

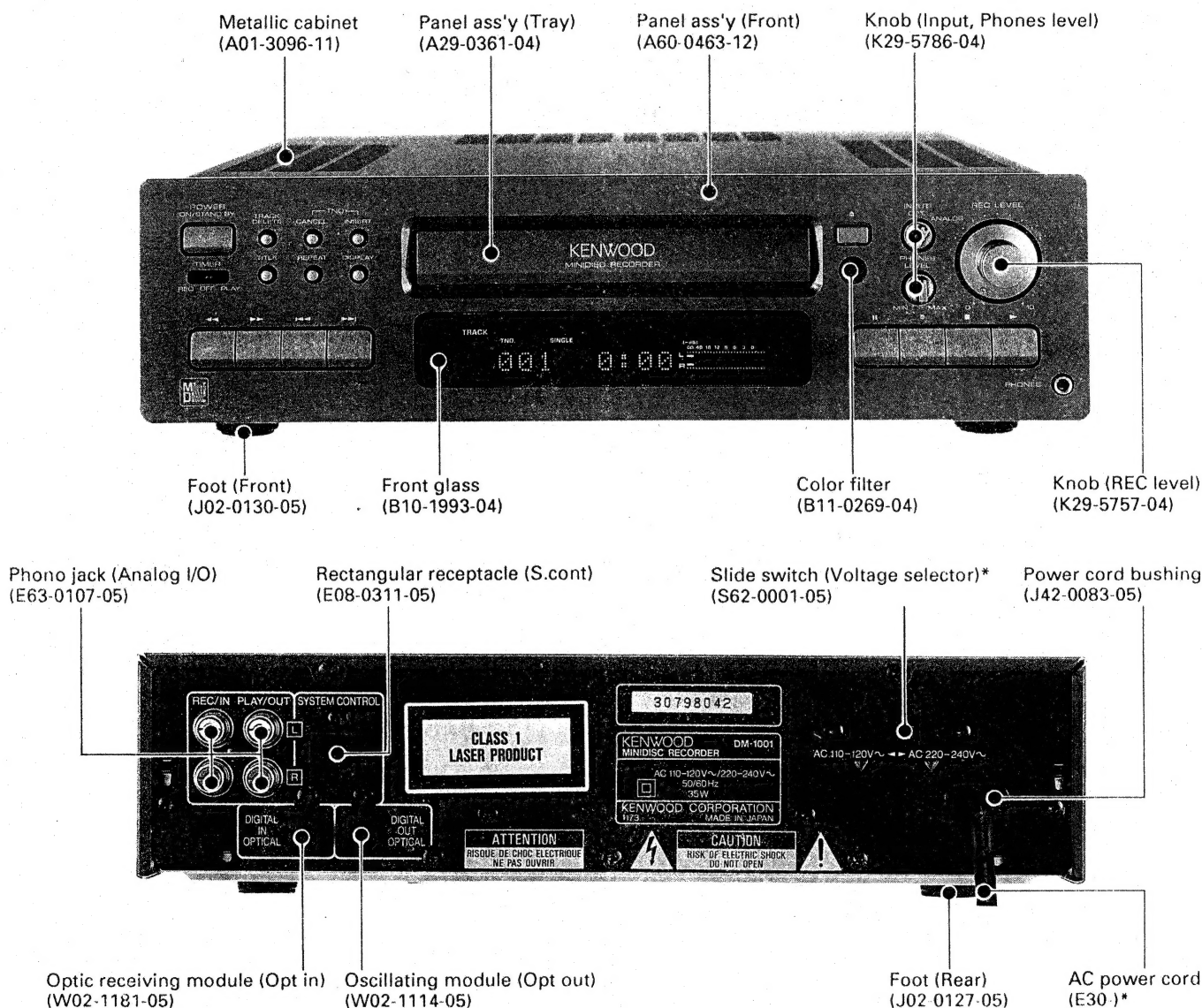
MINI DISC RECORDER

# DM-1001/B9

## SERVICE MANUAL

# KENWOOD

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Photo is DM-1001.

\*Refer to parts list on page 65.

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## ACCESSORIES

• Audio cord  
(E30-2600-05 : DM-1001)  
(E30-0615-05 : DM-B9)



• System control cord  
(E30-2628-05)



• Optical fiber cable  
(B19-1529-05)



• Remote control unit (RC-DMB9)  
(A70-0938-05)



• Battery  
(-)

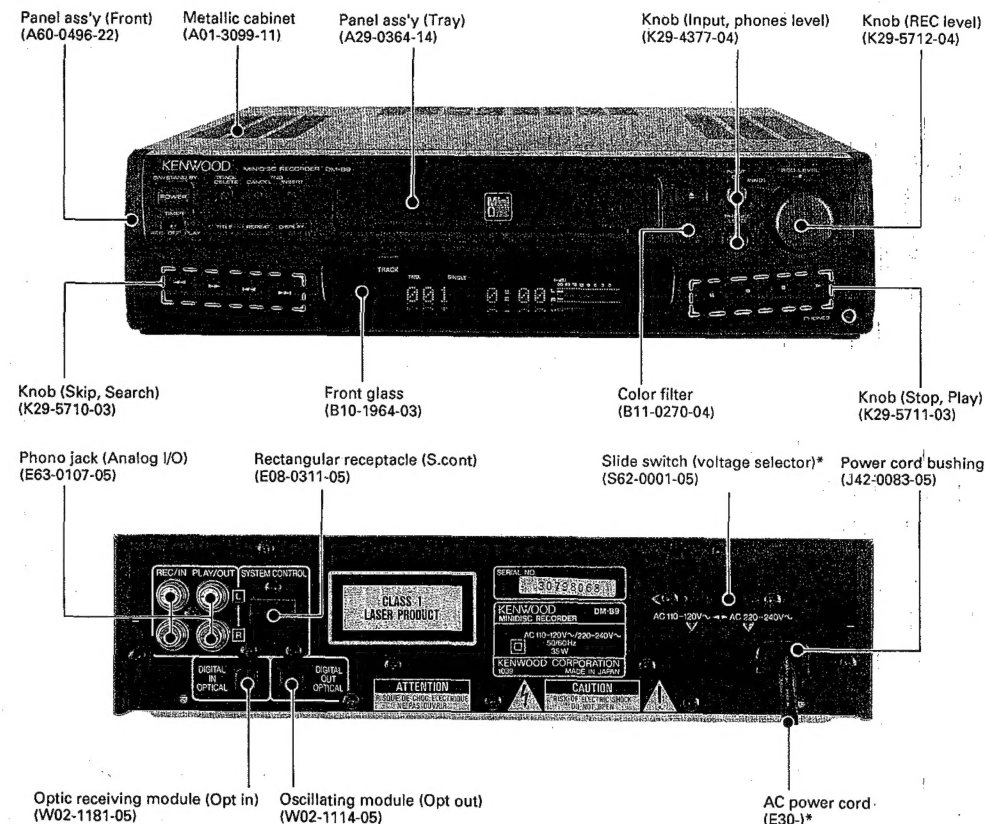


• AC plug adaptor : Mtype only  
(E03-0115-05)



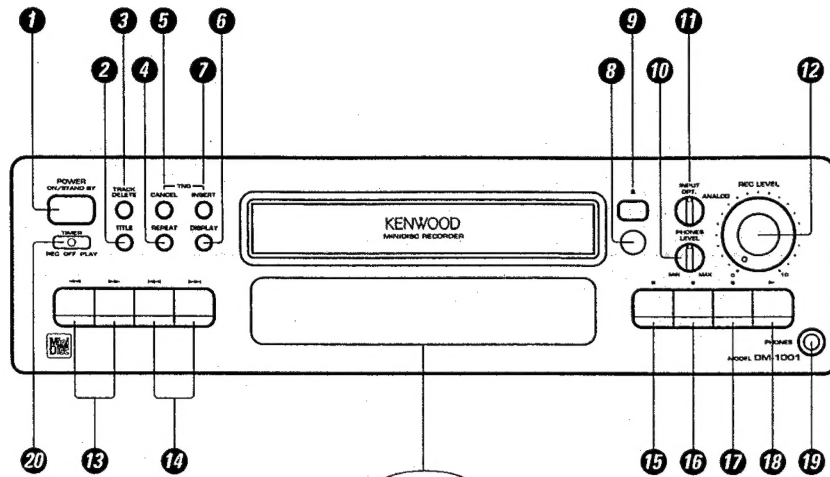
Battery cover (A09-0160-08)

## EXTERNAL VIEW : DM-B9

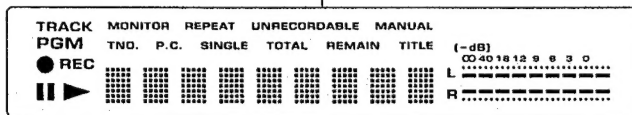


\*Refer to parts list on page 65.

# CONTROL



Display

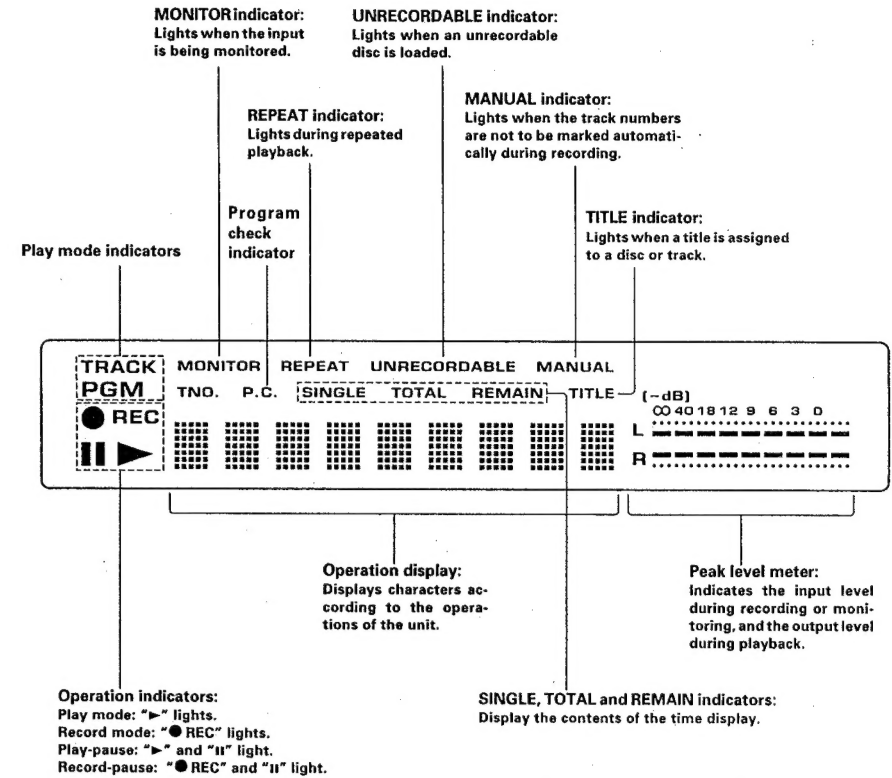


- 1 **POWER key**
- 2 **TITLE key**  
Assigns a title to a disc or music track.
- 3 **TRACK DELETE key**  
Deletes a track.
- 4 **REPEAT key**  
Activates repeated playback.
- 5 **TNO CANCEL key**  
Cancels a track number.
- 6 **DISPLAY key**  
Each press changes the display content.
- 7 **TNO INSERT key**  
Adds a track number.

- 8 **Remote sensor**
- 9 **Tray open/close key**
- 10 **PHONES LEVEL control**  
Adjusts the sound level of headphones.
- 11 **INPUT selector**  
Switches the input between Analog and Optical (digital).
- 12 **REC LEVEL control**  
Adjusts the recording level.
- 13 **Search keys**  
Fast forward or fast reverse the music.
- 14 **Skip keys**  
Locates the beginning of a track.

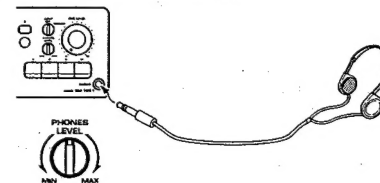
- 15 **Pause key**
- 16 **Record key**  
Press to start recording.
- 17 **Stop key**
- 18 **Play key**
- 19 **PHONES jack**  
Plug headphones (with stereo mini-plug) into this jack.
- 20 **TIMER switch**  
Used for timer-activated recording or playback using a timer available in audio stores.

# CONTROL



## Listening through headphones

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



## STAND BY mode of POWER switch

When the power cord is plugged into an AC outlet, "STANDBY" is displayed while the power is set to OFF. This is because, even when the power is set to OFF, a small amount of power is supplied to the system. This status is called the standby mode of the system. When "STANDBY" is displayed, the power can also be turned ON/OFF from the remote control unit.

Display

STANDBY

## REMOTE CONTROL OPERATION

**▲ key**  
Press to open or close the disc tray.

**POWER key**  
Press to turn the power ON and press again to activate the STAND BY mode.

### Title operation keys (in blue letters)

These keys are used as the title operation keys in the title entry mode.

#### DELETE key:

Deletes the character above the cursor. (Each press shifts the character position by one column toward the left.)

#### ENTER key:

Enters the title in memory.

#### ▷ key:

Shift the cursor toward the right.

#### ◁ key:

Shift the cursor toward the left.

#### ◀▶ keys:

Changes the track number to which the title is assigned.

#### △, ▽ keys:

Selects an alphabet character, etc.

### Editing operation keys

#### TRACK DELETE key:

Deletes a track.

#### TNO CANCEL key:

Cancels a track number.

#### TNO INSERT key:

Inserts a track number.

### Programming keys

#### PROGRAM key:

Enters the specified track number in the program.

#### CHECK key:

Checks the program contents.

#### CLEAR key:

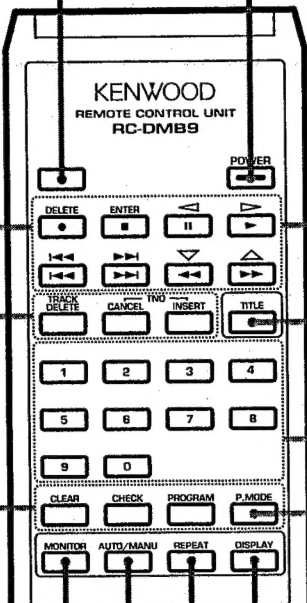
Clears the program.

### MONITOR key

Outputs the signal of the source selected with the input selector keys.

### AUTO/MANUAL key

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



Model: RC-DMB9  
Infrared ray system

### Operation keys

#### ● Record key:

Press to start recording.

#### ⏸ Pause key:

Press to pause recording or playback temporarily.

#### ■ Stop key:

Press to stop recording or playback.

#### ▶ Play key:

Press to start playback.

#### ⏮ ⏭ Skip keys:

Press to skip tracks.

#### ⏪ ⏩ Search keys:

Press to move the position being played in a track at a high speed in the forward or reverse direction.

### TITLE key

Press to activate the title entry mode.

### Numeric keys

In the TRACK or PROGRAM play mode, press to specify the desired track number.

### P.MODE (Play mode) key

Press to activate the PROGRAM mode and press again to activate the TRACK mode.

### DISPLAY key

Each press changes the display contents.

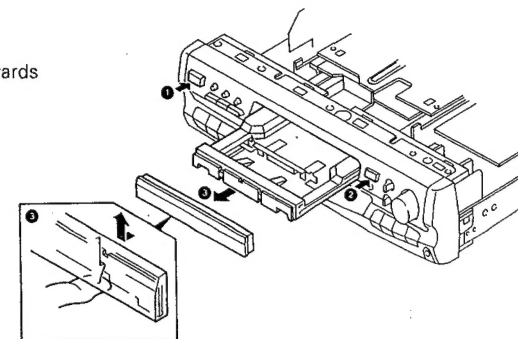
### REPEAT key

Press to activate repeated playback.

## DISASSEMBLY FOR REPAIR

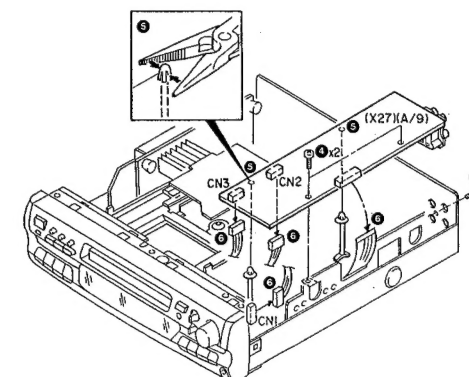
### Removing the Tray Panel

1. Push power switch to ON (1).
2. Push open switch and slide the tray outwards (2).
3. Remove the tray panel (3).



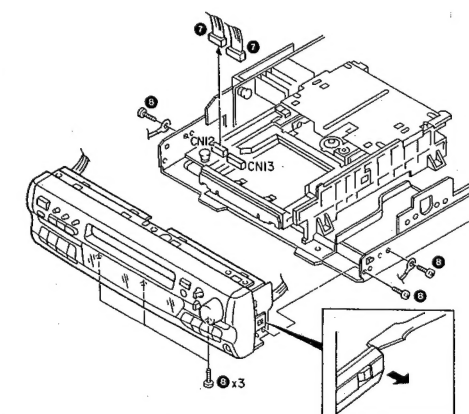
### Removing the PCB (X27-A/9)

4. Remove the three screws (4).
5. Remove the PCB from two unit holders (5).
6. Disconnect the three connectors and one flexible cable (6).



### Removing the Front Panel

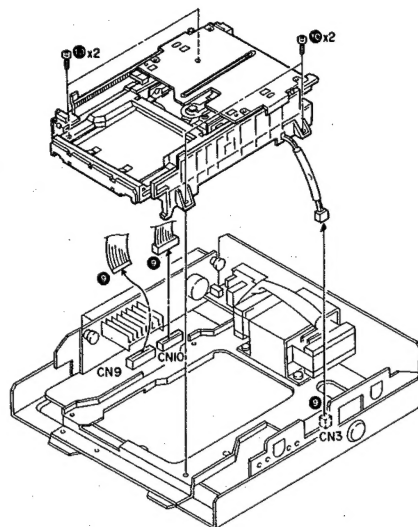
7. Disconnect the two connectors (7).
8. Remove the six screws, then remove the front panel (8).



# DISASSEMBLY FOR REPAIR

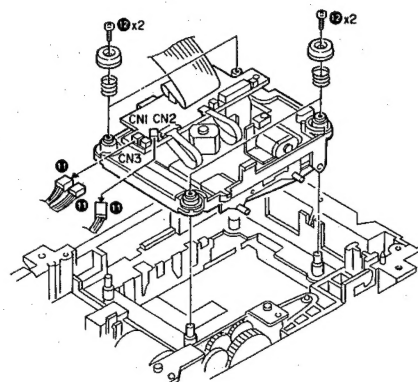
## Removing the Mechanism Ass'y

9. Disconnect the two connectors and one flexible cable (9).
10. Remove four screws (10), then remove the mechanism ass'y.



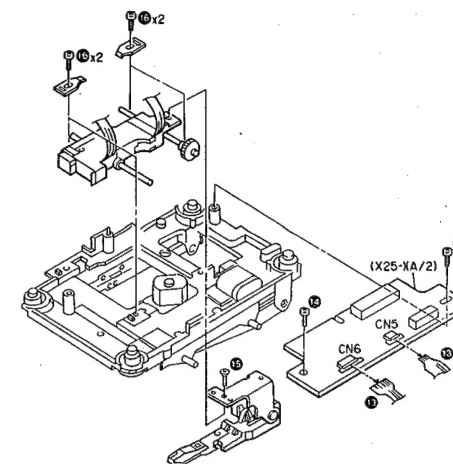
## Removing the Pickup and Record Head

11. Disconnect the three connectors (11).
12. Remove the four screws (12).

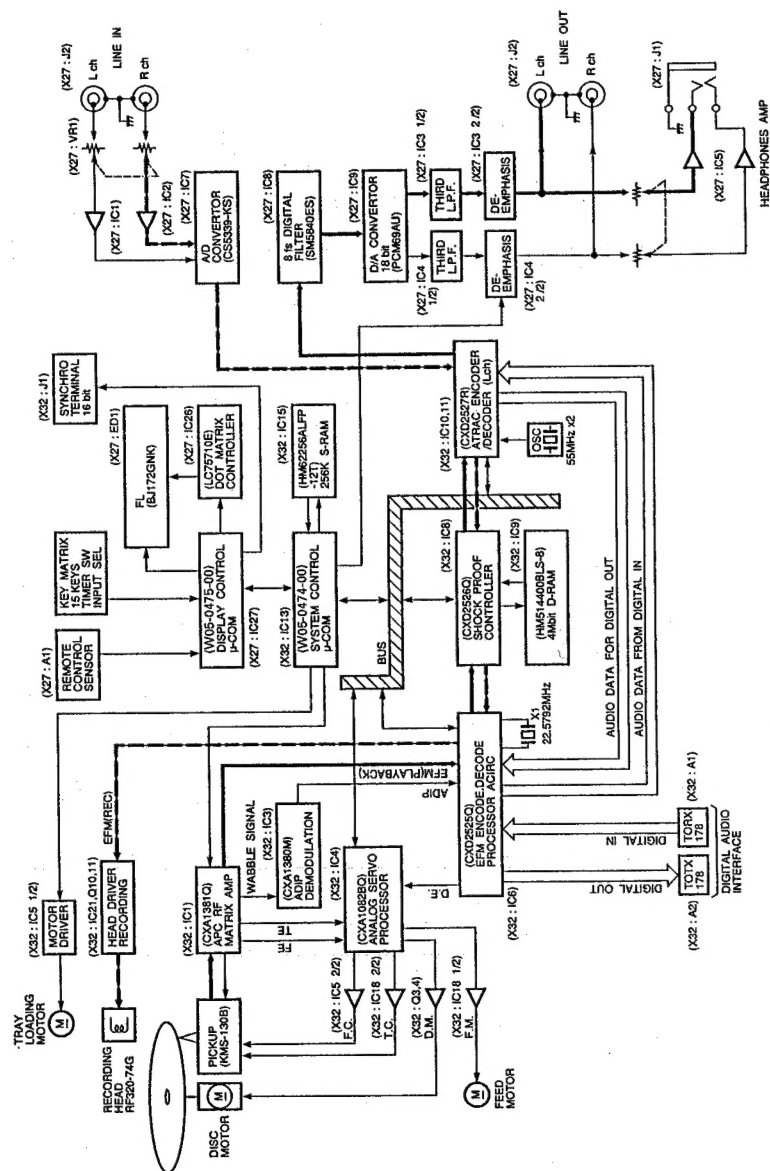


# DISASSEMBLY FOR REPAIR

13. Disconnect the two flexible cords (13).
14. Remove the two screws (14), then remove the PCB (X25 A/2).
15. Remove the one screw (15), then remove the record head.
16. Remove the four screws (16), then remove the pickup.



## BLOCK DIAGRAM



## CIRCUIT DESCRIPTION

## 1. Description of Components

## 1-1. Electric unit (X25-5450-10)

| Ref No. | Semi name      | Use and function                  | Operation                                                  |
|---------|----------------|-----------------------------------|------------------------------------------------------------|
| Q1      | UN4116         | Power supply for addition circuit | Stepping down : Output (Emitter) voltage → 10/11 Vcc - 0.6 |
| Q2      | 2SD1963 (R, S) | Addition circuit ON/OFF           | Addition circuit is turned on when Q2 is turned on.        |
| Q3      | 2SB1308 (O, R) | Laser driver                      | Control of laser power supply                              |
| D1      | DA204U         | Temperature sensor                | Two units of silicone diode VF2 are supplied.              |

## 1-2. Power supply unit (X27-1660-XX) DM-B9 : -00, -21 / DM-1001 : -01, -22

| Ref No. | Semi name              | Use and function                                          | Operation                                                                                                                                                                                                                                                          |
|---------|------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IC1     | NJM4565M               | (1/2) Op-amp for shifting analog input level (Lch)        | (1/2) For removing noises which are generated in the A/D converter and unrelated to the input analog signal, this unit follows up voltage of the voltage source to offset the input analog signal for the A/D converter and works as the reference voltage source. |
|         |                        | (2/2) Input buffer amp (Lch)                              | (2/2) Buffer to input analog signal                                                                                                                                                                                                                                |
| IC2     | NJM4565M               | (1/2) Op-amp for shifting analog input level (Rch)        | (1/2) (2/2) Have same function as IC1.                                                                                                                                                                                                                             |
|         |                        | (2/2) Input buffer amp (Rch)                              |                                                                                                                                                                                                                                                                    |
| IC3     | NJM4565M               | (1/2) Op-amp for I/V conversion of Rch                    | (1/2) Converts output current of D/A converter into voltage. Output current : 1.2mA, Output after conversion : 4.3Vp-p max.                                                                                                                                        |
|         |                        | (2/2) Op-amp for low-pass filter of Rch and output buffer | (2/2) Reduces noises out of audible range.                                                                                                                                                                                                                         |
| IC4     | NJM4565M               | (1/2) Op-amp for I/V conversion of Lch                    | (1/2) (2/2) Have same function as IC3.                                                                                                                                                                                                                             |
|         |                        | (2/2) Op-amp for low-pass filter of Lch and output buffer |                                                                                                                                                                                                                                                                    |
| IC5     | NJM4565M               | (1/2) Op-amp for headphone output buffer of Rch           | Receives analog signals after they pass IC3 and IC4. in non-inverted input mode, and outputs with the gain of about 1.                                                                                                                                             |
|         |                        | (2/2) Op-amp for headphone output buffer of Lch           |                                                                                                                                                                                                                                                                    |
| IC6     | NJM4558M               | Operation error amp for ±5V constant voltage power supply |                                                                                                                                                                                                                                                                    |
| IC7     | AK5339-VS<br>CS5339-KS | A/D converter                                             | Converts analog input into digital data. Master clock is 256fs (11.2896MHz), and output data is arranged closed to forward end with MSB first.                                                                                                                     |
| IC8     | SM5840ES               | Digital filter                                            |                                                                                                                                                                                                                                                                    |
| IC9     | PCM69AU                | D/A converter                                             | Converts audio data 8-time over-sampled and re-written in 18 bits by IC8 into analog signals.                                                                                                                                                                      |
| IC10    | TC7S04F                | Inverter                                                  | Inverts phase of audio data received from X32.                                                                                                                                                                                                                     |
| IC12    | LM2940CT-5.0           | 3 terminal regulator                                      | Connect 8V to 5V                                                                                                                                                                                                                                                   |
| IC13    | TA79005S<br>μPC7905HF  | 3 terminal regulator                                      | Connect -8V to -5V                                                                                                                                                                                                                                                 |
| IC26    | LC75710E               | Dot matrix converter                                      | Control driver for 5x7 dot matrix VFD display                                                                                                                                                                                                                      |
| IC27    | W05-0475-00            | μ-com                                                     |                                                                                                                                                                                                                                                                    |

## CIRCUIT DESCRIPTION

| Ref No.   | Semi name        | Use and function                                                       | Operation                                                                                                             |
|-----------|------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Q1 ~ Q4   | 2SC2878 (B)      | Transistor for muting                                                  | Base "H" : Mute, "L" : Mute OFF (Q1 and Q3 : Lch, Q2 and Q4 Rch)<br>Q1, Q2 : Analog output, Q3, Q4 : Headphone output |
| Q5, Q6    | DTC113ZS, UN4219 | Control transistor for muting analog output                            | * Muting made by control signal to base                                                                               |
|           |                  |                                                                        | Q5 Q6 MUTE                                                                                                            |
|           |                  |                                                                        | L L ON                                                                                                                |
|           |                  |                                                                        | L H ON                                                                                                                |
|           |                  |                                                                        | H L ON                                                                                                                |
|           |                  |                                                                        | H H OFF                                                                                                               |
| Q7, 8     | DTC113ZS, UN4219 | Transistor for controlling transistor for muting headphone output MUTE | Q7 Q8 MUTE                                                                                                            |
|           |                  |                                                                        | L L ON                                                                                                                |
|           |                  |                                                                        | L H ON                                                                                                                |
|           |                  |                                                                        | H L ON                                                                                                                |
|           |                  |                                                                        | H H OFF                                                                                                               |
| Q9        | 2SD2012, 2SD2061 | Transistor for controlling +5V constant voltage circuit                | Supplies power to IC1 ~ IC5, IC7 and IC9.                                                                             |
| Q10       | 2SB1370, 2SB1375 | Transistor for controlling -5V constant voltage circuit                | Supplies power to IC1 ~ IC5, IC7.                                                                                     |
| Q11       | DTA124EV, UN5112 | Switch                                                                 |                                                                                                                       |
| Q12       | 2SC4081 (R, S)   | Switch                                                                 |                                                                                                                       |
| D1 ~ D4   | U1BC44           | Rectification                                                          | Rectifies AC power.                                                                                                   |
| D7        | DTZ5.1 (B)       | Constant voltage                                                       | For reference voltage of +5V constant voltage circuit.                                                                |
| D8 ~ D11  | DTZ8.2 (B)       | Constant voltage for level shift                                       |                                                                                                                       |
| D12       | U1BC44           | Rectification for level shift                                          | Reduces VCE of Q10.                                                                                                   |
| D13       | DA204U           | For protection from static electricity and line noise                  |                                                                                                                       |
| D41, D42  | DA204U           | Limiter                                                                | For serial communication port.                                                                                        |
| D43, D44  | MA110            | Prevention of inverse current                                          | For serial communication port.                                                                                        |
| D45 ~ D48 | MA110            | Prevention of inverse current                                          | Countermeasure against double push of key.                                                                            |
| D49       | DA204U           | Diode clamp                                                            | Clamp against chassis                                                                                                 |
| D50       | MA110            | Clamp                                                                  | Clamp of convertor voltage of IC26 reset signal.                                                                      |
| D51       | MA110            | Switch                                                                 | CE signal input.                                                                                                      |

## 1-3. Processor unit (X32-2540-11)

| Ref No. | Semi name    | Use and function           | Operation                                                                                                                            |
|---------|--------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| IC1     | CXA1381Q     | RF matrix amp              | • RF signal processing (Equalizer, EFM comparator), • Servo signal processing (AGC, FE - TE amplifier, etc.), • APC - ADIP amplifier |
| IC2     | TC74HC4053AF | Analog switch              | FE/TE DEFECT switch and time constant change-over switch of AGC                                                                      |
| IC3     | CXA1380M     | ADIP demodulator           | Protection of ADIP demodulator from defect and generation of data clock                                                              |
| IC4     | CXA1082BQ    | Servo signal processor     | • Focus, Tracking, Feed servo control<br>• Disc servo L.P.F. drive amplifier                                                         |
| IC5     | TA8410AK     | Drive amplifier            | (1/2) Tray loading motor driver, (2/2) Focus coil driver                                                                             |
| IC6     | CXD2525Q     | EFM/ACIRC encoder, decoder | EFM/ACIRC encode, decode ADIP decode, EFM/ADIP CLV control                                                                           |
| IC7     | S-80740AL-A4 | Op-amp                     | Phase compensation amplifier for digital in PLL                                                                                      |
| IC8     | CXD2526Q     | Memory controller          | Shock-proof - memory controller, MD format signal Encode/Decode, Main data C2PO sub-data control                                     |

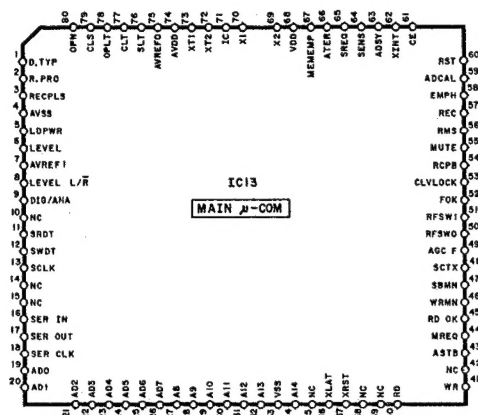
## CIRCUIT DESCRIPTION

| Ref No.    | Semi name                          | Use and function              | Operation                                                                                   |
|------------|------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------|
| IC9        | HM514400BLS-8                      | 4-Mbit D-RAM                  | Shock-proof - memory                                                                        |
| IC10, IC11 | CXD2527R                           | ATRAAC encoder/decoder        | ATRAAC (IC10: Lch, IC11 : Rch) processing (Compression and expansion of audio signal range) |
| IC12       | TC74HC4053AF                       | Analog switch                 | PIT GROOVE change-over switch of T.BAL and TOFST Disc motor drive muting switch.            |
| IC13       | W05-0474-00                        | Main $\mu$ -com               |                                                                                             |
| IC14       | TC74HC14AF                         | Inverter                      | XLAT - SWDT - SCLK buffer                                                                   |
| IC15       | HM62256ALFP-12T                    | 256k bit S-RAM                | TOC - UTOC backup memory                                                                    |
| IC16       | TC74HC373AF                        | 8 bit latch                   | S-RAM address latch                                                                         |
| IC17       | PST529F                            | Reset                         | Monitoring of source voltage of main $\mu$ -com                                             |
| IC18       | TA8410AK                           | Drive amp                     | (1/2) Feed motor driver, (2/2) Tracking coil driver                                         |
| IC19       | M62005L                            | Reset                         | Monitoring of source voltage of sub $\mu$ -com                                              |
| IC20       | TL431CLP                           | Power control                 | REC head drive power control                                                                |
| IC21       | TC74HC02AF                         | NOR gate                      | REC EFM switch                                                                              |
| Q1         | DTA124ES, UN4112                   | Switch                        | Focus bias mute when disc stop.                                                             |
| Q2         | DTC124ES, UN4212                   |                               |                                                                                             |
| Q3, Q4     | 2SD882, 2SB772                     | Driver                        | Disc motor driver                                                                           |
| Q5         | 2SC1923 (R, O)                     | Oscillator                    | VCO for digital in PLL                                                                      |
| Q6         | 2SC3246                            | Driver                        | Relay solenoid drive                                                                        |
| Q7         | 2SD2012                            | Emitter follower              | +5V power supply for sub $\mu$ -com                                                         |
| Q8         | 2SB1375                            | Emitter follower              | -30V power supply for FL                                                                    |
| Q9         | 2SC2458 (Y, GR)<br>2SC3311A (Q, R) | Emitter follower              | +6.2V power supply for IC21                                                                 |
| Q10, Q11   | IRF610                             | Driver                        | REC head driver                                                                             |
| Q12        | 2SD1944                            | Emitter follower              | +4V power supply for recording head drive                                                   |
| Q13        | 2SK163 (L)                         | Constant current power supply | +5V reference voltage for sub $\mu$ -com                                                    |
| Q14        | DTC124ES, UN4212                   | Switch                        | Power switch for main $\mu$ -com                                                            |
| Q15        | 2SA1534A (R, S)                    |                               |                                                                                             |
| Q16, Q17   | 2SK208 (Y, GR)                     | Digital in PLL                | L.P.F.                                                                                      |
| Q18        | 2SA1036K (Q, R)                    | Digital in PLL                | L.P.F.                                                                                      |
| D2         | MA110                              | Switch                        | Prevents malfunction of EFM asymmetry circuit when focus is turned off.                     |
| D3         | MA110                              | Limiter                       | Converts $\pm 5V$ defect signal into 0V ~ +5V signal.                                       |
| D4         | MA110                              | Switch                        | Prevents defect operation when disc stops.                                                  |
| D5         | 1SV147                             | VCO control                   | Control of VCO oscillation frequency for digital in PLL                                     |
| D6, D7     | MA110                              | Clamp                         | Clamp between system control signal GND and chassis GND                                     |
| D8         | MA113                              | Clamp                         | Clamp of counter voltage of relay drive solenoid                                            |
| D9         | U1BC44                             | Rectification                 | +5V power supply for sub $\mu$ -com                                                         |
| D10        | DTZ5.1 (B)                         | Reference voltage             | +5V reference voltage for sub $\mu$ -com power supply                                       |
| D12        | U1BC44                             | Prevention of inverse current | Backup protection for sub $\mu$ -com power supply                                           |
| D14        | U1BC44                             | Rectification                 | -30V power supply for FL                                                                    |
| D15, D16   | DTZ15 (B)                          | Reference voltage             | -30V power supply for FL                                                                    |
| D17        | DTZ5.1 (B)                         | Level shift                   | Shifts DC level of AC 5 V for FL                                                            |
| D18        | D3SBA20F03                         | Rectification                 | Power supply for main $\mu$ -com                                                            |
| D19        | U1BC44                             | Protection of relay           | Relay resisting voltage protection.                                                         |
| D20        | DTZ6.8 (B)                         | Reference voltage             | For IC21 +6.2V power supply                                                                 |
| D21 ~ D24  | U1BC44                             | Rectification                 | Rectification diode for power supply to drive recording head                                |
| D25, D26   | MA110                              | Temperature compensation      | +5V power supply for sub $\mu$ -com                                                         |

## CIRCUIT DESCRIPTION

2. Main  $\mu$ -com : W05-0474-00 (X32-, IC13)

## 2-1. Pin connection



## 2-2. Pin function

| Pin No. | Pin name        | I/O  | Function                                                                                                   |
|---------|-----------------|------|------------------------------------------------------------------------------------------------------------|
| 1       | D.TYP           | I    | Disc type switch input. Playback disc : "L", REC/Playback disc : "H"                                       |
| 2       | R.PRO           | I    | REC protect switch input, protect : "L"                                                                    |
| 3       | RECPLS          | O    | Pulse output for time elapsed calculation in REC mode (to sub $\mu$ -com)                                  |
| 4       | AVss            | -    |                                                                                                            |
| 5       | LDPWR           | O    | Laser power control voltage D/A output                                                                     |
| 6       | LEVEL           | O    | Audio signal level voltage D/A output (to sub $\mu$ -com)                                                  |
| 7       | AVREF1          | -    | Standard voltage input for D/A output (pin 6)                                                              |
| 8       | LEVEL L/R       | O    | L/R distinction signal output of level output (to sub $\mu$ -com)                                          |
| 9       | DIG/ANA         | I    | Digital / Analog distinction signal input of REC input (from sub $\mu$ -com)                               |
| 10      | NC              | -    |                                                                                                            |
| 11      | SRDT            | I    | System IC, serial read data input                                                                          |
| 12      | SWDT            | O    | System IC, write read data output                                                                          |
| 13      | SCLK            | O    | System IC, serial data clock output                                                                        |
| 14, 15  | NC              | -    |                                                                                                            |
| 16, 17  | SER IN, SER OUT | I, O | Serial data (pin 16 : input, pin 17 : output) for communicating between main $\mu$ -com and sub $\mu$ -com |
| 18      | SER CLK         | I/O  | Serial data clock I/O port for communicating between main $\mu$ -com and sub $\mu$ -com                    |
| 19 ~ 26 | AD0 ~ AD7       | O    | S-RAM data I/O and address output                                                                          |
| 27 ~ 32 | A8 ~ A13        | O    | S-RAM address output                                                                                       |
| 33      | Vss             | -    |                                                                                                            |

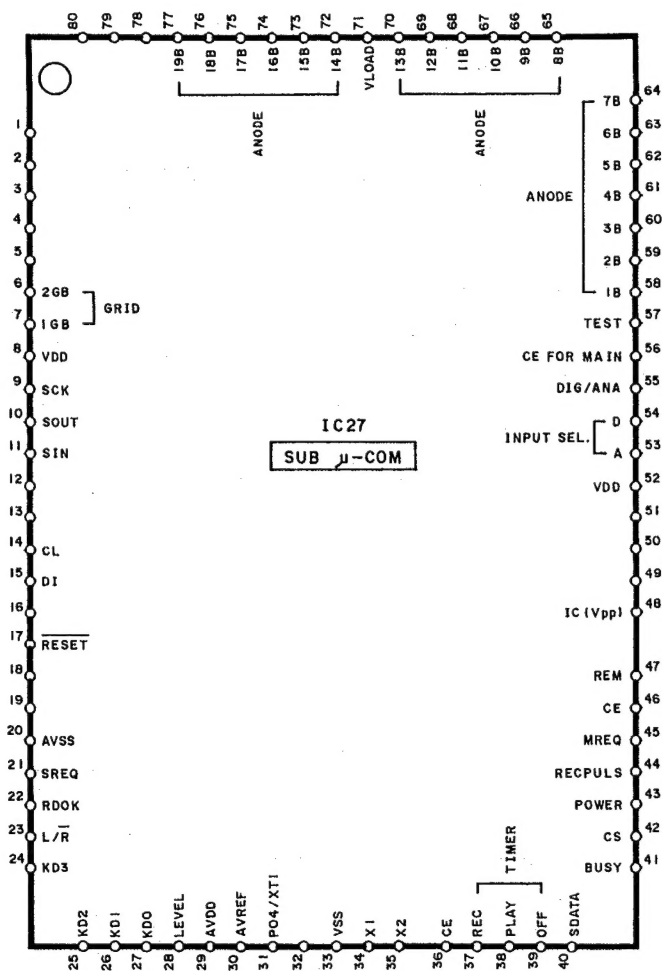
## CIRCUIT DESCRIPTION

| Pin No. | Pin name | I/O | Function                                                                         |
|---------|----------|-----|----------------------------------------------------------------------------------|
| 34      | A14      | O   | S-RAM address output                                                             |
| 35      | NC       | -   |                                                                                  |
| 36      | XLAT     | O   | System IC, serial write data latch output                                        |
| 37      | XRST     | O   | System IC, reset output                                                          |
| 38, 39  | NC       | -   |                                                                                  |
| 40      | RD       | O   | S-RAM output enable output                                                       |
| 41      | WR       | O   | S-RAM write enable output                                                        |
| 42      | NC       | -   |                                                                                  |
| 43      | ASTB     | O   | S-RAM address (AD0 ~ AD7) latch output                                           |
| 44      | MREQ     | O   | Main request output for communicating between main $\mu$ -com and sub $\mu$ -com |
| 45      | RD OK    | I   | Sub read OK input for communicating between main $\mu$ -com and sub $\mu$ -com   |
| 46      | WRMN     | O   | CXD2526Q Write mode/Read mode output                                             |
| 47      | SBMN     | O   | CXD2526Q record counter SDCT/DCT output                                          |
| 48      | SCTX     | O   | CXD2526Q data output enable output in REC mode                                   |
| 49      | AGC F    | O   | CXA1381Q AGC time constant switching output                                      |
| 50      | RFSW0    | O   | CXA1381Q high Playback disc/REC and Playback disc, distinction signal output     |
| 51      | RFSW1    | O   | CXA1381Q Pit/Groove distinction signal output                                    |
| 52      | FOK      | I   | Focus OK signal input                                                            |
| 53      | CLVLOCK  | I   | CXD2525Q CLV lock input                                                          |
| 54      | RCPB     | O   | CXD2525Q, CXD2526Q Recording/Playback mode output                                |
| 55      | MUTE     | O   | Audio output mute signal output                                                  |
| 56      | RMS      | O   | Laser high frequency ON/OFF output                                               |
| 57      | REC      | O   | Record head driver signal ON/OFF output                                          |
| 58      | EMPH     | O   | Emphasis signal output                                                           |
| 59      | ADCAL    | O   | A/D convertor calibration signal output                                          |
| 60      | RST      | I   | Reset input                                                                      |
| 61      | CE       | I   | Chip enable input                                                                |
| 62      | XINT     | I   | CXD2526Q interrupt request input                                                 |
| 63      | ADSY     | I   | CXD2525Q ADIP sync input                                                         |
| 64      | SENS     | I   | CXA1082BQ, CXD2525Q sens input                                                   |
| 65      | SREQ     | I   | Sub request input for communicating between main and sub $\mu$ -com              |
| 66, 67  | NC       | -   |                                                                                  |
| 68      | Vdd      | -   |                                                                                  |
| 69      | X2       | O   | Clock oscillation output                                                         |
| 70      | X1       | I   | Clock oscillation input                                                          |
| 71      | IC       | -   |                                                                                  |
| 72      | XT2      | -   |                                                                                  |
| 73      | XT1      | -   |                                                                                  |
| 74      | AVDD     | -   |                                                                                  |
| 75      | AVREF0   | -   | Standard voltage input for D/A output (pin 5)                                    |
| 76      | SLT      | I   | Pickup start limit switch                                                        |
| 77      | CLT      | I   | Tray close limit switch input                                                    |
| 78      | OPLT     | I   | Tray open limit switch input                                                     |
| 79      | CLS      | O   | Tray close signal output                                                         |
| 80      | OPN      | O   | Tray open signal output                                                          |

## CIRCUIT DESCRIPTION

3. Sub  $\mu$ -com : W05-0475-00 (X27-, IC27)

## 3-1. Pin connection



## CIRCUIT DESCRIPTION

## 3-2. Pin function

| Pin No. | Pin name     | I/O | Function                                                                     |
|---------|--------------|-----|------------------------------------------------------------------------------|
| 1 ~ 5   | NC           | -   |                                                                              |
| 6, 7    | 2GB, 1GB     | O   | Grid output for FL                                                           |
| 8       | Vdd          | -   | Power supply (+5V)                                                           |
| 9       | SCK          | I/O | Serial data clock I/O port for communicating between main and sub $\mu$ -com |
| 10      | SOUT         | O   | Serial data output for communicating between main and sub $\mu$ -com         |
| 11      | SIN          | I   | Serial data input for communicating between main and sub $\mu$ -com          |
| 12, 13  | NC           | -   |                                                                              |
| 14      | CL           | O   | Serial data clock output to FL driver IC                                     |
| 15      | DI           | O   | Serial data output to FL driver IC                                           |
| 16      | NC           | -   |                                                                              |
| 17      | RESET        | I   | Reset signal input                                                           |
| 18, 19  | NC           | -   |                                                                              |
| 20      | AVss         | -   | Connected to GND                                                             |
| 21      | SREQ         | O   | Sub request output for communicating between main and sub $\mu$ -com         |
| 22      | RDOCK        | O   | Sub read OK output for communicating between main and sub $\mu$ -com         |
| 23      | L/R          | I   | L/R distinction signal input of level output                                 |
| 24 ~ 27 | KD3 ~ KDO    | I   | Key input                                                                    |
| 28      | LEVEL        | I   | Audio signal level voltage D/A input                                         |
| 29, 30  | AVdd, AVREF  | -   | Power supply (+5V)                                                           |
| 31      | PO4/XT1      | -   | Connected to GND                                                             |
| 32      | NC           | -   |                                                                              |
| 33      | Vss          | -   | Connected to GND                                                             |
| 34, 35  | X1, X2       | -   | Oscillation connection                                                       |
| 36      | CE           | O   | Chip enable output                                                           |
| 37      | REC          | I   | Timer switch detection REC                                                   |
| 38      | PLAY         | I   | Timer switch detection PLAY                                                  |
| 39      | OFF          | I   | Timer switch detection OFF                                                   |
| 40      | SDATA        | I/O | Serial data signal I/O                                                       |
| 41      | BUSY         | I/O | Serial busy signal I/O                                                       |
| 42      | CS           | O   | HM62256ALFP-12T control signal output                                        |
| 43      | POWER        | O   | Power ON/OFF control                                                         |
| 44      | RECPULSE     | I   | Pulse input for time elapsed calculation in REC mode                         |
| 45      | MREQ         | I   | Main request input for communicating between main and sub $\mu$ -com         |
| 46      | CE           | I   | Chip enable signal input                                                     |
| 47      | REM          | I   | Remote control signal input                                                  |
| 48      | IC (VPP)     | -   | Connected to GND                                                             |
| 49 ~ 51 | NC           | -   |                                                                              |
| 52      | VDD          | -   | Power supply (+5V)                                                           |
| 53      | Input sel. A | I   | Input selector switch input ANALOG                                           |
| 54      | Input sel. D | I   | Input selector switch input DIGITAL                                          |
| 55      | DIG/ANA      | O   | Digital / Analog distinction signal input                                    |
| 56      | CE for main  | O   | Chip enable output                                                           |
| 57      | TEST         | I   | Test port                                                                    |
| 58 ~ 70 | 1B ~ 13B     | O   | Anode output for FL, key scan output                                         |
| 71      | VLOAD        | -   | Power supply (-30V)                                                          |
| 72 ~ 77 | 14B ~ 19B    | O   | Anode output for FL, key scan output                                         |
| 78 ~ 80 | NC           | -   |                                                                              |

## CIRCUIT DESCRIPTION

## 4. 64-time Over-sampling, with Digital Filter,

## 16-bit Stereo A/D Converter : CS5339-KS (X27-, IC7)

## 4-1. Features

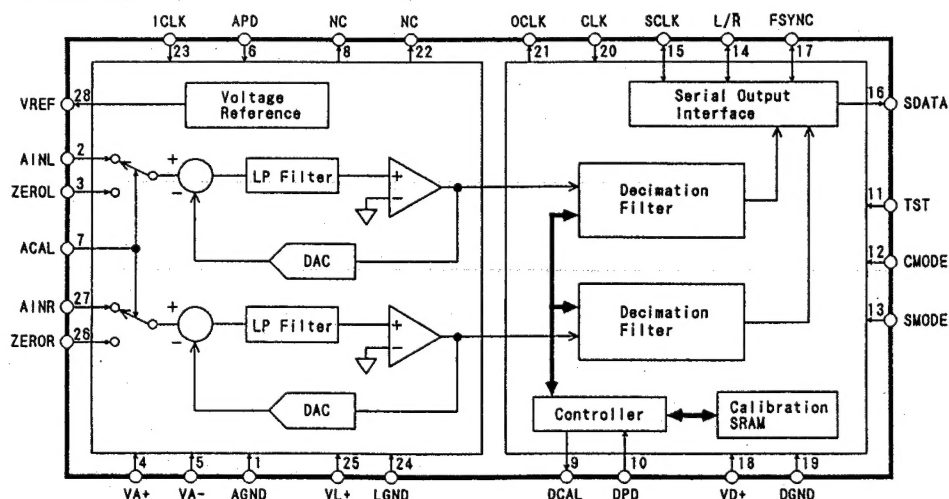
- High-performance 2-ch A/D conversion system  
Simultaneous sampling of 2 channels  
With digital filter for prevention of noise at turn  
With sample/hold circuit and reference voltage source
- 64-time over-sampling method  
Applicable to digital audio system sampling rate of 32kHz, 44.1kHz, 48kHz, etc.

## 4-2. Outline

CS5339 is a 16-bit 2-ch A/D converter of quartic  $\Delta\Sigma$  type. This converter has two  $\Delta\Sigma$  modulators and samples analog input signals simultaneously at the 64-time sampling rate (64fs). The over-sampled data are decimated by the digital filter into 16-bit data of fs.

The input range is set to  $\pm 3.68V$  by the reference voltage source. An offset error is canceled by starting the calibration cycle when the power is turned on. The calibration cycle can be started at any time. The output data are 16-bit serial data coded with complement of 2's, 3-bit over/under-scale flag, and L/R flag.

## 4-4. Block diagram



## 4-3. Pin connection

|          |    |    |          |
|----------|----|----|----------|
| AGND     | 1  | 28 | VREF     |
| AINL     | 2  | 27 | AINR     |
| ZEROL    | 3  | 26 | ZEROR    |
| VA+      | 4  | 25 | VL+      |
| VA-      | 5  | 24 | LGND     |
| APD      | 6  | 23 | ICLK     |
| ACAL     | 7  | 22 | NC(OPEN) |
| NC(OPEN) | 8  | 21 | OCLK     |
| DCAL     | 9  | 20 | CLK      |
| DPD      | 10 | 19 | DGND     |
| TST      | 11 | 18 | VD+      |
| CMODE    | 12 | 17 | FSYNC    |
| SMODE    | 13 | 16 | SDATA    |
| L/R      | 14 | 15 | SCLK     |

## CIRCUIT DESCRIPTION

## 4-5. Pin function

| Pin No. | Pin name | I/O | Function                                                                                                                                                                                                                                                                                           |
|---------|----------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | AGND     | -   | Analog ground pin                                                                                                                                                                                                                                                                                  |
| 2       | AINL     | I   | Analog input pin (Lch)                                                                                                                                                                                                                                                                             |
| 3       | ZEROL    | I   | Zero level input pin of (Lch)<br>Generally, input voltage of this pin is set to zero level for calibration of offset of Lch.                                                                                                                                                                       |
| 4, 5    | VA+, VA- | -   | Analog positive, negative power supply pin of (+5 V, -5V) of analog section                                                                                                                                                                                                                        |
| 6       | APD      | I   | Power down pin of analog section. If this pin is 'H', power down mode is selected.                                                                                                                                                                                                                 |
| 7       | ACAL     | I   | Analog calibration pin. Generally, this pin is connected to DCAL pin.<br>Input pin of outside signal is changed according to level of this pin.<br>'H': Zero level input pin (ZEROL, ZEROR), 'L': Analog input pin (AINL, AINR)                                                                    |
| 8       | NC       | -   |                                                                                                                                                                                                                                                                                                    |
| 9       | DCAL     | O   | Digital calibration pin. Indicates offset calibration is executed. Generally, connected to ACAL pin.<br>If power down signal is input to DPD pin, this pin rises immediately. It becomes 'L' 4096 L/R period (Above 85ms when fs = 48kHz) after fall of DPD pin to indicate finish of calibration. |
| 10      | DPD      | I   | Power down pin of digital section. If this pin is 'H', power down mode is selected.<br>Offset calibration is started at fall of this pin.<br>When power is turned on or clock frequency is changed, be sure to perform calibration.                                                                |
| 11      | TST      | I   | Test pin, connected to DGND                                                                                                                                                                                                                                                                        |
| 12      | CMODE    | I   | Master clock pin.<br>ICLK = 256fs (12.288MHz @ fs = 48kHz), 'H': CLK = 384fs (18.432MHz @ fs = 48kHz)                                                                                                                                                                                              |
| 13      | SMODE    | I   | Interface clock selector pin. Used to set input and output of each clock pin of L/R, SCLK, and FSYNC.<br>Slave mode (All pins are input pins), 'H': Master mode (All pins are output pins.)                                                                                                        |
| 14      | L/R      | I/O | Input channel selector pin. Slave mode : Fs clock is input. MSB data of Lch is output at rising edge, and MSB data of Rch is output falling edge.                                                                                                                                                  |
| 15      | SCLK     | I/O | Serial data clock pin.<br>Output data is output by 1 bit at fall of this pin. Slave mode : Clock of 32fs~64fs is input.                                                                                                                                                                            |
| 16      | SDATA    | O   | Serial data output pin. Data are output with complement of 2's in order from MSB.<br>After 16 bits are output, 3-bit over/under-scale flag and L/R flag are output.                                                                                                                                |
| 17      | FSYNC    | I/O | Frame synchronizing clock pin. Slave mode : If this pin is 'H', outputting of SDATA is enabled.                                                                                                                                                                                                    |
| 18      | VD+      | -   | +5V power supply (digital section)                                                                                                                                                                                                                                                                 |
| 19      | DGND     | -   | GND (digital section)                                                                                                                                                                                                                                                                              |
| 20      | CLK      | I   | Master clock input pin. CMODE = 'L' : 256fs                                                                                                                                                                                                                                                        |
| 21      | OCLK     | O   | 128 fs clock output pin.<br>Toggles at rise of master clock (CLK). Set to 'L' when power is down (DPD = 'H').                                                                                                                                                                                      |
| 22      | NC       | -   |                                                                                                                                                                                                                                                                                                    |
| 23      | ICLK     | I   | 128 fs clock input pin.<br>Clock of analog section. Connected to OCLK pin. Sampling rate of $\Delta\Sigma$ modulator is 64 fs.                                                                                                                                                                     |
| 24      | LGND     | -   | Logic ground pin (analog section).                                                                                                                                                                                                                                                                 |
| 25      | VL+      | -   | Logic power supply (analog section).                                                                                                                                                                                                                                                               |
| 26      | ZEROR    | I   | Rch zero level input pin. Generally, offset of Rch is calibrated with input voltage of this pin as zero level.                                                                                                                                                                                     |
| 27      | AINR     | I   | Rch analog input pin.                                                                                                                                                                                                                                                                              |
| 28      | VREF     | O   | Reference voltage output pin, -3.68V. Full scale of input signal depends on this voltage.<br>If VREF = -3.68V, FS = $V \pm 3.68V$ .<br>Electrolytic capacitor of 4.7 $\mu$ F and ceramic capacitor of 0.1 $\mu$ F are connected in parallel between this pin and AGND.                             |

## CIRCUIT DESCRIPTION

## 5. Digital Filter : SM5840ES (X27-, IC8)

## 5-1. Pin connection

(TOP VIEW)

|      |    |    |      |
|------|----|----|------|
| WSL1 | 1  | 22 | DIN  |
| CKI  | 2  | 21 | BCKI |
| CKSL | 3  | 20 | LRCI |
| CKO  | 4  | 19 | (NC) |
| VSS  | 5  | 18 | (NC) |
| (NC) | 6  | 17 | (NC) |
| (NC) | 7  | 16 | VDD  |
| WSL2 | 8  | 15 | WCKO |
| DSF1 | 9  | 14 | DOL  |
| DSF2 | 10 | 13 | DOR  |
| RST  | 11 | 12 | BCKO |

## 5-2. Pin function

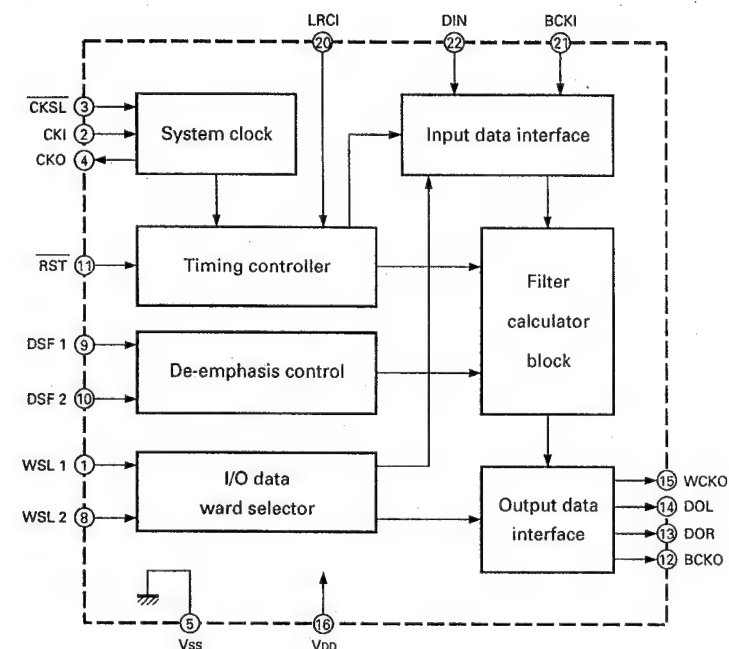
| Pin No. |          |    | Pin name                                                                     |         | I/O          | Function                     |
|---------|----------|----|------------------------------------------------------------------------------|---------|--------------|------------------------------|
| 1       | WSL1     | Ip | Word length selector pin of input/output data 1                              |         |              |                              |
|         |          |    | Setting                                                                      |         | Noise shaper | Word length of I/O data      |
|         |          |    | WSL1                                                                         | WSL2    |              | Input bits      Output bits  |
|         |          |    | H                                                                            | H       | OFF          | 18-bit      20-bit           |
|         |          |    | H                                                                            | L       | ON           | 18-bit      18-bit           |
|         |          |    | L                                                                            | H       | ON           | 16-bit      18-bit           |
|         |          |    | L                                                                            | L       | ON           | 16-bit      16-bit           |
| 2       | CKI      | I  | System clock input pin                                                       |         |              |                              |
| 3       | CKSL     | I  | System clock selector pin (CKSL : "H" = 384fs, CKSL : "L" = 256fs)           |         |              |                              |
| 4       | CKO      | O  | System clock output pin (Clock of CK1 is buffered and output.)               |         |              |                              |
| 5       | VSS      | -  | GND                                                                          |         |              |                              |
| 6, 7    | NC       | -  |                                                                              |         |              |                              |
| 8       | WSL2     | Ip | Word length selector pin of input/output data 2 (refer to function of pin 1) |         |              |                              |
| 9       | DSF1     | Ip | De-emphasis selector pin 1                                                   | Setting |              | De-emphasis                  |
|         |          |    |                                                                              | DSF1    | DSF2         | Select ON/OFF      Select fs |
|         |          |    |                                                                              | L       | L            | ON      44.1kHz              |
| 10      | DSF2     | Ip | De-emphasis selector pin 2                                                   |         |              |                              |
|         |          |    |                                                                              | L       | H            | ON      48.0kHz              |
|         |          |    |                                                                              | H       | H            | ON      32.0kHz              |
|         |          |    |                                                                              | H       | L            | OFF                          |
| 11      | RST      | Ip | System reset (RST : "L" = Reset and initialize)                              |         |              |                              |
| 12      | BCKO     | O  | Output bit clock                                                             |         |              |                              |
| 13, 14  | DOR, DOL | O  | 8fs data output (pin 13 : Rch, pin 14 : Lch)                                 |         |              |                              |
| 15      | WCKO     | O  | Output word clock                                                            |         |              |                              |
| 16      | VDD      | -  | +5V power supply                                                             |         |              |                              |
| 17 ~ 19 | NC       | -  |                                                                              |         |              |                              |
| 20      | LRCI     | Ip | Sample rate (fs) clock of input data                                         |         |              |                              |
| 21      | BCKI     | Ip | Input bit clock                                                              |         |              |                              |
| 22      | DIN      | Ip | Input data                                                                   |         |              |                              |

Note : "fs" in the following explanation means the sampling frequency of input data.

"Ip" is an input terminal with a pull-up resistor. Accordingly, it may be opened when the H level is set.

## CIRCUIT DESCRIPTION

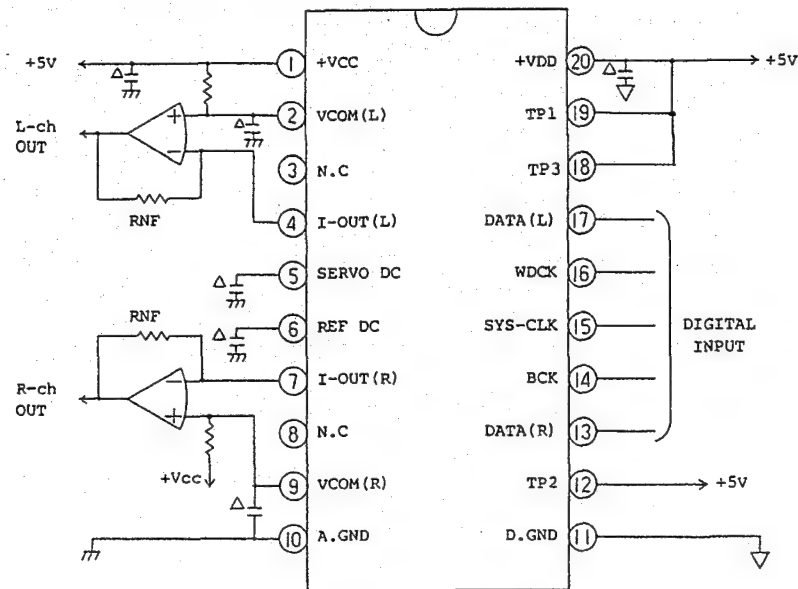
## 5-3. Block diagram



## CIRCUIT DESCRIPTION

### 6. BICMOS Dual 18-bit Serial D/A Converter : PCM69AU (X27-, IC9)

#### 6-1. Pin connection



#### 6-2. Pin function

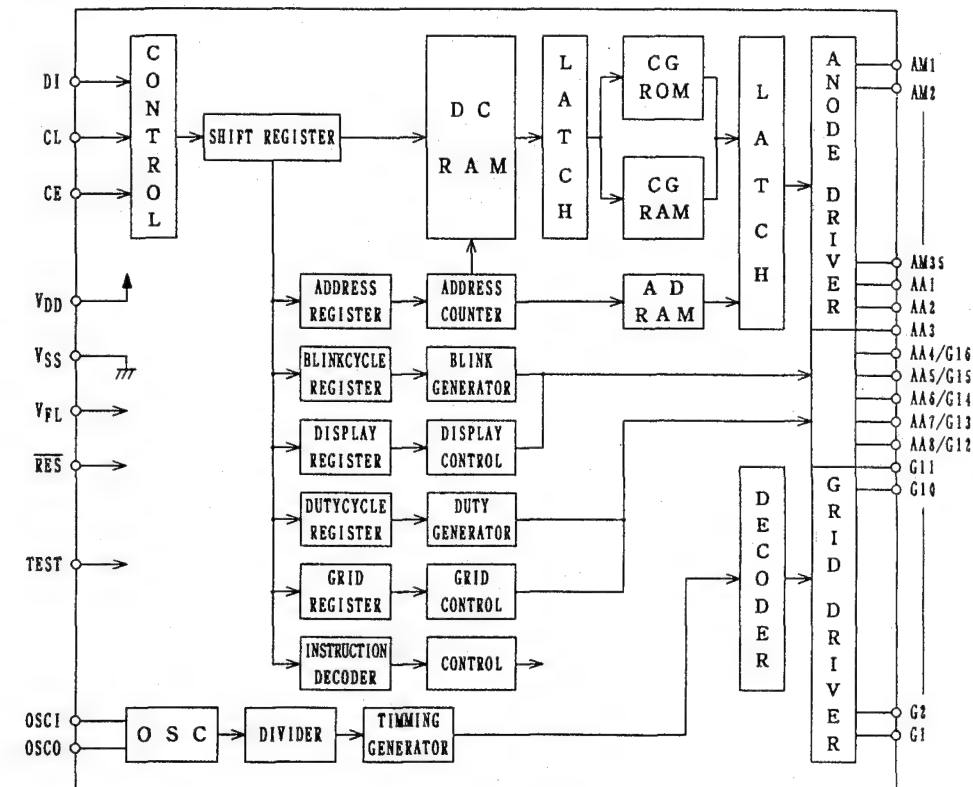
| No. | Pin name  | I/O | Function                     |
|-----|-----------|-----|------------------------------|
| 1   | +Vcc      | -   | Analog positive power supply |
| 2   | VCOM (L)  | -   | Lch V common                 |
| 3   | NC        | -   |                              |
| 4   | I-OUT (L) | O   | Lch current output           |
| 5   | SERVO DC  | -   | Servo filter                 |
| 6   | REF DC    | -   | Reference filter             |
| 7   | I-OUT (R) | O   | Rch current output           |
| 8   | NC        | -   |                              |
| 9   | VCOM (R)  | -   | Rch V common                 |
| 10  | A.GND     | -   | Analog common                |

| No. | Pin name | I/O | Function                      |
|-----|----------|-----|-------------------------------|
| 11  | D.GND    | -   | Digital common                |
| 12  | TP2      | -   | Test pin 2                    |
| 13  | DATA (R) | I   | Rch data input                |
| 14  | BCK      | I   | Bit clock input               |
| 15  | SYS-CLK  | I   | System clock input            |
| 16  | WDCK     | I   | Word clock input              |
| 17  | DATA (L) | I   | Lch data input                |
| 18  | TP3      | -   | Test pin 3                    |
| 19  | TP1      | -   | Test pin 1                    |
| 20  | +VDD     | -   | Digital positive power supply |

## CIRCUIT DESCRIPTION

### 7. Controller Driver for 5x7 Dot Matrix VFD Display : LC75710E (X27-, IC26)

#### 7-1. Block diagram



#### 7-2. Pin function

| No.     | Pin name            | I/O  | Function                                                                                                                                                                                                     |
|---------|---------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 ~ 35  | AM1 ~ AM35          | O    | Anode output pin with pull down resistor                                                                                                                                                                     |
| 36 ~ 38 | AA1 ~ AA3           | -    | Not used                                                                                                                                                                                                     |
| 39 ~ 43 | AA4/G16 ~ AA8/G12   | O    | Anode/Grid output pin. If 12 ~ 16 is selected as number of figures to be displayed by "Number of displayed figures setting" command, these terminals become grid output terminals. Have pull-down resistors. |
| 44 ~ 54 | G11, G10, 9GA ~ 1GA | O    | Grid output pin with pull down resistor (G11 and G10 are not connected)                                                                                                                                      |
| 55      | VFL                 | -    | Driver section power supply                                                                                                                                                                                  |
| 56      | TEST                | -    | LSI test pin, connected to VSS                                                                                                                                                                               |
| 57      | Vss                 | -    | Logic section +5V power supply                                                                                                                                                                               |
| 58, 59  | OSCO, OSC1          | O, I | External capacitor and resistor connection pin for oscillator                                                                                                                                                |
| 60      | Vdd                 | -    | Logic section +5V power supply                                                                                                                                                                               |
| 61      | RES                 | I    | System reset input pin                                                                                                                                                                                       |
| 62 ~ 64 | CE, CL, DI          | I    | Serial data transmission (CE : Chip enable, CL : Sync. clock, DI : Transmission data)                                                                                                                        |

## CIRCUIT DESCRIPTION

### 8. RF Matrix Amplifier : CXA1381Q (X32-, IC1)

## 8-1. Outline

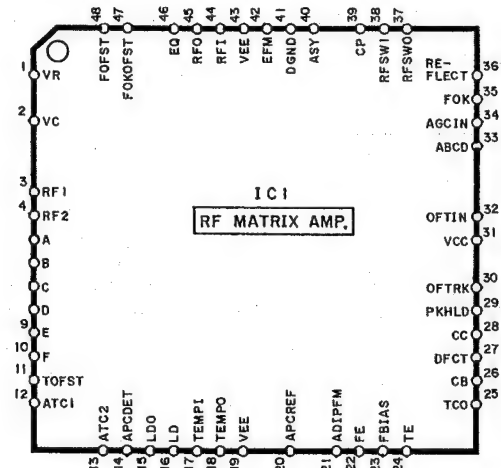
CXA1381Q processes the RF signals and servo signals used when a mini-disc is recorded or played back.

## 8-2. Features

- An equalizer circuit is attached to the RF signal processing circuit.
- The AGC (Automatic Gain Control) circuit by sensing and feeding back quantity of light.
- The APC (Automatic LASER Power Control) circuit with temperature compensation circuit.

- EFM (Eight to Fourteen Modulation) comparator with automatic asymmetry control.
- Focus error amplifier.
- Tracking error amplifier.
- Focus OK sensing circuit.
- Off-track sensing circuit.
- Tracking count signal output.
- Defect sensing circuit.
- ADIP (Address In Pre-groove) amplifier.

### 8-3. Pin connection



#### 8-4. Pin function (VCC=5V, VEE=-5V, DGND=0V)

| No.   | Pin name   | Normal voltage                      | I/O | Function                                                                                          |
|-------|------------|-------------------------------------|-----|---------------------------------------------------------------------------------------------------|
| 1     | VR         | 0V (DC)                             | O   | Voltage terminal of (Vcc – VEE)/2                                                                 |
| 2     | VC         | 0V (DC)                             | –   | When $\pm$ power is applied : GND.<br>When single power is applied : Connected to pin No. 1 (VR). |
| 3, 4  | REF1, REF2 | 160mV (DC)                          | I   | Input terminal of I-V converted RF signal 1 and 2.                                                |
| 5 ~ 8 | A ~ D      | 40mVp-p - 36mV (DC)<br>Tracking OFF | I   | Input terminal of I-V converted main beam servo signal A ~ D.                                     |
| 9, 10 | E, F       | 11mVp-p - 50mV (DC)<br>Tracking OFF | I   | Input terminal of I-V converted sub beam servo signal E and F.                                    |
| 11    | TOFST      | 0V (DC)                             | I   | Offset adjustment terminal for tracking error.                                                    |
| 12    | ATC1       | 25mVp-p                             | O   | Push-pull signal output of main beam. Used as ADIP signal.                                        |
| 13    | ATC2       | 25mVp-p                             | I   | AGC input of ADIP signal. ATC1 is connected by AC coupling.                                       |
| 14    | APCDET     | 0.35V (DC)                          | I   | Photo diode is connected.<br>I-V converted with a resistor to sense quantity of light.            |
| 15    | LDO        | 3.5V (DC)                           | O   | LD amp output terminal of APC.                                                                    |

## CIRCUIT DESCRIPTION

| No. | Pin name | Normal voltage                      | I/O | Function                                                                                           |
|-----|----------|-------------------------------------|-----|----------------------------------------------------------------------------------------------------|
| 16  | LD       | 0.35V (DC)                          | I   | Inverting output of LD amplifier.                                                                  |
| 17  | TEMPI    | 0V (DC)                             | I   | Terminal to connect temperature sensor.                                                            |
| 18  | TEMPO    | 0V (DC)                             | O   | Output terminal of temperature signal.                                                             |
| 19  | VEE      | -5V (DC)                            | -   | When $\pm$ power is applied : Negative power supply<br>When single power is applied : GND          |
| 20  | APCREF   | 0.35V (DC)                          | I   | Input terminal for setting laser power.                                                            |
| 21  | ADIPFM   | 0.5Vp-p                             | O   | FM signal output of ADIP signal.                                                                   |
| 22  | FE       | 3.6Vp-p (Focus S-curve p-p)         | O   | Focus error signal output                                                                          |
| 23  | FBIAS    | 0V (DC)                             | I   | Focus bias adjustment input                                                                        |
| 24  | TE       | 5Vp-p (when track jump)             | O   | Tracking error signal output                                                                       |
| 25  | TCOUNT   | Digital output                      | O   | Tracking count signal output                                                                       |
| 26  | CB       | 0.5V (DC)                           | -   | Capacitor for defect peak hold                                                                     |
| 27  | DFCT     | $\pm$ Digital output ('H' : defect) | O   | Defect comparator output                                                                           |
| 28  | CC       | 1V (DC)                             | I   | AC input for defect peak hold                                                                      |
| 29  | PKHLD    | 1V (DC)                             | O   | Defect peak hold output                                                                            |
| 30  | OFTRK    | Digital output ('H' : Off-track)    | O   | Off track signal output                                                                            |
| 31  | Vcc      | 5V (DC)                             | -   | Power supply                                                                                       |
| 32  | OFTIN    | 0.3Vp-p (when track jump)           | I   | Optical signal input pin from main-beam servo-detector                                             |
| 33  | ABCD     | 1V (DC)                             | I   | Optical signal output pin from main-beam servo-detector                                            |
| 34  | AGCIN    | 1V (DC)                             | I   | AGC control input                                                                                  |
| 35  | FOK      | Digital output ('H' : FOK)          | O   | Focus OK signal output                                                                             |
| 36  | REFLECT  | Digital output                      | O   | Digital output for disc mirror-rate (low/high)                                                     |
| 37  | RFSW0    | Digital input                       | I   | Disc mode flip-flop signal input pin<br>( 'H' : High reflectance disc, 'L' : Low reflectance disc) |
| 38  | RFSW1    | Digital input                       | I   | Disc mode flip-flop signal input pin ( 'H' : Track = Pit, 'L' : Track = Groove)                    |
| 39  | CP       | -3.6V (DC)                          | -   | Capacitor pin for MIRR hold                                                                        |
| 40  | ASY      | 2.5V (DC)                           | I   | Auto-asymmetry control input pin                                                                   |
| 41  | D.GND    | 0V (DC)                             | -   | When $\pm$ power is applied : GND<br>When single power is applied : GND (=VEE)                     |
| 42  | EFM      | Digital output                      | O   | EFM comparator output                                                                              |
| 43  | VEE      | -5V (DC)                            | -   | When $\pm$ power is applied : Negative power supply<br>When single power is applied : GND          |
| 44  | RFI      | 1.1Vp-p                             | I   | Equalizer output is connected by AC coupling and input to this terminal.                           |
| 45  | RFO      | 1.1Vp-p                             | O   | Equalizer output terminal. Checkpoint of eye pattern.                                              |
| 46  | EQ       | -3.5V (DC)                          | -   | Terminal to connect outside resistor for equalizer.                                                |
| 47  | FOKOFST  | 0V (DC)                             | I   | Offset adjustment terminal of ABCD amplifier.                                                      |
| 48  | FOFST    | 0V (DC)                             | I   | Offset adjustment terminal of focus error amplifier.                                               |

## CIRCUIT DESCRIPTION

## 9. ADIP Demodulator : CXA1380M (X32-, IC3)

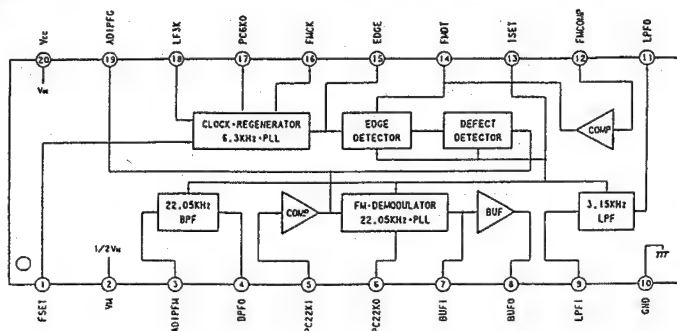
## 9-1. Outline

CXA1380M can read the ADIP (Address In Pre-groove) signals written on a mini-disc.

## 9-2. Features

- FM demodulator of ADIP.
- ADIP defect protection circuit.
- ADIP data clock generating circuit.

## 9-4. Block diagram



## 9-5. Pin function

| No. | Name    | Normal voltage  | I/O | Function                                                                                                                                                                      |
|-----|---------|-----------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | FSET    | 720mV           | I   | Terminal to set center frequency of VCO for ADIP Bit Clock Regenerator.                                                                                                       |
| 2   | VM      | 2.5V            | O   | Terminal to output 1/2 of Vcc. Internal circuit bias voltage.                                                                                                                 |
| 3   | ADIP FM | 450mVp-p        | I   | Input terminal of ADIP FM signal.                                                                                                                                             |
| 4   | BPFO    | 1Vp-p + 2.5V    | O   | Output terminal of band-pass filter.                                                                                                                                          |
| 5   | PC22KI  | 1Vp-p + 2.5V    | I   | Input terminal of phase comparator for FM demodulation. Output of BPFO is connected by capacity coupling and input.                                                           |
| 6   | PC22KO  | Digital output  | O   | Output terminal of phase comparator for FM demodulation.                                                                                                                      |
| 7   | BUFI    | 0.8Vp-p + 2.5V  | I   | Feedback terminal of PLL for FM demodulation. Signal of PC22KO is input through loop filter.                                                                                  |
| 8   | BUFO    | 0.8Vp-p + 2.5V  | O   | Output terminal of FM demodulation signal.                                                                                                                                    |
| 9   | LPFI    | 0.8Vp-p + 2.5V  | I   | Input terminal of low-pass filter. Output of BUFO is connected by capacity coupling and input.                                                                                |
| 10  | GND     | 0V              | -   | GND                                                                                                                                                                           |
| 11  | LPFO    | 0.15Vp-p + 2.5V | O   | Output terminal of low-pass filter.                                                                                                                                           |
| 12  | FM COMP | 0.15Vp-p + 2.5V | I   | Input terminal of comparator for ADIP data. Output of LPFO is connected by capacity coupling and input.                                                                       |
| 13  | ISET    | 720mV           | I   | Inside circuit constant setting terminal. • Band-pass filter fc, • Low-pass filter fc • Center frequency of VCO for FM demodulation, • Edge pulse width, • Defect pulse width |
| 14  | FM DT   | Digital output  | O   | Output terminal of ADIP data.                                                                                                                                                 |
| 15  | EDGE    | Digital output  | O   | Output terminal of edge sensing signal of ADIP data.                                                                                                                          |
| 16  | FMCK    | Digital output  | O   | Output terminal of ADIP bit clock.                                                                                                                                            |
| 17  | PC6KO   | Digital output  | O   | Output terminal of phase comparator for ADIP bit clock regenerator.                                                                                                           |
| 18  | LF3K    | 0.2Vp-p + 2.5V  | I   | Feedback terminal of PLL for ADIP pit clock regenerator. Output of PC6KO is input through loop filter.                                                                        |
| 19  | ADIPFG  | Digital output  | O   | Comparator output terminal of ADIP FM data.                                                                                                                                   |
| 20  | Vcc     | 5V              | -   | Power supply                                                                                                                                                                  |

- FG circuit for CLV (Rough mode and standard mode)
- If CXA1380M is used together with CXA1381Q, CXD2525Q, etc., the address information recorded in a Recordable MD disc.

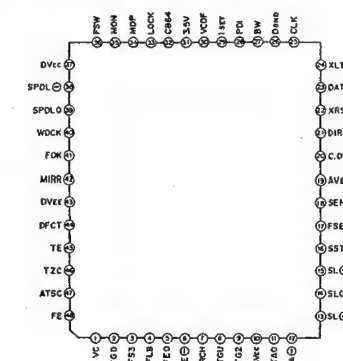
## 9-3. Uses

Used to take out the servo signal for motor control and address information from the ADIP signals of a mini-disc recorder, mini-disc player, etc.

## CIRCUIT DESCRIPTION

## 10. Servo Signal Processor : CXA1082BQ (X32-, IC4)

## 10-1. Pin connection



## 10-2. Pin function

| No.    | Name                        | I/O | Function                                                                                                       |
|--------|-----------------------------|-----|----------------------------------------------------------------------------------------------------------------|
| 2      | FGD                         | -   | To lower the high frequency gain of the focus servo, insert a capacitor between this pin and 3 pin.            |
| 3      | FS3                         | -   | The high frequency gain of the focus servo is selected by switching FS3 ON/OFF.                                |
| 4      | FLB                         | -   | Time constant external connect pin, for boosting the focus servo low frequencies.                              |
| 5      | FEO                         | O   | Power transistor drive op-amp output pin.                                                                      |
| 6      | FE-                         | I   | Focus amplifier inverted input pin.                                                                            |
| 7      | SRCH                        | -   | Time constant external connect pin, for creating the focus search waveform.                                    |
| 8, 9   | TGU, TG2                    | -   | Time constant external connect pin, for selecting the tracking high frequency gain.                            |
| 11     | TAO                         | O   | Power transistor drive op-amp output pin.                                                                      |
| 12     | TA-                         | I   | Tracking amplifier inverted input pin.                                                                         |
| 13     | SL+                         | I   | Feed motor drive amplifier non-inverted input pin.                                                             |
| 14     | SLO                         | O   | Power transistor drive op-amp output pin.                                                                      |
| 15     | SL-                         | I   | Feed motor drive amplifier inverted input pin.                                                                 |
| 16     | SSTOP                       | I   | Limit switch ON/OFF detection signal input pin, for detecting the innermost edge of the disc.                  |
| 17     | FSET                        | -   | Setting pin for the focus tracking phase peak value compensation, and of the CLV LPF.                          |
| 18, 20 | SENS, C.OUT                 | O   | Output pins for an interface with a $\mu$ -com.                                                                |
| 21-25  | DIRCT, XRST, DATA, XLT, CLK | I   | Input pins for an interface with a $\mu$ -com. A 47k $\Omega$ pull-up resistor is only incorporated in pin 21. |
| 27     | BW                          | -   | Loop filter time constant external connect pin.                                                                |
| 28     | PDI                         | I   | Input pin for the phase comparator output PDO of CXD2525Q.                                                     |
| 29     | ISET                        | I   | Input a current which determines the level of the focus search, track jump, and feed kick                      |
| 30     | VCOF                        | -   | The self-advancing frequency of the VCO is almost proportional to the resistance between this pin and 31.      |
| 32     | C864                        | O   | 8.64MHz VCO output pin.                                                                                        |
| 33     | LOCK                        | I   | Input pins for an interface with a $\mu$ -com. A 47k $\Omega$ pull-up resistor is incorporated.                |
| 34     | MDP                         | I   | CXD2525Q MDP pin connect pin.                                                                                  |
| 35     | MON                         | I   | CXD2525Q MON pin connect pin.                                                                                  |
| 36     | FSW                         | I   | LPF time constant external connect pin, for the CLV servo error pin.                                           |
| 38     | SPDL-                       | I   | Disc motor drive amplifier inverted input pin.                                                                 |
| 39     | SPDLO                       | O   | Power transistor drive op-amp output pin.                                                                      |
| 40, 41 | WDCK, FOK                   | I   | Input pins for an interface with a $\mu$ -com.                                                                 |
| 42, 44 | MIRR, DFCT                  | I   |                                                                                                                |
| 45     | TE                          | I   | Tracking error signal input pin.                                                                               |
| 46     | TZC                         | I   | Tracking zero-cross comparator input pin.                                                                      |
| 47     | ATSC                        | I   | Window comparator input pin for ATSC detection.                                                                |
| 48     | FE                          | I   | Focus error signal input pin.                                                                                  |

### CIRCUIT DESCRIPTION

### 11-3. Pin connection

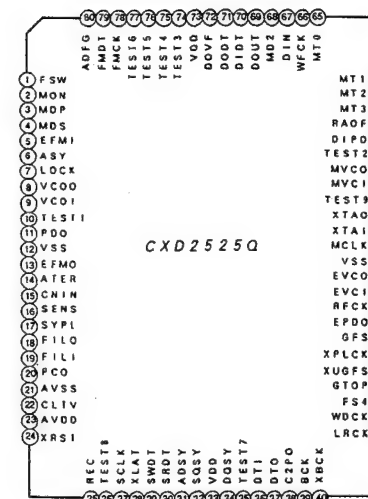
- With RAM for error correction
- Digital in/out  
(Perfectly matched to U-bit, C-bit, and SCMS)
- Peak level meter circuit
- 64-bit slot audio I/F
- New CPU I/F (Serial bus)
- Strong error correction  
(C1: Double correction, C2: Quadruple correction)

(C1: Double correction, C2: Quadruple correction)

- EFM: Encode/Decode
- ACIRC: Encode/Decode
- ADIP: Decode
- EFM/ADIP: CLV control circuit
- EFM digital PLL

The diagram illustrates the internal architecture of the TDA9006 video decoder chip, centered around a system BUS. Key components and their connections include:

- Input Section:** Receives signals like PCO, FIL, FILO, CLTV, VCOI, VCOO, EFMi, ASY, PDO, XPLCK, GTOP, GFS, XUGFS, LOCK, FSW, MON, MDP, MDS, ADFG, FMDET, FMCK, ATER, ADSY, EFM0, and EPDO.
- Processing Blocks:**
  - 34MHz PLL:** Provides a reference clock to the Decode Clock Generator and EFM Demodulator.
  - Decode Clock Generator:** Generates clocks for the EFM Demodulator and Decoder PLL.
  - EFM Demodulator:** Demodulates the EFM signal and outputs to a Register.
  - Decoder PLL:** Locks onto the video signal and provides clocks to the Sync Det./Ins. and Timing Generator.
  - Sync Det./Ins.:** Detects sync and provides a signal to the Timing Generator.
  - Timing Generator:** Generates various timing signals (WFCK, BCK, XBCK, WDCK, LRCK, MCCLK, PS4, RECK) and provides a clock to the SubQ Reader/Generator.
  - CLV Control:** Controls the CLV signal and provides a signal to the Sens. Control block.
  - Sens. Control:** Controls the SENS signal.
  - ADIP Decoder:** Decodes the ADIP signal and provides a signal to the EFM Modulator.
  - EFM Modulator:** Modulates the EFM signal and outputs to EFM0.
  - Encoder PLL:** Provides a clock to the Encode Clock Generator.
  - Encode Clock Generator:** Generates clocks for the Encode and Decode sections.
- System BUS:** Connects the internal blocks to external components like RAM, Audio Control, ECC Encoder/Decoder, and the CPU Command I/F.
- Output Section:**
  - Audio Control:** Outputs DTO, DTI, RAOF, C2PO, and MNT0-3.
  - ECC Encoder/Decoder:** Encodes and decodes error correction codes.
  - Timing Generator:** Outputs BCK, XBCK, WDCK, LRCK, MCCLK, PS4, and RECK.
  - SubQ Reader/Generator:** Reads and generates subcarrier signals.
  - Sub Q Processor:** Processes subcarrier signals and outputs SQSY.
  - Digital In/Out:** Interfaces with digital data (MD2, DODT, DOVF, DIDT, DOUT, DIN, DQSY, DIPD).
  - Peak Detect:** Detects signal peaks.
- External Interface:**
  - Clock Generator:** Provides XTAL, XTAO, MNCI, and MVCO.
  - CPU Command I/F:** Interfaces with a CPU using SCLK, XLAT, SWDT, SRDT, XRST, REC, and SYPL signals.



| No.  | Name     | I/O   | Function                                                                                      |
|------|----------|-------|-----------------------------------------------------------------------------------------------|
| 1    | FSW      | O (3) | Output to change output filter of disc motor. Set to "2" when CLV-P, and "L" in another mode. |
| 2    | MON      | O     | ON/OFF control output of disc motor. If "H", motor is turned on.                              |
| 3, 4 | MDP, MDS | O (3) | Servo control of disc motor                                                                   |
| 5    | EFMI     | I     | EFM input in playback mode                                                                    |
| 6    | ASY      | O     | EFM full swing output in playback mode                                                        |
| 7    | LOCK     | O     | Monitor of lock of disc motor servo (CLV). If "H", servo is locked.                           |
| 8    | VCOO     | O     | Analog PLL oscillation output (196 Fs = 8.6436 MHz) of EFM decoder                            |
| 9    | VCOI     | I     | Analog PLL oscillation output of EFM decoder                                                  |
| 10   | TEST1    | I     | Test pin (normal : GND)                                                                       |
| 11   | PDO      | O (3) | Analog PLL phase comparison output of EFM decoder.                                            |
| 12   | Vss      | –     | GND (digital)                                                                                 |
| 13   | EFMO     | O     | EFM output in recording mode                                                                  |
| 14   | ATER     | O     | ADIP CRC flag output. If "H", error is indicated.                                             |
| 15   | CNIN     | I     | Input of truck jump counting signal                                                           |
| 16   | SENS     | O (3) | Output terminal of internal status for address of serial bus                                  |
| 17   | SYPL     | I     | Input terminal to change polarity of SOSY, ADSY, DOSY, and MOSY. If "H", active is High.      |
| 18   | FIL0     | O (A) | Master PLL filter output for digital PLL                                                      |
| 19   | FIL1     | I     | Master PLL filter input for digital PLL                                                       |
| 20   | PCO      | O (3) | Master PLL phase comparison output for digital PLL.                                           |
| 21   | AVss     | –     | GND (analog)                                                                                  |
| 22   | CLTV     | I     | Master PLL VCO control voltage input for digital PLL                                          |
| 23   | AVdo     | –     | Power supply (analog)                                                                         |
| 24   | XRST     | I     | System reset input (active "L")                                                               |
| 25   | REC      | I     | "L" : decoder, "H" : encoder                                                                  |
| 26   | TEST8    | I     | Test pin (normal : GND)                                                                       |
| 27   | SCLK     | I     | Serial bus clock input                                                                        |
| 28   | XLAT     | I     | Serial bus latch input                                                                        |
| 29   | SWDT     | I     | Input of data written in serial bus                                                           |
| 30   | SRDT     | O (3) | Output of data read from serial bus                                                           |

## CIRCUIT DESCRIPTION

| No.     | Name         | I/O  | Function                                                                                           |
|---------|--------------|------|----------------------------------------------------------------------------------------------------|
| 31      | ADSY         | O    | ADIP sync output                                                                                   |
| 32      | SQSY         | O    | sub-code Q sync output                                                                             |
| 33      | VDD          | -    | Power supply (digital)                                                                             |
| 34      | DQSY         | O    | SYNC (SCOR) output of sub-code Q of U-bit CD format of digital-in                                  |
| 35      | TEST7        | O    | To be opened.                                                                                      |
| 36      | DTI          | I    | Audio signal input to be recorded                                                                  |
| 37      | DTO          | O(3) | Audio signal output to be played back. Impedance is heighten in recording mode.                    |
| 38      | C2PO         | O    | Playback : C2PO, D.REC : D.In-VFLAG, A.REC : 0*                                                    |
| 39      | BCK          | O    | 2.8224MHz output (MCLK section)                                                                    |
| 40      | XBCK         | O    | BCK inverting output (MCLK section)                                                                |
| 41      | LRCK         | O    | 44.1kHz (= Fs) (MCLK section)                                                                      |
| 42      | WDCK         | O    | 88.2kHz (MCLK section)                                                                             |
| 43      | FS4          | O    | 176.4kHz (MCLK section)                                                                            |
| 44      | GTOP         | O    | If "H", SYNC protection window is opened (INPUT EFM SYNC monitor output)*                          |
| 45      | XUGFS        | O    | If "L", unguarded frame SYNC (INPUT EFM SYNC monitor output)                                       |
| 46      | XPLCK        | O    | PLL clock output of EFM decoder (98Fs = 4.3218MHz)*                                                |
| 47      | GFS          | O    | "H" : frame sync OK (INPUT EFM SYNC monitor output)*                                               |
| 48      | EPDO         | O(3) | External PLL phase comparison output of EFM encoder (Freq. : Low→"H")                              |
| 49      | RFCK         | O    | 7.35kHz (MCLK section)                                                                             |
| 50, 51  | EVCI, EVCO   | I, O | External PLL oscillation (pin 50 : input, pin 51 : output) of EFM encoder (196Fs = 8.6436MHz)      |
| 52      | VSS          | -    | GND (digital)                                                                                      |
| 53      | MCLK         | O    | 22.5792MHz output. Duty is not guaranteed.                                                         |
| 54, 55  | XTAI, XTAO   | I, O | Xtal oscillation (pin 54 : input, pin 55 : output) (512Fs = 22.5792MHz)                            |
| 56      | TEST9        | I    | Fixed to "L".                                                                                      |
| 57, 58  | MVCI, MVCO   | I, O | Digital-in PLL oscillation (pin 57 : input, pin 58 : output) (512Fs = 22.5792MHz)                  |
| 59      | TEST2        | O    | To be opened.                                                                                      |
| 60      | DIPD         | O(3) | Digital-in PLL phase comparison output (Freq. : Low→"L")                                           |
| 61      | RAOF         | O    | RAM overflow output (Monitor output of decoder)*                                                   |
| 62 ~ 65 | MT3 ~ MT0    | O    | Monitor output of correcting condition in playback mode                                            |
| 66      | WFCK         | O    | 7.35kHz output (EFM decoder PLL system in playback mode, EFM encoder PLL system in recording mode) |
| 67      | DIN          | I    | Digital audio input                                                                                |
| 68      | MD2          | I    | ON/OFF terminal for digital audio-out. If "H", turned on.                                          |
| 69      | DOUT         | O    | Digital audio output                                                                               |
| 70      | DIDT         | O    | Audio data output terminal of digital audio input terminal                                         |
| 71      | DODT         | I    | 16-bit data input terminal for digital audio output                                                |
| 72      | DOVF         | I    | Validity flag input terminal for digital audio output                                              |
| 73      | VDD          | -    | Power supply (digital)                                                                             |
| 74      | TEST3        | I    | Fixed to "L".                                                                                      |
| 75      | TEST4        | O    | To be opened.                                                                                      |
| 76, 77  | TEST5, TEST6 | I    | Fixed to "L".                                                                                      |
| 78      | FMCK         | I    | Clock input for reading ADIP (6.3kHz) (TTL Schmidt input)                                          |
| 79      | FMDT         | I    | ADIP data input (TTL Schmidt input)                                                                |
| 80      | ADFG         | I    | ADIP carrier signal input (22.05kHz) (TTL Schmidt input)                                           |

- \*Notes
- XUGFS is the frame SYNC, which is a negative pulse, obtained from the EFM signal. A signal before SYNC protection.
  - PLL of XPLCK is so made that the inverting edge and falling edge of the EFM PLL clock will be matched to the changing point of the EFM signal.
  - The GFS signal is set to "H" when the frame SYNC is matched to the internal protection timing.
  - C2PO is a signal to indicate an error of the data.
  - RAOF is generated when the 32k RAM exceeds the jitter margin of  $\pm 4\%$ .

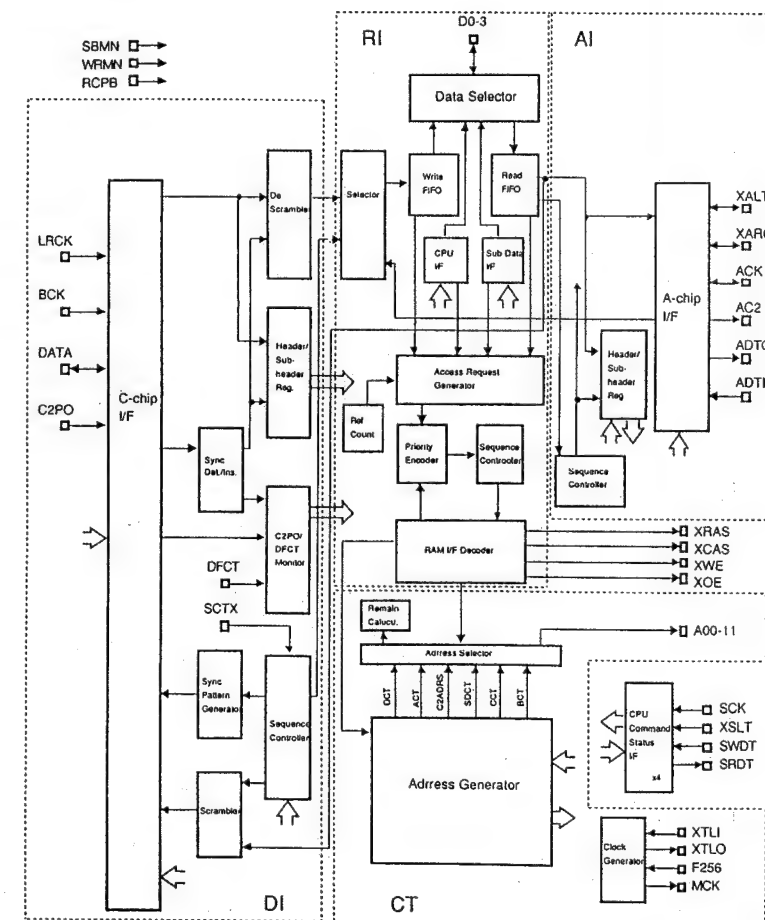
## CIRCUIT DESCRIPTION

## 12. Sound Skip Guard Memory Controller : CXD2526Q (X32-, IC8)

## 12-1. Outline

CXD2526Q is a memory controller used to make up a sound skip guard memory control. This device controls encoding and decoding, main data, C2PO data, sub data, system data for  $\mu$ -com, and external input/output status of MD-formatted signals.

## 12-2. Block diagram





## CIRCUIT DESCRIPTION

## 13. ATRAC Encoder/Decoder : CXD2527R (X32-, IC10 · IC11)

## 13-1. Outline

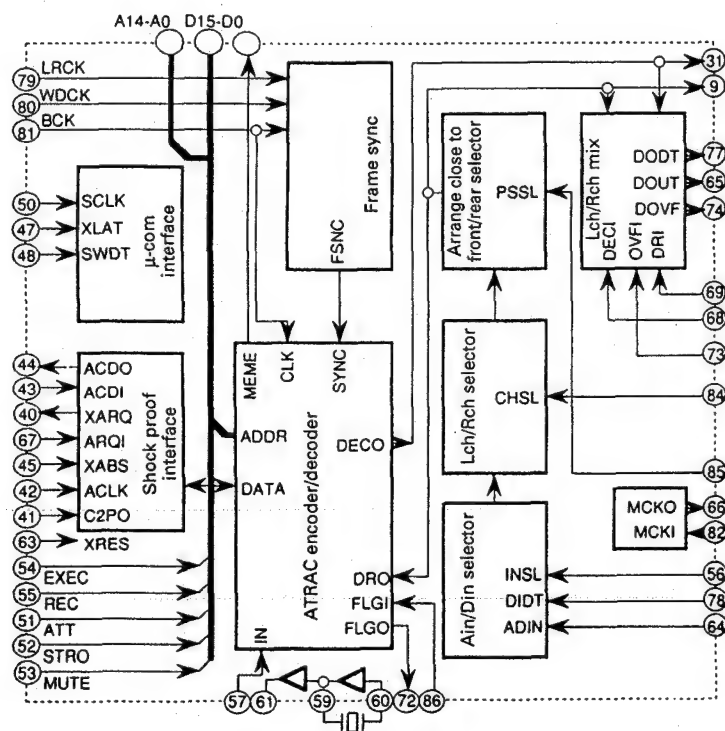
CXD2527R is an LSI which processes the sound compressing technology ATRAC (Adaptive Transform Acoustic Coding) of the mini-disc recorder.

This LSI has A/D and D/A converter interfaces. If it is combined with the mini-disc encoder/decoder processing LSI CXD2525Q and the shock-proof control LSI CXD2526Q, it can compress and expand the band in real time.

## 13-2. Features

- One chip performs ATRAC processing of one channel.
- Applicable various settings by using the serial and parallel microcomputer interfaces.
- Applicable various A/D and D/A converters by using the serial audio interface.
- Applicable to processing errors of playback data.

## 13-3. Block diagram



## CIRCUIT DESCRIPTION

## 13-4. Pin function (All the input terminals, except the pin 60 "X1", are compatible with TTL.)

| No.     | Name     | I/O/T | Function                                                              |
|---------|----------|-------|-----------------------------------------------------------------------|
| 1 ~ 6   | D5 ~ D0  | I/O/T | Connected to GND.                                                     |
| 7       | Vcc      | -     | +5V power supply                                                      |
| 8       | RSVD     | I     | Chip reserve terminal. Connect to power supply.                       |
| 9       | DRO      | I/O   | Encoder input monitor terminal.                                       |
| 10      | RSVD     | I/O/T | Chip reserve terminal. Connect to GND.                                |
| 11 ~ 17 | A0 ~ A6  | I/O/T | Connected to GND.                                                     |
| 18      | GND      | -     | Connected to GND.                                                     |
| 19 ~ 24 | A7 ~ A12 | I/O/T | Connected to GND.                                                     |
| 25      | GND      | -     | GND (+5V)                                                             |
| 26      | Vcc      | -     | +5V power supply                                                      |
| 27, 28  | A13, A14 | O/T   | To be opened.                                                         |
| 29      | RSVD     | I     | Chip reserve terminal. Connect to power supply.                       |
| 30      | RSVD     | I/O/T | Chip reserve terminal. Connect to GND.                                |
| 31      | DECO     | O/T   | Decoding output in playback mode. Connect to DECI of another channel. |
| 32      | RSVD     | O/T   | Chip reserve terminal. To be opened.                                  |
| 33      | RSVD     | I/O/T | Chip reserve terminal. Connect to GND.                                |
| 34      | MEME     | I/O/T | Enable of external memory. Connect to GND.                            |
| 35, 36  | RSVD     | I/O/T | Chip reserve terminal. Connect to GND.                                |
| 37      | GND      | -     | GND                                                                   |
| 38, 39  | Vcc      | -     | +5V power supply                                                      |
| 40      | XARQ     | O     | Request of data transfer from CXD2526Q (Transfer is requested : 'L')  |
| 41      | C2PO     | I     | Error status of input data from CXD2526Q (Error : 'H')                |
| 42      | ACLK     | I     | Serial transfer clock (128fs) for CXD2526Q                            |
| 43      | ACDI     | I     | Data input from CXD2526Q (Synchronized with rise of ACLK)             |
| 44      | ACDO     | O/T   | Data output for CXD2526Q (Synchronized with rise of ACLK)             |
| 45      | XABS     | I     | Synchronizing pulse for serial transfer to CXD2526Q                   |
| 46      | RSVD     | O/T   | Chip reserve terminal. To be opened.                                  |
| 47      | XLAT     | I     | Latch pulse of serial $\mu$ -com command                              |
| 48      | SWDT     | I     | Serial $\mu$ -com command (Synchronized with rise of SCLK)            |
| 49      | Vcc      | -     | +5V power supply                                                      |
| 50      | SCLK     | I     | Transfer clock of $\mu$ -com commands and status                      |
| 51      | ATT      | I     | Attenuation command (ATT ON : 'H')                                    |
| 52      | STRO     | I     | Stereo/Monaural command (Stereo : 'L')                                |

| No.     | Name     | I/O/T | Function                                                                   |
|---------|----------|-------|----------------------------------------------------------------------------|
| 53      | MUTE     | I     | Mute command (REC : 'H')                                                   |
| 54      | EXEC     | I     | Start/Stop command (Start : 'H')                                           |
| 55      | REC      | I     | Recording/Playback command (Recording when 'High')                         |
| 56      | INSL     | I     | Recording input command (DIDT : 'H', ADIN : 'L')                           |
| 57      | XTAI     | I     | Master clock                                                               |
| 58      | GND      | -     | GND (0V)                                                                   |
| 59      | XO       | O     | Quartz oscillation output.                                                 |
| 60      | XI       | I     | Quartz oscillation input. Connect to ground when unused.                   |
| 61      | XTAO     | O     | Master clock output. Connect to XTAI of current channel/another channel.   |
| 62      | Vcc      | -     | +5V power supply                                                           |
| 63      | XRES     | I     | Reset (Reset : 'L')                                                        |
| 64      | ADIN     | I     | Analog recording input (Connect A/D converter output)                      |
| 65      | DOUT     | O     | Monitor output (Connect to D/A converter input)                            |
| 66      | MCKO     | O     | 256fs (11.9826MHz) clock output                                            |
| 67      | ARQI     | I     | XARQ input of another channel.                                             |
| 68      | DECI     | I     | DECO input of another channel.                                             |
| 69      | DRI      | I     | DOVT input of another channel.                                             |
| 70, 71  | RSVD     | O/T   | Chip reserve terminal. To be opened.                                       |
| 72      | FLGO     | O     | Flag for synchronizing two channels. Connect FLGI of another channel.      |
| 73      | OVFI     | I     | DOVF input of another channel.                                             |
| 74      | DOVF     | O     | Validity flag                                                              |
| 75      | GND      | -     | GND (0V)                                                                   |
| 76      | Vcc      | -     | +5V power supply                                                           |
| 77      | DODT     | O     | Digital-out modulation output to CXD2525Q                                  |
| 78      | DIDT     | I     | Digital recording input (Connect DIDT of CXD2525Q)                         |
| 79      | LRCK     | I     | 44.1kHz (fs)                                                               |
| 80      | WDCK     | I     | 88.2kHz (fs)                                                               |
| 81      | BCK      | I     | 2.8224MHz (64fs)                                                           |
| 82      | MCKI     | I     | 22.5792MHz (512fs) Connected to GND when not use                           |
| 83      | Vcc      | -     | +5V power supply                                                           |
| 84      | CHSL     | I     | L/R channel command ('H' : Lch)                                            |
| 85      | PSSL     | I     | Command to arrange ADIN close to front/rear (Arranged close to rear : 'H') |
| 86      | FLGI     | I     | FLGO input of another channel.                                             |
| 87, 88  | GND      | -     | GND (0V)                                                                   |
| 89 ~ 96 | D15 ~ D8 | I/O/T | Connected to GND                                                           |
| 97      | Vcc      | -     | +5V power supply                                                           |
| 98      | GND      | -     | GND (0V)                                                                   |
| 99, 100 | D7, D6   | I/O/T | Connected to GND                                                           |

## CIRCUIT DESCRIPTION

## 14. ILD (Laser Current) Sensing Unit (X25-)

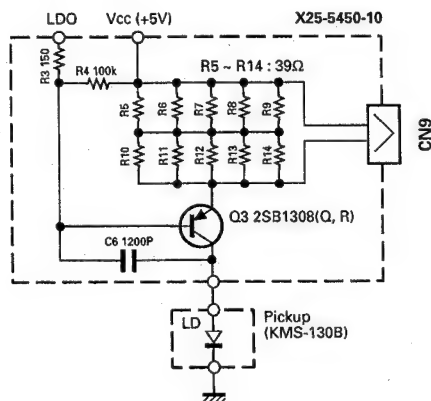
The current for generating laser is controlled by Q3. This is obtained from CN9 as the voltage over both end of the resistors R5 - R14.

$$ILD(A) = VCN(V)/15.6$$

ILD : Laser current

VCN : Voltage at CN9

Normally, the ILD (current) value is conformed to the value printed on the pickup when the laser emission power is 6.85mW. The current increases as laser unit is deteriorated. It is judged that the laser unit has reached the end of its life when the current increases 20%.



## ADJUSTMENT

| No. | ITEM                                        | INPUT SETTING                                                           | OUTPUT SETTING                                                  | PLAYER SETTING                                                                                                                                                             | ALIGNMENT POINT    | ALIGN FOR                                    | FIG. |
|-----|---------------------------------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------|------|
| 1   | RECORDING POWER ADJUSTMENT OF MAGNETIC HEAD | —                                                                       | Connect a DC voltmeter over Q12 (E) and GND.                    | STOP or PLAY                                                                                                                                                               | HD. DRV. PWR. VR12 | DC +4V                                       |      |
| 2   | PLL VCO                                     | Input digital signal of 44.1kHz for sampling to optical input terminal. | Connect a DC voltmeter over Q18 (C) and GND.                    | Set to MONITOR ON (Remote controller), RECORDING, INPUT SELECTOR : OPT.                                                                                                    | DIN PLL L1         | DC +2.5V                                     |      |
| 3   | READING LASER POWER ADJUSTMENT              | —                                                                       | Apply sensor of optical power meter over laser and pickup-lens. | Short TEST pin to GND and turn POWER on, then select TEST MODE. "TEST" blinks for a while, then "TEST OK" is indicated. Push ►► key to confirm that "TEST 1" is indicated. | APC VR1            | 0.68mW ± 0.02mW                              |      |
| 4   | RECORDING LASER POWER ADJUSTMENT            | —                                                                       | Apply sensor of optical power meter over laser and pickup-lens. | Push ◀◀ key to confirm that "TEST 2 MIN" ◀◀ is indicated. Then, "TEST 2 MAX." and "TEST 2 MIN" is selected alternately each time key is pushed.                            | TEMP VR2           | 0.68mW ± 0.2mW<br>"TEST 2 MAX" is indicated. |      |
| 5   | FOCUS OK OFFSET                             | —                                                                       | Connect a DC voltmeter over CN8-4 (ABCD) and GND.               | Push STOP key and confirm "TEST OK" is displayed.                                                                                                                          | FOK OFST VR3       | DC = 0 ± 50mV                                |      |
| 6   | FOCUS OFFSET                                | —                                                                       | Connect a DC voltmeter over CN7-2 (FE1) and GND.                | Push STOP key and confirm "TEST OK" is displayed.                                                                                                                          | FOFST VR4          | DC = 0 ± 50mV                                |      |
| 7   | PIT TRACKING OFFSET                         | —                                                                       | Connect a DC voltmeter over CN7-6 (TE1) and GND.                | Push TRACK DELETE key. Each time it is pushed, "TEST 5G" and "TEST 5P" is indicated alternately. Confirm that "TEST 5P" is indicated.                                      | PIT TOF VR5        | DC = 0 ± 50mV                                |      |
| 8   | GROOVE TRACKING OFFSET                      | —                                                                       | Connect a DC voltmeter over CN7-6 (TE1) and GND.                | Push TRACK DELETE key and confirm "TEST 5G" is displayed.                                                                                                                  | GRV TOF VR6 (VR7)* | DC = 0 ± 50mV                                |      |
| 9   | PIT TRACKING BALANCE                        | PRE-MASTERED DISC                                                       | Connect an oscilloscope over CN7-6 (TE1) and GND.               | Set pre-mastered disc. After "TEST OK" is indicated, push PLAY key. After "TEST 3 ON" is indicated, push PAUSE key, and "TEST 3 OFF" is indicated.                         | PIT T.B VR7 (VR6)* | Symmetry between upper or lower or DC ± 0.1V |      |

NOTE: (\*) = DM-1001

## ADJUSTMENT

| No. | ITEM                    | INPUT SETTING                                                        | OUTPUT SETTING                                                                         | PLAYER SETTING                                                                                                                                   | ALIGNMENT POINT    | ALIGN FOR                                        | FIG. |
|-----|-------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------|------|
| 10  | GROOVE TRACKING BALANCE | RECORDABLE DISC                                                      | Connect an oscilloscope over CN7-6 (TE1).                                              | Set recordable disc. After "TEST OK" is indicated, push PLAY key. After "TEST 3 ON" is indicated, push PAUSE key, and "TEST 3 OFF" is indicated. | GRV T.B VR8        | Symmetry between upper or lower or DC $\pm 0.1V$ |      |
| 11  | FOCUS BIAS              | RECORDABLE DISC                                                      | Connect an oscilloscope over CN7-1 (RF).                                               | Set a recordable disc. After "TEST OK" is indicated, push PLAY key. Confirm that "TEST 3 ON" is indicated.                                       | F. BIAS VR9        | Eye pattern is at maximum and best.              |      |
| 12  | FOCUS GAIN              | RECORDABLE DISC<br>Apply signal of 1.0kHz, 100m Vrms to CN7 pin 2-3. | Connect a L.P.F. to CN7 pin 2-3 to which connect an oscilloscope or two AC voltmeters. | Set a recordable disc. After "TEST OK" is indicated, push PLAY key. Confirm that "TEST 3 ON" is indicated.                                       | F. GAIN VR10       | Two VTVMs should read the same value.            |      |
| 13  | TRACKING GAIN           | RECORDABLE DISC<br>Apply signal of 1.0kHz, 100m Vrms to CN7 pin 5-6. | Connect a L.P.F. to CN7 pin 5-6 to which connect an oscilloscope or two AC voltmeters. | Set a recordable disc. After "TEST OK" is indicated, push PLAY key. Confirm that "TEST 3 ON" is indicated.                                       | TRACKING GAIN VR11 | Two VTVMs should read the same value.            |      |

## (Note)

- REPEAT KEY ... TEST MODE canceled
-  KEY ... ALL OFF
-  KEY ... ALL ON
- TITLE KEY ... Cluster point is indicated

## ADJUSTMENT

## Laser power set

Laser power when playing high reflectance disc (PIT) and low reflectance (GROOVE) depends on D.TYPE switch (S1). When recording, laser power depends on TOC information.

| Mode                             | APC REF (IC1 20pin) | Laser power | D.type SW (S1)             |
|----------------------------------|---------------------|-------------|----------------------------|
| High reflectance disc (playback) | 0.18V               | 0.34mW      | ON                         |
| Low reflectance disc (playback)  | 0.35V               | 0.68mW      | OFF                        |
| Recordable disc (recording) min. | 1.73V               | 3.4mW       | OFF                        |
| Recordable disc (recording) max. | 3.27V               | 6.8mW       | Laser power depends on TOC |

Control by  $\mu$ -com

RF switches are set by the kind of disc and track.

RFSW1 (1 : Track is PIT, 0 : Track is GROOVE)

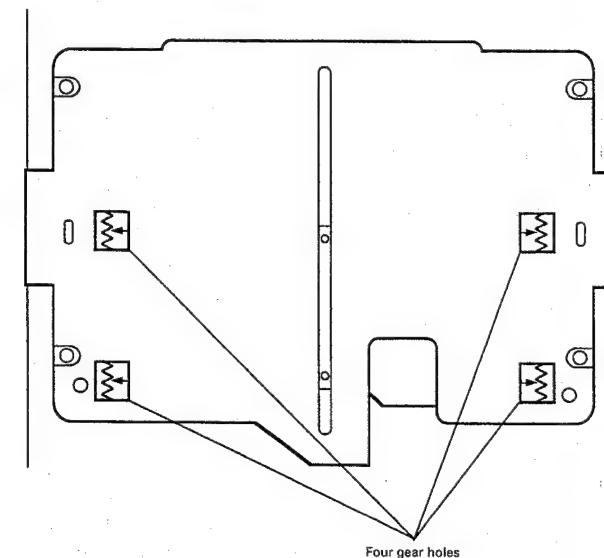
RFSW0 (1 : High reflectance disc, 0 : Low reflectance disc)

| Mode                                 | RFSW1 (IC1 38pin) | RFSW0 (IC1 37pin) |
|--------------------------------------|-------------------|-------------------|
| Groove area of recordable disc       | 0                 | 0                 |
| PIT area of recordable disc          | 1                 | 0                 |
| High reflectance disc (Pre-mastered) | 1                 | 1                 |

## Adjustment of Tray Gear

Stop the tray at the center as shown below while it is opening or closing, then adjust the gear position so that all the arrows can be seen at the center through the four holes (on the top).

The gear of the tray does not go out of the position during the normal opening operation. If only one tooth of it is shifted, however, during servicing, the tray may not open normally. Accordingly, be sure to set the gear correctly.



## ADJUSTMENT

### Laser power set

Laser power when playing high reflectance disc (PIT) and low reflectance (GROOVE) depends on D.TYPE switch (S1). When recording, laser power depends on TOC information.

| Mode                             | APC REF<br>(IC1 20pin) | Laser<br>power | D.type<br>SW (S1)          |
|----------------------------------|------------------------|----------------|----------------------------|
| High reflectance disc (playback) | 0.18V                  | 0.34mW         | ON                         |
| Low reflectance disc (playback)  | 0.35V                  | 0.68mW         | OFF                        |
| Recordable disc (recording) min. | 1.73V                  | 3.4mW          | OFF                        |
| Recordable disc (recording) max. | 3.27V                  | 6.8mW          | Laser power depends on TOC |

### Control by $\mu$ -com

RF switches are set by the kind of disc and track.

RFSW1 (1 : Track is PIT, 0 : Track is GROOVE)

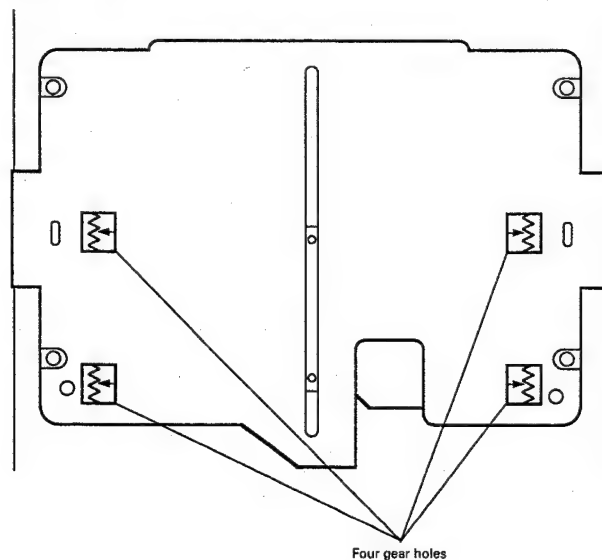
RFSW0 (1 : High reflectance disc, 0 : Low reflectance disc)

| Mode                                | RFSW1<br>(IC1 38pin) | RFSW0<br>(IC1 37pin) |
|-------------------------------------|----------------------|----------------------|
| Groove area of recordable disc      | 0                    | 0                    |
| PIT area of recordable disc         | 1                    | 0                    |
| High reflectance disc (Premastered) | 1                    | 1                    |

### Adjustment of Tray Gear

Stop the tray at the center as shown below while it is opening or closing, then adjust the gear position so that all the arrows can be seen at the center through the four holes (on the top).

The gear of the tray does not go out of the position during the normal opening operation. If only one tooth of it is shifted, however, during servicing, the tray may not open normally. Accordingly, be sure to set the gear correctly.

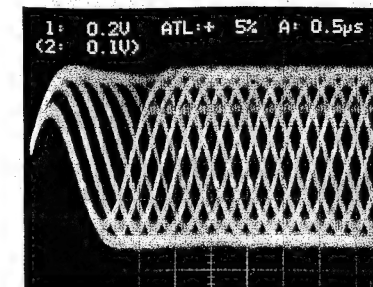


## ADJUSTMENT

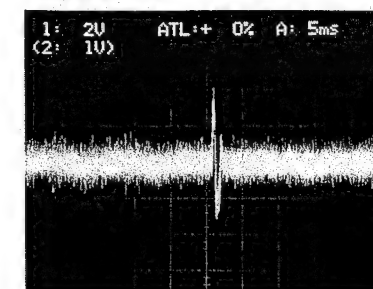
### Waveforms

Premastered disc (playback disc)

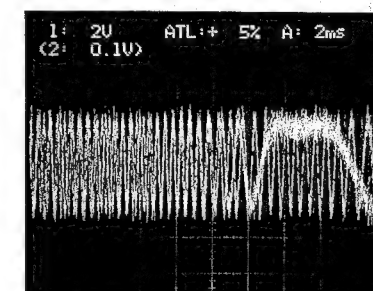
• Eye pattern



• Tracking error

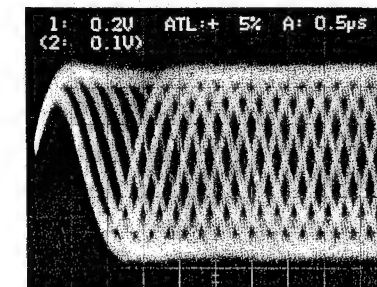


• Tracking error balance

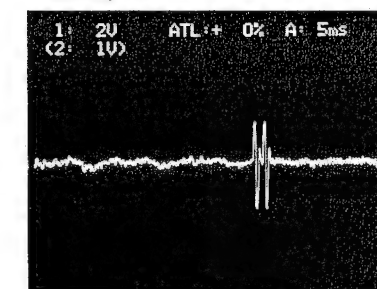


Premastered disc (Recording disc)

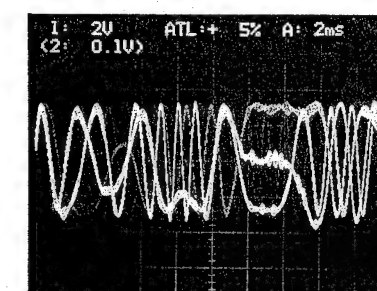
• Eye pattern



• Tracking error

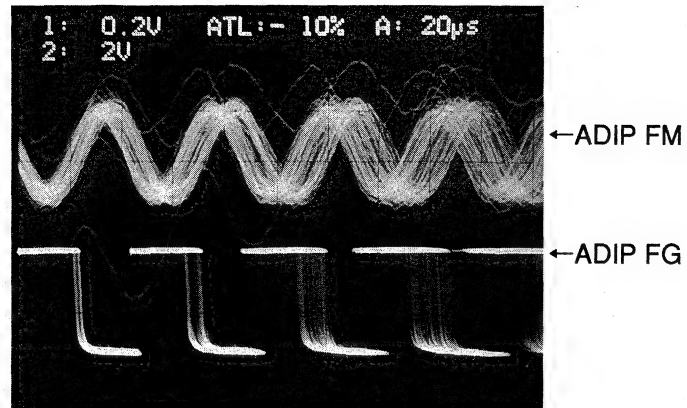


• Tracking error balance

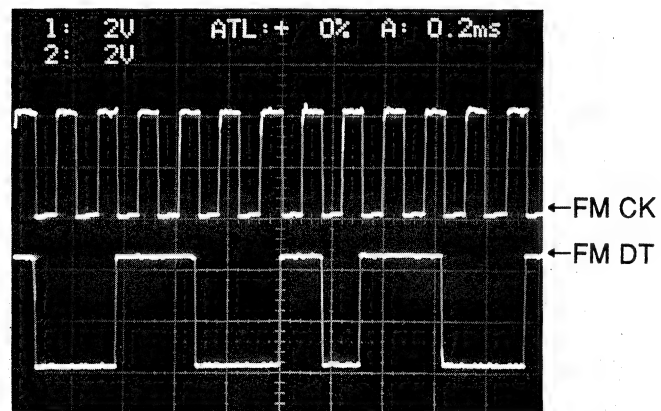


# ADJUSTMENT

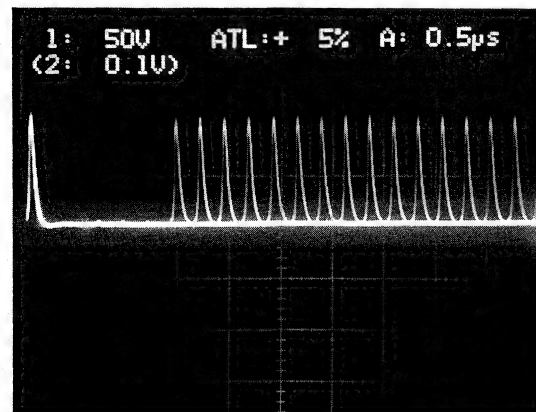
## • ADIP signal ① (Recordable disc only)



## • ADIP signal ② (Recordable disc only)



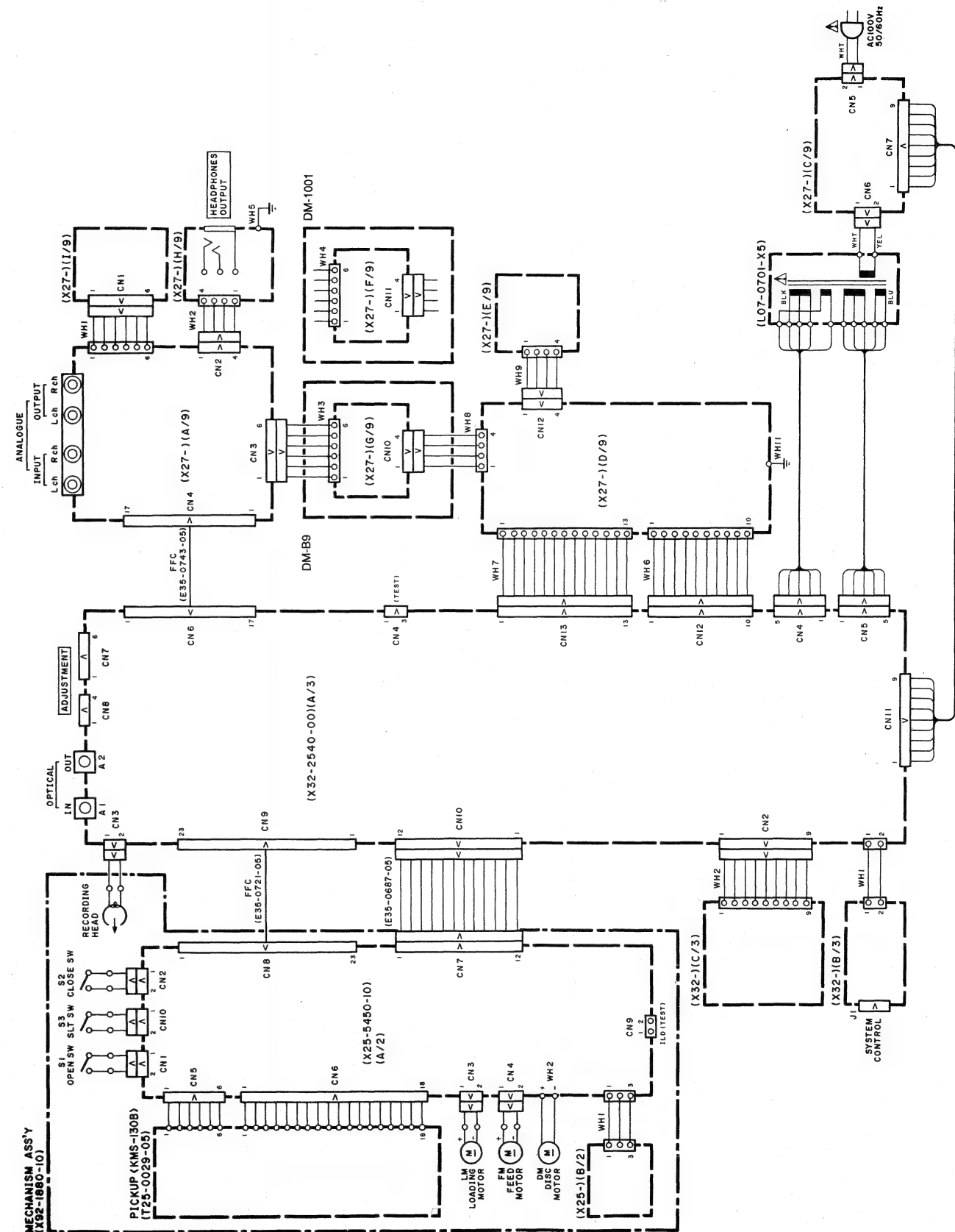
## •Recording head (CN3)



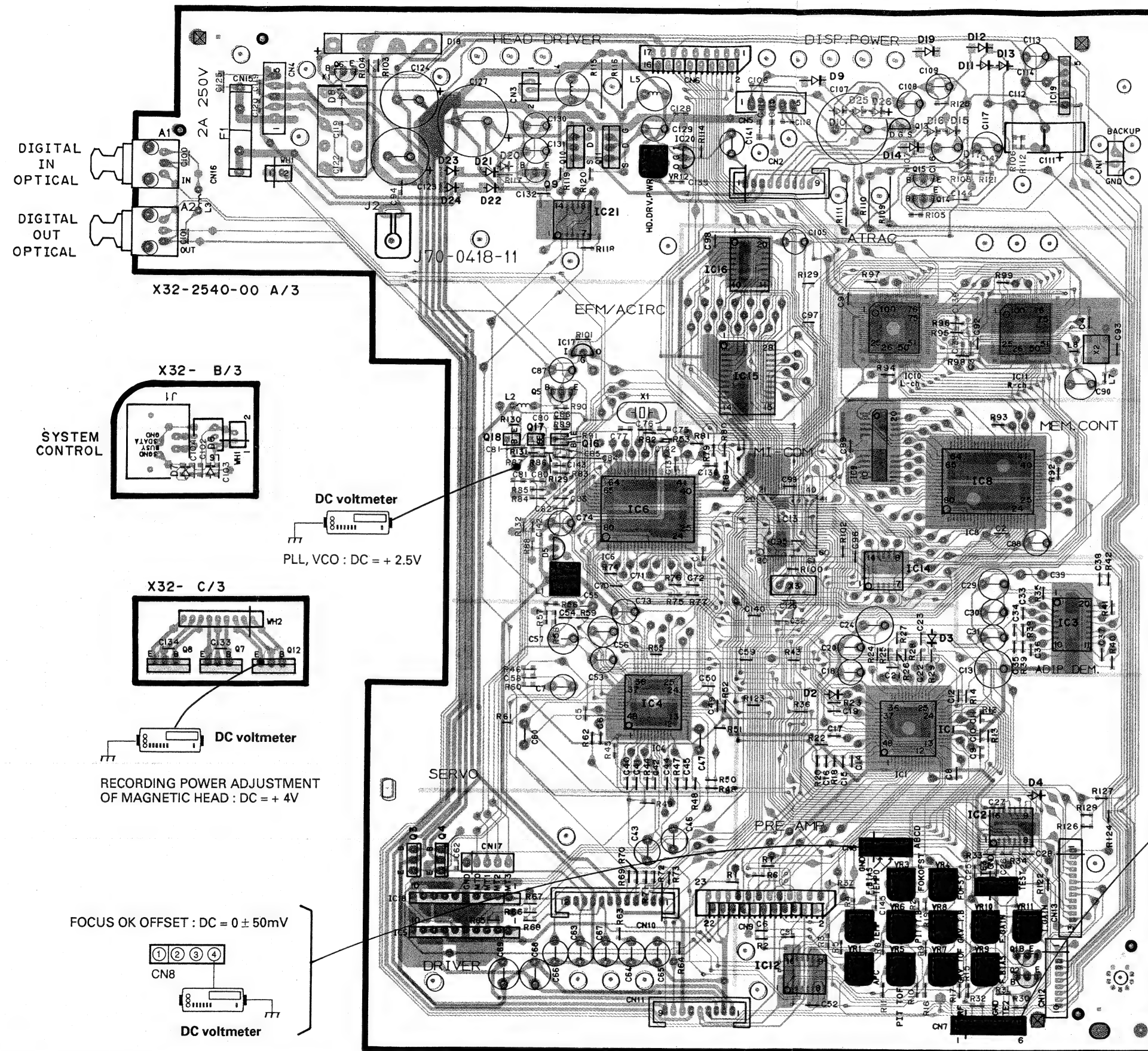
DM-1001/B9

DM-1001/B9

# WIRING DIAGRAM



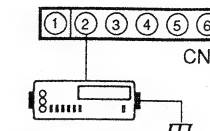
# PC BOARD (COMPONENT SIDE VIEW)



■ : Component side  
 ■ : Foil side

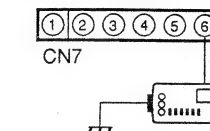
Refer to the schematic diagram for the values of resistors and capacitors.

FOCUS OFFSET : DC =  $0 \pm 50\text{mV}$



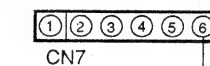
DC voltmeter

PIT TRACKING OFFSET and  
 GROOVE TRACKING OFFSET : DC =  $0 \pm 50\text{mV}$



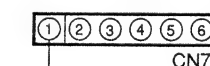
DC voltmeter

PIT TRACKING BALANCE and  
 GROOVE TRACKING BALANCE  
 : Symmetry between upper or lower or DC =  $\pm 0.1\text{V}$



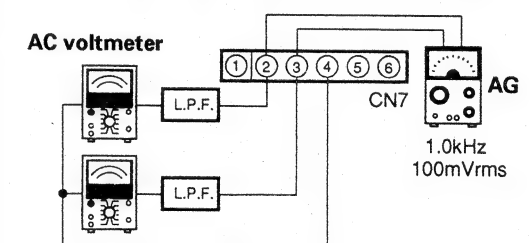
Oscilloscope

FOCUS BIAS : Eye pattern is at maximum and best.

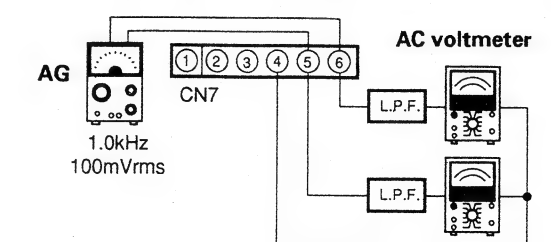


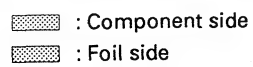
Oscilloscope

FOCUS GAIN : Two VTVMs should read the same value.

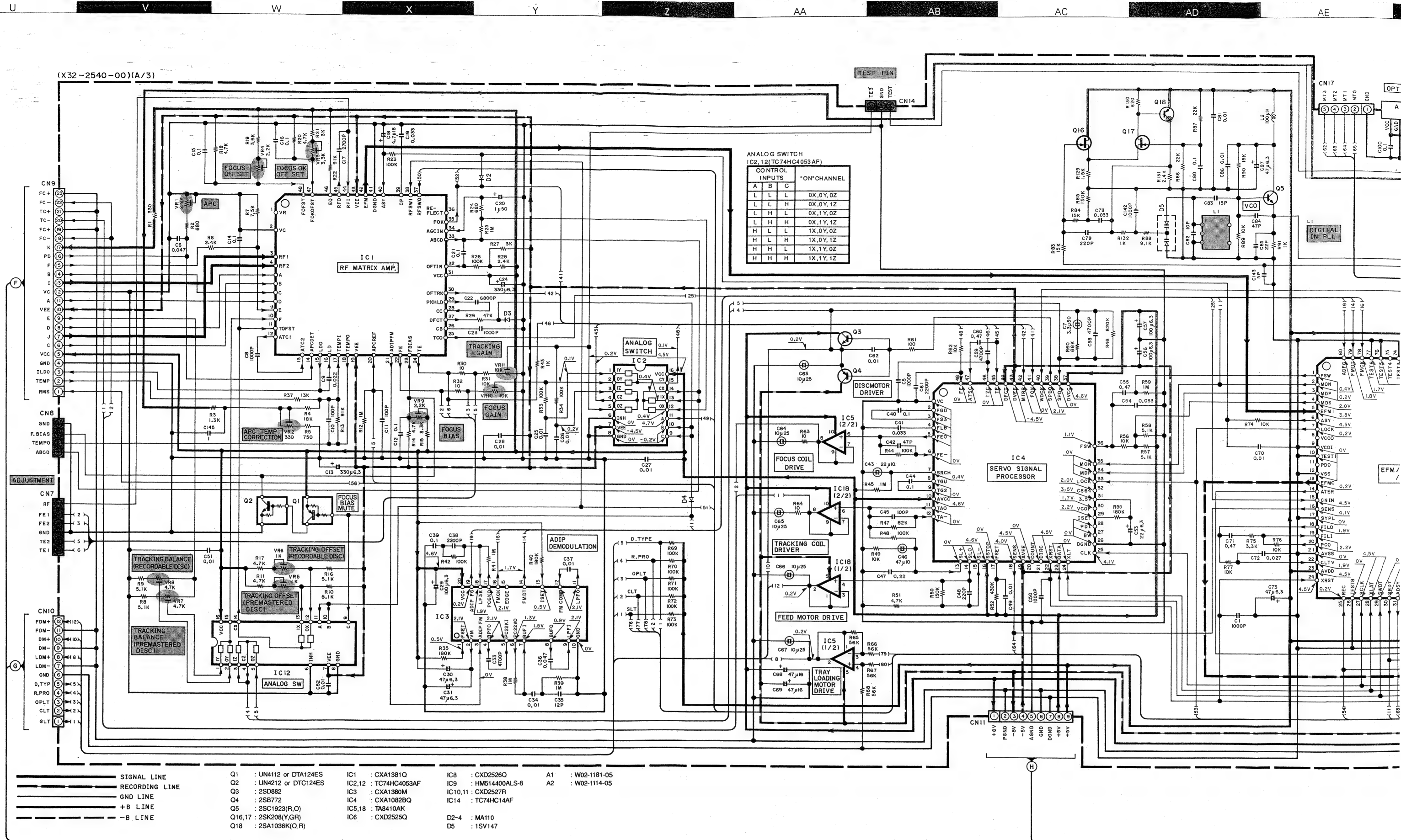


TRACKING GAIN : Two VTVMs should read the same value.



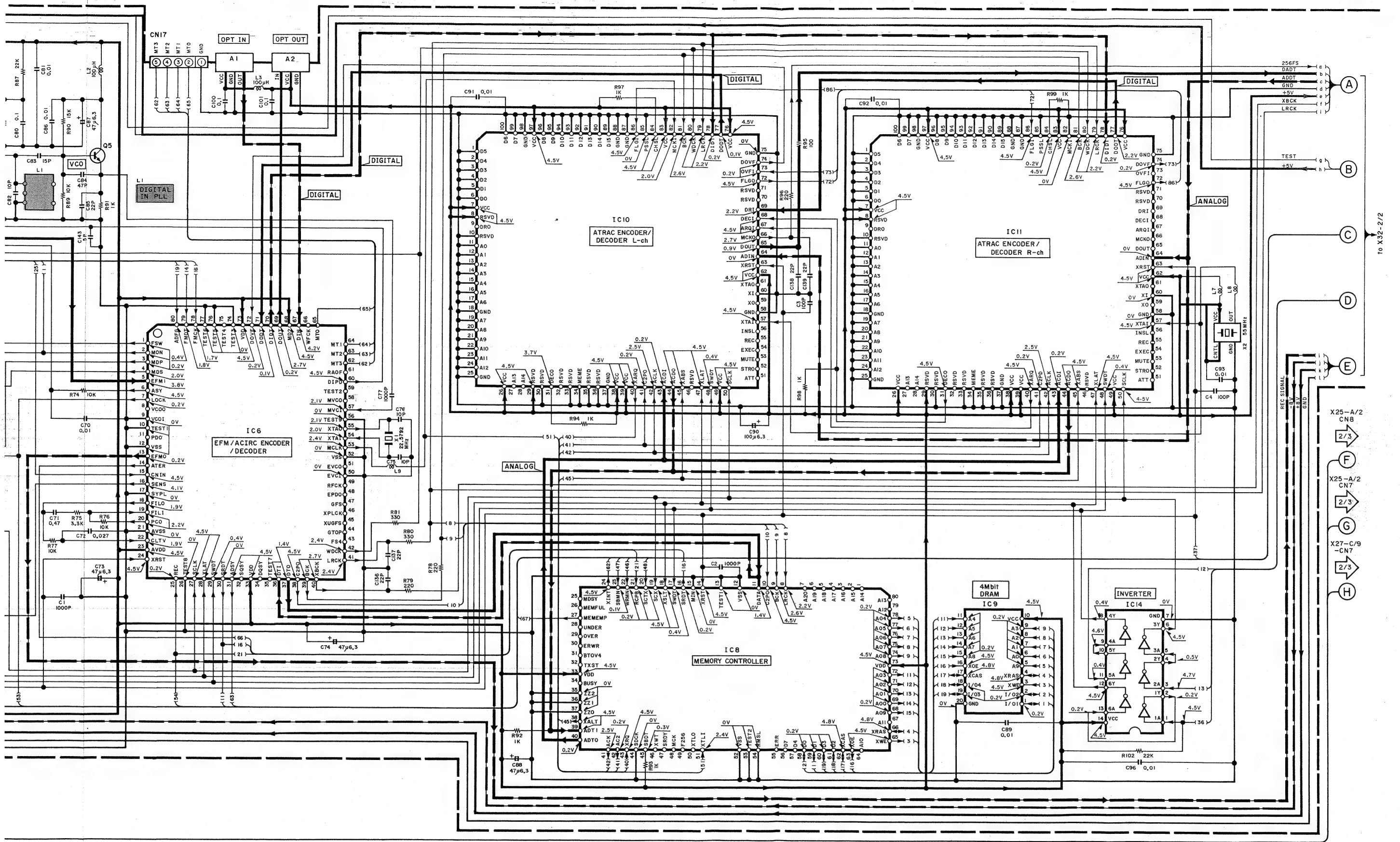


45



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

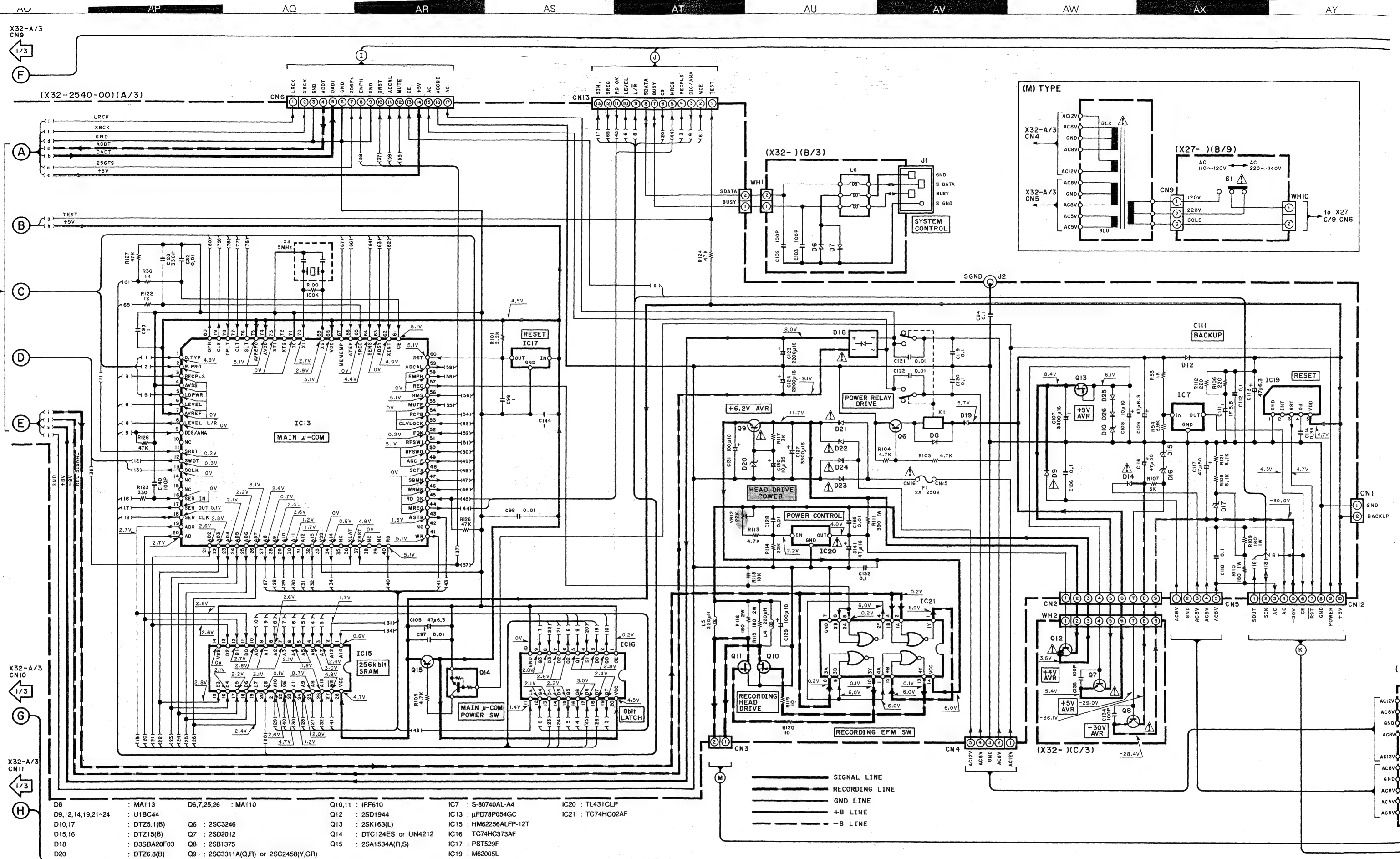
• DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

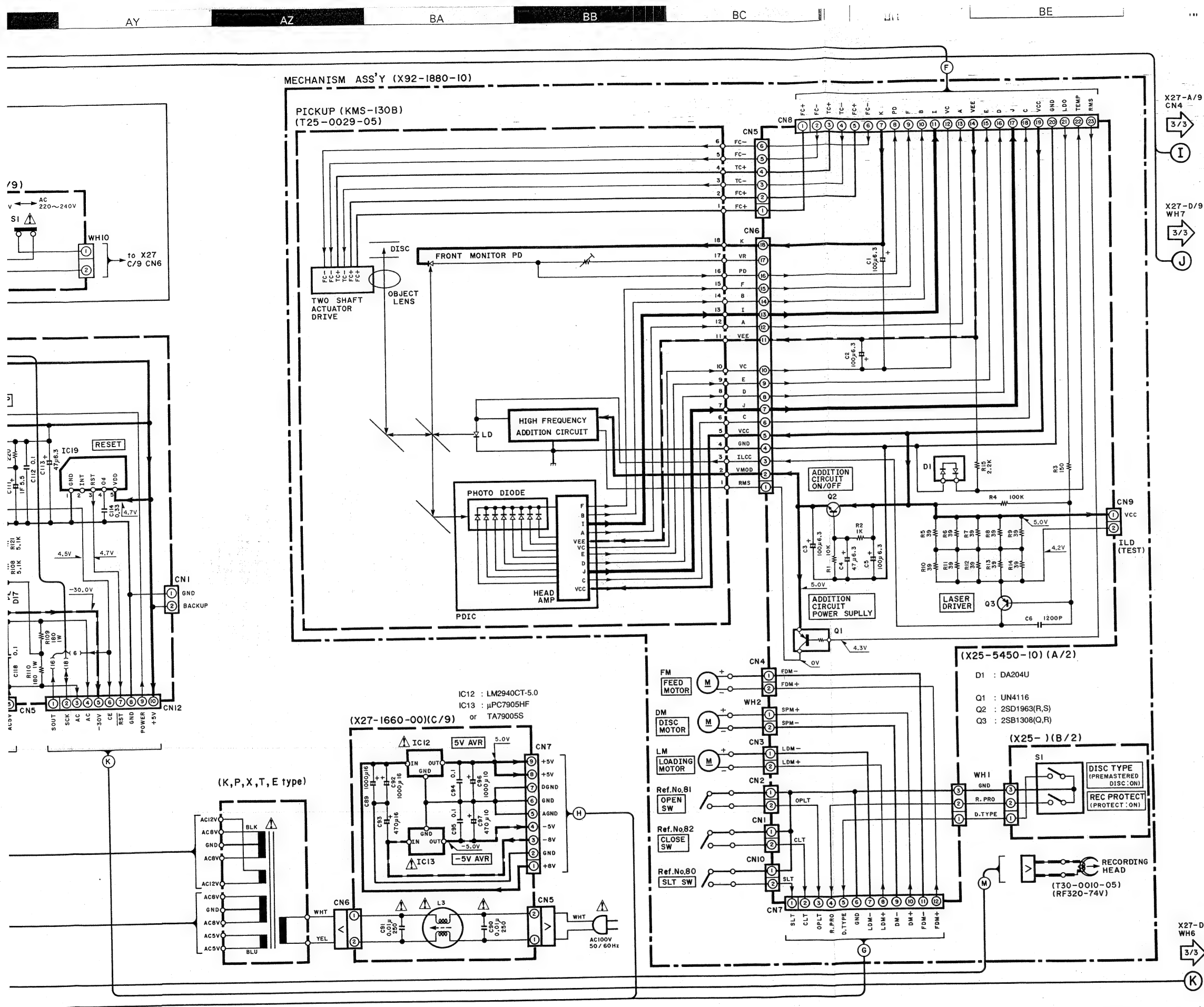


DM-B9/1001(J)(1/3)

**DM-1001/B9**  
**KENWOOD**

Y22-3412-71





2SA1534A  
2SC1923  
2SC2878  
2SC3246

2SB772  
2SD882

DTA124ES UN4116  
DTC124ES 2SC2458  
UN4112

DTA124EU  
2SA1036K  
2SC4081

2SB1308

2SD1963

2SB1370  
2SD1944  
2SD2061

UN4212  
UN4219  
2SC3311A

2SB1375  
2SD2012

M62005L

TA8410AK

NJM4558M  
NJM4565M

LM2940CT-5.0

2SK163

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

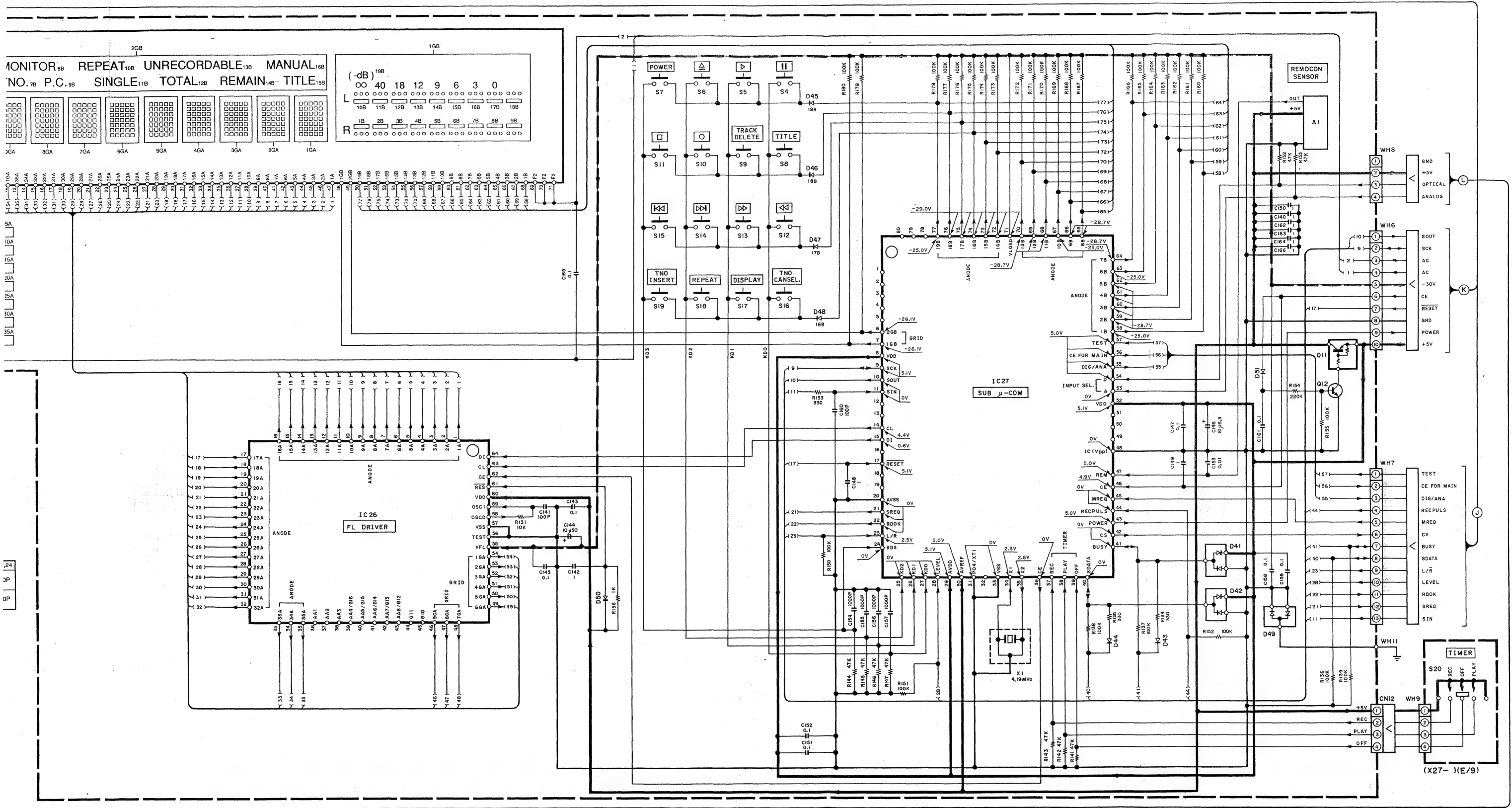
• DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

**DM-1001/B9**  
**KENWOOD**

DM-B9/1001(J) (2/3)

Y22-3412-71

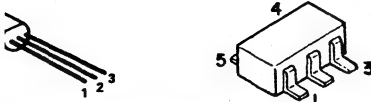




DM-B9/1001(J)(3/3)

529F

TC7S04F



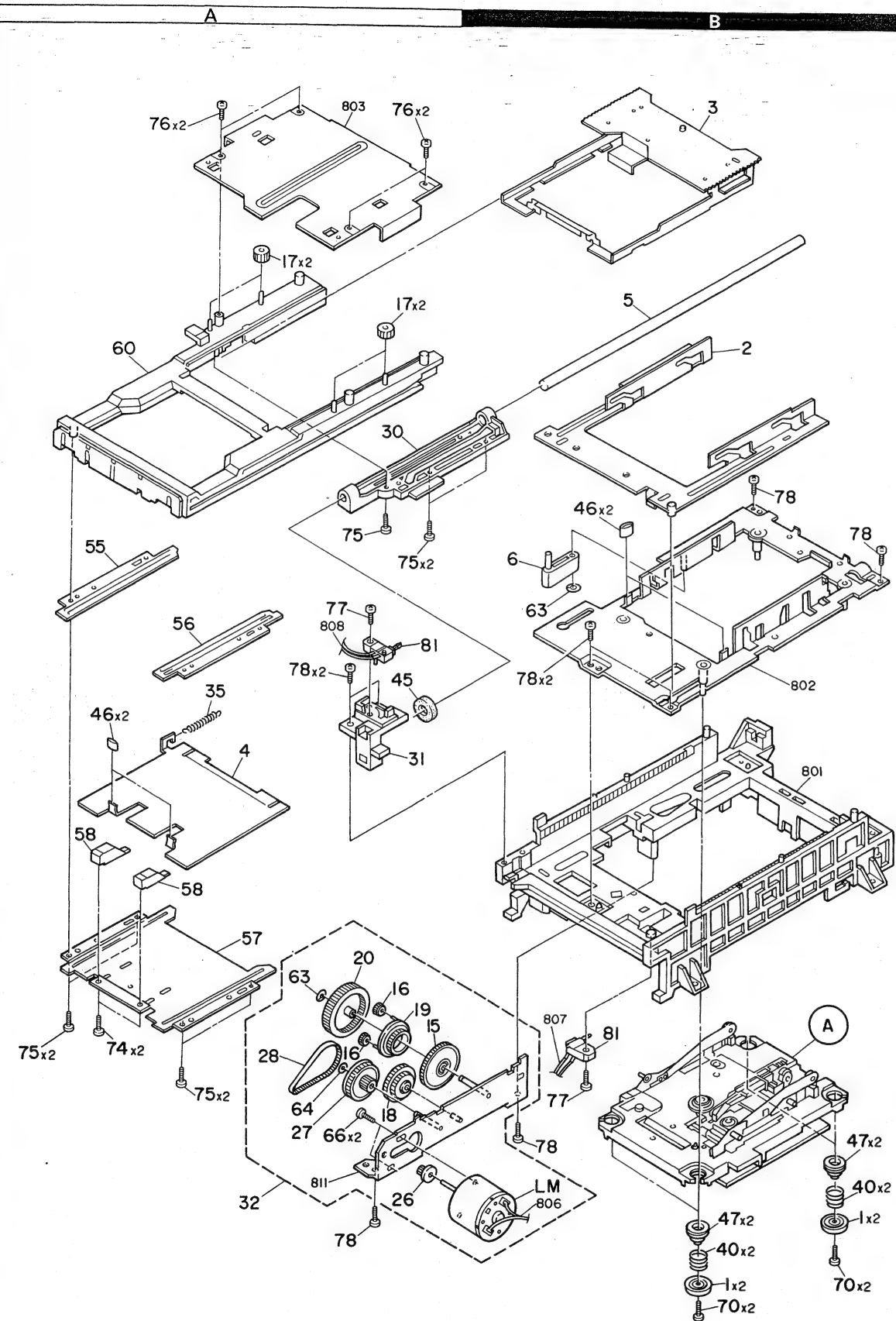
**CAUTION:** For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list).  $\Delta$  Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts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

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

Y22-3412-71

**DM-1001/B9**  
**KENWOOD**

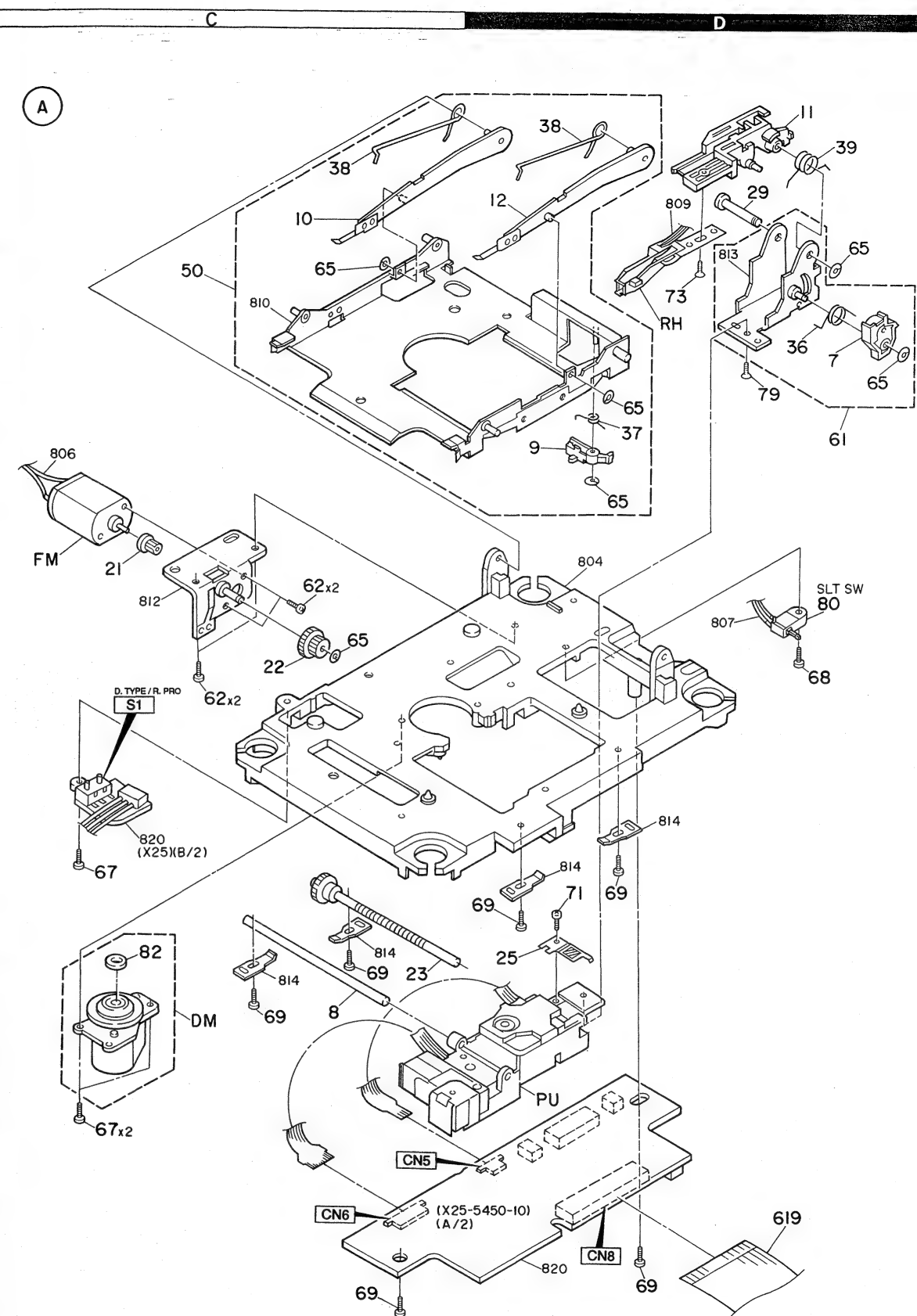
## EXPLODED VIEW (MECHANISM)



DM-B9/1001 (1/2)

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

## EXPLODED VIEW (MECHANISM)

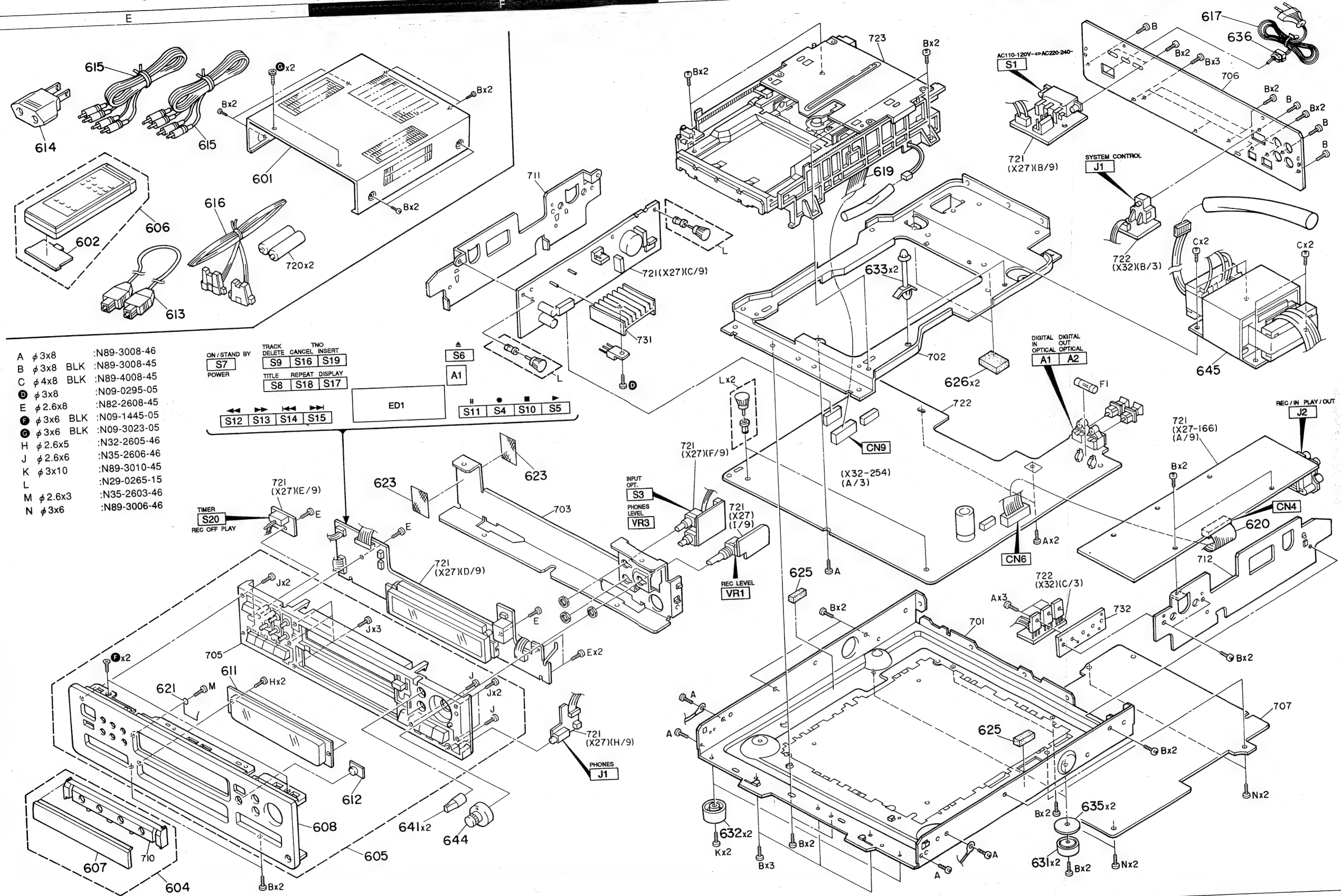


DM-B9/1001 (2/2)

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

# DM-1001/B9 DM-1001/B9

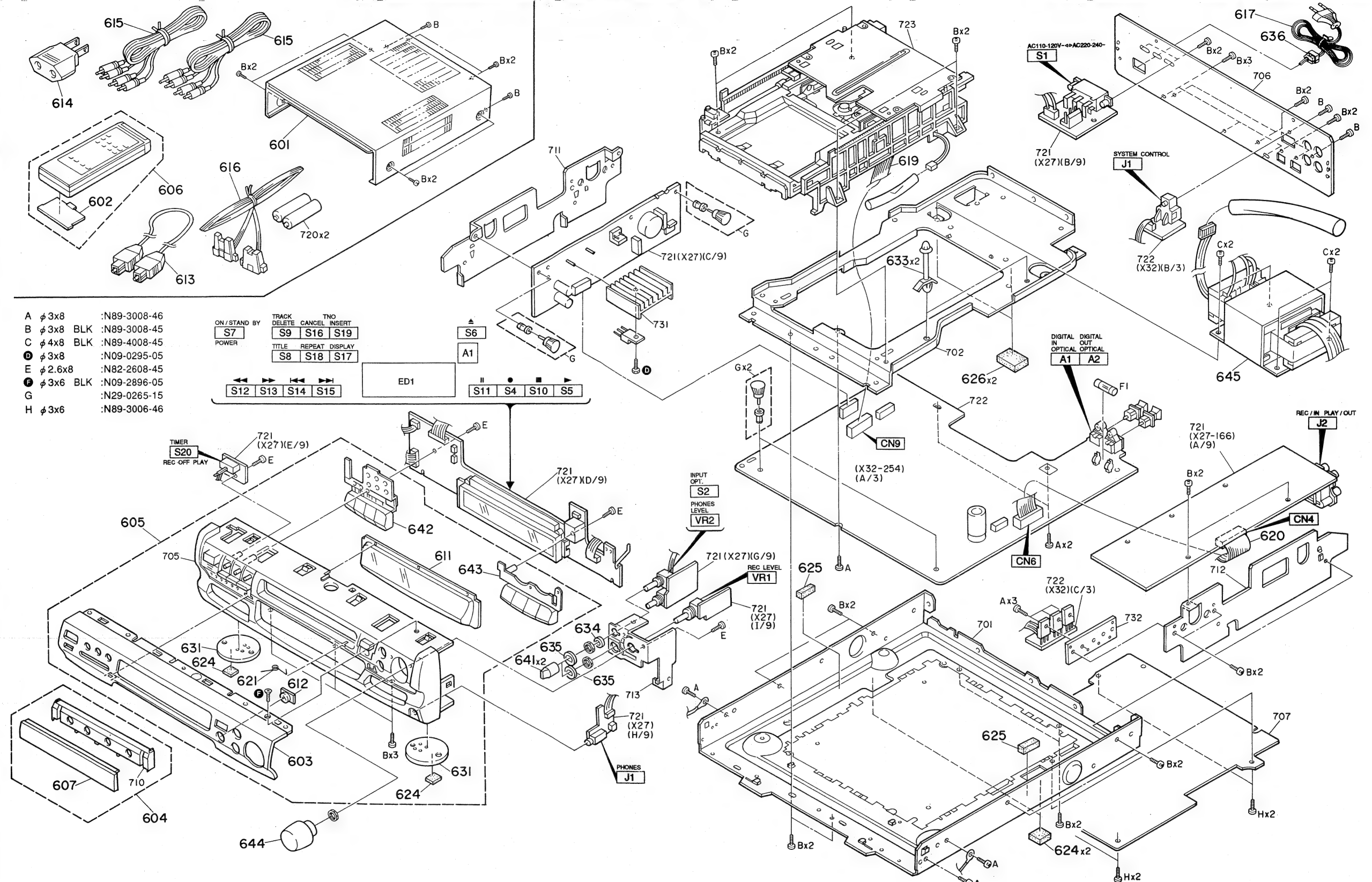
## EXPLODED VIEW (UNIT) : DM-1001



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

# DM-1001/B9 DM-1001/B9

## EXPLODED VIEW (UNIT) : DM-B9



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

| Ref. No. | Address | New Parts | Parts No.   | Description                   | Desti-<br>nation | Re-<br>marks |
|----------|---------|-----------|-------------|-------------------------------|------------------|--------------|
| 参照番号     | 位置      | 新<br>部品   | 部品番号        | 部品名/規格                        | 仕<br>向           | 備考           |
| DM-1001  |         |           |             |                               |                  |              |
| 601      | 1E      | *         | A01-3096-11 | METALLIC CABINET              |                  |              |
| 602      | 1E      | *         | A09-0160-08 | BATTERY COVER                 |                  |              |
| 604      | 3E      | *         | A29-0361-04 | PANEL ASSY (TRAY)             |                  |              |
| 605      | 3F      | *         | A60-0463-12 | PANEL ASSY (FRONT)            |                  |              |
| 606      | 1E      | *         | A70-0938-05 | REMOTE CONTROL UNIT(RC-DMB9)  |                  |              |
| 607      | 3E      | *         | A29-0359-04 | PANEL (TRAY)                  |                  |              |
| 608      | 3E      | *         | A60-0464-02 | PANEL (FRONT)                 |                  |              |
| 611      | 3E      | *         | B10-1993-04 | FRONT GLASS                   |                  |              |
| 612      | 3E      | *         | B11-0269-05 | COLOR FILTER                  |                  |              |
| 613      | 1E      | *         | B19-1529-05 | OPTICAL FIBER CABLE           |                  |              |
| -        | -       | *         | B46-0310-03 | WARRANTY CARD                 |                  |              |
| -        | -       | *         | B60-1276-00 | INSTRUCTION MANUAL(ENGLISH)   |                  |              |
| -        | -       | *         | B60-1278-00 | INSTRUCTION MANUAL(SPANISH)   |                  |              |
| -        | -       | *         | B60-1279-00 | INSTRUCTION MANUAL(DUT,ITA)   |                  |              |
| -        | -       | *         | B60-1368-00 | INSTRUCTION MANUAL(GER,FRE)   |                  |              |
| -        | -       | *         | B60-1606-00 | INSTRUCTION MANUAL(CHINESE)   |                  |              |
| 614      | 1E      | *         | E03-0115-05 | AC PLUG ADAPTOR               |                  |              |
| 615      | 1E      | *         | E30-2600-05 | AUDIO CORD                    |                  |              |
| 616      | 1E      | *         | E30-2628-05 | SYSTEM CONTROL CORD           |                  |              |
| 617      | 1H      | *         | E30-2592-15 | AC POWER CORD                 |                  |              |
| 617      | 1H      | *         | E30-2721-05 | AC POWER CORD                 |                  |              |
| 619      | 1G      | *         | E35-0721-05 | FLAT CABLE (23P,L=180)        |                  |              |
| 620      | 2H      | *         | E35-0743-05 | FLAT CABLE (17P,L=80)         |                  |              |
| 621      | 3E      | *         | G01-3642-04 | TORSION COIL SPRING           |                  |              |
| 623      | 2F      | *         | G10-0154-04 | NON-WOVEN FABRIC              |                  |              |
| 625      | 3G      | *         | G11-2069-04 | CUSHION                       |                  |              |
| 626      | 2G      | *         | G11-2126-04 | SOFT TAPE                     |                  |              |
| -        | -       | *         | H10-5534-12 | POLYSTYRENE FOAMED FIXTURE(L) |                  |              |
| -        | -       | *         | H10-5535-12 | POLYSTYRENE FOAMED FIXTURE(R) |                  |              |
| -        | -       | *         | H11-0054-04 | POLYSTYRENE FOAMED BOARD      |                  |              |
| -        | -       | *         | H12-2193-04 | PACKING FIXTURE               |                  |              |
| -        | -       | *         | H20-0577-04 | PROTECTION COVER              |                  |              |
| -        | -       | *         | H21-0301-14 | PROTECTION SHEET              |                  |              |
| -        | -       | *         | H25-0232-04 | PROTECTION BAG (235X350X0.03) |                  |              |
| -        | -       | *         | H25-0397-04 | PROTECTION BAG (0232 PRINTED) |                  |              |
| -        | -       | *         | H25-0651-04 | PROTECTION BAG (0232 PRINTED) |                  |              |
| -        | -       | *         | H25-0659-04 | PROTECTION BAG (0397 PRINTED) |                  |              |
| -        | -       | *         | H50-0844-04 | ITEM CARTON CASE              |                  |              |
| -        | -       | *         | H50-0935-04 | ITEM CARTON CASE              |                  |              |
| 631      | 3H      | *         | J02-0127-05 | FOOT (REAR)                   |                  |              |
| 632      | 3G      | *         | J02-0130-05 | FOOT (FRONT)                  |                  |              |
| 633      | 1G      | *         | J19-3208-05 | UNIT HOLDER                   |                  |              |
| 635      | 3H      | *         | J30-0299-04 | SPACER                        |                  |              |
| 636      | 1H      | *         | J42-0083-05 | POWER CORD BUSHING            |                  |              |
| -        | -       | *         | J61-0307-05 | WIRE BAND                     |                  |              |
| 641      | 3F      | *         | K29-5786-04 | KNOB (INPUT,PHONES LEVEL)     |                  |              |
| 644      | 3F      | *         | K29-5757-04 | KNOB (REC LEVEL)              |                  |              |
| 645      | 2H      | *         | L07-0703-15 | POWER TRANSFORMER             |                  |              |
| 645      | 2H      | *         | L07-0704-15 | POWER TRANSFORMER             |                  |              |

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| Ref. No.                                                            | Address | New Parts | Parts No.     | Description                   | Desti-<br>nation | Re-<br>marks |
|---------------------------------------------------------------------|---------|-----------|---------------|-------------------------------|------------------|--------------|
| 参照番号                                                                | 位置      | 新<br>部品   | 部品番号          | 部品名/規格                        | 仕<br>向           | 備考           |
| -                                                                   | -       | *         | H20-0577-04   | PROTECTION COVER              |                  |              |
| -                                                                   | -       | *         | H21-0301-14   | PROTECTION SHEET              |                  |              |
| -                                                                   | -       | *         | H25-0232-04   | PROTECTION BAG (235X350X0.03) |                  |              |
| -                                                                   | -       | *         | H25-0397-04   | PROTECTION BAG (0232 PRINTED) |                  |              |
| -                                                                   | -       | *         | H25-0651-04   | PROTECTION BAG (0232 PRINTED) |                  |              |
| -                                                                   | -       | *         | H25-0659-04   | PROTECTION BAG (0397 PRINTED) |                  |              |
| -                                                                   | -       | *         | H50-0844-04   | ITEM CARTON CASE              |                  |              |
| -                                                                   | -       | *         | H50-0935-04   | ITEM CARTON CASE              |                  |              |
| 631                                                                 | 3I, 3J  | *         | J02-1095-04   | FOOT                          |                  |              |
| 633                                                                 | 1K      | *         | J19-3208-05   | UNIT HOLDER                   |                  |              |
| 634                                                                 | 3J      | *         | J30-0299-04   | SPACER                        |                  |              |
| 635                                                                 | 3J      | *         | J30-0297-04   | SPACER                        |                  |              |
| 636                                                                 | 1L      | *         | J42-0083-05   | POWER CORD BUSHING            |                  |              |
| -                                                                   | -       | *         | J61-0307-05   | WIRE BAND                     |                  |              |
| 641                                                                 | 3J      | *         | K29-4377-04   | KNOB (INPUT,PHONES LEVEL)     |                  |              |
| 642                                                                 | 2J      | *         | K29-5710-03   | KNOB (SKIP, SEARCH)           |                  |              |
| 643                                                                 | 2J      | *         | K29-5711-03   | KNOB (STOP, PLAY)             |                  |              |
| 644                                                                 | 3I      | *         | K29-5712-04   | KNOB (REC LEVEL)              |                  |              |
| 645                                                                 | 2L      | *         | L07-0702-15   | POWER TRANSFORMER             |                  |              |
| 645                                                                 | 2L      | *         | L07-0703-15   | POWER TRANSFORMER             |                  |              |
| 645                                                                 | 2L      | *         | L07-0704-15   | POWER TRANSFORMER             |                  |              |
| ELECTRIC UNIT (X25-5450-10)                                         |         |           |               |                               |                  |              |
| C1 -3                                                               |         |           | C90-3214-05   | ELECTRO 100UF 6.3V            |                  |              |
| C4                                                                  |         |           | C90-3212-05   | ELECTRO 47UF 6.3V             |                  |              |
| C5                                                                  |         |           | C90-3214-05   | ELECTRO 100UF 6.3V            |                  |              |
| C6                                                                  |         |           | CK73FBIH122K  | CHIP C 1200PF K               |                  |              |
| CN5                                                                 | 3D      | *         | B40-4692-05   | FLAT CABLE CONNECTOR(6P)      |                  |              |
| CN6                                                                 | 3C      | *         | B40-4693-05   | FLAT CABLE CONNECTOR(18P)     |                  |              |
| CN8                                                                 | 3D      | *         | B40-4203-05   | FLAT CABLE CONNECTOR(23P)     |                  |              |
| S1                                                                  | 2C      | *         | S68-0031-05   | PUSH SWITCH (D.TYPER/R.PRO)   |                  |              |
| D1                                                                  |         |           | DA204U        | DIODE                         |                  |              |
| Q1                                                                  |         |           | UN4116        | DIGITAL TRANSISTOR            |                  |              |
| Q2                                                                  |         |           | 2SD1963(R,S)  | TRANSISTOR                    |                  |              |
| Q3                                                                  |         |           | 2SD1308(Q,R)  | TRANSISTOR                    |                  |              |
| POWER SUPPLY UNIT (X27-1660-XX) DM-B9: -00, -21 / DM-1001: -01, -22 |         |           |               |                               |                  |              |
| C1 ,2                                                               |         |           | CF92FV1H102J  | MF 1000PF J                   |                  |              |
| C3 ,4                                                               |         |           | CE04KW1H100M  | ELECTRO 10UF 6.3V             |                  |              |
| C5 ,6                                                               |         |           | CC45FSL1H220J | CERAMIC 22PF J                |                  |              |
| C7 ,8                                                               |         |           | CF92FV1H103J  | MF 0.010UF J                  |                  |              |
| C9 ,10                                                              |         |           | CF92FV1H334J  | MF 0.33UF J                   |                  |              |
| C11 ,12                                                             |         |           | CK73FBIH104Z  | CHIP C 0.1UF Z                |                  |              |
| C13 ,14                                                             |         |           | CE04KW1H100M  | ELECTRO 10UF 50WV             |                  |              |
| C15 ,16                                                             |         |           | CE04KW1A101M  | ELECTRO 100UF 10WV            |                  |              |
| C17 ,18                                                             |         |           | CF92FV1H101K  | MF 100PF K                    |                  |              |

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| 参照番号     | 位置      | 新<br>部品   | 部品番号        | 部品名/規格                          | 仕<br>向           | 備考           |
| A        |         |           | N89-3008-46 | BINDING HEAD TAPITE SCREW       |                  |              |
| B        |         |           | N89-3008-45 | BINDING HEAD TAPITE SCREW       |                  |              |
| C        |         |           | N89-4008-45 | BINDING HEAD TAPITE SCREW       |                  |              |
| D        |         |           | N09-0295-05 | HEXAGON HEAD BOLT(X3M8,+)       |                  |              |
| E        |         |           | N82-2608-46 | BINDING HEAD TAPITE SCREW       |                  |              |
| F        |         |           | N09-1445-05 | SET SCREW (X3M8)                |                  |              |
| G        |         |           | N09-3023-05 | MACHINE SCREW (3 X 8)           |                  |              |
| H        |         |           | N32-2605-46 | FLAT HEAD MACHINE SCREW         |                  |              |
| I        |         |           | N35-2606-46 | BINDING HEAD MACHINE SCREW      |                  |              |
| J        |         |           | N89-3010-45 | BINDING HEAD TAPITE SCREW       |                  |              |
| K        |         |           | N29-0265-15 | PUSH RIVET                      |                  |              |
| L        |         |           | N35-2603-46 | BINDING HEAD SCREW              |                  |              |
| M        |         |           | N89-3006-46 | BINDING HEAD TAPITE SCREW       |                  |              |
| DM-B9    |         |           |             |                                 |                  |              |
| 601      | 1I      | *         | A01-3099-11 | METALLIC CABINET                |                  |              |
| 602      | 1I      | *         | A09-0160-08 | BATTERY COVER                   |                  |              |
| 603      | 3I      | *         | A21-1934-03 | DRESSING PANEL                  |                  |              |
| 604      | 3I      | *         | A29-0364-14 | PANEL ASSY (TRAY)               |                  |              |
| 605      | 2I      | *         | A60-0496-22 | PANEL ASSY (FRONT)              |                  |              |
| 606      | 1I      | *         | A70-0938-05 | REMOTE CONTROL UNIT(RC-DMB9)    |                  |              |
| 607      | 3I      | *         | A29-0342-01 | PANEL (TRAY)                    |                  |              |
| 611      | 2J      | *         | B10-1964-03 | FRONT GLASS                     |                  |              |
| 612      | 3J      | *         | B11-0270-04 | COLOR FILTER                    |                  |              |
| 613      | 1I      | *         | B19-1529-05 | OPTICAL FIBER CABLE             |                  |              |
| -        | -       | *         | B46-0092-33 | WARRANTY CARD                   |                  |              |
| -        | -       | *         | B46-0096-43 | WARRANTY CARD                   |                  |              |
| -        | -       | *         | B46-0121-33 | WARRANTY CARD                   |                  |              |
| -        | -       | *         | B46-0310-03 | WARRANTY CARD                   |                  |              |
| -        | -       | *         | B52-0543-00 | CONNECTING DIAGRAM              |                  |              |
| -        | -       | *         | B60-1190-00 | INSTRUCTION MANUAL(ENGLISH)     |                  |              |
| -        | -       | *         | B60-1191-00 | INSTRUCTION MANUAL(FRENCH)      |                  |              |
| -        | -       | *         | B60-1192-00 | INSTRUCTION MANUAL(GER,DUT,ITA) |                  |              |
| -        | -       | *         | B60-1193-00 | INSTRUCTION MANUAL(CHI,ALA)     |                  |              |
| -        | -       | *         | B60-1605-00 | INSTRUCTION MANUAL(SPANISH)     |                  |              |
| 614      | 1I      | *         | E03-0115-05 | AC PLUG ADAPTER                 |                  |              |
| 615      | 1I      | *         | E30-0615-05 | AUDIO CORD                      |                  |              |
| 616      | 1I      | *         | E30-2628-05 | SYSTEM CONTROL CORD             |                  |              |
| 617      | 1L      | *         | E30-2592-15 | AC POWER CORD                   |                  |              |
| 617      | 1L      | *         | E30-2650-05 | AC POWER CORD                   |                  |              |
| 617      | 1L      | *         | E30-2717-05 | AC POWER CORD                   |                  |              |
| 617      | 1K      | *         | E30-2721-05 | AC POWER CORD                   |                  |              |
| 619      | 2L      | *         | E35-0743-05 | FLAT CABLE (23P,L=180)          |                  |              |
| 620      | 2L      | *         | E35-0743-05 | FLAT CABLE (17P,L=80)           |                  |              |
| 621      | 3I      | *         | G01-3643-04 | TORSION COIL SPRING             |                  |              |
| 624      | 3I, 3L  | *         | G11-2052-14 | CUSHION (FOOT)                  |                  |              |
| 625      | 3K      | *         | G11-2069-04 | CUSHION                         |                  |              |
| 626      | 2K      | *         | G11-2126-04 | SOFT TAPE                       |                  |              |
| -        | -       | *         | H10-5510-12 | POLYSTYRENE FOAMED FIXTURE(L)   |                  |              |
| -        | -       | *         | H10-5511-12 | POLYSTYRENE FOAMED FIXTURE(R)   |                  |              |
| -        | -       | *         | H11-0058-14 | POLYSTYRENE FOAMED FIXTURE      |                  |              |
| -        | -       | *         | H11-0059-04 | POLYSTYRENE FOAMED BOARD        |                  |              |
| -        | -       | *         | H12-2193-04 | PACKING FIXTURE                 |                  |              |
| -        | -       | *         | H13-0114-04 | CARTON BOARD                    |                  |              |

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| 参照番号     | 位置      | 新<br>部品   | 部品番号          | 部品名/規格              | 仕<br>向           | 備考           |
| C19 ,20  |         |           | CF92FV1H912J  | MF 9100PF J         |                  |              |
| C21 ,22  |         |           | CF92FV1H113J  | MF 0.011UF J        |                  | B9           |
| C21 ,22  |         |           | CF92FV1H822J  | MF 8200PF J         |                  | 1001         |
| C23 ,24  |         |           | CF92FV1H561J  | MF 560PF J          |                  | 1001         |
| C23 ,24  |         |           | CF92FV1H821J  | MF 820PF J          |                  | B9           |
| C25 ,26  |         |           | CE04KW1H220M  | ELECTRO 22UF 50WV   |                  |              |
| C27 ,28  |         |           | CF92FV1H102J  | MF 1000PF J         |                  |              |
| C29 ,30  |         |           | CE04KW1E220M  | NP-ELEC 22UF 25WV   |                  |              |
| C31 ,32  |         |           | CE04KW1H47M   | ELECTRO 4.7UF 50WV  |                  |              |
| C33 ,34  |         |           | CF92FV1H561J  | MF 560PF J          |                  |              |
| C35 ,36  |         |           | CC73FSL1H102J | CHIP C 1000PF J     |                  |              |
| C37 ,38  |         |           | CE04KW1H100M  | ELECTRO 10UF 50WV   |                  |              |
| C39 ,40  |         |           | CF92FV1H104J  | MF 0.10UF J         |                  |              |
| C41      |         |           | CE04KW1H47M   | ELECTRO 4.7UF 50WV  |                  |              |
| C42 -44  |         |           | CF92FV1H104J  | MF 0.10UF J         |                  |              |
| C45      |         |           | CE04KW1H100M  | ELECTRO 10UF 50WV   |                  |              |
| C46      |         |           | CE04KW1E101M  | ELECTRO 100UF 25WV  |                  |              |
| C47 ,48  |         |           | CK73FBIH104Z  | CHIP C 0.1UF Z      |                  |              |
| C49      |         |           | CC73FSL1H102J | CHIP C 1000PF J     |                  |              |
| C50      |         |           | CK73FBIH103K  | CHIP C 0.010UF K    |                  |              |
| C51      |         |           | CK73FBIH104Z  | CHIP C 0.1UF Z      |                  |              |
| C52      |         |           | CE04KW1H100M  | ELECTRO 10UF 50WV   |                  |              |
| C53      |         |           | CF92FV1H104J  | MF 0.10UF J         |                  |              |
| C54      |         |           | CE04KW1H100M  | ELECTRO 10UF 50WV   |                  |              |
| C55      |         |           | CF92FV1H154J  | MF 0.15UF J         |                  |              |
| C56      |         |           | CE04KW1H100M  | ELECTRO 10UF 50WV   |                  |              |
| C57 ,58  |         |           | CE04KW1A101M  | ELECTRO 100UF 10WV  |                  |              |
| C59 ,60  |         |           | CK73FBIH104Z  | CHIP C 0.1UF Z      |                  |              |
| C61      |         |           | CC45FSL1H220J | CERAMIC 22PF J      |                  | B9           |
| C62      |         |           | CC45FSL1H220J | CERAMIC 22PF J      |                  | 1001         |
| C63 ,64  |         |           | CK73FBIH104Z  | CHIP C 0.1UF Z      |                  |              |
| C65 ,67  |         |           | CF92FV1H104J  | MF 0.10UF J         |                  |              |
| C68 ,69  |         |           | CE04KW1C222M  | ELECTRO 2200UF 16WV |                  |              |
| C70      |         |           | CE04KW1A101M  | ELECTRO 100UF 10WV  |                  |              |
| C71      |         |           | CE04KW1H100M  | ELECTRO 10UF 50WV   |                  |              |
| C72      |         |           | CE04KW1A471M  | ELECTRO 470UF 10WV  |                  |              |
| C74 ,75  |         |           | CK73FBIH104Z  | CHIP C 0.1UF Z      |                  |              |
| C76 ,77  |         |           | CK45FBIH103Z  | CERAMIC 0.010UF Z   |                  |              |
| C78 ,79  |         |           | CK73FBIH103K  | CHIP C 0.010UF K    |                  |              |
| C80 ,81  |         |           | CF92FV1H104J  | MF 0.10UF J         |                  |              |
| C82      |         |           | CC73FSL1H101J | CHIP C 100PF J      |                  |              |
| C83 ,84  |         |           | CE04KW1J100M  | ELECTRO 10UF 63WV   |                  |              |
| C85 ,86  |         |           | CK73FBIH470J  | CHIP C 47PF J       |                  |              |
| C87 ,88  |         |           | CK73FBIH103K  | CHIP C 0.010UF K    |                  |              |
| C89      |         |           | CE04KW1C102M  | ELECTRO 1000UF 16WV |                  |              |
| C90 ,91  |         |           | C91-1439-05   | FILM 0.01UF 250VAC  |                  |              |
| C92      |         |           | CE04KW1C102M  | ELECTRO 1000UF 16WV |                  |              |
| C93      |         |           | CE04KW1C471M  | ELECTRO 470UF 16WV  |                  |              |
| C94 ,95  |         |           | CF92FV1H104J  | MF 0.10UF J         |                  |              |
| C96      |         |           | CE04KW1A102M  | ELECTRO 1000UF 10WV |                  |              |
| C97      |         |           | CE04KW1A471M  | ELECTRO 470UF 10WV  |                  |              |
| C98      |         |           | CK73FBIH103K  | CHIP C 0.010UF K    |                  |              |
| C100     |         |           | CK73FBIH105Z  | CHIP C 1.0UF Z      |                  |              |
| C101     |         |           | CK73FSL1H101J | CHIP C 100PF J      |                  |              |
| C102     |         |           | CK73FBIH105Z  | CHIP C 1.0UF Z      |                  |              |

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| -                                                                   |         |           | H20-0577-04   | PROTECTION COVER              | M           |         |
| -                                                                   |         |           | H21-0301-14   | PROTECTION SHEET              | KPMXE       |         |
| -                                                                   |         |           | H25-0232-04   | PROTECTION BAG (235X350X0.03) | KPMXE       |         |
| -                                                                   |         |           | H25-0397-04   | PROTECTION BAG                | T           |         |
| -                                                                   |         |           | H25-0651-04   | PROTECTION BAG (0232 PRINTED) | T           |         |
| -                                                                   |         |           | H25-0659-04   | PROTECTION BAG (0397 PRINTED) | T           |         |
| -                                                                   |         |           | H50-0916-04   | ITEM CARTON CASE              | KPMXE       |         |
| 631                                                                 | 31, 3J  |           | J02-1095-04   | FOOT                          | T           |         |
| 633                                                                 | 1K      |           | J19-3208-05   | UNIT HOLDER                   | T           |         |
| 634                                                                 | 3J      |           | J30-0299-04   | SPACER                        | T           |         |
| 635                                                                 | 3J      |           | J30-0297-04   | SPACER                        | T           |         |
| 636                                                                 | 1L      |           | J42-0083-05   | POWER CORD BUSHING            | T           |         |
| -                                                                   |         |           | J61-0307-05   | WIRE BAND                     | T           |         |
| 641                                                                 | 3J      |           | K29-4377-04   | KN08 (INPUT, PHONES LEVEL)    | KP          |         |
| 642                                                                 | 2J      |           | K29-5710-03   | KN08 (SKIP, SEARCH)           | N           |         |
| 643                                                                 | 2J      |           | K29-5711-03   | KN08 (STOP, PLAY)             | XTE         |         |
| 644                                                                 | 3I      |           | K29-5712-04   | KN08 (REC LEVEL)              |             |         |
| 645                                                                 | 2L      |           | L07-0702-15   | POWER TRANSFORMER             |             |         |
| 645                                                                 | 2L      |           | L07-0703-15   | POWER TRANSFORMER             |             |         |
| 645                                                                 | 2L      |           | L07-0704-15   | POWER TRANSFORMER             |             |         |
| A                                                                   |         |           | N89-3008-46   | BINDING HEAD TAPITTE SCREW    |             |         |
| B                                                                   |         |           | N89-3008-45   | BINDING HEAD TAPITTE SCREW    |             |         |
| C                                                                   |         |           | N89-4008-45   | BINDING HEAD TAPITTE SCREW    |             |         |
| D                                                                   |         |           | N09-0295-05   | HEXAGON HEAD BOLT (M3X8, +)   |             |         |
| E                                                                   |         |           | N82-2608-45   | BINDING HEAD TAPITTE SCREW    |             |         |
| F                                                                   |         |           | N09-2896-05   | SET SCREW                     |             |         |
| G                                                                   |         |           | N29-0245-15   | PUSH RIVET                    |             |         |
| H                                                                   |         |           | N89-3008-46   | BINDING HEAD TAPITTE SCREW    |             |         |
| ELECTRIC UNIT (X25-5450-10)                                         |         |           |               |                               |             |         |
| C1                                                                  | -3      |           | C90-3214-05   | ELECTRO 100UF 6.3V            |             |         |
| C4                                                                  |         |           | C90-3212-05   | ELECTRO 47UF 6.3V             |             |         |
| C5                                                                  |         |           | C90-3214-05   | ELECTRO 100UF 6.3V            |             |         |
| C6                                                                  |         |           | CK73FB1H122K  | CHIP C 1200PF K               |             |         |
| CN5                                                                 | 3D      |           | E40-4692-05   | FLAT CABLE CONNECTOR (6P)     |             |         |
| CN6                                                                 | 3C      |           | E40-4693-05   | FLAT CABLE CONNECTOR (18P)    |             |         |
| CN8                                                                 | 3D      |           | E40-4203-05   | FLAT CABLE CONNECTOR (23P)    |             |         |
| S1                                                                  | 2C      |           | S68-0031-05   | PUSH SWITCH (D, TYPE/R, PRO)  |             |         |
| D1                                                                  |         |           | DA204U        | DIODE                         |             |         |
| Q1                                                                  |         |           | UN4116        | DIGITAL TRANSISTOR            |             |         |
| Q2                                                                  |         |           | 2SD1963(R, S) | TRANSISTOR                    |             |         |
| Q3                                                                  |         |           | 2SB1308(Q, R) | TRANSISTOR                    |             |         |
| POWER SUPPLY UNIT (X27-1660-XX) DM-B9: -00, -21 / DM-1001: -01, -22 |         |           |               |                               |             |         |
| C1                                                                  | 2       |           | CF92FV1H102J  | MF 1000PF J                   |             |         |
| C3                                                                  | 4       |           | CE04KW1J100M  | ELECTRO 10UF 63V              |             |         |
| C5                                                                  | 6       |           | CC45FSL1H220J | CERAMIC 22PF J                |             |         |
| C7                                                                  | 8       |           | CF92FV1H103J  | MF 0.010UF J                  |             |         |
| C9                                                                  | 10      |           | CF92FV1H334J  | MF 0.33UF J                   |             |         |
| C11                                                                 | 12      |           | CK73FF1E104Z  | CHIP C 0.1UF Z                |             |         |
| C13                                                                 | 14      |           | CE04KW1H100M  | ELECTRO 10UF 50WV             |             |         |
| C15                                                                 | 16      |           | CE04KW1A101M  | ELECTRO 100UF 10WV            |             |         |
| C17                                                                 | 18      |           | CF92FV1H101K  | MF 100PF K                    |             |         |

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| C19      | 20      |           | CF92FV1H912J  | MF 9100PF J         |             |         |
| C21      | 22      |           | CF92FV1H113J  | MF 0.01UF J         | B9          |         |
| C23      | 24      |           | CF92FV1H822J  | MF 8200PF J         | 1001        |         |
| C23      | 24      |           | CF92FV1H561J  | MF 560PF J          | 1001        |         |
| C23      | 24      |           | CF92FV1H821J  | MF 820PF J          | B9          |         |
| C25      | 26      |           | CE04KW1H220M  | ELECTRO 22UF 50WV   |             |         |
| C27      | 28      |           | CF92FV1H102J  | MF 1000PF J         |             |         |
| C29      | 30      |           | CE04KW1E220M  | NP-ELEC 22UF 25WV   |             |         |
| C31      | 32      |           | CE04KW1H477M  | ELECTRO 4.7UF 50WV  |             |         |
| C33      | 34      |           | CF92FV1H561J  | MF 560PF J          |             |         |
| C35      | 36      |           | CC73FSL1H102J | CHIP C 1000PF J     |             |         |
| C37      | 38      |           | CE04KW1H100M  | ELECTRO 10UF 50WV   |             |         |
| C39      | 40      |           | CF92FV1H104J  | MF 0.10UF J         |             |         |
| C41      | 42      |           | CE04KW1H477M  | ELECTRO 4.7UF 50WV  |             |         |
| C42      | 44      |           | CF92FV1H104J  | MF 0.10UF J         |             |         |
| C45      |         |           | CE04KW1H100M  | ELECTRO 10UF 50WV   |             |         |
| C46      |         |           | CE04KW1E101M  | ELECTRO 100UF 25WV  |             |         |
| C47      | 48      |           | CK73FF1E104Z  | CHIP C 0.1UF Z      |             |         |
| C49      |         |           | CK73FSL1H102J | CHIP C 1000PF J     |             |         |
| C50      |         |           | CK73FB1H103K  | CHIP C 0.010UF K    |             |         |
| C51      |         |           | CK73FF1E104Z  | CHIP C 0.1UF Z      |             |         |
| C52      |         |           | CE04KW1H100M  | ELECTRO 10UF 50WV   |             |         |
| C53      |         |           | CF92FV1H104J  | MF 0.10UF J         |             |         |
| C54      |         |           | CE04KW1H100M  | ELECTRO 10UF 50WV   |             |         |
| C55      |         |           | CF92FV1H154J  | MF 0.15UF J         |             |         |
| C56      |         |           | CE04KW1H100M  | ELECTRO 10UF 50WV   |             |         |
| C57      | 58      |           | CE04KW1A101M  | ELECTRO 100UF 10WV  |             |         |
| C59      | 60      |           | CK73FF1E104Z  | CHIP C 0.1UF Z      |             |         |
| C61      |         |           | CC45FSL1H220J | CERAMIC 22PF J      |             |         |
| C62      |         |           | CC45FSL1H220J | CERAMIC 22PF J      |             |         |
| C63      | 64      |           | CK73FF1E104Z  | CHIP C 0.1UF Z      |             |         |
| C65      | 67      |           | CF92FV1H104J  | MF 0.10UF J         |             |         |
| C68      | 69      |           | CE04KW1C222M  | ELECTRO 2200UF 16WV |             |         |
| C70      |         |           | CE04KW1A101M  | ELECTRO 100UF 10WV  |             |         |
| C71      |         |           | CE04KW1H100M  | ELECTRO 10UF 50WV   |             |         |
| C72      |         |           | CE04KW1A477M  | ELECTRO 470UF 10WV  |             |         |
| C74      | 75      |           | CK73FF1E104Z  | CHIP C 0.1UF Z      |             |         |
| C76      | 77      |           | CK45FF1H103Z  | CERAMIC 0.010UF Z   |             |         |
| C78      | 79      |           | CK73FB1H103K  | CHIP C 0.010UF K    |             |         |
| C80      | 81      |           | CF92FV1H104J  | MF 0.10UF J         |             |         |
| C82      |         |           | CK73FSL1H101J | CHIP C 100PF J      |             |         |
| C83      | 84      |           | CE04KW1J100M  | ELECTRO 10UF 63WV   |             |         |
| C85      | 86      |           | CK73FSL1H470J | CHIP C 47PF J       |             |         |
| C87      | 88      |           | CK73FB1H103K  | CHIP C 0.010UF K    |             |         |
| C89      |         |           | CE04KW1C102M  | ELECTRO 1000UF 16WV |             |         |
| C90      | 91      |           | C91-1439-05   | FILM 0.01UF 250VAC  |             |         |
| C92      |         |           | CE04KW1C102M  | ELECTRO 1000UF 16WV |             |         |
| C93      |         |           | CE04KW1A477M  | ELECTRO 470UF 10WV  |             |         |
| C94      | 95      |           | CF92FV1H104J  | MF 0.10UF J         |             |         |
| C96      |         |           | CE04KW1A102M  | ELECTRO 1000UF 10WV |             |         |
| C97      |         |           | CE04KW1A477M  | ELECTRO 470UF 10WV  |             |         |
| C98      |         |           | CK73FB1H103K  | CHIP C 0.010UF K    |             |         |
| C100     |         |           | CK73EF1C105Z  | CHIP C 1.0UF Z      |             |         |
| C101     |         |           | CK73FSL1H101J | CHIP C 100PF J      |             |         |
| C102     |         |           | CK73EF1C105Z  | CHIP C 1.0UF Z      |             |         |

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| C143      |         |           | CK73FF1E104Z  | CHIP C 0.1UF Z                   |             |         |
| C144      |         |           | C90-3258-05   | ELECTRO 10UF 50WV                |             |         |
| C145      |         |           | CK73FB1H104K  | CHIP C 0.10UF K                  |             |         |
| C146      |         |           | C90-3209-05   | ELECTRO 10UF 6.3V                |             |         |
| C147      |         |           | CK73FF1E104Z  | CHIP C 0.1UF Z                   |             |         |
| C148-150  |         |           | CK73FF1C105Z  | CHIP C 1.0UF Z                   |             |         |
| C151, 152 |         |           | CK73FF1E104Z  | CHIP C 0.1UF Z                   |             |         |
| C153      |         |           | CK73FB1H103K  | CHIP C 0.010UF K                 |             |         |
| C154-157  |         |           | CK73FSL1H102J | CHIP C 1000PF J                  |             |         |
| C158      |         |           | CK73FB1H104K  | CHIP C 0.10UF K                  |             |         |
| C159      |         |           | CK73FF1E104Z  | CHIP C 0.1UF Z                   |             |         |
| C160      |         |           | CK73FSL1H101J | CHIP C 100PF J                   |             |         |
| C161      |         |           | CK73FF1E104Z  | CHIP C 0.1UF Z                   |             |         |
| C162-164  |         |           | CK73FF1C105Z  | CHIP C 1.0UF Z                   |             |         |
| C165      |         |           | CK73FF1E104Z  | CHIP C 0.1UF Z                   |             |         |
| C166      |         |           | CK73FF1C105Z  | CHIP C 1.0UF Z                   |             |         |
| CN4       | 2H, 2L  |           | B40-4197-05   | FLAT CABLE CONNECTOR (17pin)     |             |         |
| J1        | 3F, 3J  |           | B11-0228-05   | MINIATURE PHONE JACK (PHONES)    |             |         |
| J2        | 2H, 2L  |           | B63-0107-05   | PHONE JACK (ANALOG I/O)          |             |         |
| L1        | 2       |           | L79-1216-05   | LINE FILTER                      |             |         |
| L3        | -6      |           | L79-0733-05   | LINE FILTER                      |             |         |
| L4        | -6      |           | L79-1211-05   | LINE FILTER                      |             |         |
| L7        |         |           | L79-1216-05   | LINE FILTER                      |             |         |
| X1        |         |           | L78-0267-05   | RESONATOR (4.194MHz)             |             |         |
| VR1       | 2G, 2K  |           | R10-4049-05   | POTENTIOMETER (50kx2) (REC LEV)  | B9          |         |
| VR2       | 2K      |           | R10-4050-05   | POTENTIOMETER (50K) (PHONES LEV) | 1001        |         |
| VR3       | 2F      |           | R10-4050-05   | POTENTIOMETER (50K) (PHONES LEV) |             |         |
| S1        | 1H, 1L  |           | S62-0001-05   | SLIDE SWITCH (VOLTAGE SELECTOR)  | M           |         |
| S2        | 2K      |           | S60-0022-05   | ROTARY SWITCH (INPUT OPT/ANA)    | B9          |         |
| S3        | 2K      |           | S60-0022-05   | ROTARY SWITCH (INPUT OPT/ANA)    | 1001        |         |
| S4        | -19     |           | S70-0815-05   | ACT SWITCH (PLA STOP etc.)       |             |         |
| S20       | 2E, 2I  |           | S62-0036-05   | SLIDE SWITCH (TIMER REC/PLAY)    |             |         |
| D1        | -4      |           | U18C44        | DIODE                            |             |         |
| D7        |         |           | DT25.1(B)     | ZENER DIODE                      |             |         |
| D8        | -11     |           | DT28.2(B)     | ZENER DIODE                      |             |         |
| D12       |         |           | U18C44        | DIODE                            |             |         |
| D13       |         |           | DA204U        | DIODE                            |             |         |
| D41, 42   |         |           | DA204U        | DIODE                            |             |         |
| D43       | -48     |           | MA110         | DIODE                            |             |         |
| D49       |         |           | DA204U        | DIODE                            |             |         |
| D50, 51   |         |           | MA110         | DIODE                            |             |         |
| ED1       | 2F, 2J  |           | B3172GNK      | INDICATOR TUBE                   |             |         |
| IC1       | -5      |           | NJM4565M      | IC(OP AMP X2)                    |             |         |
| IC6       |         |           | NJM4558M      | IC(OP AMP X2)                    |             |         |
| IC7       |         |           | AKS339-VS     | IC(A/D CONVERTER)                |             |         |
| IC7       |         |           | CS5339-XS     | IC(A/D CONVERTER)                |             |         |
| IC8       |         |           | SM5840ES      | IC(DIGITAL FILTER)               |             |         |
| IC9       |         |           | PCM69AU       | IC(D/A CONVERTER)                |             |         |
| IC10      |         |           | TC7804F       | IC(2CH NAND GATE)                |             |         |
| IC12      |         |           | LM2940CT-5.0  | IC(VOLTAGE REGULATOR/ +5V)       |             |         |
| IC13      |         |           | TA7900SS      | IC(VOLTAGE REGULATOR/ -5V)       |             |         |
| IC13      |         |           | UPC7905HF     | IC(VOLTAGE REGULATOR/ -5V)       |             |         |
| IC26      |         |           | LC75710E      | IC(DISPLAY DRIVER)               |             |         |

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| IC27                         |         |           | W05-0475-00   | IC(MICROPROCESSOR)      |             |         |
| Q1                           | -4      |           | 2SC2878(B)    | TRANSISTOR              |             |         |
| Q5                           | -8      |           | DT1132S       | DIGITAL TRANSISTOR      |             |         |
| Q5                           | -8      |           | UN4219        | DIGITAL TRANSISTOR      |             |         |
| Q9                           |         |           | 2SD2012       | TRANSISTOR              |             |         |
| Q9                           |         |           | 2SD2061       | TRANSISTOR              |             |         |
| Q10                          |         |           | 2SB1370       | TRANSISTOR              |             |         |
| Q10                          |         |           | 2SB1375       | TRANSISTOR              |             |         |
| Q11                          |         |           | DTA124EU      | DIGITAL TRANSISTOR      |             |         |
| Q11                          |         |           | UN5112        | DIGITAL TRANSISTOR      |             |         |
| Q12                          |         |           | 2SC4081(R, S) | TRANSISTOR              |             |         |
| A1                           | 2F, 2J  |           | W02-1129-05   | ELECTRIC CIRCUIT MODULE |             |         |
| PROCESSOR UNIT (X32-2540-11) |         |           |               |                         |             |         |
| C1                           | 2       |           | CK73FB1H102K  | CHIP C 1000PF K         |             |         |
| C3                           | 4       |           | CK73FSL1H101K | CHIP C 100PF K          |             |         |
| C6                           |         |           | CK73FB1H102K  | CHIP C 1000PF K         |             |         |
| C6                           |         |           | CK73FB1B473K  | CHIP C 0.047UF K        |             |         |
| C7                           |         |           | CE04HW1H3R3M  | NP-ELEC 3.3UF 50WV      |             |         |
| C8                           |         |           | CK73FB1H102K  | CHIP C 1000PF K         |             |         |
| C9                           |         |           | CK73FB1H223K  | CHIP C 0.022UF K        |             |         |
| C10                          | 11      |           | CK73FSL1H101J | CHIP C 100PF J          |             |         |
| C12                          |         |           | CK73FF1E104Z  | CHIP C 0.1UF Z          |             |         |
| C13                          |         |           | C90-3216-05   | ELECTRO 330UF 6.3V      |             |         |
| C14                          | -16     |           | CK73FF1E104Z  | CHIP C 0.1UF Z          |             |         |
| C17                          |         |           | CK73FB1H272K  | CHIP C 2700PF K         |             |         |
| C18                          |         |           | C90-3224-05   | ELECTRO 4.7UF 16WV      |             |         |
| C19                          |         |           | CK73FB1E333K  | CHIP C 0.033UF K        |             |         |
| C20                          |         |           | C90-3253-05   | ELECTRO 1UF 50WV        |             |         |
| C21                          |         |           | CK73FF1E104Z  | CHIP C 0.1UF Z          |             |         |
| C22                          |         |           | CK73FB1H822K  | CHIP C 8200PF K         |             |         |
| C23                          |         |           | CK73FB1H102K  | CHIP C 1000PF K         |             |         |
| C24                          |         |           | C90-3216-05   | ELECTRO 330UF 6.3V      |             |         |
| C25                          | -28     |           | CK73FB1H103K  | CHIP C 0.010UF K        |             |         |
| C29                          |         |           | C90-3214-05   | ELECTRO 100UF 6.3V      |             |         |
| C30                          | 31      |           | C90-3212-05   | ELECTRO 47UF 6.3V       |             |         |
| C32                          |         |           | CK73FB1H103K  | CHIP C 0.010UF K        |             |         |
| C33                          |         |           | CK73FB1H472K  | CHIP C 4700PF K         |             |         |

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|------------------|---------------|-------------------|-----------------------|------------------------|--------------------|
| C50              |               | CK73FB1H102K      | CHIP C 1000PF K       |                        |                    |
| C51              | 52            | CK73FB1H103K      | CHIP C 0.010UF K      |                        |                    |
| C53              |               | C90-3210-05       | ELECTR 22UF 6.3WV     |                        |                    |
| C54              |               | CK73FB1H333K      | CHIP C 0.033UF K      |                        |                    |
| C55              |               | CF92FV1H474J      | MF 0.47UF J           |                        |                    |
| C56              | 57            | C90-3214-05       | ELECTR 100UF 6.3WV    |                        |                    |
| C58              | 59            | CK73FB1H472K      | CHIP C 0.010UF K      |                        |                    |
| C60              |               | CF92FV1H474J      | MF 0.47UF J           |                        |                    |
| C61              |               | CK73FB1H222K      | CHIP C 2200PF K       |                        |                    |
| C62              |               | CK73FB1H103K      | CHIP C 0.010UF K      |                        |                    |
| C63-67           |               | CE04HW1E100M      | NP-ELEC 10UF 25V      |                        |                    |
| C68              | 69            | C90-3228-05       | ELECTR 47UF 16WV      |                        |                    |
| C70              |               | CK73FB1H103K      | CHIP C 0.010UF K      |                        |                    |
| C71              |               | CF92FV1H474J      | MF 0.47UF J           |                        |                    |
| C72              |               | CK73FB1E273K      | CHIP C 0.027UF K      |                        |                    |
| C73              | 74            | C90-3212-05       | ELECTR 47UF 6.3WV     |                        |                    |
| C75              | 76            | CC73FSL1H100D     | CHIP C 100PF D        |                        |                    |
| C77              |               | CK73FB1H102K      | CHIP C 1000PF K       |                        |                    |
| C78              |               | CK73FB1E333K      | CHIP C 0.033UF K      |                        |                    |
| C79              |               | CC73FSL1H221J     | CHIP C 220PF J        |                        |                    |
| C80              |               | CK73FF1E104Z      | CHIP C 0.1UF Z        |                        |                    |
| C81              |               | CK73FSL1H100D     | CHIP C 100PF D        |                        |                    |
| C82              |               | CK73FSL1H100D     | CHIP C 100PF D        |                        |                    |
| C83              |               | CK73FSL1H150J     | CHIP C 15PF J         |                        |                    |
| C84              |               | CK73FSL1H470J     | CHIP C 47PF J         |                        |                    |
| C85              |               | CK73FSL1H220J     | CHIP C 22PF J         |                        |                    |
| C86              |               | CK73FB1H103K      | CHIP C 0.010UF K      |                        |                    |
| C87              | 88            | C90-3212-05       | ELECTR 47UF 6.3WV     |                        |                    |
| C89              |               | CK73FB1H103K      | CHIP C 0.010UF K      |                        |                    |
| C90              |               | C90-3214-05       | ELECTR 100UF 6.3WV    |                        |                    |
| C91-93           |               | CK73FB1H103K      | CHIP C 0.010UF K      |                        |                    |
| C94              |               | CK73FF1E104Z      | CHIP C 0.1UF Z        |                        |                    |
| C95              |               | CK73FIC105Z       | CHIP C 1.0UF Z        |                        |                    |
| C96-98           |               | CK73FB1H103K      | CHIP C 0.010UF K      |                        |                    |
| C99              |               | CK73FIC105Z       | CHIP C 1.0UF Z        |                        |                    |
| C100,101         |               | CK73FF1E104Z      | CHIP C 0.1UF Z        |                        |                    |
| C102,103         |               | CC73FSL1H101J     | CHIP C 100PF J        |                        |                    |
| C105             |               | C90-3212-05       | ELECTR 47UF 6.3WV     |                        |                    |
| C106             |               | CK73FF1E104Z      | CHIP C 0.1UF Z        |                        |                    |
| C107             |               | CE04KW1C332M      | ELECTR 3300UF 16WV    |                        |                    |
| C108             |               | C90-3217-05       | ELECTR 10UF 10WV      |                        |                    |
| C109             |               | C90-3218-05       | ELECTR 47UF 6.3WV     |                        |                    |
| C111             |               | C90-3242-05       | ELECTR 1F 5.5WV       |                        |                    |
| C112             |               | CF92FV1H104J      | MF 0.10UF J           |                        |                    |
| C113             |               | C90-3212-05       | ELECTR 47UF 6.3WV     |                        |                    |
| C114             |               | CF92FV1H334J      | MF 0.33UF J           |                        |                    |
| C116,117         |               | CE04KW1H470M      | ELECTR 47UF 50WV      |                        |                    |
| C118-120         |               | CK73FF1E104Z      | CHIP C 0.1UF Z        |                        |                    |
| C121,122         |               | CK73FB1H103K      | CHIP C 0.010UF K      |                        |                    |
| C123,124         |               | CE04DW1C222M      | ELECTR 2200UF 16WV    |                        |                    |
| C126             |               | CC73FSL1H331J     | CHIP C 330PF J        |                        |                    |
| C127             |               | CE04KW1C332M      | ELECTR 3300UF 16WV    |                        |                    |
| C128             |               | CK73FB1H103K      | CHIP C 0.010UF K      |                        |                    |
| C129             |               | CE04KW1A101M      | ELECTR 100UF 10WV     |                        |                    |
| C130             |               | CE04KW1V100M      | ELECTR 10UF 35WV      |                        |                    |

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|------------------|---------------|-------------------|---------------------------------|------------------------|--------------------|
| C131             |               | CE04KW1A101M      | ELECTR 100UF 10WV               |                        |                    |
| C132             |               | CK73FF1E104Z      | CHIP C 0.1UF Z                  |                        |                    |
| C133,134         |               | CK73FSL1H101J     | CHIP C 100PF J                  |                        |                    |
| C135             |               | CK73FB1H103K      | CHIP C 0.010UF K                |                        |                    |
| C136-139         |               | CK73FSL1H220J     | CHIP C 22PF J                   |                        |                    |
| C140             |               | CK73FSL1H101J     | CHIP C 100PF J                  |                        |                    |
| C141             |               | CE04KW1C470M      | ELECTR 47UF 16WV                |                        |                    |
| C142             |               | CK73FB1H102K      | CHIP C 1000PF K                 |                        |                    |
| C143             |               | CK73FSL1H050C     | CHIP C 5PF C                    |                        |                    |
| C144,145         |               | CK73FIC105Z       | CHIP C 1.0UF Z                  |                        |                    |
| CN6              | 26,2K         | E40-4157-05       | FLAT CABLE CONNECTOR(17pin)     |                        |                    |
| CN9              | 26,2K         | E40-4163-05       | FLAT CABLE CONNECTOR(23pin)     |                        |                    |
| J1               | 1H,1L         | E08-0311-05       | RECTANGULAR RECEPTACLE(S.CONT)  |                        |                    |
| ▲ F1             |               | F04-2025-05       | FUSE (UL) (250V 2A)             | XP                     |                    |
| ▲ F1             |               | F06-2021-05       | FUSE (SEMKO) (250V T2A)         | MXTE                   |                    |
| CN15,16          |               | J13-0075-05       | FUSE CLIP                       |                        |                    |
| L1               |               | L39-1324-05       | VARIABLE INDUCTOR(DIG IN PLL)   |                        |                    |
| L2               | 3             | L40-1011-16       | SMALL FIXED INDUCTOR(100UH,K)   |                        |                    |
| L4               | 5             | L33-0378-05       | CHOKE COIL (220UH)              |                        |                    |
| L6               |               | L79-1211-05       | LINE FILTER                     |                        |                    |
| L7               |               | L79-1216-05       | LINE FILTER                     |                        |                    |
| L8               | 9             | L92-0131-05       | FERRITE CORE                    |                        |                    |
| X1               |               | L77-1124-05       | CRYSTAL RESONATOR(22.5792MHz)   |                        |                    |
| X2               |               | L77-2123-05       | CRYSTAL RESONATOR(55.0MHz)      |                        |                    |
| X3               |               | L78-0284-05       | RESONATOR (5MHz)                |                        |                    |
| R109,110         |               | RS14KB3A181J      | FL-PROOF RS 180 J 1W            |                        |                    |
| R111             |               | RS14KB3A391J      | FL-PROOF RS 390 J 1W            |                        |                    |
| R115,116         |               | RS14KB3D181J      | FL-PROOF RS 180 J 2W            |                        |                    |
| VR1              |               | R12-1617-05       | TRIMMING POT(2.2K)<APC>         |                        |                    |
| VR2              |               | R12-0606-05       | TRIMMING POT(330)<TEMP>         |                        |                    |
| VR3              |               | R12-1618-05       | TRIMMING POT(3.3K)<F0K0FSET>    |                        |                    |
| VR4              |               | R12-1617-05       | TRIMMING POT(2.2K)<F0FSET,PT0F> |                        |                    |
| VR5              |               | R12-1616-05       | TRIMMING POT(1K)<PIT 0F>        |                        |                    |
| VR6              |               | R12-1616-05       | TRIMMING POT(4.7K)<PIT T.B>     |                        |                    |
| VR7,8            |               | R12-1619-05       | TRIMMING POT(4.7K)<GRV T.B>     |                        |                    |
| VR9              |               | R12-1617-05       | TRIMMING POT(2.2K)<F BIAS>      |                        |                    |
| VR10,11          |               | R12-3685-05       | TRIMMING POT(10K)<F.T GAIN>     |                        |                    |
| VR12             |               | R12-3686-05       | TRIMMING POT(22K)<HD DRV PWR>   |                        |                    |
| K1               |               | S76-0033-05       | MAGNETIC RELAY                  |                        |                    |
| D2               | 4             | MA110             | DIODE                           |                        |                    |
| D5               |               | 1SV147            | VARIABLE CAPACITANCE DIODE      |                        |                    |
| D6               | 7             | MA110             | DIODE                           |                        |                    |
| D8               |               | MA113             | DIODE                           |                        |                    |
| ▲ D9             |               | U1BC44            | DIODE                           |                        |                    |
| D10              |               | DT25.1(B)         | ZENER DIODE                     |                        |                    |
| D12              |               | U1BC44            | DIODE                           |                        |                    |
| ▲ D14            |               | U1BC44            | DIODE                           |                        |                    |
| D15,16           |               | DT215(B)          | ZENER DIODE                     |                        |                    |
| D17              |               | DT25.1(B)         | ZENER DIODE                     |                        |                    |
| ▲ D18            |               | D3SBA20F03        | DIODE                           |                        |                    |
| D19              |               | U1BC44            | DIODE                           |                        |                    |
| D20              |               | DT26.8(B)         | ZENER DIODE                     |                        |                    |

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|-------------------------------|---------------|-------------------|--------------------------------|------------------------|--------------------|
| ▲ D21-24                      |               | U1BC44            | DIODE                          |                        |                    |
| D25,26                        |               | MA110             | DIODE                          |                        |                    |
| IC1                           |               | CKA1381Q          | IC(AMP MATRIX AMP)             |                        |                    |
| IC2                           |               | TC74HC4053AF      | IC(ANALOG SWITCH)              |                        |                    |
| IC3                           |               | CKA1380M          | IC(ADIP DEMODULATOR)           |                        |                    |
| IC4                           |               | CKA1082BQ         | IC(SERVO SIGNAL PROCESSOR)     |                        |                    |
| IC5                           |               | TAB410AK          | IC(POWER OP AMP)               |                        |                    |
| IC6                           |               | CKD2525Q          | IC(ENCODER/DECODER)            |                        |                    |
| IC7                           |               | S-80740AL-A4      | IC(OP AMP)                     |                        |                    |
| IC8                           |               | CKD2526Q          | IC(MEMORY CONTROLLER)          |                        |                    |
| IC9                           |               | HM514400BLS-8     | IC(4Mbit DRAM)                 |                        |                    |
| IC10,11                       |               | CKD2527R          | IC(ATRAC ENCODER/DECODER)      |                        |                    |
| IC12                          |               | TC74HC4053AF      | IC(ANALOG SWITCH)              |                        |                    |
| IC13                          |               | W05-0474-00       | IC(MICROPROCESSOR)             |                        |                    |
| IC14                          |               | TC74HC14AF        | IC(SCHMITT INVERTER)           |                        |                    |
| IC15                          |               | HM62256ALFP-12T   | IC(256Kbit SRAM)               |                        |                    |
| IC16                          |               | TC74HC373AF       | IC(8 bit LATCH)                |                        |                    |
| IC17                          |               | PST529F           | IC(SYSTEM RESET)               |                        |                    |
| IC18                          |               | TAB410AK          | IC(POWER OP AMP)               |                        |                    |
| IC19                          |               | M2005L            | IC(SYSTEM RESET)               |                        |                    |
| IC20                          |               | TL431CLP          | IC(REGULATOR)                  |                        |                    |
| IC21                          |               | TC74HC02AF        | IC(NOR GATE)                   |                        |                    |
| Q1                            |               | DTA124ES          | DIGITAL TRANSISTOR             |                        |                    |
| Q2                            |               | UN4112            | DIGITAL TRANSISTOR             |                        |                    |
| Q3                            |               | DTA124ES          | DIGITAL TRANSISTOR             |                        |                    |
| Q4                            |               | UN4212            | DIGITAL TRANSISTOR             |                        |                    |
| Q5                            |               | 2SD982            | TRANSISTOR                     |                        |                    |
| Q6                            |               | 2SB772            | TRANSISTOR                     |                        |                    |
| Q7                            |               | 2SC1923(R,Q)      | TRANSISTOR                     |                        |                    |
| Q8                            |               | 2SC3246           | TRANSISTOR                     |                        |                    |
| Q9                            |               | 2SD2012           | TRANSISTOR                     |                        |                    |
| Q10                           |               | 2SB1375           | TRANSISTOR                     |                        |                    |
| Q11                           |               | 2SC2458(Y,GR)     | TRANSISTOR                     |                        |                    |
| Q12                           |               | 2SC3311A(Q,R)     | TRANSISTOR                     |                        |                    |
| Q13                           |               | IRF610            | FET                            |                        |                    |
| Q14                           |               | 2SD1944           | TRANSISTOR                     |                        |                    |
| Q15                           |               | 2SK163(L)         | FET                            |                        |                    |
| Q16                           |               | DTA124ES          | DIGITAL TRANSISTOR             |                        |                    |
| Q17                           |               | UN4212            | DIGITAL TRANSISTOR             |                        |                    |
| Q18                           |               | 2SA1534A(R,S)     | TRANSISTOR                     |                        |                    |
| Q19                           |               | 2SK208(Y,GR)      | TRANSISTOR                     |                        |                    |
| Q20                           |               | 2SA1036K(Q,R)     | TRANSISTOR                     |                        |                    |
| A1                            | 2H,2L         | W02-1181-05       | OPTIC RECEIVING MODULE(OPT IN) |                        |                    |
| A2                            | 2H,2L         | W02-1141-05       | OSCILLATING MODULE(OPT OUT)    |                        |                    |
| MECHANISM ASS'Y (X92-1880-10) |               |                   |                                |                        |                    |
| 1                             | 3B            | B09-0242-04       | CAP                            |                        |                    |
| 2                             | 1B            | D10-3380-03       | SLIDER ASSY                    |                        |                    |
| 3                             | 1B            | D10-3382-03       | SLIDER ASSY                    |                        |                    |
| 4                             | 1B            | D10-3385-03       | SLIDER                         |                        |                    |
| 5                             | 1B            | D10-3386-04       | RND                            |                        |                    |
| 6                             | 2B            | D10-3387-04       | ARM                            |                        |                    |
| 7                             | 1D            | D10-3388-03       | LEVER                          |                        |                    |
| 8                             | 3C            | D10-3389-04       | RND                            |                        |                    |

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|------------------|---------------|-------------------|----------------------------|------------------------|--------------------|
| 9                | 1D            | D10-3390-03       | LEVER                      |                        |                    |
| 10               | 1C            | D10-3391-04       | ARM ASSY                   |                        |                    |
| 11               | 1D            | D10-3393-03       | ARM                        |                        |                    |
| 12               | 1D            | D10-3420-04       | ARM ASSY                   |                        |                    |
| 15               | 3A            | D13-0976-03       | GEAR                       |                        |                    |
| 16               | 3A            | D13-0978-03       | GEAR                       |                        |                    |
| 17               | 1A            | D13-1542-04       | GEAR                       |                        |                    |
| 18               | 3A            | D13-1543-04       | GEAR                       |                        |                    |
| 19               | 3A            | D13-1544-04       | GEAR                       |                        |                    |
| 20               | 3A            | D13-1545-04       | GEAR                       |                        |                    |
| 21               | 2C            | D13-1546-08       | GEAR                       |                        |                    |
| 22               | 2C            | D13-1547-08       | GEAR                       |                        |                    |
| 23               | 3C            | D13-1548-08       | GEAR ASSY                  |                        |                    |
| 25               | 2A            | D13-1550-13       | LACK (GEAR)                |                        |                    |
| 26               | 3A            | D15-0292-08       | PULLEY                     |                        |                    |
| 27               | 3A            | D15-0351-04       | PULLEY                     |                        |                    |
| 28               | 3A            | D16-0352-05       | BELT                       |                        |                    |
| 29               | 1D            | D21-1728-04       | SHAFT                      |                        |                    |
| 30               | 1A            | D23-0295-03       | RETAINER                   |                        |                    |
| 31               | 2A            | D23-0296-03       | RETAINER                   |                        |                    |
| 32               | 3A            | D40-1312-03       | DRIVE MECHANISM ASSY       |                        |                    |
| 35               | 2A            | G01-3582-04       | EXTENSION SPRING           |                        |                    |
| 36               | 1D            | G01-3583-04       | TORSION COIL SPRING        |                        |                    |
| 37               | 1D            | G01-3584-04       | TORSION COIL SPRING        |                        |                    |
| 38               | 1C,1D         | G01-3585-04       | TORSION COIL SPRING        |                        |                    |
| 39               | 1D            | G01-3586-04       | TORSION COIL SPRING        |                        |                    |
| 40               | 3B            | G01-3611-04       | COMPRESSION SPRING         |                        |                    |
| 45               | 2A            | G11-2055-04       | CUSHION                    |                        |                    |
| 46               | 2A,2B         | G11-2164-04       | CUSHION (2X3,L3)           |                        |                    |
| 47               | 3B            | J02-1093-08       | INSULATOR                  |                        |                    |
| 50               | 1C            | J19-3589-02       | HOLDER ASSY                |                        |                    |
| 50               | 2D,3C         | J21-5926-04       | MOUNTING HARDWARE          |                        |                    |
| 55               | 2A            | J90-0802-04       | GUIDE                      |                        |                    |
| 56               | 2A            | J90-0803-04       | GUIDE                      |                        |                    |
| 57               | 3A            | J90-0805-03       | GUIDE                      |                        |                    |
| 58               | 2A            | J90-0806-04       | GUIDE                      |                        |                    |
| 60               | 1A            | J99-0530-01       | TRAY                       |                        |                    |
| 61               | 1D            | J21-6017-04       | MOUNTING HARDWARE ASSY     |                        |                    |
| 62               | 2C            | N09-3031-05       | MACHINE SCREW (M2X2.5)     |                        |                    |
| 63               | 2B,3A         | N19-0891-04       | FLAT WASHER                |                        |                    |
| 64               | 3A            | N19-1105-04       | FLAT WASHER                |                        |                    |
| 65               | 1C,1D         | N19-1171-04       | FLAT WASHER                |                        |                    |
| 66               | 3A            | N09-3040-05       | SENS (MACHINE SCREW)(M2X3) |                        |                    |
| 67               | 2D,3C         | N35-2004-46       | BINDING HEAD MACHINE SCREW |                        |                    |
| 68               | 2D            | N35-2006-46       | BINDING HEAD MACHINE SCREW |                        |                    |
| 69               | 2D,3C         | N35-2603-46       | BINDING HEAD MACHINE SCREW |                        |                    |
| 70               | 3B,3C         | N35-2605-46       | BINDING HEAD MACHINE SCREW |                        |                    |
| 71               | 3D            | N38-1440-46       | PAN HEAD MACHINE SCREW     |                        |                    |
| 73               | 1D            | N79-1740-46       | PAN HEAD TAPTITE SCREW     |                        |                    |
| 74               | 3A            | N83-2004-45       | PAN HEAD TAPTITE SCREW     |                        |                    |
| 75               | 2A,3A         | N83-2006-45       | PAN HEAD TAPTITE SCREW     |                        |                    |
| 76               | 1A            | N83-2006-46       | PAN HEAD TAPTITE SCREW     |                        |                    |
| 77               | 2A,3B         | N83-2008-46       | PAN HEAD TAPTITE SCREW     |                        |                    |

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|-------------------------------------------|----------------|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------|--------------------|
| △ D21 -24<br>D25 ,26<br>IC1<br>IC2<br>IC3 |                | * U18C44<br>MA110<br>CXAL381Q<br>TC74HC4053AF<br>CXAL380M                | DIODE<br>DIODE<br>IC(CMP MATRIX AMP)<br>IC(ANALOG SWITCH)<br>IC(ADIP DEMODULATOR)                              |                        |                    |
| IC4<br>IC5<br>IC6<br>IC7<br>IC8           |                | * CXA1082BQ<br>TA8410AK<br>CXD2525Q<br>S-80740AL-A4<br>CXD2526Q          | IC(SERVO SIGNAL PROCESSOR)<br>IC(POWER OP AMP)<br>IC(ENCODER/DECODER)<br>IC(OP AMP)<br>IC(MEMORY CONTROLLER)   |                        |                    |
| IC9<br>IC10,11<br>IC12<br>IC13<br>IC14    |                | * HM514400BLS-8<br>CXD2527R<br>TC74HC4053AF<br>W05-0474-00<br>TC74HC14AF | IC(4Mbit DRAM)<br>IC(ATRAC ENCODER/DECODER)<br>IC(ANALOG SWITCH)<br>IC(MICROPROCESSOR)<br>IC(SCHMITT INVERTER) |                        |                    |
| IC15<br>IC16<br>IC17<br>IC18<br>IC19      |                | * HM62256ALFP-12T<br>TC74HC373AF<br>FST529F<br>TA8410AK<br>M62005L       | IC(256kbit SRAM)<br>IC(8 bit LATCH)<br>IC(SYSTEM RESET)<br>IC(POWER OP AMP)<br>IC(SYSTEM RESET)                |                        |                    |
| IC20<br>IC21<br>Q1<br>Q2                  |                | TL431CLP<br>TC74HC02AF<br>DTA124ES<br>UN4112<br>DTC124ES                 | IC(REGULATOR)<br>IC(INVR GATE)<br>DIGITAL TRANSISTOR<br>DIGITAL TRANSISTOR<br>DIGITAL TRANSISTOR               |                        |                    |
| Q2<br>Q3<br>Q4<br>Q5<br>Q6                |                | UN4212<br>2SB082<br>2SB772<br>2SC1923(R,Q)<br>2SC3246                    | DIGITAL TRANSISTOR<br>TRANSISTOR<br>TRANSISTOR<br>TRANSISTOR<br>TRANSISTOR                                     |                        |                    |
| △ Q7<br>△ Q8<br>△ Q9<br>△ Q10,11          |                | 2SD2012<br>2SB1375<br>2SC2458(Y,GR)<br>2SC3311A(Q,R)<br>1RF610           | TRANSISTOR<br>TRANSISTOR<br>TRANSISTOR<br>TRANSISTOR<br>FET                                                    |                        |                    |
| △ Q12<br>Q13<br>Q14<br>Q15                |                | 2SD1944<br>2SK163(L)<br>DTC124ES<br>UN4212<br>2SA1534A(R,S)              | TRANSISTOR<br>FET<br>DIGITAL TRANSISTOR<br>DIGITAL TRANSISTOR<br>TRANSISTOR                                    |                        |                    |
| △ Q16,17<br>△ Q18                         |                | 2SK208(Y,GR)<br>2SA1036K(Q,R)                                            | TRANSISTOR<br>TRANSISTOR                                                                                       |                        |                    |
| A1<br>A2                                  | 2H,2L<br>2H,2L | * W02-1181-05<br>W02-1114-05                                             | OPTIC RECEIVING MODULE(OPT IN)<br>OSCILLATING MODULE(OPT OUT)                                                  |                        |                    |
| MECHANISM ASS'Y (X92-1880-10)             |                |                                                                          |                                                                                                                |                        |                    |
| 1                                         | 3B             | * B09-0242-04                                                            | CAP                                                                                                            |                        |                    |
| 2                                         | 1B             | * D10-3380-03                                                            | SLIDER ASSY                                                                                                    |                        |                    |
| 3                                         | 1B             | * D10-3382-03                                                            | SLIDER ASSY                                                                                                    |                        |                    |
| 4                                         | 2A             | * D10-3385-03                                                            | SLIDER                                                                                                         |                        |                    |
| 5                                         | 1B             | * D10-3386-04                                                            | R0D                                                                                                            |                        |                    |
| 6                                         | 2B             | * D10-3387-04                                                            | ARM                                                                                                            |                        |                    |
| 7                                         | 1D             | * D10-3388-03                                                            | LEVER                                                                                                          |                        |                    |
| 8                                         | 3C             | * D10-3389-04                                                            | R0D                                                                                                            |                        |                    |

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Y:AAFE(S) Europe X:Australia M:Other Areas

△ indicates safety critical components.

× New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

10

| Ref. No.<br>参照番号           | Address<br>位置              | Parts No.<br>部品番号                                                                 | Description<br>部品名 / 規格                                                                   | Desti-<br>nation<br>仕向 | Re-<br>marks<br>備考 |
|----------------------------|----------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------|--------------------|
| 78<br>79                   | 2A,2B<br>1D                | N83-2608-46<br>N39-1740-46                                                        | PAN HEAD TAPTITE SCREW<br>PAN HEAD SCREW                                                  |                        |                    |
| 80<br>81                   | 2D<br>2A,3B                | S33-1022-05<br>S40-1112-05                                                        | PUSH SWITCH (SLT)<br>PUSH SWITCH (OPEN,CLOSE)                                             |                        |                    |
| 82<br>DM<br>FM<br>LM<br>PU | 3C<br>3C<br>2C<br>3B<br>3D | * T99-0539-05<br>* T42-0647-08<br>* T42-0637-05<br>* T42-0620-05<br>* T25-0029-05 | MAGNET<br>DISC MOTOR ASSY<br>FEED MOTOR<br>LOADING MOTOR<br>OPTICAL PICKUP HEAD(KMS-130B) |                        |                    |
| RH                         | 1D                         | * T30-0010-05                                                                     | RECORD HEAD (RF320-74V)                                                                   |                        |                    |

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| Ref. No.<br>参照番号           | Address<br>位置                       | Parts No.<br>部品番号                                                                 | Description<br>部品名 / 規格                                                                                                                        | Desti-<br>nation<br>仕向 | Re-<br>marks<br>備考 |
|----------------------------|-------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------|
| 9<br>10<br>11<br>12<br>15  | 1D<br>1C<br>1D<br>1D<br>3A          | * D10-3390-03<br>* D10-3391-04<br>* D10-3393-03<br>* D10-3420-04<br>D13-0976-03   | LEVER<br>ARM ASSY<br>ARM<br>ARM ASSY<br>GEAR                                                                                                   |                        |                    |
| 16<br>17<br>18<br>19<br>20 | 3A<br>1A<br>3A<br>3A<br>3A          | * D13-0976-03<br>* D13-1542-04<br>* D13-1543-04<br>* D13-1544-04<br>* D13-1545-04 | GEAR<br>GEAR<br>GEAR<br>GEAR<br>GEAR                                                                                                           |                        |                    |
| 21<br>22<br>23<br>25<br>26 | 2C<br>2C<br>3C<br>3D<br>3A          | * D13-1546-08<br>* D13-1547-08<br>* D13-1548-08<br>* D13-1550-13<br>D15-0292-08   | GEAR<br>GEAR<br>GEAR ASSY<br>LACK (GEAR)<br>PULLEY                                                                                             |                        |                    |
| 27<br>28<br>29<br>30<br>31 | 3A<br>3A<br>1D<br>1A<br>2A          | * D15-0351-04<br>* D16-0352-05<br>D21-1728-04<br>* D23-0296-03<br>* D23-0296-03   | PULLEY<br>BELT<br>SHAFT<br>RETAINER<br>RETAINER                                                                                                |                        |                    |
| 32                         | 3A                                  | * D40-1312-03                                                                     | DRIVE MECHANISM ASSY                                                                                                                           |                        |                    |
| 35<br>36<br>37<br>38<br>39 | 2A<br>1D<br>1D<br>1C,1D<br>1D       | * G01-3582-04<br>* G01-3583-04<br>* G01-3584-04<br>* G01-3585-04<br>* G01-3586-04 | EXTENSION SPRING<br>TENSION COIL SPRING<br>TENSION COIL SPRING<br>TENSION COIL SPRING<br>TENSION COIL SPRING                                   |                        |                    |
| 40<br>45<br>46             | 3B<br>2A<br>2A,2B                   | * G01-3611-04<br>G11-2055-04<br>G11-2164-04                                       | COMPRESSION SPRING<br>CUSHION<br>CUSHION (2X3,L3)                                                                                              |                        |                    |
| 47<br>50<br>50<br>55<br>56 | 3B<br>1C<br>2D,3C<br>2A<br>2A       | * J02-1093-08<br>* J19-3589-02<br>* J21-5926-04<br>* J90-0802-04<br>* J90-0803-04 | INSULATOR<br>HOLDER ASSY<br>MOUNTING HARDWARE<br>GUIDE<br>GUIDE                                                                                |                        |                    |
| 57<br>58<br>60<br>61       | 3A<br>2A<br>1A<br>1D                | * J90-0805-03<br>* J90-0806-04<br>* J99-0530-01<br>* J21-6017-04                  | GUIDE<br>GUIDE<br>TRAY<br>MOUNTING HARDWARE ASSY                                                                                               |                        |                    |
| 62<br>63<br>64<br>65<br>66 | 2C<br>2B,3A<br>3A<br>1C,1D<br>3A    | * N09-3031-05<br>N19-0891-04<br>N19-1105-04<br>N19-1171-04<br>* N09-3040-05       | MACHINE SCREW (M2X2.5)<br>FLAT WASHER<br>FLAT WASHER<br>FLAT WASHER<br>SEMS (MACHINE SCREW)(M2X3)                                              |                        |                    |
| 67<br>68<br>69<br>70<br>71 | 2C,3C<br>2D<br>2D,3C<br>3B,3C<br>3D | N35-2004-46<br>N35-2006-46<br>N35-2603-46<br>N35-2605-46<br>N38-1440-46           | BINDING HEAD MACHINE SCREW<br>BINDING HEAD MACHINE SCREW<br>BINDING HEAD MACHINE SCREW<br>BINDING HEAD MACHINE SCREW<br>PAN HEAD MACHINE SCREW |                        |                    |
| 73<br>74<br>75<br>76<br>77 | 1D<br>3A<br>2A,3A<br>1A<br>2A,3B    | N79-1740-46<br>* N83-2004-45<br>* N83-2006-45<br>N83-2006-46<br>N83-2006-46       | PAN HEAD TAPTITE SCREW<br>PAN HEAD TAPTITE SCREW<br>PAN HEAD TAPTITE SCREW<br>PAN HEAD TAPTITE SCREW<br>PAN HEAD TAPTITE SCREW                 |                        |                    |

L:Scandinavia K:USA P:Canada R:Mexico  
Y:PX(Far East,Hawaii) T:England E:Europe G:Germany  
Y:AAFE(S) Europe X:Australia M:Other Areas

△ indicates safety critical components.

PARTS LIST

DM-1001/B9

DM-1001/B9

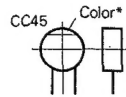
PARTS LIST

## PARTS LIST

## CAPACITORS

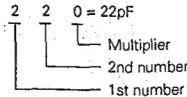
| CC | 45 | TH | 1H | 220 | J |
|----|----|----|----|-----|---|
| 1  | 2  | 3  | 4  | 5   | 6 |

- 1 = Type ... ceramic, electrolytic, etc.  
 2 = Shape ... round, square, etc.  
 3 = Temp. coefficient  
 4 = Voltage rating  
 5 = Value  
 6 = Tolerance



## • Capacitor value

- 010 = 1pF  
 100 = 10pF  
 101 = 100pF  
 102 = 1000pF = 0.001μF  
 103 = 0.01μF



## • Temperature coefficient

| 1st Word | C     | L   | P      | R      | S     | T    | U      |
|----------|-------|-----|--------|--------|-------|------|--------|
| Color*   | Black | Red | Orange | Yellow | Green | Blue | Violet |
| ppm/°C   | 0     | -80 | -150   | -220   | -330  | -470 | -750   |

| 2nd Word | G   | H   | J    | K    | L    |
|----------|-----|-----|------|------|------|
| ppm/°C   | ±30 | ±60 | ±120 | ±250 | ±500 |

Example: CC45TH = -470 ± 60ppm/°C

## • Tolerance (More than 10pF)

| Code | C     | D    | G  | J  | K   | M   | X   | Z   | P    | No code                                                 |
|------|-------|------|----|----|-----|-----|-----|-----|------|---------------------------------------------------------|
| (%)  | ±0.25 | ±0.5 | ±2 | ±5 | ±10 | ±20 | +40 | +80 | +100 | More than 10μF - 10 ~ +50<br>Less than 4.7μF - 10 ~ +75 |

## (Less than 10pF)

| Code | B    | C     | D    | F  | G  |
|------|------|-------|------|----|----|
| (pF) | ±0.1 | ±0.25 | ±0.5 | ±1 | ±2 |

## • Voltage rating

| 2nd word | A    | B    | C    | D    | E    | F    | G    | H    | J    | K    | V  |
|----------|------|------|------|------|------|------|------|------|------|------|----|
| 1st word |      |      |      |      |      |      |      |      |      |      |    |
| 0        | 1.0  | 1.25 | 1.6  | 2.0  | 2.5  | 3.15 | 4.0  | 5.0  | 6.3  | 8.0  | -  |
| 1        | 10   | 12.5 | 16   | 20   | 25   | 31.5 | 40   | 50   | 63   | 80   | 35 |
| 2        | 100  | 125  | 160  | 200  | 250  | 315  | 400  | 500  | 630  | 800  | -  |
| 3        | 1000 | 1250 | 1600 | 2000 | 2500 | 3150 | 4000 | 5000 | 6300 | 8000 | -  |

## • Chip capacitors

(EX) C C 7 3 F S L 1 H 0 0 0 J  
 1 2 3 4 5 6 7 Refer to the table above.

(Chip) (CH, RH, UJ, SJ)

(EX) C K 7 3 F F 1 H 0 0 0 Z  
 1 2 3 4 5 6 7  
 (Chip) (B, F)

- 1 = Type  
 2 = Shape  
 3 = Dimension  
 4 = Temp. coefficient  
 5 = Voltage rating  
 6 = Value  
 7 = Tolerance

## Dimension (Chip capacitors)

| Dimension code | L         | W          | T              |
|----------------|-----------|------------|----------------|
| Empty          | 5.6 ± 0.5 | 5.0 ± 0.5  | Less than 2.0  |
| A              | 4.5 ± 0.5 | 3.2 ± 0.4  | Less than 2.0  |
| B              | 4.5 ± 0.5 | 2.0 ± 0.3  | Less than 2.0  |
| C              | 4.5 ± 0.5 | 1.25 ± 0.2 | Less than 1.25 |
| D              | 3.2 ± 0.4 | 2.5 ± 0.3  | Less than 1.5  |
| E              | 3.2 ± 0.2 | 1.6 ± 0.2  | Less than 1.25 |
| F              | 2.0 ± 0.3 | 1.25 ± 0.2 | Less than 1.25 |
| G              | 1.6 ± 0.2 | 0.8 ± 0.2  | Less than 1.0  |

## RESISTORS

## • Chip resistor (Carbon)

(EX) R K 7 3 E B 2 B 0 0 0 J  
 1 2 3 4 5 6 7

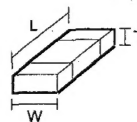
(Chip) (B, F)

## • Carbon resistor (Normal type)

(EX) R D 1 4 B B 2 C 0 0 0 J  
 1 2 3 4 5 6 7

- 1 = Type  
 2 = Shape  
 3 = Dimension  
 4 = Temp. coefficient  
 5 = Rating wattage  
 6 = Value  
 7 = Tolerance

## Dimension



## Dimension (Chip resistor)

| Dimension code | L         | W          | T         |
|----------------|-----------|------------|-----------|
| E              | 3.2 ± 0.2 | 1.6 ± 0.2  | 1.0       |
| F              | 2.0 ± 0.3 | 1.25 ± 0.2 | 1.0       |
| G              | 1.6 ± 0.2 | 0.8 ± 0.2  | 0.5 ± 0.1 |

## Rating wattage

| Code | Wattage | Code | Wattage | Code | Wattage |
|------|---------|------|---------|------|---------|
| 1J   | 1/16W   | 2C   | 1/6W    | 3A   | 1W      |
| 2A   | 1/10W   | 2E   | 1/4W    | 3D   | 2W      |
| 2B   | 1/8W    | 2H   | 1/2W    |      |         |

## SPECIFICATIONS

System ..... Mini Disc digital audio system  
 Laser ..... Semiconductor laser  
 Recording method ..... Field modulation overwrite method  
 Sampling frequency ..... 44.1kHz  
 Playing rotation ..... Approx. 400rpm~900rpm (CLV)  
 Audio compression ..... ATRAC (Adaptive TRansform Acoustic Coding)

Output level / Impedance ..... 1.2V/3.3kΩ : DM-B9, 2.0V/1kΩ : DM-1001

## Digital output

Optical ..... -15dBm~-21dBm (Wave length 660nm)

Headphone output (16Ω) ..... 6.0mW : DM-B9, 6.4mW : DM-1001

Input sensitivity / Impedance ..... 300mV/22kΩ or more : DM-B9, 500mV/22kΩ or more : DM-1001

## GENERAL

Power consumption ..... 35W

## Dimensions

DM-B9 ..... W : 270mm (10-5/8") x H : 70mm (2-3/4") x D : 322mm (12-11/16")

DM-1001 ..... W : 270mm (10-5/8") x H : 83mm (3-1/4") x D : 324mm (12-3/4")

Weight (Net) ..... 4.4kg (9.7lb) : DM-B9, 4.7kg (10.3lb) : DM-1001

KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.  
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## Note:

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

## KENWOOD CORPORATION

Alive Mitake, 2-5, 1-chome Shibuya, 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 ELECTRONICS CANADA INC.  
 6070 Keele Road, Mississauga, Ontario, Canada L5T 1S9  
 KENWOOD ELECTRONICS LATIN AMERICA S.A.  
 P.O. BOX 55-2781, Piso 6 Plaza Chase, Cl. 47 y Aquilino de la Guardia, Panama, Republic of Panama  
 TRIO-KENWOOD U.K. LIMITED  
 KENWOOD House, Dwight Road, Watford, Herts., WD1 8EB United Kingdom  
 KENWOOD ELECTRONICS BENELUX N.V.  
 Mechelsesteenweg 418 B-1930 Zaventem, Belgium  
 KENWOOD ELECTRONICS DEUTSCHLAND GMBH  
 Rembrücker-Str. 15, 69150 Hausenstamm, Germany  
 TRIO-KENWOOD FRANCE S.A.  
 13 Boulevard Ney, 75018 Paris, France  
 KENWOOD ELECTRONICS ITALIA S.p.A.  
 Via G. Sirtori, 7/9 20129 Milano, Italy  
 KENWOOD ESPAÑA S.A.  
 Bolivia, 239-08020 Barcelona, Spain  
 KENWOOD ELECTRONICS AUSTRALIA PTY. LTD. (A.C.N. 001 499 074)  
 P.O. BOX 504, 8 Figgis Drive, Australia Centre, Homebush, N.S.W. 2140, Australia  
 KENWOOD & LEE ELECTRONICS, LTD.  
 Unit 3712-3724, Level 37 Tower 1, Metroplaza, 223 Hing Fong Road, Kwai Fong N.T. Hong Kong  
 KENWOOD ELECTRONICS SINGAPORE PTE LTD.  
 No. 1 Gentling Lane #07-09, KENWOOD Building, Singapore, 1334