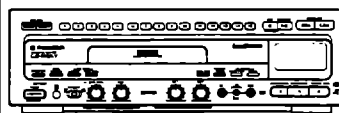


Service Manual

PIONEER
The Art of Entertainment



SERVICE GUIDE

ORDER NO.
RRV 1519

CD/VIDEO CD/LD PLAYER

CLD-3750KV CLD-1750KV

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T-FZM JUNE 1996 Printed in Japan

1. SPECIFICATION OF VIDEO CD

1.1 VIDEO CD

- A maximum of 74 minutes of moving pictures with audio are recorded in a 12 cm (5inch) disc by using the compression technology of the international standard MPEG. (Audio is also compressed by MPEG.)
- Pictures using MPEG have no red stripes or noise causing skipped color. However, block distortion and so-called mosquito noise exist in the pictures.

Picture quality of Video CD

Since the units of screen compression are macro blocks and blocks, error will be generated in units of blocks if the screen as a whole moves. Thus, distortion may be generated on the borderline between blocks, resulting in a screen blurred with mosaics. This is called "block noise."

Error during compression may generate noise, that looks like a blur in a position with high frequency in the screen (edges of characters, etc.), or mosquito noise.

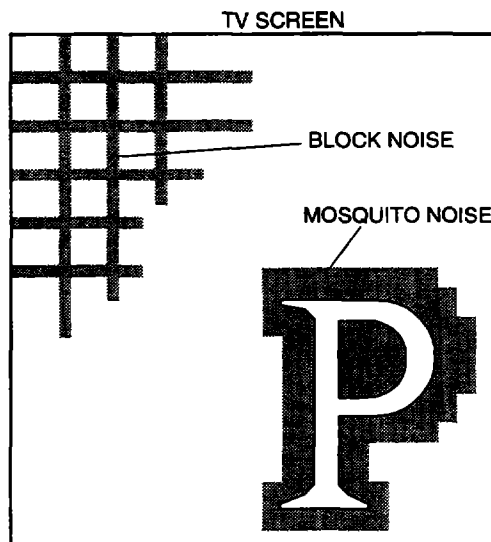


Fig. 1-1

These noises are generated during encoding. Therefore, they cannot be reduced or eliminated at the decoding side (player).

- The track pitch and the bit length of Video CDs are equivalent to those in normal CDs (CD-DA). The file structure complies with the ISO 9660. Thus, Video CDs belong to CD-ROM XA. (Therefore, Video CDs can be played back with personal computers if the MPEG board is used.)
Besides 12 cm (5inch) discs, there are 8 cm (3inch) discs. Also, CD-DA can be recorded on the external perimeter of the MPEG track. In addition, subcodes (graphics) can be recorded. However, the CLD-3750KV and CLD-1750KV are not designed to use subcodes of the MPEG track.
- Moving pictures of MPEG are recorded after Track 2. At least a single track must be used. With the CLD-3750KV and CLD-1750KV, the system displays a value deducting 1 from the actual track number of Video CD played back for searching or display. Although other companies are using similar methods, these methods are not established as a rule. Therefore, some discs may indicate actual track numbers on their labels.

1.2 BASIC KNOWLEDGE OF VIDEO CD

Category of Video CD

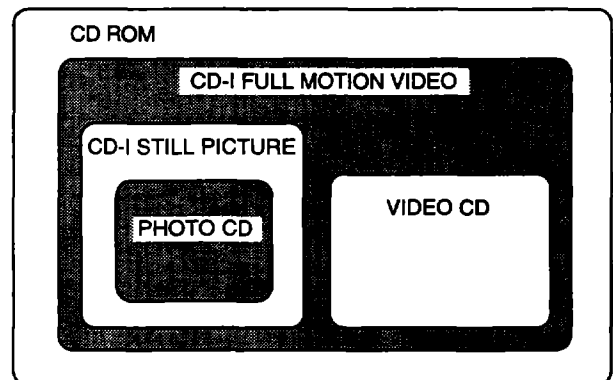


Fig. 1-2

1.3 SPECIFICATIONS OF VIDEO CD

Physical format	CD-ROM (XA)
Digital video	Complies with MPEG1. Picture size/Picture rate 352×240/29.97Hz (NTSC) 352×240/23.975Hz (FILM) 352×288/25Hz (PAL) Transmission rate: max. 1.152 MBPS
Digital audio	Complies with MPEG1 Layer II. Sampling frequency : 44.1kHz Bit rate : 224kBPS
Playback time	Max. 74 minutes
Pixels of still picture	Standard level: 352×240 High definition level: 704×480
Playback specification	Normal playback and Menu playback using PBC
Video signal output	NTSC/PAL

Fig. 1-3

2. VIDEO CD FORMAT

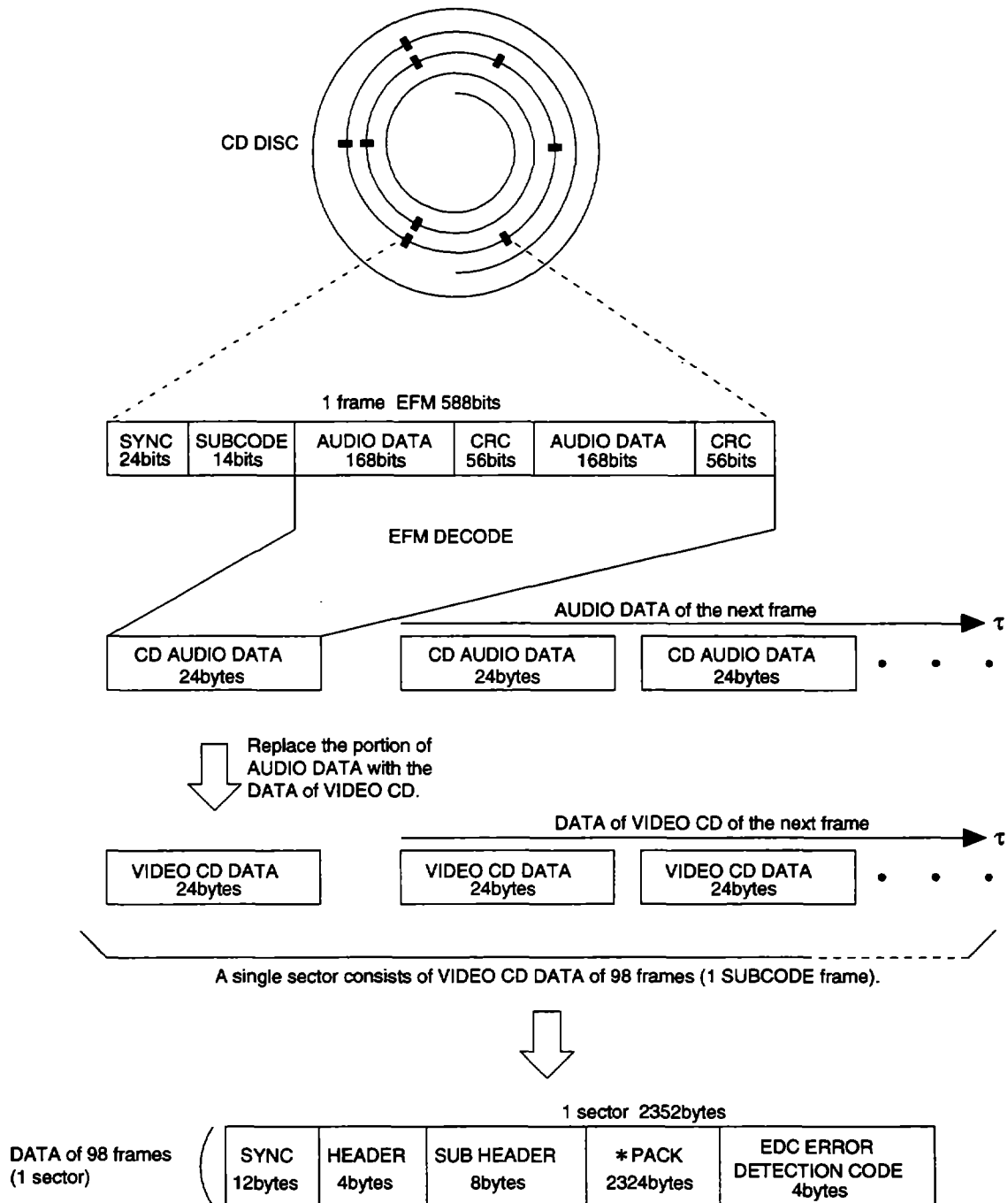


Fig. 2-1

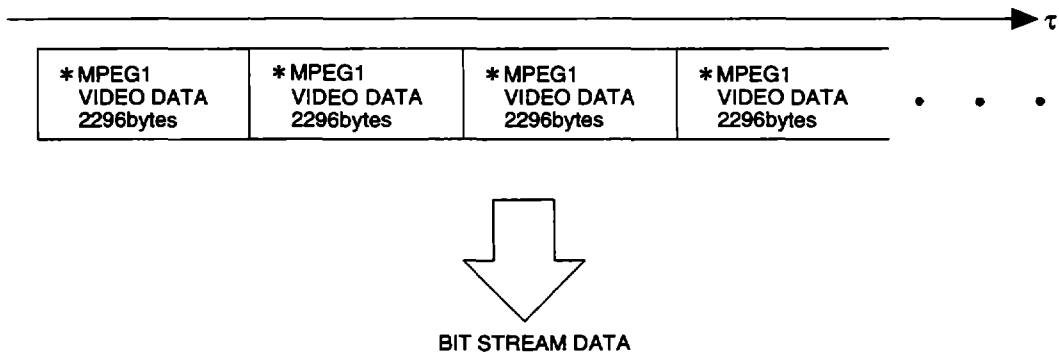
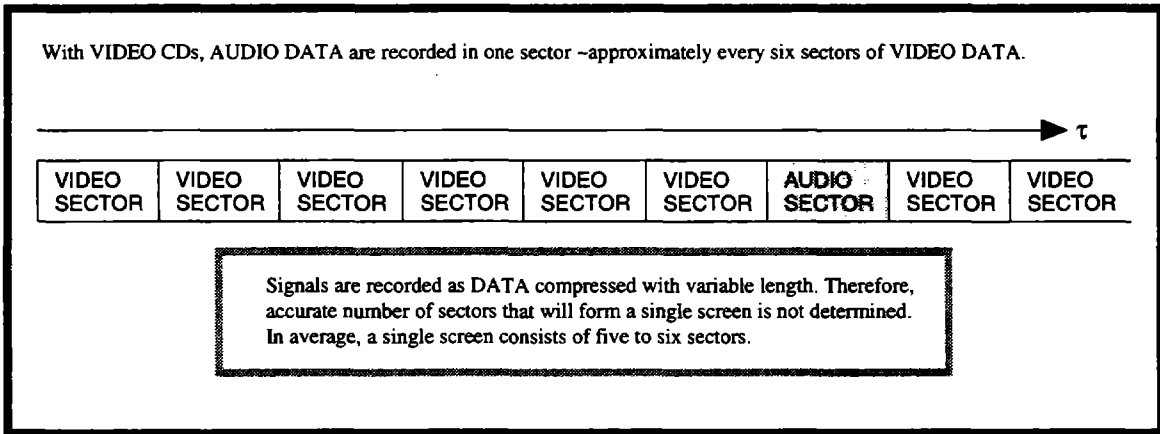
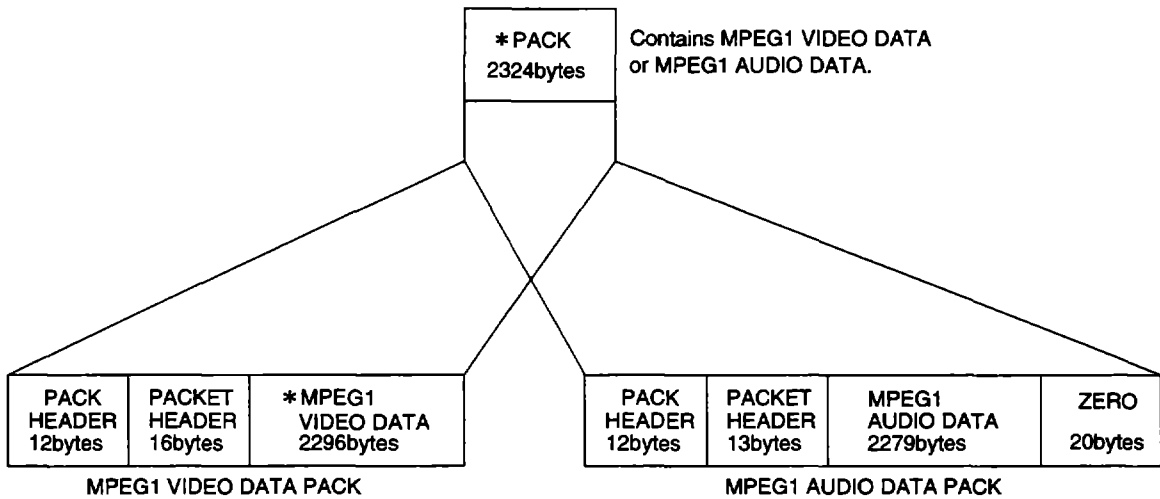


Fig. 2-2

VIDEO CD VERSION 2.0 TRACK FORMAT

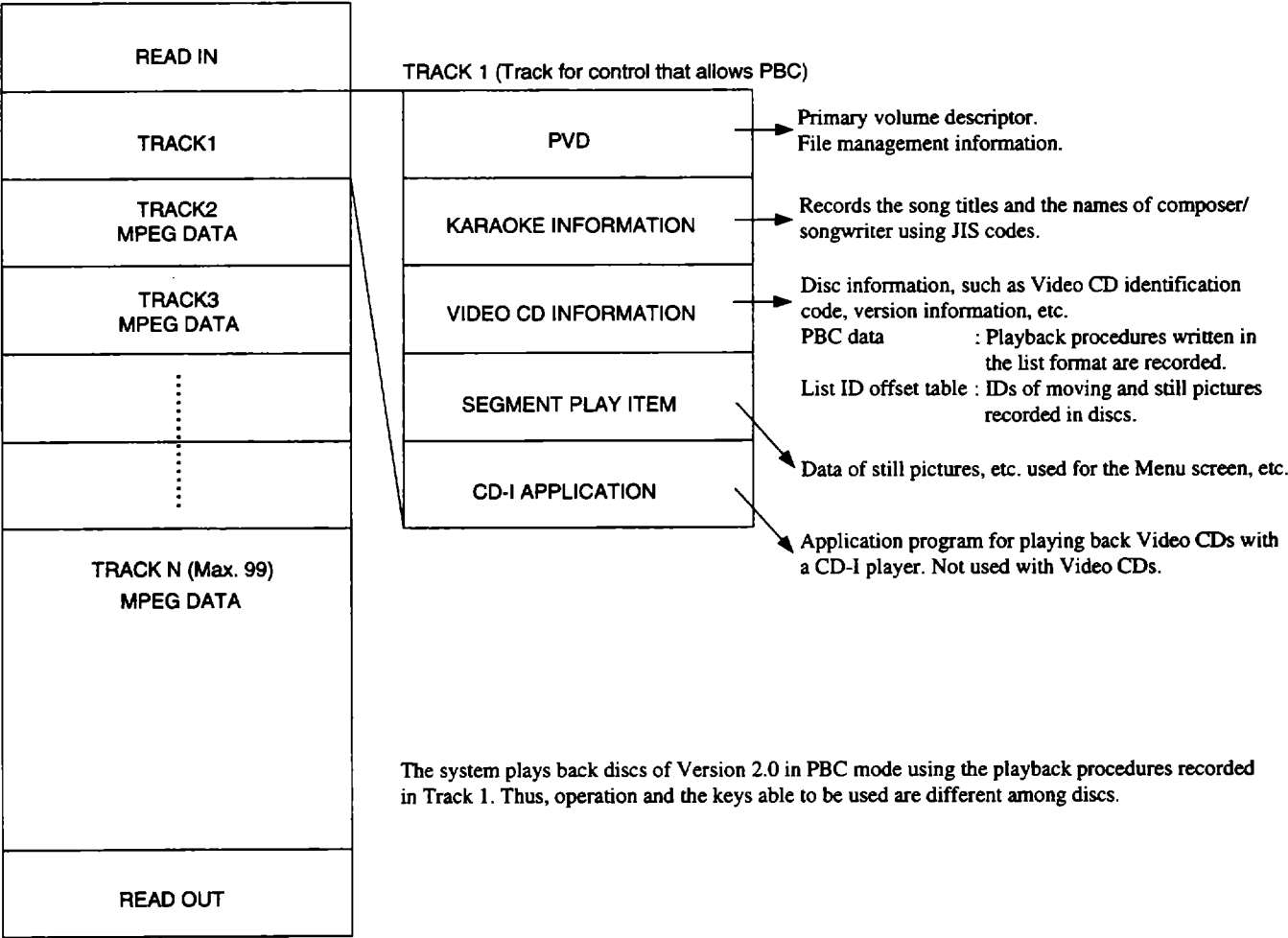


FIG. 2-4

CLD-3750KV/1750KV : Player compatible with Video CD Version 2.0. When the PBC button is set to ON, discs of Video CD Version 2.0 can be played back in PBC mode. When the PBC button is set to OFF, the system plays back the disc from Track 2. (The display shows "Track 1.") Discs of Version 1.0 are also played back from Track 2. The system does not play back discs of Version 1.0 in PBC mode, even when the PBC button is set to ON.

3. PBC OPERATION

When a disc is played back in PBC mode, playback will be based on the PBC data written in Track 1 of the disc. If the user performs operation disabled by PBC, all such operations will be ignored by the system.

Operation keys during PBC mode

Key	Name	Purpose
PLAY key	Selection	Executes selected items.
STOP key	Return	Terminates the current operation and returns to the previous screen.
FWD SKIP key	Next	Forwards pages, etc.
RVS SKIP key	Previous	Reverses pages, etc.
TEN keys	-	Selects a number and executes, etc.

Fig. 3-1

Although the keys listed in the table above can be basically used for PBC operation, it depends on the discs. With some discs, these keys may not function.

(Normally, information on keys able to be used is written on the disc jacket or in the instruction manual.)

Example of operation

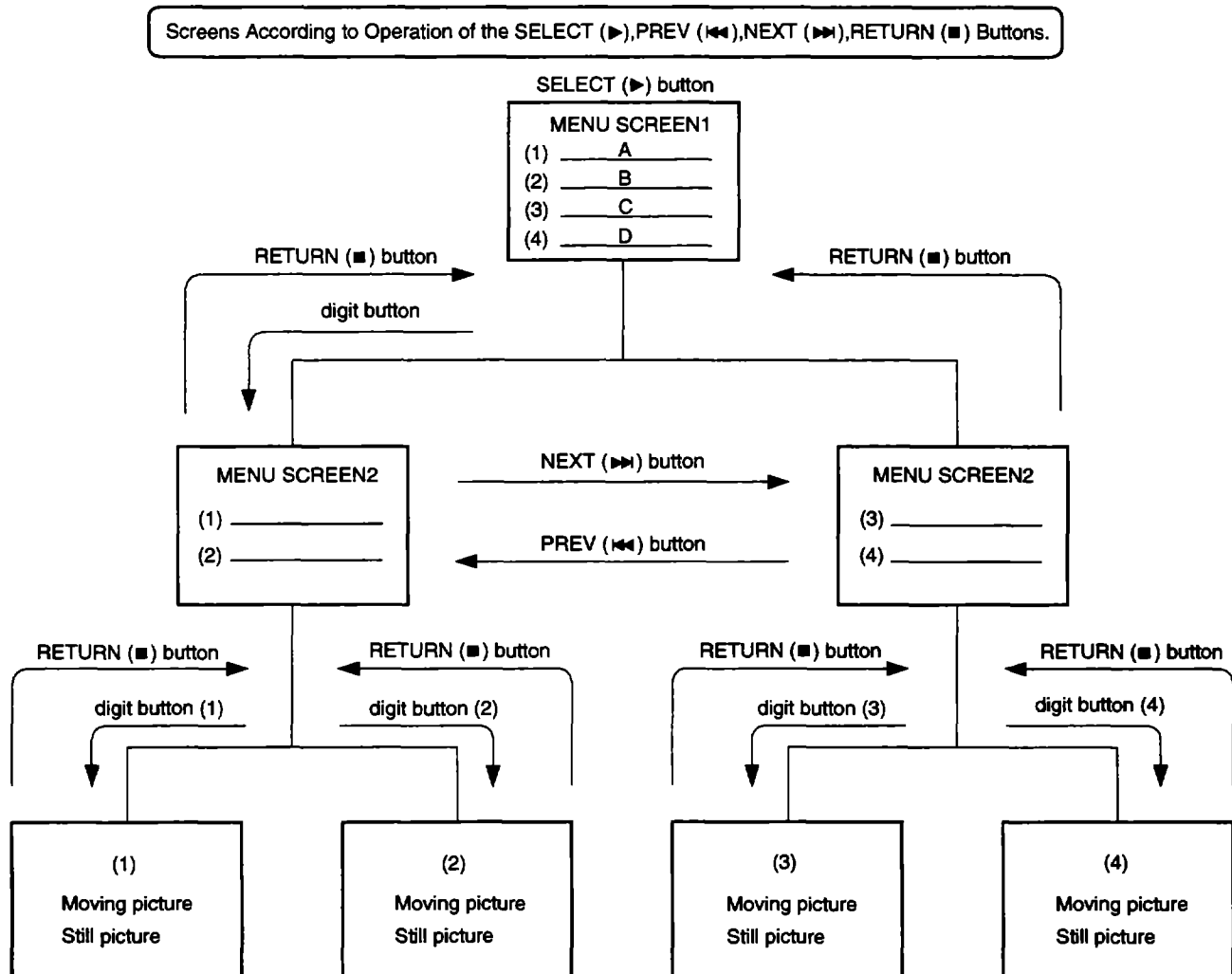


Fig. 3-2

4. SPECIAL PLAYBACK

(1) Scanning

MPEG scanning is performed by continuously displaying only I picture (completed screen able to decoded independently.). Therefore, scanning is made in different manner than with LDs where screens change continuously. In addition, audio is muted during scanning.

Actual scanning operation of the CLD-3750KV and CLD-1750KV is outlined as follows:

When the Scan key is pressed, the system skips tracks for approximately 15 seconds at a point where I picture can be decoded. After that, the system plays back while continuously displaying the previous I picture (incorporating I picture) until the next I picture can be decoded. Once I picture can be decoded, the system changes the display screen and skips tracks again. Scanning is performed by repeating the operation mentioned above. The positions where I pictures are recorded depend on the discs. Therefore, the display time of I picture is not the same. (Although recommended value of MPEG is 0.5 second per picture, some discs recommend 2 seconds per picture.)

Also, changing the screen takes time if the direction to search tracks has changed for reverse scanning. This is because the system plays back the beginning of the track to read the sequence header at the beginning of the track, then return to the end of the track to perform scanning.

The sequence header is important data for decoding MPEG. If an error has occurred, normal screen will not be displayed.

As there is a possibility that the sequence header may be different in every track, the system reads the sequence header.

(2) Pause

Different from LDs, pausing Video CD produces still picture. Still pictures can be made with B or P pictures, as well as I picture. To cancel pause, press the PLAY key or PAUSE key. However, in PBC mode, the PLAY key of the remote control unit functions as a selection key. Thus, pause cannot be canceled by pressing the PLAY button of the remote control unit.

(3) Forwarding frames

With Video CDs, frames can be run in the forward direction as with CAV of LDs. However, frames cannot be run in the reverse direction (reversing frames).

(Because decoding of MPEG uses forecasting in the forward direction, decoding cannot be made in the reverse direction.)

To cancel still-picture mode, press the PLAY key. However, in PBC mode, the PLAY key of the remote control unit functions as a selection key. Thus, still picture cannot be canceled by pressing the PLAY button of the remote control unit.

(4) Repeat between two points

Since starting of repeat is always made from I picture, slight dislocation (approx. 0.5 to 2 seconds) will occur if the position specified by user is not an I picture.

(5) Time search

Although this function is not provided with CDs, the system performs Time Search with Video CDs, by taking into consideration of discs containing motion pictures. As the start position is from an I picture, dislocation may occur.

Scoring Function

As with LDs, scoring is possible when PBC is set to OFF. When PBC is set to ON, some discs may have restrictions on scoring because of the following reasons:

When PBC is set to OFF, the system starts scoring by searching after Track 2, and displays the result of scoring by searching for Track 1. Therefore, with the discs designed to return to the Menu screen every time a song is completed, the system displays the result of scoring correctly. With discs from Victor, the system plays back the next song, without returning to the Menu. Thus, the system plays back the next song without displaying the result of scoring.

With such discs, user must press the PAUSE button in order to display the result of scoring. Another solution is to set PBC to OFF and then perform scoring.

(With karaoke discs using LDC, the system returns to the Menu. Thus, displaying the result of scoring functions correctly.)

Discs currently available on the market have only improper operations as mentioned above. Depending on the content of discs to be introduced in future, other improper operations may appear.

(If still-picture karaoke discs using only Track 1 are introduced, the scoring function cannot be used.)

5. VCDB ASSY/THE METHODS OF REPAIR

5.1 DIAGNOSIS

Block	IC	Functions	Malfunction (defective soldering in the block on the left, or defective parts)
A	IC101 IC501 IC502 IC503 X101	CPU 1M RAM Address decode Address decodr 16MHz clock	Cannot identify Video CD. Does not operate.
B	IC201 IC202 IC205	CD-ROM decoder 256K RAM Buffer	Cannot identify Video CD. Does not operate.
C	IC301 IC302 IC305 X301	MPEG video decoder 4M RAM 4M RAM 13.5MHz clock	No picture displayed (black screen). Displays distorted screen (with mosaic patterns, deflected synchronization) Identifies Video CD, but does not play back.
D	IC401	MPEG audio decoder	No sound is output. Distorted sound is output. Displays for several seconds, then stops. Identifies Video CD, but does not play back.
E	IC701 IC702 X701	3CH (RGB) DAC RGB encoder 14.3181MHz clock	No picture displayed Display is not in color. Displays incorrect colors. Displays distorted screen (deflected synchronization)

Fig. 5-1

Test land	Possible malfunctioning point when the signal on the test land is abnormal
DACK*	IC301 Block C
DRQ*	IC101, address decoder Block A
CSN	IC101 Block A
WRITE*	IC201 Block B
BSREQN	IC301 Block C
QDVLD	IC401 Block D

*The name of test land is different from the meaning of the signal shown on the test land.

DACK DMA request signal from IC301 to IC101
 DRQ DMA enable signal from IC101 to IC301
 WRITE Interrupt signal from IC201 to IC101

Fig. 5-2

VCDB ASSY BLOCK DIAGRAM

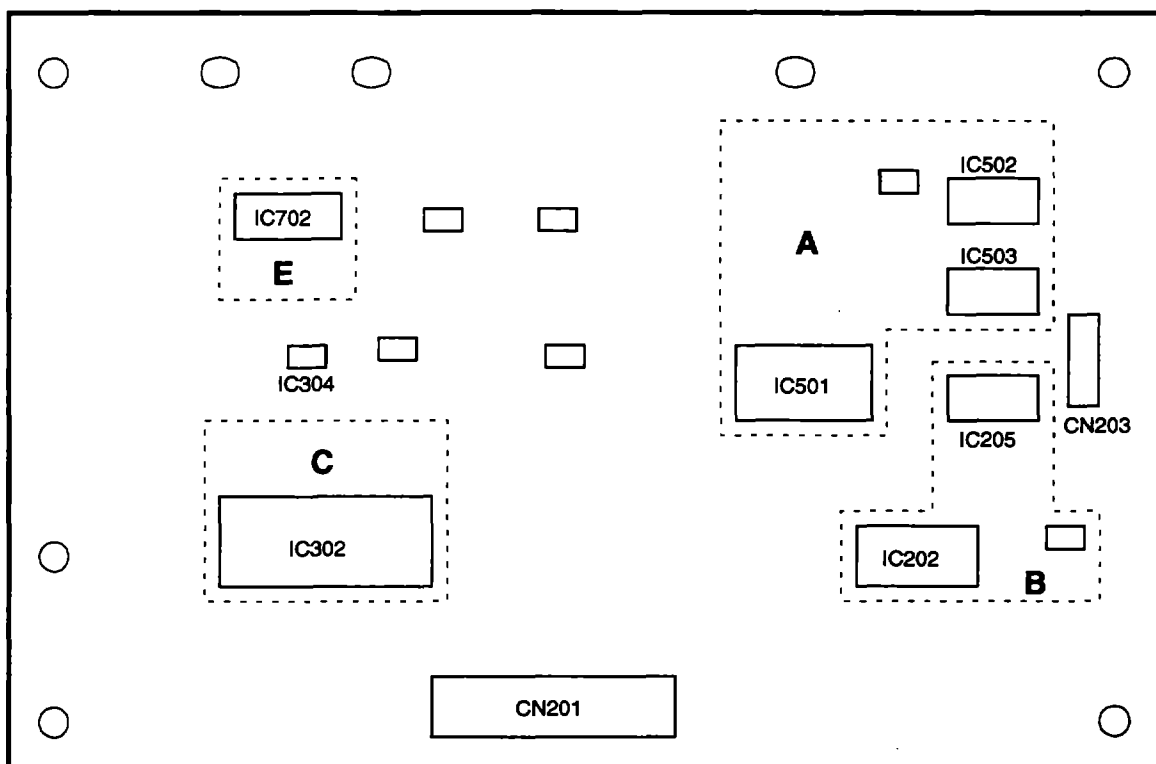
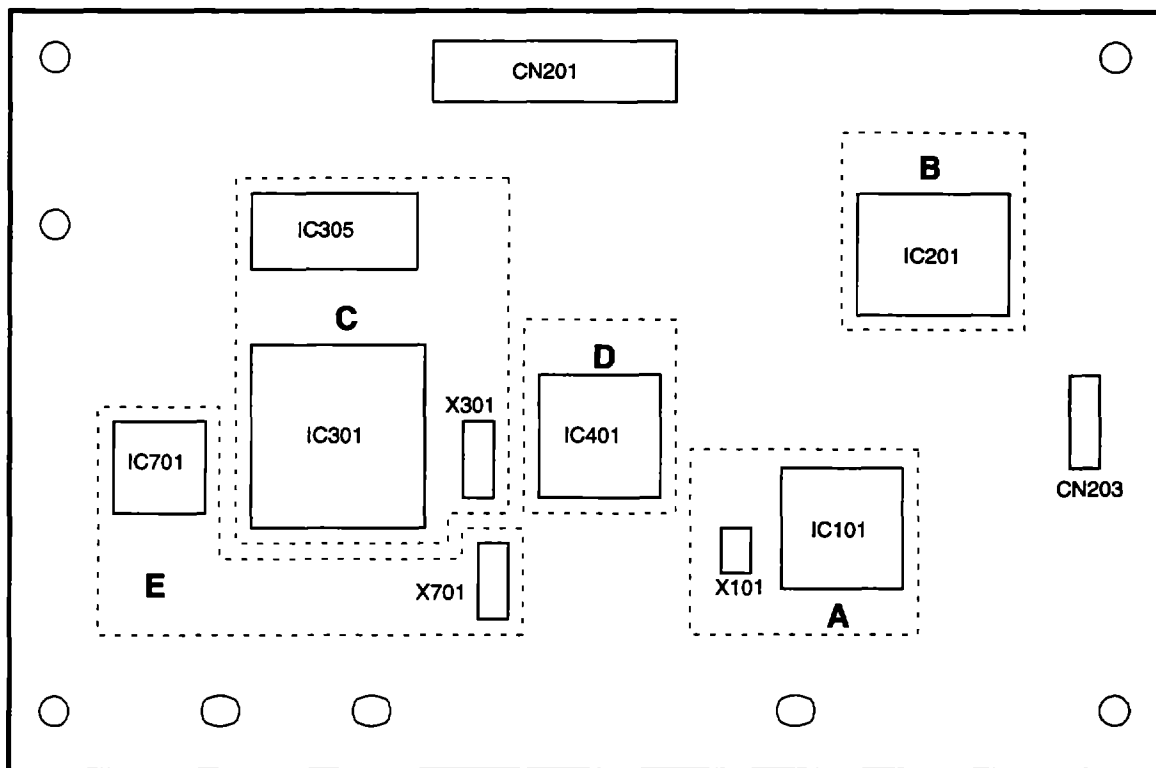


Fig. 5-3

5.2 FLOWCHART OF REPAIR PROCEDURE

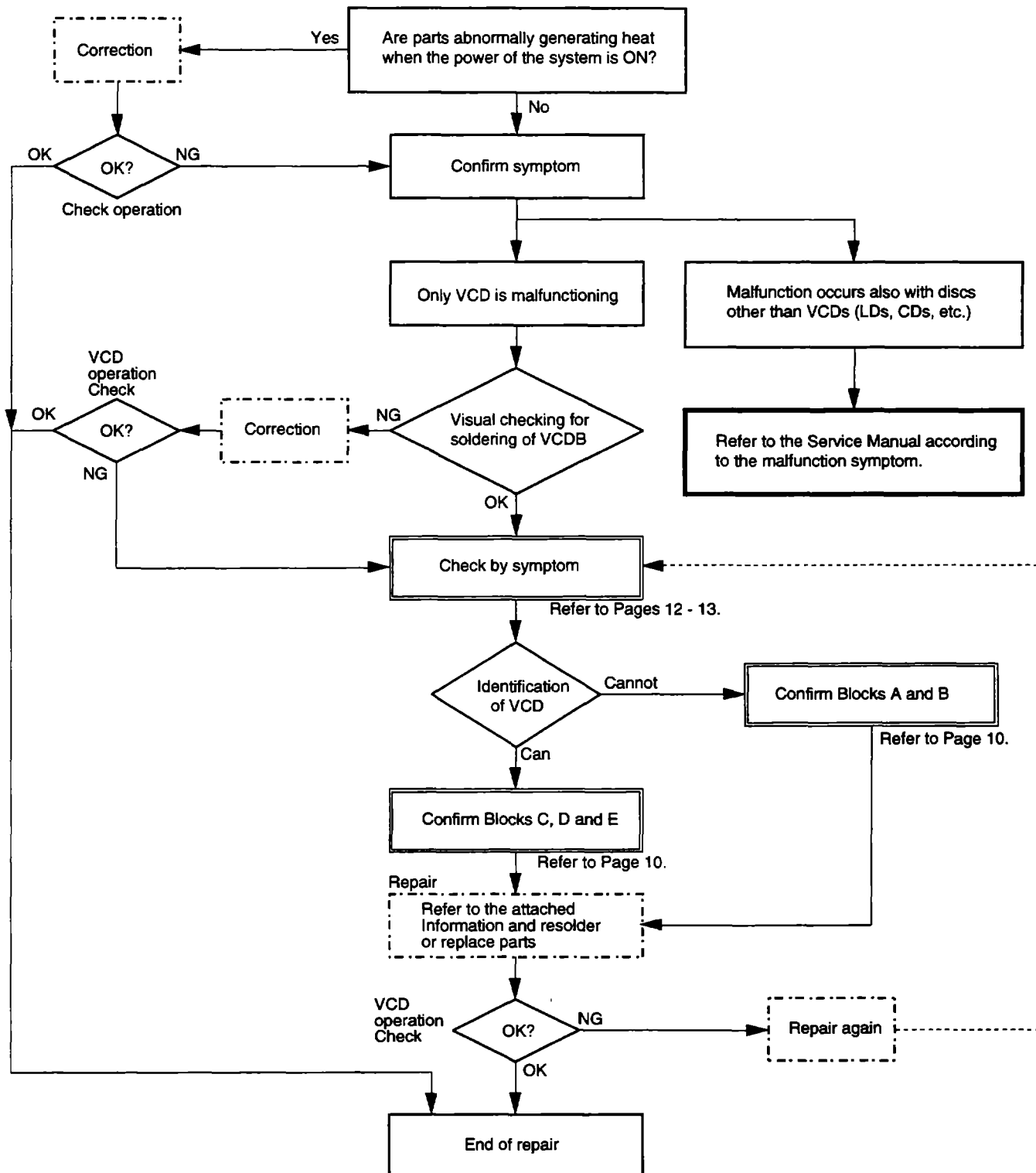
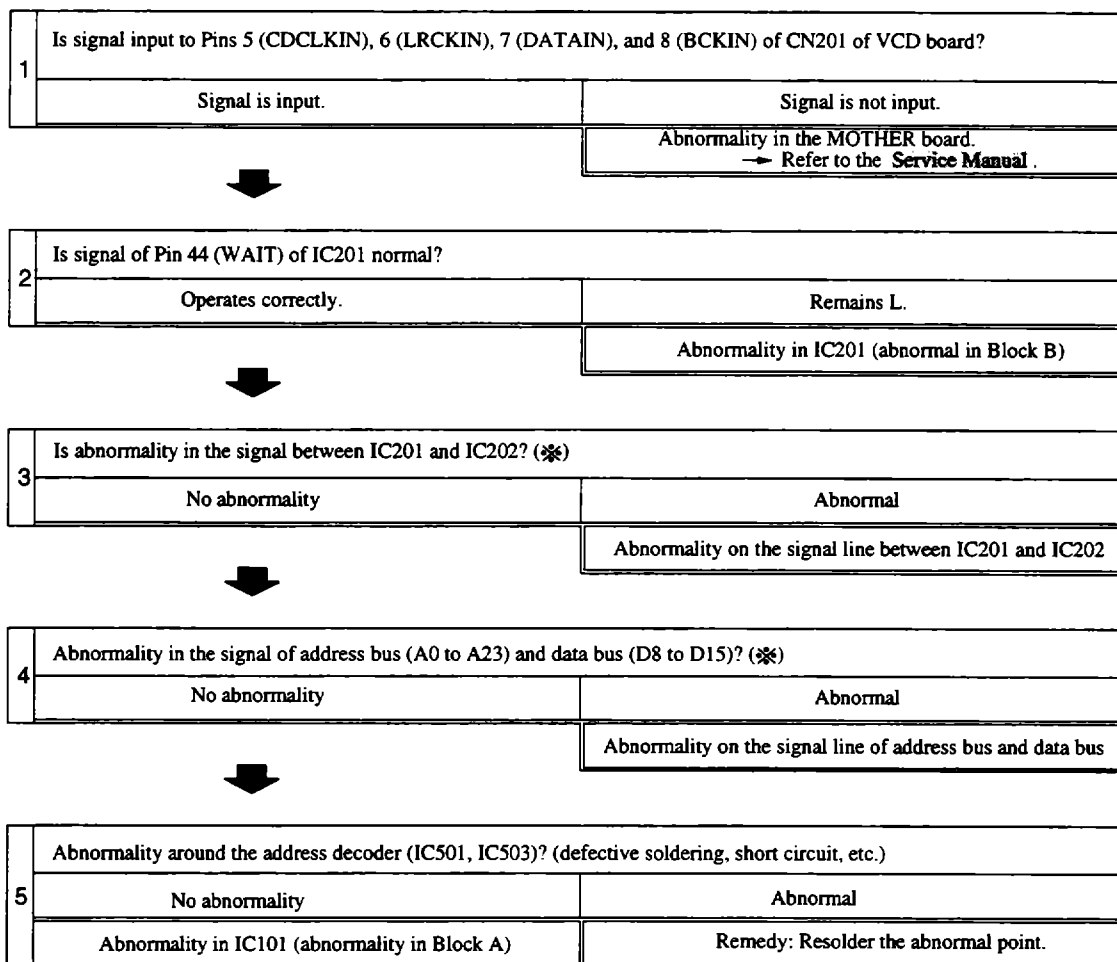


Fig. 5-4

5.3 MANUAL FOR ASSUMPTION OF MALFUNCTIONING POINTS BY SYMPTOM

Cannot identify VCD



※ Abnormality in the signal line means that the voltage, waveform, etc. are different between output and input signals.
This may be caused by defective soldering on the signal line, short circuit, etc.

The system plays back VCD, but PBC does not function.

→ Abnormality in FRPB. Refer to the **Service Manual**.

Screen is not displayed in color only with VCDs.

X701 (3.58 MHz) is not oscillating.
The signal of 3.58 MHz is not input to Pin 6 (Block E) of IC702.

→ Abnormality in Block E

Fig. 5-5

Identifies VCD, but does not play back.

1	Is Pin 65 (XREQV) of CN301 of the VCD board is set to L, or the test land BSREQN is set to L?	
	Set to L.	Set to H.
	Abnormality in IC301 (abnormality in Block C)	



2	Is Pin 5 (XREQA) of IC401 is set to L, or the test land DACK is set to L?	
	Set to L.	Set to H.
	Abnormality in IC101 (abnormality in Block A)	Abnormality in IC401 (abnormality in Block D)

No picture displayed only with VCDs.

1	Is composite signal output to Pin 18 (COMPV) of CN301 of the VCD board?	
	Composite signal is output.	Composite signal is not output.
	Abnormality in the VCD board (abnormality in Block C)	



2	Is Pin 5 (XLD/VCD) of CN203 is set to H?	
	Set to H.	Set to L.
	Abnormality in the GRPB board. → Refer to the Service Manual .	Abnormality in the signal line of XLD/VCD of the VCD board. → Refer to the Service Manual .

No sound is output only with VCDs.

1	Is signal output to Pins 10 (LRCKOUT), 11 (DATAOUT), and 12 (BCKOUT) of CN201 of the VCD board?	
	Signal is output.	Signal is not output.
	Abnormality around IC203 of the MOTHER board. → Refer to the Service Manual .	Abnormality in the VCD board (Block D)

Characters shake only with VCDs.

1	Is sine wave of 6.75 MHz output to Pin 4 (6.75M) of CN203 of the VCD board?	
	Sine wave is output.	Sine wave is not output.
	Abnormality in the GRPB board. → Refer to the Service Manual .	Abnormality in IC304

Fig. 5-6

5.4 POSSIBLE COMPLAINTS

Since the system is designed to operate according to the PBC information of the discs, complaints that the user cannot use the system as they wish may be claimed.

Clame	Cause
Playback stops when the Playback Control key is pressed during playback.	When a disc with PBC is used and playback is changed, the place of playback will be changed. Therefore, the system cannot continue playback. Thus, the system stops playback in such a case. Although the system can continue playback of discs without PBC, some discs are not clearly indicated whether they are with PBC or not. Therefore, the system is desinged to operate as mentioned above for all discs.
The system does not accept song selection when PBC is ON, or other songs cannot be selected during playback.	When PBC is set to ON, PBC also controls acceptance of song selection. Therefore, the system does not accept song selection in the scenes where PBC does not allow song selection. If PBC allows reselection of song during playback, the system accepts reselection of songs. (With LDC discs from Victor, songs can be reselected.)
When no operation is made in the Menu for awhile, the system starts playback automatically.	This is one of the functions of PBC. Some discs are designed to be automatically played back after a specified time has elapsed. User can specify whether to play back particular place or in random.
The system does not terminate operation when termination is selected.	This is a malfunction of discs we found with a disc titled "World Fairy Tales." There is no measure to be taken at the player side. There are possibilities that other such defective discs are on the market.
The system does not stop after a single song when PBC is ON.	Since the system merely operates according to PBC, the function to stop after a single song does not function.
Sometimes the Menu can be paused, and sometimes not.	If the Menu is a still picture without sound, pausing of the Menu is disabled because there is no point in allowing this. If the Menu is a still or moving picture with sound, the Menu can be paused.
The system does not return to the Menu after completing a single song when PBC is ON.	PBC is designed to play back the next song without returning to the Menu.
The system plays back the next song without displaying the result of scoring when PBC is ON.	As explained in "Scoring," with discs designed not to return to the Menu after completing a single song, the system plays back the next song without displaying the result of scoring.
The system cannot return to the beginning of the track in reverse scanning when PBC is ON.	If the starting of playback is specified by the entry point, playback ranges from the entry point to the end of that track. Therefore, the system scans only this range.
Sometimes the system does not accept "Select," "Return," "Next" or "Previous" when PBC is ON.	Since functions to be accepted by PBC can be specified, some discs may not accept these keys.
The system displays "Return" when the PAUSE button is pressed during scoring when PBC is ON.	To display the result of scoring, playback must be stopped. When the picture is paused in PBC mode, the system does not stop playback. Therefore, pause during scoring in PBC mode has the return function so that playback can be stopped. Thus, the system displays "Return."
Still/Pause cannot be canceled with the PLAY key when PBC is ON.	When PBC is ON, the PLAY key of the remote control unit also functions as a selection key. In such a case, the PLAY key does not have the usual playback function. Thus, Still/Pause cannot be canceled with the key. To cancel Still/Pause, use the PLAY key of the player.
The system cannot perform Track Search or Repeat when PBC is ON.	When PBC is set to ON, the place of playback is specified by PBC of the disc. Therefore, changing the place of playback by user conflicts with PBC. Thus, this is disabled.