks but has a disc title.	● The disc can be used for recording without any problem.
READING	● The **TOC**[*1] data of the disc is being read.	● This is a normal operation.
WRITING	● The data related to editing or recording is being written in the disc.	● This is a normal operation.
DISC ERROR	● The contents of **UTOC**[*2] are abnormal.	● Erase all tracks by executing **"←ALL"**. If this is not possible, use another Mini Disc. → 42
EDIT NOW!	● The editing operation is in progress.	● This is a normal operation.
CAN'T EDIT	● An attempt is made to perform editing beyond the restrictions, for example to erase a track which is too short.	● Perform editing following the restrictions.
ok? (blinking)	● This is a message for confirming if editing can really be executed.	● Press the **ENTER** key to execute editing.
PROTECTED	● The Mini Disc is in the **"WRITE PROTECT"** condition.	● Release the **"WRITE PROTECT"** condition. → 7
PLAY ONLY	● A playback-only Mini Disc is loaded.	● Load a recordable Mini Disc. → 9
CAN'T ACCESS	● A CD text-compatible CD player is not connected to this unit.	● Connect the unit with a KENWOOD CD text-compatible CD player using the synchro cord and optical cable. → 10
CAN'T LOAD	● The disc loaded in the CD player is not CD text-compatible. ● The CD player is not connected to this unit through an optical cable. ● The CD player is in play mode or in the program mode.	● Load a CD text-compatible disc in the CD player. ● Connect the CD player through an optical cable and set the REC INPUT of the MD recorder accordingly. → 10 ● Switch the program mode of the CD player off and put both the CD player and MD recorder in stop mode.
CAN'T COPY	● The CD text of certain discs cannot be copied.	● The CD text of the current disc cannot be copied. (Use a copy-capable CD disc.)

Other symptoms

Symptom	Cause	Remedy
Sound is not output even when the play key is pressed.	● The cords are connected erroneously. ● No disc has been loaded. ● A non-recorded disc has been loaded.	● Connect the cords in accordance with **"System connections"**. →10 ● Load a disc. ● Load a prerecorded disc or playback-only disc.
Recording is not possible	● The disc is write-protected. ● An attempt is made to record digital signal from a source while its digital copy has been prohibited by SCMS. ● The recording level is too low (in case of analog recording). ● A playback-only disc has been loaded. ● The disc does not have a recordable area. ● The **REC INPUT** key is not set to the actual input source. ● If the amplifier is connected to this unit through a system control cord, the amplifier's input selector is set to the MD input.	● Change the position of the write protect tab to the write position or use a recordable disc. →7 ● Use analog recording. →26 ● Adjust the recording level again. →27 ● Use a recordable disc. →9 ● Use another disc. ● Set it according to the actual input source. →26 →28 ● Set the amplifier's input selector to other position than MD.
Sound is distorted.	● The recording level has not been adjusted. ● A disc in which distorted sound has been recorded is played.	● Adjust the recording level. →27 →29 ● Use another disc.
Noise is noticeable.	● An external noise is induced.	● Install the unit at a position apart from an electric appliance or TV set.
Power cannot be turned on from the remote control.	● The **POWER** key is set to OFF.	● Set the **POWER** key to on (STANDBY).

TOC[*1] : All minidiscs contain a Table of Contents (TOC) in addition to sound signals. The TOC is similar to the table of contents in a book and contains information, such as track numbers, track length, and character information, that cannot be rewritten. →52

UTOC[*2] : In addition to the TOC, minidiscs also contain a special User's Table of Contents (UTOC) that contains track number, track length, and character information, that can be rewritten. →52

Specifications

[Format]

System	Minidisc digital audio system
Laser	Semiconductor laser
Recording method	Field modulation overwrite method
Audio compression	ATRAC (Adaptive TRansform Acoustic Coding)
Playing rotation	Approx. 400 rpm ~ 900 rpm (CLV)

[D/A conversion]

D/A conversion	1 Bit (24 bit Fine D.R.I.V.E.)
Oversampling	8 fs (352.8 kHz)

[A/D converter]

A/D converter	4 th order sigma-delta conversion+ D.R.I.V.E. conversion
Sampling frequency	44.1 kHz

[Digital audio performance]

Frequency responce (playback mode)	8 Hz ~ 20 kHz, ± 1 dB
Signal to noise ratio (playback mode)	More than 110 dB
Dynamic range (playback mode)	More than 98 dB
Total harmonic distortion (1 kHz, playback mode)	Less than 0.004 %
Wow & flutter	Less than unmeasurable limit
Analog input sensitivity / input impedance	500 mV / 22 kΩ
Analog output level / output impedance	2.0 V / Less than 300 Ω
Headphone output	20 mW/32 Ω load
Digital input	
Coxaial	0.5 Vp-p / 75 Ω
Optical(Wave length 660 nm)	- 15 dBm ~ - 21 dBm
Digital output	
Coxaial	0.5 Vp-p / 75 Ω
Optical(Wave length 660 nm)	- 15 dBm ~ - 21 dBm

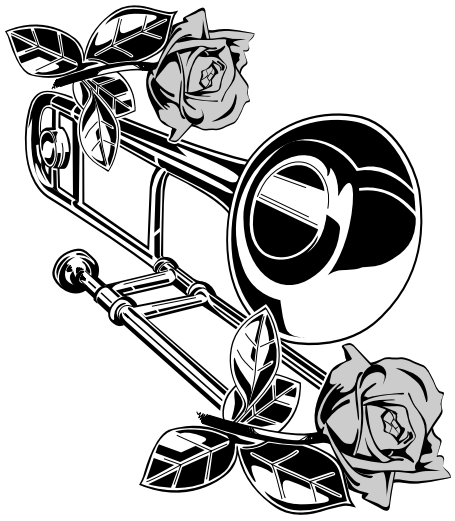
[General]

Power consumption	20 W
Dimensions	W : 440 mm (17 - 5 / 16”)
	H : 125 mm (4 - 15 / 16”)
	D : 373 mm (14 - 11 / 16”)
Weight (Net)	5.4 kg (11.9 lb)

Notes

1. KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.
2. The full performance may not be exhibited in an extremely cold location (under a water-freezing temperature).

MEMO:



KENWOOD

For your records

Record the serial number, found on the back of the unit, in the spaces designated on the warranty card, and in the space provided below. Refer to the model and serial numbers whenever you call upon your dealer for information or service on this product.

Model _____ Serial Number _____