

Service Manual

DVD Player/ Portable DVD Player

DVD-RV21

DVD-RV31

DVD-RV41

DVD-RA71

DVD-RP91

DVD-H2000

DVD-LV60

DVD-PV40

Areas

A.....Oceania. (DVD-RV31, 41, RA71 only)

CA.....Canada. (DVD-RV31, 41 only)

D.....U.S.A. and Canada. (DVD-RP91,
H2000 only)

E.....Europe. (DVD-RV31, 41, RA71 only)

EB.....Great Britain. (DVD-RV31, 41, RA71,
LV60, PV40 only)

EG.....Germany and Poland, etc. (DVD-RV31,
41, RA71, LV60, PV40 only)

EN.....Asia. (DVD-RV31, RA71 only)

EU.....Russia. (DVD-RV31 only)

GCS.....Asia. (DVD-LV60, PV40 only)

PM.....South America. (DVD-RV31 only)

PX.....Px. (DVD-RV31 only)

PP.....U.S.A. and Canada. (DVD-LV60, PV40
only)

U.....U.S.A.. (DVD-RV21, 31, 41 only)



Subject : New servicing method for DVD player (5th generation models)

Please file and use this supplement manual together with the service manual for

Model No. DVD-RV31UCA, RV41UCA, Order No. ODS010203C1

Model No. DVD-RV31EEBEG, RV41EEBEG, Order No. ODS010307C2

Model No. DVD-RA71EEBEG, Order No. ODS010304C2

Model No. DVD-RP91D, Order No. ODS010305C1

Model No. DVD-RV31AEU Order No. ODS010416C8

Model No. DVD-RV31ENPMPX Order No. ODS010417C3

Model No. DVD-RV41A Order No. ODS010411C3

Model No DVD-RA71A Order No. ODS010525C3

Model No. DVD-RA71EN Order No. ODS010527C3

Model No. DVD-H2000D Order No. ODS010629C1

Model No. DVD-RV31EEBEG, Order No. MB0106004S2

Model No. DVD-RV21U, Order No. ODS010528C1

Model No. DVD-LV60PP, Order No. ODS010306C1

Model No. DVD-LV60EBEG, Order No. ODS010418C2

Model No. DVD-PV40PP, Order No. ODS010523C1

Model No. DVD-PV40EBEG, Order No. ODS010524C2

Model No. DVD-LV60GCS, Order No. ODS010630C3

Model No. DVD-PV40GCS, Order No. ODS010631C3

WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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1 New servicing method for DVD player (5th generation models)

With the 5th generation models (DVD-RV31, DVD-RP91 and others), new self-diagnosis function and new servicing method described below are additionally available.

1.1. Firmware updating and recovery with disc

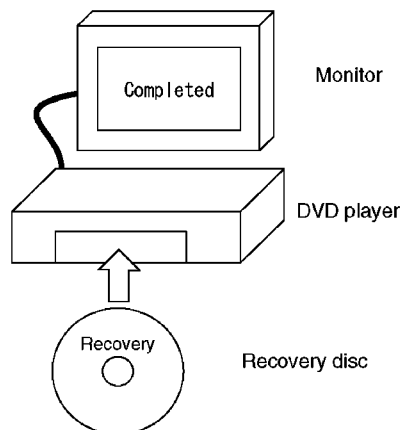
- Recovery
- Firmware updating

Simply run the recovery disc. Then both of the above operations are automatically performed.

Commercially available CD-R can now perform updating and recovery process, making it easier to update the version.

Recovery process: Optimization of player after replacement of FROM, EEPROM and modular P.C.B.

Version updating: Firmware updating for improved operability and performance



1.2. New self-diagnosis function

- Cumulative operation time display function (Spindle motor and DVD/CD laser)
- Servo process display function
- ADSC internal RAM display function
- Other: Increased number of last errors storage
1event →20 events

Utilization of the above functions, in combination with servicing procedures, is expected to contribute to higher efficiency of fault diagnosis.

[Purposes]

Operation time display function: For faultfinding of spindle motor or laser that has limited service life

Servo process display: For fault diagnosis of player startup malfunction

ADSC internal RAM display function: For faulty part identification in servo system using the learned values

2 How to use recovery disc

2.1. Performing recovery

1. Load the recovery disc RFKZD5TR001 on to the player and run it.
2. Recovery is performed automatically. When it is finished, a message appears on the screen.
3. Remove the recovery disc.
4. Turn off the power.

2.2. Updating firmware

1. Load the recovery disc RFKZD5TR001 on to the player and run it.
2. Firmware version of the player is automatically checked. Appropriate message appears whenever necessary.
3. Using remote controller's cursor key, select whether version updating is to be done or not. (Selection of Yes/No)
4. a. If Yes is selected, version updating is performed.
 - b. If No is selected, only recovery is performed.
5. a. When updating is finished, remove the disc according to the message appearing on the screen.
 - b. Remove the disc according to the message appearing on the screen.
6. Turn off the power.

[Cautions]

Never turn off the main unit power while version updating is under way (displayed on the screen).

When turning off the power caused error status, replace FROM.

* When black screen continues for a long time without finish message after version updating with DVD-RP91, turn off the power switch once and then turn it on again to finish the updating operation.

* When monitor screen continues to show stand-by status after version updating with the changer model, press the PLAY button.

* To confirm the version after updating, turn on the power again and go to the specified service mode for checking.

Recovery disc ... First edition = RFKZD5TR001

Model	Recovery	Version updating	Firmware version	Required time
DVD-RV21	1	1	45A373/B373/C373	Approx. 1.3 minutes
DVD-RV26	1	1	45A373/B373/C373	Approx. 1.3 minutes
DVD-RV31	1	1	45A373/B373/C373	Approx. 1.3 minutes
DVD-RV41	1	1	45A373/B373/C373	Approx. 1.3 minutes
DVD-RA71	1	1	50B679/C679	Approx. 3 minutes
DVD-RP91	1	1	50E188/G188	Approx. 3 minutes
DVD-CV51	1	1	45K103	Approx. 1.3 minutes
DVD-LV60	1	-	-	-
DVD-PV40	1	-	-	-
SA-HT70	1	1	45A373/B373/C373	Approx. 1.3 minutes
SA-DK10	1	1	45A373/B373/C373	Approx. 1.3 minutes
SL-DV260	1	1	45A373/B373/C373	Approx. 1.3 minutes
SL-HDV600	1	1	45A373/B373/C373	Approx. 1.3 minutes

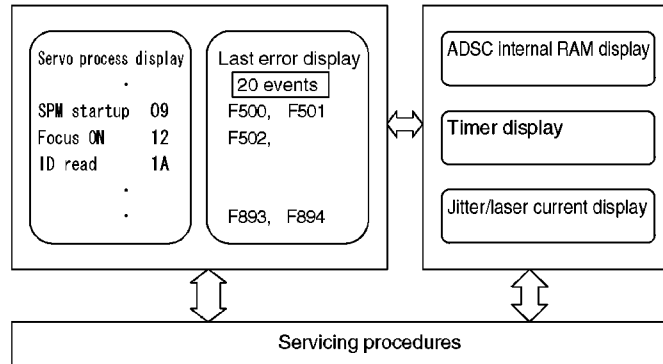
Destination of firmware version ... A=Japan, B=Asia, C=North America, Europe, etc.

3 Fault diagnosis using new self-diagnosis function

The 5th generation DVD players have the additional new service modes as described above to further reinforce the diagnosis function.

These new functions are unable to bring sufficient results when they are used alone.

Effective fault diagnosis can be expected when multiple diagnostic methods are properly combined in accordance with the servicing procedures depending on specific fault status.



* New servicing procedures are now under study to match with the newly developed self-diagnosis functions introduced here. Details of the new servicing procedures will be informed from time to time.

1. Cumulative operation time display function

For spindle motor and DVD/CD laser, the cumulative operation time is displayed.

When servicing, check the timer display and use it as information for fault diagnosis.

At the time of repair and replacement of these components, make sure to check the operation time and reset the timer after replacement.

Operation time of the replacement parts (spindle motor and laser) is the valuable information as actual data for future product quality.

Please save the records and supply information to us.

2. Servo process display function

This additional function is intended to improve efficiency of fault diagnosis, especially for the player's startup failure, in combination with the learned value data of ADSC internal RAM.

3. ADSC internal RAM display function

The function is to display the internal RAM data of ADSC servo processor.

The RAM data are the learned values of drive servo, memorizing those concerning focus and tracking, as well as data slice and equalizer.

* This function is also a newly developed service mode. Its full utilization is still under study.

4. Others

- Increased number of last errors stored

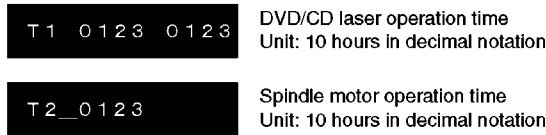
1event →20 events

Focus drive value display function

4 Overview of each function

4.1. Cumulative operation time display

1. Operation/display



Key operations are as follows.

- Laser operation time In STOP mode, main unit PAUSE+FWD-SKIP+ remote controller [5]
- Spindle motor operation time In STOP mode, main unit PAUSE+FWD-SKIP+ remote controller [6]
- To reset the timer, perform the following while displaying the time with above key operation.
- Laser operation time In STOP mode, main unit STOP+FWD-SKIP+ remote controller [5]
- Spindle motor operation time In STOP mode, main unit STOP+FWD-SKIP+ remote controller [6]

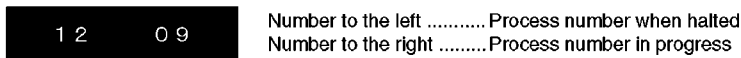
2. How to utilize

- Reference information in fault diagnosis of laser or spindle motor system
- Review of faulty point in repeated repair

4.2. Servo process display

1. Operation/display

- While the player is in STOP mode, perform the specified key operation to display the servo process number on FL.
- When the display does not change from the error indication, press Open/Close key to show the servo process number.
- Key operation: In STOP mode, main unit PAUSE+FWD- SKIP+ remote controller [7]



2. How to utilize for fault diagnosis

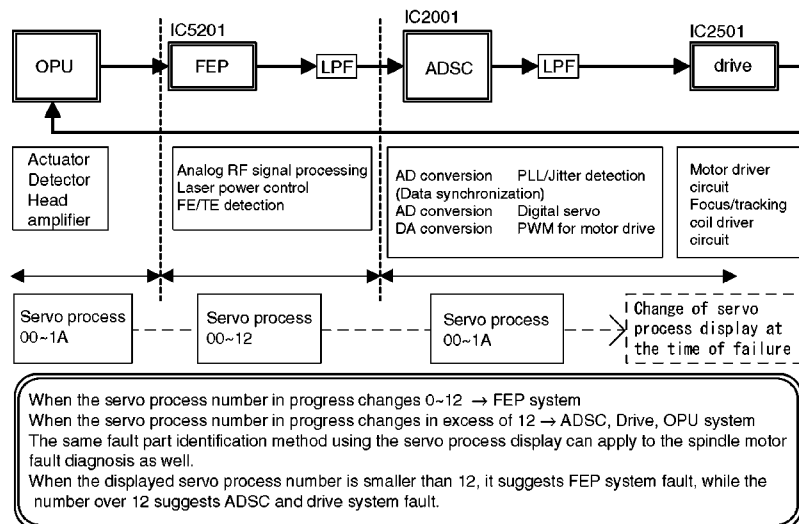
[RV31 series, RV21 series, RV41 series]

Note:

Diagnosis procedures are now under study for the models using SODC such as RP91 series and RA71 series.

Whether the number to the right on FL display exceeds 12 or not can be utilized as a guide to identify faulty part. The display can be effectively utilized for the fault diagnosis of focus/tracking system when player startup is faulty, as well as for the diagnosis of spindle motor servo system.

Faulty part identification with servo process display for focus/tracking servo system



4.3. ADSC internal RAM display function

1. Operation/display

Key operation: Main unit PAUSE+OPEN + remote controller [RETURN] Operate the remote controller [CLEAR] key to update internal RAM address and display 11 learned values.

Table 1 shows the descriptions of the display.

2. How to utilize

At present, learned values of ADSC internal RAM are expected to be useful for the following faulty part identification.

Use how learned value changes from initial value to find whether faulty part exists before or after ADSC in the focus/tracking servo system.

[Focus system]

When focus gain remains at initial value and tracking gain changes, fault exists before ADSC input.

When focus gain changes and tracking gain remains at initial value, fault exists after ADSC output.

[Tracking system]

When focus gain remains at initial value and tracking gain changes, fault exists after ADSC output.

When focus gain changes and tracking gain remains at initial value, fault exists before ADSC input.

Table 1 ADSC internal RAM learned value

Address	Memory data	Data range	Standard value
4B4	Focus gain learned value except for DVD DL (L1 layer)	0040h~0800h	200h
4BC	Focus gain learned value of DVD DL (L1 layer)	0040h~0800h	200h
4B6	Focus balance learned value except for DVD DL (L1 layer)	B000h~5000h	0000h
4BE	Focus balance learned value of DVD DL (L1 layer)	B000h~5000h	0000h
4B5	Tracking gain learned value except for DVD DL (L1 layer)	0040h~0800h	200h
4BD	Tracking gain learned value of DVD DL (L1 layer)	0040h~0800h	200h
TB0	Tracking balance learned value of DVD SL and DL (L0)	0060h~FFA0h	0000h
	Tracking balance learned value of CD and VCD	B000h~5000h	0000h
TB1	Tracking balance learned value of DVD DL (L1 layer)	FFA0~0060h	0000h
DBD	DSL offset learned value of DVD	9000h~F000h	
DBC	DSL offset learned value of CD and VCD	9000h~F000h	
FC0	Equalizer FC value except for DVD DL (L1 layer)	0000h~0004h	
BT0	Equalizer BOOST value except for DVD DL (L1 layer)	0000h~0004h	
FC1	Equalizer FC value of DVD DL (L1 layer)	0000h~0004h	
BT1	Equalizer BOOST value of DVD DL (L1 layer)	0000h~0004h	

Notes:

1. Learned values of focus balance and tracking balance are the coded binary data.
2. DSL offset learned value is effective only in upper 2 digits. (Lower 2 digits, normally 06, are ignored.)

Picking up servo learned value (Determined)

1. Focus (primary)/tracking balance learning ... When leading in focus
2. Focus/tracking gain and equalizer ... When leading in tracking
3. Focus balance (secondary) ... When leading in tracking

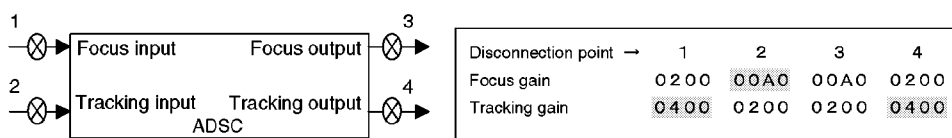
[Note]

When fault exists somewhere after tracking servo, the disc type is switched by retry to make learned value different from the one in normal startup.

Initial learned value: Gain = 0200
Balance = 0000
DSL = C406/CC06 (Differs depending on P.C.B.)
Equalizer = 0000

Equalizer value is entered when RF signal is sent out.

When focus/tracking servo system circuit is faulty, the gain learned value changes from initial value as follows.



Examples of ADSC internal RAM learned value display